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# DIVERSIFIED DEVELOPMENT

MAKING THE MOST OF NATURAL RESOURCES IN EURASIA

Indermit S. Gill • Ivailo Izvorski • Willem van Eeghen • Donato De Rosa





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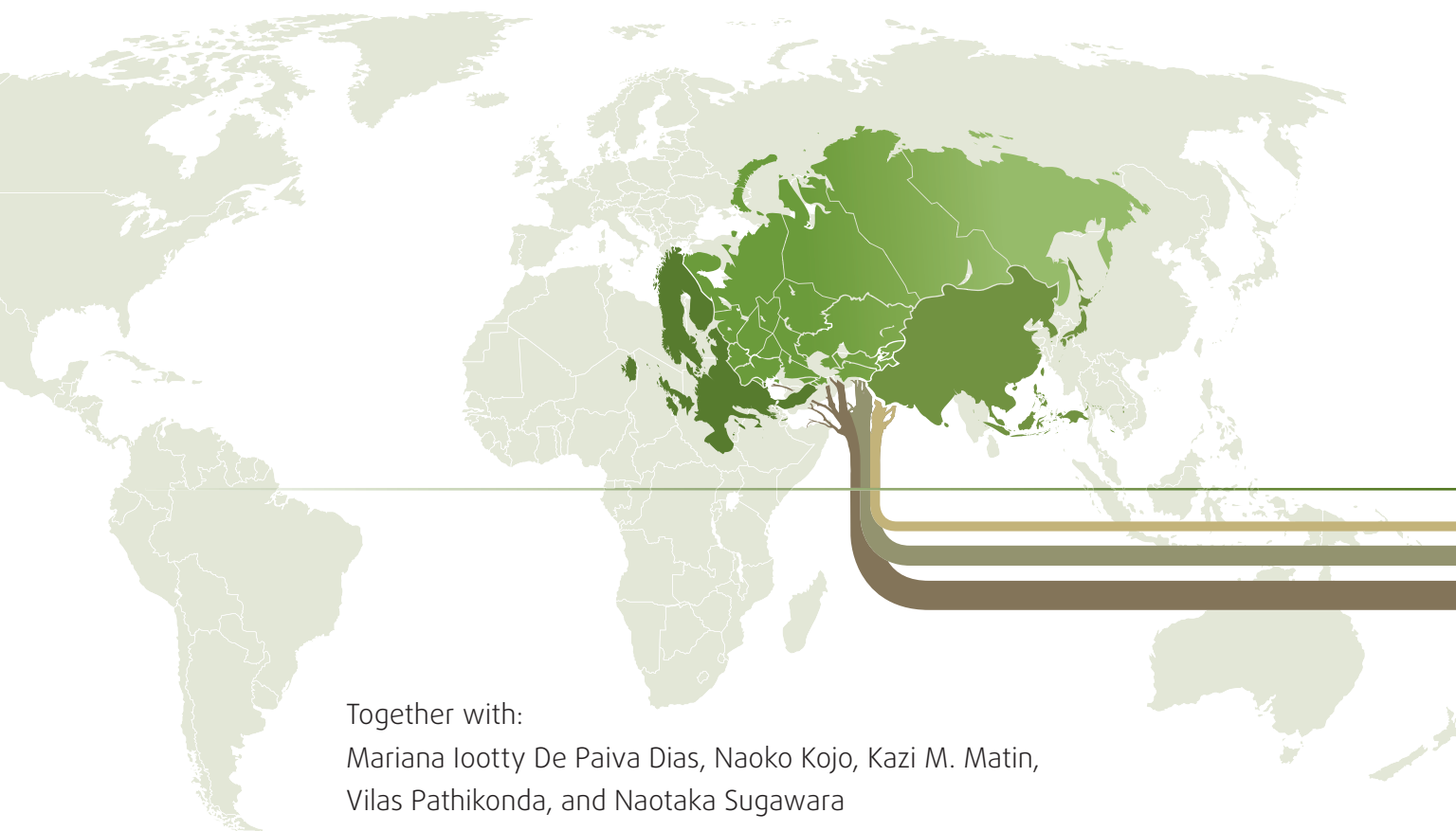
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# Foreword

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In 2012, the World Bank published a report on economic growth in Europe: *Golden Growth: Restoring the Lustre of the European Economic Model*. The report covered Central and Eastern Europe—the western part of the Europe and Central Asia (ECA) region—and the high-income economies of Western Europe. It highlighted the benefits that Europe has derived from integration with the world based on its most abundant asset: capital, both physical and human.

*Diversified Development*, the report in front of you, complements *Golden Growth*. It covers Eurasia, the eastern part of ECA, defined in this report as the countries of the former Soviet Union excluding the Baltic States: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Three-quarters of the region's population live in resource-rich countries, with which the other countries have close economic ties. This report assesses the economic performance of Eurasia since the early 1990s and its prospects looking ahead.

It finds that Eurasia has recovered from the recession of the 1990s and is integrating into the world economy—primarily through its abundant natural resources. The resource-rich countries of Eurasia have benefited from global economic growth. After all, Eurasia has more than one-third of the world's reserves of oil, gas, bauxite, and gold, and prices for these commodities have surged since 2000, boosting resource-related revenues. The other countries of Eurasia have also benefitted from the resource abundance of their neighbors through trade, capital flows, and remittances.

Natural resources have been a blessing for Eurasia. Policy makers and academics worry that this blessing could become a curse as the region's dependence on resources grows. Economic diversification has been the principal preoccupation of policy makers and the subject of serious study by researchers during the past two decades. They are justified in being concerned, because this problem has also vexed governments in resource-abundant countries in other parts of the world. "Resource curse," "Dutch disease," and the "voracity effect" are much-discussed policy problems. These have led the World Bank and the Eurasian Development Bank to join forces to help Eurasia's governments and citizens find ways to make the most of natural resources—to foster development and shared prosperity.

The report's main message is that countries in the region are benefiting from natural resources, and they will continue to do so if Eurasia's economies become more efficient—that is, if they grow more productive, create jobs in private enterprises, and reduce economic volatility. The report also finds that although it is not clear whether diversifying exports and production is necessary for development, it is clear that diversified exports and economic structures are not sufficient for countries to develop. There is little evidence that concentration of economic activity is detrimental to productivity growth and job creation, or that it leads to excessive economic volatility. The implication is that governments would do well to review strategies that rely on interventions to stimulate specific sectors or activities. Instead, it would be far more effective if Eurasian countries focused more on diversifying their national asset portfolios—that is, to ensure better balance between natural resources, physical and human capital, and economic institutions.

Eurasian countries can be proud of what they have achieved during the past two decades. By recognizing the special imperatives of resource-based development, Eurasia's policy makers can make the coming decades even better. Diversifying national asset portfolios is not easy, but it will be necessary if countries in Eurasia are to become advanced, high-income economies. We hope this report will help to make this task a little easier.

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# Acknowledgments

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# Abbreviations and Country Groups

## Abbreviations

ANS	adjusted net savings
BRICS	Brazil, Russia, India, China, and South Africa
CAGR	compound annual growth rate
CIF	cost, insurance, and freight
CIS	Commonwealth of Independent States
COMECON	Council for Mutual Economic Assistance
CORFO	Chilean Economic Development Agency
CU	Customs Union
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia (World Bank regional vice presidency)
ECD	early childhood development
EDB	Eurasian Development Bank
EITI	Extractive Industries Transparency Initiative
EU	European Union
FDI	foreign direct investment
FOB	free on board
GCC	Gulf Cooperation Council
GDP	gross domestic product
GNI	gross national income
GNS	gross national savings
GSP	generalized system of preferences
HDI	Human Development Index
HS	Harmonized Commodity Description and Coding System (or Harmonized System)
ICT	information and communication technology
IFC	International Finance Corporation (of the World Bank Group)
IMF	International Monetary Fund
IP	intellectual property
LIC	low-income country
LPI	Logistics Performance Index
MIC	middle-income country
NTM	nontariff measure
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment (of the OECD)
PPI	private participation in infrastructure
PPP	purchasing power parity
PSA	production-sharing agreement
R&D	research and development

REER	real effective exchange rate
SAR	special administrative region
SITC	Standard International Trade Classification
SOE	state-owned enterprise
SWF	sovereign wealth fund
TFP	total factor productivity
TIMSS	Trends in International Mathematics and Science Study
UN	United Nations
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNSD	United Nations Statistics Division
WTO	World Trade Organization

## Country groups

The following are the country groups mentioned in this report. These categories are broad and commonly used across all the chapters. In addition, each chapter has its own groupings of countries, and how the countries are classified is defined in each chapter.

Eurasia	Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan
Eurasia resource-poor	Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan
Eurasia resource-rich	Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan
East Asia-11	Cambodia, China, Indonesia, Japan, the Republic of Korea, the Lao People’s Democratic Republic, Malaysia, the Philippines, Singapore, Thailand, and Vietnam
East Asia-12 (or East Asia and Pacific-12)	Cambodia, China, Indonesia, the Republic of Korea, the Lao People’s Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam
EU-11	Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia
EU-12	Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia
EU-15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom
EU-27	EU-12 plus EU-15



# Country Codes and Names

The three-letter country codes used in this report are taken from the International Organization for Standardization (ISO) 3166-1 alpha-3 codes, except for a few countries, as described by the World Bank ([data.worldbank.org/node/18](http://data.worldbank.org/node/18)). The use of the word “countries” to refer to economies implies no judgment by the authors and contributors about the legal or other status of a territory. The following are the codes and corresponding country names that can be found in this report.

Code	Name	Code	Name	Code	Name
<b>AGO</b>	Angola	<b>GAB</b>	Gabon	<b>OMN</b>	Oman
<b>ARE</b>	United Arab Emirates	<b>GEO</b>	Georgia	<b>PAK</b>	Pakistan
<b>ARG</b>	Argentina	<b>GHA</b>	Ghana	<b>PER</b>	Peru
<b>ARM</b>	Armenia	<b>GIN</b>	Guinea	<b>PNG</b>	Papua New Guinea
<b>AUS</b>	Australia	<b>GNB</b>	Guinea-Bissau	<b>POL</b>	Poland
<b>AUT</b>	Austria	<b>GUY</b>	Guyana	<b>QAT</b>	Qatar
<b>AZE</b>	Azerbaijan	<b>IDN</b>	Indonesia	<b>ROM</b>	Romania
<b>BDI</b>	Burundi	<b>IND</b>	India	<b>RUS</b>	Russian Federation
<b>BEL</b>	Belgium	<b>IRL</b>	Ireland	<b>SAU</b>	Saudi Arabia
<b>BHR</b>	Bahrain	<b>IRN</b>	Iran, Islamic Republic of	<b>SDN</b>	Sudan
<b>BLR</b>	Belarus	<b>IRQ</b>	Iraq	<b>SGP</b>	Singapore
<b>BOL</b>	Bolivia	<b>ITA</b>	Italy	<b>SLB</b>	Solomon Islands
<b>BRA</b>	Brazil	<b>KAZ</b>	Kazakhstan	<b>SYR</b>	Syrian Arab Republic
<b>BRN</b>	Brunei Darussalam	<b>KGZ</b>	Kyrgyz Republic	<b>TCD</b>	Chad
<b>BWA</b>	Botswana	<b>KOR</b>	Korea, Republic of	<b>TJK</b>	Tajikistan
<b>CAF</b>	Central African Republic	<b>KWT</b>	Kuwait	<b>TKM</b>	Turkmenistan
<b>CAN</b>	Canada	<b>LAO</b>	Lao People’s Democratic Republic	<b>TMP</b>	Timor-Leste
<b>CHL</b>	Chile	<b>LBR</b>	Liberia	<b>TTO</b>	Trinidad and Tobago
<b>CHN</b>	China	<b>LBY</b>	Libya	<b>TUN</b>	Tunisia
<b>CIV</b>	Côte d’Ivoire	<b>LTU</b>	Lithuania	<b>UGA</b>	Uganda
<b>CMR</b>	Cameroon	<b>LVA</b>	Latvia	<b>UKR</b>	Ukraine
<b>COG</b>	Congo, Republic of	<b>MDA</b>	Moldova	<b>USA</b>	United States
<b>COL</b>	Colombia	<b>MEX</b>	Mexico	<b>UZB</b>	Uzbekistan
<b>CZE</b>	Czech Republic	<b>MLI</b>	Mali	<b>VEN</b>	Venezuela, República Bolivariana de
<b>DEU</b>	Germany	<b>MNG</b>	Mongolia	<b>VNM</b>	Vietnam
<b>DJI</b>	Djibouti	<b>MOZ</b>	Mozambique	<b>YEM</b>	Yemen, Republic of
<b>DZA</b>	Algeria	<b>MYS</b>	Malaysia	<b>ZAF</b>	South Africa
<b>ECU</b>	Ecuador	<b>NAM</b>	Namibia	<b>ZAR</b>	Congo, Democratic Republic of
<b>EGY</b>	Egypt, Arab Republic of	<b>NGA</b>	Nigeria	<b>ZMB</b>	Zambia
<b>EST</b>	Estonia	<b>NLD</b>	the Netherlands	<b>ZWE</b>	Zimbabwe
<b>ETH</b>	Ethiopia	<b>NOR</b>	Norway		
<b>FIN</b>	Finland				



# Overview



## Making the Most of Natural Resources in Eurasia

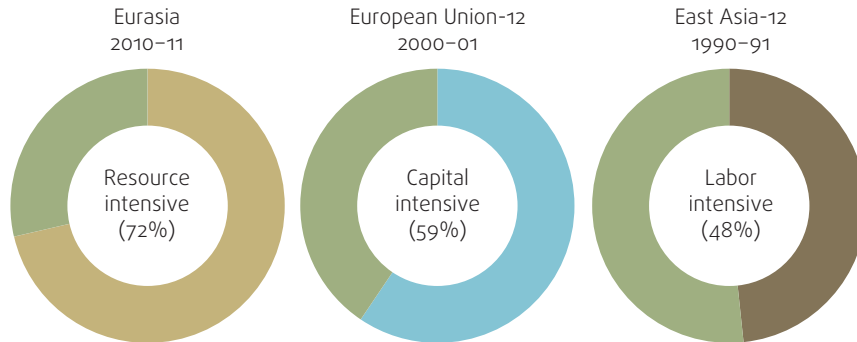
Two decades ago, with the republics of the former Soviet Union still in turmoil, the World Bank published one of its most influential reports. *The East Asian Miracle* was written in 1993 to understand the reasons for rapid growth in Asia's eight most dynamic economies.<sup>1</sup>

The debates it fueled—on what governments must do for countries to develop—carry on to this day. But its main conclusion remains largely unchallenged: East Asian countries have been successful because they integrated into the world economy, and they could do this because their own economies were efficient. With neither an abundance of natural resources nor a lot of capital, the instrument of East Asia's integration was labor, the one factor of production that it had in good supply. In 1997 a serious economic crisis led to skepticism about the durability of East Asia's success. But China's progress and the region's quick recovery in the 2000s has left few doubts about the main reason for the biggest reduction of poverty in recorded history: importing capital and know-how and exporting goods and services that require a great deal of labor (East Asia has a third of the world's supply).

Around the same time, with the collapse of communism, the economies of Central Europe rejoined the west, beginning with the association agreements the European Union (EU) signed with Hungary, Poland, and the Czech Republic.<sup>2</sup> The rewards for adopting the policies and institutions of their western neighbors included the largest inflows of foreign capital in history. A potent mix of Western European know-how and finance and Central Europe's capable workers fueled the integration of 100 million people into the global economy, helping them institute modern markets and attain high incomes. The European convergence machine in many ways rivals the East Asian miracle, and reflects the same fundamental forces: efficient integration into the international economy based on trade in goods and services that use Central Europe's relatively abundant asset—this time, though, it was capital. Western Europe had a third of the world's supply of capital, and their deep and comprehensive integration into the EU made capital suddenly abundant in Central European countries such as the Czech Republic, Estonia, and Poland.

What has been happening in the former Soviet Union during the past decade is essentially the same. Starting in the late 1990s, many countries in "Eurasia"—defined in this report as the dozen countries of the former Soviet Union less the three Baltic economies—rejoined the world economy after more than a half-century of communism.<sup>3</sup> Their trajectory is different only in that whereas East

Asia was abundant in labor and emerging Europe in capital, Eurasia is abundant in natural resources. Natural resource supplies are more difficult to estimate than labor or capital, but estimates indicate that Eurasia has more than a third of the world's reserves of oil, gas, bauxite, and gold. Unsurprisingly, just as East Asian exports tended to be intensive in the use of labor and Central Europe's in capital, Eurasia's exports are intensive in the use of natural resources (figure O.1).



**Figure O.1. Three dozen countries, three ways to integrate and grow**

(Export product share, by factor intensity)

Source: World Bank staff calculations based on United Nations Comtrade; see chapter 1.

Note: Factor intensity is measured with the export data classified by Standard International Trade Classification (SITC) Revision 1. The modified version of commodity classification by Krause (1987) is used. Resource intensive includes products related to hydrocarbon and minerals only. Goods related to agriculture are contained in labor intensive (unskilled labor intensive). Here, capital intensive is represented by both technology intensive and human capital intensive. European Union-12 includes Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia. East Asia-12 includes Cambodia, China, Indonesia, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam.

Almost every East Asian country is now a middle-income economy. Almost all Central European countries are high-income economies. Nearly every Eurasian economy has recovered from the deep slump and suffering of the 1990s, and natural resources have much to do with this. This report is about economic development in the twelve countries of Eurasia. Six of them are rich in resources: Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Six are not: Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan. About 85 percent of the economic output of Eurasia is in its six resource-rich economies, and minerals and metals are about 85 percent of the exports of the region. Azerbaijan, Kazakhstan, and Russia—the three countries that both have abundant natural resources and have done a lot to increase commerce with the rest of the world—are now close to becoming high-income economies. Through trade, migration, investment, or aid, they have shared their prosperity with their poorer neighbors. Today, 85 percent of people in Eurasia are no longer poor.

But academics who study resource-based economies debate whether these countries should consider themselves cursed or blessed (van der Ploeg 2011). And Eurasian countries seem uneasy with living off the land. Their policy makers long for the day when their economies no longer depend so heavily on natural resources. They try to put away some of the earnings from oil and gas for future generations. And they have spent significant amounts of public money trying

to foster activities believed to be less extractive and more innovative. These observations prompt questions. Is Eurasia's resource wealth a blessing or a curse? If it is one of these things, what would make it into the other? How much should Eurasian governments try to diversify their exports and economies away from activities that depend on natural wealth? Are there ways to make Eurasian economies simultaneously extractive and innovative? In other words, are there better strategies to foster economic development than those they have tried?

These questions are answered in this report. Here are the main conclusions (see "20 questions, 20 answers . . ." at the end of this overview). The large majority of Eurasia's 280 million people who are not poor can consider themselves blessed by the region's natural abundance. To make sure that this blessing does not become a curse—as has sometimes happened in Africa and Latin America—Eurasian economies have to become more efficient—shorthand for becoming more productive, job-creating, and stable. But efficiency is not the same thing as diversification: there is not much evidence that less concentrated economies have greater productivity growth, more job creation, or systematically less economic volatility. Governments in the region need to worry less about the composition of exports and the profile of production and more about national asset portfolios—the blend of natural resources, built capital, and economic institutions. They have much to do. Eurasia's portfolios are heavy in tangible assets such as oil and gas, road and rail, and schools and hospitals. And they are light in intangibles such as the institutions for managing volatile resource earnings, providing high-quality social services, and evenhandedly regulating enterprise. Tangible investments are not what distinguish the successes from the failures—investments in intangibles, early in their development, have helped make successful resource-rich countries both extractive and innovative.

The people of Eurasia can be proud of what they have accomplished during the past two decades, and the world should recognize the progress they have made in so short a time. For some countries in the region, such as Georgia and Kazakhstan, the last decade may have been the best in their history. By recognizing the imperatives of resource-based development, Eurasia's policy makers can make the next decade better still, not just for this generation but for many more to come. This report was written to make their task a little easier.

## A blessing, undisguised

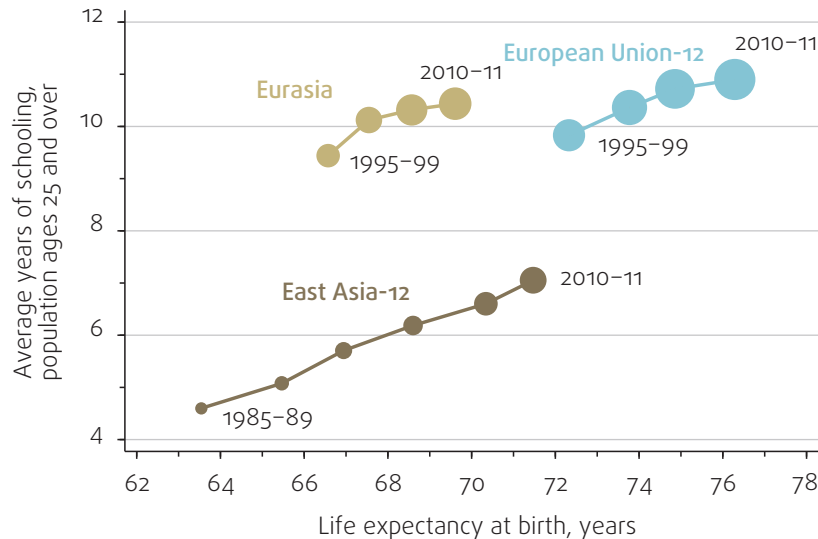
The 1990s were a difficult time for every country in Eurasia. The move from communism to market-based economies had made obsolete much of the institutional capital of the republics of the Soviet Union. But their greatest asset, natural resources, was still not valued much by world markets. Their asset portfolios consisted mainly of built capital, decent infrastructure, and an educated workforce.

Then things changed. The prices of commodities—fuels, food, metals, and agricultural raw materials—tripled in the 2000s. The price of a barrel of crude oil illustrates the speed and extent to which Eurasia's fortunes improved. For 100 years before 1973, oil had stayed at around \$20 a barrel in today's prices. It then rose sharply to spike at more than \$100 in 1980. But when the Soviet Union collapsed in 1989, oil prices were below \$30, and by 1999 they had fallen to \$15.

After 2000 prices rose rapidly and by mid-2008 were \$130 a barrel. After falling during the financial crisis, oil prices rose again above \$100 a barrel. The prices of most commodities—fuels, metals, and farm products—behaved much like those of crude oil.

## Poverty halved, prosperity shared

This price surge greatly improved the living standards of most of Eurasia's inhabitants, especially the nearly 250 million in its six resource-rich economies. In 1995 the region's gross output was about \$350 billion; by 2012 it surged to almost \$2 trillion. With populations constant, per capita incomes increased notably. The retired get paid their pensions. Social services have been restored. Educational attainment is up, and is now close to levels that the EU's new member states had in the mid-2000s. Longevity could be much higher, but life expectancy has been rising rapidly since 2000 (figure O.2). Inequality has been inching up in the past few years, but it is down from the tumultuous days that followed the collapse of the Soviet Union.



**Figure O.2. Natural resources have served Eurasia well**

(Development outcomes, 1985-2011)

Sources: World Bank staff calculations based on World Bank World Development Indicators; and Barro and Lee 2013; see chapter 1.

Note: Each data point shows a nonoverlapping five-year average value. The size of the bubble represents the relative level in per capita income. Countries in each category are listed in the Selected Indicators.

Most impressive perhaps is the reduction of poverty. High commodity prices have been associated with plummeting poverty rates in almost every country in Eurasia. A poverty line of \$5 a day is appropriate for the countries of Eurasia to take account of climatic conditions that increase the cost of living compared to other parts of the world, whereas a threshold of \$2.50 marks the extreme poverty line for the region. In 2000, one of every two Russians, Belarussians, and

Ukrainians lived on less than \$5 a day; by 2010 it was one of every 10. About 80 percent of people in Azerbaijan and Kazakhstan lived on less than \$5 a day in 2000; by 2010 fewer than 50 percent did. In 2000 more than 60 percent of the people in Armenia, Moldova, and Tajikistan lived on less than \$2.50 a day; by 2011 the figure was around 30 percent (figure O.3).

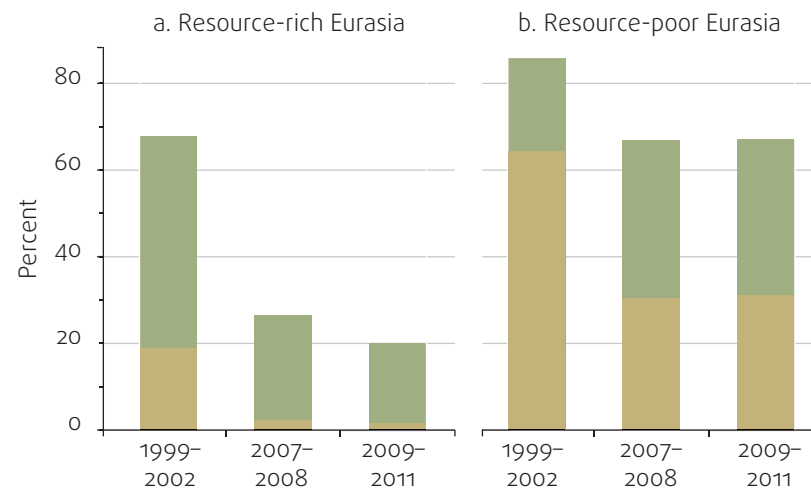
The better development outcomes in the region coincided with high commodity prices in the rest of the world. Natural resources are helping the economies of Eurasia, are giving people a helping hand, and have made its governments solvent.

### Figure O.3. Poverty has fallen to half of what it was in the 1990s

(Headcount poverty rates in Eurasia at \$5 a day and \$2.50 a day, 1999–2011)

Poverty rates:

- \$5/day
- \$2.50/day



Source: World Bank staff calculations based on World Bank ECAPOV database; see chapter 1.

Note: Simple averages of countries belonging to respective groups are shown. Resource-rich countries are Azerbaijan, Kazakhstan, Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor countries are Armenia, Belarus, Georgia, Kyrgyz Republic, Moldova, and Tajikistan.

### A chafing dependency on nature

Of course, natural resources differ from labor and capital in an important aspect—they are exhaustible. Norway is considered fortunate that it discovered oil after it had developed the institutions to adeptly manage its windfall wealth from oil and gas. Similarly, though to lesser extent, Eurasia's resource-rich countries may have been fortunate in that the first decade of transition was a period of low commodity prices. Governments had little choice but to institute the mechanisms for collecting taxes, regulating labor, and providing social protection in ways that encouraged work, and to lay the foundations of governance that made the state more accountable to citizens. When the commodity boom came in 2000, Eurasian countries were perhaps more efficient and better prepared than they might have been had oil prices risen earlier.

An efficient economy produces in larger amounts and exports only the things that require the means of production—labor, capital, natural resources,

whatever—that it has in good supply. Using this as a yardstick for efficiency, Eurasian economies have grown ever more efficient since the fall of communism, and this has coincided with notable improvements in the lives of most people in the region.

But it is equally clear that greater dependence on natural resources disappoints those who make policy. President Vladimir Putin thinks that Russia “must diversify from oil, gas, and minerals toward high-tech products to ensure stability and sovereignty.”<sup>4</sup> Oil and gas now account for around two-thirds of Russia’s exports, up from less than half in the late 1990s. Commodities are almost 90 percent of exports, with no signs that this will change any time soon. In early 2013 Azerbaijan President Ilham Aliyev noted with some satisfaction that because economic growth in the non-oil sector in the first four months of 2013 was close to 11 percent, “this shows that already we have largely achieved our objective, that is, the diversification of the economy.”<sup>5</sup> Meanwhile, the share of mining in Azerbaijan’s gross domestic product (GDP) has quadrupled from less than 15 percent in 1991 to almost 60 percent today, and measures of economic diversification indicate that Azerbaijan may be less diversified today than it was in 1997 (box 0.1).

### Box 0.1. Not so fast—measuring diversification is difficult

It is not easy to measure how diversified an economy is. Economists who study the subject generally look at the composition of exports—how many goods and services a country exports—or the profile of production—how important manufacturing is in a nation’s output—because they can be measured using widely available data. By making it easier to measure the aspects of diversification that matter less for the development of nations, science has played a trick on economists who, in turn, may have confused policy makers.

**Exports.** The most common way to measure diversification is to put a number on how concentrated a country’s exports are. It could be as simple as this. In 2011 just five products—using an arbitrary aggregation of production—accounted for 96 percent of Azerbaijan’s exports and 70 percent of the Russian Federation’s, but just 22 percent of Ukraine’s (figure BO.1.1). By this measure Ukraine is a lot better off than Russia, because it is not rich in oil and gas. But using the same measure resource-poor Tajikistan’s top five exports are 76 percent of its total, roughly the same as Kazakhstan, one of the world’s most resource-rich countries. Obviously, exports can be concentrated for many reasons: hydrocarbon wealth, underdevelopment, or an economy’s size. Another measure is the hydrocarbon content of exports. In 2011,

hydrocarbons were almost 70 percent of Kazakhstan’s and Russia’s exports, but more than 90 percent of Azerbaijan’s and Turkmenistan’s. What is not clear from this is whether a lower percentage is always better. For Turkmenistan this ratio dipped to 70 percent in 2009 and 2010 as a result of the global crisis. It is not obvious that this was a good thing.

**Products.** The most popular method for measuring the concentration of economic activities is the Herfindahl-Hirschman Index. The measure was originally developed to study the extent to which a small number of firms dominated an industry; it has since been applied to assess the extent to which a sector of production dominates an economy. It follows then that for any economy the index can be computed for different levels of aggregation. For example, if services are all treated as one sector, the only economies that experienced some diversification between 1997 and 2010 were Kazakhstan and Russia; all the others became more concentrated (chapter 3). But if services are disaggregated—into, say, public utilities, construction, trade, transport, finance, public administration, and other services—all Eurasian countries except Azerbaijan and Kazakhstan became more diversified. So the two versions of the same measure yield almost exactly opposite conclusions.

**Assets.** It gets even more complicated when we try to measure what really matters—a nation’s economic assets. World Bank (2011) provides the best available estimates of a nation’s wealth and its decomposition into three types of capital: natural, produced, and intangible. Among these three assets, natural resources are best estimated (see figure BO.1.2). It is harder to measure the others. Total wealth is the approximate value of consumption over the next 25 years, using a discount rate of 4 percent. Natural capital consists of subsoil assets, forests, and farmland, valued at world prices and local costs. Produced capital is derived from physical investment data, using the perpetual inventory method. Intangible capital is the residue, which puts a sum on the contribution of labor, human capital, social capital, institutions, and the rule of law. In Russia, the total wealth per capita in 2005 was \$73,000, of which \$31,000 was natural, \$18,000 produced, and \$24,000 intangible. In this report, human and physical capital are combined in a single category called “built capital,” mainly to isolate the contribution of institutions. The three types of assets are called natural resources, built capital, and national institutions. Government efforts to diversify exports or economic production are called *economic diversification* policies. In contrast, policies to diversify asset portfolios lead to *diversified development*.

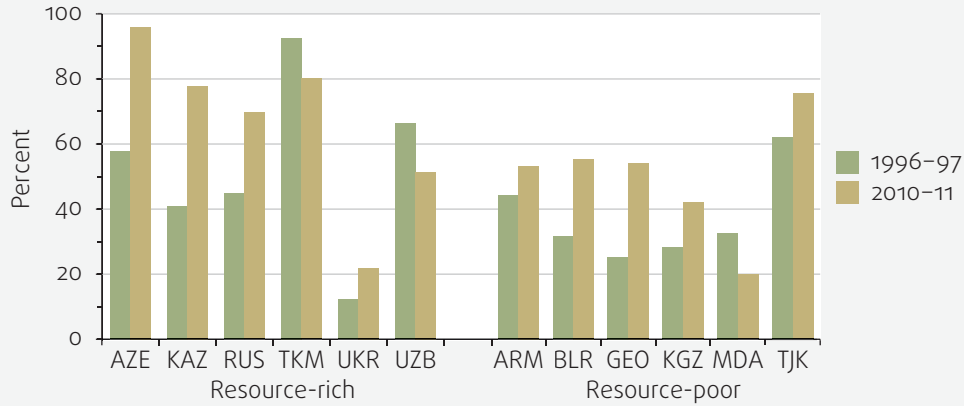
(continued)



**Box 0.1. (cont.)**

**Figure BO.1.1. Export product concentration has increased, especially in resource-rich countries**

(Share of top five export products, 1996–97 vs. 2010–11, for resource-rich and resource-poor countries)

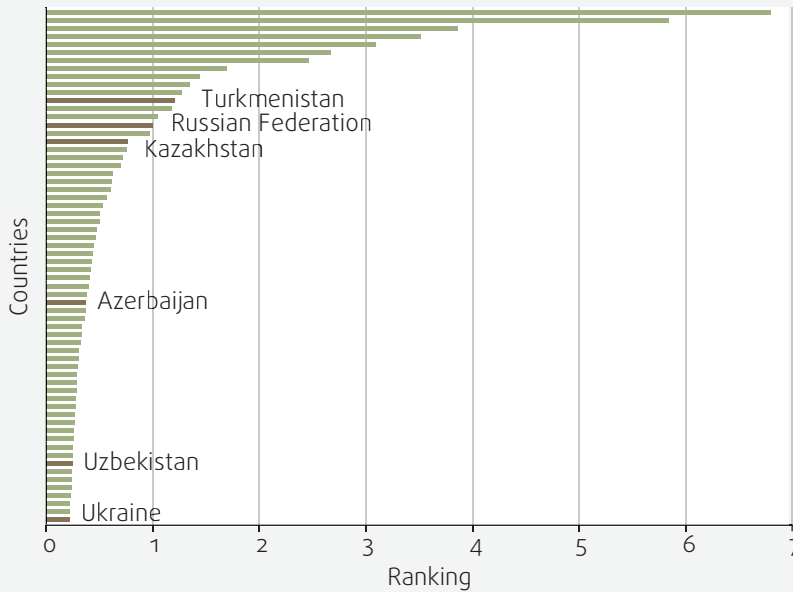


Source: World Bank staff calculations based on United Nations Comtrade; see chapter 2.

Note: Calculations are based on the six-digit export data classified by the Harmonized System 1988/92.

**Figure BO.1.2. Eurasia’s six resource-rich economies are ranked in the top 60 worldwide**

(Natural resources per capita, Russian Federation = 1, 2005)

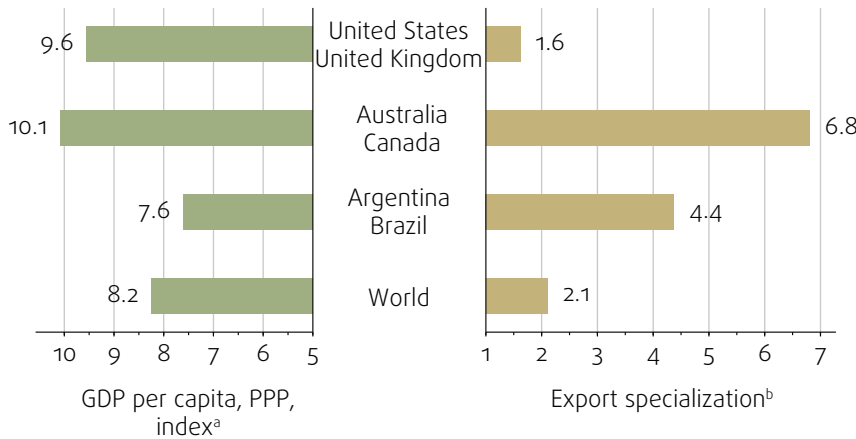


Source: World Bank staff calculations based on World Bank 2011; see chapter 4.

Note: Relative figures: Russian Federation = 1.

The long-term experience of nations—such as the United Kingdom and the United States, Australia and Canada, and Argentina and Brazil—suggests that economic diversification is neither necessary nor sufficient for economic development (see figure 0.4 and spotlight one). Interventions to diversify economies appear to work only when they are supported by policies to diversify assets (spotlight two). The correlation between diversified asset portfolios and greater economic efficiency is stronger (spotlight three).

The United States and the United Kingdom increased their per capita incomes tenfold since 1870, and have diversified exports. Australia and Canada’s economies have also grown as quickly, but their exports remain specialized. Through import substitution and industrial policies, Argentina and Brazil have diversified more, but have struggled to sustain economic growth. In 1910 Canada and Argentina’s per capita incomes were about 80 percent of U.S. levels. By 2010 Canada’s per capita income was 85 percent that of the United States; Argentina’s had fallen to 35 percent. Brazil’s GDP has stagnated at about 20 percent relative to the United States for more than a century. The experience of these countries and others is instructive and provides enough evidence to question whether Eurasia’s policy makers should equate development with diversification.



**Figure 0.4. Diversification is neither necessary nor sufficient for development**

(Economic growth, 1870–2010, and export specialization, 2009–10)

Sources: World Bank staff calculations based on Bolt and van Zanden 2013; and United Nations Comtrade; see spotlight one.

Note: GDP per capita is expressed in 1990 Geary-Khamis international dollars and converted to an index with a value of 1 in 1870. Export specialization is measured by the Herfindahl-Hirschman Index using four-digit export data classification in SITC (Standard International Trade Classification) Revision 1. For presentation purposes, it is multiplied by 100. PPP = purchasing power parity.

a. 1870 = 1.

b. Higher values indicate less diversification.

## Complicated questions, simple answers

Eurasia's greater integration in the world economy since the 1990s has—at least in some countries—come with increasingly concentrated exports and economic activity. But it has also brought greatly improved development outcomes—higher incomes, far less poverty, and better education and health. The question that many policy makers are asking now is: How can Eurasia reverse the trend toward export specialization and sector concentration without jeopardizing the gains in living standards?

This is not the question that they should be asking. Better questions are:

- First, are the improvements since the late 1990s merely windfall gains from high commodity prices or the fruits of better economic performance?
- Second, have governments used the time to become genuinely more efficient in transforming Eurasia's natural wealth into better-built infrastructure and healthier and more skilled people?
- Third, are there signs that Eurasians have learned the lessons provided by the resource-rich countries in other parts of the world?

The short answer to the first question is that most economies in Eurasia have done surprisingly well—see chapters 2 (Foreign Trade) and 3 (Economic Structures) and spotlight two (Industrial Policy). But because they will continue to depend on natural resources for the foreseeable future, they will not be able to escape economic volatility. To borrow a term from corporate finance, Eurasian countries have “high-beta” economies which, when performing normally, will be characterized by high and volatile growth rates.

The answer to the second question is that Eurasian governments have become better at building capital over the years—see chapters 4 (Natural Resources) and 5 (Built Capital). This improvement notwithstanding, countries other than Russia have only recently begun adding more in renewable capital—roads, railways, airports, telecommunication facilities, schools, and hospitals—than the amounts of natural resources they have been extracting and selling. To borrow a term from environmental economics, “genuine savings” have only recently become positive.

The answer to the third question is that to develop using natural resources, Eurasia will have to pay more attention to its “intangible capital”—see chapter 6 (Economic Institutions) and spotlight three (Natural Development). Institutions are not always well defined in the economic literature but, at least for Eurasia, there is no escaping them. This report specifies clearly what the term means: the mechanisms to manage resource rents, administer social services, and regulate economic production. A survey of the experience of a dozen resource-rich countries—Australia, Botswana, Canada, Chile, Malaysia, the Netherlands, Nigeria, Norway, Saudi Arabia, the United Arab Emirates, the United States, and República Bolivariana de Venezuela—provides clues about what can be done to successfully institute such arrangements.<sup>6</sup>

The report's main message for policy makers in Eurasia is that the most important unfinished task may be the toughest: to strengthen structures that cannot be seen, but whose weakness may threaten the region's prosperity.

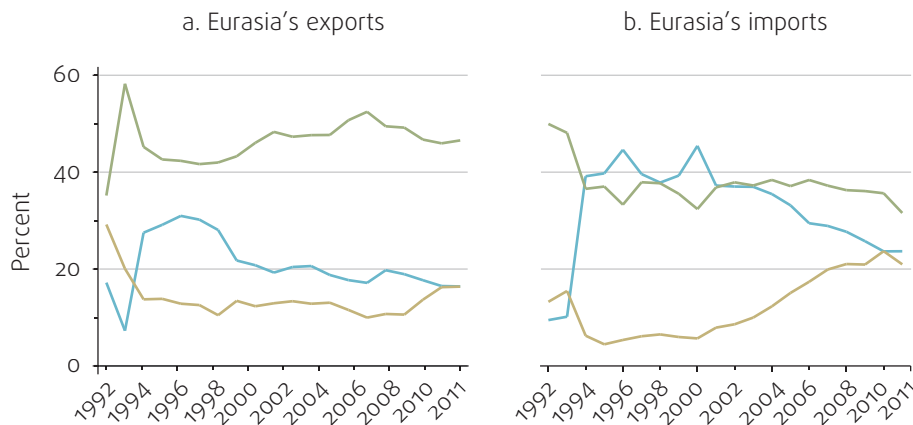
## “High-beta” economies

Most Eurasian economies have integrated efficiently into world markets. They have restructured to become competitive abroad and productive at home. And they have generated jobs and coped reasonably well with volatility. The experience of the last decade and a half is encouraging and informative: looking back there has been progress, and looking ahead there are lessons to be applied.

## Going global—with natural resources

In 1989 about 70 percent of Eurasia’s trade was within the region. By 1999, 70 percent of its trade was with outsiders. For the smaller countries the drops were precipitous. In Armenia, Georgia, Moldova, Tajikistan, and Turkmenistan, intra-Eurasian trade was greater than their GDPs in 1989. By 2011 it was less than 20 percent. Russia’s trade within the Soviet Union was 35 percent of its GDP in 1989; in 2011 it was 5 percent.

Today, almost half of Eurasia’s exports go to the EU, and almost a third of imports are from that bloc (figure 0.5). In the westernmost parts of the region, firms are becoming part of production networks centered on Western Europe. The value of exports to the EU is about \$350 billion, almost three times Eurasia’s intraregional exports. A fifth of Eurasian exports go to East Asia, and almost a quarter of Eurasia’s imports come from there. Trade, especially imports, with East Asia has been growing, and the shift from west to east has picked up speed since the crisis in the Euro Area. Before 2008 Eurasia’s exports to Europe were five times the value of its exports to East Asia; after 2009 just three times as much. To keep things in perspective, though, only 2 percent of East Asia’s imports come from Eurasia, and this ratio is closer to 1 percent for the EU. Economists use “gravity models” to predict how much countries should trade with each other based on their size, distance, and trade barriers. Eurasia’s patterns are much as expected.



**Figure 0.5. More trade with Europe, growing imports from East Asia**

(Export and import shares, main trading partners, 1992–2011)

— European Union  
— Intra-Eurasia  
— East Asia

Source: World Bank staff calculations based on data from International Monetary Fund (IMF) Direction of Trade Statistics; see chapter 2.

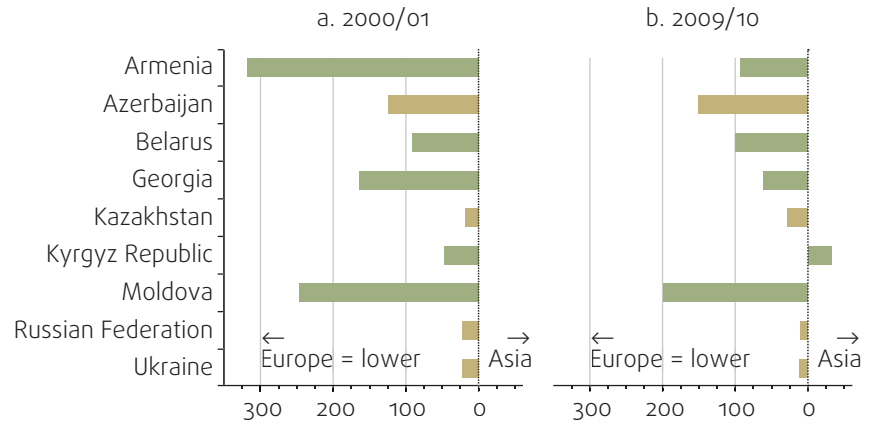
A quick look at a map of Europe and Asia leaves little doubt that physical distance cannot explain why Eurasia trades so much more with Europe than with Asia. Since the 1990s, Europe has reduced trade costs with Eurasia, incorporating the biggest economies such as Russia and Ukraine into the greater European trade corridor. A revealing exercise compares trade costs of countries in Eurasia and Europe with China and Germany, the two biggest trading nations in the world that border Eurasia (chapter 2). There are two surprises: First, the only country for which costs of trade with China are lower than with Germany is Kazakhstan; and second, the cost of trading with China for the average European economy is lower than the cost of trading with Germany for the average economy in Eurasia.

This is changing. Much as Kazakhstan has done, others in the region are investing in roads, railways, and pipelines with China. But trade restrictions continue to act as an important barrier to trade. Japan, China, and the Republic of Korea still levy the tariff equivalent of 1.5, 3.5, and 7.8 percent, respectively, on imports from Eurasia; the EU charges just 0.4 percent. If East Asian countries reduce their trade restrictiveness from the tariff-equivalent of 6 percent to close to the 2 percent for Europe, Eurasia’s trade with East Asia will soon exceed the trade with Europe. While nature can make trade easy or tough, for countries like Tajikistan whose apricots and other farm produce face high tariffs in neighboring China (compared with 6 percent in the distant EU), barriers thrown up by governments—not nature—make the difference. Fortunately, this is getting better. Trade costs have fallen, especially for resource-poor economies (figure 0.6).

**Figure 0.6. Trade with East Asia is becoming less costly, but trade with Western Europe is still cheaper**

(Difference in costs of trade with Europe and Asia, percentage points, ad valorem equivalent)

- Resource-rich
- Resource-poor



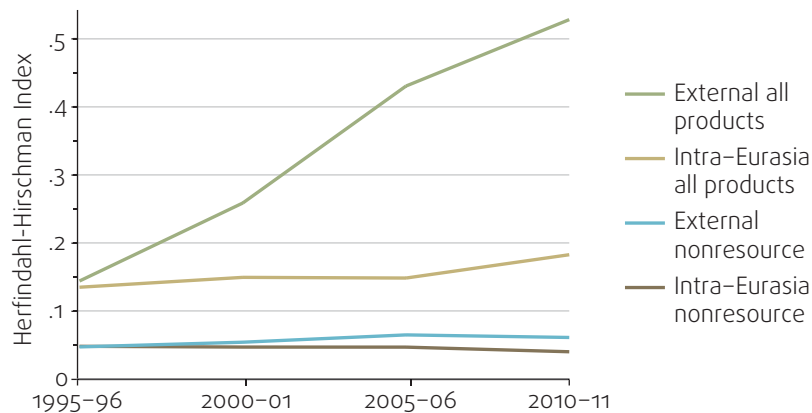
Source: World Bank staff calculations based on World Bank Trade Costs Dataset; see chapter 2.

Note: Europe and Asia are represented by the three largest economies in each region: France, Germany, and the United Kingdom, and China, Japan, and the Republic of Korea, respectively. Period averages of group median values are used.

## How you export matters

One of the debates fueled by *The East Asian Miracle* was about how much success depended on activist industrial policies. Were East Asian governments better than others at picking industries such as electronics, automobiles, and apparel that—with some help from taxpayers—could compete and win in global markets? Understandably, the debate soon became one about the industries or activities that governments in other regions should favor. Top academics gave such questions respectability in treatises with titles like “What You Export Matters” (Hausmann, Hwang, and Rodrik 2007). Another wave of research conjectured that developing countries start off producing and exporting only a few things (such as wheat or crude oil), then become more diversified (in such areas as food processing or petroleum refining) as they develop, and then become specialized again (selling financial and transport services, for example) after they reach higher levels of income (Imbs and Wacziarg 2003). Think of the United States or the United Arab Emirates, or even of Chile, Finland, and Saudi Arabia (spotlight two). The policy implication is that countries have to diversify economic activity in order to reach high income levels.

Eurasia’s policy makers have taken this advice seriously. If what you export matters for economic development, then the first step is to figure out what exports will help the most. The next move would be to come up with ways to encourage them: protection from foreign competitors, big subsidies or tax holidays, well-chosen investments in infrastructure, and incentives to cluster economic activities in a few places. Eurasians have been doing all this and more. And as Eurasia’s trade ties with the rest of the world have grown, its exports have become less diversified, entirely because of the growth of trade in resource-based products with countries outside the region (figure 0.7).



**Figure 0.7. Resource-related trade outside Eurasia has made exports less diversified**

(Normalized Herfindahl-Hirschman Indexes, 1995–2011)

Source: World Bank staff calculations based on United Nations Comtrade; see chapter 2.

Note: This index is measured as the sum of squared shares in a given trade flow. Higher index scores indicate greater concentration; nonresource exports here exclude energy, minerals, and metals (Harmonized Commodity Description and Coding System, or HS) 25–27 and HS 72–83; external refers to European Union-27 and East Asia-11; index calculated at the two-digit HS level (but the same trends appear at the six-digit level).

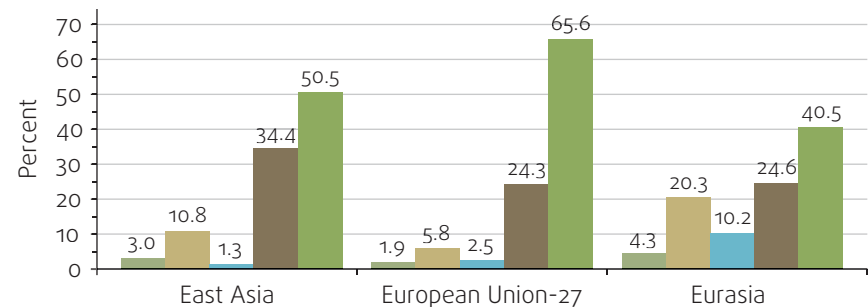
Eurasia’s policy makers could pay more attention to recent research, including by the World Bank, indicating that what matters for development is not so much what a country makes at home and sells abroad, but how it goes about making these goods and services. This does not mean a small role for government. “Market failures abound in the provision of infrastructure, the accumulation of human capital, the establishment of trade networks, and the creation and management of ideas” (Lederman and Maloney 2012, 107). What helps a lot more than identifying growth- or diversification-promoting sectors are policies that “raise the overall ability of a country to increase productivity and quality, and to move to more sophisticated tasks” (Lederman and Maloney 2012, 107).

There may be one quick way to increase the sophistication of Eurasian exports, and perhaps offset their growing concentration. That is to trade more with East Asia. Almost 15 percent of Eurasia’s exports to East Asia are fairly high-tech manufactures whereas less than 10 percent of trade with the EU does not directly involve natural resources (figure 0.8). More trade with East Asia and other parts of the world will diversify Eurasian exports beyond primary products. While it is true that intra-Eurasian trade is even more diversified than trade with East Asia, the size of resource-poor economies is small and the immediate prospects for rapid growth in regional trade are small.

**Figure 0.8. Trade with East Asia has higher technology content**

(Technology content of exports to main partners, 2010–11)

- High-tech manufacturing
- Medium-tech manufacturing
- Low-tech manufacturing
- Resource-based manufacturing
- Primary products



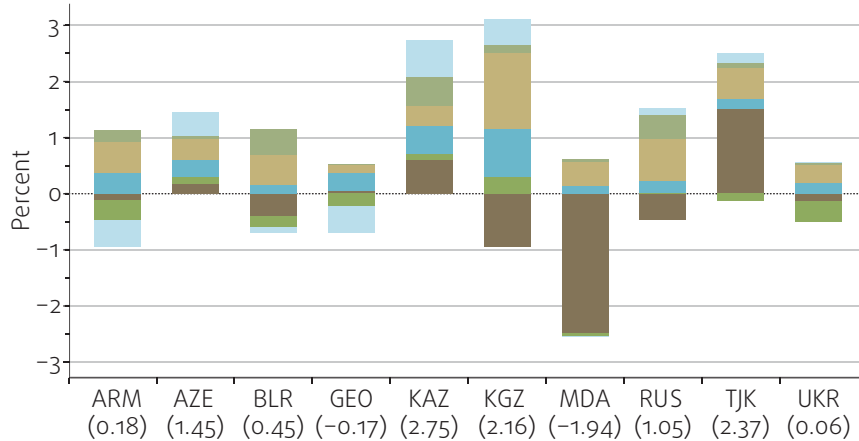
Source: World Bank staff calculations based on United Nations Comtrade; see chapter 2.

Note: Calculations for technology content are based on data from United Nations Comtrade using Lall 2000 categories.

### Eurasia’s production structures—better today

Central planners in the Soviet Union relied on hard labor and big investments—especially in heavy industry—to make their economies grow. They did not seem to pay much attention to the fact that since the 1970s, their capitalist competitors had found a new engine of economic growth and higher living standards: services. Stunted services may have been the key factor that sapped the Soviet economy’s dynamism. Eurasia’s new market economies have experienced seismic structural shifts. In almost every country, there was a big increase in services. In Ukraine, for example, the share of services in value added grew from 37 percent in 1989 to 70 percent in 2009.<sup>7</sup> Only a few countries, such as Azerbaijan, have seen declines in the share of services in value

added. Services have created most of the jobs in Eurasia during the last decade (figure 0.9). In the resource-rich economies, mining has grown in importance; in Azerbaijan for example, its share in value added rose from 16 percent in 1997 to 49 percent in 2010, and in Kazakhstan it doubled from 9 percent to 18 percent. There have also been big declines in the shares of agriculture in value added.



**Figure 0.9. More jobs in services, fewer in industry**

(Annual average employment growth, percent, 2000–10/11)

- Agriculture
- Construction trade
- Finance Real estate/business
- Hotels/restaurants Transport
- Industry
- Other services

Sources: World Bank staff calculations based on data from the United Nations Economic Commission for Europe; United Nations National Accounts Statistics; and International Labour Organization ILOSTAT Database; see chapter 3.

Note: The one-digit-level employment data classified by ISIC (International Standard Industrial Classification) Revision 3 are used. The period covered is 2000–10 (or 2011, if available), except for Armenia (ARM, 2002–08) and Georgia (GEO, 2000–07). The number in parentheses below the country code is the overall annual average employment growth.

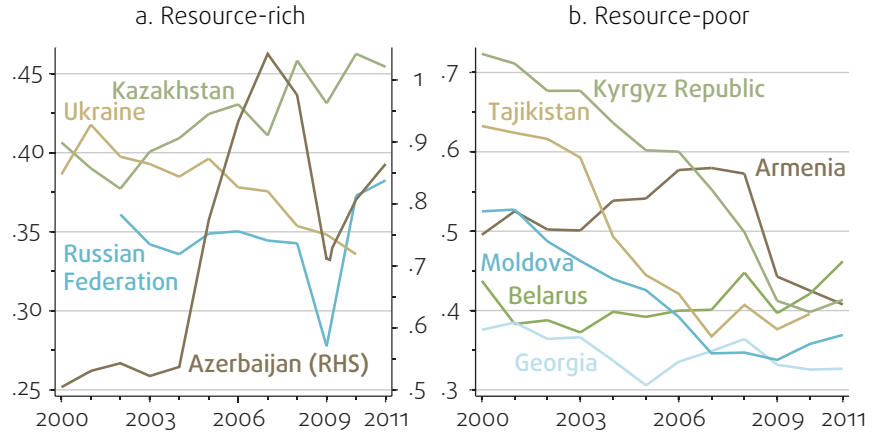
What most troubles policy makers in the region is that industry has declined in importance. Entire subsectors in manufacturing have disappeared due to competitive pressures from global markets, so that every resource-rich economy now has a less diversified manufacturing sector than in 1993 (chapter 3). As a result of such changes brought about by market prices and greater openness, production has become more concentrated in resource-rich economies, and more diversified in their resource-poor neighbors (figure 0.10). The real question is whether Eurasia’s economies have become more efficient or less.

This question cannot be answered by looking at the sector composition of production or employment, at any level of disaggregation. The way to find out is by looking at measures of economic performance. We picked three: growth in productivity, job creation in private unsubsidized activities, and reduction in economic volatility. The reasons are straightforward: countries cannot become rich unless they become more productive, societies are not stable unless their economies create jobs, and public finances that are volatile are difficult to manage. Comparing the economic performance of Eurasia, East Asia, and Central Europe shows that Eurasians have increased productivity fastest and added jobs more quickly than Central Europe. Unsurprisingly, Eurasian economies are much more volatile, in terms of fluctuations in GDP (figure 0.11).



**Figure 0.10. In hydrocarbon-heavy economies, production has become less diversified**

(Theil's entropy index for inequality in production; higher numbers mean more concentration, 2000–11)



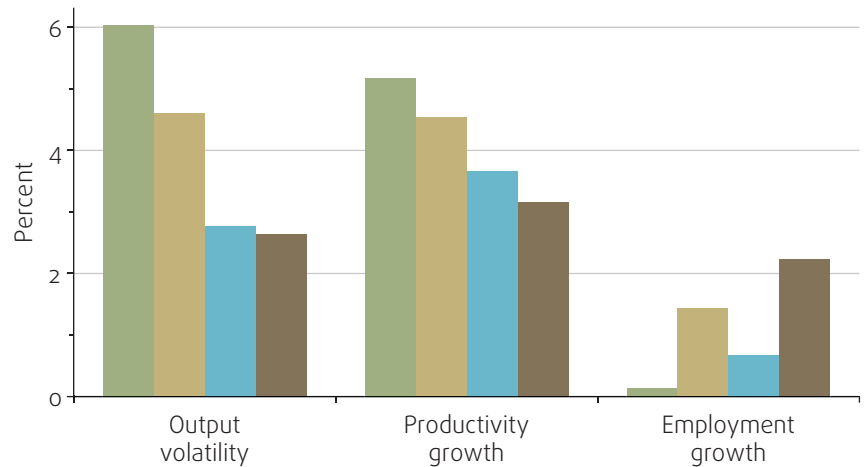
Source: World Bank staff calculations based on United Nations National Accounts Statistics; see chapter 3.

Note: Inequality in production is measured with the one-digit-level value-added data classified by ISIC (International Standard Industrial Classification) Revision 3. Therefore the number of production categories used is 15 or 16 (that is, from lines A to O or P), except for Tajikistan where the index is based on 11 groups. For Kazakhstan, the data for 2010 and 2011 are classified by ISIC Revision 4, which gives 20 production categories. The index scores for Azerbaijan in panel a are shown on the right-hand-side (RHS) axis due to the different scale.

**Figure 0.11. Productivity growth is higher in Eurasia, but so is economic volatility**

(Economic performance 1995–2008, annual average changes in employment, labor productivity, and volatility)

- Eurasia resource-poor
- Eurasia resource-rich
- European Union-12
- East Asia-12



Sources: World Bank staff calculations based on World Bank World Development Indicators; and IMF World Economic Outlook (April 2013).

### Does diversification improve performance?

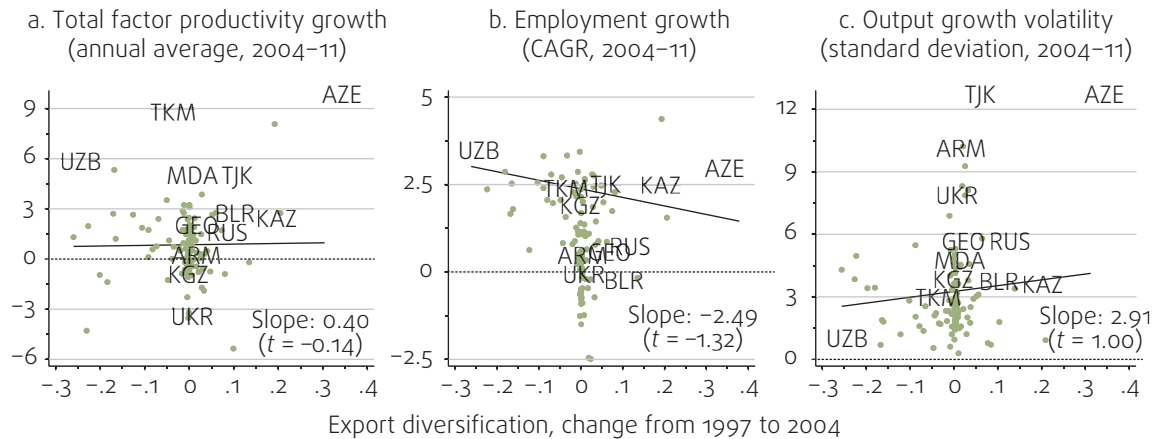
These numbers should reassure Eurasia's policy makers that the region's economies have made progress over the past two decades, a time of structural upheaval and economic crisis. A closer look shows that the performance does not seem to depend much on whether a country diversified its exports and production, or

whether it became less diversified. But the uniqueness of Eurasia’s experience—the collapse both of communism and the Soviet Union—does make it difficult to treat these trends as reliable. One has to check to see if these findings are exceptional, or whether Eurasia’s experience is similar to that of others around the world.

A quick way to tell is to look at the correlation between each measure of performance and success in diversifying exports, the most easily available measure of economic diversification. It is striking that for the world as a whole, there is no systematic relationship between changes in economic diversification in the seven years between 1997 and 2004, and economic performance during the subsequent seven years, 2004–11: total factor productivity (TFP) growth (panel a in figure 0.12), employment growth (panel b), and output growth volatility (panel c). Other formulations yield some support for the association between growth volatility and economic diversification (see chapter 3), and the associations are just strong enough to suggest that Eurasia’s governments need to be prepared to manage the consequences of volatile growth. But the relationships are not robust enough to imply that governments would do better to try to reduce or eliminate economic volatility by forcibly altering economic structures.

**Figure 0.12. Economic diversification does not increase economic efficiency**

(Change in export diversification and economic performance, 1997–2011)



Sources: World Bank staff calculations based on Conference Board 2013; United Nations Comtrade; and World Bank World Development Indicators; see chapter 1.

Note: Change in export diversification is defined by the difference in the Herfindahl-Hirschman Index between 1997 and 2004; positive (negative) changes reflect exports more concentrated (diversified) over the period. The index is calculated with the six-digit export data classified by the Harmonized System 1988/92. CAGR is a compound annual growth rate, and output growth volatility is the standard deviation of annual real GDP growth rates. Azerbaijan is excluded from the estimation of slope in the productivity and volatility panels.

The stock of a company whose value increases by more than that of the market in good times and falls more than the market when it is down is called a “high-beta” stock. It can be said that Eurasia has high-beta economies. They have yielded high rates of growth, but Eurasia’s growth has been highly volatile. Eurasia’s ups and downs coincide with those of the world economy, but they are more exaggerated. This is unlikely to change in the near future. Governments in the region would do better if they focused less on trying to reduce economic volatility, and more on ways to manage it instead.

## “Genuine” savers

Governments in Eurasia’s oil-rich economies saved about \$350 billion of their oil earnings during the last decade. Kuwait, with a population of 2.8 million—exactly a hundredth of Eurasia’s—has a bigger oil fund (though it did have a 40-year head start). But modern national accountants ask a question that is more relevant for the wealth of nations: has Eurasia accumulated more in assets than the resources it has used up? Economists compute the “adjusted net savings” of a country by taking the sum of financial savings and the investments in education, and subtracting the market value of natural resources used up and the capital that has been depreciated through use. Environmentalists have a better name for the concept when the costs associated with pollution are also deducted: “genuine savings.” This report does not study pollution costs. But the question that environmentalists ask is a good one: Has the region genuinely been saving?

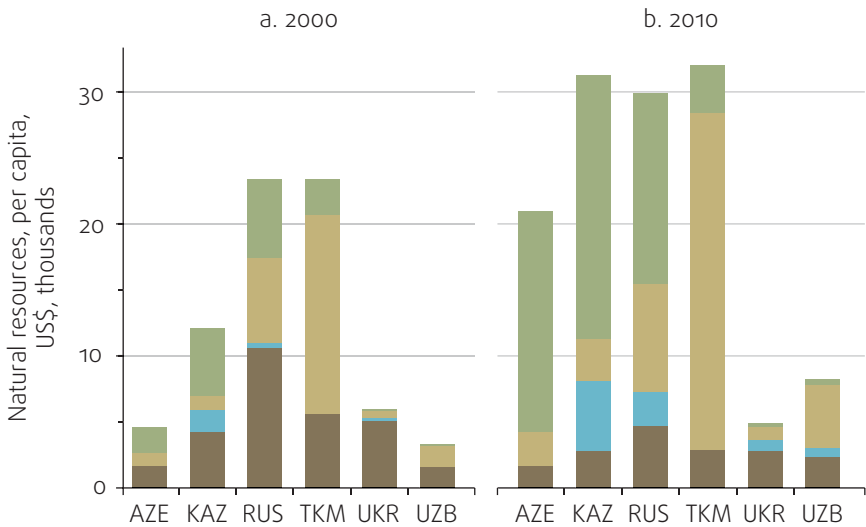
## Where (natural) wealth accumulates

Most countries in the region are becoming prolific in exploring and extracting subsoil resources. Production has gone up sharply, the fruits of investments in oil, gas, and other minerals going back to the early days of the transition. A good example: Azerbaijan’s 1994 deal of the century with BP (according to President Aliyev), which led to a quadrupling of oil production, just in time to take advantage of the oil price boom. Kazakhstan has done as well to bring in foreign investors. Russia has done less well in this regard—even more in gas than in oil—but the production of both is up since the early 2000s. Where all Eurasian economies have done poorly, especially Russia and Ukraine, is in exploiting the great potential for agriculture. Overall, though, natural resources per capita nearly doubled, from \$15,000 to \$30,000, during the 2000s (figure 0.13).

**Figure 0.13. The composition of natural resources varies by country**

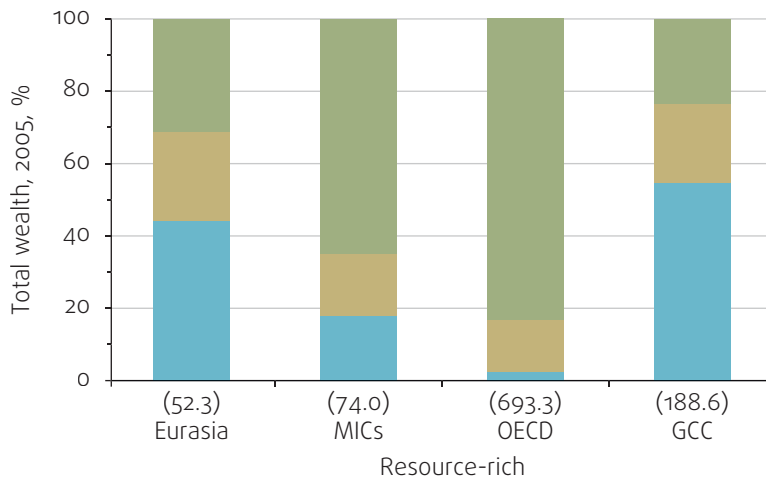
(Natural resources, per capita, thousands of 2005 U.S. dollars, 2000 and 2010)

- Oil
- Natural gas
- Coal and minerals
- Land



Source: World Bank staff calculations based on World Bank 2011; see chapter 4.

In Eurasia, natural wealth was about 45 percent of the measured total wealth of \$50,000 per capita in 2005, which also includes produced capital and intangibles as defined in World Bank (2011). Wealth in middle-income countries as a group was almost \$75,000—and less than a fifth was natural resources. In high-income economies, measured wealth in 2005 was close to \$700,000 per capita, with natural resources a negligible fraction (figure O.14). Eurasian asset portfolios are not the most tilted toward natural capital, though; that distinction belongs to Gulf economies such as Kuwait, Saudi Arabia, and the United Arab Emirates whose natural wealth per capita was about \$100,000 in 2005. But they are five times higher than those in high-income economies. In resource-rich Australia, Canada, Norway, and New Zealand, natural capital is 8–13 percent of overall wealth. The ratio is 43 percent in Russia, 64 percent in Kazakhstan, and 76 percent in Azerbaijan. In Turkmenistan it is even higher at about 85 percent.



**Figure O.14. The Gulf is the most resource-rich part of the world**

(Distribution of total wealth, percent, 2005)

- Intangibles
- Produced capital
- Natural resources

Sources: World Bank staff calculations based on World Bank 2011; and Sugawara 2012; see chapter 4.

Note: The numbers in parentheses are total wealth per capita expressed in thousands of 2005 U.S. dollars. For countries where data on produced capital are unavailable in World Bank 2011 the numbers are from Sugawara 2012. GCC = Gulf Cooperation Council; MICs = middle-income countries; OECD = Organisation for Economic Co-operation and Development.

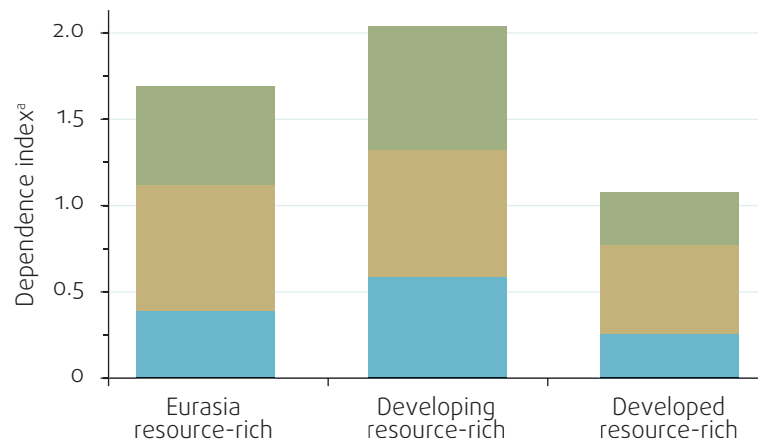
Russia is 15th when countries are ranked by natural capital per capita. But the combined population of the top 14 countries (topped by Kuwait, Brunei Darussalam, the United Arab Emirates, Norway, Saudi Arabia, Bahrain, and Oman, with Turkmenistan in 12th place between Australia and Canada) is just 110 million, 35 million fewer than Russia's. While Eurasians are not the richest in natural assets per capita, Eurasia's mass makes it the most richly endowed in the world. If Eurasians get better at exploring and extracting minerals and more productive in farming and forestry, they could soon become the wealthiest in natural resources.

## Dependency on natural wealth has increased

North America is also well endowed in natural resources, but neither the United States nor Canada is considered resource dependent. That label comes not from an abundance of natural wealth, but from being excessively dependent on it. Dependency on natural resources is measured in at least three ways: the share of natural resources in a country's production, the extent to which it depends on exports of natural resources for foreign exchange, and the contribution of resource rents to government revenues. For most purposes, a reasonable measure of resource dependence might simply be a sum of these three ratios. Using this measure, Eurasia is more dependent than high-income resource-rich economies such as Australia and Canada but less dependent than resource-rich developing countries such as Saudi Arabia and República Bolivariana de Venezuela (figure O.15).

**Figure O.15. Resource-rich Eurasia is more dependent on natural resources than advanced economies are**

(Resource dependence in resource-rich countries, index, 2006–10)

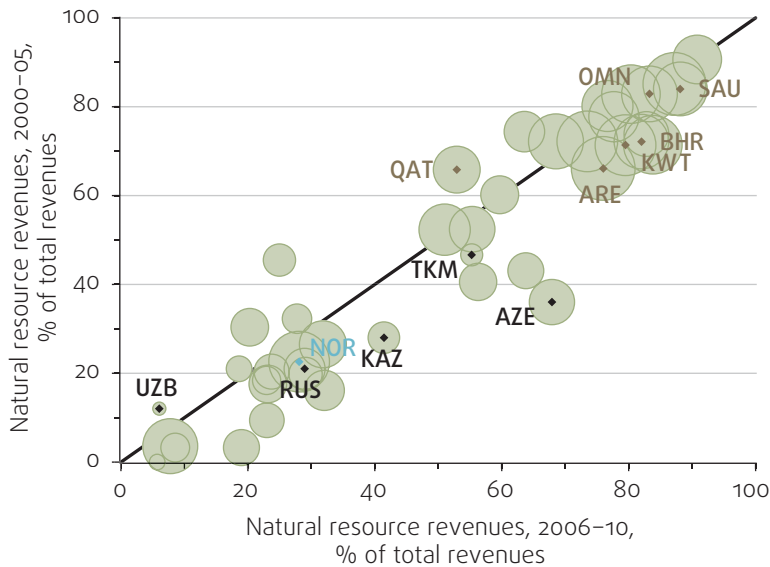


Sources: World Bank staff calculations based on United Nations National Accounts Statistics; World Bank World Development Indicators; and IMF 2012.

Note: The values of the three subindicators in the bar chart are rescaled using the “min–max” method. They are calculated by first subtracting the minimum score and then dividing by the difference between the minimum and maximum score. The maximum rescaled score is equal to 1 and the minimum rescaled score is equal to 0. Index dependence is constructed as the sum of the three indicators: mining and quarrying value added as a share of GDP in 2008, commodity exports as a share of total merchandise exports in 2008, and resource revenue as a share of total fiscal revenue in 2006–10.

a. Index range is 0 to 3; higher values indicate more dependent.

For governments the dependency that probably matters the most is resource-related revenues. Azerbaijan's government is now the most dependent, followed by Turkmenistan, though they are less dependent than governments in the Gulf (figure O.16). During the last decade, Kazakhstan and Russia have also become more dependent on oil and gas, but their governments still depend less on natural resources than most resource-rich economies: resources contribute less than half of total government revenues.



**Figure O.16. Governments in Eurasia have become more dependent on resources**

(Natural resource revenues, percentage of total revenues, 2000-05 and 2006-10)

Sources: World Bank staff calculations based on IMF World Economic Outlook April 2013; IMF 2007 and 2012; and World Bank World Development Indicators; see chapter 4.

Note: The size of the bubble represents the relative transformation rate from resource rents to revenues over 2006-10. The rate is computed by dividing revenues from natural resource by rents from natural resources.

Dependency is important, but that is just part of the story. What also matters is how efficient governments are at collecting a reasonable fraction of “resource rents”—the extra-normal profits that are common in the business. That efficiency is represented by the size of the bubbles in figure O.16. Russia’s bubble is much smaller than Norway’s, and Kazakhstan’s is much smaller than Qatar’s. Turkmenistan does not do well at all, and Uzbekistan does especially poorly. What is going on?

Azerbaijan and Kazakhstan have been relatively proficient both in increasing oil production and transforming more of these earnings into revenues. Between 2005 and 2010 the share of government revenues in resource rents rose from 24 percent to 50 percent in Kazakhstan and from 24 percent to 62 percent in Azerbaijan. They have done this by making investment attractive for foreign oil companies. A measure that helped was to decree that production-sharing agreements between foreign companies and the government would be respected even if there were conflicts with existing laws. Russia took a lot longer to do this, and after 2004 the Russian government has increased taxes and intervened more frequently in the oil industry. The growth in Russia’s oil production dropped from 7 percent in 2001-05 to about 1.5 percent in 2006-11. The gas industry has remained a national monopoly (chapter 4). Relying mainly on state-owned enterprises, Turkmenistan and Uzbekistan have done least well in this regard .

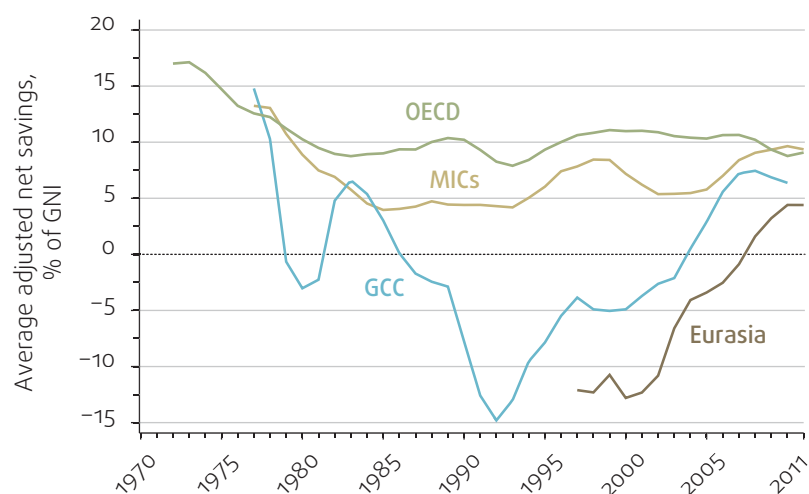
Norway also uses a state-owned company to produce and process oil, but it is obvious that Eurasians have not yet been able to achieve Norwegian efficiency in natural resource management. In Eurasia increasing oil and gas production has required sensible laws to attract foreign investors. Countries that have done this have seen production grow, and they have managed to convert more of the profits into government revenues that can be invested in infrastructure and education.

## A region of genuine savers—but just barely

Eurasian governments have done least well in converting revenues into built capital. Between 1997 and 2002 the adjusted net savings rate in Eurasia's six resource-rich economies was a negative 12 percent, lower even than the 5 percent dissaving in the Gulf countries, and much lower than the 10 percent saving rate in the resource-rich Organisation for Economic Co-operation and Development (OECD) economies (figure O.17).<sup>8</sup> Put another way, until a few years ago Eurasian countries were consuming more of the earnings from natural resources than they invested.

**Figure O.17. Eurasia has only recently become efficient in converting resources into capital**

(Average adjusted net savings, percentage of gross national income, 1970–2011)



Source: World Bank staff calculations based on World Bank World Development Indicators; see chapter 4.

Note: The figure covers resource-rich countries only. Particulate emission damage is excluded. The series is presented as three-year moving-average values. For GCC (Gulf Cooperation Council), the value for Kuwait in 1991 is dropped due to the huge negative share (-163 percent). Average numbers are computed only if data are available in more than 25 percent of countries in respective groups in a given year (for Eurasia, containing six resource-rich countries, at least two countries need to have data). GNI = gross national income; MICs = middle-income countries; OECD = Organisation for Economic Co-operation and Development.

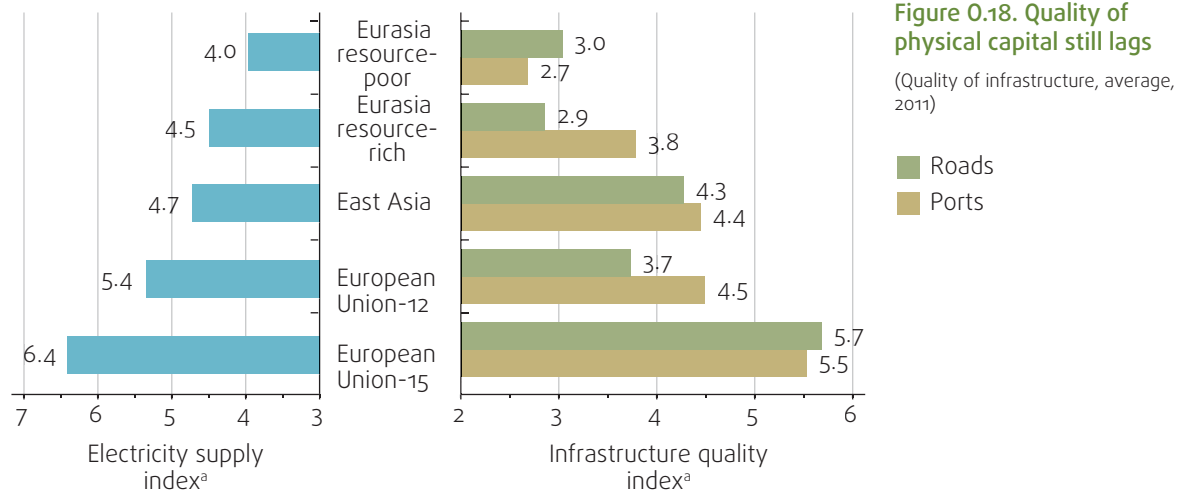
One reason is high energy subsidies. In 2011 these subsidies were 3–5 percent of GDP in Azerbaijan, Kazakhstan, and Russia, 8 percent in Ukraine, and more than 25 percent in Turkmenistan and Uzbekistan. Another reason is that while ever bigger amounts are being saved in the oil funds, a sizable fraction is invested abroad. Azerbaijan, Kazakhstan, and Russia have long-term funds to transfer wealth to future generations, mainly through foreign investments. While this helps keep currencies from appreciating too much, it does not build capital at home. Capital formation rates in resource-rich countries have been 20–25 percent—lower than even their resource-poor neighbors and much lower than East Asia's emerging economies such as China.

## Eurasian countries have to invest more in infrastructure

In the Soviet Union, planners were obsessed with building capital. "Communism is Soviet power plus the electrification of the whole country" was not just

a slogan on a billboard facing the Kremlin to remind its occupants of one of Vladimir Lenin’s most memorable lines. The 500-page plan presented by the State Electrification Commission to the Eighth Congress of Soviets in 1920 was the precursor to the many five-year plans that followed. Communism is believed to have left Eurasia formidable physical infrastructure.

It is not so formidable now. Russia has a rail network that is just a third the length of that in the United States. France’s territory is just a twentieth of Russia’s, but its roads are as long. Kazakhstan covers 10 times the land area of Malaysia, but its roads are barely as long as Malaysia’s. Eurasia, a region of almost 22 million square kilometers, has a road network only as big as Brazil’s, with just a third of the area and two-thirds of the population. A quarter of Eurasia’s rural population lives more than 2 kilometers from an all-weather road, lower than in Indonesia. Only 12 percent of Russians have access to broadband communications, far behind the 30 percent in the United States and 36 percent in the Republic of Korea. There are big differences in infrastructure quality between, say, Ukraine and Uzbekistan, but it is not an exaggeration to conclude that Eurasia has lost its edge in infrastructure, if it ever had it (figure 0.18). Even resource-rich Eurasia trails East Asia in electricity supply.



**Figure 0.18. Quality of physical capital still lags**

(Quality of infrastructure, average, 2011)

■ Roads  
■ Ports

Source: World Bank staff calculations based on World Economic Forum 2012; see chapter 5.

Note: Average scores by group are shown.

a. Index range is 1 to 7 (best).

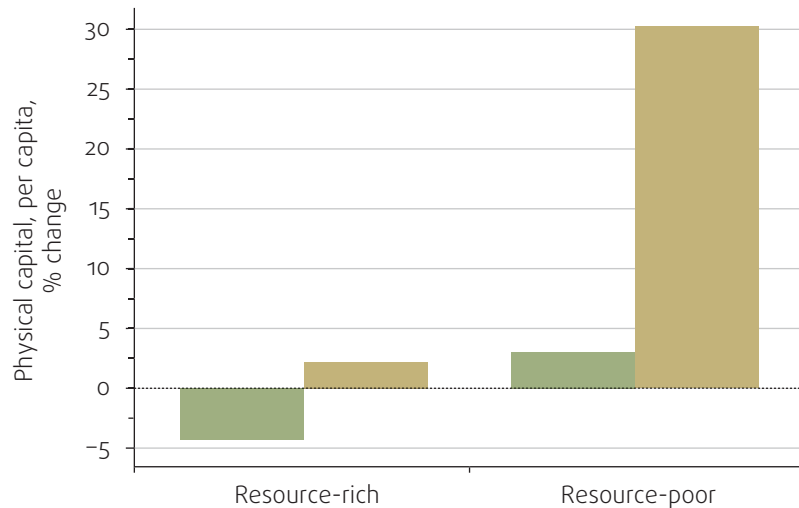
Resource-poor countries in Eurasia lag behind their richer neighbors in infrastructure. But of late they have been trying harder. They boosted per capita physical capital by almost a third in 2010 relative to 2005 (figure 0.19). They did so by steadily increasing public investment to levels above 6 percent of GDP, rivaling those of East Asia. In contrast, Russia’s public investment has stagnated at about 4 percent since 2005 (figure 0.20). Oil-rich Eurasian economies now have to make a big push to improve their infrastructure.



**Figure 0.19. Resource-poor Eurasia has effected a huge increase in physical capital**

(Physical capital, per capita, percentage change, 2000-05 and 2005-10)

- 2000-05
- 2005-10

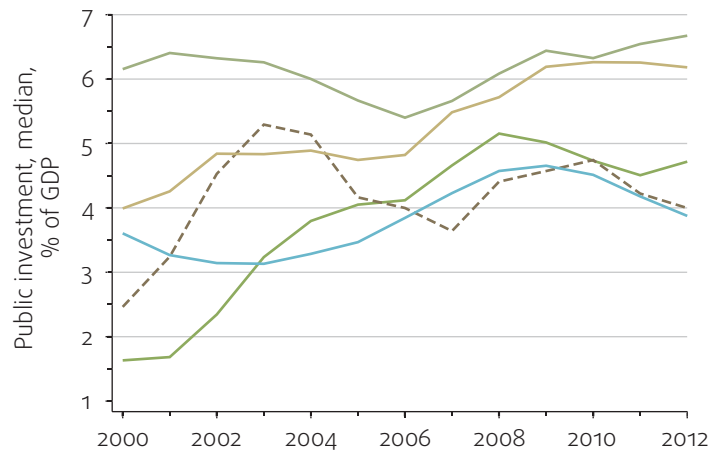


Source: World Bank staff calculations based on World Bank 2011; see chapter 5.

**Figure 0.20. Resource-rich Eurasia invests half as much as East Asia**

(Public investment, as a percentage of GDP, median, 2000-12)

- East Asia
- Eurasia resource-poor
- European Union-12
- - Russian Federation
- Eurasia resource-rich (excl. Russian Federation)



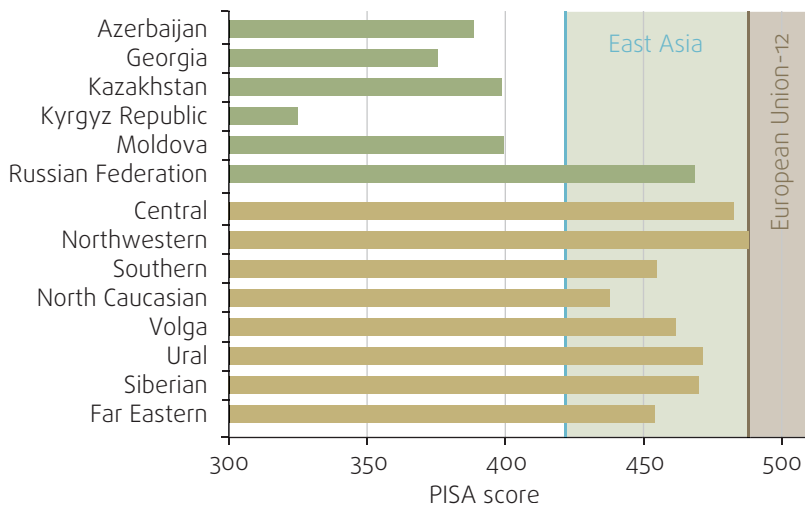
Source: World Bank staff calculations based on IMF World Economic Outlook April 2013; see chapter 5.

Note: Three-year moving-average values. Public investment is defined as gross public fixed capital formation.

Eurasia’s spending on capital formation has been about 20 percent, 10 percentage points short of the levels in Japan and the Republic of Korea during their takeoff. But Russia and resource-rich economies do not have to increase spending by much: increasing gross fixed capital formation to about 25 percent of GDP, as recommended by the Growth Commission, may be enough. No more than a third of this 5-6 percentage point increase needs to be public investment. The rest could be private, brought about by improving the investment climate.

### All should make a bigger push for better education

The countries that need to invest most urgently in physical capital—transport, communications, and pipelines—are Russia and Ukraine. For every other country in the region, the more urgent investment need is in human capital—especially education. Secondary school enrollment rates are high in Eurasia, and even tertiary education levels are on a par with or higher than other countries with similar levels of development. In Ukraine and Russia a quarter of all adults have completed tertiary education, a higher share than in Australia and Ireland. But all assessments of the quality of schooling point to a crisis of worrying proportions in almost every country, and even in a few parts of Russia. The most reliable evidence comes from the OECD’s Programme for International Student Assessment (PISA) tests, which indicate that in 2009 two of every three 15-year-olds in Georgia, the Kyrgyz Republic, and Moldova were functionally illiterate. More disconcerting, resource-rich Azerbaijan and Kazakhstan had similar scores (figure 0.21).



**Figure 0.21. The Russian Federation’s education outcomes are the exception**

(Programme for International Student Assessment [PISA] score, 2009, in Eurasian countries and Russia’s regions)

Source: Ajwad et al. 2013 based on PISA dataset; see chapter 5.

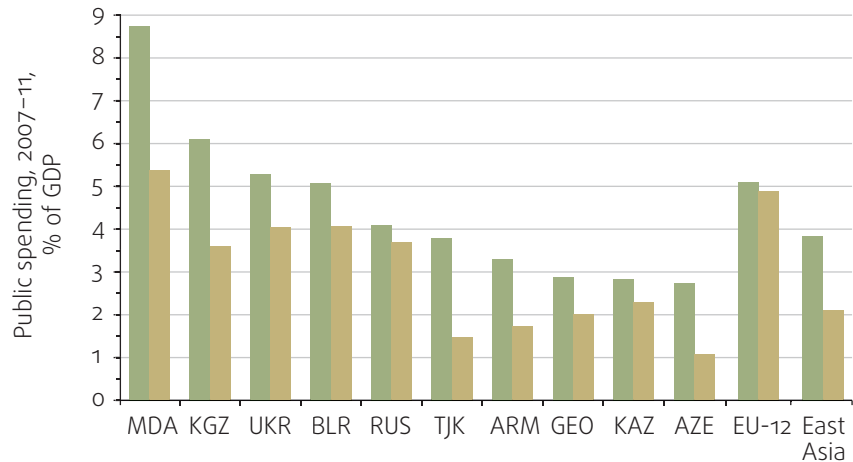
Note: The score is an average of math, science, and reading. The median values of East Asian (excluding Shanghai) and European Union-12 countries are presented.

Development institutions like the World Bank tend to advise governments that greater public spending will not guarantee better education quality. After all, Singapore’s public spending on education is less than 4 percent of GDP, and it has excellent outcomes. But it is difficult to advise governments in Azerbaijan and Kazakhstan, which spend less than 3 percent of GDP on education and have poor education outcomes, not to spend more, while striving to get more value for money for their spending. Armenia, Georgia, and Tajikistan could also spend more on education (figure 0.22). The public spending on health in many countries is also low—lower than even East Asia as a share of GDP. The standard advice to spend better in both education and public health (and perhaps spend less) applies only to a few countries like the Kyrgyz Republic and Moldova.

**Figure O.22. Public spending on education in many Eurasian countries is less than in East Asia**

(Public expenditures, percentage of GDP, average, 2007–11)

■ Education  
■ Health care



Source: Ajwad et al. 2013 based on World Bank World Development Indicators; see chapter 5.

Just as the case is clear for increasing resource allocations to education in most countries in Eurasia, some reforms are clearly needed. One is to end the problem of poor access to early childhood development (ECD). Interventions before schooling starts generally produce students who are more successful in subsequent education and better adjusted socially. A growing body of evidence suggests that the costs of these programs are dwarfed by the benefits. Another important policy is to improve access to high-quality college and university education. Of course, improving educational outcomes will require complementary measures to increase efficiency of public spending throughout Eurasia. The efficiency enhancements will vary by country, but in most the measures would include increasing student-teacher ratios in secondary schools and restructuring education finance to create stronger incentives to improve learning outcomes.

On being told that the Soviet Union had more of almost everything than the United States, former president Ronald Reagan reportedly asked: “What do we have more of?” The answer was: “Money, Mr. President.” “Good. Let’s use that,” he replied.<sup>9</sup> Eurasia’s resource-rich economies can use money from natural resource exports to invest more in education, health, and infrastructure. Some of them—especially Turkmenistan and Uzbekistan, but also Russia and some others—can free up funds by spending less on energy subsidies. Recent research shows that this is possible; there is no reason why Russia wastes more gas each year than France consumes. And there are ways to reduce energy subsidies without risking the welfare of the poor.<sup>10</sup>

Eurasia’s governments have not become bloated with unneeded workers as some of the oil-rich economies in the Middle East have, avoiding what this report calls the “Gulf Syndrome.” This is good, but it is not enough. Now they have to get better at delivering services. The time has come for Eurasia to make the government efficient, not just by keeping its cost low by keeping public spending down, but by making the benefits of government greater. To genuinely increase their savings, Eurasian economies will have to invest more in both physical and human capital.

## “Intangible” capitalism

Since the 1930s Chile and República Bolivariana de Venezuela both have relied on natural resources—copper in Chile and crude oil in RB Venezuela. But their development trajectories have diverged. In 1983, Chile’s per capita income was about three-quarters that of Venezuela. Three decades later, Chileans had incomes at least one and a half times that of Venezuelans. When asked why Chile has done so much better than RB Venezuela, development experts might reply with a single word: institutions.

But “institutions” is a word both overused and underspecified. This report makes matters more specific. Chile has done better than República Bolivariana de Venezuela in formalizing the rules for managing volatile resource revenues, in providing essential social services, and in regulating private enterprise in ways that favor neither incumbents nor newcomers. This has resulted in diverging economic performance—in volatility, productivity, and employment. Government spending is much more volatile in RB Venezuela; Chile’s governments, by contrast, appear to have assembled a consensus for stable public finances by adhering to fiscal rules. RB Venezuela’s public debt is almost 50 percent of its GDP, while Chile’s is less than 10 percent. RB Venezuela has been using oil revenues to create government jobs, while Chile has kept public employment modest and has instead promoted public-private partnerships in education and essential infrastructure. Public enterprises dominate the landscape in RB Venezuela today, while Chile had privatized 94 percent of financial institutions and enterprises by the mid-1990s. RB Venezuela is ranked 180th of 185 countries in the World Bank’s ease of doing business assessment in 2013—the sixth worst in the world—while Chile is ranked 37th, the best in Latin America (World Bank 2013).

The quality of institutions in Eurasia today resembles neither that in Chile nor that in RB Venezuela. Azerbaijan, Kazakhstan, and Russia have improved the arrangements for managing resource revenues, providing social services, and regulating enterprises. But they have not yet attained the institutional standards of Chile. The other resource-rich economies—Turkmenistan, Ukraine, and Uzbekistan—are even further behind. While the six countries in Eurasia that have fewer natural resources—Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan—have all improved their capacities to deliver public services and regulate business activity, they can still do much more.

### Resource-based development is intensive in institutions

To better understand success and failure of resource-based development, this report commissioned case studies for Chile and RB Venezuela, and 10 other resource-rich countries: Canada and the United States, Australia and Malaysia, Botswana and Nigeria, Saudi Arabia and the United Arab Emirates, and the Netherlands and Norway. The main lesson: all countries have to make governance fair and balanced and governments reasonably efficient, but resource-rich economies have to do this earlier in their development.

The many tangible investments that Eurasian societies have made during the last two decades are obvious. During the past few years, Eurasia has become a region of genuine savers. Now it has to become one of sophisticated investors.

Investments in “intangibles” will make the difference between productive economies and those that stagnate, fully participatory societies and those that exclude many, and stable governments and those that are fragile.

In all Eurasian countries—even those where education, infrastructure, and other forms of built capital are deficient—the asset portfolios are weighted toward “hard” endowments: natural resources, physical infrastructure, hospitals and clinics, and primary and secondary schools. This is especially true of the most resource-rich countries—Azerbaijan, Kazakhstan, Russia, and Turkmenistan. As their softer assets are examined—the robustness of the rules to manage resource rents, the quality of public services, and the ability of governments to create a level playing field for entrepreneurs and innovators—the portfolios start to look lopsided.

It is instructive to contrast the quality of institutions in Eurasia with its neighbors: the East Asian emerging economies that have become middle- and high-income economies during the last generation and the Central European countries (figure 0.11) that have joined the EU in the last decade. But these comparisons are useful only up to a point.<sup>11</sup> Resource-led development is more demanding of national institutions than are development strategies in labor-abundant economies such as China in East Asia, or those that are part of a union that includes the most advanced economies in the world, such as Poland in Central Europe. Unassisted by the anchor of the EU and facing the additional internal pressures of managing the volatile revenues associated with the exploitation of natural resources, Eurasia’s development is more institutionally challenging. So the most reliable comparators for resource-rich emerging economies are other resource-rich countries at various stages of development.

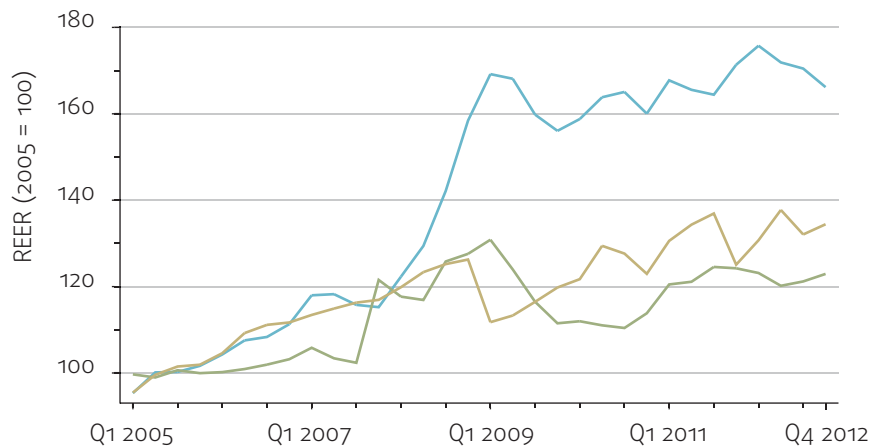
Given the specific needs of resource-rich economies, the extent and depth of these weaknesses are especially damaging for Eurasia. If sensibly designed rules for managing the revenues from natural resources over booms and busts have reduced the volatility of government spending to acceptable levels, then both the design and implementation of the fiscal rules and oil funds can be reassessed. If more than half of all ninth grade students are functionally illiterate, the quality of education is unacceptably low. If the rules for private enterprise have been made better but public institutions do not enforce them consistently and impartially—then a new round of institutional improvements is necessary.

Every Eurasian country needs better economic institutions to ensure stable public finances and dampen volatility, improved education, and infrastructure to make workers more productive, and stronger competition regimes to encourage private enterprise and entrepreneurship. Stabilization, education, and competition—these are the priorities for the next decade.

### Stabilization funds are just one part of a macroeconomic policy package

As hydrocarbons have flowed out of Eurasia, wealth has flowed in. By making their currencies stronger, such riches can give policy makers a headache (figure 0.23). “Dutch disease” is an expression heard often in policy discussions in Eurasia. The term refers to the unexpected predicament in the Netherlands

after it discovered gas in the 1970s.<sup>12</sup> The windfall profits from gas led to an appreciation of the guilder, which made Dutch exports uncompetitive. Easy money from gas revenues also led to high rates of unemployment, exacerbated by generous social benefits that undermined incentives to work. The disease has been dreaded ever since. But the lesson that others can learn from the Netherlands is that regulations that help private enterprise flourish and sensible stewardship of public finances have proved to be effective antidotes to the disease.



**Figure 0.23. Risking the “Dutch disease” in Azerbaijan**

(Real effective exchange rate, 2005 = 100, Q1 2005–Q4 2012)

— Azerbaijan  
— Russian Federation  
— Kazakhstan

Source: IMF International Financial Statistics; see chapter 6.

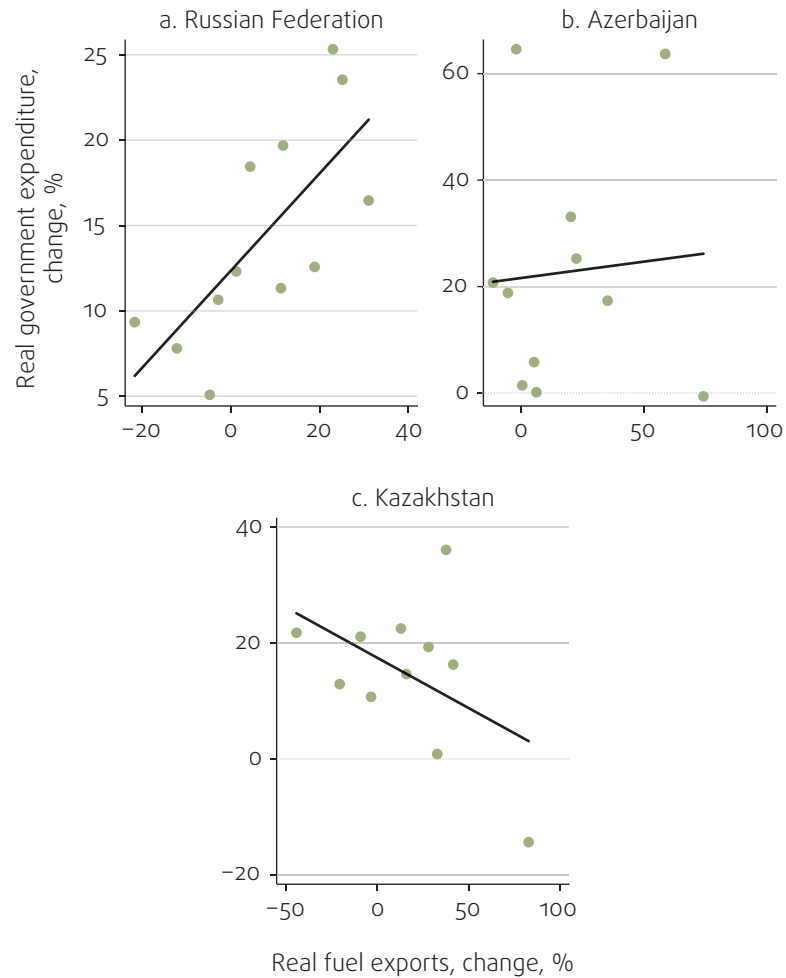
Much like staving off other diseases, the way to avoid Dutch disease is that economies must stay healthy. The most important part of this regimen is for governments to avoid spending more when times are good, which feeds the glut in private markets caused by high oil prices. Russia has often deviated from this rule, and Azerbaijan actually increased government spending by more than 50 percent in a year. The only country in Eurasia that has carried out systematic countercyclical fiscal policies is Kazakhstan, except in 2007 (figure 0.24).

Many governments—such as those of Azerbaijan, Chile, Kazakhstan, Russia, Saudi Arabia, Turkmenistan, and the United Arab Emirates—have used stabilization funds to help them offset cyclical fluctuations. It is clear that the size of rainy-day funds that is necessary for smoothing the cycle need not be all that large—it can be much smaller than the funds currently accumulated by Azerbaijan and Kazakhstan, and a mere fraction of those amassed by Kuwait, Norway, and the United Arab Emirates. Across the world, stabilization funds have helped to smooth out government spending, but it is less clear that they can offset the fluctuations in economic output. Research also shows that stabilization funds only help when the overall quality of fiscal governance is good. And even this is not enough: poor regulation of private finance can be as dangerous as poor oversight of public finance (box 0.2).

This experience notwithstanding, sovereign wealth funds (SWFs) have become big players in financial markets. About 70 SWFs across the world hold nearly

**Figure 0.24. Kazakhstan’s economic management is better**

(Changes in real government expenditure and real fuel exports, 2000–11)



Sources: World Bank staff calculations based on World Bank World Development Indicators; and IMF World Economic Outlook April 2013; see chapter 6.

Note: Dots represent years. A value for year 2000 is unavailable for Azerbaijan and Kazakhstan.

\$6 trillion in assets, more than twice as much as all hedge funds and nearly as much as the entire Japanese economy. SWFs are diverse in many ways, including the main source of funds—commodity revenues (for example, Azerbaijan), fiscal surpluses (for example, Singapore), and noncommodity current account surpluses (for example, China)—investment strategies, and size. Their most common objectives are saving and stabilization, though many funds try to do both at the same time. About three-quarters of all SWFs have saving as one of their objectives; the biggest and best known of these is Norway’s Government Pension Fund. These funds tend to invest more in equities and target long-term returns. Stabilization is an objective for a quarter of all SWFs. Not surprisingly, most of these funds are held by resource-rich countries. Typically, stabilization funds invest in short-term fixed income securities to ensure liquidity.

### Box O.2. Eurasia’s financial sector—banks too big to fail and too stingy for smaller enterprises

In the 2000s, even as Kazakhstan’s government was managing inflationary pressures caused by the oil and gas exports, its banks were bringing in money from Western Europe and flooding the market with loans. Financiers were too aggressive, regulators too lax. The external debt of the banking sector rose to more than 25 percent of GDP. By 2007, even with oil prices at an all-time high, many borrowers were finding it difficult to service their loans. In 2008, when oil prices crashed, a quarter of them went bankrupt. Kazakhstan’s financial system froze.

The government stepped in, spending more than \$10 billion of its savings. The sovereign wealth fund, Samruk-Kazyna, bought the third-largest bank and propped up two others. This has not helped much. In mid-2013, non-performing loans—

with repayments overdue more than 90 days—were still close to \$25 billion. But people probably trust Kazakhstan’s banks less today than they did in 2008.

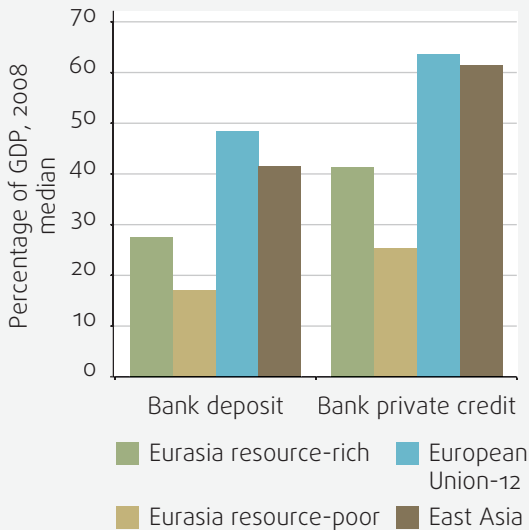
Kazakhstan is no exception. Eurasian countries have yet to develop solid financial systems for three reasons. First, the public’s mistrust of banks means that many do not deposit their savings. The median deposit-to-GDP ratio in Eurasia was 22 percent in 2008, less than half the EU-12’s (49 percent) and East Asia’s (42 percent) (figure B0.2.1). Deposit penetration is especially low in Azerbaijan, the Kyrgyz Republic, and Tajikistan; in Turkmenistan, less than 1 percent of households had a bank account in 2011. The mistrust can only be reduced through better governance.

Second, the private sector is crowded out by state-owned enterprises and

government-directed lending. In Belarus the banking system is dominated by state-owned banks, which play mainly a quasi-fiscal function by providing directed lending and on-lending to state-owned enterprises. Directed credit through state-related banks is common in Azerbaijan and Kazakhstan. Banks are inefficient as well, mainly due to a lack of competition. This keeps interest margins high—5.2 percent in Eurasia versus 2.6 percent in EU-12 and 3.6 percent in developing Asia in 2008. This can only be fixed by better governance.

Third, inefficiencies in resolving insolvency discourage banks from taking risks, particularly with potential new investors and small enterprises (figure B0.2.2). Shortcomings in the collateral regime have also discouraged lending to small enterprises. This can be remedied only by better governance.

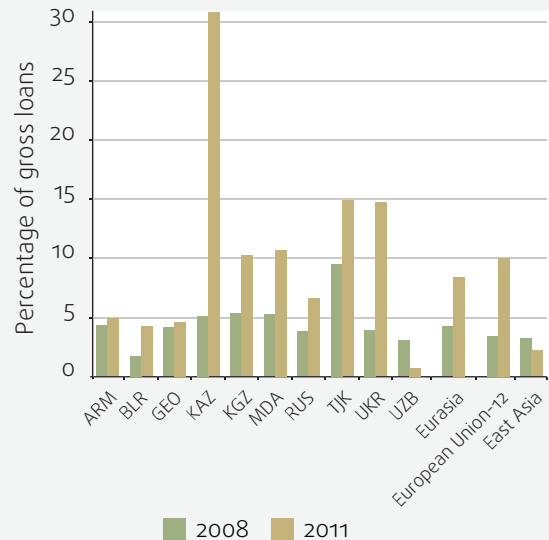
Figure B0.2.1. Low deposits



Source: World Bank staff calculations based on World Bank Global Financial Development Database; see chapter 6.

Note: Turkmenistan and Uzbekistan, and Kyrgyz Republic and Tajikistan, are excluded from resource-rich and resource-poor groups, respectively.

Figure B0.2.2. Lousy loans



Source: World Bank staff calculations based on World Bank Global Financial Development Database.

Note: For country groups, median values are shown.



Though SWFs are typically set up with good intentions, no government can expect that having one of these funds will automatically improve its fiscal situation. Stabilization funds did prove to be useful during the last financial crisis. In Russia, for example, the stabilization fund played a key role in smoothing out public spending. The financial sector was stabilized too when the National Welfare Fund injected about \$30 billion into three state-owned banks.

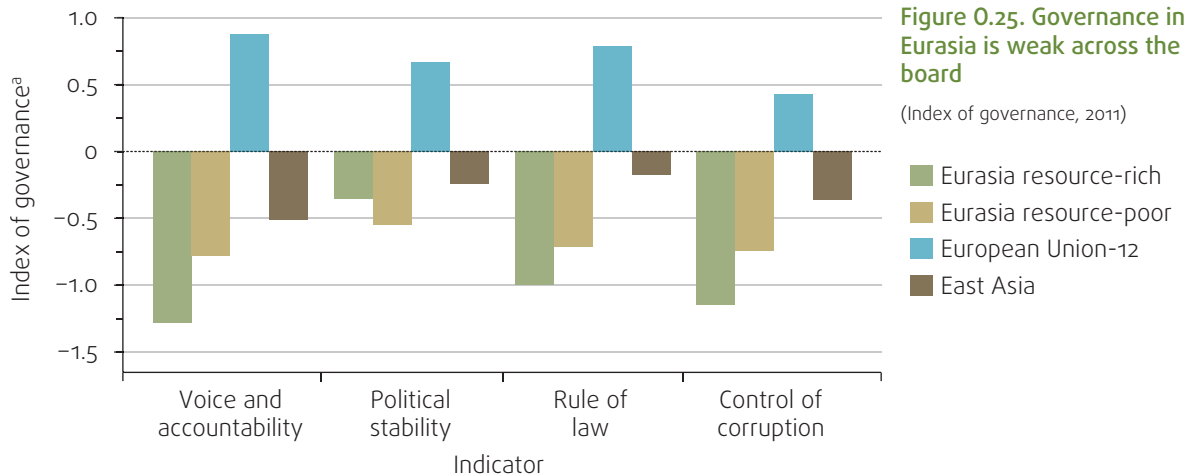
What should governments do? First, with institutions to discipline government spending untested and banks still prudentially weak, Eurasian governments could consider keeping the size of oil funds small. With appreciating currencies, it may be difficult to get high rates of return on investments abroad, so these funds are not ideal for transferring wealth across generations. And there may be better ways to transfer wealth across generations, such as well-chosen investments in human capital and in infrastructure at home. Without the institutions to safeguard these ever larger pools of money, they could be vulnerable to suboptimal investment or even potential misappropriation. If there is any doubt about the reliability of these arrangements, and if additional spending on education and infrastructure will be wasteful, leaving natural resources unexploited is a better way to transfer wealth to future generations.

The second step is to keep the government's books balanced: keep the long-term fiscal deficit close to zero. Economists distinguish between structural and cyclical fiscal deficits by making informed guesses about how much aggregate output is above or below trend levels. As figure 0.24 shows, Russia has found it hard to reduce its structural deficit. In 2012, with oil prices at an unusually high \$100 a barrel, the Russian government ran a non-oil fiscal deficit of almost 10 percent of GDP.

The third step is to create the conditions for enterprises to become more productive, so that the real exchange rate is kept low even when the nominal value of the currency is high. If Azerbaijani or Russian enterprises increase their productivity in step with the appreciation of the manat or the ruble, foreigners can buy as much of what they produce as they could before. This keeps them competitive in world markets. For this, Azerbaijani and Russian producers should specialize in goods and services that their countries are well equipped to produce.

### Better government needs more accountable providers

A good way to transfer wealth to future generations would be to invest in the education and health of the young, and to build durable infrastructure in the right places. Governments are responsible for much of this, so governance has to be made better. But compared both with the formerly communist countries of Central Europe and the developing economies in East Asia, Eurasia has governments that are less accountable, less stable, less just, and more corrupt. The resource-rich countries in Eurasia do especially poorly in accountability and control of corruption (figure 0.25).



Source: World Bank staff calculations based on Kaufmann et al. 2010; see chapter 6.

a. Index range is approximately -2.5 to 2.5 (best).

There is also evidence that governance and building economic institutions are hurt by resource abundance. This leads to what economists call the “voracity effect” where even increases in commodity prices can result in fiscal deterioration and slower growth (Tornell and Lane 1999).

Recent research by the World Bank recommends that recipes for improving Eurasia’s health care will need five ingredients, in differing doses depending on the country: activity-based reimbursement where the payment follows the patient; autonomy for service providers; the use of performance information for decision making; adequate risk-pooling; and committed and credible leadership. Eurasia lags Central and Western Europe in each of these (Smith and Nguyen 2013).

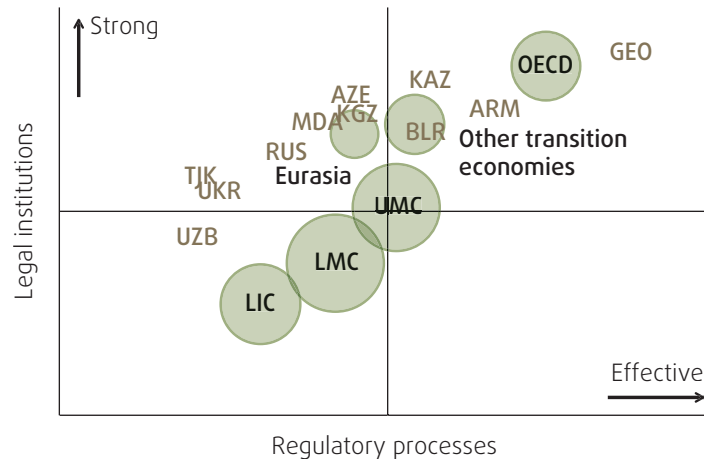
Improving education outcomes will be more difficult, but it is certainly possible. A study at the World Bank has identified the three steps to better education in the region: measure learning outcomes through international and national assessments; increase autonomy and introduce accountability based on these results; and improve efficiency by using performance-based financing (Sondergaard and Murthi 2011). A good way to begin is for all countries in Eurasia to participate in international tests such as PISA, the Progress in International Reading Literacy Study, and Trends in International Mathematics and Science Study. The next step is to supplement these tests with national testing. The final step is to use this information to improve teaching and reward the better schools. The countries that have made the most progress are Russia, Georgia, Ukraine, and Moldova. The others will need to do much better.

### Competition regimes are Eurasia’s big blind spot

Enterprise surveys find that 40 percent of all enterprises identify electricity as a major constraint. The World Bank’s *Doing Business 2013* report identifies some of the reasons. In Russia it takes 10 procedures and 281 days to get electricity, compared with just 5 procedures and 89 days in East Asia. In Ukraine there are 11 procedures and a wait of 285 days. The quality of power supplies is about the same in resource-rich countries as it is in the resource-poor. Getting a permit to construct takes even longer—42 procedures and 344 days in Russia. Closing a business can take more than three years in the Kyrgyz Republic and Ukraine. The median Eurasian country is ranked 112th in the World Bank’s *Doing Business* surveys. Contrast this with other resource-rich economies: New Zealand 3rd, United States 4th, Norway 6th, Australia 10th, Malaysia 12th, and Canada 17th. Every stable, high-income resource-rich country is a good place to do business (figure 0.26).

**Figure 0.26. Eurasia needs to make regulatory processes better**

(Average ranking on sets of *Doing Business* Indicators, 2012)



Source: World Bank staff calculations based on World Bank 2013.

Note: Strength of legal institutions refers to the average ranking on getting credit, protecting investors, enforcing contracts, and resolving insolvency, whereas complexity and cost of regulatory processes does the average ranking on starting a business, dealing with construction permits, getting electricity, registering property, paying taxes, and trading across borders. LIC = low-income countries; LMC/UMC = lower- and upper-middle-income countries; other transition economies are countries in Europe and Central Asia excluding Eurasia and Turkey; OECD (Organisation for Economic Co-operation and Development) includes only advanced economies.

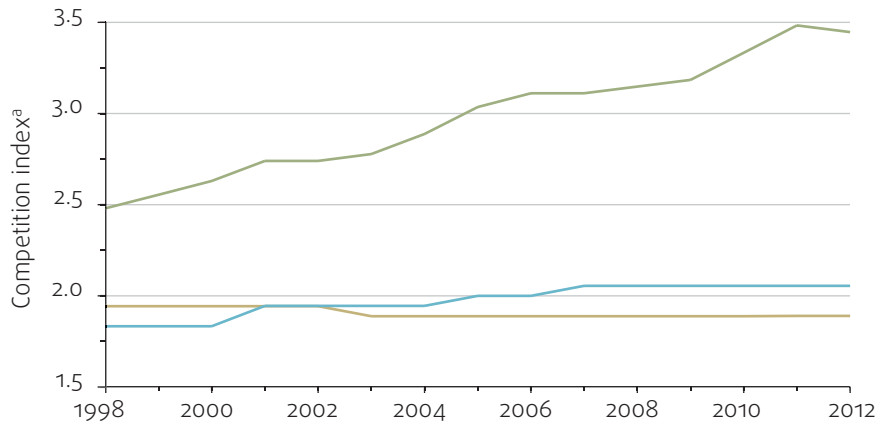
Eurasian governments have also been trying to improve regulations; the World Bank’s *Doing Business* surveys have shown a steady improvement in the last 10 years. But enterprise surveys suggest that compliance with regulations has become more cumbersome, especially in resource-rich economies. In 2009 more than a third of all enterprises reported having to make informal payments to government officials to get an operating license.

Even when the general laws are not onerous, other policies can make life difficult for entrepreneurs. Azerbaijan requires multinationals to certify that

foreign workers are free of ailments such as HIV and hepatitis, but only from licensed facilities in Azerbaijan. Kazakhstan requires medium and large firms to hire 90 percent of its workers locally, sometimes making it difficult to bring in expatriate workers with technical skills not available in the country. Turkmenistan levies higher tax rates on foreign investors. Uzbekistan makes it difficult for foreign firms to repatriate profits.

Georgia has shown that Eurasian countries can quickly improve economic institutions, and the benefits are palpable. It is ranked ninth in the world on the ease of doing business, and it is among the few countries where managers spent less time dealing with regulation in 2009 than they did in 2005 (World Bank 2013). Between 2008 and 2011, new business creation went up from three newly registered corporations per 1,000 working people to five; in Russia it fell from four to one. Enterprise surveys in 2009 showed that almost no one in Georgia has to bribe officials to get electricity or a license to operate. Obtaining customs clearances and licenses for imports and exports in Georgia is easier than in the new member states of the EU. Armenia and Kazakhstan have also been making laws simpler and easier to comply with.

But there are no bright spots in competition regimes—especially in judicial independence, integrity of the legal system, and protection of property rights. The biggest economies—Russia and Ukraine—do especially poorly. And unlike the Doing Business measures, there has been scant progress in improving competition regimes in resource-poor economies, and actual deteriorations in the resource-rich countries since 1998 (figure O.27). In contrast to the new member states of the EU, government promises to improve competition regimes have so far not been matched by results.



**Figure O.27. Domestic competition is muted**

(Competition index, 1998–2012)

— European Union-12  
 — Eurasia resource-rich  
 — Eurasia resource-poor

Source: European Bank for Reconstruction and Development Transition Indicators; see chapter 6.

a. Higher values indicate more competition.

The source of these problems is the capture of lawmakers and the judiciary by powerful interests. Corporations that are less productive can dominate sectors of the economy, sometimes because they are state owned and sometimes because they are well connected. In Ukraine, state-owned enterprises often

circumvent procurement law. In Russia, state corporations are altogether exempt from competition law and they often dominate product markets. Many also get energy at subsidized rates while their competitors often struggle to just get power. In Belarus and Turkmenistan, state-owned banks channel funds to favored enterprises, keeping more productive newcomers small or sidelined.

A poor investment climate may be compounded by an interventionist mind-set that seems to permeate governments in the region. Abetted by proponents of selective interventions to encourage this activity or that, governments have launched initiatives like Skolkovo, an innovation city near Moscow (chapter 3). The results so far have not lived up to expectations.

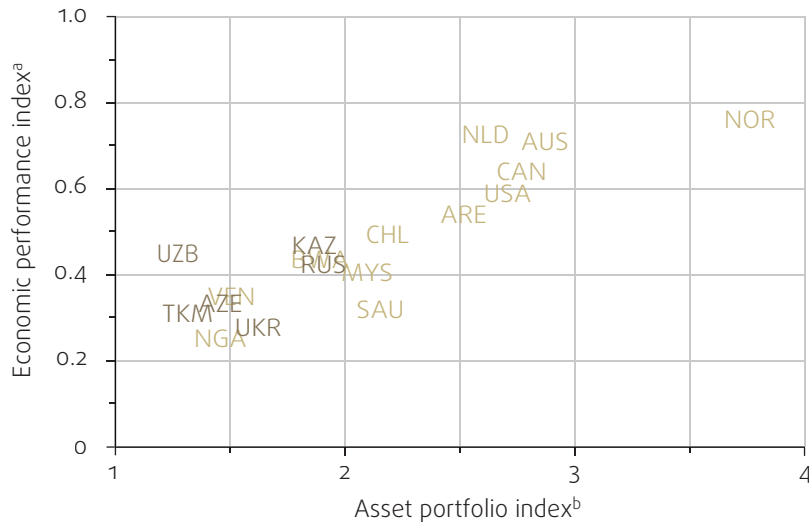
Poorly implemented laws, favoritism in financing, arbitrary court decisions, and other such violations of competition laws present perhaps the greatest threat to Eurasian prosperity. Government efforts to encourage enterprise have become piecemeal and interventionist, and could be making things worse. It may be too soon to assess the impact of such government interventions. But it is possible that they could be exacerbating two worrying developments: job creation has become tepid, and productivity growth has been falling since the early 2000s.<sup>13</sup>

### A natural way to diversify

If the goal of government policy is sustained progress in incomes and living standards, and the ways and means to this goal require high-performing economies and efficient governments, there is little evidence to recommend policies to diversify exports and economic production. But there is more convincing evidence to support policies to diversify national asset portfolios. National asset portfolios consist of natural resources, built capital, and public institutions. These can be estimated to provide approximate but useful estimates of the extent of diversification of a country's asset portfolio. The portfolios of successful resource-rich Eurasian countries can be juxtaposed with the experience of countries such as Australia, Canada, Chile, Norway, and the United Arab Emirates. This can help to identify the priorities for change. Plotting the degree of diversification of assets against a composite measure of economic performance—productivity growth, job creation, and output stability—yields a different result. Countries with more diversified asset portfolios have economies that are more productive, inclusive, and stable (figure 0.28).

Over the last decade, Eurasian economies have improved the efficiency of public investments so that (at least) Azerbaijan, Kazakhstan, and Russia now add more to their tangible nonresource assets than they deplete through extracting natural resources. But they have not commensurately improved the quality of institutions to manage public saving, even less the delivery of essential services such as education, and less still the implementation of the rules for private enterprise. These are the intangibles needed for development. If this is the case, Eurasian economies may be weakening their asset portfolios even as they add to the endowments that they can obviously see and easily measure. Even as they keep growing their incomes, their development may be becoming less diversified.

Why should this be a problem when poverty rates in the region are down, incomes are up, and the quality of life gets better every year? It is commonly



**Figure 0.28. What really matters: built capital and economic institutions**

(Economic performance index vs. asset portfolio index)

Source: World Bank staff calculations; see spotlight three.

Note: The asset portfolio index is a multiplicative index constructed as the product of two types of assets: capital (natural resources and built capital averaged) and institutions. The economic performance index is a composite index constructed as the unweighted average of the three measures of economic performance: output volatility, employment, and productivity.

a. Higher values indicate better performance.

b. Higher values indicate more diversified portfolio.

proposed that the weaknesses are apparent in the composition of exports and economic activities, which have become more concentrated since the days of the Soviet Union. Actually, the reasons are related to economic efficiency, proxied by the recent trends in productivity, employment, and volatility. While it is difficult to prove, the evidence appears to point toward a systematic slowdown in productivity growth in the region during the past decade. While it may be too soon to say with certainty, Eurasian economies have exhibited an excess volatility that may discourage long-term investment and employment creation. While their circumstances have been unique, Eurasia's policy makers need to be aware that the experience of others indicates that resource-intensive development paths are especially demanding of institutions.

Eurasians can learn from the experience of others, and this report was written to help. But Eurasians will have to develop these institutions on their own. Outsiders from successful countries will be tempted to recommend designs and details. They should resist the urge. As Luiz Carlos Bresser-Pereira, a former minister in Brazil, once put it: "Institutions can be at most imported, never exported."

## Making more miracles

In March 1993, six months before *The East Asian Miracle* was published, the scholarly journal *Econometrica* carried an article by Robert E. Lucas, Jr., an American professor and future winner of the 1995 Nobel Prize for economics. “Making a Miracle” analyzed how the Republic of Korea had engineered one of the greatest economic transformations in history.

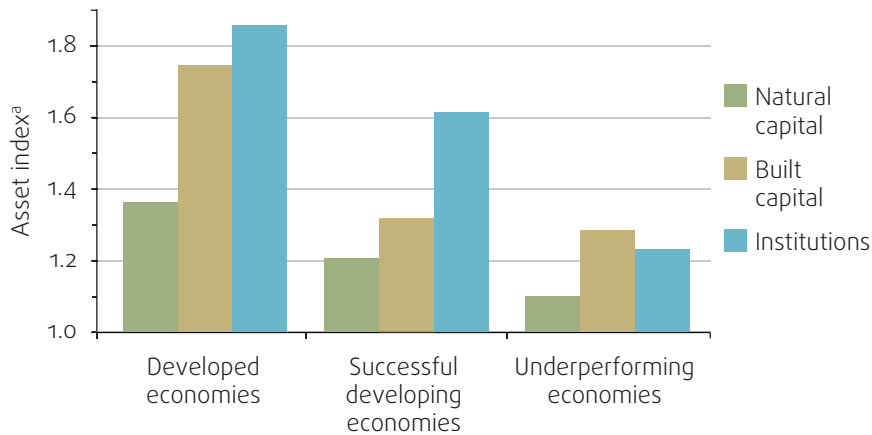
Lucas began by pointing out that in 1960, Korea had the same per capita income as the Philippines and similar economic structures (about a quarter of secondary school-age children were in school and about 90 percent of merchandise exports were primary commodities). Over the next three decades Philippine per capita income grew annually at about 1.3 percent and Korea’s at an annual rate of 6.2 percent. By 2000 Korea’s per capita income was about \$11,000, the Philippines’s \$1,100. Today, their per capita incomes—in current prices—are about \$23,000 and \$2,600. For a Korean to become nine times as rich as a Filipino within a lifetime is nothing short of a miracle.

To succeed, resource-based economies will have to do what successful developers in East Asia and central Europe have done: integrate with the rest of the world through foreign trade and investment. This is the sine qua non for economic development. But just as the Republic of Korea needed to do more than increase exports, success in Eurasia will require more than openness to commerce. The most important thing may be to develop their institutions at an unusually early stage of growth, an especially tough task if there is a “voracity effect” of resource abundance.

This is not because of subtle differences. Depending on a few commodities makes their economies more volatile, so resource-rich countries will be unstable unless they make government spending smoother over the economic cycle—and perhaps even institute savings and spending rules that enable countercyclical fiscal policies. By reducing the need to tax citizens, natural wealth also tends to make governments less accountable and compromises the quality of public services—unless other mechanisms are instituted. Because mining and minerals contribute a big share of economic output but generate few jobs, governments need to regulate these sectors especially well so that private enterprise flourishes—even when resource wealth can make it tough for them to compete in foreign markets.

These insights are consistent with the experience of 18 resource-rich economies—six in Eurasia and a dozen in other regions—that together account for more than two-thirds of the world’s natural resources. What distinguishes the countries that succeeded from those that have struggled is that they have made improvements in these institutions before they became high-income economies, and before their built capital showed a big improvement (figure 0.29).

It is not possible to draw specific policy conclusions from a finding based on such rough calculations, but some general implications are clear. While the details will differ among countries in the region, it is not difficult to conclude that what Eurasia’s resource-rich economies need most is what East Asians had identified as a priority for themselves more than a decade ago—a shift in governance from the “rule of man” to the “rule of law.” Eurasia’s most urgent task now is to strengthen its soft structures.



**Figure 0.29. To succeed, resource-rich emerging economies have to build institutions sooner**

(Economic assets, developed and developing countries)

Source: World Bank staff calculations; see spotlight three.

a. Index range is 1 to 2; higher = better.

Policy makers in Eurasia will find this advice difficult to put into practice. If history is any guide, governments in Eurasia will be tempted to look for quicker ways to develop. It seems easier to provide a few places where investors and entrepreneurs can cluster untargeted by corrupt officials and create goods and services that can be exported unhampered by frayed facilities. It may sound more sensible to use oil money to subsidize some non-extractive activities than to invest the surpluses in better education and infrastructure that might take years to bear fruit. In other words, governments will be tempted to spend their energies intervening to diversify exports and economic activities. Some of these initiatives might succeed, but most are likely to leave Eurasia's governments frustrated.

With a strategy to diversify assets, Eurasia's economies and exports might first become more concentrated. But Eurasia's development will become diversified, with ever more efficient economies and higher living standards. While diversified asset portfolios take time to build, they will facilitate unforced structural transformations. If the experience of resource-rich countries in other parts of the world is a reliable guide, diversified assets will bring about a more sustainable dynamism in Eurasia's economies, generate fewer stresses in its societies, and make governments more appreciated by their citizens. They might even help Eurasian countries make a few miracles of their own.



## 20 questions, 20 answers . . .

### Chapter 1: Diversifying Naturally

#### Have natural resources served Eurasia well?

- Yes. Since 2000, poverty has been halved, incomes increased fivefold, and education and health outcomes have improved. These improvements coincided with high commodity prices.

#### Did countries that diversified their economic activities and exports do better?

- No. The resource-rich countries that integrated more into the global economy have increased incomes and improved development outcomes most. These countries have actually become less diversified in their exports and economic activities.

#### Which diversification strategies are best for Eurasia?

- Eurasian countries are best served by building diversified portfolios of assets: natural resources, built capital, and economic institutions. They should focus less on diversifying exports or production.

### Chapter 2: Foreign Trade

#### Why does Eurasia trade more with Europe than with Asia?

- Economic mass, shorter physical distance, lower trade costs, and built physical capital have brought about greater trade with Western Europe. Looking ahead, Eurasia's human capital assets will be better used if the region trades more with East Asia.

#### How is Eurasia's intraregional trade different from its trade with the rest of the world?

- Just as Eurasia's global trade is driven by differences in endowments, intraregional trade increasingly reflects the differences among neighbors in natural resources, physical and human capital, and the institutions needed for investment and innovation.

#### What are the immediate payoffs to regional integration in Eurasia?

- With 85 percent of regional GDP in resource-rich economies that have similar endowments, and with regional economic mass small and trade barriers considerable, trade with the rest of the world will yield more benefits now. The payoffs to regional integration may be higher in the future as Eurasian countries build the assets needed to take advantage of economies of scale.

### Chapter 3: Economic Structures

#### Have Eurasian economies become less diversified during the last two decades?

- While it is difficult to accurately measure the degree of diversification, it appears that resource-rich Eurasian economies have become more concentrated, while resource-poor economies in the region have become somewhat more diversified.

#### Has economic efficiency increased or deteriorated in the countries that have diversified more?

- Economic performance as measured by productivity growth, new employment, and economic volatility has improved in almost all countries, though there are signs that productivity growth has slowed since the early 2000s in both resource-rich and resource-poor economies.

#### Could activist industrial policies improve economic efficiency and development outcomes?

- Subsidies and special treatment for selected economic activities will result in economic inefficiency unless accompanied by investments in built capital and improvements in the institutions for managing public resource rents, providing public services, and regulating private enterprise.

## Chapter 4: Natural Resources

### How rich is Eurasia in natural resources?

- In aggregate, Eurasia is the most abundant region in nonrenewable natural resources; in per capita terms, the countries of the Gulf Cooperation Council (GCC) in the Middle East are richer.

### How resource dependent are Eurasia's resource-rich economies?

- Eurasian countries depend more on natural resources for export earnings and government revenues than the resource-rich economies of the OECD (such as Australia, Canada, and Norway) but less than the GCC countries (such as Kuwait, Saudi Arabia, and the United Arab Emirates).

### Are Eurasian economies efficient in converting natural resources into built capital?

- Resource-rich economies in Eurasia are good at generating resource rents, less adept at collecting government revenues from such sources, and—though they have become better during the last decade—least efficient in raising “adjusted net savings”—that is, building capital faster than depleting nonrenewable resources.

## Chapter 5: Built Capital

### Does Eurasia have a problem with its physical and human capital?

- Eurasia has less capital than it should given its resource riches, and the gaps are greater for less tangible forms of capital such as educational attainment and the quality of roads and railways than the more tangible types of capital such as number of schools and hospitals.

### Are the resource-poor countries in Eurasia more capital constrained than the resource-rich economies?

- Resource-poor countries in Eurasia have lower capital stocks but have been investing more in education, health, and infrastructure than countries that have greater resource wealth.

### Are Russia's education and infrastructure as good as those of its peers?

- On average, Russia does better than the other 11 countries in Eurasia, but the quality of capital—educational attainment—in Russia ranges from among the best in the world to the worst in Eurasia; but differences in built capital within Russia are smaller than the average differences between countries in Eurasia.

### Are there straightforward solutions to the shortfalls in capital quality and quantity?

- All governments in Eurasia, but especially those in resource-rich countries, could spend much more on education and infrastructure and a lot less on energy subsidies.

## Chapter 6: Economic Institutions

### In which policy areas are Eurasia's institutional gaps greatest?

- Countries in the region are doing relatively well in managing resource rents, less well in providing high-quality public services, and least well in regulating production in ways that promote competition and encourage entrepreneurship.

### Should oil funds be used for short-term economic stabilization or long-term development?

- Oil funds and fiscal rules should be designed to steady government revenues and offset output fluctuations over the business cycle; the longer-term objectives of increasing productivity and employment could be left to other instruments of public policy.

### Have weaknesses in Eurasia's public services become a drag on private productivity growth?

- Slowing productivity growth since the early 2000s points to problems in curbing economic volatility in some countries, a growing shortfall in public education and infrastructure in many countries, and weak competition regimes in all.

### Are regulations in resource-rich Eurasian economies good enough to meet their job creation imperatives?

- The design and enforcement of regulations for private enterprise have not made the problem of weak job-creation worse, but the rules have been implemented in ways that greatly favor state-owned enterprises and influential investors.

## Notes

- 1 Hong Kong SAR, China; Indonesia; Japan; the Republic of Korea; Malaysia; Singapore; Taiwan, China; and Thailand.
- 2 The countries include three former republics of the Soviet Union—Estonia, Latvia, and Lithuania—and seven formerly communist economies in Central Europe: Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, and Slovenia. Cyprus (and Malta) joined the EU in 2004; Croatia in 2013.
- 3 The countries are Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
- 4 The statement was made during the 2012 Russian presidential campaign.
- 5 The statement was made at the opening of the Azerbaijan-U.S. Convention “Vision for the Future” in May 2013.
- 6 For a summary, see Gogova and Winkler 2013.
- 7 UN National Accounts Main Aggregate Database; percentile distribution (shares) of Value Added in Services, other, corresponds to ISIC (International Standard Industrial Classification) Rev. 3 E–P. The series used to calculate the percentage distribution are in current local currency units.
- 8 Adjusted net savings are derived from gross national savings by making three changes. First, estimates of capital consumption of produced assets are deducted to obtain net national savings. Then, current expenditures on education are added to net domestic savings as an appropriate value of investments in human capital. Finally, estimates of the depletion of a variety of natural resources are deducted to reflect the decline in asset values with extraction and harvest. Environmental dissaving can also be subtracted by costing the damages from pollution, such as the health costs from urban pollution, and the global costs of carbon dioxide emissions. To keep matters simple, this report does not consider pollution costs.
- 9 Anecdote courtesy of Jørgen Møller.
- 10 A trio of reports published by the World Bank shows how this can be done. *Growing Green* by Deichmann and Zhang (2013) shows that energy efficiency can free up \$40 billion every year in Russia alone. *Energy Efficiency* by Stuggins, Sharabaroff, and Semikolenova (2013) summarizes the lessons from successful countries in Western Europe (Denmark, Germany, Ireland, and Sweden) and Central Europe (Lithuania, Poland, and Romania). *Balancing Act: Cutting Energy Subsidies While Protecting Affordability* by Laderchi, Olivier, and Trimble (2013) shows how better social protection systems can pay for themselves by helping protect the weakest households while reducing wasteful energy subsidies.
- 11 The East Asian countries are Cambodia, China, Indonesia, the Republic of Korea, the Lao People’s Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam. The new member states are Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia.
- 12 It was probably coined by economists W. Max Corden and J. Peter Neary in 1982.
- 13 World Bank (forthcoming) analyzes these developments in more detail.

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# Chapter One

## Diversifying Naturally

In April 2011, Prime Minister Vladimir Putin voiced the worry of many of the Russian Federation's leaders of the previous half century. "Russia must not become a hunter-gatherer nation. It must diversify from oil, gas, and minerals toward high-tech products to ensure stability and sovereignty." In one way or another, this was also a policy objective of the republics of the Soviet Union, expressed by Nikita Khrushchev (1957), Alexei Kosygin (1965), Leonid Brezhnev (1979), and Mikhail Gorbachev (1987) (Schroeder 1990). In Russia, as in other countries of the former Soviet Union, the desire to diversify the economy might have been more constant than either communism or capitalism.

In the Soviet Union, nonextractive industries were favored and subsidized—and have been so in the Eurasian countries ever since.<sup>1</sup> Meanwhile, the region's dependence on hydrocarbons has grown. In Russia, for example, oil and natural gas accounted for 37 percent of exports in 1995; today, they account for 73 percent. In 2013, Russia ran a non-oil fiscal deficit of about 10 percent and an overall deficit of 0.5 percent. The difference between the two is a good measure of the government's dependence on oil and gas.

Other Eurasian hydrocarbon exporters, including Azerbaijan, Kazakhstan, and Turkmenistan, have similar aspirations and concerns. They too have grown more dependent on their natural resources. Even the non-hydrocarbon-exporting countries of the former Soviet Union, such as Armenia and Moldova, care about diversification. Indeed, almost every country in the region wants to broaden its export base and diversify its production profile. The hope is that if the resource-rich Eurasian countries diversify and grow, the others in the region would benefit and diversify as well.

Why do developing countries care so much about economic diversification? The question seems rhetorical, almost unnecessary. The idea that countries with diversified economies and trade fare better than those that depend heavily on a few activities and exports is held so widely that it is considered obvious. Indeed, there are sensible arguments that favor economic diversification. Countries that export few things besides oil and gas are vulnerable to fluctuations in world commodity markets. Volatility of output increases

### Box 1.1. The resource curse, Dutch disease, and the voracity effect in Eurasia

*Have Eurasian countries suffered from the resource curse?*

No. As chapter 1 shows, resource-rich Eurasian countries have performed quite well since 2000. Their performance cannot be attributed solely to high oil prices. There is no evidence that growth in resource-rich countries has been lower than in resource-poor countries. Eurasian countries have done well in increasing productivity and thus creating employment.

*Are Eurasian countries suffering from Dutch disease?*

The real effective exchange rate has appreciated in many Eurasian countries.

But productivity is still increasing, though at a slower pace over the last 10 years. If there is a Dutch disease effect, it might not be all that serious, as countries have become more efficient and created jobs.

*Is there a voracity effect in Eurasia?*

Available indicators suggest that resource-rich Eurasian countries have poor governance. It is possible that the availability of natural resources in countries with weak governance has led to distortionary redistributive activity, worsening income inequality. There is no evidence, though, that this has affected overall economic growth.

uncertainty and can reduce long-term investment and growth. Economies that produce few things besides derivatives of oil and gas struggle to generate jobs. Joblessness leads to suffering and can cause social instability. Countries that export products associated with oil and gas have to contend with currency appreciation. An appreciating currency—if productivity growth does not keep up—erodes competitiveness.

Casual empiricism appears to validate these concerns. Many natural resource-rich countries have slower growth than resource-poor ones. The economic literature refers to this as the “resource curse” (box 1.1) (Auty 1993). Indeed, over 1970–89, economies that exported natural resources averaged slower growth rates than economies that had the same income levels but fewer natural resources.

There are widespread concerns that resource-rich countries inevitably fall prey to “Dutch disease” (Van Wijnbergen 1984). The expression was coined—probably by economists Max Corden and J. Peter Neary—after gas was discovered in the Netherlands in the 1970s. The windfall profits from gas led to an appreciation of the Dutch guilder, which reduced the competitiveness of the country’s traditionally strong export sector. Easy money from gas revenue led also to high unemployment, exacerbated by generous social benefits that undermined incentives to work. The disease has been dreaded ever since.

There is also evidence that governance and the building of good institutions are hurt by resource abundance and the availability of huge funds in the hands of a few. This in turn leads to a distribution of income that increases inequality to the point of reducing growth. This is called the “voracity effect” (Tornell and Lane 1999). Indeed, the resource-rich Eurasian countries (see following page), including Azerbaijan, Kazakhstan, Russia, and Turkmenistan, score low on Transparency International’s Corruption Perceptions Index, with an average score of 24 out of 100. Their resource-poor neighbors, such as Armenia, Georgia, Moldova, and Tajikistan, fare a little better, with an average score of 33.

Governance quality in both groups is well below the global average, which is 43. And despite many improvements in the regulation of private enterprise, Eurasian countries do not do nearly as well as their peers in East Asia and Central Europe.

These concerns might imply that countries with less diversified economies and exports have poor indicators of economic efficiency, as measured by productivity growth, economic volatility, and job creation. Over time, this would translate into mediocre outcomes for income, poverty, education, and health. But there is little systematic evidence that this is true. For every resource-rich country like Nigeria that has not done as well as it should have, there is one like Norway that has prospered; for every República Bolivariana de Venezuela that has squandered the opportunities that come from natural wealth, there is a Chile that has been disciplined in its use of resources. Eurasia's own development experience since the mid-1990s has been encouraging. Some countries such as Kazakhstan have done well enough to generate expectations that their future will be like that of Norway or Canada.

The economic fate of countries in the former Soviet Union that are rich in natural resources depends heavily on world markets, through various channels, and the fate of others in the region is tightly linked to their hydrocarbon-exporting neighbors' economic performance. This report is about 12 countries that together constitute what—using a geographically incorrect definition—some call “Eurasia.” Six of the countries are well endowed with natural resources: Azerbaijan, Kazakhstan, Russia, Turkmenistan, Ukraine, and Uzbekistan. The other six—Armenia and Georgia in the South Caucasus, the Kyrgyz Republic and Tajikistan in Central Asia, and Belarus and Moldova in Eastern Europe—are less well endowed in minerals, arable land, and forests. Together, these countries constituted the vast majority of the former Soviet Union. What binds them together now is their dependence on natural resources—either directly or indirectly—which they all consider chafing, even undesirable.

Natural resources undoubtedly provide opportunities for economic development. But they have also posed a risk in some parts of the world, notably Latin America and Sub-Saharan Africa. So the fundamental question of this report is: What can Eurasian countries do to make sure that natural resources prove to be an asset rather than a liability?

To begin the inquiry, this chapter asks three questions:

**Have natural resources served Eurasia well during the last two decades?** Yes. The abundance of natural resources in the largest Eurasian economies combined with high commodity prices has helped the region recover from the trauma of transition from one economic system to almost its polar opposite in the ideological spectrum. The number of people living in poverty has fallen by half since the mid-1990s, and the economies have grown more than fivefold.

The unanswered question is whether this progress is sustainable, or just a windfall gain—that is, have economies become more efficient over the last decade? This question is answered later in the report.

**Have the economies that have diversified more done better?** No. If anything, the opposite is true, and the reason is simple. The economies that have integrated more into the world economy have prospered, and the instrument

of this integration has been the resource that they have in the greatest abundance. For Azerbaijan, Kazakhstan, Russia, and Turkmenistan, the most abundant assets are oil and gas, and despite government interventions to support nonextractive industries, their hydrocarbon exports have become ever more important. For Armenia, the Kyrgyz Republic, Moldova, and Tajikistan, the instrument of integration has been labor, and having exported talent and effort in return for remittances they have prospered. Belarus, Georgia, Ukraine, and Uzbekistan are more diversified in their endowments, but they have hesitated to integrate, probably missing many opportunities.

The unanswered question is whether this dependence on exports and remittances will come back to haunt the region—as was feared in 2009 and 2010, when the global economic crisis led to economic contraction in the countries that had integrated most. To answer this question, again, whether their economies became more efficient during the last two decades or less must be assessed.

**Which diversification strategies are best for Eurasia?** This is the most difficult question, and answering it is the main purpose of this report. The report provides evidence that the efforts to directly diversify export compositions or production profiles—generally called “economic diversification” policies—have been unsuccessful in Eurasia and elsewhere. Based on Eurasia’s experience in the last two decades, and more than two centuries of experience in other parts of the world, this report suggests an alternative. It proposes that governments try to create the conditions for accumulating a balanced portfolio of national assets, by exploiting natural resources responsibly, building infrastructure and human capital, and instituting mechanisms to manage resource rents, provide public services, and regulate private enterprise. The best way to tell if the policies are right is to monitor the vital signs of an economy: factor productivity, private employment, and economic volatility.

These three questions provide the motivation for the report and a framework for organizing the rest of it.

## Natural resources have served Eurasia well

Since the mid-1990s, Eurasia has benefited from its natural wealth. All the countries in Eurasia have seen incomes rise, living standards improve, and poverty fall. Income inequality has become more uneven—both over time and across countries. But even though income inequality has been widening of late, it remains narrower than in other parts of the developing world, notably Latin America. Eurasia’s weak point is governance—both in providing public services and regulating enterprise—and the mechanisms for managing resource rents. But even these areas have improved. As the rest of this chapter indicates and the following chapters detail, Eurasia has mostly been well served by its natural resource wealth.

## Incomes have increased more than fivefold

Eurasia’s resource-rich countries, as well as its resource-poor ones, have maintained impressive growth since 1993, comparable to that of their neighbors

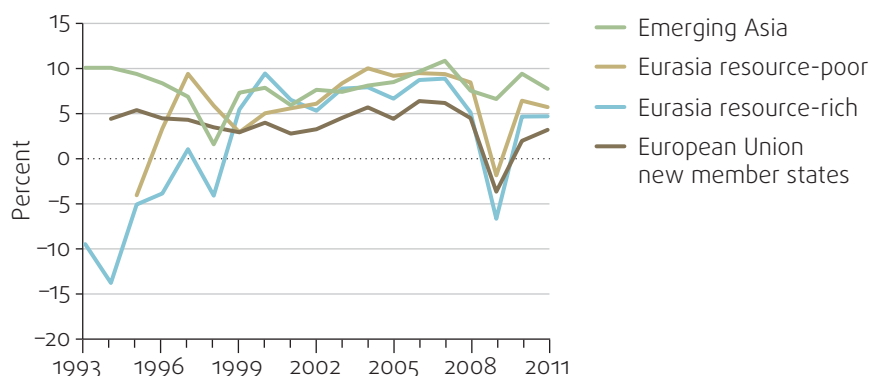


to the east and west, the countries of emerging Asia and the formerly communist new member states of the European Union (EU; figure 1.1).

Some increases in per capita incomes in resource-rich countries have been spectacular (figure 1.2). In 2000, Azerbaijan’s per capita gross domestic product (GDP) was \$655; today it is more than \$6,900. Kazakhstan’s also rose tenfold, to \$11,350. And Russia’s increased from \$1,775 in 2000 to \$13,675 in 2012. Even non-hydrocarbon-rich countries, whose economies are tightly linked to those of their resource-rich neighbors, rode the wave of high oil prices. Armenia’s per capita GDP, for instance, rose from \$620 to \$3,300. Other countries in the region experienced similar gains. Even though the region’s GDP contracted 3 percent in 2008–09 because of the global crisis, it rebounded more quickly than in the region’s western neighbors.

**Figure 1.1. Until the crisis, Eurasia’s economies were growing at rates similar to East Asia’s**

(Annual GDP growth, 1993–2011)

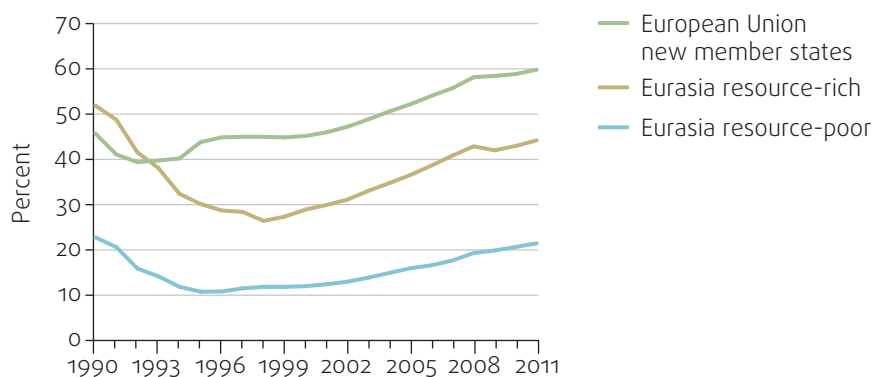


Source: World Bank staff calculations based on IMF 2012.

Note: Weighted averages.

**Figure 1.2. Since the mid-1990s, Eurasian economies have been catching up to Europe**

(Purchasing power parity GDP per capita, percentage of European Union average, 1990–2011)



Source: World Bank staff calculations based on World Bank, n.d.a.

Note: Weighted averages. Purchasing power parity GDP per capita expressed in 2005 international dollars.

Today, the region's total output is almost \$2.5 trillion, compared with \$350 billion in 2000, for a sixfold increase in average per capita income from \$725 in 2000 to \$4,600 in 2011. The income gap with the EU is now much smaller. Indeed, the average per capita income in the resource-rich economies is close to half the EU's, up from barely a quarter in 1998.

## Poverty has fallen by half

With economic growth and improvements in social services and protection came impressive declines in poverty. During the last decade, about 100 million people were lifted out of poverty in Eurasia. In 1999–2002, an average of 68 percent of a population of 300 million was living on less than \$5 a day in resource-rich countries; by 2009–11 the number had fallen to 20 percent. In Russia, the share of the population living on less than \$5 a day fell from more than 55 percent in 2000 to less than 11 percent in 2009–11. In Ukraine, the share fell from 51 percent to 7 percent. And in Kazakhstan, the share fell from 79 percent to 42 percent. These are impressive achievements. Poverty also fell sharply in resource-poor Eurasian countries, from 86 percent to 67 percent (table 1.1).

At \$2.50 a day, the drops in poverty in the resource-poor Eurasian economies are as impressive as those in the resource-rich economies using the \$5 a day poverty line. Between 1999 and 2011, \$2.50 a day poverty rates fell by nearly half or more in Armenia (from 70 percent to 38 percent), Belarus (8 percent to 0 percent), the Kyrgyz Republic (84 percent to 36 percent), Moldova (78 percent to 13 percent), and Tajikistan (95 percent to 46 percent).

**Table 1.1. Big drops in poverty**

(Poverty headcount ratios at \$2.50 and \$5 a day)

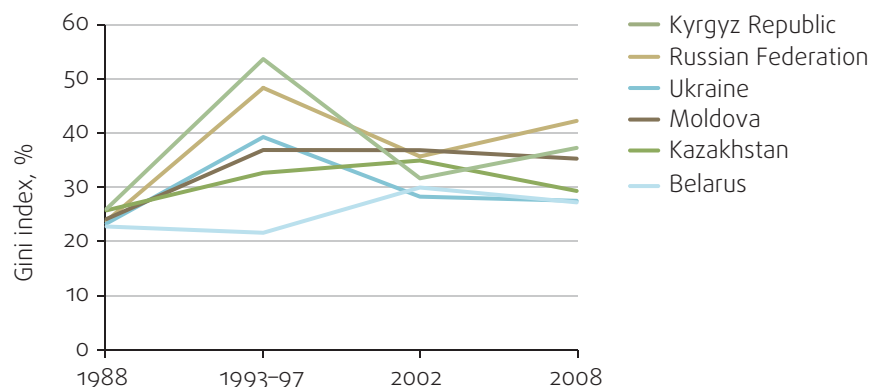
	Poverty rates at \$2.50 a day			Poverty rates at \$5 a day		
	1999–2002	2007–08	2009–11	1999–2002	2007–08	2009–11
Azerbaijan	11.5	4.5	–	86.1	38.6	–
Kazakhstan	38.2	3.8	3.5	79.0	46.4	42.1
Russian Federation	18.3	0.8	0.8	55.1	11.0	10.7
Ukraine	7.9	0.2	0.2	50.9	10.0	7.3
Resource-rich average	18.9	2.3	1.5	67.8	26.5	20.0
Armenia	69.7	28.1	37.7	95.3	79.5	86.2
Belarus	7.9	0.4	0.0	43.8	7.6	3.6
Georgia	51.3	49.1	54.0	84.7	84.0	85.9
Kyrgyz Republic	84.4	31.5	36.1	98.5	73.7	80.8
Moldova	77.6	16.9	13.0	93.9	62.7	58.7
Tajikistan	95.2	56.6	46.3	99.7	93.0	87.1
Resource-poor average	64.4	30.4	31.2	86.0	66.8	67.1

Source: World Bank staff calculations based on the ECAPOV database.

Note: – = not available. Azerbaijan had no data for 2009–11.

### Figure 1.3. Gini index

(Evolution during the transition period)



Source: World Bank, n.d.a.

Note: Higher values indicate a more uneven income distribution; data for 1993-97 are for 1993 in Belarus, Kazakhstan, the Kyrgyz Republic, and the Russian Federation; for 1995 in Ukraine; and for 1997 in Moldova.

### Inequality is lower than in the mid-1990s

When poverty reduction is impressive, people often point out that the growth and reduced poverty have come at the expense of greater income inequality. Indeed, after the Soviet Union dissolved, income inequality increased sharply as both social security systems and enterprises collapsed. Social exclusion became more common and wealth more concentrated. As growth resumed, income inequality narrowed, though in some countries it seems to have begun rising again in recent years (figure 1.3). And there continue to be concerns about the social exclusion of disadvantaged groups. Inequality widened sharply in part because Eurasia's middle-income economies started from an exceptionally equal income distribution. But despite this widening and concerns about social exclusion, Eurasia has fared better than some Latin American countries and several countries in East Asia (table 1.2).

### Eurasians are becoming healthier and more educated

Other social indicators also point to gains in the well-being of Eurasia's people. Since 2000, the United Nations Development Programme's Human Development Index, a summary measure of life expectancy, schooling levels, and per capita income, has increased for every Eurasian country (figure 1.4). Lately, the increase has been faster in the resource-rich Eurasian countries. And the gap is narrowing between Eurasia and emerging Asia and the EU new member states. Despite these improvements, however, average life expectancy in Eurasia is at least 10 years lower than in the EU, and the quality of education is emerging as a serious concern in all Eurasian countries.

### A little less diversified, a lot more efficient

Many policy makers and economists believe that a more diversified economy is structurally superior to a more specialized one (box 1.2). So have Eurasia's

**Table 1.2. No clear trends in inequality in Eurasia**

(Gini coefficient in Eurasian and other selected economies)

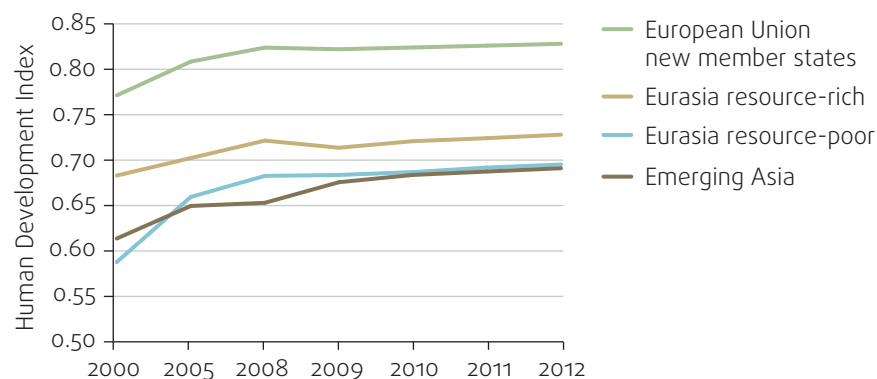
Country	1995-97 <sup>a</sup>	2002	2008
Azerbaijan	35	—	34
Kazakhstan	35	35	29
Russian Federation	46	36	42
Turkmenistan	—	—	—
Ukraine	35	28	28
Uzbekistan	—	—	—
Armenia	44	36	31
Belarus	29	30	27
Georgia	42	40	41
Kyrgyz Republic	—	32	37
Moldova	37	37	35
Tajikistan	—	—	31
Argentina	49	54	46
Brazil	61	59	55
Uruguay	43	47	46
China	36	43	43
Indonesia	31	30	34
Malaysia	49	—	46 <sup>b</sup>
Thailand	43	42	41

Source: World Bank, n.d.a.

Note: Higher values indicate a more uneven income distribution. — = not available.

a. Latest year with data.

b. 2009.

**Figure 1.4. Steady increases in human capital**

(Human Development Index, 2000-12)

Source: World Bank staff calculations based on data from the United Nations Development Programme.

Note: Country-level index is averaged by group.

### Box 1.2. Diversifying development in Azerbaijan

A recent World Bank report (2013a) finds that oil wealth has served Azerbaijan well. With its huge increase in oil production, Azerbaijan's gross national income (GNI) per capita grew from \$720 in 2002 to \$5,290 in 2011, helping it become a middle-income country. Along with growth, social transfers helped reduce poverty from 47 percent in 2002 to 6 percent in 2012. The government reduced public debt from 23 percent of gross domestic product (GDP) in 2002 to around 12 percent in 2012. Foreign exchange reserves increased to 67 percent of GDP. Azerbaijan is now rated as an investment-grade economy by all three major credit rating agencies, on par with Bulgaria, Croatia, Romania, and Turkey.

Despite this progress, there are concerns. The country has seen increased volatility, reduced labor force participation, and low productivity. Oil revenue accrues to the central government budget and to an oil fund, and absent any formal mechanism to manage resource rents, public spending is linked to current oil revenue—and thus to volatile oil prices. This has led to volatile public spending, which has acted as a tax on investment. Azerbaijan has yet to operationalize a mechanism to manage its resource rents,

*Source:* Contribution from Mona Prasad.

even though it adopted the Long-Term Oil Revenue Management Strategy, based on the permanent-income approach, in 2004. And while unemployment fell from 10 percent in 2002 to 5.2 percent in 2012, reduced labor force participation played a role, falling from 89 percent to 75 percent over the period. At the 2002 participation rate, unemployment would have been 20 percent in 2012. Finally, while productivity per worker increased nearly tenfold in the decade to 2012, it still remains below the average for middle-income countries.

To achieve high-income status, Azerbaijan needs to reduce volatility, create jobs, and increase productivity. These strides require investments in the country's asset base, which includes human and physical capital and institutions. Azerbaijan's physical capital stock is low, possibly because of low contributions from the private sector, even though the government has prioritized infrastructure investments since the start of the oil boom in 2005. Azerbaijan has low tertiary education enrollment, and its students perform poorly on international tests. At about 1 percent of GDP, the country's health spending is one of the lowest in Europe and Central Asia, leading to poor health outcomes.

Azerbaijanis are among the most dissatisfied of all people in the region with the quality and efficiency of public services, and the country has the highest prevalence of unofficial payments for accessing public services. Major shortcomings are also evident in competition for and in access to infrastructure services and finance. And rampant corruption is a big impediment to doing business.

The government is aware of these problems and has formulated the Vision 2020 strategy to develop the country's assets. It envisages doubling per capita GDP to \$13,000 and transforming the country into a diversified, innovative, and competitive high-income economy by developing its human and physical capital and by modernizing its institutions. The government also plans to encourage specific industries by setting up industrial estates and special economic zones and by offering subsidized credit. Vision 2020 incorporates all the crucial elements of a successful diversification strategy. The main challenge will be to pay more attention to developing assets and less to finding ways to use public resources for subsidizing specific sectors.

economies, especially the resource-rich, become more diversified since the mid-1990s? More important, have they become more efficient? It is possible to answer both questions.

### More trading partners, but more concentrated exports

In the last two decades, the 12 Eurasian economies have rapidly diversified their trade relations. In 1992, just after the Soviet Union collapsed, these countries had about 450 bilateral import and export relations (chapter 2); by 2011 that figure had reached more than 1,500. In 1990, more than two-thirds of Eurasian countries' trade was within the region—as determined by the central planners in the Soviet Union—but by the late 1990s three-quarters of it was with countries outside the region. In 2011, 45 percent of Eurasian exports went to the EU, about 35 percent to the rest of the world, and less than 20 percent to former Soviet republics. Trade destinations are thus much more diversified than two decades ago, a reflection of more efficient economies driven by economic forces, not political imperatives.

One way to quantify economic diversification is to measure the diversity of the composition of exports (rather than their destinations). One commonly used measure is the share of the top 10 export items in total merchandise exports.

**Table 1.3. Export diversification, Eurasia and comparators**

(Top 10 export items as a percentage of total merchandise exports)

	2000	2005	2010
Azerbaijan	86.49	92.85	94.32
Kazakhstan	77.68	80.35	83.17
Russian Federation	61.97	67.29	73.47
Turkmenistan	74.91	97.39	92.51
Ukraine	46.13	51.42	49.86
Uzbekistan	77.85	81.01	73.80
Armenia	67.29	84.89	71.78
Belarus	23.59	37.11	32.14
Georgia	69.07	76.21	75.46
Kyrgyz Republic	79.61	61.04	73.85
Moldova	61.76	71.83	57.27
Tajikistan	93.27	91.83	86.94
<b>Comparators</b>			
Australia	44.40	52.36	65.63
Canada	44.28	43.97	42.79
Chile	72.25	75.40	79.57
Malaysia	64.79	66.72	64.13
Netherlands	30.75	31.89	32.28
Norway	70.07	70.17	62.66
Saudi Arabia	93.48	95.13	94.65
United Arab Emirates	80.47	79.13	75.09
United States	36.55	31.52	29.69
Venezuela, RB	87.99	89.73	97.24

Source: UNSD, n.d.

Note: The three-digit-level export data classified by Standard International Trade Classification (SITC) Rev. 3 are used. The maximum number of items possible is 261.

By this measure Belarus and Ukraine were the most diversified in 2010, and Azerbaijan and Turkmenistan were the least (table 1.3). Russia's dependence on its top 10 exports—about 75 percent—is roughly the same as that of the United Arab Emirates', a much smaller economy. Azerbaijan's dependence is similar to Saudi Arabia's. Contrast this with the resource-rich countries in the Organisation for Economic Co-operation and Development, such as Canada and the Netherlands, which depend less on a narrow range of exports.

The most popular indicator of diversification for goods and services in an economy is the Herfindahl-Hirschman Index. Ukraine is Eurasia's most diversified country using the index (table 1.4), followed by Moldova and the Kyrgyz Republic. Azerbaijan (by far) and then Turkmenistan and Kazakhstan are the least diversified. Regional economies are more concentrated than comparator economies. Russia, for example, has the same index as Norway, a much smaller economy.

**Table 1.4. Eurasian economies are less diversified than comparators**

(Level of diversification, Herfindahl-Hirschman Index)

	Index in 2011	Number of products
Azerbaijan	0.83	1,671
Turkmenistan	0.36	518
Kazakhstan	0.33	1,726
Russian Federation	0.19	4,312
Uzbekistan	0.12	1,276
Ukraine	0.01	3,667
Tajikistan	0.27	785
Belarus	0.16	2,489
Armenia	0.08	1,287
Georgia	0.07	1,683
Kyrgyz Republic	0.04	918
Moldova	0.02	1,661
<b>Comparators</b>		
Saudi Arabia	0.61	3,464
Venezuela, RB	0.52	2,407
United Arab Emirates	0.26	4,525
Norway	0.19	4,020
Chile	0.12	3,479
Australia	0.07	4,550
Canada	0.03	4,576
Malaysia	0.03	4,444
Netherlands	0.02	4,708
United States	0.01	4,875

*Source:* UNSD, n.d.*Note:* The Herfindahl-Hirschman Index is calculated based on the six-digit export data classified by the Harmonized System 1988/92, using three-year moving averages.

As new large oil and gas fields were brought into operation in Azerbaijan, Kazakhstan, and Russia over 1997–2013, these countries became more concentrated several times faster than comparator countries (table 1.5). They also experienced higher rates of economic growth. But countries that have diversified faster are not clearly doing better than countries that have remained concentrated or become more so.

### Services have burgeoned

The second and most commonly used measure of diversification is that of goods and services. Chapter 3 discusses how Eurasian economies are doing in this respect. It explains why Eurasian countries are commonly perceived to have produced a wider range of goods and services before they became market

**Table 1.5. Many fast-growing economies have become less diversified, not more**

(Change in Herfindahl-Hirschman Index, 1997–2011)

	Change from 1997
Azerbaijan	0.679
Kazakhstan	0.274
Uzbekistan	0.267
Turkmenistan	0.254
Russian Federation	0.122
Ukraine	0.001
Belarus	0.131
Armenia	0.079
Moldova	0.021
Georgia	0.015
Kyrgyz Republic	0.004
Tajikistan	0.002
<b>Comparators</b>	
Venezuela, RB	0.140
Chile	0.057
Australia	0.050
Netherlands	0.012
Canada	0.010
Malaysia	0.009
United States	0.000
Saudi Arabia	-0.002
Norway	-0.012
United Arab Emirates	-0.176

Source: UNSD, n.d.

Note: Positive numbers mean an increase in concentration; negative numbers mean a decrease.

economies. It also explains why over the last 10 years some countries in the region appear to have become more concentrated while others have become more diversified.

Services were suppressed under socialism. The move to a market economy unleashed them, with their share of GDP among Eurasia's resource-rich countries increasing sharply during transition to more than two-thirds of output by 2009 (table 1.6). The share of agriculture and manufacturing fell by 3 percentage points each from 2000 to 2009. Although both of these falls trouble policy makers, the resource-rich countries show no major differences from other countries in these three trends.



**Table 1.6. A big increase in services and a noticeable drop in manufacturing and agriculture**

(Sector composition of GDP [percent], 2000 and 2009)

Sector	2000		2009	
	Resource-rich	Resource-poor	Resource-rich	Resource-poor
Agriculture, hunting, and forestry	8.7	19.1	5.2	11.5
Mining and quarrying	6.9	0.2	10.2	0.3
<b>Manufacturing</b>	<b>17.6</b>	<b>26.4</b>	<b>14.3</b>	<b>23.1</b>
Food and beverages	21.5	41.9	20.8	37.3
Tobacco products	1.9	4.0	1.1	2.2
Textiles	1.2	4.2	0.7	3.4
Wearing apparel, fur	0.8	1.2	0.5	2.5
Leather, leather products, and footwear	0.5	0.7	0.3	0.4
Wood products (excluding furniture)	1.6	0.5	1.8	0.7
Paper and paper products	2.9	0.3	1.9	0.6
Printing and publishing	1.1	1.6	1.7	2.2
Coke, refined petroleum products, nuclear fuel	5.2	2.4	19.5	0.8
Chemicals and chemical products	9.6	2.5	8.8	3.3
Rubber and plastics products	1.9	0.8	2.6	2.1
Nonmetallic mineral products	5.0	5.5	5.0	8.5
Basic metals	23.5	26.0	16.5	27.3
Fabricated metal products	3.5	0.8	2.8	2.1
Machinery and equipment n.e.c.	6.2	1.8	5.3	1.1
Office, accounting, and computing machinery	0.4	0.2	0.2	0.0
Electrical machinery and apparatus	2.5	1.3	2.3	1.0
Radio, television, and communication equipment	0.2	0.2	0.1	0.2
Medical, precision, and optical instruments	1.0	0.7	1.3	0.4
Motor vehicles, trailers, semitrailers	5.6	0.2	2.9	0.2
Other transport equipment	1.4	1.0	1.4	1.7
Furniture; manufacturing n.e.c.	1.7	2.0	1.7	1.4
Recycling	0.9	0.2	1.0	0.3
<b>Services</b>	<b>66.9</b>	<b>54.2</b>	<b>70.3</b>	<b>65.0</b>

Sources: World Bank staff calculations. Broad sectors are calculated based on their value added from UN, n.d.; the distribution within manufacturing is evaluated based on industrial output data from UNSD, n.d.

Note: Simple averages for resource-rich countries (Azerbaijan, Kazakhstan, the Russian Federation, and Ukraine) and resource-poor countries (Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan).

## Eurasian countries have “high-beta” economies

Despite Eurasia’s 10 years of good economic performance, many analysts believe that past trends are unlikely to continue. They argue that this performance reflects a favorable external environment of high commodity prices.<sup>2</sup> They appreciate that the bigger part of the recovery in 1999–2008 was brought about by better capacity utilization and the easy productivity gains that followed the massive collapse in output after 1991.

The development model that policy makers have in mind is one of an economy that simultaneously enhances productivity, creates jobs, and reduces volatility. The reasons are straightforward: economies that do not become more productive cannot become rich; societies that do not create employment are not stable; and public finances that are volatile are hard to manage.

Eurasia’s progress has coincided with high oil and gas prices. So it is reasonable to ask whether the improvements in development outcomes are the result of an unexpected windfall or the consequence of improvements in efficiency. This question is not difficult to answer. It is possible to assess whether economic efficiency has improved using measures of efficiency that are of the greatest interest to governments: productivity growth, private sector job creation, and economic volatility (table 1.7).

**Table 1.7. More employment and productivity in Eurasia, but perhaps also more volatility**

(Annual average changes in employment, labor productivity, and volatility, 2000–10)

Percent

Country	Employment growth	Productivity growth	Volatility of output
Azerbaijan	2.6	11.0	6.6
Kazakhstan	2.2	5.9	3.3
Russian Federation	0.9	4.2	3.7
Turkmenistan	2.2	10.9	4.8
Ukraine	0.1	4.2	5.1
Uzbekistan	2.9	3.6	1.1
Eurasia resource-rich	1.8	6.6	4.1
Armenia	0.1	7.3	4.2
Belarus	-0.5	7.5	2.7
Georgia	0.1	5.5	3.8
Kyrgyz Republic	1.9	2.1	3.3
Moldova	-2.5	7.2	3.6
Tajikistan	1.8	6.2	8.3
Eurasia resource-poor	0.2	6.0	4.3

Source: World Bank staff calculations based on World Bank, n.d.a.

Note: Output growth volatility is computed as a five-year moving standard deviation of annual growth rate in real GDP per capita.

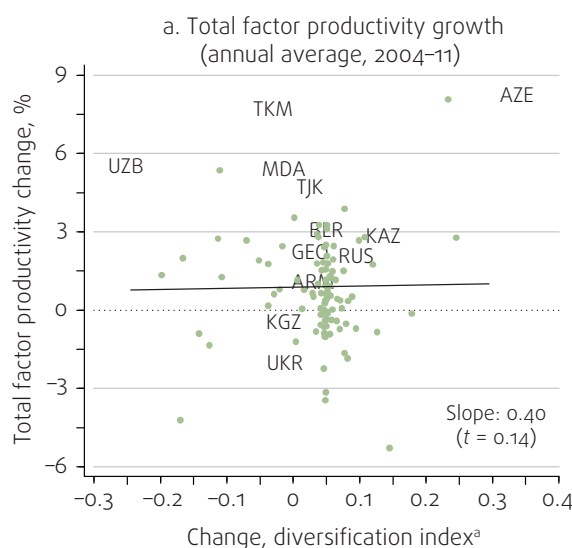
Have countries that have diversified their economies done better in enhancing productivity, creating employment, and reducing volatility? The answer might surprise many people. Over the last 10 years, every Eurasian country has seen increases in productivity and, except for Moldova and Belarus, every country has witnessed rises in employment. Among the countries with the highest employment increases were those that depend most on natural resources, such as Uzbekistan, Azerbaijan, and Kazakhstan. In most cases, volatility as measured by the difference in the five-year rolling standard deviation of aggregate output has increased. But the more diversified economies did not always do better than the less diversified.

To borrow a term from corporate finance, Eurasian countries tend to have “high-beta” economies. Over the last decade and a half, they have provided high returns—in growth, productivity, and employment—but have been characterized by high volatility.

### Eurasian patterns are the norm, not an exception

Because of the seismic changes in the Eurasian economies over the last two decades, measures of productivity, employment, and volatility cannot be reliably estimated. It might help to look at a bigger sample. Statistical tests for a sample of all countries do not reveal any clear association between substantial changes in diversification and changes in total factor productivity, employment, and economic volatility (figure 1.5).

**Figure 1.5. Less diversified economies are not less efficient**



Sources: The Conference Board 2013; UNSD, n.d.; World Bank, n.d.a.

Note: Change in diversification is defined by the difference in the Herfindahl-Hirschman Index between 1997 and 2004. The index is calculated with the six-digit export data classified by the Harmonized System 1988–92. The indicator on the y-axis is the percentage change in total factor productivity, which is defined as the average annual growth rate of total factor productivity over 2004–2011. Azerbaijan is excluded from the estimation of slope.

a. Negative numbers indicate greater diversification.

(continued)

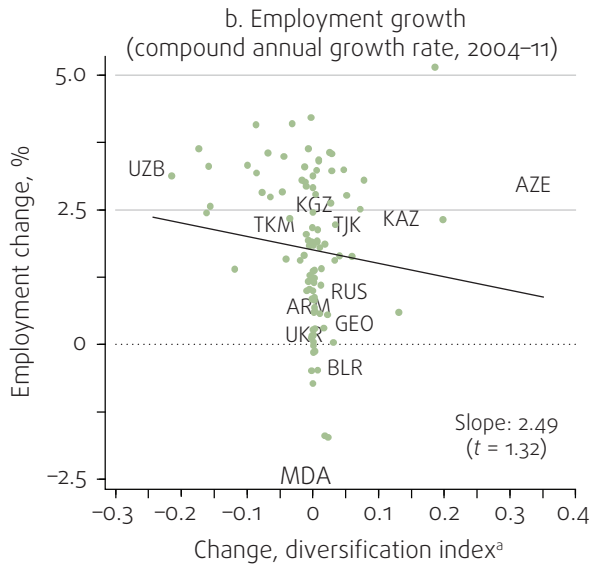
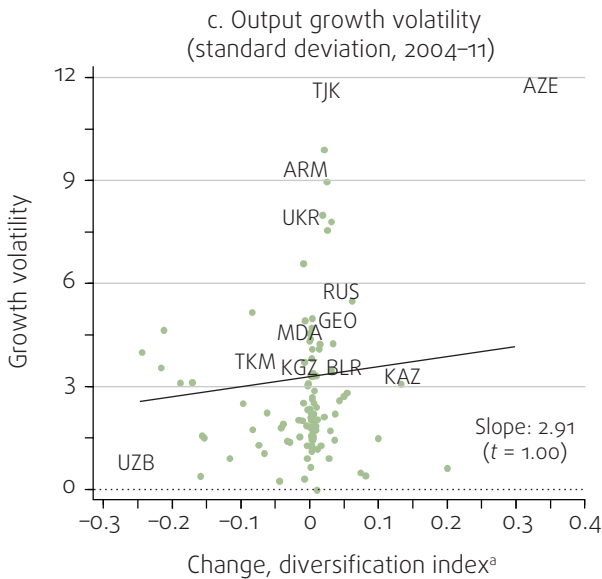


Figure 1.5. Less diversified economies are not less efficient (cont.)

Sources: UNSD, n.d.; World Bank, n.d.a.

Note: Percentage change in employment is a compound annual growth rate of total employment between 2004 and 2011. Change in diversification is measured over the period of 1997-2004.

a. Negative numbers indicate greater diversification.



Sources: UNSD, n.d.; World Bank, n.d.a.

Note: Growth volatility is the standard deviation of the annual GDP growth rate over 2004-11. The difference in the Herfindahl-Hirschman Index is used as the change in diversification on the x-axis. Azerbaijan is excluded from the estimation of slope.

a. Negative numbers indicate greater diversification.

### Box 1.3. Diversifying development in Kazakhstan

Kazakhstan has transitioned from lower-middle-income to upper-middle-income status in less than two decades. With improving terms of trade and rising international oil prices, the Kazakhstani economy outgrew that of its regional peers. Income has been rising remarkably, as Kazakhstan's gross domestic product (GDP) per capita increased eightfold from \$1,500 (in current prices) in 1991 to \$12,000 in 2012. The share of the population living on less than \$2.50 a day fell from 41 percent in 2001 to 4 percent in 2009. With economic growth estimated to remain on average at 5 percent per year over the next few years, Kazakhstan will soon become a high-income economy.

In the government's recently announced Vision 2050, the focus is on laying the foundations for an accelerated diversification of the economy through industrialization, infrastructure development, and investments in human capital. Policies to improve the overall business environment are a core part of the vision. The government also plans on intervening directly, as

articulated in the Industrial Acceleration Plan 2010–2014. The World Bank's recent Country Economic Memorandum argues that further diversification of the economy will be the result of policies that help the country strengthen its human and physical capital and the quality of its institutions. If Kazakhstan uses the right policies to diversify these endowments, it could become a model of economic development and diversification in Eurasia.

The Country Economic Memorandum identifies the main gaps in human capital and institutions. Kazakhstan's education system fares poorly in providing skilled workers to enterprises. In 2009, Kazakhstan participated for the first time in the Programme for International Student Assessment, which assesses students in math, reading, and science. Kazakhstani students performed worse than other countries at similar levels of development, scoring an average of 40 exam points lower on reading—equivalent to more than a year of schooling—than the level predicted by the country's GDP per capita.

Constraints such as market contestability, a dominating public sector, and an underdeveloped financial sector hold back growth in the private sector. The quality and coverage of regulatory institutions have improved, but gaps remain in implementing regulations effectively and without discrimination. Kazakhstan has a regulatory enforcement gap with countries in the Organisation for Economic Co-operation and Development—especially for due process in administrative proceedings, suggesting that respect for rule of law is not guaranteed.

Kazakhstan's development objective of becoming one of the 30 most developed countries by 2050 will require a continued steady hand at macroeconomic management to avoid the volatility associated with oil dependence, improvements in governance and transparency, a better regulatory environment, a big effort to improve education, and more attention to social policies.

Source: Contribution from Ilyas Sarsenov, based on World Bank 2013b.

All Eurasian economies—both those with and those without abundant natural resources—have had high rates of total factor productivity growth compared with the rest of the world (figure 1.5a). The more resource-dependent economies such as Azerbaijan and Kazakhstan have been prolific in creating jobs; resource-poor economies such as Moldova and Tajikistan have done less well (figure 1.5b). Except for Azerbaijan, there is little evidence that less diversified economies are more volatile (figure 1.5c). Statistics indicate that both Turkmenistan and Uzbekistan have diversified their exports, but whereas economic volatility is low in Uzbekistan, it is fairly high in Turkmenistan. Something else—not simply a dependence on natural resources—seems to matter more for productivity growth, job creation, and economic stability.

If productivity is increasing, jobs are being created, and volatility has been kept under control, why bother to diversify (box 1.3)? One concern could be that resources do not last forever, and countries in the region have to look ahead to a future without natural resources. But estimates for oil and natural resources reserves have often proven too conservative. What then is the cause for concern in the resource-rich Eurasian countries? At first glance, the numbers seem to be at odds with the conventional wisdom that countries need to diversify if they want to become rich. This report tries to answer these questions for the Eurasian countries, which can benefit from two decades of their own experience and two centuries of other countries', including the

United States and the United Kingdom, Australia and Canada, and Argentina and Brazil.

## An abundance of resources, a deficit of intangibles

This report argues that what matters most for a country's economic development is the diversity of its asset portfolio, not its production profile or export composition. The assets can be classified into three categories: natural resources, built capital, and national institutions. Natural resources—in the form of minerals, arable land, and forests—are largely endowed, but technological progress and better management can radically alter their economic value. Built capital consists of both physical and human capital, in the form of decent infrastructure and a healthy and skilled labor force. This again can be measured for any country, though with more difficulty and less precision than natural resources. Finally, the most poorly measured and possibly the most important asset a country has are national institutions—the regulations and mechanisms that a country has put in place to manage resource rents, deliver public services such as roads, security, health care, and education.

Chapters 4, 5, and 6 explore the asset portfolios of Eurasian countries.

### Eurasia is rich in natural resources

Eurasia's natural capital is the greatest of all developing regions—more than twice as much per capita as the Middle East and North Africa (table 1.8), and three times as much as the world as a whole. More than two-thirds of it is oil and gas. Eurasia is the richest in coal and minerals and well-endowed with land and forests (second only to Latin America). Australia and Canada are better endowed with natural assets than Russia and Kazakhstan, but Eurasia is the best-endowed region in the world.

Countries typically export the items that are derived from their most abundant assets. Indeed, Azerbaijan, Kazakhstan, Russia, and Turkmenistan export oil and gas because they have them in plenty. Ukraine and Moldova export agricultural products, as they have the world's highest share of arable land in total land area. Tajikistan has an abundance of labor, so one of its biggest exports is workers, and its share of remittances in GDP is one of the highest in the world.

The abundance of resources explains the observed trade patterns. It explains why Eurasia's production and exports are not diversified. It is also why as Eurasia has integrated into the world economy, the share of hydrocarbon exports has grown despite all the attempts to diversify exports. In Russia and Kazakhstan, hydrocarbons as a share of total exports have risen from less than 10 percent in the 1990s to more than 60 percent today (table 1.9). In Azerbaijan and Turkmenistan, the share is even higher. Higher prices for hydrocarbons this century have also helped.

Chapter 4 provides estimates of natural resource abundance in Eurasia, the extent to which Eurasian governments depend on resources for revenue, and how efficient they have been at collecting the rents from such riches.

**Table 1.8. Natural resource wealth in Eurasia and other regions**

(2005, per capita in thousands of 2005 U.S. dollars)

Country/region	Total natural capital	Forest and land	Coal and minerals	Oil and gas
Armenia	3.1	3.0	0.1	0.0
Azerbaijan	11.7	2.5	0.0	9.2
Belarus	6.0	5.2	0.0	0.8
Georgia	3.3	3.2	0.0	0.1
Kazakhstan	23.9	3.6	3.1	17.2
Kyrgyz Republic	3.0	2.9	0.0	0.1
Moldova	4.1	4.1	0.0	0.0
Russian Federation	31.3	7.1	1.0	23.2
Tajikistan	1.8	1.7	0.0	0.0
Turkmenistan	37.9	5.4	0.0	32.5
Ukraine	6.9	4.9	0.6	1.4
Uzbekistan	7.7	2.3	0.0	5.4
Eurasia	20.8	5.5	0.8	14.5
East Asia and Pacific	4.4	3.4	0.4	0.6
Latin America and the Caribbean	12.1	8.5	0.7	2.9
Middle East and North Africa	9.9	3.1	0.0	6.8
South Asia	2.6	2.3	0.1	0.2
Sub-Saharan Africa	3.9	2.4	0.2	1.3
Australia	40.0	19.7	10.7	9.7
Canada	36.9	24.3	1.1	11.5
United States	13.8	10.3	0.5	3.0
World	7.1	4.3	0.3	2.4

Source: World Bank 2011.

### Growing gaps in Eurasia's built capital will compromise productivity

Infrastructure and education were commonly considered the Soviet Union's strengths. But the posttransition collapse was harsh on both—and perhaps even harsher on health. Today, the infrastructure needs rehabilitation, and education systems need to be revamped to supply skills that are better suited for market economies. These concerns are difficult to confirm and quantify, but chapter 5 attempts to do just that.

While Eurasia inherited a large stock of infrastructure assets from the Soviet system—probably larger than most countries at a similar level of development—this stock served primarily to meet basic human needs rather than to support the development of competitive and sustainable economies. Additions to the existing stock of physical capital have been small—with inadequate and at times inefficient investments by the public sector. In many ways, Eurasia still lives on

**Table 1.9. Eurasia's resource-rich countries rely more on hydrocarbons now**

Country	1992–2001	2001–06	2006–11
<b>Hydrocarbon exports (percentage of merchandise exports)</b>			
Azerbaijan	6	84	93
Turkmenistan	25	89	82
Kazakhstan	6	52	65
Russian Federation	8	52	62
Uzbekistan	1	13	26
<b>Hydrocarbon exports (percentage of GDP)</b>			
Azerbaijan	4	24	41
Turkmenistan	23	50	29
Kazakhstan	4	20	23
Russian Federation	7	17	17
Uzbekistan	1	3	6

Sources: UNSD, n.d.; World Bank, n.d.a.

the stocks of physical capital inherited from the Soviet system. Even better-off Russia and Kazakhstan do not do well. Russia's railway network is half the length of that of the United States, a country with half its area, and its total road length is shorter than that of France, which is a tenth its size. Kazakhstan has fewer roads than Malaysia. And the roads and railways are better suited for trade within Eurasia—which is declining as a share of total trade—and least suited for commercial relations with East Asia.

In principle, resource-rich Eurasian countries can finance sizable investments in capital by using the revenue derived from natural resources and converting it into productive capital. In reality, the availability of natural resource rents has coincided with decreases in the stock of public capital; resource-poor Eurasian economies have actually done better in investing in physical infrastructure. When adjusted for efficiency, however, Eurasia's infrastructure stocks fall further behind its comparators, with those of resource-poor economies especially low.

While access to education and health care is not a major problem in many countries, service quality is worrisome. If business surveys can be considered reliable, about half of all enterprises in the region see the lack of skilled workers as a serious impediment. According to Organisation for Economic Co-operation and Development assessments, more than half of all 15-year-olds in Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, and Moldova are functionally illiterate in science, math, and reading. Only in Russia is the quality of education not an emergency. In many of these countries, one problem is inadequate government spending. In Azerbaijan and Kazakhstan, education spending is less than 3 percent of GDP, compared with 5 percent in the Republic of Korea, Malaysia, and Poland.

It appears that the less tangible the type of built capital, the worse Eurasia does in facilitating its accumulation. The weakest aspect might well be



entrepreneurial capital, in which all Eurasian economies except Georgia do especially poorly. The findings in chapter 5 implicate the quality of institutions that influence the delivery of public services and the regulation of enterprise.

### Institutional weaknesses could destabilize Eurasia

Compared with its neighbors to the east and west, Eurasia has not done well in providing the softer structures that productive economies and participatory societies need. The main aspect of this can be called “governance quality”—voice and accountability, political stability, rule of law, and the control of corruption. The gaps can be measured by using the World Bank’s Worldwide Governance Indicators (figure 1.6). Resource-rich Eurasian economies do especially poorly in giving people voice, making governments accountable, and controlling corruption. The formerly communist countries in Central Europe have made impressive progress in these aspects by strengthening their underlying institutions. These countries include Estonia, Latvia, and Lithuania, the three former Soviet republics that are now part of the EU.

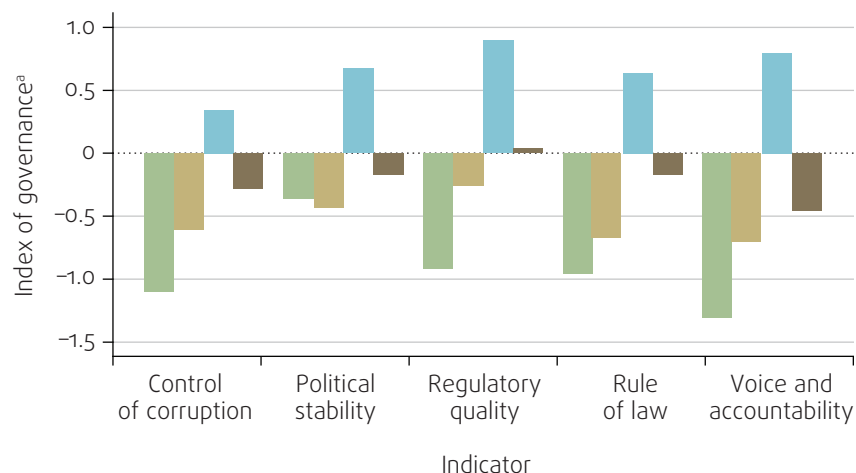
These institutions are especially necessary for countries that have to manage sizable resource rents, so the weaknesses in accountability and corruption are sources of instability in Azerbaijan, Kazakhstan, Russia, Turkmenistan, Ukraine, and Uzbekistan. They have to be strengthened to reliably reduce economic volatility, an unavoidable aspect of natural resource-based development.

These aspects of governance are central to the provision of social services like education and health. Health outcomes have been improving (Smith and Nguyen 2013), but health systems have been slow to respond to demographic and epidemiological shifts in Eurasia, where populations are both older and wealthier than they were two decades ago. And while access to education has improved as governments have been stabilized, the indicators for education quality are poor outside the biggest cities in Russia and Ukraine.

**Figure 1.6. Governance is weak across much of Eurasia**

(Indicators of governance in Eurasia, European Union new member states, and East Asia, 2012)

- Eurasia resource-rich
- Eurasia resource-poor
- European Union-12
- East Asia



Source: World Bank, n.d.b.

a. 2.5 = best.

Eurasian economies are doing better in creating the regulatory conditions for enterprise. They have been improving on the World Bank's Doing Business Indicators, and most have been closing the distance to the regulatory frontier. But in economies where natural resources form a big part of GDP and government revenue but a miniscule portion of employment, the conditions for doing business—especially the ease of employing workers—have to be much better, not just a little worse, than those of East Asian and Eastern European economies. There is a lot of work to do, and countries like Georgia have shown that big improvements can be made over years, not decades. For Russia, greater competition among enterprises might be the most important aspect of economic governance (box 1.4).

## Diversifying naturally

This introductory chapter has three main conclusions.

**Natural resources have served Eurasia well during the last two decades.** The abundance of natural resources in the largest economies in Eurasia combined with high commodity prices for much of the last two decades has helped the region recover from a severe economic crisis. The number of people living in poverty has been halved since the mid-1990s, and the economies have grown sixfold. The unanswered question here is whether this progress is sustainable, or just a windfall gain. To answer this question, one has to examine whether economies have become more efficient during the last decade. This question is answered later in the report.

**The economies that have diversified more have not done better.** The economies that have integrated more into the world economy have prospered, and the instrument of this integration has been the resource that they have in the greatest abundance. For countries whose most abundant assets are oil and gas, hydrocarbon exports have become ever more important—despite government interventions to support nonextractive industries. For their poorer neighbors, labor has been the instrument of integration. Countries that have integrated less like Ukraine and Uzbekistan might have missed many opportunities.

**The diversification strategies that have worked best are those that lead to a more balanced set of economic assets.** Policies to directly diversify export compositions or production profiles—generally called “economic diversification” policies—have not on the whole been successful in Eurasia. Based on the last two decades of experience in Eurasia, and more than two centuries in other parts of the world, this report proposes that governments create the conditions for building a balanced portfolio of national assets—natural resources, built capital, and institutions—and monitor the performance of the economy by tracking productivity growth, job creation, and economic volatility.

With a strategy to diversify assets rather than production, Eurasia's economies and exports might well become *more* concentrated in the short term. But if done right, Eurasia's development will be diversified, with ever more efficient

### Box 1.4. Diversifying development in the Russian Federation

The Russian Federation has greatly benefited from its natural resources. With a steep increase in international commodity prices, incomes per capita more than tripled between 2000 and 2010 (from \$6,660 to \$20,110). Over the same period, Russia's export base narrowed. Oil and natural gas made up less than half of total exports in 2000. By 2010, they made up two-thirds, with an additional 15 percent coming from other extractive commodities and only 9 percent from high-tech exports, mainly defense related.

Like other resource-dependent countries, Russia has taken many measures to promote growth in the non-oil-and-gas sector. Addressing the government's concerns about a lack of export diversification, a recent World Bank report finds that a lack of competition and entrepreneurial innovation are the main obstacles to the growth of non-oil activities and thereby of potentially exportable products outside oil and gas.

Russia's trade composition indicates a narrow product base and a lack of diversification toward new markets and products. A gravity model of trade suggests that Russia undertrades with a number of potentially large partners, such as China, India, and some G-8 countries, including Germany, Italy, and the United States. Russian exporters face difficulties not only entering foreign markets but also sustaining their presence there. In 1999–2009, only 57 percent of Russia's export relationships survived more than two years, compared with 70 percent of China's. Low survival rates in international

markets may indicate a mismatch between the goods that Russian firms produce and the economy's portfolio of human, physical, and institutional assets.

An inadequate asset base is a likely cause of the low levels of entrepreneurship in Russia and of the consequent lack of experimentation in new products and markets. A poor business environment leads to rent-seeking rather than productive activities. The share of firms in Russia considering corruption a top obstacle for business is about five times the share in Brazil. About a quarter of management time is spent on regulation requirements, compared with 7 percent in India, showing how a deficient governance regime leads to misallocation of talent. At the same time, 88 percent of Russian firms complain about the availability of adequate human capital.

Productivity also suffers. The incentives to become more efficient are dulled by weak market competition and by the availability of skills—for instance, skills to effectively use new technologies. Low productivity limits the ability of Russian enterprises to break into export markets. As much as 42 percent of the propensity to export is explained by productivity levels, with the rest explained by innovation performance and competition in product markets.

Through the competition regime, the government affects the export propensity of domestic firms. Asymmetric applications of rules or access to state aid favoring larger incumbents to the detriment of smaller (and perhaps more

efficient) firms and potential entrants—as well as direct government support to enterprises—distorts competition and reduces the productivity of favored firms.

Government-induced market distortions are sector-specific and take many forms. For example, cheap energy is provided to nonviable steel and cement plants. This asymmetry is acute at the regional level and is a source of regional variability in the broad competition regime. In procurement rules, for example, municipal and regional authorities have adopted different approaches to using single-source procurement bids and to practices. This facilitates collusion, even though a federal legal framework has been established.

A good competition policy would help establish a level playing field, facilitate entry of more-efficient firms, and encourage orderly exit of less-efficient firms, contributing to increased productivity and export propensity. Measures could include broadening the mandate on state aid regulation to diminish firm- and sector-specific state aid; creating an inventory of state aid; aligning state aid regulation with international best practices; and eliminating preferential treatment to state- or municipality-owned corporations. Sector-specific policies in transport, construction, and professional services would further increase competition and incentives for entry and reduce prices of services.

Source: World Bank 2013c.

economies and higher standards of living. And, over time, balanced asset portfolios will yield more diversified economies, so the most desired objective of Eurasia's policy makers will eventually be achieved.

But while diversified asset portfolios take time to build, they help structural transformations come along naturally. If the experience of resource-rich economies around the world is a reliable guide, the policies to foster diversified development will bring about a more natural dynamism in Eurasia's economies, generate fewer stresses in its societies, and leave its governments less frustrated.

## Notes

- 1 The remaining three former socialist republics on the Baltic Sea—Estonia, Latvia, and Lithuania—regained their prewar independence and are now part of the European Union. Their development challenges are different. See Gill and Raiser (2012).
- 2 A barrel of crude oil was less than \$30 in 2000; today it is nearly \$100.

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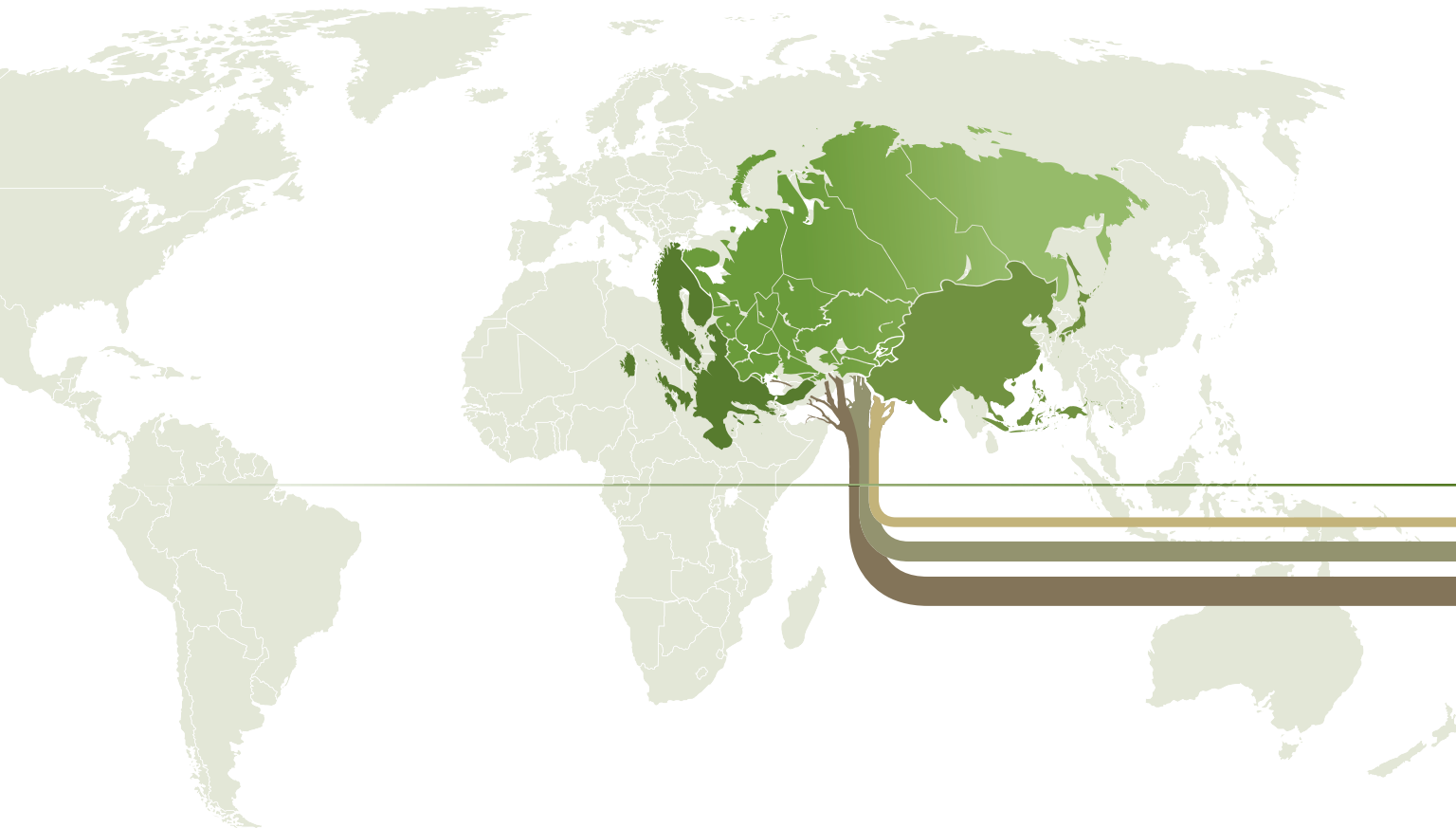
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# Spotlight One



## Diversification and Development

California is an economic powerhouse. If it were a country, it would be one of the richest, largest, and most diversified economies in the world. It is known as much for its entertainment industry in Los Angeles as for its computer prowess in San Francisco, as much for shipping and finance as for agriculture and tourism.



Yet California might well have been the original petro-state. Initially a peripheral economy, the transformation of the state began with its rise as the leading oil producer in the United States between 1900 and 1930.

California is also known the world over as one of the best places to get a college education. It excels in both private and public higher education. The University of California at Berkeley and Stanford University, for example, are globally recognized icons of the American system of universities. California's universities are the alma mater of numerous Nobel laureates, responsible for scores of breakthrough scientific discoveries. Stanford University has been instrumental in the rise of the Silicon Valley as the world's high-tech hub and the home of companies like Apple and Google, which have transformed the way people live and work.

All this is common knowledge. What is not generally known is that the history of these two academic powerhouses resembles that of their home state. It was petroleum geology that helped put both of them on the map. At the turn of the 20th century, Berkeley was the largest mining college in the world. Early graduates from Stanford were influential in popularizing breakthrough theories of petroleum geology.

From the trendsetting Hollywood film industry to the profitable vineyards of central California to the high-tech firms in Silicon Valley, California is one of the world's best examples of a diversified economy. The roots of its diversification lie in a potent portfolio of assets: abundant natural resources; sustained investments in education and infrastructure; and active communities and representative government. California is the world's eighth-largest economy and Californians enjoy perhaps the best combination of high incomes and living standards in the world. Berkeley and Stanford are only two of many examples of the ever-evolving institutions that aided oil extraction during the early 20th century, and that have continued to play an important role in California's rise. The economic history of the state provides perhaps the most vivid illustration of diversified development, the central subject of this report.

California's progress has origins in that of the rest of the United States, which in turn has antecedents in that of its former colonizer, the United Kingdom. But the experience of two other former British colonies—Australia and Canada—shows that diversified economic production is not a necessary condition for successful development. And the experience of another pair of resource-rich economies—Argentina and Brazil—shows that diversification is not a sufficient condition for development either.

## The United Kingdom and the United States: diversification and development

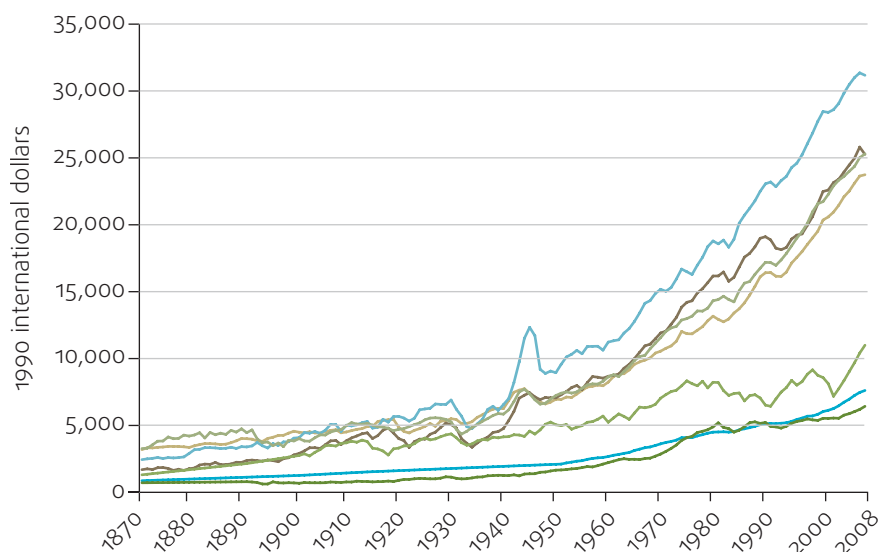
Ever since the industrial revolution made the United Kingdom a great power, the process of economic diversification away from natural resources has been associated with that of long-term economic growth. A classical view of the British industrial revolution is one of a mainly agrarian society making the transition to a modern economy where production and technological innovations were increasingly mechanized.

There are still no definitive answers to the questions of “why” and “how” the industrial revolution began in the United Kingdom when it did, but several developments that took place at the same time facilitated its expansion. Breakthrough innovations such as the steam engine and mechanical spinning are just the tip of the iceberg when compared to the big increase in the number of patents after 1750. It has been argued that the British patent system contributed to this wave of innovation, as it raised the expected return of inventions and stimulated technical progress. At the same time, coal endowments not only provided cheap fuel but also focused the United Kingdom’s attention on the solution to the technological problems related to mineral exploration, which then spilled over to other industries. Equally, the form of government that had emerged in the United Kingdom created an environment more conducive to economic development than elsewhere: taxes were high but not arbitrary or confiscatory, the right to own and manage property was sacrosanct, and personal freedom—with some exceptions—was widely accepted. This form of government had emerged smoothly in the United Kingdom—and was yet to do so in continental Europe, but bumpily.

The industrial revolution marks the beginning of the era of modern economic growth. Per capita gross domestic product (GDP) rose quickly in the United Kingdom and its former colonies during the late 19th century and throughout the 20th century (figure S1.1).

**Figure S1.1. GDP per capita, 1870–2008**

(1990 International Geary-Khamis dollars)



Source: Bolt and Van Zanden 2013.

The experience of the United States resembles that of the United Kingdom. Both countries developed and diversified their economies. But in contrast to the United Kingdom, the early economic development of the United States had more to do with natural resources than with technological innovation. Historical evidence shows that American manufacturing exports were increasingly intensive in nonreproducible natural resources during the half-century before the Great Depression. By 1913 the United States was not only the world's leading producer of 14 major industrial minerals but also had a range of mineral resources wider than any other country.

This did not stop the United States from becoming a leader in technology. In fact, the abundance of exploitable natural resources was in many ways an outgrowth of America's technological progress, much as new techniques that allow shale gas to be accessed are making the United States the world's biggest producer of natural gas. Early mining took place in areas close to the early centers of industrial and technological development. Another stimulus was that the country was a vast free trade area, and this created the grounds for massive investment in transportation infrastructure.

Finally, the process of mineral discovery and development was also a prime outlet for innovation. In other words, even though America's production before the Great Depression was concentrated in natural resources and resource-intensive manufacturing, dramatic changes in infrastructure and technology were taking place at the same time. The decrease in the natural resource intensity of America's manufacturing exports after World War II was not because the country had exhausted its reserves and become "resource poor." Instead, the reduction of transport costs and trade barriers had largely cut the link between domestic resources and domestic industries. When this happened, the United States was able to move from being a resource-based economy to one based on a well-educated labor force and on science-based technology.

Regardless of the initial trigger of economic growth in the United Kingdom and the United States, economic conditions in both countries were suitable for this initial impulse not to dissipate quickly. The case of California is illustrative. The dramatic fall in the cost of energy brought about by the oil boom of the first three decades of the 20th century was essential for manufacturing's growth in California: the sector's size quadrupled in that period. The oil boom helped reduce transport costs as the Southern Pacific Railroad began using oil fuel exclusively after 1900. With oil came a commitment to the gasoline-powered automobile, and California came to symbolize the American lifestyle of the century.

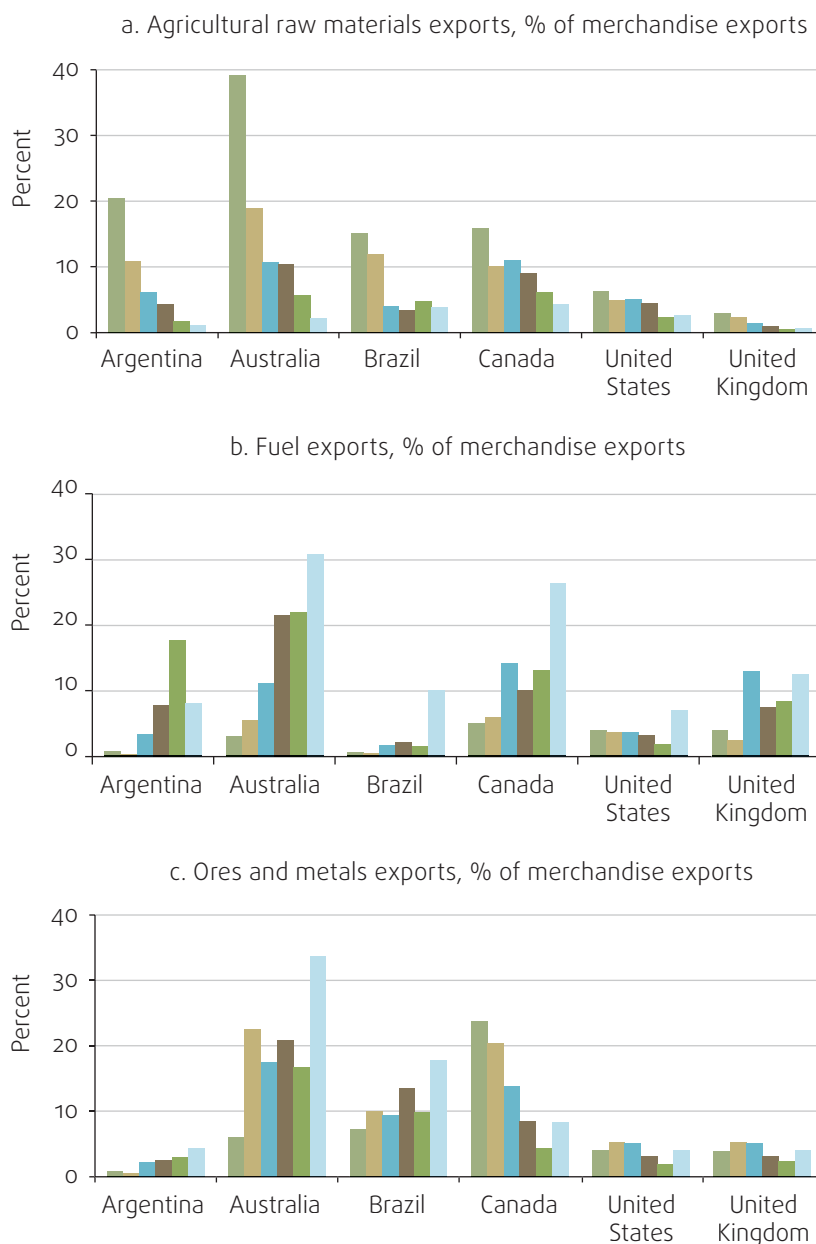
Oil also helped institutions of higher learning such as Berkeley and Stanford—to name only the two most prominent—that have diversified to become world-class universities rivaling Oxford and Cambridge. Yet a feature that set the American education system apart from that in the United Kingdom during the late 19th century was the effort to bring together engineering science and practical arts. Mining engineers increasingly assumed managerial and executive roles within large firms, and this expectation came to be reflected in the curricula of the major mining schools. So, instead of causing "Dutch disease," resource abundance in California was accompanied by a plethora of productivity-enhancing changes.<sup>1</sup>



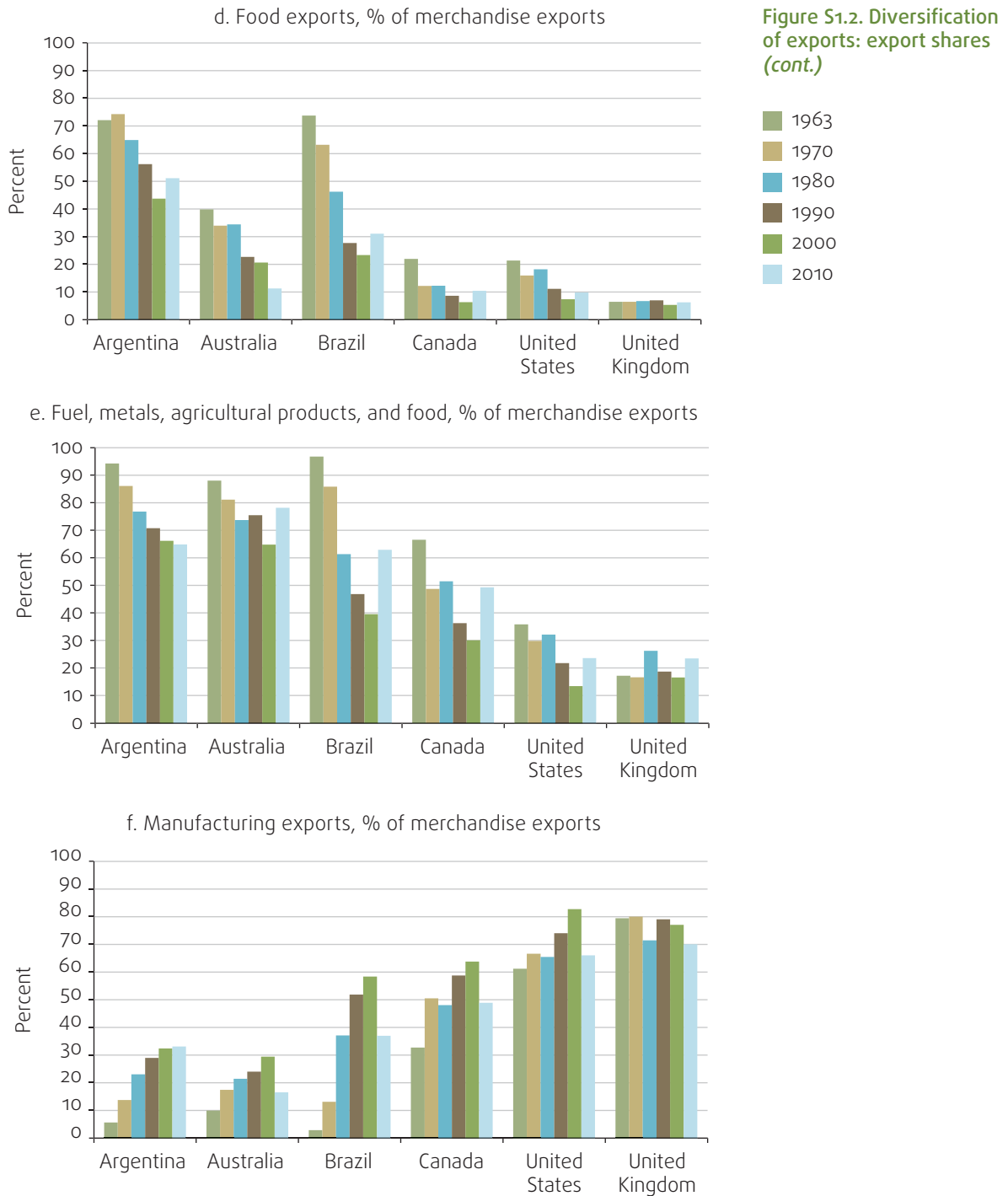
The United States and the United Kingdom—two examples of economic development accompanied by economic diversification—have displayed little dependence on natural resource exports since 1960 (figure S1.2): manufactured exports have represented at least 60 percent of total merchandise exports ever since. But as the following section shows, economies do not have to diversify widely to develop.

**Figure S1.2. Diversification of exports: export shares**

- 1963
- 1970
- 1980
- 1990
- 2000
- 2010



(continued)



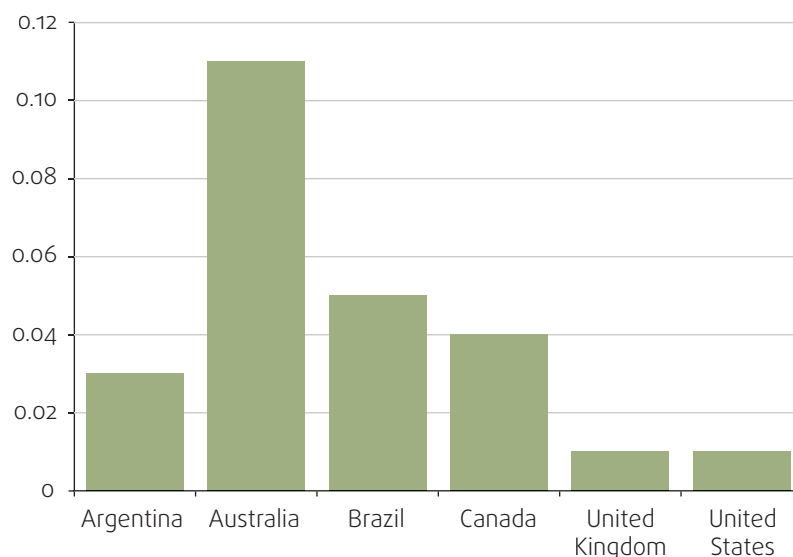
Source: World Bank World Development Indicators (WDI) 2013.

## Canada and Australia: little diversification but with development

The export pattern of the United States and the United Kingdom is in sharp contrast to the other country couplets considered here—Argentina and Brazil, and Australia and Canada—whose exports are highly concentrated in natural resources and in resource-intensive goods. The cases of Australia and Canada are particularly interesting both because they share the cultural and institutional heritage of the United States and the United Kingdom and because they became developed economies. But even in 2010, natural resources and resource-intensive goods represented 80 percent and 50 percent of merchandise exports from Australia and Canada, respectively. The relatively little export diversification of Australia and Canada are confirmed by other indicators such as the Herfindahl-Hirschman Index of exports of products defined at the 6-digit HS (Harmonized Commodity Description and Coding System) 1988/92 classification level (figure S1.3).

**Figure S1.3. Diversification of exports: Herfindahl-Hirschman Index**

(Exports of products, Harmonized System 1988/92 6-digit)



Source: World Bank staff estimates.

These two countries' low export diversification should not surprise, as their development has been linked to natural resources. The transformation of Canada into one of the world's richest economies began with the growth of wheat production in the west during the late 19th century and before War World II. The "staples thesis" of Canadian development proposes that economic diversification was possible because of economic linkages between wheat production and the rest of the economy. Wheat required a great deal of labor and capital, not only for farming but also for building railways and port facilities to get the harvest to market. (The growth of railways not only expanded domestic trade but also created greater demand for financial intermediation.) With new technologies, wheat farming moved from labor-intensive to

mechanized production. Technical progress in transportation reduced the unit costs of moving the staple to market and increased the feasible region of cultivation. Already by 1870 manufacturing accounted for 22.5 percent of GDP, virtually identical to its share 40 years later.

Across the Pacific, it would be hard to imagine the economic progress of Australia without its vast endowments of natural resources. Their value was high not only in absolute terms but also relative to the country's small population in the 19th century. These land and mineral resources could, for the most part, be exploited cheaply, meeting the high and sustained international demand for the country's natural resource-intensive products. Demographically, the favorable sex and age characteristics of the population (a high male-to-female ratio and low dependency rates) generated high labor force participation.

During the first part of the 20th century Australia's economic growth slowed, only to pick up again after 1945 with high immigration and foreign investment, as well as a new era of resource-based growth. Some of this acceleration involved the further diversification of rural industries and the rapid expansion of the minerals sector, which became much more diversified than in the 19th century. But even though natural resources exerted a major influence on the economy, their mere presence did not ensure economic development: their discovery and exploitation was also fostered by the institutions and laws in which exploration, investment, and production decisions were made.

That Canada and Australia achieved sustained economic growth shows that development does not necessarily require wide economic diversification. These countries also faced the challenges common to resource-rich economies, such as Dutch disease and volatility, as their economies depend heavily on external demand for a few products. Should resource-based growth therefore have been discouraged and diversification encouraged, through public policies? This is impossible to tell—as we cannot create a counterfactual (“what-if”) scenario. But we can analyze the evolution of an economy with similar initial conditions to those of these two countries that pursued a policy of diversification, while discouraging resource-intensive activities: Argentina. The policy failed.

## Argentina and Brazil: diversification without development?

Taylor (1994) highlights the role of the disruption to capital flows in World War I as the time when the economic performance of Argentina began to diverge from that of Canada and Australia (see figure S1.1). While the trigger of the divergence was exogenous, its impact was exacerbated by government policies afterward. Widespread intervention transformed Argentina's economy from outward orientation to an “infant industrializer.” The explicit policy goal was to diversify domestic production by substituting imports and achieving self-sufficiency in manufacturing. The case of Argentina during the 20th century is just one example of the harm of import-substitution policies that characterized Latin America mainly during the third quarter of the last century.

A big part of the idea of industrialization through import substitution was based on the idea that static market signals overestimated returns to primary exports because of potential deterioration of the terms of trade (Fishlow 1990). Hence, it was the policy obligation of the government to provide appropriate “shadow prices” through trade restrictions and credit and tax subsidies. Interventions in the capital market limited imports to consumption goods and raw materials. The rationing of the remaining foreign exchange, used for imported capital goods, led to a rise in the price of capital goods. Taylor’s (1994) findings suggest that the price distortions that affected Argentina between 1950 and 1973 explain at least 50 percent of its economic growth shortfall relative to countries in the Organisation for Economic Co-operation and Development during this period.

Brazil, too, used various types of trade protection and subsidies for production in some sectors between the 1950s and 1980s. It also encouraged heavy credit flows to what it considered priority sectors, and developed a strong presence in some productive activities.

The protectionist policies in Argentina not only harmed capital formation but also piled up inefficiencies—the population was quite small and much manufacturing industry developed during this period was unable to reach minimum efficient scale. The policies therefore ended up fostering high-cost manufacturing with very low export opportunities (Gerchunoff and Llach 1998).

In contrast, Brazil’s import-substitution policies allowed higher rates of industrialization and a large increase in its share of regional income from 1953 to 1973. Its bigger population and its ability to generate large enough demand for domestic industry to achieve minimum efficient scale may well have contributed to better results than in Argentina.

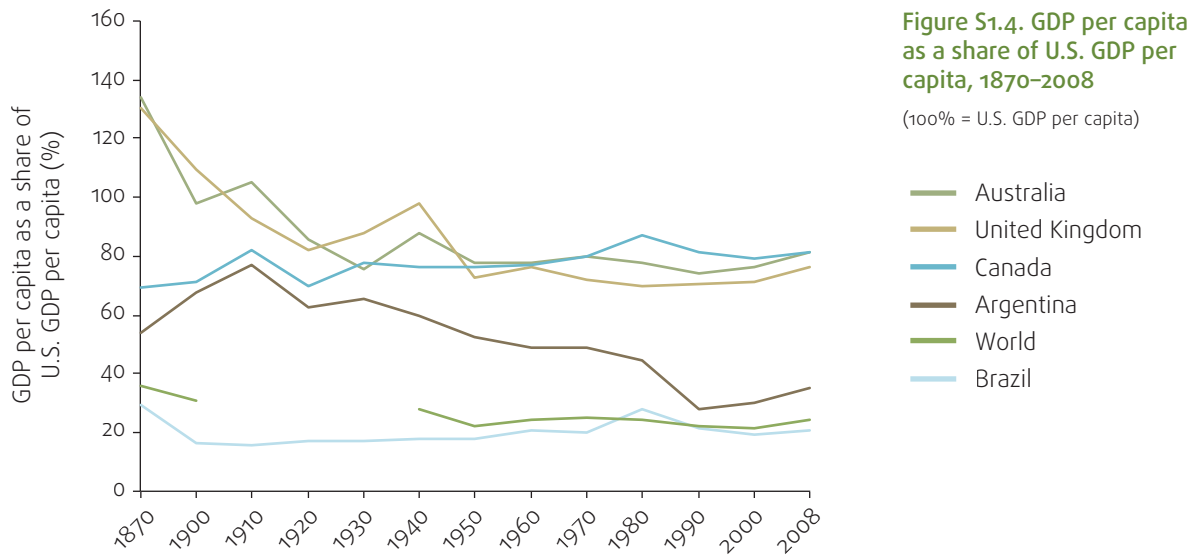
Industrialization in both Argentina and Brazil was achieved at the expense of growing disequilibrium in three critical dimensions (Fishlow 1990): policy-induced exchange overvaluation discriminated against exports, making the balance of payments and access to essential inputs more precarious; the increase in government expenditures was not matched by tax revenues, leading to larger deficits financed primarily by accelerating inflation; and the emphasis on industrialization frequently hindered agricultural development, leaving deep pockets of rural poverty.

Australia and Canada also pursued protectionist policies at this time, but they were far from the highly interventionist actions of Argentina and Brazil. The role of natural resources in these two country groupings’ development strategies was also different. Investment in natural resources and related infrastructure played a key role in the economic development of the two former British colonies, but Argentina and Brazil found real difficulty in allocating a role to agriculture and natural resources in their policies.

Argentina’s government often “squeezed” agriculture to finance new manufacturing, centralizing agricultural exports and paying lower than international prices to producers. This “tax” on agricultural exports was crucial for financing increasing public expenditures, including industrial subsidies. And Brazil, despite its vast reserves of natural resources, only saw the start of substantial growth of mineral output in the 1980s, following an intensive government investment program in prospecting, exploration, and basic geologic

research (Lederman and Maloney 2007). Brazil's government efforts on infrastructure were also insufficient, both in making its own investment and in attracting private funds (Calderón and Servén 2004).

Decades of poor policy have taken their toll: in the early 20th century, Argentina, Australia, and Canada all had per capita GDP at least 80 percent of that of the United States; today only Australia and Canada do—Argentina's has fallen to only 35 percent (figure S1.4).



Source: Bolt and Van Zanden 2013.

Not in the same league 100 years ago, Brazil has been unable to reduce the gap with the United States: its per capita GDP has stagnated at about 20 percent relative to the United States for more than a century. The disappointing performance of these two South American economies stands out even more starkly when compared with East Asia's. Many economies there had similar or lower GDP than them in the 1960s, but swiftly overtook them in the 1980s.

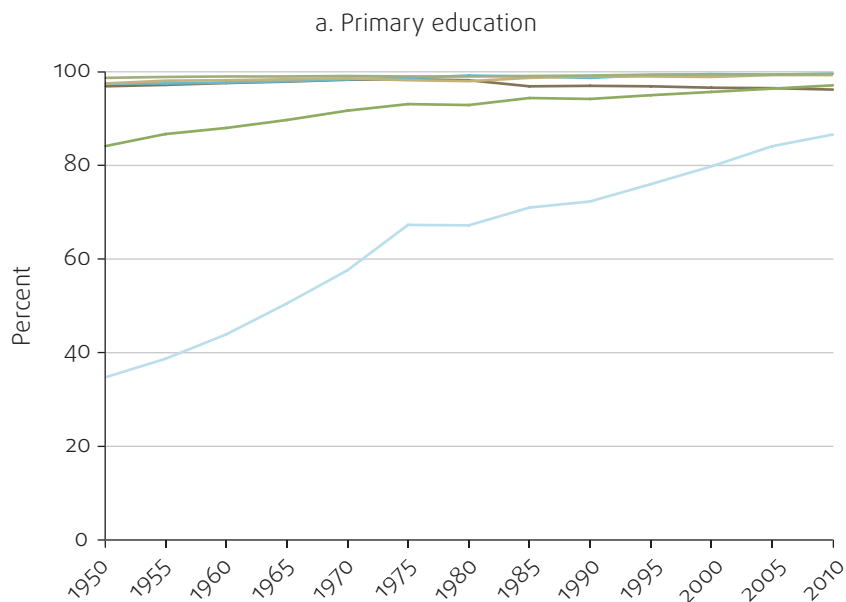
The project to replicate the British industrial revolution in Latin America by building factories would therefore seem to have been ill conceived, suggesting that a host of other factors and policies beyond diversification was responsible for both industrialization and development in the United Kingdom—and the United States.

## Diversification of production: neither necessary nor sufficient for development

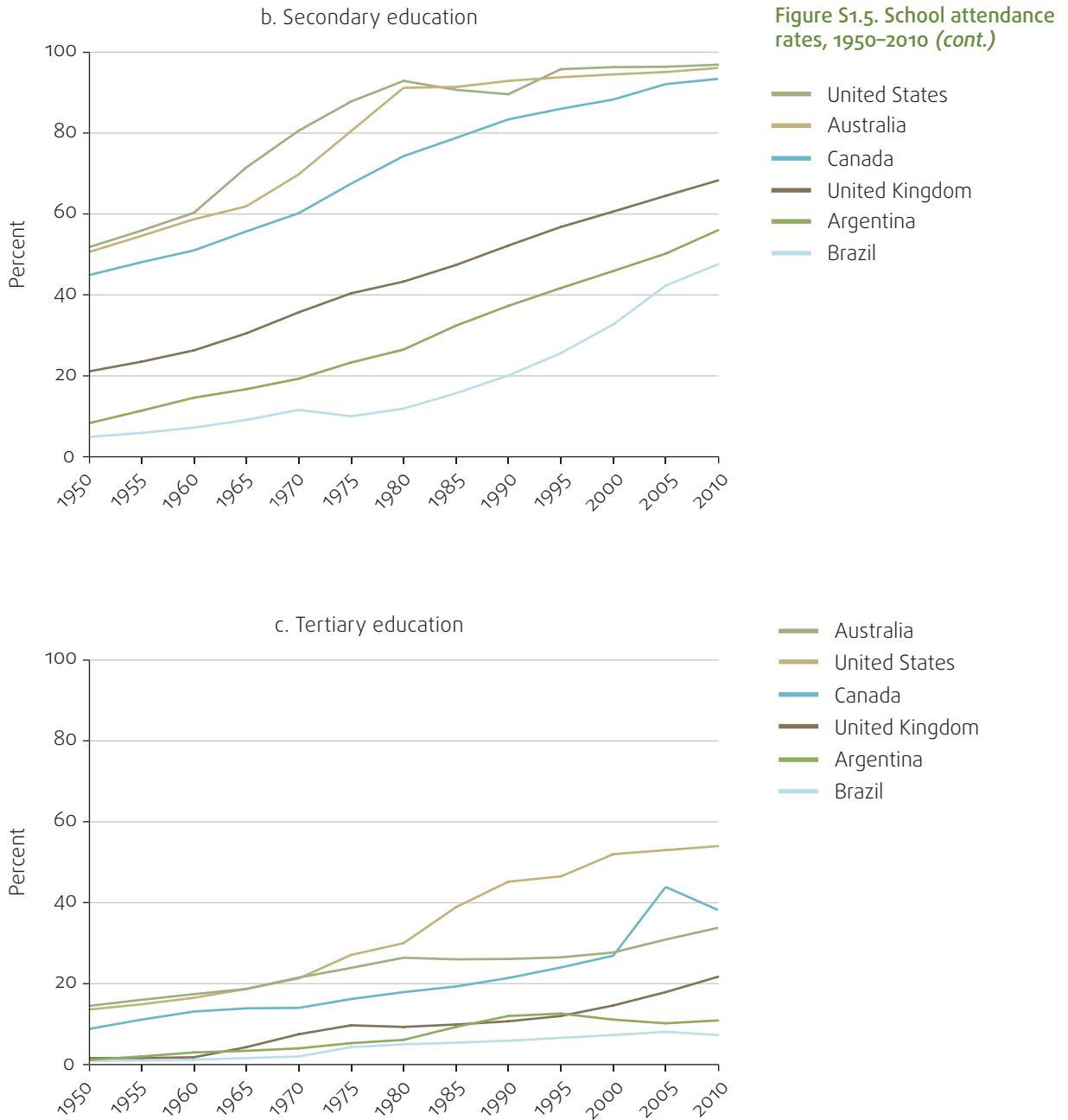
The experience of these countries suggests that there is no clear correlation between economic diversification and development. While the United States and the United Kingdom managed to develop and diversify their economies at the same time, the experience of Australia and Canada shows that development and diversification do not necessarily happen simultaneously.

The successful economic performance of the United Kingdom and its former colonies seems to go beyond diversification and may be related to sustained investments in human resources and infrastructure, good macroeconomic practices, and an economic environment friendly to business. For instance, the “high school movement,” which swept parts of the United States from 1920 to 1940, not only brought about the skills necessary for a rising manufacturing sector but also brought students from less privileged backgrounds to college. The G.I. Bill, which was intended to facilitate college enrollment among World War II veterans in the United States, had a huge impact on educational attainment. Similar forces were at work in other countries, as shown by rising school attendance rates from 1950 to 2010 (figure S1.5). But these forces were weaker in Argentina and Brazil, which failed to catch up with the other countries considered here in secondary and tertiary attendance.

**Figure S1.5. School attendance rates, 1950–2010**



(continued)



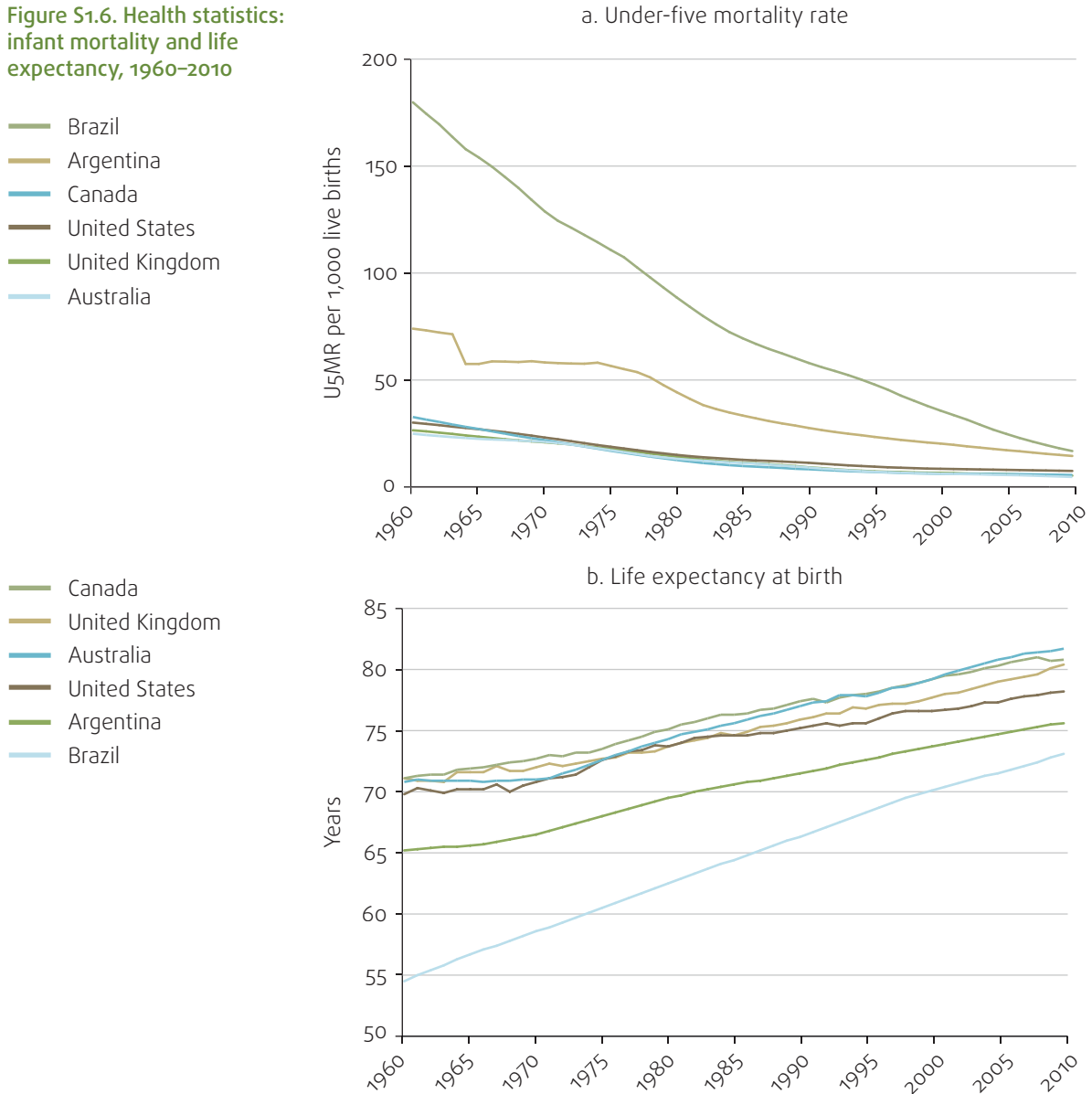
Source: Barro and Lee 2010.



Much of this six-decade period also showed improving public health (figure S1.6)—but again, despite substantial progress over 50 years, Argentina and Brazil have yet to catch up.

A more discouraging story emerges when comparing infrastructure stock since 1950 (figure S1.7). Country differences were already large before 1960, but they tended to widen over time. Calderón and Servén (2004) find that if Brazil had had

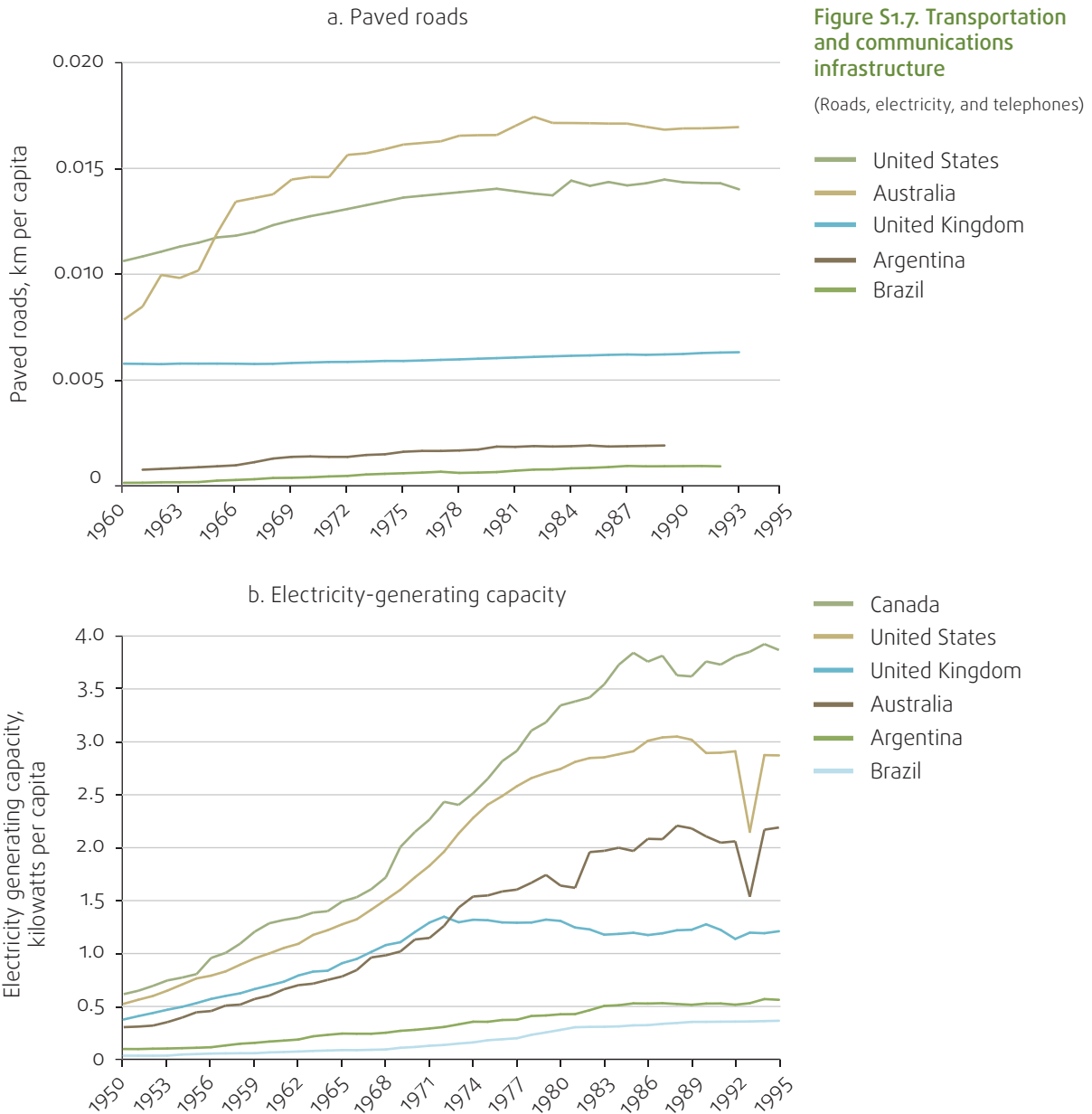
**Figure S1.6. Health statistics: infant mortality and life expectancy, 1960–2010**



Source: World Bank World Development Indicators (WDI) 2013.

the same level and quality of infrastructure as the Republic of Korea, its growth rate might have been 4.4 percentage points a year higher between 1960 and 2000.

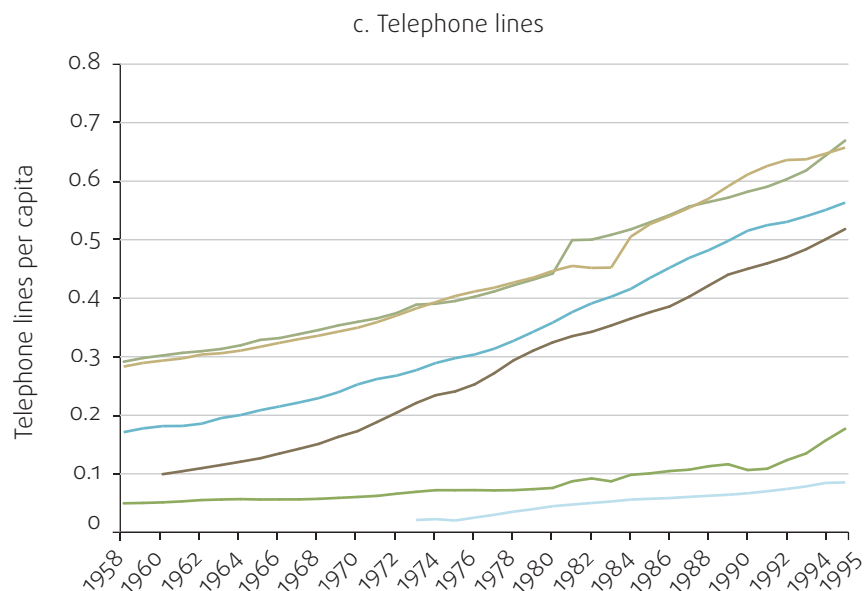
These differences in the rates of accumulation of endowments might be just an expression of deeper institutional differences across countries that date back to colonial times. Engerman and Sokoloff (1997) argue that weather conditions in Canada and the United States favored a regime of mixed farming centered on grains and livestock that exhibited quite limited economies of scale in production



(continued)

Figure S1.7. (cont.)

— United States  
 — Canada  
 — Australia  
 — United Kingdom  
 — Argentina  
 — Brazil



Source: Canning 1998.

and used few slaves. These circumstances fostered relatively homogenous populations with relatively equal distributions of human capital and wealth. Greater equality led, over time, to more democratic political institutions, to more investment in public goods and infrastructure, and to institutions that offered broad access to economic opportunities. In contrast, the extensive native populations of some Latin American countries and the Spanish practices of awarding claims on land, native labor, and rich mineral resources to members of the elite were powerful factors leading to both economic and political inequality.

Canada and the United States encouraged immigration more than their Latin American counterparts did, had more active policies to get land to smallholders, had patent systems that provided opportunities to inventors of all social classes, adopted secret ballots and extended the franchise even to the poor and illiterate much earlier, and created a widespread network of primary schools at least 75 years earlier. The greater prevalence of small landholdings facilitated the growth of loans among farmers and planters to a much higher extent, which allowed for faster growth of the financial sector.

In summary, economic diversification appears to be neither necessary nor sufficient for development. While the history of the United States and the United Kingdom may have led to the belief that economic diversification is required for development, the experience of Canada and Australia indicates that it is not necessary to achieve sustained economic growth. Increasing diversification of exports or production does not lead to development either, as Argentina and Brazil illustrate. The long-term experience of these countries points to a diversified portfolio of assets—responsible stewardship of natural resources, sustained investments in human capital and infrastructure, as well as institutions that provide regulatory and macroeconomic stability—as what is necessary both for economic efficiency and successful development.

Spotlight contributed  
by Hernan Winkler.

## Note

- 1 Dutch disease is named for the adverse effects on manufacturing in the Netherlands triggered by the discovery of natural gas in the 1960s. Exports of natural gas caused the real exchange rate to appreciate, which in turn made other export sectors less competitive.

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# Chapter Two

## Foreign Trade

In 2004, the governor of the Russian Federation's eastern region of Primorskiy marveled at the changes taking place thanks to economic integration with China. Far removed from European Russia, exports to China of oil and gas, timber, and electricity were growing, joint free trade zones and transport links were being established, and growing numbers of traders were crossing the border. Yet on taking office, the governor had received a stern warning from his predecessor: rid the area of the Chinese presence. The governor, smartly, did the opposite, seeing China as an economic opportunity rather than a threat (Brooke 2004).

Since that time, Russia and the rest of the Eurasian region have continued expanding links with the rest of the world on the back of natural resources. Russia has around 5 percent of the world's proven oil reserves and 25 percent of its proven gas reserves. And it has competed with Saudi Arabia for first place in annual oil production in recent years. Kazakhstan has 2 percent of the world's proven oil reserves, and Turkmenistan has 4 percent of the world's proven gas reserves. With these combined natural resources, a large part of what Eurasia sells to the world is products derived from this endowment. Today, rail containers and pipelines crisscross the landmass of Eurasia delivering natural resources to the rest of the world.<sup>1</sup>

Fundamentally, what a country or region gains from exporting the things it has is the ability to import the things it wants. By this measure, Eurasia's integration with the rest of the world based on its natural resources has been successful. It imported \$700 billion-worth of goods and services in 2011 from inside and outside Eurasia, including all manner of industrial equipment, vehicles, home appliances, personal electronics, luxury brands, and basic consumer items. In doing so, its citizens' living standards have risen, with \$200 billion savings.<sup>2</sup>

In addition to financing imports, the volume, structure, and direction of a country's exports can affect many economic variables, including productivity, gross domestic product (GDP) volatility, and employment. Much discussion in international policy circles has recently centered on whether there is an optimal export product mix for a country. In some cases, policy makers have been led to take extraordinary measures to directly change the nature of export relationships.

What this chapter and the next demonstrate is that the most effective policy levers for diversification reside far from the product mix and instead in the realm of underlying assets. The level of diversification of export markets and products, so often the foremost concern of policy makers, forms the backdrop of this discussion. This chapter frames trade relationships as an outgrowth of underlying assets or factor endowments, which include natural, physical, institutional, and human capital, and emphasizes connections between the product and market mix on one side and underlying assets on the other.

The central question to be addressed: Is Eurasia able to export only natural resources? The issue is important because natural resources have dominated Eurasia's export basket for over two decades. Eurasia's relative resource wealth allows it to be competitive in products that are based on this endowment. But the current asset structure is not destiny. It can be changed, and that will allow Eurasia to find new trade partners and to diversify the range of products it can offer. In assessing the trade patterns and potential of Eurasian economies, this chapter tries to answer three main questions:

**Why is Eurasia's trade directed more toward the west than the east?** Economic mass, geographic proximity, market-access barriers, and bilateral engagement have been most important so far in prompting an opening toward the west. European countries recognized the value of trade with Eurasian economies earlier than East Asia did, and attempted to decrease the economic distance between Eurasia and Europe. Russia, for example, now supplies a third of Europe's oil and gas needs. But a greater east-west balance is likely ahead, reflected in recent growth in trade with East Asia.

**How does the composition of trade within Eurasia differ from that with external (non-Eurasian) partners?** Underlying asset structure is the short answer. The composition of external exports is influenced heavily by the natural capital endowment. Physical capital and institutions are the factors that seem to prevent greater nonresource exports from flowing to external partners. The result of these resource-based relationships with external partners has been the concentration of Eurasia's export basket, at a time when endowments are asserting themselves in intra-Eurasian trade flows. Flows of natural, physical, and institutional capital are present in trade from factor-rich to factor-poor Eurasian countries. Common institutional features such as the standards and certification regime contribute to the isolation of some nonresource goods.

**Should Eurasia aggressively pursue deeper regional integration?** That is, are there large and immediate gains to greater trade within Eurasia? This chapter concludes that the time for deep Eurasian integration might not be right now, and these economies will gain much more from trading more with the rest of the world for the foreseeable future. The resource-rich economies account for more than 85 percent of the region's GDP, and they have broadly similar endowments. Trade between countries with similar endowments can be enormous—witness Europe—but only when the economies are big and trade costs small. In today's Eurasia, neither condition applies. Based on its factor endowments, Eurasia is better suited to expand trade with the growing economic powers in its immediate neighborhood—especially China, India, the Republic of Korea, and Turkey. If Eurasia follows the course that the European Union (EU) and East Asia have taken, regional integration between Eurasian

countries with similar asset endowments will come after global integration has reached a more advanced stage.

As Eurasia's economic assets become more diversified, its trade composition and trading partners will change. In the long term, addressing the deficits of physical capital and institutions will allow for trade based on both factor endowments and intra-industry trade from economies of scale.

## A declining European bias

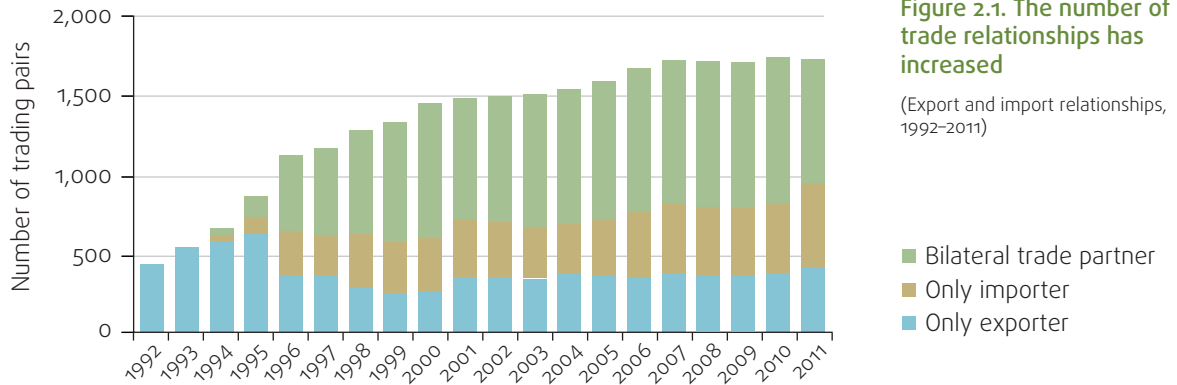
For many years, Europe has been Eurasia's main trading partner, and Europe has been an even more important source of foreign demand than the other Eurasian states. What exactly has been happening over time? What are some of the reasons for the large European bias? Will it continue?

This section examines the trading partners of Eurasia, with a specific focus on the preponderance of external trade directed toward the west rather than the east. First, it examines the trends since the post-Soviet transition. Second, it looks at the underlying reasons for the bias toward Europe. Shorter economic distances between many Eurasian countries and European countries certainly play a role. Friendlier market access and concerted efforts at bilateral engagement, symbolized in trade preferences, may have an impact but likely far less so. Ultimately, complementarity of trade structures based on underlying assets creates the impetus for trade, and this will be described in detail in the following section.

## New relationships, mainly with Europe

Why does it matter whom a country trades with? For several reasons. From the demand side, foreign consumer preferences constitute additional demand for a country's products and may prompt quality upgrading or improvements in the overall sophistication of the export basket, leading to productivity and income growth. Productivity growth is also facilitated by access to cheaper or greater varieties of inputs from trading partners. Economic fortunes also covary with large trading partners, and a boom or recession in one will naturally affect the others. In addition, trade relationships are often part of larger economic relationships that include access to partners' capital and skills. Foreign investment and trade usually provide access to knowledge, ideas, and technology, which can lead to greater innovation.

Eurasia registered an impressive increase in the number of trade relationships from the early to mid-1990s. Trade during Soviet times was directed mostly to members of the Council for Mutual Economic Assistance (COMECON).<sup>3</sup> In 1989, 70 percent of Soviet trade took place only among the republics of the Soviet Union. There was a strong increase in the number of trading partners immediately after the Soviet breakup, from fewer than 500 bilateral trading pairs in 1992 to nearly 1,400 by 1999 (figure 2.1). Since the beginning of the 2000s, the number of trading pairs has been fairly stable. Today, every Eurasian country has at least 70 export partners. The largest economies such as the Russian Federation and Ukraine each had over 140 partners by the mid-2000s,



Source: Görg and Meyer 2013 based on UNSD, n.d.

Note: The figure shows total bilateral pairings for Eurasian countries.

an increase from 108 and 82 in 1995, respectively. Even a small country like Moldova trades with a distant country like New Zealand, or Armenia with Bolivia.

The interest in external trading partners was a natural outgrowth of the breakdown of Soviet trading networks and liberalization of trade policies. The decline in economic activity was described as a process of “disorganization” that occurred as the central planner disappeared and the economy could no longer mitigate the negative contractual effects of having usually only one buyer and one supplier for a given firm’s production (Blanchard and Kremer 1997). As many of these buyer-seller relationships were cross-border transactions among the former constituent republics of the Soviet Union, trade declined. Market mechanisms to deal with this type of specificity of contractual relationships could not develop overnight. Thus producers in the former Soviet republics began to look outside Eurasia for buying inputs and making sales. By the late 1990s, nearly three-quarters of merchandise exports by value was leaving the orbit of the former Soviet Union (figure 2.2).

The biggest new trading relations formed after the fall of the Soviet Union were with European countries. Europe coveted Eurasia’s natural resources and offered manufacturing goods in return. Intra-Eurasian trade supplanted some exports and imports to and from Europe during the mid- to late 1990s as Eurasian trade networks were reinstated after the transition.

But today the EU accounts for a higher share of merchandise trade than do other regions. The EU accounts for half of exports and more than 30 percent of imports (figure 2.3). Exports to the EU dwarf the volume of intra-Eurasian trade (\$338–\$119 billion). The median country exports nearly 40 percent by value to European countries, ranging from 9 percent of Uzbekistan’s exports to 64 percent of Azerbaijan’s.

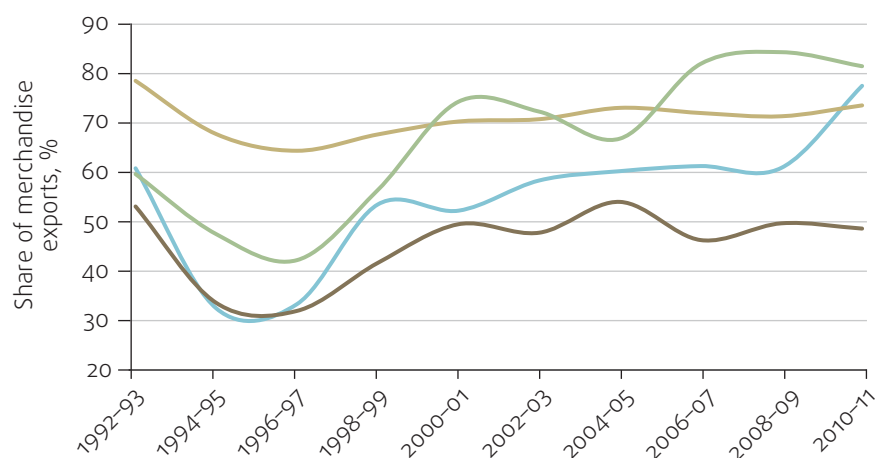
In isolated instances, Eurasian countries became integrated with European production networks. Expanding supply chains driven by the unbundling of manufacturing production processes allowed Eastern Europe to become fully



**Figure 2.2. An increasing share of exports has been leaving traditional markets**

(Share of merchandise exports, 1992–2011, percent)

— Russian Federation  
— South Caucasus  
— Central Asia  
— Ukraine, Belarus, Moldova



Source: World Bank staff calculations based on IMF, n.d.

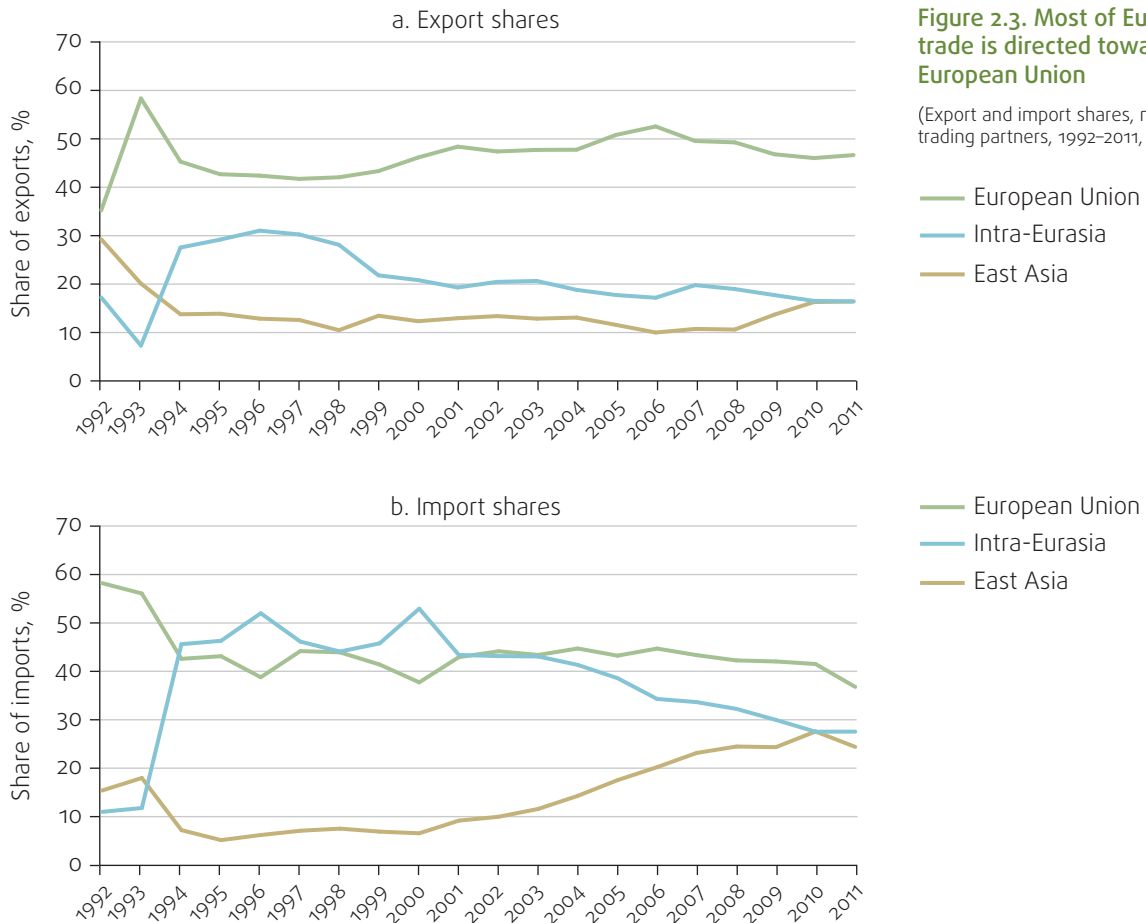
Note: Share of merchandise exports from the respective source country groups, two-year averages. Traditional markets include the European Union new member states, former Yugoslavia, and Eurasia. East Germany, Mongolia, Cuba, and Vietnam, which were also members of the Council for Mutual Economic Assistance (COMECON), are not included.

integrated with Western Europe, first in buyer-driven networks in the furniture and clothing industries and then in producer-driven participation in automotive and electronics networks led by foreign direct investment (World Bank 2012b). Armenia's diamond trading accounted for about half the country's exports in the early 2000s. (Its craftspeople cut and polished raw diamonds sourced from Russia and sent them to Belgium and Israel for sorting and wholesaling.) Moldova has become involved in clothing and footwear production networks, which are also typically buyer driven.

After years of accounting for a low share of Eurasia's trade, East Asia's importance as an export destination for Eurasian countries has accelerated in the last few. While East Asia has steadily supplied more products to Eurasian markets since the late 1990s (now roughly a 20 percent share of Eurasian imports compared with about 5 percent in 1998), only since 2008 has East Asia begun to emerge as a sizable destination for Eurasian exports (see figure 2.3). Trade with East Asia has risen for all Eurasian countries since the mid-1990s, especially on the import side. The median Eurasian country sends about 10 percent of its merchandise exports to East Asia—ranging from 44 percent for Turkmenistan to 2 percent for Moldova. Imports from East Asia range from a low of 7 percent for Belarus to 63 percent for the Kyrgyz Republic (table 2.1). China, Japan, and Korea are the biggest East Asian trade partners for Eurasia. Between the two regions, China accounts for two-thirds of exports and slightly more than half of imports.<sup>4</sup>

But to put this burgeoning relationship in perspective, only 2 percent of East Asia's imports come from Eurasia, making it a very minor trade partner for East Asia as a whole.

Eurasia's engagement with external partners—Europe and East Asia—has been on the back of oil, gas, and other natural resource commodities. This has not



**Figure 2.3. Most of Eurasia's trade is directed toward the European Union**

(Export and import shares, main trading partners, 1992–2011, percent)

— European Union  
— Intra-Eurasia  
— East Asia

— European Union  
— Intra-Eurasia  
— East Asia

Source: World Bank staff calculations based on IMF, n.d.

changed much from the opening 20 years ago. Indeed, energy export revenues began flowing from the late 19th century, and as far back as the 1950s the Soviet Union was the second-largest oil producer in the world and main supplier to both Eastern and Western Europe. Oil and gas accounted for 20 percent of foreign export earnings just before the Soviet Union broke up.<sup>5</sup> What has changed is the size and relative importance of resource-based exports.

In return, Eurasia imports from Europe capital goods, such as industrial equipment, finished consumer goods, and large consumer durables such as vehicles and chemicals (figure 2.4). Imports from East Asia are similar, with a greater share of textiles and clothing, but fewer chemicals (figure 2.5).

Given the importance of natural resources in exports to external partners, it is no surprise that Eurasia's resource-rich countries—Azerbaijan, Kazakhstan, Russia, Turkmenistan, Ukraine, and Uzbekistan—have the most substantial

**Table 2.1. A growing trade deficit with East Asia**

(Share of merchandise trade directed to East Asia by country, 1995/96 and 2010/11)

Percent

	Exports		Imports	
	1995/96	2010/11	1995/96	2010/11
Armenia	0	6	0	16
Azerbaijan	1	11	1	14
Belarus	1	7	2	7
Georgia	2	5	1	12
Kazakhstan	10	25	3	27
Kyrgyz Republic	18	8	5	63
Moldova	1	2	1	7
Russian Federation	16	17	6	27
Tajikistan	5	21	1	29
Turkmenistan	1	44	3	16
Ukraine	8	10	2	12
Uzbekistan	13	20	14	34

Source: World Bank staff calculations based on IMF, n.d.

Note: This East Asian aggregate covers 11 East Asian economies.

export relationships with external partners. Resource-rich countries account for more than 90 percent of Eurasian trade flows in any direction. Resource-poor countries remain almost twice as dependent on other Eurasian countries (as markets for their exports) as do resource-rich countries (figure 2.6).

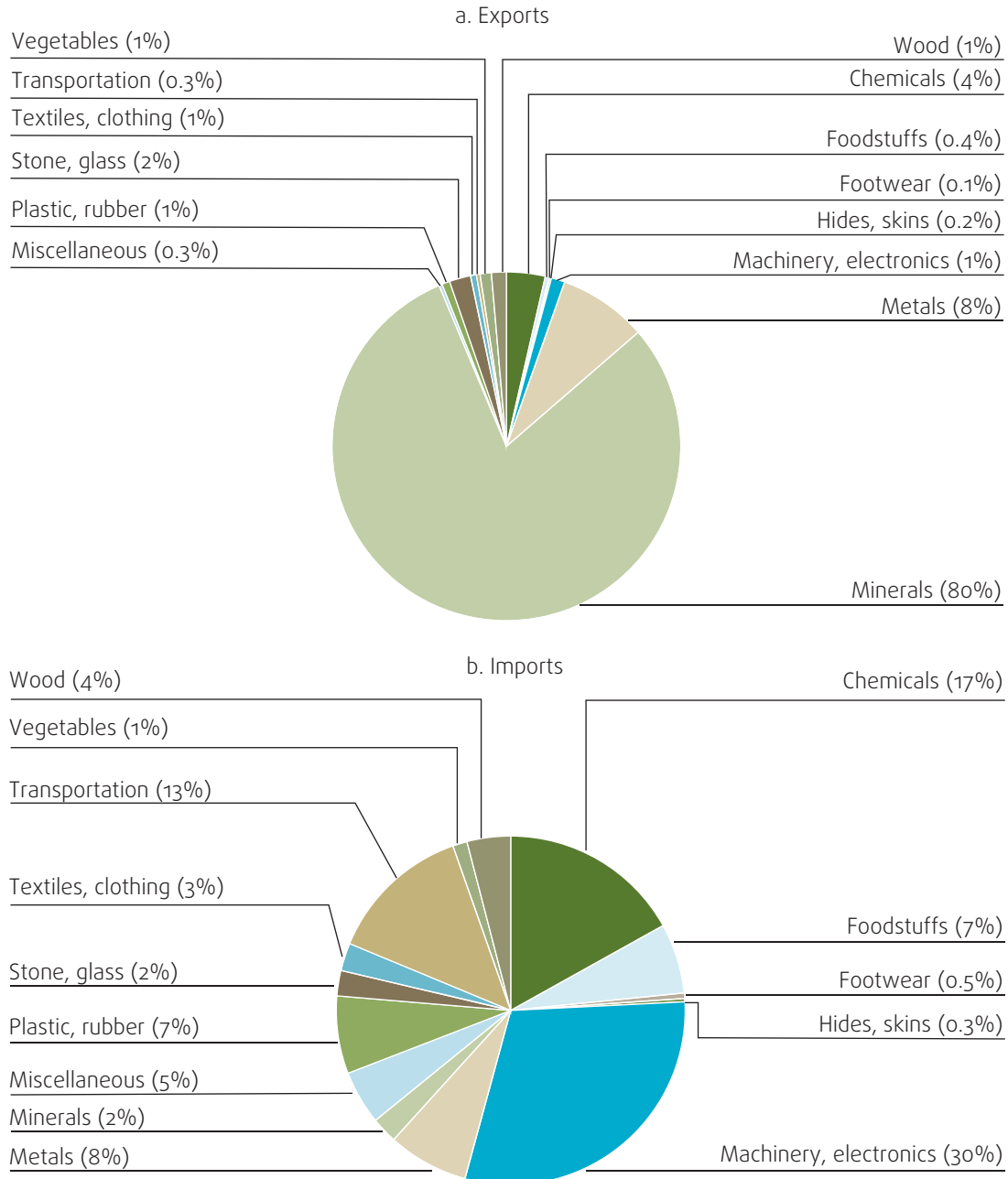
### Proximity and economic mass explain the European bias of Eurasian trade

The high level of trade with Europe—and the low level with East Asia—are unsurprising given where Eurasia is relative to the economic activity that surrounds it. Two variables—economic distance and economic mass of trading partners—are important in explaining the pattern of Eurasia's trading relationships. But these patterns are changing.

Proximity to economic activity is fundamental. Geographic distance to markets is a major contributor to trade costs, and the sheer size of Eurasia is a key feature of the region that increases distances to markets. Russia is the largest country in the world (the distance from Vladivostok to St. Petersburg is almost 10,000 kilometers), but three-fourths of its population lives in European Russia, west of the Ural Mountains. Kazakhstan is the ninth-largest country in the world and the largest landlocked country. The influence of distance is also notable in the greater volume of trade with East Asia for Eurasian countries closer to East Asia.

**Figure 2.4. Minerals and metals are exported to the European Union, and manufactured goods are sourced there**

(Composition of exports and imports to the European Union-27, 2010-11, percent)

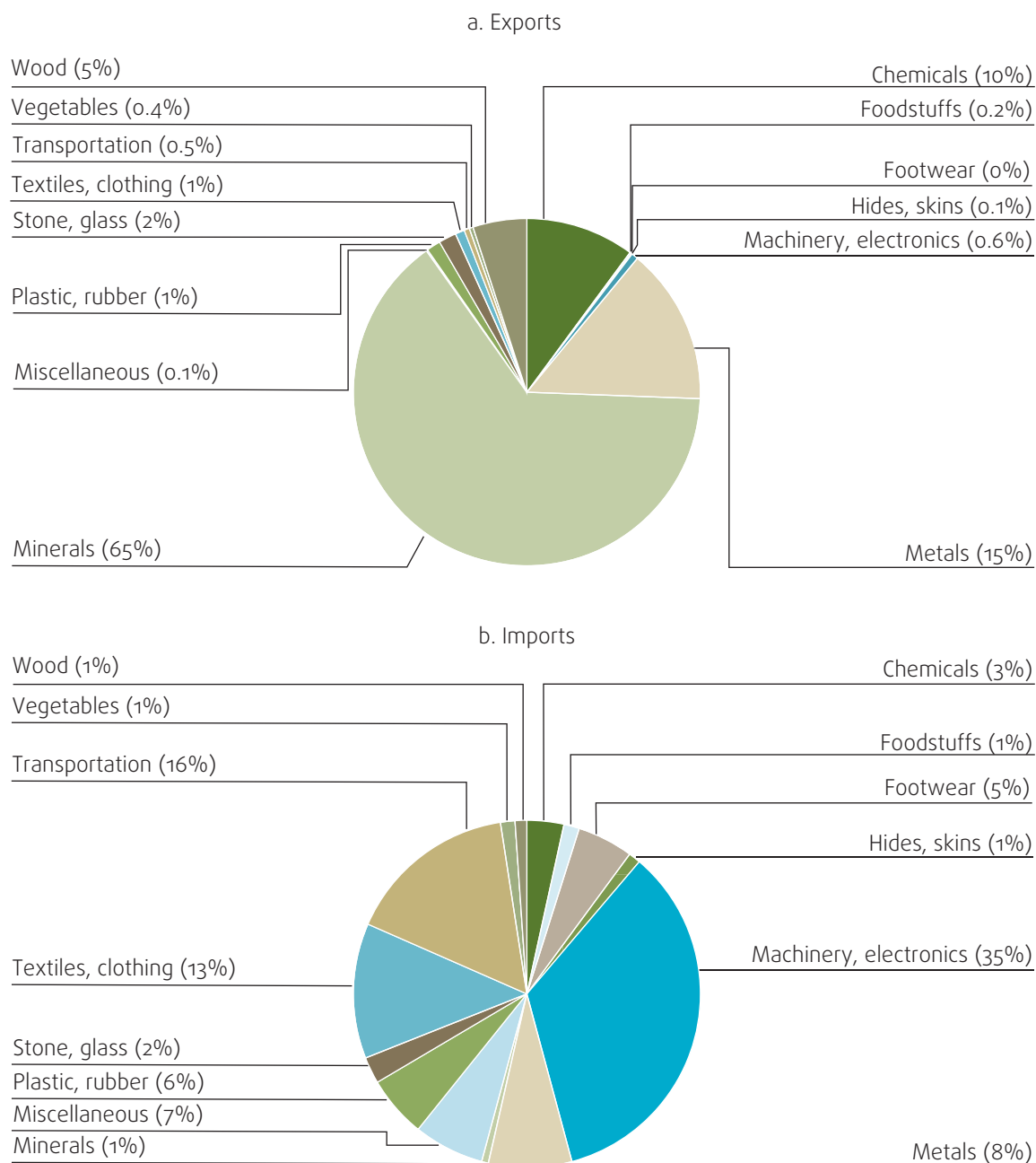


Source: World Bank staff calculations based on data from UNSD, n.d.

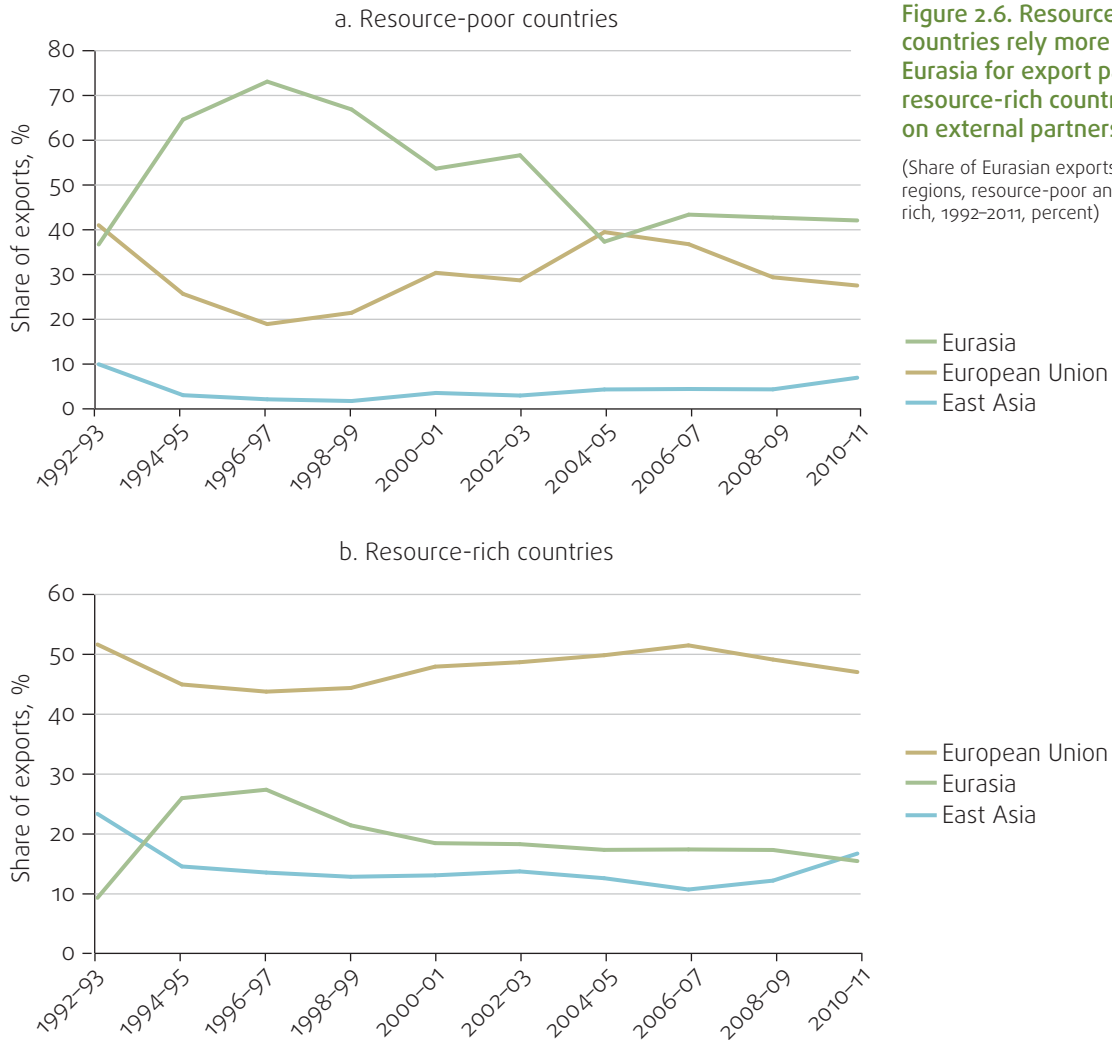
Note: EU-27 comprises Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

**Figure 2.5. Trade with East Asia shows similar patterns to trade with Europe**

(Composition of exports and imports to East Asia, 2010–11, percent)



Source: World Bank staff calculations based on data from UNSD, n.d.



**Figure 2.6. Resource-poor countries rely more on Eurasia for export partners, resource-rich countries more on external partners**

(Share of Eurasian exports to main regions, resource-poor and resource-rich, 1992–2011, percent)

Source: World Bank staff calculations based on IMF, n.d.

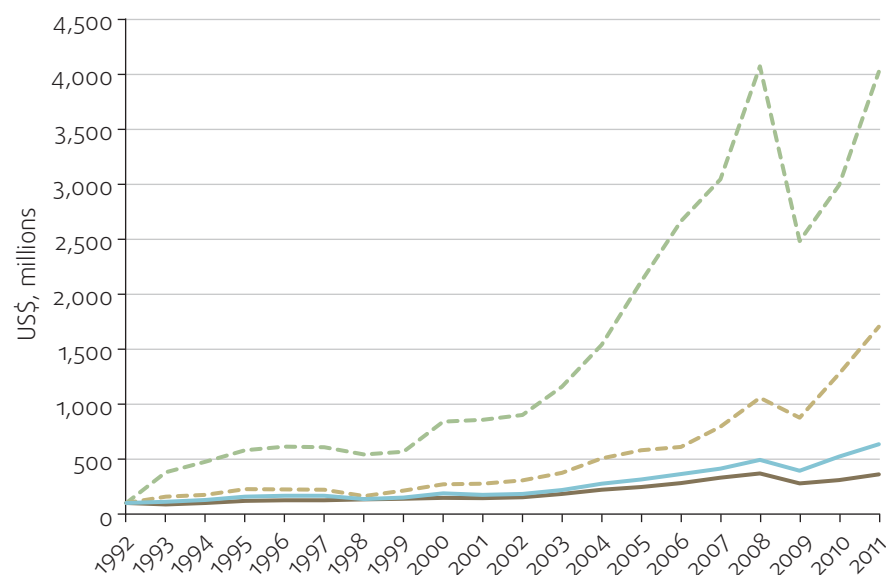
Note: Resource-rich countries are Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor countries are Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan.

One would naturally expect greater trade with larger economies, and growth in trade with growing economies. That half of all Eurasian exports go to Europe may not surprise because, until very recently, Europe was larger than East Asia by output. Yet economic growth patterns point to a rebalancing toward East Asia, as shown by the higher growth of East Asian than European imports since 2009 (figure 2.7). The adverse effect of the global crisis on European imports from Eurasia coupled with only a minor effect on East Asian imports hastened a rebalancing of Eurasia’s trade toward East Asia: Eurasia’s exports to Europe fell 39 percent from 2008 to 2009, while its exports to East Asia fell only 17 percent.

**Figure 2.7. Recent growth trends favor Eurasia–East Asia trade**

(Value of imports from Eurasia and from the world, 1992–2011, millions of U.S. dollars, 1992 = 100)

- - - European Union imports from Eurasia  
 - - - East Asia imports from Eurasia  
 — East Asia imports from world  
 — European Union imports from world



Source: World Bank staff calculations based on IMF, n.d.

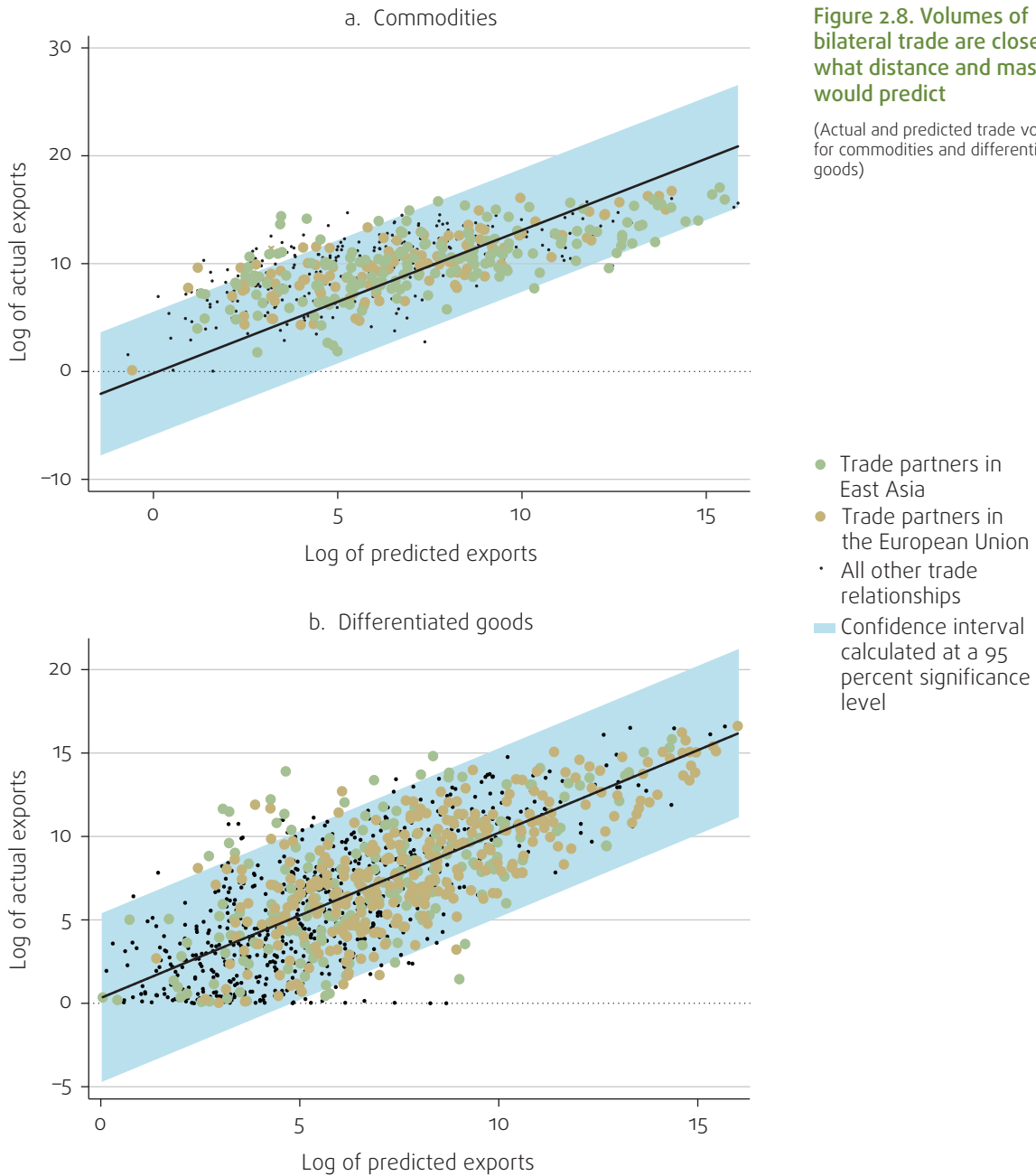
Note: In 1992 Europe's imports from Eurasia were \$8.4 billion, and East Asia's were \$7 billion.

Eurasia's exports to Europe rebounded, but not as fast as East Asia's: since 2009 exports to Europe have been, on average, three times the value of exports to East Asia, compared with five times before the crisis. There is still a sizable trade bias toward Europe, but it is decreasing.

A benchmark model shows that geographic distance, economic mass, and other variables such as common language and heritage explain most of Eurasia's export relationships (figure 2.8). Actual trade volumes appear within the confidence band around the trend line predicted by the model. Box 2.1 outlines the methodology and results of the gravity model used to analyze the impact of the characteristics.

The main findings of the gravity model for Eurasia are:

- For Eurasian exports as a whole, trade costs approximated by economic distance and economic mass matter significantly in determining trade relationships (controlling for other bilateral characteristics).
- Trade costs for intra-Eurasian trade are much smaller than for external trade. The Soviet heritage seems to be of special importance for intra-Eurasian trade in differentiated goods.
- Comparisons between successive subperiods reveal that the effect of trade costs measured by distance declined over time as export volumes increased. Efforts to tackle trade costs, such as by investing in transport infrastructure to surmount distance obstacles, seem to have encouraged trade.
- Commodities are less sensitive to distance than are differentiated goods.



**Figure 2.8. Volumes of bilateral trade are close to what distance and mass would predict**

(Actual and predicted trade volume for commodities and differentiated goods)

Sources: Görg and Meyer 2013 based on UNSD, n.d.; Mayer and Zignago 2011; and World Trade Organization.

Note: The scatterplots show the relationship between observed and predicted trade in commodities and differentiated goods exports for 2010. A differentiated good is a consumption good the consumer perceives as different (in quality, price, style, or service) than other goods. The predicted export volumes are obtained from the fully specified gravity benchmark model described in box 2.1.



### Box 2.1. Gravity model of Eurasia's trade

The gravity model helps assess the impact of economic distance and mass, as well as other characteristics (table B2.1.1). Tinbergen (1962) was the first to show that the size of bilateral trade flows between any two countries can be approximated by a law called the "gravity

equation" analogous to the Newtonian theory of gravitation. Later, Eaton and Kortum (2002), Anderson and van Wincoop (2004), and Bergstrand and Egger (2011) carried out extensive work to incorporate multilateral resistance between countries and to account for asymmetric trade costs.

A two-stage model suggested by Helpman, Melitz, and Rubinstein (2008) is estimated for the years 1992–2011. The first stage accounts for the selection bias among heterogeneous firms into exporting. The second stage is estimated in nonlinear terms by:

$$\begin{aligned} \ln(X_{ijt}) = & \beta_0 + \beta_1 \ln(D_{ij}) + \beta_2 \ln(GDP_{it}) + \beta_3 \ln(GDP_{jt}) + \beta_4 cont_{ij} + \beta_5 lang_{ij} + \beta_6 col_{ij} \\ & + \beta_7 comcol_{ij} + \beta_8 d_{EU} + \beta_9 d_{Asia} + \sum_{k \in \{EU, Asia\}} \beta_{10,k} [d_k \times \ln(GDP_{kt})] \\ & + \sum_{k \in \{EU, Asia\}} \beta_{11,k} [d_k \times \ln(dist_{kt})] + \beta_{12} \bar{\lambda}_{ijt} + \ln(\exp(\beta_{13} \bar{z}_{ijt}^*) - 1) + \gamma_i + \gamma_j + \gamma_t + \mu_{ijt}, \end{aligned}$$

where  $X_{ijt}$  is the total export value of a Eurasian country  $i$  to country  $j$  in year  $t$ . All countries in the world economy are considered importers.  $D_{ij}$  is the distance

between the economic centers of the dyad.  $GDP_{it}$  and  $GDP_{jt}$  are the exporter's and the importer's gross domestic product (GDP) in year  $t$ , respectively.  $cont_{ij}$ ,  $lang_{ij}$ ,  $col_{ij}$ , and

$comcol_{ij}$  are dummy variables that are equal to 1 if the countries share a border, have a common language, have ever had colonial ties, and had a common colonizer after 1945.

Table B2.1.1. Results of estimation of gravity model on Eurasian exports

	(1)	(2)	(3)
	All	Differentiated	Commodities
Distance, km, log	-0.761*** (0.0298)	-0.605*** (0.0286)	-0.268*** (0.0442)
GDP, exporter, log	0.225*** (0.0607)	0.0516 (0.0583)	0.173** (0.0848)
GDP, importer, log	0.565*** (0.00904)	0.504*** (0.00879)	0.277*** (0.0128)
Common colonizer dummy	0.631*** (0.0713)	0.831*** (0.0798)	0.404*** (0.111)
Colonial ties dummy	0.521*** (0.119)	0.779*** (0.120)	1.462*** (0.213)
Common language dummy	0.741*** (0.220)	0.961*** (0.216)	0.382 (0.250)
Contiguity dummy	1.335*** (0.0684)	1.419*** (0.0756)	1.012*** (0.115)
Constant	67.82 (0)	204.5 (0)	-12 (0)
Observations	31,036	31,017	22,509
R-squared	0.774	0.744	0.696

Source (table): Görg and Meyer 2013.

Note: Estimated for Eurasian exports only. Partial results shown. Robust standard errors (clustered by country pairs). Standard errors are given in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ . The z-score and the inverse mills ratio (lambda) are derived from cross-sectional panel estimation for each year. In each estimation, time, exporter, and importer fixed effects are included.

To determine the different role of distance and economic mass in influencing export patterns to the European Union and East Asia, regional dummy variables  $d_k$  with  $k = \{\text{East Asia, EU-27}\}$  and corresponding interaction terms of  $d_k$  with region-specific GDP and distance are included. The interaction terms are intended to disentangle the different effects of trade with East Asia and Europe. Finally,  $\gamma_i$ ,  $\gamma_j$ , and  $\gamma_t$  are a set of exporter, importer, and time-fixed effects.

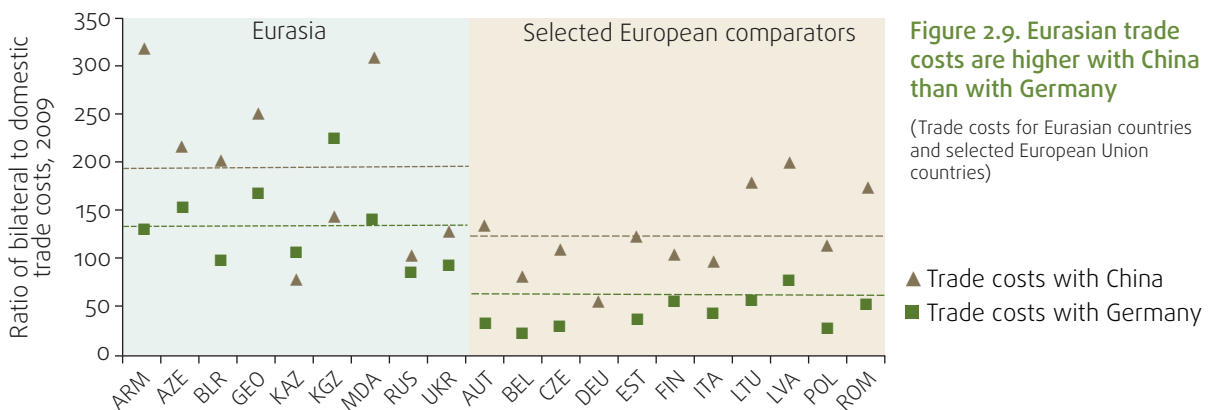
Source (box): Görg and Meyer 2013.

- Endowments (outlined later in the chapter) are all significant: the rule of law tends to increase trade volumes; human capital does the same but also reduces the size of the impact of the common language variable; physical capital increases trade in differentiated goods; and natural capital increases trade in commodities.
- Analysis of predicted versus actual trade reveals more “missed opportunities” with East Asia than with Europe.

Unlike physical distance, economic distance can be reduced by lowering trade costs. Trade costs constitute a wedge between the cost of production at the origin and the price paid by consumers in destination markets. Trade costs can result from “natural” sources (geographic distance, transport costs, and common features between trading partners such as language, common history, sharing a common border, and so on) or endogenous, policy-related characteristics (such as logistical performance, international connectivity, tariffs, and nontariff barriers).<sup>6</sup>

Europe has reduced its trade costs and economic distance with Eurasia, helped by the historical orientation of trade and logistical systems (rail and road) between them. Given the large trade volume between the regions already by the early 2000s, Europe incorporated the largest Eurasian countries, such as Russia and Ukraine, into the greater European corridor network. The Trans-European Network and the Transport Corridor Europe–Caucasus–Asia development plans of the EU are two initiatives from the west. Like road and rail corridors, pipelines also provide avenues for exports, and they were built to transport Russian and Caspian gas to the European market.

But trade costs with East Asia are still quite high, as shown by estimates of overall bilateral trade costs using the “inverse gravity” approach (figure 2.9; Novy 2013). Remarkably, European countries have lower trade costs with China



**Figure 2.9. Eurasian trade costs are higher with China than with Germany**  
 (Trade costs for Eurasian countries and selected European Union countries)

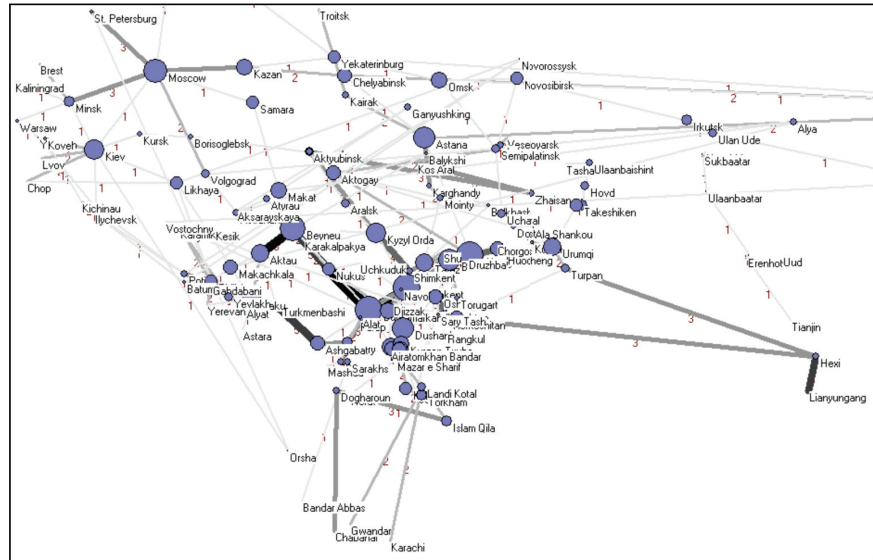
▲ Trade costs with China  
 ■ Trade costs with Germany

Sources: Rastogi and Arvis 2013 based on UNESCAP and World Bank, n.d.; and Arvis and others 2013.

Note: Ad valorem equivalent trade costs are figured using the inverse gravity approach described in Novy (2013) and Arvis and others (2013) that infers a measure of overall trade costs from changes in trade volumes in relation to production volumes. The dashed lines represent regional averages of trade costs to either Germany (green) or China (brown). Data on other Eurasian countries are not available.

**Figure 2.10. Road corridors are gradually rebalancing toward the east and south**

(Length and use through nodes of Eurasian road corridors)



Source: Kunaka and Saslavsky 2013.

Note: The size of each node indicates the centrality of cities along the corridor network. The boldness of the line between nodes indicates the number of overlapping links between them. Data are available only for 2011.

than do many Eurasian countries (that are often far closer). Being landlocked and isolated from major sea trading routes plays a role.<sup>7</sup> Even Georgia, with its port of Poti on the Black Sea, has far higher trade costs with China than with its near neighbor across the Black Sea, Romania.

East Asia is now attempting to reduce the economic distance between itself and Eurasia. New initiatives such as the Central Asia Regional Economic Cooperation may be balancing the western bias, while China is taking a strong interest in developing and facilitating overland trade with Eurasia as part of its strategy to develop its western provinces. Thus, for instance, Kazakhstan's trade costs have fallen more with China than with Russia over the last decade.

Recent projects include a railway between the Kazakhstani and Chinese networks; road and rail links among China, the Kyrgyz Republic, and Uzbekistan; a road from Almaty to Bishkek; and a rail link between Turkmenistan's and the Islamic Republic of Iran's networks. These are in addition to the three oil and gas pipelines from Central Asia to China built since 2006. Based on all these changes, the road (and rail) infrastructure network of Eurasia is shifting from a north-south dimension that connected the Soviet republics to Russia to an east-west dimension more aligned with Eurasia's Silk Road heritage (figure 2.10).

Market access barriers may create an additional bias toward Europe, especially for nonresource goods, though they are less important than other trade costs. These barriers include both tariffs levied on traded items and nontariff regulatory measures. Combining tariff and nontariff measures, East Asia's trade restrictiveness is 6 percent compared with 2 percent for Europe. The trade-weighted average tariff for major East Asian countries ranges from 1.5 percent

**Table 2.2. East Asia maintains higher tariff barriers than the European Union**

(Applied and most-favored-nation tariffs, European Union and selected East Asian partners, 2011 or latest available)

Percent

	Applied (including preferences)		Most-favored nation	
	Simple average	Weighted average	Simple average	Weighted average
European Union	1.1	0.4	4.2	3.4
Japan	2.5	1.5	3.2	1.8
Indonesia	4.7	2.4	6.9	5.2
China	7.6	3.5	9.3	4.1
Korea, Rep.	10.1	7.8	10.3	7.9

Source: Cusolito and Hollweg 2013 based on UNCTAD, n.d., through the World Bank's World Integrated Trade Solution software.

in Japan to 3.5 percent for China and 7.8 percent for Korea, compared with only 0.4 percent for the EU (table 2.2). So even countries close to China might not be able to take advantage of their proximity to the country. Chinese tariff rates on agricultural goods exported by Tajikistan, Turkmenistan, and Uzbekistan are above 65 percent compared with EU rates on the same products that are less than 10 percent. For example, dried apricots from Tajikistan, an important product for that country, face a tariff of 70 percent in China versus a tariff of 6 percent in the EU. Looking forward, preferential trading arrangements have the potential for a positive impact on trade with East Asia: China has an applied tariff 2 percentage points lower than its most-favored-nation rate.<sup>8</sup>

Improving European market access for Eurasian countries closer to Europe has been a focus of the EU's neighborhood policy, illustrating that bilateral engagement has fostered some isolated nonresource trading relationships. South Caucasus countries have nonreciprocal preferential access to the European market under the generalized system of preferences (GSP and GSP-plus). Surmounting nontariff measures has also been a focus of the EU's efforts to increase access to its own market for many Eurasian countries. As higher consumer quality demands keep many Eurasian goods out of that market, the EU has made efforts to upgrade quality on the supply side and to smooth quality certification to allow these products to be sold in Europe.<sup>9</sup>

## Intra-Eurasian trade: more room for differentiation

The composition of Eurasia's exports to its main trading partners—Europe and East Asia—is largely the same: minerals, metals, oil, and gas (box 2.2). But the composition of exports within Eurasia differs from that with external partners. What explains this difference?

Nonresource goods account for nearly half the trade among Eurasian countries but only for 20 percent of exports to the EU. Likewise, if metals are also excluded, 37 percent of intra-Eurasian trade can be considered to include nonresource goods compared with only 12 percent of exports to the EU

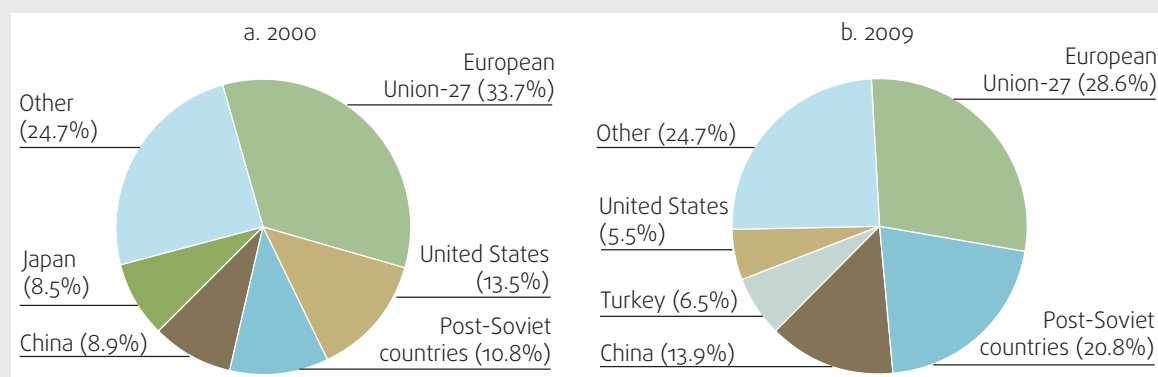
### Box 2.2. The Russian Federation's trading partners—non-oil and oil

Five regions account for three-fourths of the Russian Federation's non-oil exports—but the names and order of those five regions have changed since the start of the century (figures B2.2.1a and B2.2.1b).

Russia has had a major role in the European energy sector in the last decade as the largest exporter of oil and natural gas to the EU, though by the end of the decade other post-Soviet countries, the

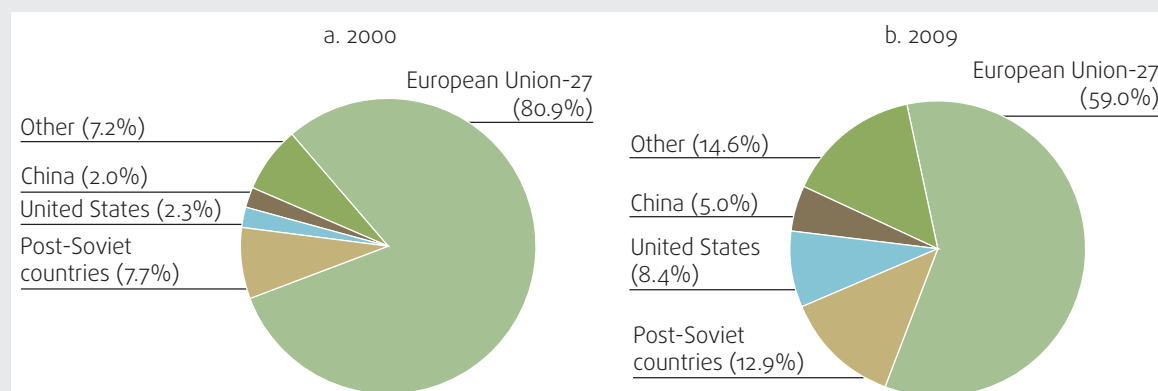
United States, and China had gained share (figures B2.2.2a and B2.2.2b).

Figure B2.2.1. The Russian Federation's non-oil export destinations



Source: World Bank 2013.

Figure B2.2.2. The Russian Federation's oil and gas export destinations

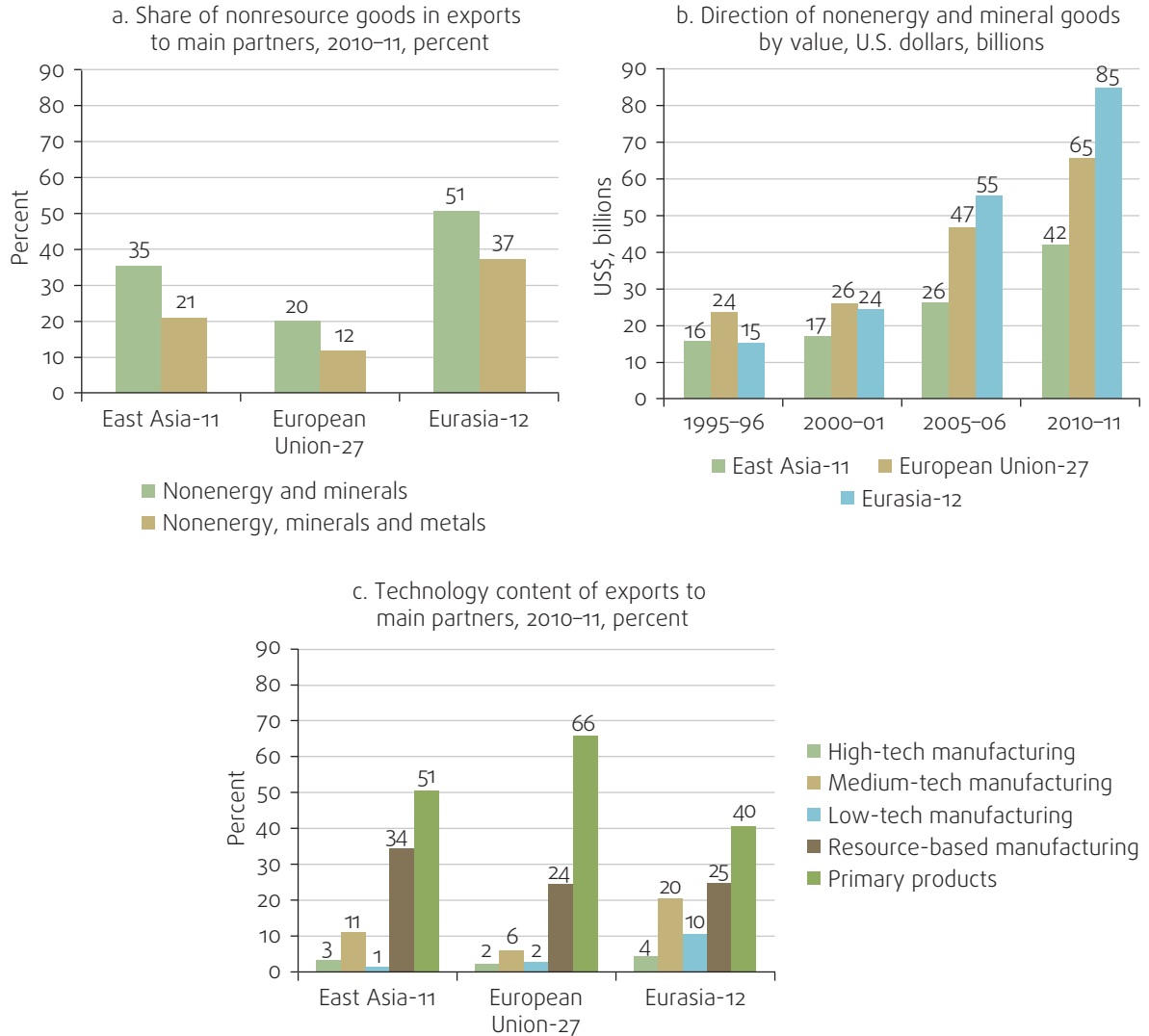


Source: World Bank 2013.

(figure 2.11a). In dollar terms, the amount of nonresource exports is greater for intra-Eurasian trade at \$85 billion, but nonresource exports to Europe are not far behind at roughly \$65 billion (figure 2.11b).

Intra-Eurasian goods exports are also skewed toward higher technology content. More than 30 percent of intra-Eurasian exports consist of high-, medium-, or low-tech manufacturing, whereas the corresponding figure for the EU is 10 percent (figure 2.11c).

**Figure 2.11. Intra-Eurasian exports have more nonresource products and higher technology content than external exports**



Source: Calculations for all charts are based on data from UNSD, n.d., using Lall 2000 categories.

Note: Energy and minerals are defined as Harmonized System (HS) 25–27, and metals are defined as HS 72–83.

### Endowment differences explain Eurasia’s trade

Traditional explanations of trade patterns focus on the role of comparative advantage, especially in relative abundance of factor endowments. This is seen in the Heckscher-Ohlin model of trade, according to which countries are export goods-intensive in the factors with which they are relatively well endowed.<sup>10</sup> The discussion of factor endowments has traditionally been limited to human and physical capital. This study also includes natural resource endowments and

### Box 2.3. Why is there so little empirical support for the factor proportions theory? And does it matter?

Empirical support for the factor proportions theory is limited. Lontief (1953) found that U.S. exports are less capital intensive than imports, which later seemed to be supported by Bowen, Leamer, and Sveikauskas (1987).

The factor proportions theory explains the direction of north-south trade well, but underexplains its volume, as Trefler (1995) noted for the United States-China trade. Empirical tests have shown that the Heckscher-Ohlin model holds in appropriately specified ways, as in Davis and others (1997) or when the assumptions of identical technologies and factor price

equalization are relaxed. As Baldwin (2008) writes, this success on the empirical side served to undermine the underlying theory.

What matters for the present study is not that the theory holds robustly worldwide but that it allows one to discern an association between the level and changes in relative endowments on one side and trade patterns on the other. This chapter takes into account the fact that endowments interact with geographic distances, market-access barriers, and other trade costs to produce a pattern of trade.

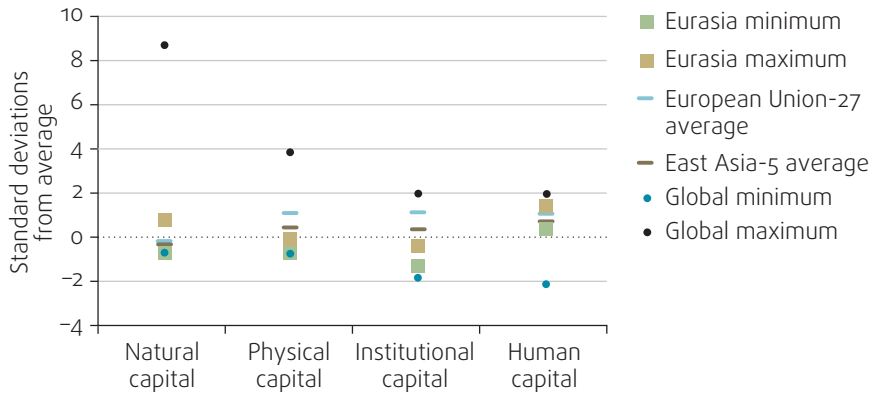
institutions as forms of capital. The extent to which the factor proportions theory holds in practice has been no small question for trade economists (box 2.3).

Products can indeed be measured to some extent by the endowment characteristics of the countries that export them. One can assign a value to a product based on the relative abundance of a given factor in the economies exporting each product traded in the world economy. In this way, a product exported mainly by countries richly endowed with physical capital will be “revealed” as “intensive” in physical capital. For this study, the assignment of values to measure a country’s endowment is done globally, not just for Eurasian countries. Once the factor intensity values are calculated, they can be used to evaluate the factors in a given economy’s exports to or imports from the world, or in a certain trade flow between two regions. The “revealed factor intensity” methodology used in this study is explained in greater detail in annex 2B.

This study uses a set of widely known cross-country indicators as proxies to measure the levels of natural, physical, human, and institutional capital in economies.<sup>11</sup> These indicators measure the broad-based availability of this factor, rather than the supply of the factor inside special economic zones or other enclaves. The indicators are standardized for comparability to each other.

Eurasia fares differently across the four indicators relative to main external partners and also within the global distribution (figure 2.12).<sup>12</sup> The natural capital endowment of many Eurasian countries is higher than that of the EU and East Asia, though in the global range it is near the low end. The human capital endowment of Eurasia (as measured by educational attainment) is near the top of the global distribution. (EU and East Asian averages are between the maximum and minimum of Eurasia, with some Eurasian economies ahead of external partners in raw educational attainment.) But Eurasia has a lower level of physical and institutional capital: all Eurasian countries have averages lower than the EU and East Asia.

As the factor proportions theory would predict, the composition of Eurasia’s trade with external partners follows from the relative endowments just described (figure 2.13).

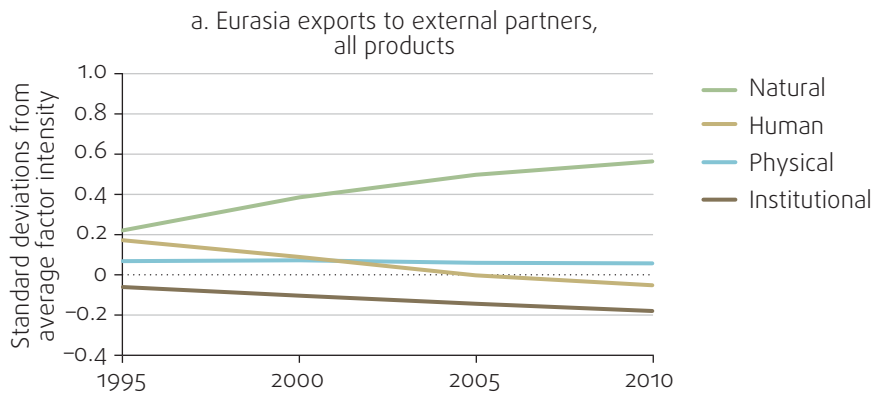


**Figure 2.12. Eurasia has good natural and human capital, but less-good physical and institutional capital**

(Range of Eurasian economies in standardized global distribution, 2010, standard deviations from average)

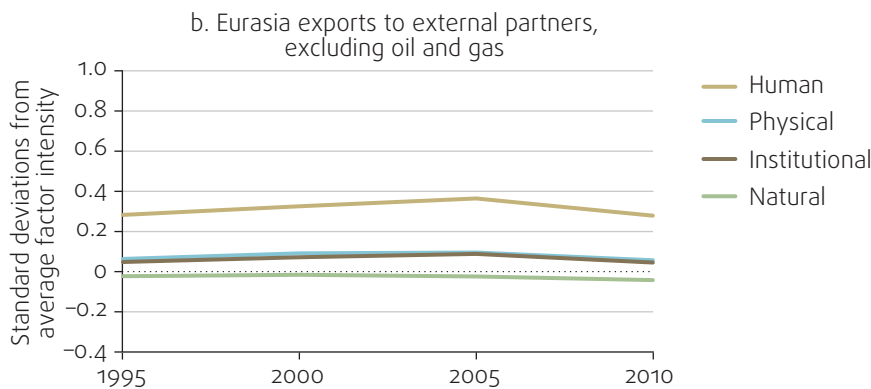
Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11.



**Figure 2.13. Natural capital is driving overall trade, while nonresource exports are more intensive in human capital**

(Factor intensity of Eurasia's exports to main external partners, European Union-27 and East Asia, all products and non-oil products; standard deviations from average intensity)



Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11. The charts show the levels of factor endowments in the trade flow from Eurasia to external partners.



Several rough characterizations can be made (also see box 2.4):

- Eurasia's natural capital, which for most countries is higher than the endowment for external partners, is increasingly driving trade with these external partners. The goods comprising the bulk of the natural capital-intensive goods are oil and gas. Because these products are such a huge part of the Eurasian export basket, it helps to remove them from the calculations (see figure 2.13). Outside oil and gas, the natural capital represented in exports to these external partners is fairly low.
- Human capital in Eurasia, measured by average years of schooling, is the factor with the greatest representation among nonresource products to external partners. Educational attainment in Eurasia is relatively high on the global distribution, and several countries have higher educational attainment than some countries in Europe or East Asia. A few products with high human capital content, like steel (\$3 billion in exports to EU-27 in 2010) and enriched uranium (\$1.7 billion in exports to EU-27 in 2010) are well represented in the Eurasian export basket to external partners. To East Asia, the top human capital-intensive exports include flat-rolled steel (Harmonized System, HS, 720824 and 720923).
- Physical capital is not well represented in exports to external partners even in the nonresource export basket. Some of the nonresource products exported to Europe—including steel, copper cathodes, enriched uranium, and iron ore—certainly require that physical capital inputs be extracted and processed, but this analysis suggests that this generally happens in environments with lower capital-to-labor ratios. These products can thus be profitably exported with the physical capital per worker that Eurasian countries can offer or in capital-abundant enclaves in the country without a broadly shared physical capital allocation.
- Institutional capital in Eurasian exports to both Europe and East Asia is low and on a downward trend, mostly related to oil and gas. Institutionally intensive products require good institutions as an input to the production process. This is true of more sophisticated products produced within supply chains requiring a system for enforcing contracts. The top nonresource exports from Eurasia to external partners are not associated with broad-based institutional strength.

The flip side of Eurasia exporting goods intensive in the factors in which it is relatively abundant is that the region imports from external partners goods intensive in the factors relatively scarce in Eurasia—such as physical, human, and institutional capital. From 1995 to 2010, Eurasia imported products increasingly intensive in such capital (figure 2.14). This is not the result of changing factor input requirements of goods, but rather of the changing composition of the import flow.

Some of the products imported from EU-27 countries responsible for these increases are medicaments (HS 300490), medium-size passenger vehicles (HS 870323), and transmission apparatus (HS 852520). Imports from East Asia have been consistently high in physical, human, and institutional factors and low in natural capital. In 2010, top imports from East Asia included large passenger vehicles (HS 870324) and switching apparatus (HS 851730), both institutional capital-intensive goods.

### Box 2.4. Why Eurasia's export relationships are not long-term

Export relationships of Eurasian firms tend to die off more quickly than for comparator countries. Around half of Belarussian, Russian, or Ukrainian exports survive after one year (table B2.4.1). The situation is much worse in other Eurasian economies, with two-thirds of exports from Georgia or Turkmenistan not lasting beyond the first year. Less than 4 percent of exports from Central Asia and the Caucasus survive after 10 years.

One obvious explanation could lie in the very nature of the mix of exported

products. Whereas commodity exports are more likely to be one-off, more sophisticated products are usually traded within complex global supply networks, based on long-term contractual arrangements, which would be reflected in the longer-term survival of individual export spells.

Misalignment of exported products with the underlying factor endowments is another possibility. Exports that die might represent attempts to produce goods that require a different mix of

factor endowments than supported by the economy. In this light, government attempts to artificially induce exports are destined to fail if more fundamental constraints are not addressed (see chapter 3). For instance, a poor regulatory environment is directly reflected in a firm's cost structure, making exports not cost-competitive. Poor infrastructure could aggravate the consequences of long distances, making exports more costly and not sustainable in the longer run.

**Table B2.4.1. Probability of survival of an export relationship**

Percent

	After 1 year	After 5 years	After 10 years
<b>United States</b>	62	33	20
<b>China</b>	64	35	18
<b>Netherlands</b>	56	26	15
<b>Poland</b>	56	25	13
<b>Finland</b>	52	22	13
<b>Russian Federation</b>	51	21	12
<b>Norway</b>	48	19	11
<b>Brazil</b>	53	22	11
<b>Malaysia</b>	51	20	11
<b>Canada</b>	49	19	10
<b>Australia</b>	50	18	10
<b>Ukraine</b>	48	18	9
<b>Belarus</b>	47	17	8
<b>Chile</b>	46	16	7
<b>Romania</b>	51	18	7
<b>Moldova</b>	46	15	5
<b>United Arab Emirates</b>	47	15	5
<b>Uzbekistan</b>	41	11	4
<b>Nigeria</b>	39	10	4
<b>Saudi Arabia</b>	40	11	4
<b>Kazakhstan</b>	38	11	4
<b>Venezuela, RB</b>	41	11	3
<b>Kyrgyz Republic</b>	39	9	3
<b>Tajikistan</b>	36	8	3
<b>Armenia</b>	40	9	3
<b>Azerbaijan</b>	38	9	3
<b>Georgia</b>	35	6	2
<b>Turkmenistan</b>	32	7	2
<b>Botswana</b>	35	7	1

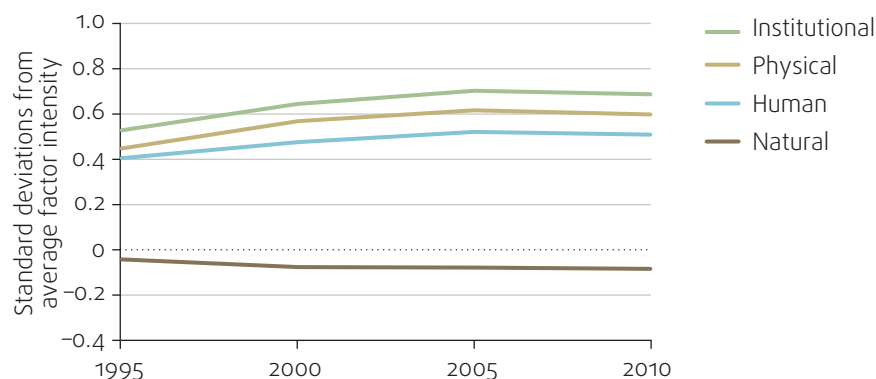
Source (table): UNSD, n.d.

Note: The survival functions are calculated using mirror data from the United Nations Commodity Trade Statistics Database for 2002–12. The duration of export relationships (“spells”) and the associated survival probabilities are estimated using Kaplan-Meier survival functions. The Kaplan-Meier method can be used to measure the length of time an export spell remains active. The unit of analysis for an export spell is the pair “product-destination,” where the product is defined as one Harmonized System category at six digits. Export flows lower than \$1,000 were excluded from the analysis. Eurasian countries that are the focus of this report are in boldface.

Source (box): World Bank 2013.

### Figure 2.14. Eurasian imports are intensive in factors scarce in Eurasia

(Factor intensity of Eurasia's imports from its main external partners, European Union-27 and East Asia, all products)



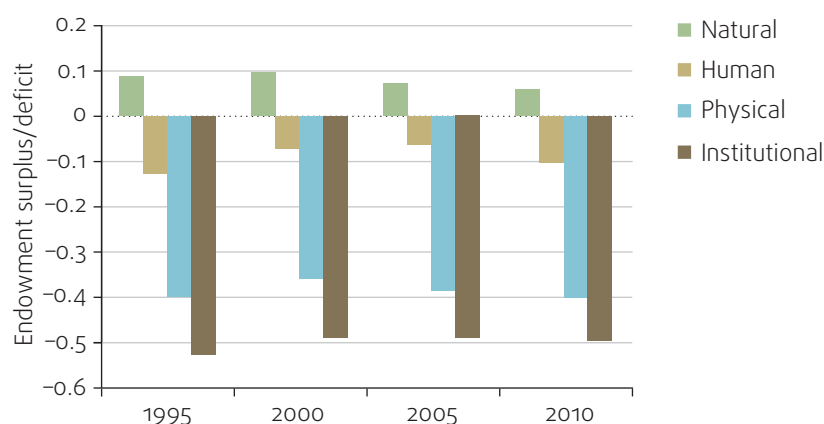
Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11. The chart shows the levels of factor endowments in the trade flow from external partners to Eurasia.

Using the “endowment gap”—the distance between the factors embodied in the goods that Eurasia offers to the world and the factors embodied in the goods that external partners demand from the world—puts the spotlight on Eurasia’s deficiencies in physical and institutional capital. Physical capital and institutions are likely placing a ceiling on export diversification on the extensive margin. Is Eurasia getting closer to having the right endowments to be able to export to these external partners? Although the average may obscure some improvements, these endowment gaps seem to be quite stable over time, suggesting that Eurasia’s efforts to diversify exports have not focused on reducing the endowment gap (figure 2.15).

### Figure 2.15. Physical and institutional capital show the largest endowment deficits

(Endowment gap between Eurasian exports to world and external partners’ imports from world, 1995–2010, nonresource trade)



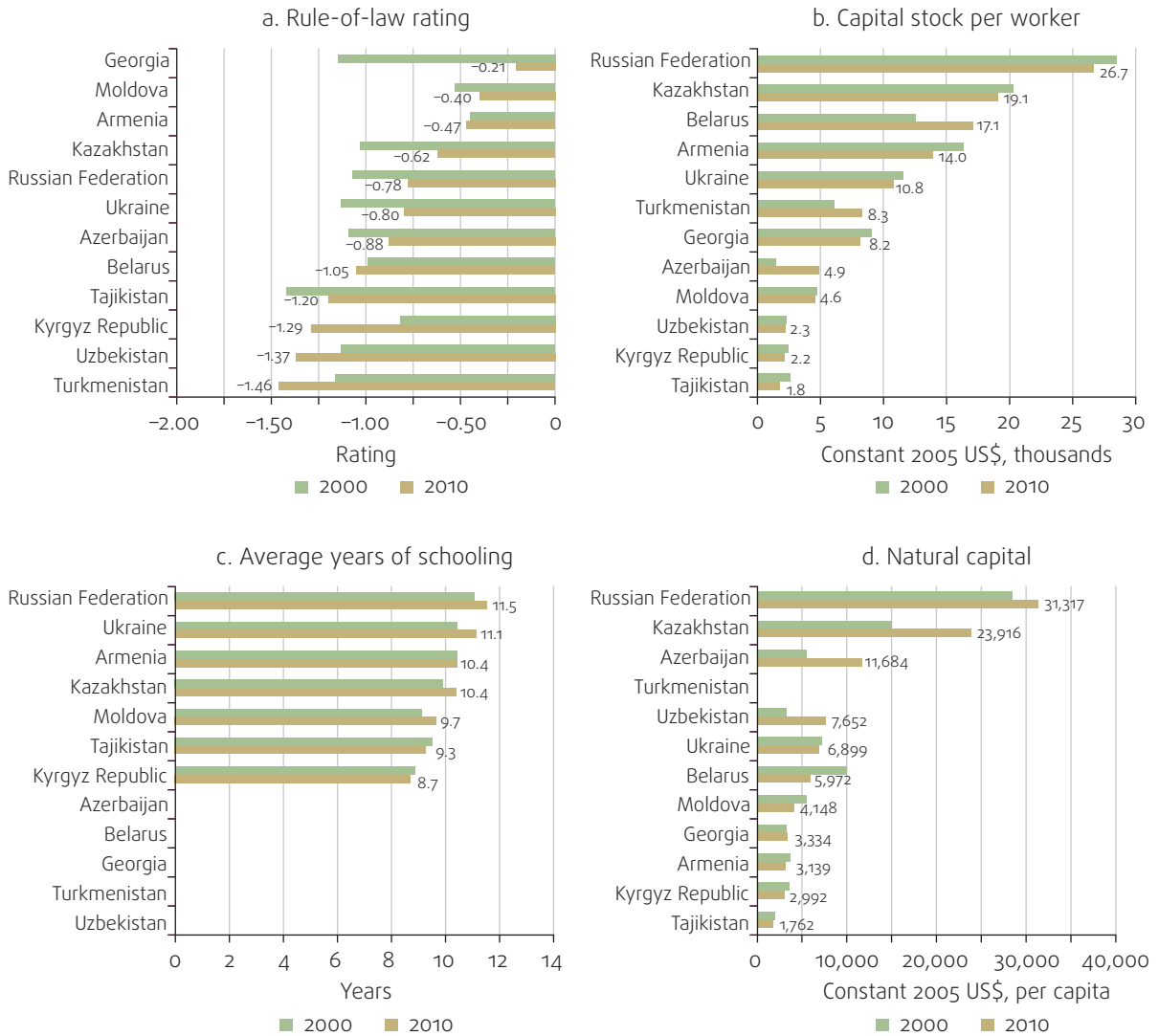
Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11. The endowment gap (surplus/deficit) depicts the difference between the factor intensity index of Eurasia’s exports and the factor intensity index of external partners’ imports. External partners are European Union-27 and East Asia-5 (China, Indonesia, Japan, the Republic of Korea, and Malaysia).

The endowment gap differs by exporter-importer pair. Viewing Eurasian countries as one entity mainly reflects the characteristics of the largest Eurasian economies, but differences among Eurasian countries are quite significant in some areas—they are not always more similarly endowed among themselves than with external partners (figure 2.16). For example, Russia has the highest

**Figure 2.16. Eurasian endowments vary widely across countries**

(Endowments of Eurasian countries, 2000 and 2010)



Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11. Data are missing for several countries in average years of schooling and for Turkmenistan on natural capital. The missing values were not figured into the global factor intensity measurements. But the extent to which factors are represented in these countries' trade can still be measured using global intensities calculated without the indicators from these countries.

capital stock per worker in the region, 15 times higher than Tajikistan, which has the lowest capital-to-labor ratio in Eurasia. The institutional capital endowment is quite different among Eurasian economies as well: the rule-of-law rating is much higher in Georgia than in Turkmenistan, for instance. There are also differences in educational attainment, though they are not as stark as for the other three factors, most likely due to the Soviet legacy of universal education.

Each Eurasian country thus offers something different to external partners. Yet countries at the high end of a distribution in Eurasia may still have less of that factor than what is needed to export to external partners. Georgia, even with the best institutions in Eurasia, cannot translate its institutional endowment into exports with high institutional intensity to external partners because its institutions are still far worse than those in Europe and East Asia. And while Russia can take advantage of the highest natural capital endowment in Eurasia, it has a harder time translating its physical capital—high compared with other Eurasian countries—into exports to external partners. Ukraine—around the middle of Eurasian countries on all four factor endowments—exports human capital to external partners, a dimension in which the entire region is rather well endowed, but less so other factors. With its lagging physical capital endowment, low natural capital, and relatively poor institutions, Tajikistan has trouble generating any exports to external partners.

Other than natural capital-intensive exports, some Eurasian countries may be able to capitalize on human capital-intensive exports. Eurasia's level of educational attainment is more in line with East Asia than Europe, and in fact several Eurasian countries exhibit even higher attainment than some major East Asian economies: China and Indonesia provide fewer than nine years of schooling on average, and so may be more likely to import human capital-intensive goods from countries like Russia and Ukraine, which have higher average educational attainment (table 2.3).<sup>13</sup>

In the short term—with the current endowments—growth in Eurasia's nonresource exports is likely to be higher to East Asia than to Europe, if trade costs do not hinder them (such as economic distance and market-access barriers). On both institutional and physical capital, East Asia imports more low-intensity and fewer high-intensity products than Europe does, matching more the exports of Eurasia: in panels a and b in figure 2.17, the curves of East Asia align more with the curves for Eurasia. In these figures, the x-axis represents a product's intensity in a given factor and the y-axis represents the share of that product in Eurasia's exports or a partner's imports. Again, this shows the rough correspondence between imports of human capital by East Asia and the exports of Eurasia in panel c.

### Export concentration was inevitable

With the dearth of physical and institutional capital and the abundance of natural capital in Eurasia, it was inevitable that natural capital-intensive goods would dominate the export basket and increase their concentration. This was seen in two waves. After liberalization and the breakdown of Soviet trading networks caused the first wave of concentration in Eurasian economies, resource-based trading relationships prompted a further concentration of the export basket in the late 1990s and 2000s, especially in resource-rich countries (Azerbaijan, Kazakhstan, Russia, Turkmenistan, Ukraine, and Uzbekistan).

**Table 2.3. Human capital in exports of some countries conducive to trade with external partners**

(Human capital intensity index, Eurasian exports and partners' imports, 1995–2010 average, excluding oil and gas)

Exporter	Human capital intensity index (high to low)	Importer
	0.501	Malaysia
	0.473	Korea, Rep.
Ukraine	0.470	
	0.463	European Union-27
	0.451	Indonesia
	0.435	China
Belarus	0.409	
Armenia	0.404	
Russian Federation	0.393	
Georgia	0.367	
	0.365	Japan
Moldova	0.315	
Kazakhstan	0.193	
Azerbaijan	0.017	
Kyrgyz Republic	-0.068	
Tajikistan	-0.293	
Uzbekistan	-0.537	
Turkmenistan	-0.648	

Source: World Bank staff calculations.

Note: The human capital intensity index is a weighted average of human capital intensity (calculated in standard deviations from average intensity) of products exported (for Eurasia) or imported (for partners). The weights are the shares in the export or import basket in a given year. The index is then averaged for 1995–2010.

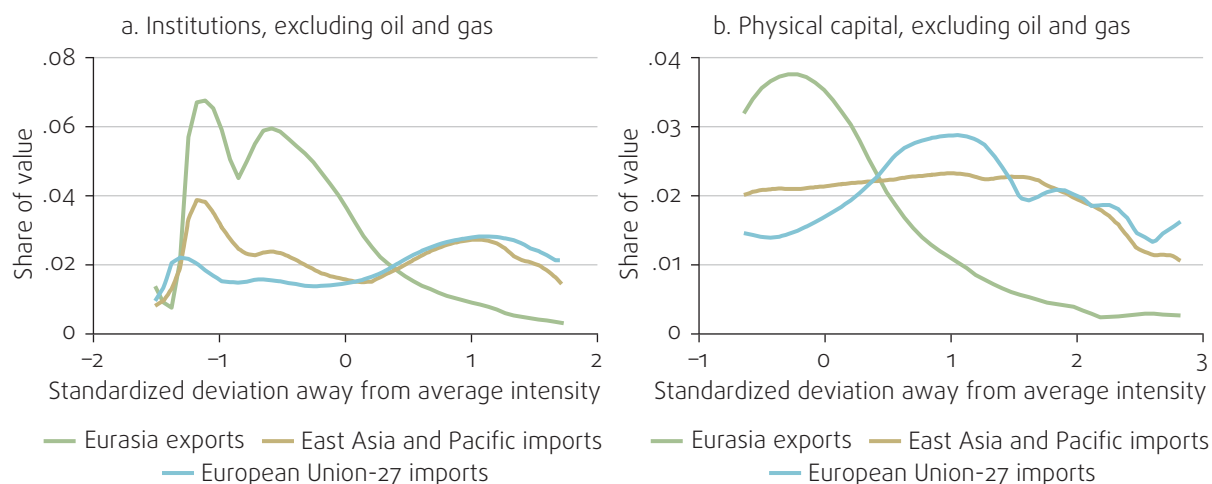
Illustrating this trend, between 1998 and 2008, nonextractive exports from Russia grew at a much slower pace than the average in other BRIC (Brazil, Russia, India, and China) countries (figure 2.18).

With the Eurasian export basket broken down into intra-Eurasian and external, and further into all products and nonresource shipments, resource-based exports to external partners are seen concentrated the most in 2010–11 (figure 2.19).

By 2010–11, the share of the top five products in merchandise exports of Azerbaijan, Kazakhstan, Russia, Tajikistan, and Turkmenistan was greater than 70 percent. For Armenia, Belarus, Georgia, the Kyrgyz Republic, and Uzbekistan, the corresponding share was 40–55 percent. Moldova and Ukraine, at roughly 20 percent, are least concentrated on this measure (figure 2.20).

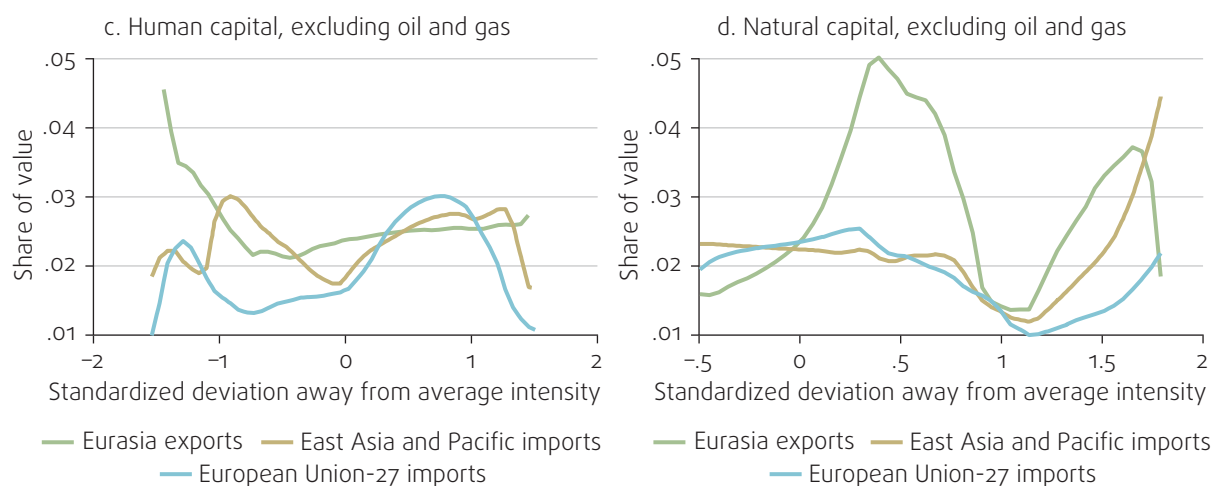
**Figure 2.17. Eurasia's current export structure matches East Asia's imports more than Europe's imports**

(Distribution of factor intensities of products traded, 2010, excluding oil and gas)



Note: kernel = epanechnikov; degree = 0; bandwidth = .22.

Note: kernel = epanechnikov; degree = 0; bandwidth = .27.

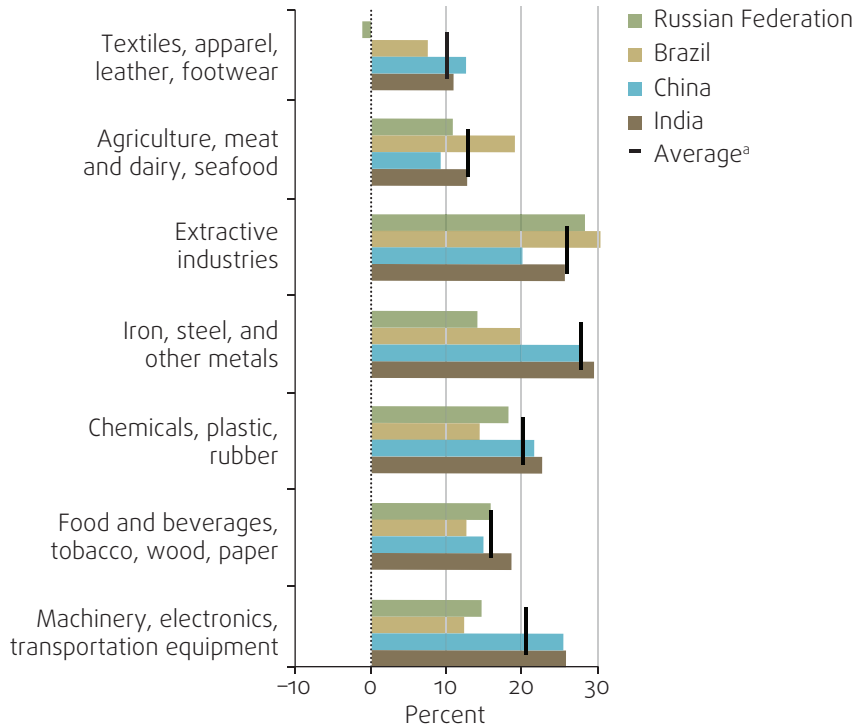


Note: kernel = epanechnikov; degree = 0; bandwidth = .34.

Note: kernel = epanechnikov; degree = 0; bandwidth = .15.

Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11. At a given endowment level in an economy at a certain time, a country can export goods over a continuum of factor intensities—that is, it exports goods above and below its average. At the same time, foreign trade partners, given the endowment level in their own economies, import goods over a range of factor intensity levels. The y-axis refers to the share in merchandise export value for Eurasia and share of merchandise import value for Europe and East Asia and the Pacific. The x-axis refers to the factor intensity for products. These graphs fit a polynomial to the scatterplot of share-intensity combinations. In addition to oil and gas (Harmonized System, HS, 27), natural uranium (HS 284410) is also excluded from these charts because it registers very low on human capital and serves as an outlier for the human capital graph.

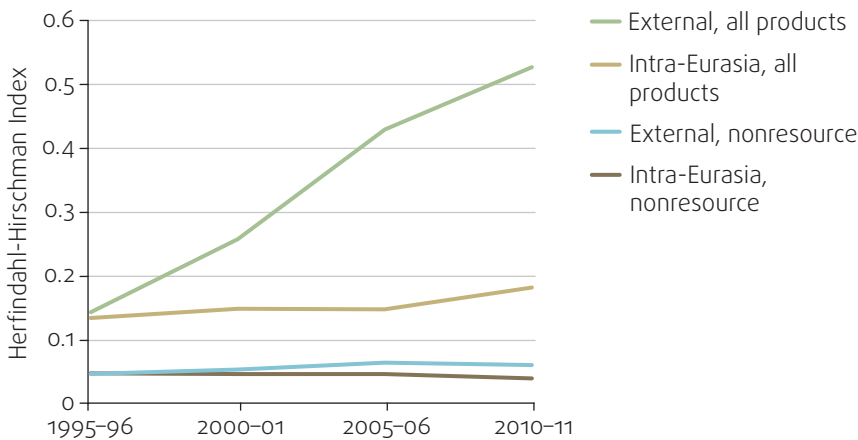


**Figure 2.18. Extractive industries are increasingly dominating the Russian Federation’s export basket**

(Compound average growth rate, 1998–2008, percent)

Source: World Bank 2013.

a. Average does not include the Russian Federation.



**Figure 2.19. Resource exports to external partners concentrated the export basket**

(Normalized Herfindahl-Hirschman Index, 1995–2011)

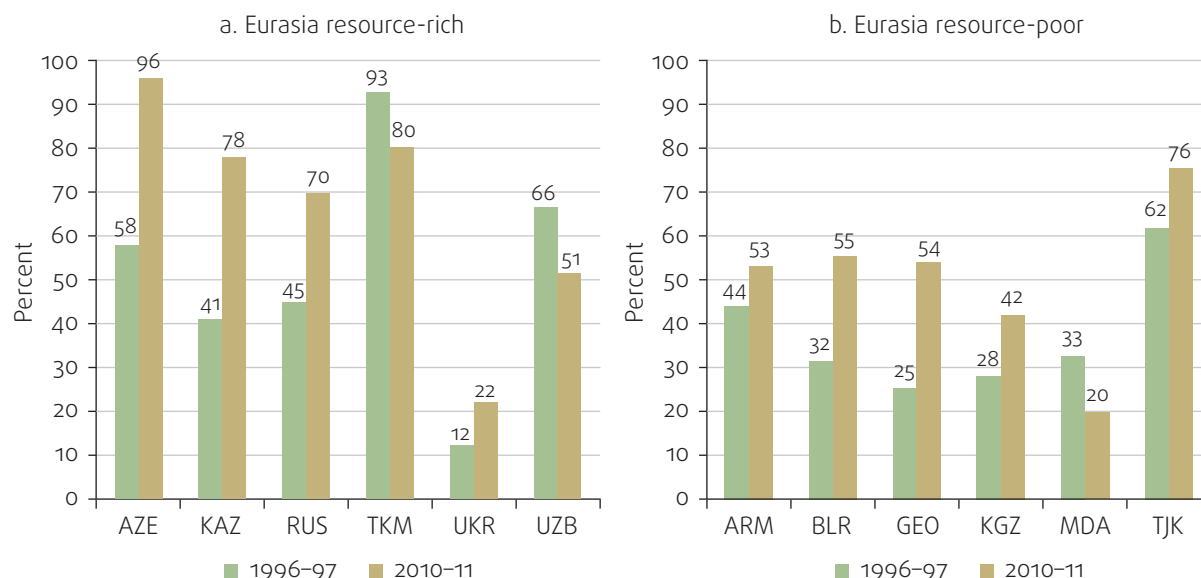
Source: World Bank staff calculations based on United Nations Comtrade.

Note: This index is measured as the sum of squared shares in a given trade flow. Higher index scores indicate greater concentration. Nonresource exports exclude energy, minerals, and metals (Harmonized System, HS, 25–27 and HS 72–83). External refers to European Union-27 and East Asia-11. The index is calculated at the two-digit HS level (but the same trends appear at the six-digit level).



**Figure 2.20. Export product concentration has increased, especially for resource-rich countries**

(Share of top five exports, 1996–97 and 2010–11, for resource-rich countries and resource-poor countries, percent)



Source: World Bank staff calculations based on United Nations Comtrade.

Note: Calculations are based on the six-digit export data classified by the Harmonized System 1988/92.

External shocks such as the mid-2000s commodity price boom, not surprisingly, contributed to this increased concentration. The boom especially affected the export concentration of resource-rich countries shipping commodities like oil and gas, increasing the share of their top five products in their export baskets (box 2.5). The boom also meant that resource-poor countries could export more items to the fast-growing domestic markets of resource-rich countries: for example, Armenia expanded exports of cement to Russia's fast-expanding construction industry.

In price-neutral terms, Eurasia does not seem to be as concentrated. Such a measure of concentration is the total number of merchandise products exported by each Eurasian country. In 2010–11 despite its top-heavy export structure, Russia exported nearly 3,500 products at the most detailed level of product disaggregation. Ukraine exported more than 2,000 products, Belarus 1,000, and the others around 600 or fewer.

Three country characteristics do a reasonable job of predicting outcomes: resource dependence, which tends to decrease the total number of products exported; the size of the economy; and productivity—the latter two tend to increase the number of products exported.<sup>14</sup> These three characteristics explain more than four-fifths of the range in the products exported by each country worldwide and predict closely the concentration for Eurasian countries (figure 2.21). Many export products are of low value and so do not affect the overall export value concentration levels; survival of these flows is usually seen as a problem.

**Box 2.5. Effect of the commodity boom on export concentration**

To assess whether the diversification performance of Eurasian countries during the commodity boom (2006–11) differed between resource-dependent and non-resource-dependent countries, the following equation was used:

$$D_{it} = \alpha + \alpha_i + \beta_1 CBoom_t + \beta_2 CBoom_t \times RR_i + \varepsilon_{it}$$

where  $D_{it}$  is the diversification indicator (share of exports in the top five products in total exports) for country  $i$  in period  $t$ ,  $CBoom$  is a dummy that takes value 1

if the period falls under the commodity boom (2006–11) and zero otherwise, and  $RR$  is a dummy variable that takes value 1 if the country in question depends on the export of commodities (in this case, Azerbaijan, Kazakhstan, the Russian Federation, Tajikistan, Turkmenistan, and Uzbekistan), and zero otherwise, and  $\alpha_i$  is a set of country-fixed effects that capture the country-specific factors affecting diversification that are time invariant (table B2.5.1).

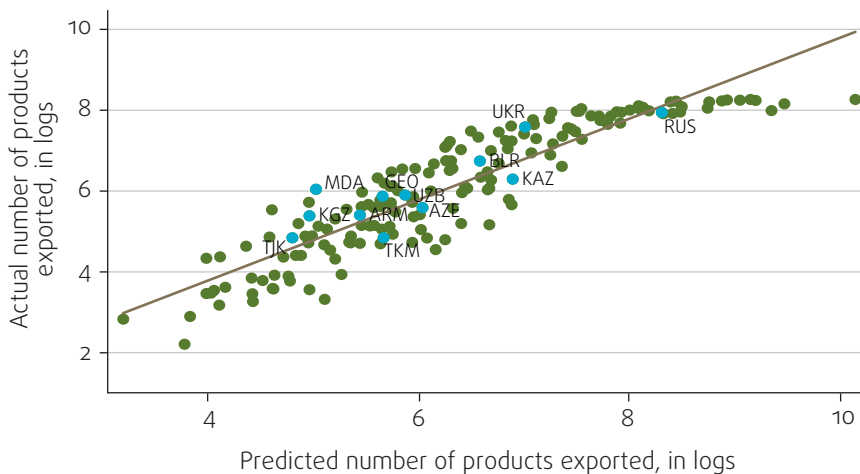
The change in diversification during the commodity boom for resource-dependent and non-resource-dependent countries is given by differentiating the equation with respect to the commodity boom dummy ( $CBoom$ ), conditional on  $RR = 1$  and  $RR = 0$ , respectively. For non-resource-dependent countries, this is given by  $\beta_2$ , whereas for resource-dependent countries, it is given by the sum of  $\beta_1$  and  $\beta_2$ .

**Table B2.5.1. Equation results**

Variable	Share of top five exports
Commodity boom	-0.022 (0.023)
Commodity boom*resource-rich	0.067** (0.0322)
Constant	0.561*** (0.011)

Note: Observations = 72;  $F(2, 58) = 2.42^*$ . Standard errors are given in parentheses. \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$ .

Source: Varela 2013b.



**Figure 2.21. Number of products exported is roughly at the predicted level**

(Log count of export products against prediction)

- Fitted values
- Eurasian countries
- All countries

Source: Varela 2013a based on UNSD, n.d., and World Bank, n.d.

## Much of trade within Eurasia is also due to differences in endowments

Has intra-Eurasian trade followed the same pattern as external trade in its relation to underlying endowments? The volume of trade between republics during the Soviet era was very high, at more than 100 percent of GDP in 1989 for all except Kazakhstan, Russia, and Ukraine. During Soviet times, the republics traded with low transport costs, common regulatory regimes, and no border controls. Locked into centrally planned interdependence through Soviet production networks that crossed borders, Eurasian countries traded very little with the outside world. This resulted in a home bias of trade at around 43 times the normal level (Fidrmuc and Fidrmuc 2003).

Much inter-republican Soviet trade did not follow endowments. Aslund (2007) writes that in Soviet times “the wrong things were traded for the wrong reasons between the wrong people in the wrong places at the wrong prices.” If trade was really artificial during the Soviet period, it would likely come down very quickly after liberalization and the composition would now be different—and indeed this is exactly what happened. Intra-Eurasian trade dropped precipitously as a share of GDP and total exports after the fall of the Soviet Union (table 2.4).

Inter-republican Soviet trade was dominated by manufacturing products, whereas today Eurasian countries trade mainly minerals and metals. Inter-republican trade in 1989 included machine building (32 percent), light industry

**Table 2.4. Share of intra-Eurasian trade in output declined drastically since the Soviet era**

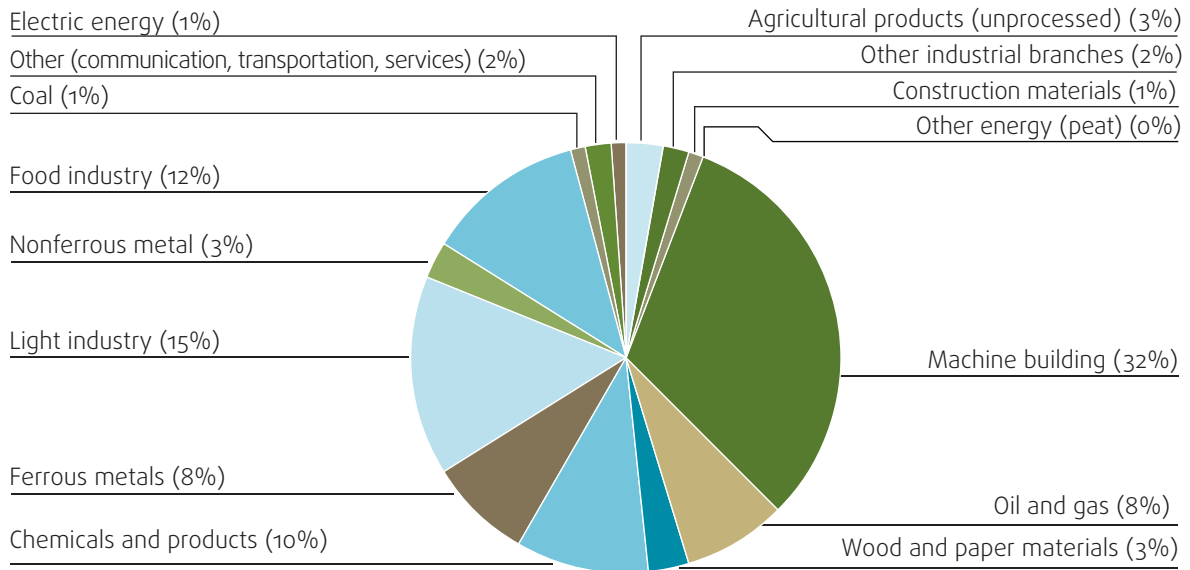
(Share of intra-Eurasian trade in GDP, 1989, 1995–96, and 2010–11)  
Percent

Country	1989	1995–96	2010–11
Armenia	108	30	15
Azerbaijan	96	19	8
Belarus	118	51	58
Georgia	116	13	17
Kazakhstan	80	31	8
Kyrgyz Republic	106	40	57
Moldova	150	85	33
Russian Federation	35	7	5
Tajikistan	113	68	29
Turkmenistan	107	89	10
Ukraine	74	39	37
Uzbekistan	95	24	16

Source: World Bank staff calculations using Russian Statistical Committee 1990 and UNSD, n.d.

Note: Inter-republican trade in 1989 includes trade with the three Baltic republics, intra-Eurasian trade does not. Net material product (the Soviet classification most proximate to GDP) is used for output in 1989. Trade equals imports plus exports.

**Figure 2.22. Before 1991, intra-Eurasian trade was dominated by manufactured goods**



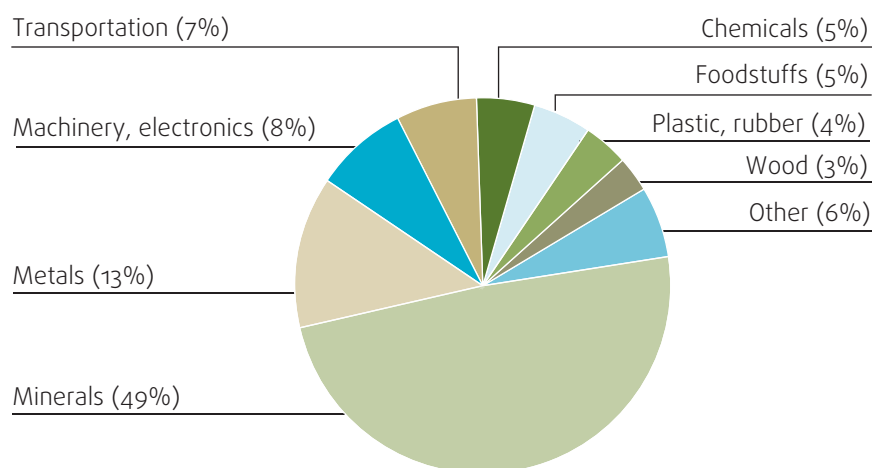
Source: World Bank staff calculations based on data from Russian Statistical Committee 1990.

(15 percent), food industry (12 percent), ferrous and nonferrous metals (11 percent), and chemicals and products (10 percent), as well as oil and gas (8 percent; figure 2.22). In the pattern of Soviet trade, manufactured goods from the more developed republics were sent to the energy exporters, which paid huge implicit subsidies to energy importers through artificially low energy prices (Aslund 2007).

Just machine building and light industry, a narrow definition of manufacturing, constituted nearly half of intra-Eurasian trade. Services are included in the “other” category (2 percent). Although they were low, they were also likely undercounted. Today, minerals (49 percent) and metals (13 percent) dominate intra-Eurasian trade to a greater extent, while combining machinery and electronics, transport equipment, chemicals, and plastic and rubber means manufacturing only totals a fourth of the traded goods (figure 2.23).

In a liberalized setting, factor endowment differences would be expected to have a large impact on trade patterns. But when Eurasian countries have different endowments, the impact of these differences is moderated by trade between Eurasian countries and external partners. After all, any country poorly endowed in a factor has the option of importing that factor from a non-Eurasian country. Since Eurasia is deficient in physical and institutional capital relative to external partners, this difference drove imports from external partners and dampened the volume of intra-Eurasian trade that was intensive in these factors. Even so, as expected, the composition of intraregional trade in the post-Soviet era follows from relative abundance of endowments:

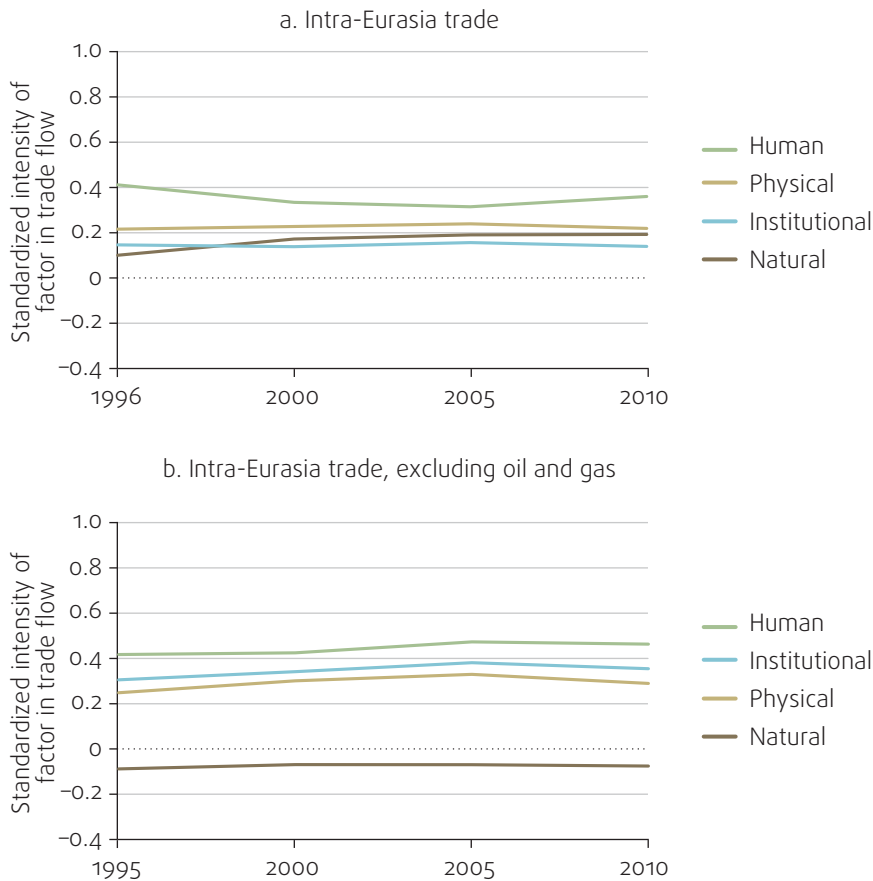
**Figure 2.23. Minerals and metals dominated intra-Eurasian trade in 1995–2011**



Source: World Bank staff calculations based on data from UNSD, n.d.

- Natural-capital differences between Eurasian countries are sizable, and they are represented in trade flows. As shown earlier, much intra-Eurasian trade consists of mineral resources, notably oil and gas. Resource-poor countries like Armenia and Belarus depend on gas imports from resource-rich Russia. Once these key products are removed, the presence of natural capital in the basket disappears, and the expression of the other factors is revealed more (figure 2.24).
- Human-capital intensity in non-oil exports is roughly at the same level within Eurasia as it is with external partners (see figures 2.13 and 2.24). It may seem surprising that human capital is so well represented in Eurasian trade when it is so similar among countries, but similar endowments can give rise to intra-industry trade. For example, railway cars (HS 8606), which have high human-capital intensity and are traded between countries relatively abundant in human capital, are among the top nonresource products traded among Eurasian countries.
- Physical capital is not well represented even in nonresource flows, even though it is higher than for external trade. This is not surprising given the generally low levels of physical capital worldwide.
- Institutional intensity of intra-Eurasian trade flows is higher than that for external trade in nonresource flows, but it is still quite low. This, too, should not surprise given the generally low levels of institutional capital worldwide. But unique institutions such as the standards and certification regime may be able to generate some high-intensity goods.

The relative abundance of endowments seems to be driving intra-Eurasian trade flows more than in previous years.<sup>15</sup> Focusing on institutions and physical capital, the direction of high factor-intensity trade in Eurasia is estimated (figure 2.25). Putting Eurasian countries into two groups—“factor-rich” and “factor-poor” in this factor<sup>16</sup>—allows one to examine whether the direction of



**Figure 2.24. Greater physical and institutional capital present in intra-Eurasia trade**

(Factor intensity of intra-Eurasia trade, with and without oil and gas, compared with external trade)

Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11.

factor movement follows in the predicted direction and how it is changing over time. The trends are the same for both factors: trade in factor-intensive goods over time is increasing for both sets of countries.

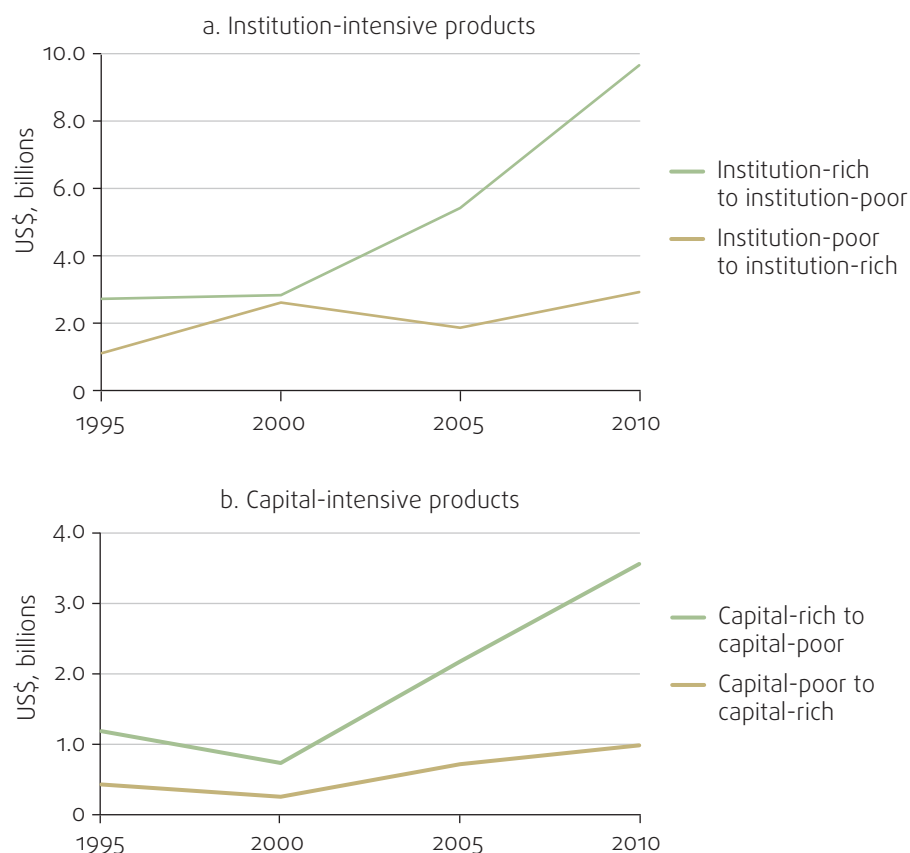
The factor-rich group in both cases exports more to the factor-poor group. Because this may be because the rich group is also made up of larger economies than is the poor group, it is best to focus on the widening gap, which provides some evidence that underlying endowments are affecting these flows (although it is also possible that trade or output could be growing faster in the factor-rich economies for reasons other than factor endowments).

### The standards regime isolates Eurasian goods

Why might intra-Eurasian products be more institutionally intensive than products in exports to external partners? That countries with low levels of institutions (relative to the global average) trade some institutionally intensive

### Figure 2.25. Direction of intra-Eurasian trade flows aligns with relative factor abundance

(Direction of institution-intensive trade and capital-intensive trade within Eurasia, 1995–2010, billions of U.S. dollars)

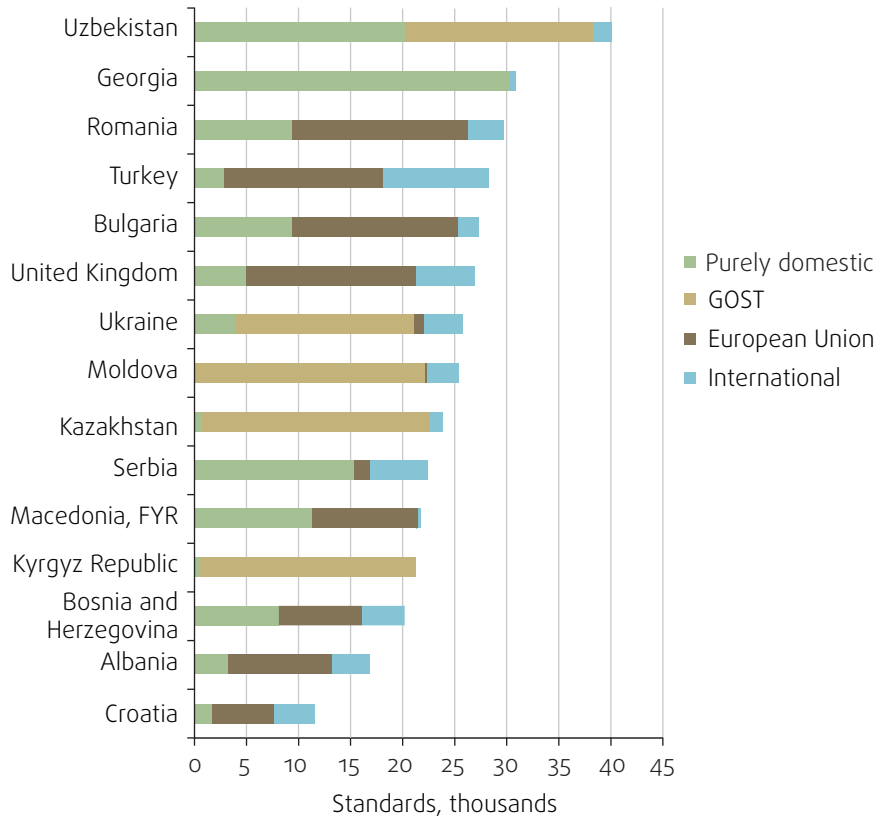


Source: World Bank staff calculations.

Note: Factor-intensive trade was considered to be above 0.3 on the Standardized Factor Intensity Scale.

goods among themselves instead of importing such goods from external partners suggests that there may be institutions peculiar to Eurasia generating these goods. This may be due to the system of standards and certification (the “standards regime”) that is specific to Eurasia and less compatible with foreign markets. This regime forms the core of the “national quality infrastructure” that influences production and trade.

It also represents a peculiarity that may contribute to a pattern of intraregional trade that goes beyond what normally anchors trade in nearby countries. Market access and geography contribute to the closing off of distant markets for Eurasian countries, driving intraregional trade, but this is common to many world regions. For agricultural trade, the EU is not that open, and some EU agricultural tariffs are close to China’s rates. (Fresh grapes and plums from Moldova face a 12 percent tariff on entering the EU.) But this bias prevails on agricultural goods from nearly all non-European countries. Additionally, Eurasian countries have much higher trade costs (including transport costs) with external partners than among themselves. This, too, is not unique to Eurasia given the shorter distances to neighboring countries than to elsewhere.



**Figure 2.26. Many Eurasian countries lag in harmonizing with European Union and international standards**

(Harmonization of standards, 2006, selected Eurasian countries and comparators, thousands of standards)

Source: Racine 2011.

Note: GOST (gosudarstvennyy standart) is a technical standard, originally developed by the government of the Soviet Union as part of its national standardization strategy. The Euro-Asian Council for Standardization, Metrology and Certification maintained this standard.

The problems with the standards regime in Eurasia can be grouped into two. First, it is not aligned with international norms, and Eurasia still largely relies on regional and national standards tracing back to Soviet times (figure 2.26). (In contrast, the new member states of the EU in Central and Eastern Europe quickly aligned with the standards of Western Europe after the Soviet Union fell.) Second, Eurasia has not switched from a mandatory to voluntary approach. The regime uses prescriptive mandatory technical regulation and inflexible government-driven conformity assessment methods to manage quality issues. (Again in contrast, new EU member states have created independent national standards bodies, which issue voluntary standards after greater stakeholder consultation.)

Eurasia’s standards regime hurts trade in several ways. For one, it levies unnecessary costs on firms. In Moldova, domestic wine producers must possess a special certification that is not recognized by the EU. In Ukraine, soft drink suppliers must recertify their inventory every six months, even though the standards allow for storage of 15–20 months. And the regime pushes producers



into different production methods and into making products with different characteristics than those required by potential markets.

The regime also undermines attempts to adopt international standards. For example, the adoption rate of the International Organization for Standardization (ISO) 9001 management certification, which plays a crucial role in the global supply chain,<sup>17</sup> is very poor among Eurasian countries besides Armenia, Georgia, and Russia.<sup>18</sup> Finally, the system engenders mistrust between suppliers and potential customers, as modern conformity assessment services are not available or recognized by trade partners—and even among Eurasian countries, mistrust is rampant.

## The future of Eurasian trade: global and regional outlook

What does the future hold for Eurasian trade patterns? As endowments change over the longer term, the nature of trade relationships will too, allowing Eurasia to diversify the mix of products it exports. Intra-industry trade will grow between countries with similar endowments, especially those that build human, physical, and institutional capital, and Eurasian economies will, no doubt, boost their trade with external partners having similar endowments. Participation in global and regional value chains, so far minimal for Eurasian countries, is set to increase if the right policies are put in place. Connectivity, indirectly based on physical and institutional endowments, will also influence Eurasian integration. This section outlines these short- and long-term considerations.

### International integration now, regional integration later

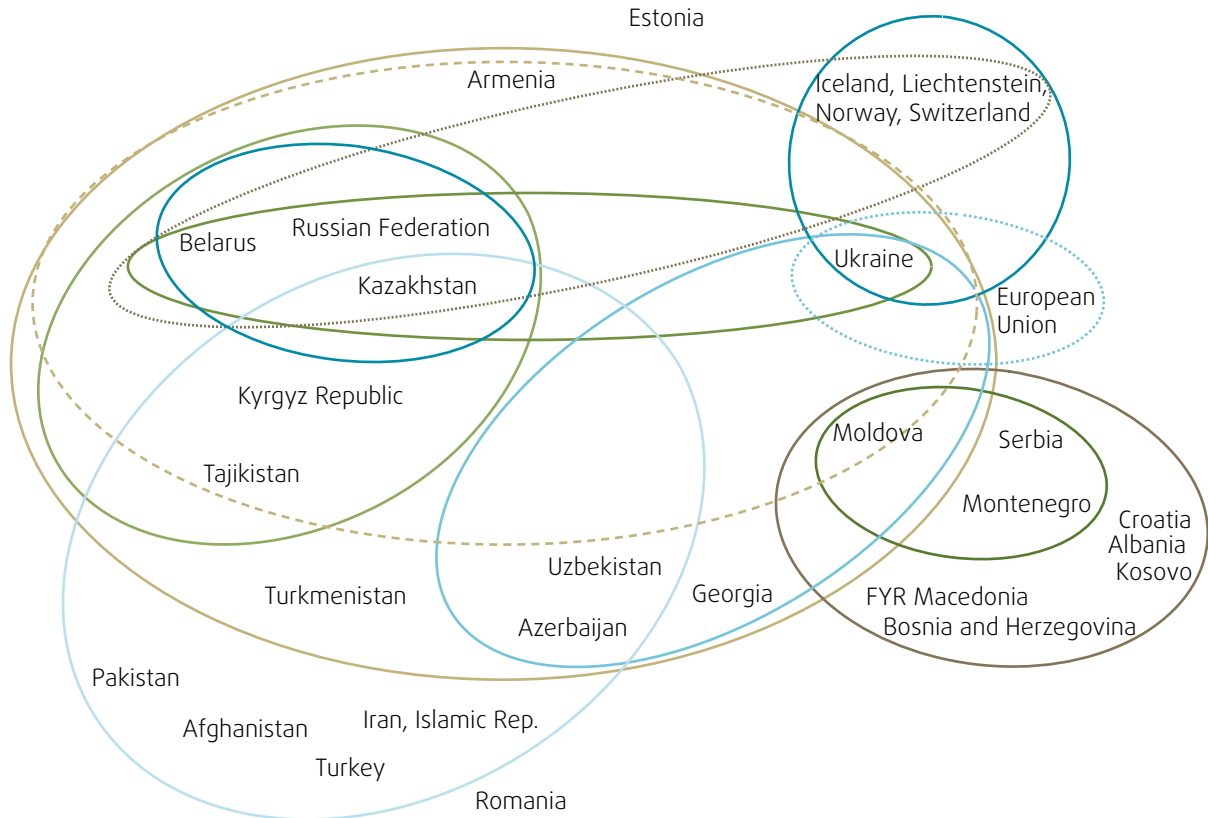
Eurasia's neighborhood is growing fast. And, geographically, Eurasian countries are moving from a disadvantaged to advantaged position because of external trends. Eurasia is better positioned in the economic geography than 10 years ago, and far better positioned than 20 years ago when its countries became independent. It helps to be close to countries doing well.

Four neighboring countries—China, India, Korea, and Turkey—are among the world's most dynamic economies. With fairly high projected growth, they will constitute an increasing share of total world output. In 1992, when Eurasian countries became independent, these four countries made up 5 percent of global GDP of \$24 trillion. By 2010, they made up 15 percent of a global economy almost three times as large as in 1992. In 2011, China's economy was seven times as large in real terms as in 1992, India four times, Korea three times, and Turkey two times (World Bank, n.d.). By 2015, these four countries will account for 20 percent of the global economy. Yet the traditional economic powers—the European Union, the United States, and Japan—are still very important, and Eurasia borders two of them.

While trade with Eurasia's neighbors will remain based on current endowments over the short term, Eurasia can help expand the volume of trade with its neighbors by reducing trade costs. Given the importance of economic distance and economic mass of trading partners, total trade volumes are expected to rise, and different impacts will emerge for Eurasian countries based largely on

**Figure 2.27. Eurasian countries have signed agreements mostly with one another**

(Plurilateral regional trade agreements signed by Eurasian countries)



Sources: Cusolito and Hollweg 2013 based on WTO, n.d.a, b, and World Bank and Dartmouth College, n.d., through the World Bank's World Integrated Trade Solution software.

their geographic location. Central Asia can be expected to further integrate with China and perhaps more with India. Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine are likely to integrate more with Europe and Turkey. And Russia might further integrate with Europe and with China, Japan, and Korea. Trade along these lines has already risen, but complementarity of endowment structures, inefficiency of production, and other characteristics may well prevent trade from reaching levels predicted purely on economic distance and economic mass—thus the need to cut as many policy-based trade costs with these economies as possible.

One way to reduce trade costs: regional trade agreements. Initiatives have focused on reintegrating Eurasia but most have not borne fruit (figure 2.27). The Commonwealth of Independent States (CIS), established in 1991, was not very successful in reestablishing free trade among former Soviet republics. The CIS aimed to strengthen traditional economic links by coordinating economic policies and institutional arrangements. In 1993, CIS countries committed themselves to a program of gradual integration, starting with an agreement

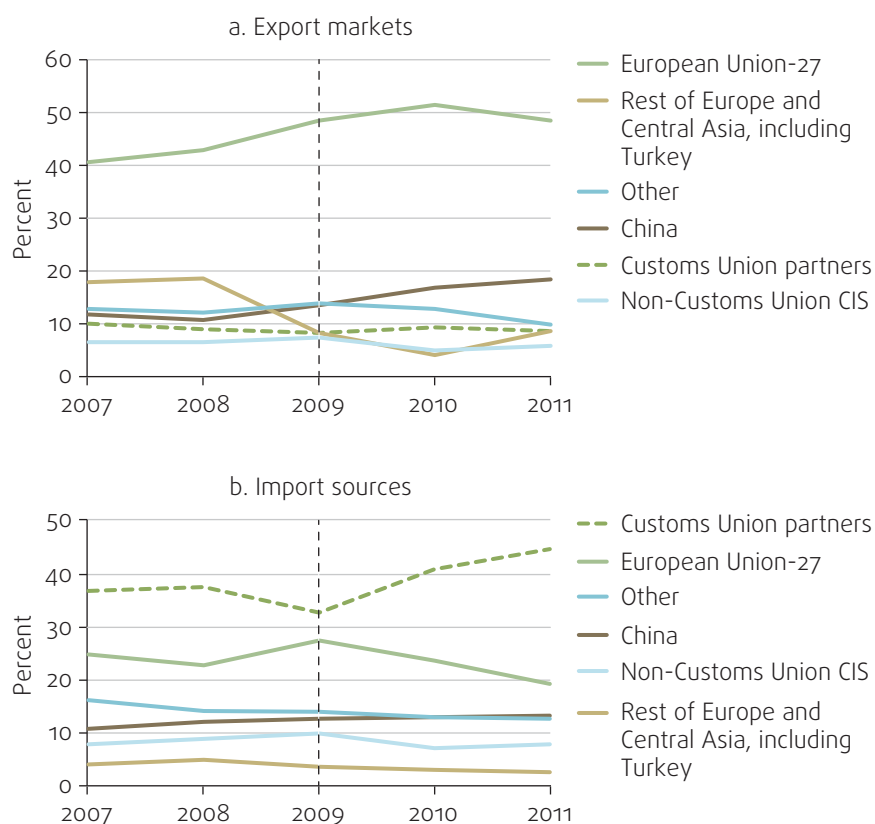
on tariffs and eventually achieving a monetary union. In 1994, they signed an agreement setting up a free trade area but could not agree on a common list of exemptions. In 1999, they amended the agreement, allowing exemptions to be agreed bilaterally, but not all countries could reach even this lower bar.<sup>19</sup>

This lack of success led to the Customs Union (CU) agreement among Belarus, Kazakhstan, and Russia, which came into force in January 2010. The three members have a potentially large consumer market with 170 million people, an estimated GDP of \$2.3 trillion, and a goods turnover of about \$900 billion. Armenia, the Kyrgyz Republic, Tajikistan, and Uzbekistan are potential participants. The CU adopted a common external tariff, removing internal border controls. The arrangement has lofty ambitions to establish a common economic space with a free flow of goods, services, capital, and labor.

But regional integration must not come at the expense of global integration. Russia lifted its exports to CU partners, but Kazakhstan (and no doubt Belarus) saw some diversion of trade from optimal suppliers of inputs, as the CU compelled Kazakhstan to raise its tariffs from 6.7 percent to 11.1 percent on average on an unweighted basis (figure 2.28).<sup>20</sup> Its imports were diverted from

**Figure 2.28. The Customs Union shifted Kazakhstan's trade, especially its imports, toward Customs Union partners**

(Change in share of Kazakhstan's partners, 2007–11, percent)



Source: World Bank 2012a based on data from the Kazakhstan Customs Authority.

Note: Dashed vertical line marks the end of 2009, when the Customs Union came into force. CIS = Commonwealth of Independent States.

### Box 2.6. The burden of nontariff measures

The Customs Union (CU) made Kazakhstan's nontariff measures (NTMs) more numerous, onerous, and difficult to navigate. Major barriers to trade in most developing countries, NTMs are typically trade-related regulations, such as product standards or labeling requirements imposed for legitimate purposes, such as protecting public health or the environment, but that may also serve to restrict trade intentionally.

Most NTMs suffer from a fragmented authority because of their diverse nature: a large number of government agencies and ministries, including health, agriculture, trade, industry, and standards, as well as metrology bureaus, issue and enforce NTMs. When poorly designed and adopted with little consultation with the private sector, they can hurt firm competitiveness by making it hard to source key inputs from abroad. Surveys reveal that firms in several countries would prefer more transparent NTMs.

*Source: Malouche 2013.*

Kazakhstan is often portrayed as a fairly open economy because of its (earlier) low tariff protection and steps the government had taken to harmonize NTMs with the European Union's (EU). But after joining the CU, it is transitioning from a national trade regime to a supranational one, and aligning its trade policies with Russia's more protectionist policies, characterized by more stringent standards and technical regulations.

For example, Russia's Ministry of Health in 2012 prepared to issue a CU-wide regulation on emissions from volatile organic compounds used as solvents in glues in many furniture items. The regulation aimed to set the limit at half of what the EU's regulations tolerate, a level incompatible with local production capabilities in all three member states, which could potentially leave firms in permanent violation of the rules. Instead of this, alignment with international standards, where local conditions allow, is preferable.

Streamlining NTMs is important for improving firm competitiveness. To avoid the excessive, complex, and costly procedures that NTMs impose, governments must strengthen their institutional mechanisms that oversee them. International experience shows that the reviewing body must have a high-level mandate, involve the private sector and key stakeholders, secure participation from officials responsible for administering measures, and have the necessary technical and financial resources.

For its part, the Kazakhstani government is planning to move from mandatory to voluntary certification on technical regulations. A critical question is whether Russia's (and soon Kazakhstan's) accession to the World Trade Organization will reverse and reduce the restrictive nontariff measures that the CU increased.

Europe to Russia, in precisely the categories of manufacturing goods most likely used as inputs in production processes (World Bank and Government of Kazakhstan 2012). Some capital and intermediate goods from the most advanced countries thus became uncompetitive in the Kazakhstani market, slowing the technology transfer embedded in such imports. This effect might be alleviated somewhat in the future, however, as the CU common external tariff decreases in line with the terms of Russia's World Trade Organization (WTO) agreement. (Russia joined the WTO in August 2012.)

Beyond tariffs, nontariff measures—national or supranational—can serve as impediments to trade (box 2.6).

Driven by the need for economies of scale, demands of the international market may provide the impetus for regional cooperation—so far muted in Eurasia, and unlike East Asia, where countries grew on the back of trade, investment, and technology links with Western Europe and North America. East Asia then tightened its global integration through regional exchange of goods, finance, and ideas (World Bank 2007).

Thus global (rather than regional) integration may offer far more benefits for Eurasia, not only allowing greater trade with dynamic economies like its four neighbors, but also prompting greater intra-Eurasian integration later. For example, the option of integration eastward or westward seems a false choice for Ukraine (box 2.7). Global integration requires integration in many directions.

### Box 2.7. Must Ukraine choose between east and west?

Ukraine has a long-standing relationship with the European Union (EU) and European countries. Its relations with the EU are guided by an Association Agreement signed in 2012, which includes provisions to establish a Deep and Comprehensive Free Trade Area for closer integration with the west.

Ukraine is also being courted by members of the Customs Union (CU). The Executive Secretary of the CU Commission described the following benefits that Ukraine could enjoy as a member: domestic prices on Russian Federation natural gas; cancellation of

export duty on oil; removal of barriers to trade; and closer cooperation in the machine-building industry.<sup>a</sup>

Yet with the benefits come drawbacks, including a doubling of external tariffs on imports from the rest of the world. One estimate suggests that these higher tariffs will reduce imports from non-CU countries from 83 percent of the total in 2010 to about 76 percent in 2020, compensated largely by imports from Russia.<sup>b</sup>

Shepotylo (2010) estimated that deeper integration with the EU could have increased Ukrainian exports over 2004–07

by 10 percent, while joining the CU would have resulted in a 4 percent increase.

Ukraine can potentially have it both ways. It can establish closer ties with the CU without actually joining it. Ukraine is now negotiating with the CU on a “3 + 1” format—by creating a free trade area with the CU and by joining some of the agreements. Despite the fact that Russia has ruled out Ukraine’s entry on any special scheme of cooperation, Ukrainian officials had publicly expressed the hope that Ukraine would sign a free trade agreement with both the CU and the EU by the end of 2013.<sup>c</sup>

a. <http://nbnews.com.ua/news/2867/>.

b. Joint research by the Russian Academy of Science and the National Academy of Science of Ukraine in <http://forbes.ua/nation/1344329-vygoden-li-ukraine-tamozhennyj-soyuz>.

c. [www.agroperspectiva.com/en/news/101825](http://www.agroperspectiva.com/en/news/101825).

### Trade based on economies of scale will grow later

Even if over the longer term exports are concentrated in natural resources, Eurasia should build its endowments, particularly institutional, physical, and human capital endowments, to change its nonresource production and trade. This will help its economies to generate productivity gains, provide employment, and mitigate macroeconomic volatility. As a by-product, the move to change endowments will also adjust the mix of trade partners and products based on shifting comparative advantages.

As underlying endowments strengthen, Eurasia can also begin to take advantage of trade with countries that have similar endowments through intra-industry trade. Much trade is between countries with similar endowments, so comparative advantage based on dissimilar characteristics only explains interindustry trade. Over time, advanced countries have become more similar in their endowments, and their trade with each other has continued to increase as they have engaged in intra-industry trade.

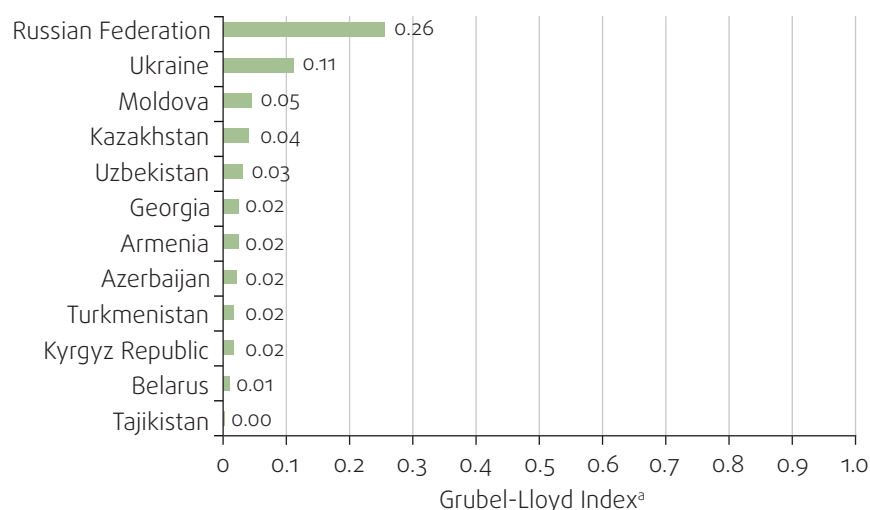
In intra-industry trade, countries trade to capitalize on the inherent advantages of specialization, which supports large-scale production. The empirical findings on the volume of trade between similar countries motivated the development of “new trade theory” arising from consumers’ love of variety and monopolistic competition based on economies of scale (Krugman 1979, 1980). Firms manufacture differentiated products and concentrate production in a single location, while consumers spread their spending across all firm varieties, giving rise to two-way trade even if countries are similar. With external partners, Eurasia’s intra-industry trade is low (table 2.5); with each other, it is higher but still rather low for many Eurasian economies (figure 2.29).

**Table 2.5. Eurasia has a low share of intra-industry trade with its main external partners**

(Grubel-Lloyd Index for Eurasia on trade with its main external partners, 1995–2011)

Year	1995–96	2000–01	2005–06	2010–11
With European Union	0.09	0.07	0.05	0.06
With East Asia	0.03	0.02	0.03	0.04

Source: World Bank staff calculations based on data from UNSD, n.d.



**Figure 2.29. The share of intra-industry trade among Eurasian countries is only slightly higher than with the main external partners**

(Grubel-Lloyd Index for Eurasian countries on intra-Eurasian trade, 2010–11)

Source: World Bank staff calculations based on data from UNSD, n.d.

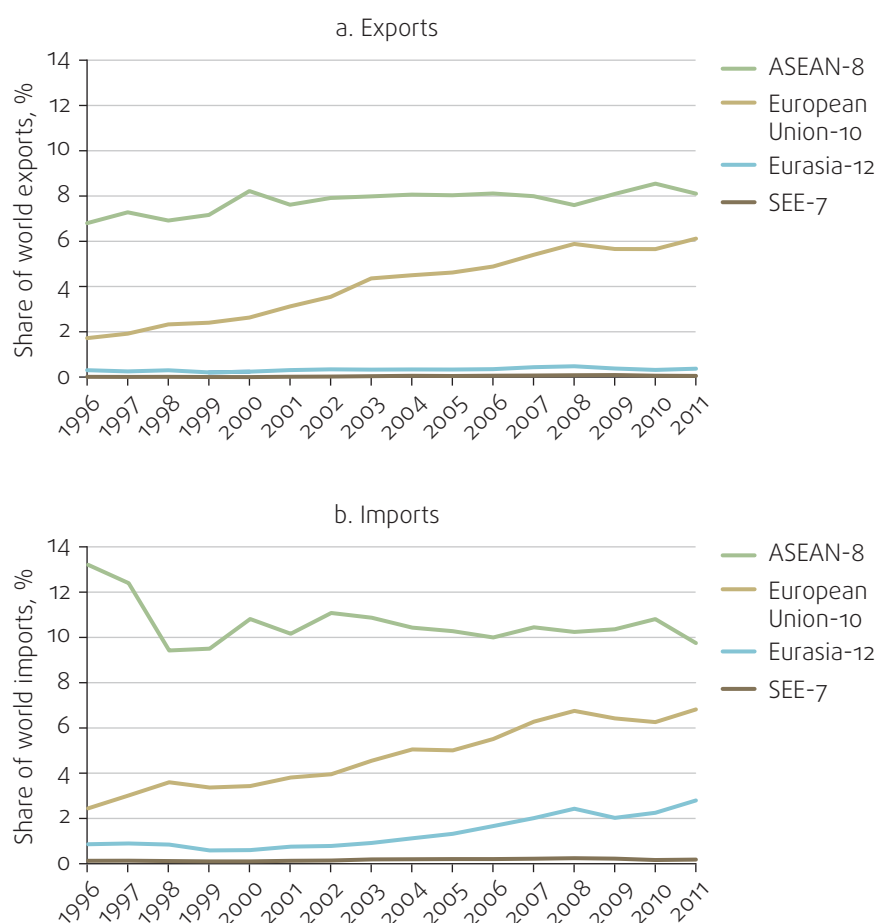
a. The index is computed at the six-digit Harmonized System level and runs from 0 to 1.

Global and regional value chains take advantage of relative factor abundance while also serving as arbiters of intra-industry trade. Many of the products traded within an industry are consumer products like automobiles, electronics, furniture, and clothing. Barriers to unbundling these global value chains have been eased by decreasing global transport and communications costs, allowing sections of the chain to be placed in countries where factor endowments make factor costs more favorable (Baldwin 2011).

Yet Eurasia's current endowment structure has prevented full participation in such chains. Eurasia's exports of parts and components exchanged in manufacturing production networks are only about three times greater than the Western Balkans' exports of parts and components, though Eurasia has a population 10 times greater (figure 2.30). Parts and components trade makes up a small part of Eurasia's own manufacturing exports—7 percent compared with 16 percent for Southeast Europe, 28 percent for Southeast Asia, and 32 percent for new EU member states. Over the longer term, greater participation in global and regional manufacturing value chains hinges on changing underlying assets, especially institutional ones (box 2.8).

**Figure 2.30. Eurasia accounts for a low share of global manufactured parts and components trade**

(Share of Eurasia and comparators in global exports and imports of parts and components, 1996–2011, percent)



Sources: World Bank staff calculations using production classification by Athukorala 2010 and data from UNSD, n.d.

Note: ASEAN = Association of Southeast Asian Nations; SEE = Southeast Europe.

Interindustry and intra-industry trade between neighbors are key determinants of regional integration, as seen in East Asian regional production networks. Intra-industry trade was a driver of the complex two-way trade within production networks that arose after the “flying geese” pattern took hold.<sup>21</sup> This allowed labor-abundant Cambodia to produce one type of labor-intensive article of clothing and a neighboring labor-abundant economy, like Thailand or Vietnam, to specialize in a slightly different labor-intensive article of clothing. The original placement of a product in a location might have been an accident of history. The products traded intraregionally within Europe and within East Asia are intensive in physical, human, and institutional capital, demonstrating the importance of these endowments in fostering regional integration (figure 2.31).

Greater connectivity to decrease transport costs will enhance production networks between Eurasian neighbors, and is indirectly based on improvements

### Box 2.8. The Russian Federation's automotive sector faces bottlenecks in integrating with automotive value chains

The Soviet automotive industry began in earnest in 1929 when Ford helped establish GAZ, the country's oldest mass automotive manufacturer, in Nizhny Novgorod. Automotive production increased dramatically after World War II as homegrown brands like VAZ, KamAZ, GAZ, and BelAZ produced passenger cars and light and heavy trucks for markets across the republics. At its peak in 1985, the Soviet Union was producing more than 2 million vehicles a year (compared with the United States, which produced about 13 million vehicles). The fall of the Soviet Union in 1991 devastated the local automotive industry, as higher-quality foreign imports and used vehicles flooded in.

Since the early 2000s, the Russian Federation has experienced a wave of new automotive investment and joint ventures from foreign automakers to meet a large domestic demand for foreign cars. The new automotive clusters (in or around Kaliningrad, St. Petersburg, Kaluga, and Primorskiy Krai) attracting foreign automakers have grown faster than the traditional clusters (Nizhny Novgorod, Tatarstan, Tolyatti, and Moscow).

The industry is centered on importing parts for final assembly to supply Russia's internal market. Contract manufacturer Avtotor assembles cars for BMW, GM, Kia, and two Chinese companies—NAC and Chery—using imported parts. In the far eastern Primorskiy cluster, Russian company Sollers assembles various car models for Ssangyong, Mazda, and Toyota.

The government has encouraged foreign investment. Decree 166 was adopted on March 29, 2005, as part of a larger "industrial assembly" regime, seeking to develop domestic capabilities by incentivizing inward investment and boosting local production. The decree offers automakers duty-free component imports in return for local assembly. It originally allowed automakers producing more than 25,000 vehicles locally to import components duty free for eight years in return for 30 percent localization within three years. It was strengthened in February 2011, offering automakers producing more than 300,000 vehicles in the country duty-free imports for eight years in return for 60 percent localization in six years, and mandating the location of engineering centers in the country.

Decree 566 was announced on September 16, 2006, aiming to increase automotive component production in Russia. Similar to Decree 166, it reduces import duties on parts to zero for certain core subsystems produced locally. The decree calls for 30 percent localization within 40 months of receiving incentives.

Russia's accession to the World Trade Organization (WTO) will complicate its ability to maintain localization quotas and import taxes. The country's automotive policies were in fact a key stumbling block in letting the country join the WTO. Negotiations resulted in the end date for the industrial assembly regime being moved up from 2020 to 2018. Russia must honor commitments to existing investors while keeping with

the reform agenda required by WTO accession. For example, the Russian government has negotiated with the European Commission to compensate component manufacturers for lost sales stemming from localization requirements.

With 90 percent of the value added of cars in their parts and components, localizing parts production is important. When parts are produced domestically in Russia, they are produced by foreign firms such as Delphi, Faurecia, and Johnson Controls. Local small and medium-size suppliers often lack the access to finance, research and development spending, and experience needed to meet the high quality and delivery standards that global firms require. They often produce lower value-added parts like side air bags, bumpers, mirrors, fuel tanks, and mufflers.

Unlike Eastern Europe, no ecosystem of local parts suppliers has begun to export parts and components in Russia. The main reasons: lagging human capital and an unpredictable institutional environment. A major constraint is finding skilled automotive experts, especially engineers, middle managers, and designers. Although special economic zones attract some foreign direct investment, global automakers report that their policies are hard to navigate.

The broader investment climate requires improvements to attract future investment from global automakers and suppliers, whose presence should be leveraged to form links between local suppliers and automotive value chains.

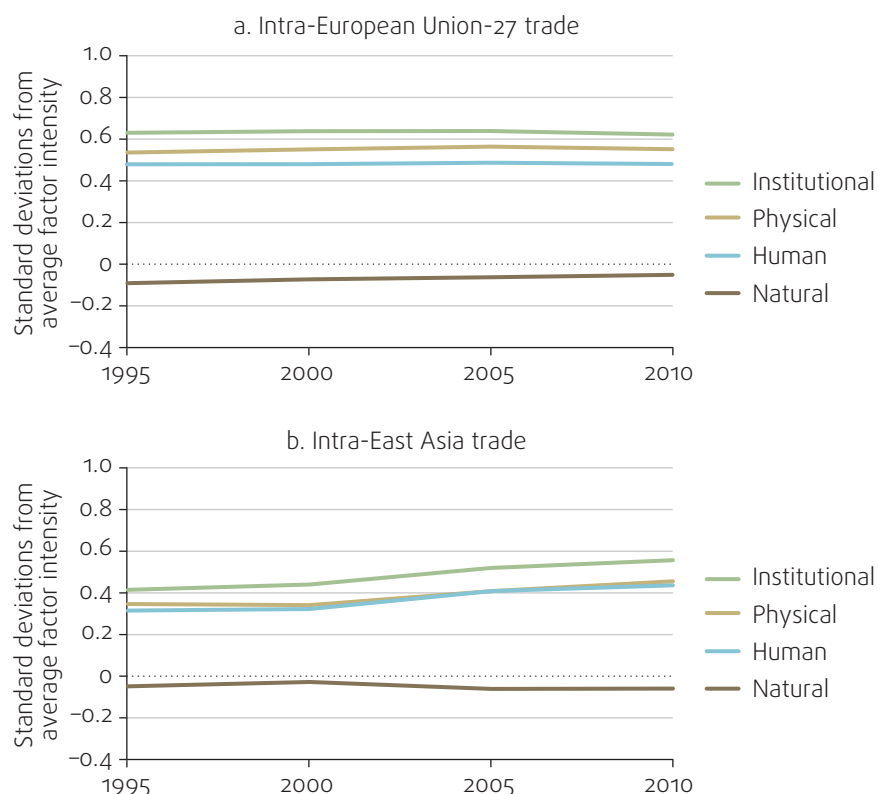
Source: Sturgeon, Prazdnichnyh, and Zylberberg 2013.

in physical and institutional capital. Transport costs are determined by physical capital investments in infrastructure, as well as by institutions such as customs and border agencies, policies that give rise to high-quality logistical services, and regulation of infrastructure sectors (box 2.9). Transport costs are already quite low between the following country pairs: Belarus-Ukraine, Russia-Ukraine, and Russia-Kazakhstan (table 2.6), and this is something to build on. In Central Asia, a north-south road corridor connecting Kazakhstan, the Kyrgyz Republic, and Tajikistan should boost Almaty, Kazakhstan, as a regional agroprocessing hub, taking advantage of local strengths in agricultural production in the Fergana Valley and logistics in Almaty itself (World Bank 2011a).



**Figure 2.31. Intraregional trade within Europe and within East Asia is intensive in physical, human, and institutional capital**

(Factor intensity of intra-EU-27 and intra-East Asia trade)



Sources: World Bank staff calculations based on World Bank 2011b; Kaufmann, Kraay, and Mastruzzi 2010; and Barro and Lee 2010.

Note: For an explanation of how indicators for factor endowment levels were generated, see note 11.

### Box 2.9. Reintegrating the Eurasian supply chain: building on the Customs Union model

Institutional issues are at least as binding as infrastructure-related issues in intraregional transport. Border management is often highly problematic in Eurasia, especially in Azerbaijan and the Russian Federation. Institutional reforms such as customs remain a high priority. The current approach of designating corridors does not address core institutional and capacity constraints, as it depends heavily on the TIR Convention of the United Nations Economic Commission for Europe and other generic pan-European facilitation

instruments as the default framework to move goods. And it has not so far been conducive to deeper integration. Especially in Central Asia, the corridor concept has not solved the fundamental issues with institutional capacities and private sector competitiveness.

Some of the binding constraints are not route specific; they are largely national and have to be addressed at that level, within a regional integration framework with a strong customs and transport component, such as the Eurasian Customs

Union (CU). The CU has had a direct trade facilitation impact, as customs control between the members' (now internal) borders has been phased out. For trade with non-CU partners, the transit system in the CU has been simplified to one large national transit system common to all three members, which also facilitates integration of transport services (such as railways), and allows for the possibility for trucks to operate across internal borders.

Source: Rastogi and Arvis 2013.

**Table 2.6. Regional production networks are most likely to develop between partners with low bilateral trade costs**

(Bilateral trade costs, nonenergy trade, 2009)

	Armenia	Azerbaijan	Belarus	Georgia	Kazakhstan	Kyrgyz Republic	Moldova	Russian Federation	Ukraine
<b>Armenia</b>									
Azerbaijan	—								
Belarus	172	164							
Georgia	92	67	154						
Kazakhstan	226	103	120	152					
Kyrgyz Republic	472	204	160	256	81				
Moldova	220	187	90	198	156	176			
Russian Federation	115	81	—	170	66	96	107		
Ukraine	132	101	66	91	80	171	83	60	

Sources: Rastogi and Arvis 2013 based on UNESCAP and World Bank, n.d., and Arvis and others 2013.

Note: Figures represent tariff equivalent (in percent). Tajikistan, Turkmenistan, and Uzbekistan are not available on this database. — = not available.

## Trade: a time to build endowments

This chapter asks whether Eurasia can only export natural resources and allied products. The short answer is yes, in the short term. But this is not necessarily a drawback, since natural resource endowments have allowed Eurasia to rejoin the world economy, allowing Eurasia to increase the number of markets where it exports. The most important message is that Eurasia must build its underlying assets if it wants to diversify its product mix and reach out to more external partners.

Eurasia registered an impressive increase in the number of trade relationships from the early to mid-1990s. The most substantial new trading relationship that came about after the fall of the Soviet Union was with European countries. After years of accounting for a lower share of Eurasia's trade, East Asia has risen in importance as an export destination for Eurasian countries over the last few years, especially on the import side.

But Europe remains far more important than East Asia as an export partner for Eurasia. Shorter physical distance and economic size were key determinants of bringing about this pattern. Europe has also reduced trade costs and the "economic distance" between Eurasia and itself. Market access barriers may create an additional bias toward Europe, especially for nonresource goods. Improving European market access for Eurasian countries closer to Europe has been a focus of the EU's neighborhood strategy. The direction of trade in the future will depend on growth patterns and the extent to which Eurasia and trading partners reduce economic distance and other trade costs. Because of the substantially greater overall volume of trade with Europe, this bias is likely to continue for some time but with rising balance toward the east, especially for resource-rich countries.

**Eurasia trades more with the west than with the east because of economic endowments.** The composition of Eurasia’s trade with external partners follows from the relative endowment levels. Eurasia’s physical and institutional capital, both near the bottom of the global range, do not appear in exports to the EU and East Asia, both with higher endowments in this area. Without the ability to produce many of the goods intensive in these two factors, it was inevitable that natural capital-intensive goods would dominate the export basket and increase concentration. In the short term—with the current set of endowments—growth in Eurasia’s nonresource exports to East Asia is likely to be higher than growth in nonresource exports to Europe, perhaps most likely in human capital-intensive goods.

**Trade within Eurasia is increasingly driven by endowment differentials.** During Soviet times, manufacturing products dominated inter-republic trade, but today, minerals and metals together dominate. Some inter-republican Soviet trade likely followed endowments, but much did not. Endowments seem to be driving trade to a greater extent than before, as factor-intensive goods are increasingly flowing from factor-rich to factor-poor countries within Eurasia. Current intraregional trade includes products more institution and physical capital-intensive than present in external trade. The standards and certification regime represents an institutional peculiarity that may contribute to a pattern of regional trade beyond what normally anchors trade to nearby countries.

**The benefits from regional integration will be greater in the future; the benefits from global integration are great now.** In the short term, Eurasia can expand trade with growing economic powers in its immediate neighborhood, especially countries such as China, India, Korea, and Turkey. While trade with Eurasia’s neighbors will continue to be based on existing endowments over the short term, Eurasia can expand trade with its neighbors by reducing trade costs. Initiatives have thus far been focused on reintegrating Eurasia. Global integration may offer significantly more benefits for Eurasia, not only in allowing greater trade with dynamic economies, but also in creating the conditions for greater intra-Eurasian integration some years down the road.

Diversifying its endowments will allow Eurasia to change both the composition of trade and the profile of production (chapter 3). As their asset portfolios become more diversified, Eurasian countries will—through intra-industry trade—also benefit from economic relations with countries that have similar endowments. That time will come sooner the better Eurasia manages its natural resources, builds human and physical capital, and improves its institutions. How Eurasian governments can best diversify its assets is the subject of the last three chapters in this report.

## Annex 2A Availability of trade data

While much better than data for services trade, reliable merchandise trade statistics are often hard to gather for developing countries. For Eurasian countries, a gap exists during the turbulent post-Soviet transition period when few countries reported statistics to international databases. Further, even with available statistics, official trade itself ignores the prevalence of informal cross-border trade among neighboring countries.

A common way to get around the gaps in official trade data in developing countries is by using importer-reported trade. This means exports of Eurasian countries are generated by using the imports that their export partners report. Generally, import statistics are more reliable than export statistics worldwide because import data are associated with collection of revenues based on import tariffs.

Problems still exist then when analyzing intraregional trade if countries do not report their import statistics at all. Some countries, such as Tajikistan, Turkmenistan, and Uzbekistan in Central Asia, do not report imports or exports. Kazakhstan did not report in 2010 (table 2A.1).

Even among countries that do report, much trade volume, especially in Central Asia, is informal cross-border trade, which is not registered in official statistics. Much of this informal trade, mediated by bazaars in the Kyrgyz Republic, for example, is in low-end manufacturing and agricultural goods. Kaminski and Mitra (2012) estimate that a substantial portion of Central Asian trade flows are not represented in official statistics. The overall result thus underestimates the volume of intraregional trade, and the existing figures only represent goods traded in the formal economy.

**Table 2A.1. UN Comtrade data gaps and strategy employed to fill gaps**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Armenia																				
Azerbaijan																				
Belarus																				
Georgia																				
Kazakhstan																				
Kyrgyz Republic																				
Moldova																				
Russian Federation																				
Tajikistan																				
Turkmenistan																				
Ukraine																				
Uzbekistan																				

Source: UNSD, n.d.

Note: All shaded boxes indicate country-year combinations where rest of world exports were employed. Brown indicates no reported data so rest of world exports must be used. Green indicates places where disaggregated statistics were not available, though total trade figures were available, so disaggregated rest of world exports were employed. Blue indicates places where rest of world exports were chosen over own data for the sake of continuity, even though reported data were available. UN Comtrade is the United Nations Commodity Trade Statistics Database.

In this report, intra-Eurasian trade and Eurasian imports from the rest of the world were adjusted using reported export statistics from the United Nations Commodity Trade Statistics Database (see table 2A.1). This risks misalignment due to the cost, insurance, and freight (CIF)/free on board (FOB) difference—imports are reported including CIF while exports are reported FOB without insurance and freight. And as mentioned, export statistics are less reliable than import statistics. There are still some key gaps: bilateral trade among Tajikistan, Turkmenistan, and Uzbekistan is missed entirely.

The first year that Eurasian countries show up in partner reports is 1992 (the Soviet Union was formally dissolved at the end of 1991). Eurasia's trade with non-Eurasian partners at the disaggregated level in 1992–95 is available through partner reports. Data on intra-Eurasian trade begin to be available in 1996, though they are incomplete. There are no disaggregated data on intra-Eurasian trade for 1992–95.

## Annex 2B Methodology of the revealed factor intensity analysis

The process for generating the underlying factor intensities of individual products was conducted with some modifications to the approach proposed by Shirotori, Tumurchudur, and Cadot (2010) at the most disaggregated level of product classification.

First, the measurements of the endowment levels were standardized so that they could be compared. This is because each indicator is measured on a different scale with different units. For example, the rule-of-law measurement runs from  $-2.5$  to  $2.5$ , which is particular to this measure. Each indicator was standardized across countries and years to represent a distance from the average endowment level. Standardizing across years also protects against any changes in the way that the measurement was calculated.

Second, endowment levels were weighted by the extent to which the share of a product in a country's exports is greater than the share of that product in world exports, using a measure of revealed comparative advantage with slight modifications suggested by Hausmann, Hwang, and Rodrik (2007). Because of reporting gaps, the global factor intensities are generated from a balanced panel of 127 countries for which data were available for each of the four indicators over the period. This included 7 of 12 Eurasian countries. Thus the factor intensities are a weighted average of standardized endowment levels.

The revealed factor intensity for each factor type-product-year combination is summarized by the following equation:

Where

$$RFI_{f,p,t} = \sum_c \left( \frac{x_{c,p,t} / X_{c,t}}{\sum_c (x_{c,p,t} / X_{c,t})} \right) f_{c,t}, \quad (2B.1)$$

$$f_{c,t} = \frac{e_{c,t} - \bar{e}_c}{\sigma_c},$$

- $f$  = factor (endowment) level,
- $c$  = country,
- $p$  = product (Harmonized System 88/92 at the six-digit level),
- $t$  = year (1995, 2000, 2005, and 2010),
- $e$  = endowment level,
- $x_{c,p,t}$  = exports of country  $c$  of product  $p$  in year  $t$ ,
- $X_{c,t}$  = total exports of country  $c$  in year  $t$ , and
- $f_{c,t}$  = underlying indicator of endowment.

Finally, the factor intensities were averaged across the entire period under examination (1995–2010) so that changes in the way a product might be produced (with a different combination of factors) or by a different set of countries over the period are not reflected here, and the focus can be on the impact of the changing composition of a trade flow.

These factor intensity measurements then allow us to answer the following questions:

*What factor endowments are represented in a given trade flow?* To assess the factors in a given trade flow, we calculate a “factor intensity index,” in which

the factor intensities calculated previously are weighted by the share of each product in a given trade flow (such as exports from Eurasia to Europe).

Where

$$RFI_{f,d,t} = \sum_p \left( \frac{X_{d,p,t}}{X_{d,t}} \right) RFI_{f,p,t} \quad (2B.2)$$

- $d$  = trade flow.

*How large is the gap between the factor endowments that Eurasia is exporting to the world and what partners are trying to import from the world? How is this gap changing over time?* To understand this, an “endowment gap” is calculated, defined as the difference between the factors embodied in Eurasia’s exports to the world versus the factors embodied in a partner’s imports from the world. For each year and factor, we compute the difference between the factor intensity index of Eurasian exports to the world minus the factor intensity index of a partner’s imports from the world.

$$Gap_{f,p,t} = Eurasia\ RFI_{f,d,t} - Partner\ RFI_{f,d,t'} \quad (2B.3)$$

Where

- $d$  = trade flow to world/from world.

*What is the range of factor intensities across which Eurasia exports to the world? How does this match up with the structure of a trading partner’s imports?* At a given endowment level in an economy at a certain time, a country can export goods over a continuum of factor intensities—that is, it exports goods above and below the average. At the same time, foreign trade partners, given the endowment level in their own economies, import goods over a range of factor intensity levels. The level of correspondence will result in a certain flow of goods between the economies, subject to bilateral trade costs.

Source: Lederman, Pathikonda, and Rojas 2013.

## Notes

- 1 Data on oil and natural gas reserves, as well as oil production, are obtained from EIA (n.d.) for 2011.
- 2 Both import of goods and services and savings are in 2011 U.S. dollars from World Bank (n.d.).
- 3 COMECON included Soviet countries (Eurasian countries plus the Baltic States), Bulgaria, Czechoslovakia, Hungary, Poland, Romania, East Germany, Mongolia, Cuba, and Vietnam.
- 4 This export share is driven partly by new oil exports through pipelines from Russia (beginning in 2011) and Kazakhstan (2006) that run directly to China, which is now the world's largest energy consumer, in addition to a gas pipeline that runs to China from Turkmenistan over Kazakhstani and Uzbek territory.
- 5 Export shares are from World Bank (n.d.).
- 6 Natural factors will always result in some wedge between export and import prices. But natural trade barriers interact with policies in areas such as transport and trade facilitation to determine the level of trade costs.
- 7 The access to seaports offers a bigger opportunity to participate in international trade, particularly with intermediate goods. Sea transport is generally cheaper than land transport (Limão and Venables 2001).
- 8 Preferential trade agreements simplify trade between two countries aiming for closer integration. A preferential trade agreement gives preferential access to specific products. The tariff applied for the specific goods traded is lower than the tariff for other goods and for trade with countries not taking part in the preferential trade agreement. Preferential rates are allowed under World Trade Organization rules to be below the "nondiscriminatory" most-favored-nation rate, which applies to other product categories and trade with other countries.
- 9 As with crustaceans from Armenia, and sturgeon and caviar from Kazakhstan.
- 10 The Heckscher-Ohlin model has four central theorems: the Heckscher-Ohlin and the Heckscher-Ohlin-Vanek theorems on trade in goods and factor services; the Rybczynski theorem on production; the Stolper-Samuelson theory that later examined the effect of the Heckscher-Ohlin mechanism linking goods and factor prices; and the factor price equalization theorem. Together they are termed the "factor proportions theory" as it emphasizes comparative advantage arising from relative factor endowments as a driver of trade patterns.
- 11 Indicators for factor endowment levels were generated using the following cross-country indicators. The institutional capital indicator is the rule-of-law rating of the World Governance Indicators by Kaufmann, Kraay, and Mastruzzi (2010). The rule of law, usually essential for the functioning of the private sector, is highly correlated with other measures of the institutional environment. The natural capital indicator is from the Wealth of Nations dataset (World Bank 2011b), using measurements from 1995 to 2005. In this measure, natural capital is the sum of subsoil assets, timber resources, nontimber forest resources, cropland, pastureland, and protected areas. (Subsoil assets include oil, natural gas, hard coal, lignite, and minerals; minerals in turn include bauxite, copper, gold, iron, lead, nickel, phosphate, silver, tin, and zinc.) The measurement of physical capital stock is taken from World Bank staff calculations generated by applying the perpetual inventory method on investment flows and subtracting annual depreciation of the capital stock. Physical capital stock is divided by the labor force to account for the relative abundance of labor. Human capital is measured by average years of schooling, a widely used indicator constructed by Barro and Lee (2010) on educational attainment of the population older than 15 years.
- 12 This part of the chapter views Eurasia as one entity, even though Eurasian countries themselves vary in their endowments. Later, the analysis disaggregates Eurasian countries.
- 13 See chapter 5.
- 14 Resource dependence is measured by per capita net exports of minerals. Per capita GDP serves as a measure of productivity, and labor force serves as a measure of size of the economy.
- 15 This breaks down into two questions: To what extent are factor-rich countries exporting a given factor to factor-poor countries? And does relative abundance of a factor predict a country's net factor content in its intra-Eurasian trade? It is empirically easier to show support for the pattern of trade and more difficult to show support for predictions on net factor content of trade.
- 16 Most countries in the relatively "rich" and relatively "poor" group stay in one group for the entire period for physical capital, but there was some switching between the rich and poor group for institutions. In 2005, Russia was the seventh-ranked country in Eurasia on institutions, placing it in the



poor group, after rankings of fifth in 1995 and sixth in 2000. It moved back into the rich group with a ranking of fifth in 2010. Because Russia's position matters greatly to the volume of a group's trade, it is an outlier, which breaks the illustrated trend for that one year. So for 2005 Russia is kept in the institution-rich grouping, as its average rank over the period is still solidly in the top half of Eurasian countries.

- 17 Management system standards are the most widely spread international standards, surpassing product standards, and there are more data on their adoption rate. So the ISO 9000 series can serve as a valuable instrument in gauging Eurasian countries' movement toward relevant international best practices.
- 18 Separately, most global automotive players require that their suppliers obtain the ISO/TS 16949 common management standard, but major vehicle producers Russia and Ukraine account for only a small number of registered certificates per million vehicles produced.
- 19 A few bilateral trade agreements with external partners have been signed. After receiving tariff-free and quota-free access to the European market under a one-way preference scheme, Armenia and Georgia are now in negotiations for deep and comprehensive reciprocal trade concessions. Ukraine and the EU are also negotiating a free trade agreement (see box 2.7).
- 20 Tariffs increased 5.3–9.5 percent on a trade-weighted basis.
- 21 The V-shaped flying geese pattern was based on factor endowments: as labor costs rose in the first set of industrializing countries (the leading geese), low-skilled manufacturing moved to the next set of countries that welcomed investors (the geese just behind).

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# Chapter Three

## Economic Structures

Moscow-based Rubin was a leading electronics manufacturer in the Soviet Union. In addition to supplying military and space technology, it became a household brand as the leading producer of televisions. Founded in 1951, Rubin began production in 1952 and developed television models that became fixtures of Soviet living rooms for decades. By the 1970s, Rubin was producing a million television sets a year.

In 1992, after the Soviet Union collapsed, the Rubin industrial complex was divided into separate enterprises, including the Rubin Moscow Television Factory (MTZ Rubin), which was made a joint-stock company. In 1997, private investors acquired the factory, as well as Videofon, an electronics manufacturer in Voronezh in the western Russian Federation. In 1999, all television manufacturing was moved there, while managerial and design functions stayed in Moscow. From a near standstill in 1997—and on the back of the 1998 depreciation of the ruble, which made imports more expensive—Rubin had regained market share in Russia by the early 2000s, with several hundred thousand units produced in its Voronezh plant. In 2003, that plant and the Rubin trademark were acquired by Rolsen Electronics, a subsidiary of Korean multinational LG that has since assembled televisions in Russian plants using imported parts.

After it sold the television manufacturing side, development and management of real estate became MTZ Rubin's only business (it retained its original name). The 150,000 square meters of prime real estate hosting the Moscow factory were converted into a shopping center. Today, the site also hosts a business center, high-end apartments, and a hotel.

Experiences similar to Rubin's—from high-tech manufacturer and mass producer of consumer goods to real estate developer—have contributed to the perception that Eurasian countries could produce a wider range of products before the transition. This is true to some extent, because the Soviet bloc was almost autarkic and followed an import-substitution strategy motivated by the desire to win the race against the capitalist West.

But after the Soviet Union dissolved, the structure of Eurasian economies changed radically. In some countries inducing a more concentrated economic structure, the share of services increased from less than half of economic activity to more than two-thirds. In parallel, the share of extractive industries in value added increased 30 percent in Russia, more than doubled in Kazakhstan, and tripled in Azerbaijan.<sup>1</sup> Even Ukraine, which is not as richly endowed with

mineral resources, has made its way into international markets with energy-intensive production (like metals and chemicals) in which subsidized, resource-based energy inputs play a large role.

Growing resource dependence has engendered fear among resource-rich Eurasian countries of sliding toward a preindustrial stage of development that is not only eroding the prestige of countries that used to pride themselves on their world superpower status but that will, eventually, prove fatal when the bonanza of natural resources is exhausted. Some of these concerns may be justified. Resource-dependent economies seem to grow more slowly and tend to be more volatile because of swings in commodity prices. Governments of Eurasia have put in place measures targeting specific—often knowledge-based—nonresource sectors. The intent is to jump-start a “knowledge economy” and to free countries from the “curse” of natural resources.

However, such seeding may not be falling on fertile soil and might even be diverting resources and attention from other areas—such as health, education, infrastructure, business regulation, and enforcement of market competition—which would yield higher benefits in the long run. Building on these considerations, this chapter answers three questions:

**Have Eurasian economies become more concentrated?** Eurasia has become somewhat less diversified since the early 1990s. Entire industries—especially in manufacturing—have contracted sharply or vanished in many Eurasian countries. Services—the underpinning of dynamic modern economies—have emerged from a low base to become the main driver of value added and employment.

**Has economic performance—as measured by productivity growth, private employment, and output volatility—improved or deteriorated?** A more concentrated economic structure has not prevented Eurasian economies from generating new employment, increasing productivity, and improving overall economic outcomes. It has, however, exposed them to the dangers of output volatility, which have so far been managed satisfactorily, thanks in part to the buffer afforded by resource revenue.

**Can industrial policy help improve these outcomes?** The proliferation of industrial policy initiatives targeted at specific sectors can succeed only if backed up by more fundamental measures. These should aim to build the physical capital, the human capital, and (perhaps most important) the institutions that provide the structure and incentives to invest and innovate across the economy.

## Less manufacturing, more services and oil

Growth in centrally planned economies was driven by factor accumulation, with investments focused on manufacturing, especially heavy industry. Other sectors of the economy (mainly services, less so agriculture) were largely neglected, as they were seen as providing little value to growth and to the ultimate goal of overtaking capitalist economies. But central planners failed to notice that, since the 1970s, growth in advanced Western economies was driven largely by an

expanding services sector and by its ability to support the rest of the economy, increasing overall productivity. The underdevelopment of services made it impossible for the Soviet Union to catch up with the West.

The liberalization that accompanied the transition to a market economy gave rise to two far-reaching trends. First was the reallocation of factors of production across broad sectors, with services rapidly emerging from a very low base in the early 1990s to become the main contributor to value added and employment growth. Second was the exposure to international competition, which caused the steep decline of entire industries, especially in manufacturing, that could not withstand the effects of price and trade liberalization. The result of these changes was a transformation—concentration—of the sectoral composition of value added and employment in Eurasia (table 3.1; see annex 3A for a more detailed breakdown).

The degree of this concentration is not easy to quantify, because measures of concentration are somewhat arbitrary and depend on the level of disaggregation of sectors chosen to represent the whole economy. For this study, sector concentration is evaluated by estimating the Herfindahl-Hirschman Index for different levels of disaggregation.

As a first step, to identify general trends, the economy is disaggregated into four broad sectors: agriculture, mining, manufacturing, and a wide definition of “services” that combines “pure” services, public administration, utilities, and construction (figure 3.1a).<sup>2</sup> By this measure, concentration appears to have increased since the late 1990s in most Eurasian countries, due mainly to a shift from agriculture and manufacturing toward various services subsectors.<sup>3</sup> Concentration has generally been more pronounced in resource-poor countries, where the Herfindahl-Hirschman Index rose 35 percent on average over 1997–2010. In the largest economy, Russia, the contribution of the sectors to total value added does not appear to have changed substantially since the early 2000s, though a different picture would emerge if data from the 1990s were included.

When disaggregating the sectors further, notably by splitting the broad category of services, concentration appears to have increased only in Azerbaijan and Kazakhstan (figure 3.1b). This confirms that most Eurasian countries saw value added flow in more or less even measure to services. In Azerbaijan and Kazakhstan, the shift was partly offset by the huge growth in mining. Since the late 1990s, the value-added share of mining has tripled in Azerbaijan—to account for half of economic activity in 2010. On this more disaggregated classification, resource-poor countries became more diversified, driven by the relative decline in agriculture, manufacturing, and mining in favor of services.

The sectoral distribution of employment and value added in 2009 shows stark differences between resource-rich and resource-poor countries (figure 3.2). The primary sector (agriculture, hunting, forestry, and fishery) accounts for averages of 25 percent of employment and 10 percent of value added in resource-poor Eurasia, compared with 9 percent of employment and 5 percent of value added in the resource-rich countries. The share of manufacturing value added in resource-poor countries (27 percent) is almost twice that in resource-rich countries (14 percent). Construction is also more important in resource-poor

**Table 3.1. Eurasia's economy became more reliant on mining and services and less reliant on agriculture and manufacturing; underemployment in agriculture remains a challenge**

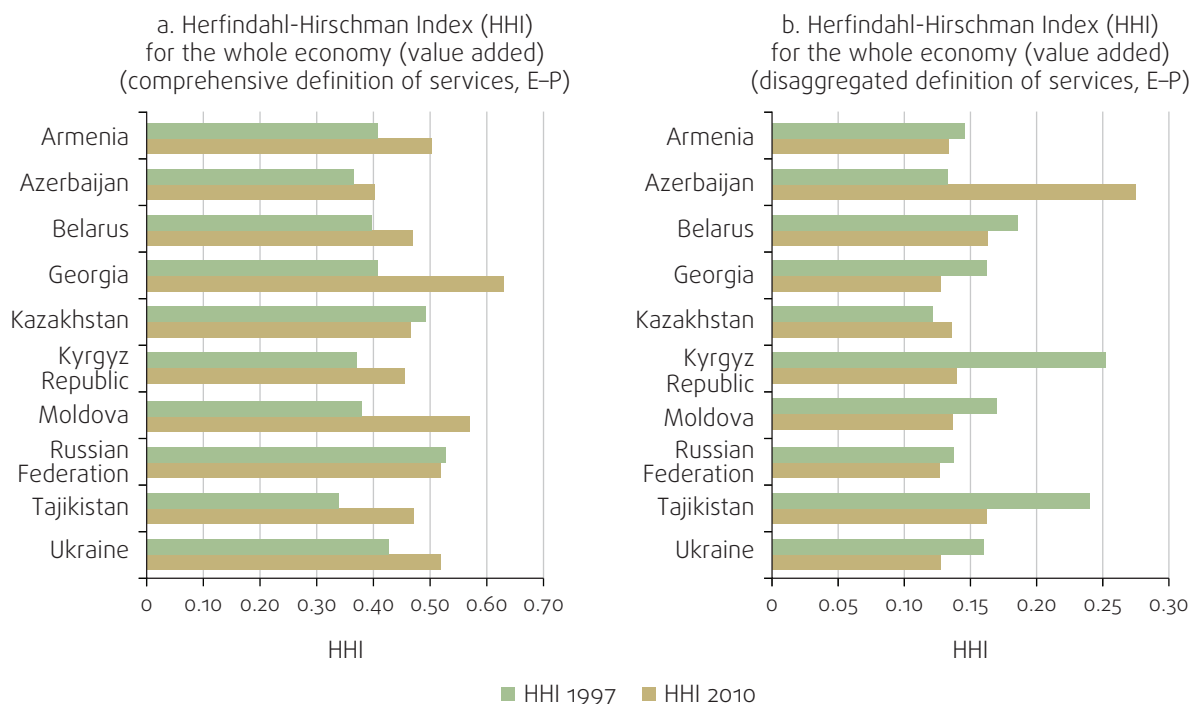
Sector shares of total value added (top) and employment (bottom)		Year	A + B: Agriculture, hunting and forestry, and fishery (percent)	C: Mining and quarrying (percent)	D: Manufacturing (percent)	E-P: Services (percent)
Total value added	Resource-rich					
	Azerbaijan	1997	21.7	15.9	9.0	2.3
		2010	5.9	48.9	5.1	1.1
	Kazakhstan	1997	11.9	9.2	11.5	5.2
		2009	6.2	18.1	11.0	1.8
	Russian Federation	1997	6.3	7.5	28.1	1.9
		2010	4.0	9.9	15.0	3.9
	Ukraine	1997	13.6	4.4	27.5	3.3
		2010	8.3	6.6	15.8	3.5
	Resource-poor					
	Armenia	1997	30.9	0.9	23.7	44.5
		2010	18.8	2.8	10.7	67.6
	Belarus	1997	15.1	0.0	34.3	50.6
		2010	10.2	0.4	26.6	62.9
Georgia	1997	29.1	0.4	16.0	54.0	
	2010	8.3	1.0	12.0	78.6	
Kyrgyz Republic	1997	44.0	0.4	17.8	37.8	
	2010	18.8	0.7	18.2	62.4	
Moldova	1997	28.9	0.2	20.4	50.4	
	2010	14.1	0.4	12.4	72.8	
Employment	Resource-rich					
	Azerbaijan	1997	42.3	1.1	4.8	51.8
		2010	38.4	1.1	4.9	55.6
	Kazakhstan	1997	26.7	4.2	8.9	60.2
		2009	30.2	2.5	7.3	60.0
	Russian Federation	2002	11.7	1.8	18.7	67.8
		2010	8.6	1.9	16.4	73.0
	Ukraine	1997	20.9	3.4	17.7	58.0
		2010	15.8	2.9	18.9	62.3
	Resource-poor					
	Armenia	2000	45.3	0.7	10.7	43.3
		2010	44.2	0.7	8.5	46.6
	Georgia	1997	48.5	0.3	7.0	43.9
		2010	53.4	0.3	4.9	41.3
Kyrgyz Republic	1997	49.0	0.5	8.4	42.1	
	2010	34.0	0.6	8.1	56.5	
Moldova	1997	45.7	0.2	9.4	44.6	
	2010	31.1	0.3	10.9	57.7	

Sources: For value added, World Bank staff calculations based on UNSD, n.d.a, at the International Standard Industrial Classification Rev. 3 one-digit level. Value-added shares were computed based on local current prices. For employment, World Bank staff elaborations based on International Labour Organization data at the International Standard Industrial Classification Rev. 3 one-digit level. For Armenia, the Russian Federation, Ukraine, and the Kyrgyz Republic, the value for "C: Mining and quarrying" for 1997 is obtained from UNSD, n.d.c.

Note: Services comprise International Standard Industrial Classification (one-digit level) sections E through P: E = electricity, gas, and water supply; F = construction; GH = wholesale and retail trade/hotels and restaurants; I = transport, storage, and communication; JK = financial intermediation/real estate, renting, and business activities; L = public administration; MNO = education/health/other services; P = private households.



Figure 3.1. Economic activity has become more concentrated in most Eurasian countries since the late 1990s



Source: World Bank staff calculations based on UN data for value added at the International Standard Industrial Classification Rev. 3 one-digit level aggregated as follows: A = agriculture, hunting, and forestry + B = fishery; C = mining and quarrying; D = manufacturing; E = electricity, gas, and water supply; F = construction; GH = wholesale and retail trade/hotels and restaurants; I = transport, storage, and communication; JK = financial intermediation/real estate, renting, and business activities; L = public administration; MNO = education/health/other services; and P = private households.

Note: Armenia's and Tajikistan's earliest available data were for 2000; the Russian Federation's were for 2002. Kazakhstan's latest available data were for 2009. Value-added shares were computed in purchasing power parity 2005 U.S. dollars. The Herfindahl-Hirschman Index ranges from 0.1 (no concentration) to 1 (concentrated).

Eurasia (12 percent versus 6 percent of total value added). Resource-poor countries seem to lag in the weight of more sophisticated service activities. Logistics (transport, storage, and communication) and the financial sector together account for 22 percent of value added in resource-poor Eurasia, compared with more than 27 percent in their resource-rich neighbors.

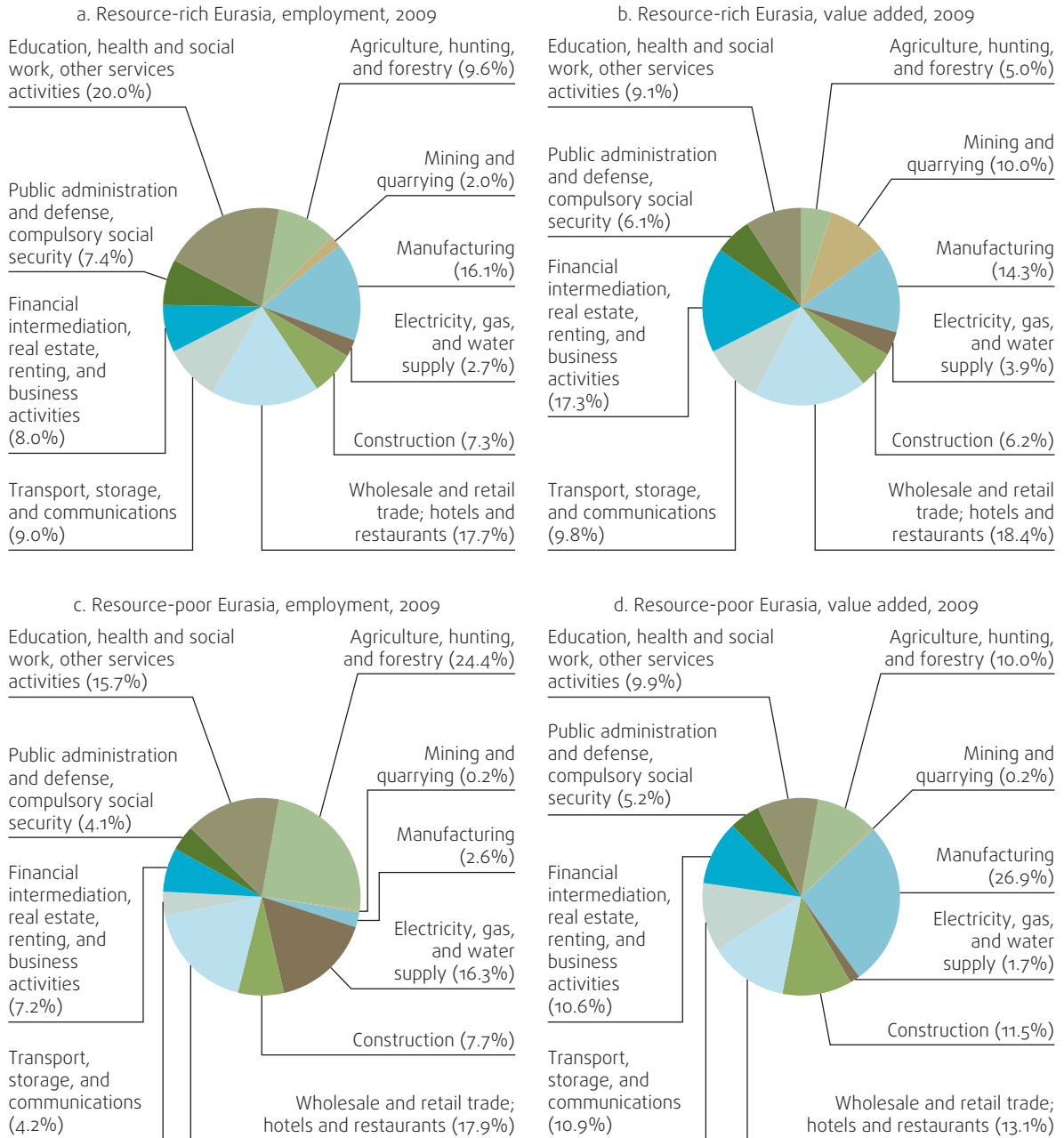
The patterns and trends in services, agriculture, manufacturing, and mining are now examined more closely.

## Services

### Services almost doubled their share in economic activity and employment

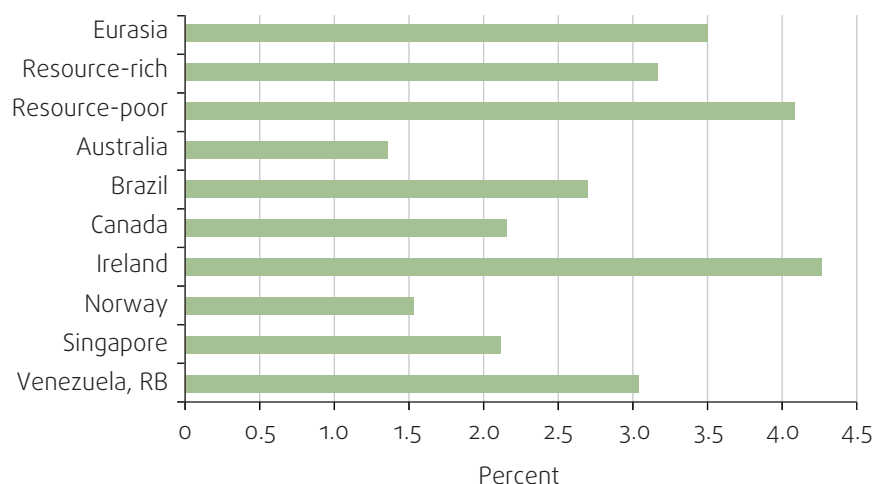
The rise of services was particularly pronounced in less-developed Eurasian economies, which started from a lower base. The share of services in the

**Figure 3.2. Resource-rich and resource-poor countries show large differences in employment and value added**



Source: World Bank staff calculations based on International Labour Organization employment data and UN data for value added at the International Standard Industrial Classification Rev. 3 one-digit level.

Note: Value-added shares were computed in purchasing power parity 2005 U.S. dollars. The analysis is for 2009, the most recent year with data. Population-based averages are depicted for the sectoral employment distribution for resource-rich and resource-poor Eurasian countries. The value-added figures are weighted by GDP per capita, in purchasing power parity 2005 U.S. dollars. Resource-rich countries are Azerbaijan, Kazakhstan, the Russian Federation, and Ukraine. Resource-poor countries are Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan.



**Figure 3.3. The rise of services, 1989–2009**

(Average annual services employment growth in Eurasia and comparators)

Source: World Bank staff calculations based on International Labour Organization data.

Note: Population-based averages for employment growth rates for resource-rich and resource-poor Eurasian countries. Resource-rich countries are Azerbaijan, Kazakhstan, the Russian Federation, and Ukraine. Resource-poor countries are Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan.

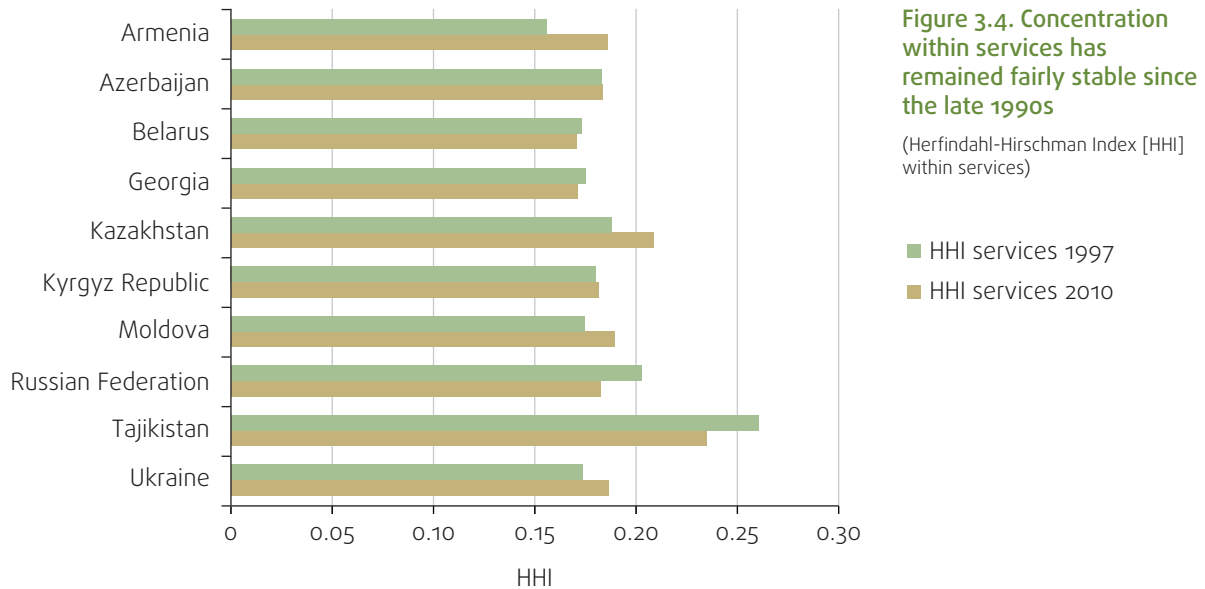
Kyrgyz Republic grew from 38 percent of value added in 1997 to 62 percent in 2010, and in Moldova from 50 percent to 73 percent. In Ukraine, the share increased from 37 percent in 1989 to 70 percent in 2009. In Azerbaijan and Kazakhstan, the share fell from the mid- or late-1990s to 2009–10, owing to the substantial rise of extractive industries.

International Labour Organization data suggest that employment in services continued to rise in both resource-rich and resource-poor countries, keeping pace with the changing structure of their economies. In more-developed resource-rich countries, such as Kazakhstan and Russia, more than 60 percent of the labor force now works in services. In resource-poor countries, such as Georgia and Armenia, services account for 41 percent and 47 percent of total employment. This reflects sustained growth of services jobs at a pace of more than 3 percent a year in both resource-rich and resource-poor Eurasian countries (figure 3.3).

### **Value added from services (less so, employment) varies between resource-rich countries and resource-poor countries**

Concentration within services has remained fairly stable since the late 1990s, indicating that most of the shifts of employment toward services, and within service activities, had by then already occurred (figure 3.4).

The services subsectors that have most increased their shares of value added are construction, wholesale and retail trade, and financial and real estate activities, though with some differences between resource-rich and resource-poor countries (figure 3.5). In resource-rich countries, the highest contributions to value added come from wholesale and retail trade and



**Figure 3.4. Concentration within services has remained fairly stable since the late 1990s**

(Herfindahl-Hirschman Index [HHI] within services)

■ HHI services 1997  
■ HHI services 2010

*Source:* World Bank staff calculations based on UN data for value added at the International Standard Industrial Classification Rev. 3 one-digit level (E–P).

*Note:* E = electricity, gas, and water supply; F = construction; GH = wholesale and retail trade/hotels and restaurants; I = transport, storage, and communications; JK = financial intermediation/real estate, renting, and business activities; L = public administration; MNO = education/health/other services; and P = private households. The Herfindahl-Hirschman Index ranges from 0.08 (no concentration) to 1 (concentrated). The Russian Federation's earliest available data were for 2002. Kazakhstan's latest available data were for 2009; Tajikistan's were for 2010.

hotels and restaurants; financial intermediation and real estate activities; and activities related to logistics (transport, storage, and communication). Financial intermediation and real estate appears especially productive, employing just over a tenth of the services labor force but contributing a quarter of services value added.

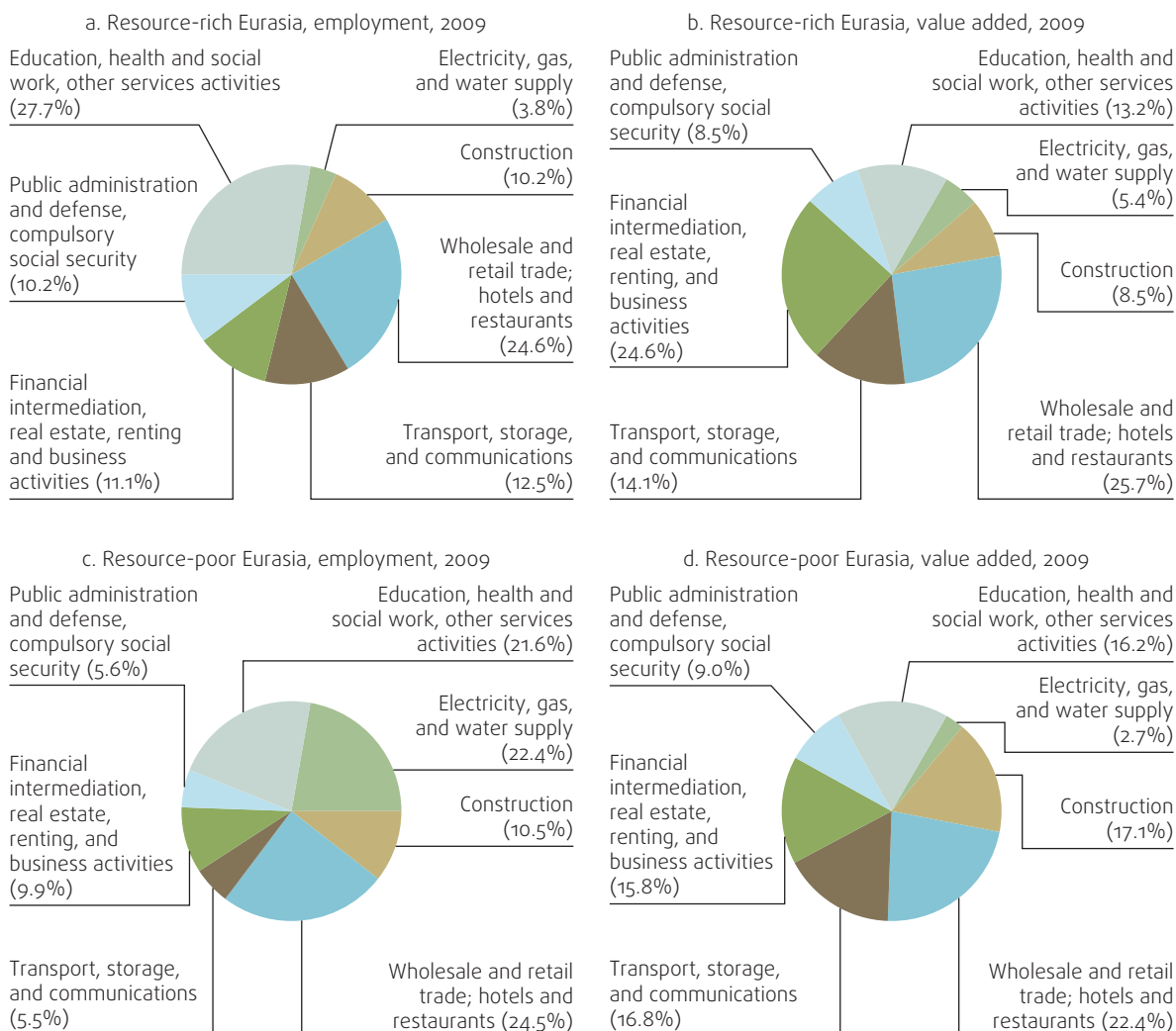
The picture is different in resource-poor countries. Trade and hotels and restaurants are still the largest services subsectors. But financial intermediation and real estate, though in employment playing a similar role to that in resource-rich countries, contributes a far smaller portion of value added (16 percent). Construction has a greater share of value added (17 percent versus only 9 percent in resource-rich countries). Activities that are often performed by public sector entities (public administration, education and health, and utilities) occupy almost 40 percent of employment in services in resource-poor countries, compared with about 25 percent in resource-rich countries.

## Agriculture

### Farming saw a steep decline after the transition

Among resource-rich Eurasian countries, the decline in agriculture is clearest in Azerbaijan and Ukraine, where at the start of the 1990s the sector was still

**Figure 3.5. Trade is the largest services sector in Eurasia, but resource-poor countries rely more on the public sector and construction, and resource-rich countries more on financial intermediation**



Source: World Bank staff calculations based on International Labour Organization employment data and UN data for value added at the International Standard Industrial Classification Rev. 3 one-digit level.

Note: Value-added shares were computed in purchasing power parity 2005 U.S. dollars. Population-based averages are depicted for the sectoral employment distribution for resource-rich and resource-poor Eurasian countries. The value-added figures are weighted by GDP per capita, in purchasing power parity 2005 U.S. dollars. Resource-rich countries are Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor countries are Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan.

fairly large. In Azerbaijan, agriculture fell from 22 percent of value added in 1997 to only 6 percent by end-2010.<sup>4</sup> Yet in many resource-poor countries, agriculture's contribution contracted even more, plunging nearly four times in Georgia (from 29 percent in 1997 to 8 percent in 2010) and more than half in Moldova (from 29 percent in 1991 to 14 percent in 2010).

Despite this drop, at least a third of employment in many resource-poor economies is still in agriculture, including Georgia (53 percent), Armenia (44 percent), and the Kyrgyz Republic (34 percent).<sup>5</sup> This suggests that agriculture is often an employer of last resort, pointing to a lack of opportunities in other sectors, like services. Equally, major sectoral shifts in employment require huge readjustments in skills and often also a geographic reallocation of workers (Rutkowski and Scarpetta 2005).

## Manufacturing

### The share of manufacturing declined in resource-rich and resource-poor countries alike

In resource-rich countries, manufacturing has declined as a share of value added and employment. In the extreme case of Ukraine, it contracted from 29 percent in 1997 to 17 percent in 2010. In resource-poor countries, manufacturing constituted around a third of the economy at the start of the 1990s. By value added, the sector collapsed by almost half after the transition in Moldova and Tajikistan but appears to have increased its share in Georgia. In contrast, manufacturing's share of employment has not changed much since the late 1990s. It shows a small decline in most countries, except in Moldova, where manufacturing employment increased from 10 percent to 11 percent over 1997–2008.

Market forces in the aftermath of the transition ensured that manufacturing became more concentrated in certain industries in most Eurasian countries, because the distribution of industry inherited from the Soviet Union was, by design, different from market patterns. The resulting distorted location of production units turned out to be unsustainable in the new order. Distance from factors of production, subcontractors, and destination markets saw entire industries disappear from the production landscape in many Eurasian countries (Gaddy and Hill 2003; World Bank 2004). The upshot was greater concentration in manufacturing: only industries (and firms) that were less artificially located managed to survive.

Smaller countries, such as Armenia, Azerbaijan, and the Kyrgyz Republic, were especially hard-hit. Their manufacturing value-added concentration almost tripled after the early 1990s (figure 3.6). Larger economies such as Russia and Ukraine, whose manufacturing bases were more diversified, recorded smaller increases in concentration, as their larger domestic markets and greater availability of factors of production allowed their more diversified manufacturing bases to survive. Georgia and Moldova are exceptions to this trend.

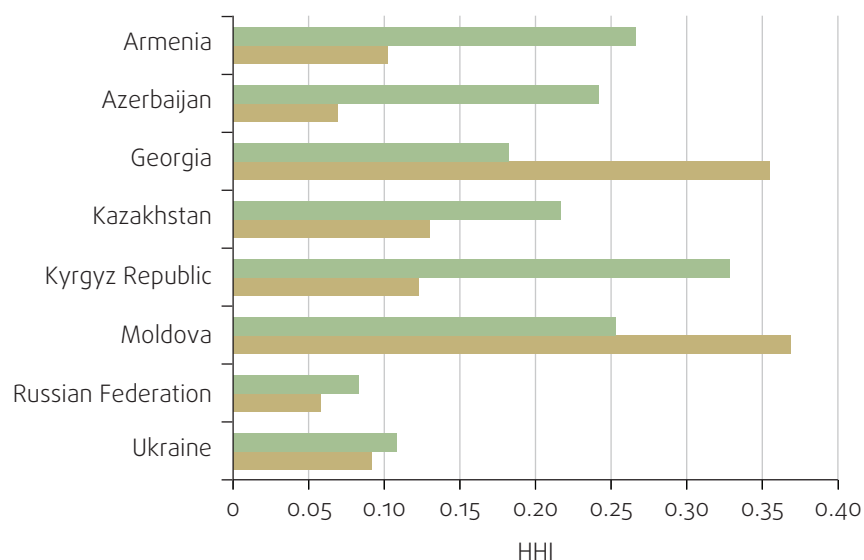
### Output and employment shifted sharply within manufacturing's subsectors

All countries saw large intrasectoral shifts within manufacturing, in output and employment (figure 3.7). The overall trend since the mid-1990s is one of manufacturing industries shrinking their employment and expanding their output. Growing sectors for most Eurasian countries are food and beverages, textiles, and basic metals. The coke, refined petroleum products, and nuclear

**Figure 3.6. Manufacturing value added became less diversified in most countries**

(Herfindahl-Hirschman Index [HHI] within manufacturing)

■ 2009  
■ 1993



*Source:* World Bank staff calculations based on UN data for value added at the International Standard Industrial Classification Rev. 3 two-digit level (15-37).

*Note:* Armenia's earliest available data were for 1994; Georgia's were for 1998. Kazakhstan's latest available data were for 2007.

fuel industry is becoming more relevant in the resource-rich countries. A country overview now follows.

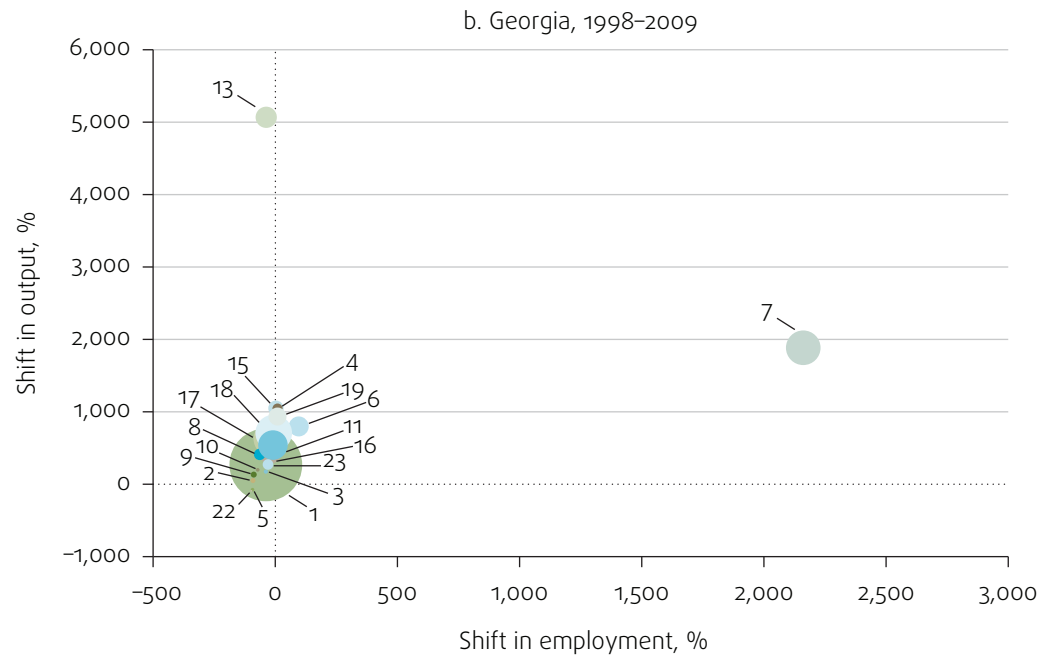
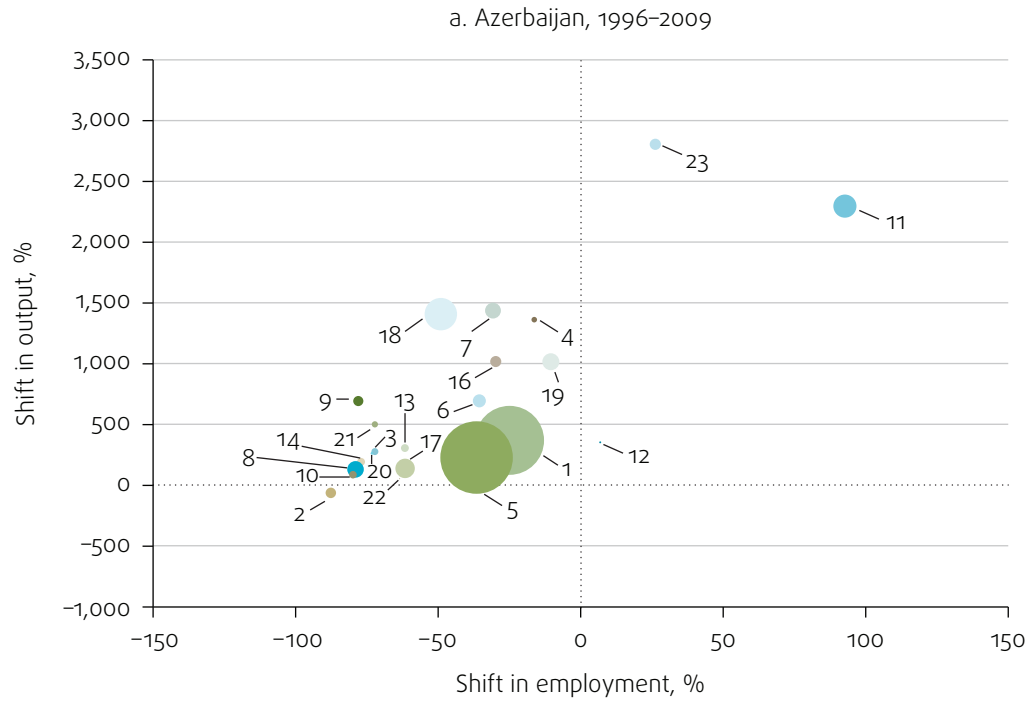
In Azerbaijan, food and beverages and textiles, which employed a large share of the workforce in the 1990s, contracted 26 and 91 percent, respectively, over 1996–2009. By contrast, other transportation equipment and furniture and other products grew immensely, particularly in output and employment. In the Soviet era, these two sectors had a negligible weight in the economy, but they have now become drivers of the country's manufacturing output and employment. With annual average growth over 1996–2009 of more than 164 percent, the two sectors accounted in 2009 for more than 5 percent of total output, up from less than 0.4 percent in 1996.

In Georgia, manufacturing output is dominated by food and beverages and the manufacture of nonmetallic mineral products, which together account for more than 53 percent of Georgian output. Like most Georgian manufacturing subsectors, these face stagnating employment set against annual output growth of 20 percent. The basic metal industry grew massively in output and employment, while tobacco production saw output climbing steeply but employment dropping 4.6 percent a year, boosting productivity. Georgia's motor vehicle industry, by contrast, is uncompetitive. Over 1998–2009, it collapsed from 1.5 percent of total output to 0.02 percent.

In Kazakhstan, a majority of industries faced an upward shift in output. Sectors facing a remarkable transformation are paper and paper production, motor vehicles, and other transportation equipment. The other transportation

**Figure 3.7. Manufacturing's winning and losing subsectors**

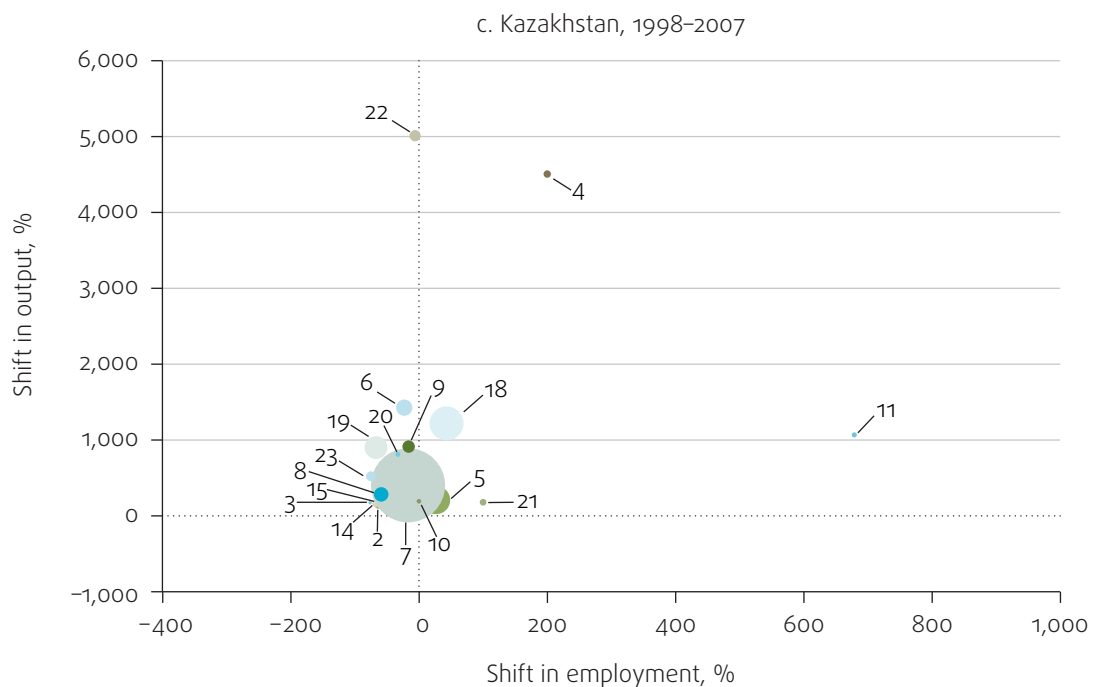
(Cumulative shifts in employment and output, percent)



(continued)

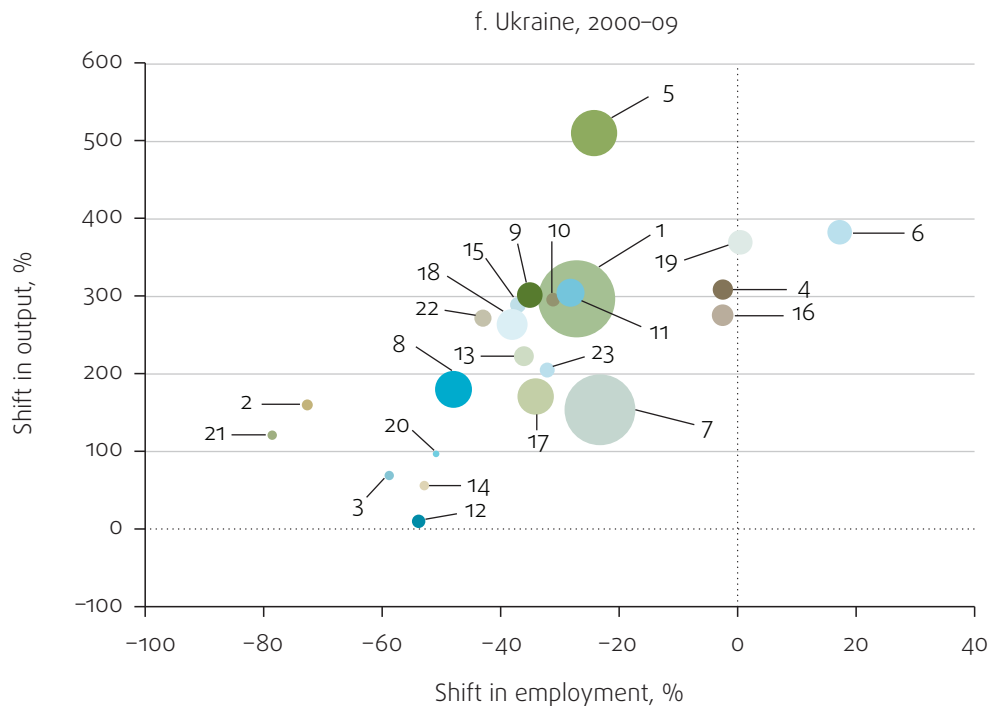
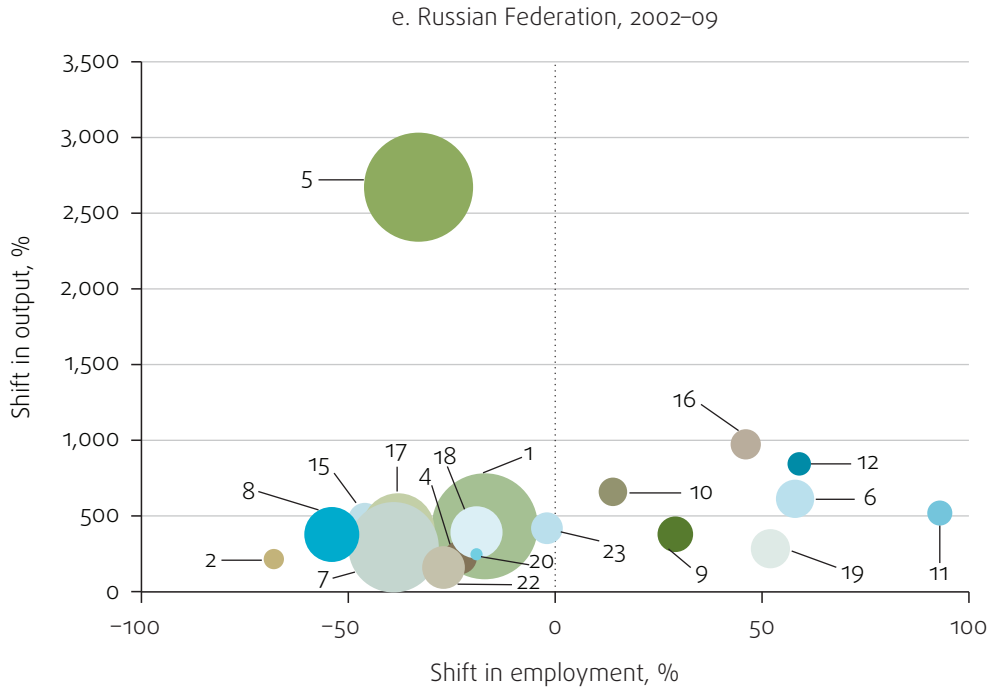


Figure 3.7. (cont.)



(continued)

Figure 3.7. Manufacturing's winning and losing subsectors (cont.)



(continued)

Figure 3.7. (cont.)

- |   |  |
|---|--|
| 1. ● Food and beverages                             | 13. ● Tobacco products                               |
| 2. ● Textiles                                       | 14. ● Wearing apparel, fur                           |
| 3. ● Leather, leather products, and footwear        | 15. ● Wood products (excluding furniture)            |
| 4. ● Paper and paper products                       | 16. ● Printing and publishing                        |
| 5. ● Coke, refined petroleum products, nuclear fuel | 17. ● Chemical and chemical products                 |
| 6. ● Rubber and plastics products                   | 18. ● Nonmetallic mineral products                   |
| 7. ● Basic metals                                   | 19. ● Fabricated metal products                      |
| 8. ● Machinery and equipment n.e.c.                 | 20. ● Office, accounting, and computing machinery    |
| 9. ● Electrical machinery and apparatus             | 21. ● Radio, television, and communication equipment |
| 10. ● Medical, precision, and optical instruments   | 22. ● Motor vehicles, trailers, semitrailers         |
| 11. ● Other transport equipment                     | 23. ● Furniture; manufacturing n.e.c.                |
| 12. ● Recycling                                     |  |

Sources: World Bank staff calculations based on International Labour Organization employment data and UN data for value added at the International Standard Industrial Classification Rev. 3 one-digit level.

Note: Value-added shares were computed in purchasing power parity 2005 U.S. dollars. Shift-share analysis of output and employment in manufacturing sectors. Industries in the upper-left corner are shrinking in employment but growing in output. Sectors in the upper-right corner are growing in both employment and output. Industries in the lower-right corner are shrinking in output but growing in employment. Industries in the lower-left corner are shrinking in both output and employment. The economic importance of each industry for each country, in terms of output at the end of the period, is shown in the size of the bubble.

equipment sector not only grew in output by an average of more than 100 percent a year but also is attracting a rising share of employment, which rose 676 percent in 1998–2007. The sector, however, still accounts for only 1 percent of total manufacturing output.

In the Kyrgyz Republic, the largest industry is basic metals, with a 54 percent share of manufacturing output. Over 1997–2009, it grew 47 percent a year in output and 0.2 percent in employment. By contrast, growth in paper and paper products (2,881 percent increase in output and 452 percent increase in employment), rubber and plastics (3,714 percent and 216 percent), and chemicals (1,963 percent and 515 percent) outpaced all other sectors. These booming sectors are still small, together accounting for less than 2.5 percent of total manufacturing output, but have the potential to grow. The Kyrgyz Republic is not competitive in higher technology industries, as seen in office, accounting, and computing machinery (where output declined 61 percent and employment 70 percent) and in medical, precision, and optical instruments (35 percent and 82 percent).

In the last decade, Russia faced the lowest declines in employment across all manufacturing sectors among Eurasian countries, indicating that its employment was better allocated according to comparative advantage than any other Eurasian country's. The most notable sector is coke, refined petroleum products, and nuclear fuel, which grew more than 2,672 percent in output over 2002–09. Food and beverages, basic metals, and chemicals recorded growing

output and declining employment. Rubber and plastics, fabricated metals, and other transportation equipment also saw large increases. Electrical machinery and apparatus grew substantially in output (an average of 66 percent a year) and slightly in employment (3 percent), as did medical precision and optical instruments (38 percent and 1.5 percent).

The most important industries for Ukraine are food and beverages; basic metals; coke, refined petroleum products, and nuclear fuel; chemicals; and machinery and equipment. These five industries managed average output growth of between 57 percent (coke, refined petroleum products, and nuclear fuel) and 17 percent (basic metals), together accounting for more than 70 percent of total manufacturing output in 2009. In employment, all manufacturing industries saw a decline over 2000–09 (except rubber and plastics, whose employment rose 17 percent). The biggest losses in employment were in radio, television, and communication equipment and in textiles, which contracted more than 75 percent.

## Mining

### Contribution to GDP growth, but not much to jobs

Extractive industries tripled their contribution to economic activity in some countries and have been major recipients of foreign direct investment (FDI) (box 3.1)—but with little impact on jobs. Resource-rich economies enjoyed a bonanza over the past decade due to high commodity prices. Perhaps the most impressive was Azerbaijan, where extractive industries surged from

#### Box 3.1. To which sectors has foreign investment gone?

In resource-rich countries like Azerbaijan<sup>a</sup> and Kazakhstan,<sup>b</sup> foreign direct investment (FDI) has been concentrated in extractive industries and in services that support oil and natural gas activities.

The Russian Federation's share of annual FDI inflows to its extractive industries fell from 19 percent in 2003 to 12 percent in 2010. However, over the same period, the proportion of FDI inflows to coke, refined petroleum products, and nuclear fuel rose from 0.6 percent to 11.6 percent, making it the biggest FDI-recipient manufacturing subsector in 2010.<sup>c</sup> The second-largest in 2010 was basic metals and fabricated metal products (6.7 percent of total FDI inflows), though its share fell over

the period. The biggest subsector was financial activity (33 percent), while real estate, renting, and business activities accounted for 6.4 percent of FDI inflows.

In Ukraine over 2007–11,<sup>d</sup> the largest recipients were financial activities, trade, and real estate, renting, and business activities. As for manufacturing, apart from the food and beverages subsector, which accounts for around 5 percent of FDI capital, the share of metallurgy and metal products rose from around 4 percent in 2008 to more than 12 percent in 2011 (likely the result of Russian investors taking advantage of the financial difficulties in a major Ukrainian company) (Górska and Wiśniewska 2010).

In Georgia over 2007–12,<sup>e</sup> the largest FDI recipients were energy (large, mainly Russian investments in hydropower) (Doggart 2011), manufacturing, transport and communications, and financial services.

In Armenia, the largest FDI inflows have focused on telecommunications, energy, mining, transport, and financial services (U.S. Department of State 2011; KPMG Armenia 2009).

And in Moldova, the largest shares of FDI in 2010 were in finance (22 percent), trade (19 percent), processing (18 percent), and property (18 percent). Around a third of the foreign investment stock is of Russian origin.<sup>f</sup>

a. Over 2002–10, an average of 65 percent of Azerbaijan's FDI went to the oil sector, with the share decreasing (Statistical Committee of Azerbaijan, as cited by the Embassy of Azerbaijan and in Günther and Jindra, 2009). Other studies place the oil sector's average share of FDI at 88 percent over 1993–2010 (Hubner 2011).

b. Approximately 75 percent of FDI inflows in Kazakhstan go to the oil and natural gas sectors, including supporting services (OECD 2011).

c. Federal State Statistics Service of Russia.

d. Statistical Yearbooks of Ukraine, 2007–2011.

e. National Statistics Office of Georgia, n.d.; figures likely represent flows as they are available on a quarterly basis.

f. Shares provided by Moldovan Investment and Promotion Organization, as cited in Giucci and Radeke (2012).

16 percent of the country's economic activity in 1997 to 49 percent in 2010. In Kazakhstan, mining and quarrying's share of value added rose from 8 percent in 1998 to 18 percent in 2009. Azerbaijan and Kazakhstan are also the countries where mining and quarrying had the largest growth in share of value added, suggesting a potential "crowding out" of services by a rapid expansion in extractive industries.

More industrialized and diversified economies, such as Russia, have also recorded a large increase in oil and gas revenue, but Russia's share of mining has increased less than in other resource-rich countries (from around 7.5 percent in 1997 to 10 percent in 2010). Yet extractive industries employ only a tiny share of the workforce: 1 percent in Azerbaijan (who produce nearly half its output), 2.5 percent in Kazakhstan, and 1.5 percent in Russia.

## How does Eurasia compare?

### Eurasia is more reliant on mineral wealth

Eurasian countries generally have an economic structure different from those of higher-income countries and from countries at a similar stage of development with comparable endowments, relying more on their mineral wealth. Extractive industries account for 10 percent of value added in Russia, for example, but only 3 percent in Brazil. Although Brazil appears to have a more developed services sector (as a share of value added), the two countries have similar employment structures.

In other resource-rich but less industrialized countries in Eurasia, such as Kazakhstan—an upper-middle-income economy—mining accounts for 18 percent of economic activity. The comparable figure in Argentina is only 4 percent. In Azerbaijan and Ecuador—two small, resource-rich, upper-middle-income economies—the oil and gas sector makes up 49 percent of Azerbaijan's value added but only 19 percent of Ecuador's (still fairly high but leaving room for a more diversified economic base).

The share of manufacturing in value added in both Kazakhstan (11 percent) and Azerbaijan (6 percent) is half the share in comparator countries—Argentina (21 percent) and Ecuador (12 percent). This distribution is reflected in the labor force: manufacturing employment makes up 7 percent of the total in Kazakhstan and 5 percent in Azerbaijan but 13 percent in Argentina and 14 percent in Ecuador.

Russia's services sector is highly developed and similar to Brazil's, both in value added and employment. As a share of economic activity, Kazakhstan's services are fairly well developed and comparable to Argentina's. In Azerbaijan, the sector accounts for only 40 percent of value added, which is no surprise given that half the economy is mining. In both Kazakhstan and Azerbaijan, the share of employment in services is far smaller than in comparators, while employment in agriculture is much higher, indicating a potential lack of opportunities and the need for skills upgrading to facilitate a move toward a more knowledge-based economic structure.

Resource-poor Eurasian economies can be compared with other countries of similar size and stage of development that also lack mineral wealth. Of this

group in Eurasia, only Belarus is classified as an upper-middle-income economy. Belarus has a much larger manufacturing sector (30 percent of value added) than similar upper-middle-income economies, though its services sector is slightly less developed than, for example, Bulgaria's.

The lower-middle-income and low-income countries in the region (Armenia, Georgia, Moldova, the Kyrgyz Republic, and Tajikistan) all have larger services sectors than their non-Eurasian comparators at similar income levels (apart from El Salvador). Although Eurasian countries as a whole still rely more than high-income countries on agriculture, their share of agriculture in value added is sometimes smaller than those of their peers at the same income level (such as Cambodia). Still, as in resource-rich Azerbaijan and Kazakhstan, a fairly steep proportion of the labor force in resource-poor Eurasia still works in agriculture—53 percent of employment in Georgia, for example.

### **Employment and value-added patterns are consistent with Eurasia's level of development**

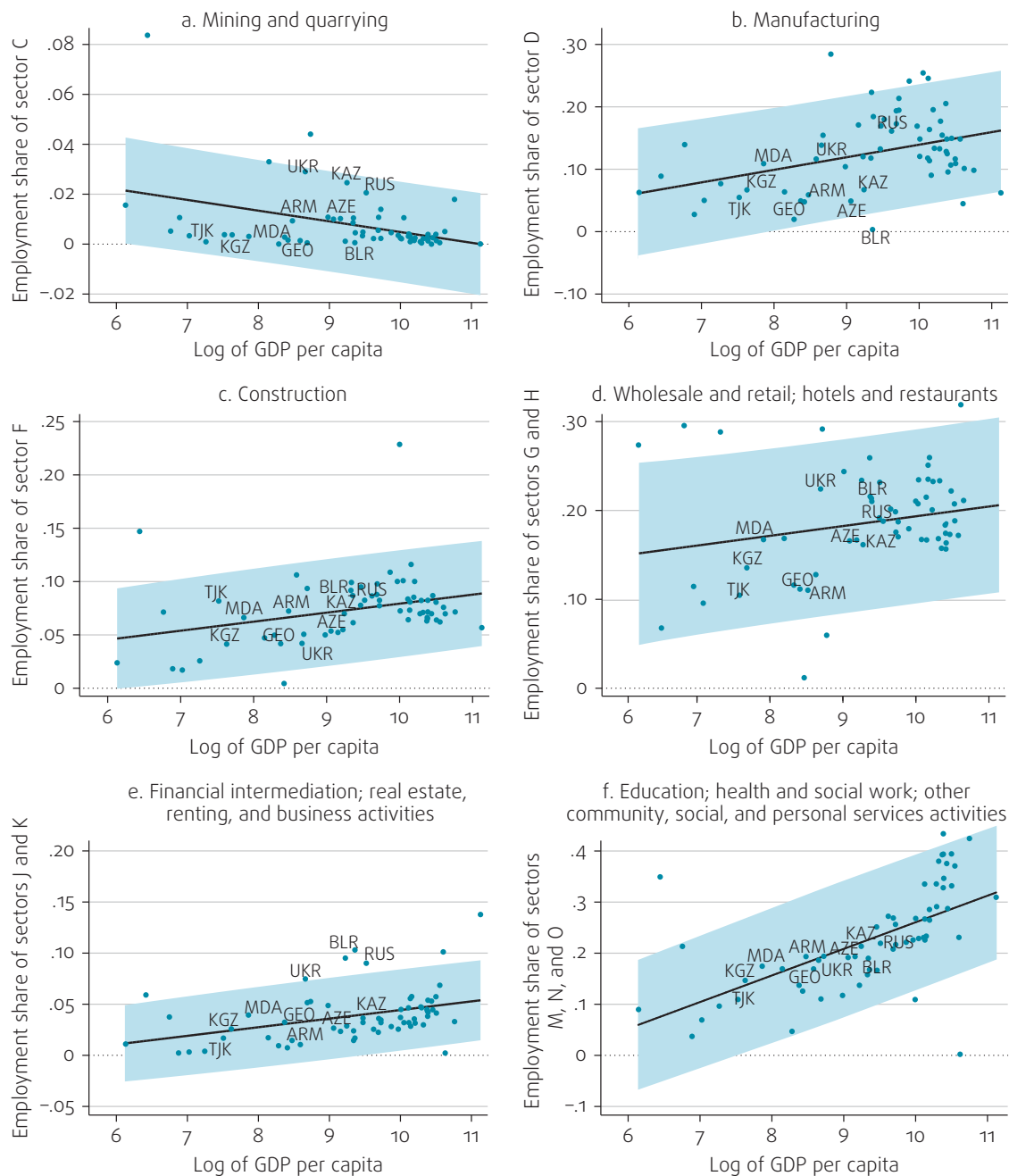
The share of employment in the various sectors and subsectors in Eurasian countries is broadly consistent with income per capita (figure 3.8). Even in resource-rich countries like Azerbaijan, Kazakhstan, Russia, and Ukraine, employment in extractive industries is consistent with the level predicted by the countries' income per capita (figure 3.8a). Apart from Belarus, manufacturing employment is also at the level predicted by income per capita (figure 3.8b). Not surprisingly, resource-poor countries—Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan—have neither employment-attractive manufacturing nor a high employment share in mining and quarrying. The share of employment in construction is also not out of line with what would be expected based on income per capita (figure 3.8c).

In general, the share of services in an economy tends to increase with economic development. In Eurasian countries, the employment shares in wholesale and retail trade and in financial services tend to cluster between resource-rich and resource-poor countries. The employment share in wholesale and retail trade in Ukraine is slightly overrepresented, an outcome of the last decade's strong growth in this sector (around 6 percent a year). Wholesale and retail trade usually has a low correlation with income (figure 3.8d). The financial sector and real estate activities are substantially overdeveloped with respect to employment in Ukraine, Russia, and Belarus (figure 3.8e), reflecting strong growth in the financial sector in the last decade (around 8 percent annually). Financial intermediation, formerly underdeveloped in Armenia, Kazakhstan, and Azerbaijan, has come closer to its predicted value.

In view of the legacy of a large welfare state in the old order, one might assume that Eurasian countries would be more reliant on education and social services as sources of employment—but this is not the case. Regardless of resource wealth, the employment shares in these sectors for Eurasian countries appear closely clustered around predicted values (figure 3.8f).

Mirroring the findings for employment, the share of value added in the various sectors and subsectors in Eurasia is also broadly consistent with income per capita (figure 3.9). The share of employment in resource-rich countries in extractive industries is in line with the prediction (figure 3.9a). The exception

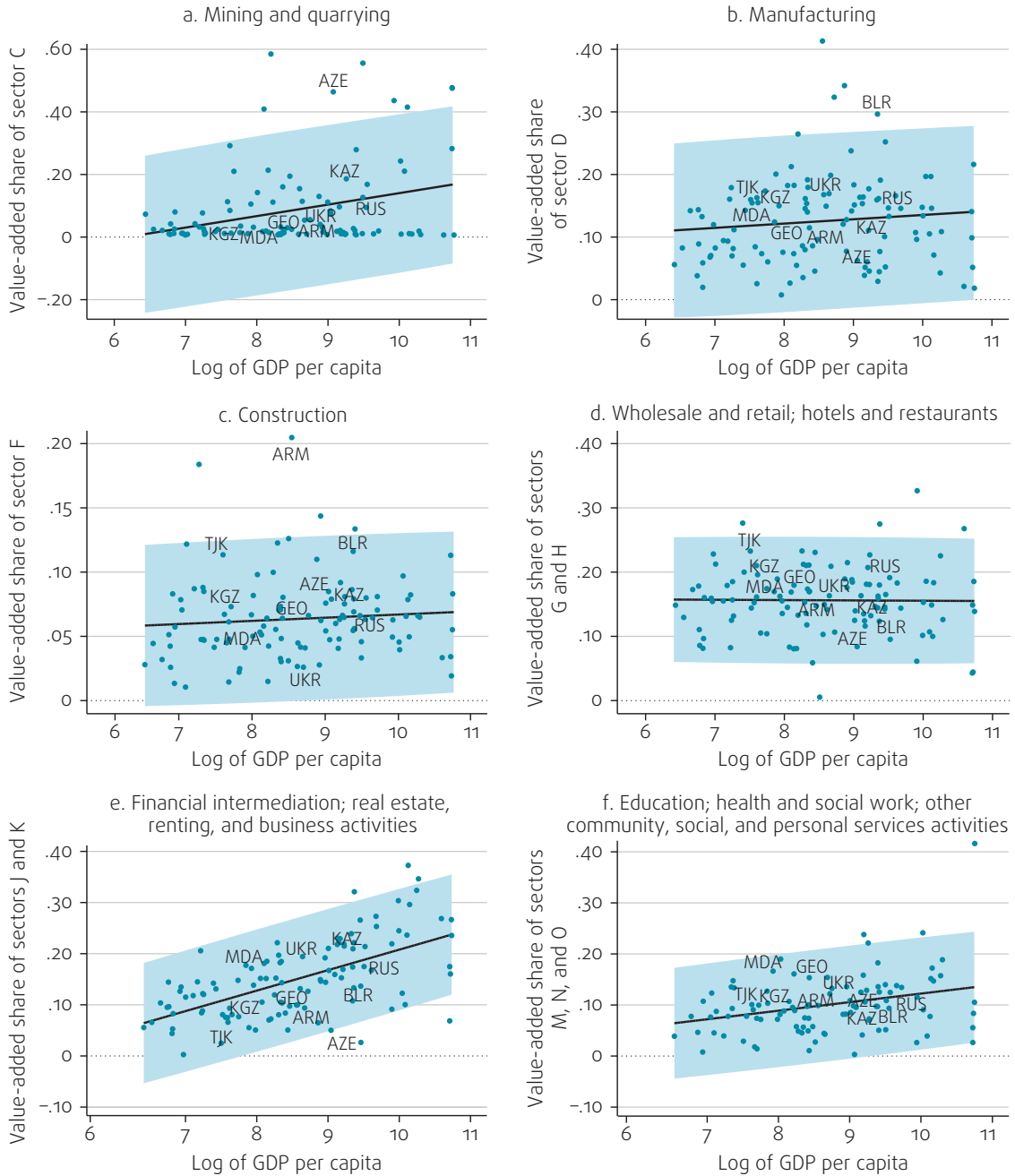
Figure 3.8. Relationships between employment shares and per capita GDP, 2009



Sources: World Bank staff elaborations based on World Bank, n.d., and International Labour Organization data.

Note: All countries with data on employment share were incorporated (sample includes 65 countries; a detailed country list can be found in annex 3B). The analysis was carried out for 2009, the most recent year with data for Eurasian countries. The blue shaded area corresponds to a confidence interval calculated at a 95 percent significance level. Observations outside the blue area have a significantly higher or lower share in employment in relation to GDP per capita. GDP per capita is based on purchasing power parity 2005 U.S. dollars.

**Figure 3.9. Relationships between sectoral value-added shares and per capita GDP, 2009**



Sources: World Bank staff elaborations based on World Bank, n.d., and UN data.

Note: All countries with data on value added were incorporated (sample includes up to 104 countries; a detailed country list can be found in annex 3B). The analysis was carried out for 2009, the most recent year with data for Eurasian countries. The blue shaded area corresponds to a confidence interval calculated at a 95 percent significance level. Observations outside the blue area have a significantly higher or lower share in value added in relation to GDP per capita. GDP per capita is based on purchasing power parity 2005 U.S. dollars.



is Azerbaijan, where the extractive industry's high concentration seems to be crowding out manufacturing and services, especially the financial sector (figure 3.9e). Belarus stands out in manufacturing, which appears to employ a workforce share lower than predicted by income per capita but contributes a significantly higher share to value added (figure 3.9b).

Construction (figure 3.9c) surged over the decade in Armenia and is now significantly larger than predicted by per capita income. Belarus and Tajikistan, too, with shares above 10 percent of value added, have overrepresented construction sectors.<sup>6</sup>

Wholesale and retail and hotels and restaurants (figure 3.9d) show only a slight positive correlation between their economic value added and per capita GDP. Within these subsectors, all Eurasian countries are close to the predicted value. The value-added shares of education, health and social work, and other community, social, and personal services activities (figure 3.9f) are also in line with income level, with resource-rich countries clustering slightly below the predicted value and resource-poor countries above it.

Relating value-added shares to employment shares for each sector reveals which sectors have internationally comparable productivity. Countries significantly below their predicted value (the shaded areas of figure 3.10) misallocate labor; countries above it use resources more efficiently.

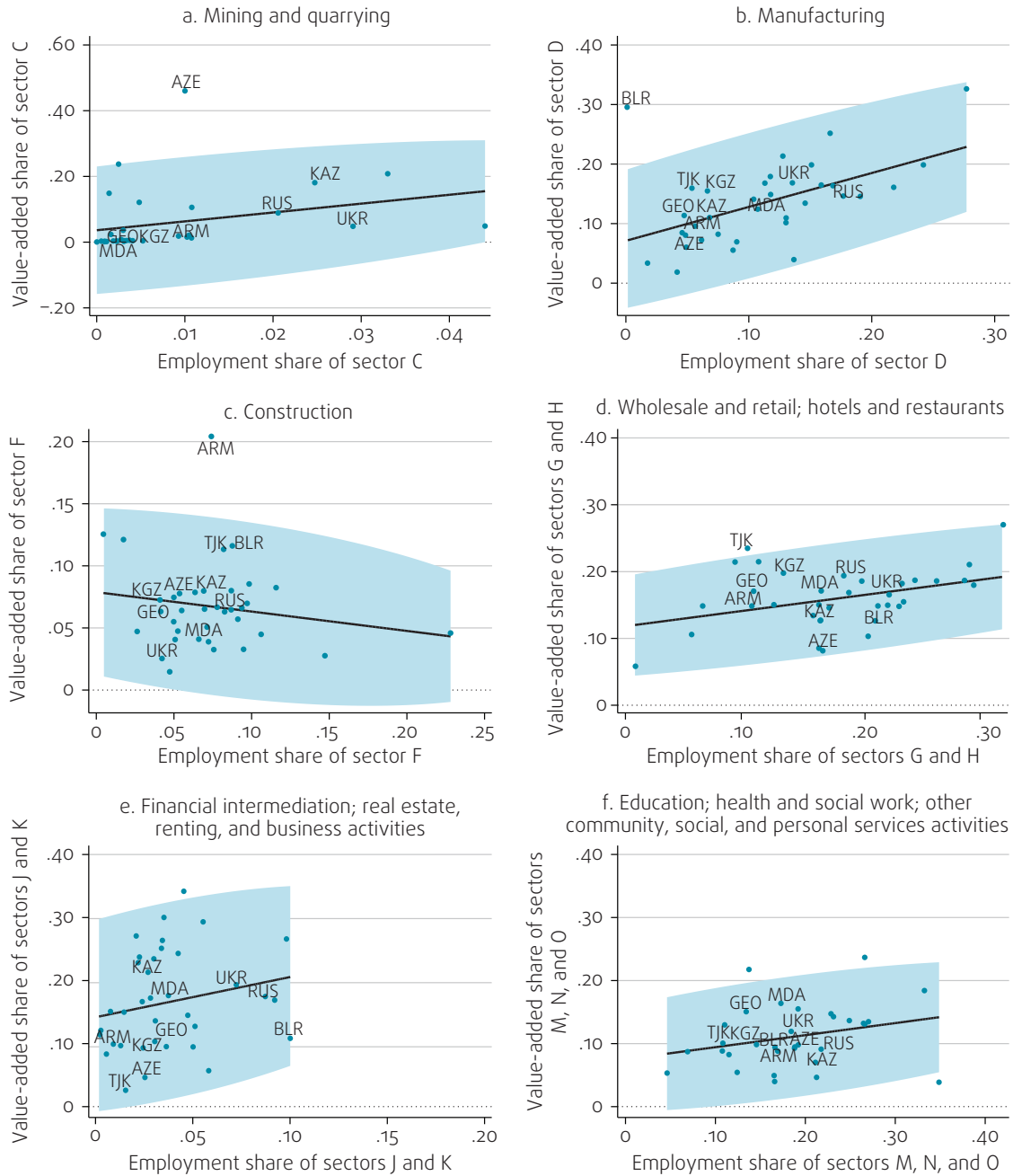
In mining and quarrying (figure 3.10a), Azerbaijan appears to allocate its resources productively, whereas Ukraine performs poorly when compared internationally. In manufacturing (figure 3.10b), Belarus appears to have especially high labor productivity, whereas other Eurasian countries show values close to their predicted levels. Armenia stands out as especially productive in construction (figure 3.10c). In wholesale and retail, Tajikistan is internationally outstanding for its high share of value added relative to employment.

## More services jobs, higher productivity, and more output volatility

Eurasia's changing economic structure—a shrinking manufacturing base and a sharp increase in the share of natural resources and services in the economy—has caused concern that three economic outcomes (employment, productivity, and GDP volatility) may be hurt. This view contradicts the evidence in chapter 1, which indicates that despite increasing concentration of economic activity and exports, incomes and various measures of human development have improved over the past two decades.

This section goes beyond chapter 1 and attempts to track the evolution of these three outcomes in Eurasian countries. The cross-country comparability of trade data suggests that one should first verify whether the degree of export diversification is associated with better or worse outcomes, in line with the empirical evidence worldwide indicating a positive effect of export diversification on per capita income growth (Hesse 2009; Lederman and Maloney 2009). A potential channel could be the influence of increasing export concentration on volatility of terms of trade, which would increase macroeconomic uncertainty.

Figure 3.10. Relationships between value-added and employment shares, 2009



Sources: World Bank staff elaborations based on World Bank, n.d., and UN data.

Note: All countries with data on value added were incorporated (sample includes up to 44 countries; a detailed country list can be found in annex 3B). The analysis was carried out for 2009, the most recent year with data for Eurasian countries. The blue shaded area corresponds to a confidence interval calculated at a 95 percent significance level. Observations outside the blue shaded area have a significantly higher or lower share in value added in relation to GDP per capita. GDP per capita is based on purchasing power parity 2005 U.S. dollars.

A simple correlation between export revenue concentration and the three economic outcomes, globally, suggests that there is a clear and robust relationship only between export diversification and GDP growth volatility (figure 3.11). Figure 3.11a shows no clear correlation between export diversification and employment growth adjusted for growth in the working-age population.<sup>7</sup> There is also no clear connection between export revenue concentration and growth in incomes per capita (figure 3.11b).<sup>8</sup> Only figure 3.11c displays a positive (and statistically significant) association between export revenue concentration and GDP growth volatility (proxied by the standard deviation of annual GDP growth) during 1996–2011.

Yet despite the inconclusive evidence internationally, has increased concentration of exports affected economic outcomes in Eurasia? To shed light, one must go beyond simple correlations between export concentration and economic outcomes. It is also helpful to enlarge the analysis to include the evolution of overall economic structure—not just exports (which in Eurasia account for a small share of GDP).

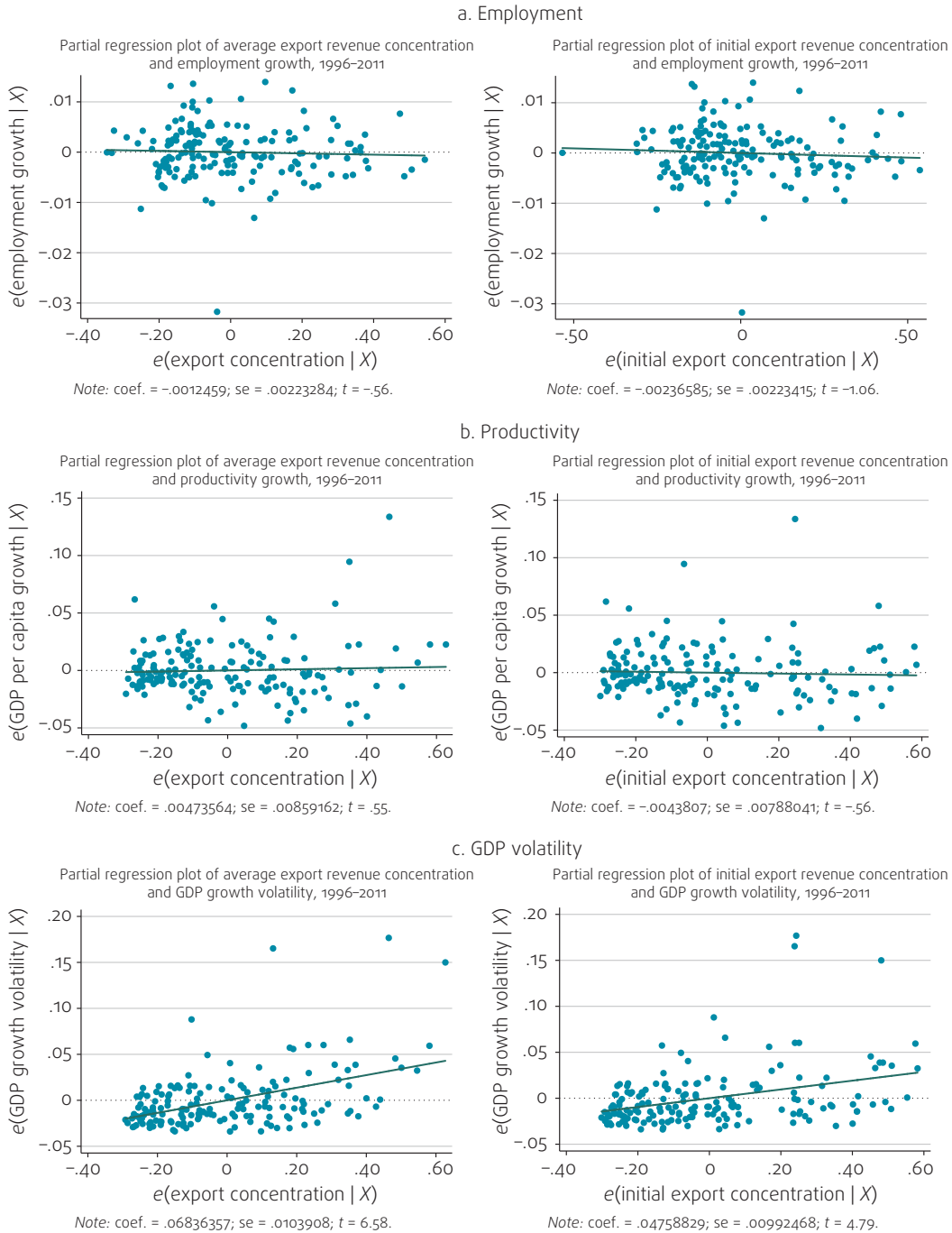
## Employment

Labor force participation was quite high—perhaps artificially—in the former Soviet Union. After its demise, the economically active population declined in most countries, as labor was reallocated across sectors and displaced workers—who rarely managed to find new jobs—dropped out of the labor force. Today, labor force participation is still below pretransition rates in most countries, with important differences between resource-rich and resource-poor economies. In the former, labor force participation has started to converge back to 1990 rates; in the latter, it has continued to decline and is now far lower than at the start of the transition (figure 3.12a). This suggests that resource-rich economies have been better at creating jobs.

All Eurasian countries for which International Labor Organization data are available—except Georgia and Moldova—achieved employment growth each year over 1998–2008. Economies with the highest employment increases—such as Kazakhstan and Azerbaijan—were among the least diversified. But Eurasian economies have done less well than comparators: annual employment growth in the last decade has been lower in Russia (2.2 percent) and Ukraine (0.5 percent) than in Australia (2.5 percent), Brazil (2.3 percent), and Canada (2.2 percent). Resource-poor Eurasian countries especially are lagging: 20 years after gaining independence, employment growth remains negative, particularly in Georgia and Moldova.

Employment trends in the 1990s differed from those in the 2000s. The sharp contraction of employment in the first decade was partly offset by new employment generation in the second (figure 3.12b). Employment contracted in Eurasia by 0.8 percent annually in the 1990s, steeply in resource-poor countries (1.5 percent) and less so in resource-rich countries (0.4 percent). In the 2000s, employment recovered for both groups, albeit faster in resource-rich countries (2.1 percent) than in resource-poor countries (1.8 percent). This confirms that resource-rich countries have been better able to create jobs.

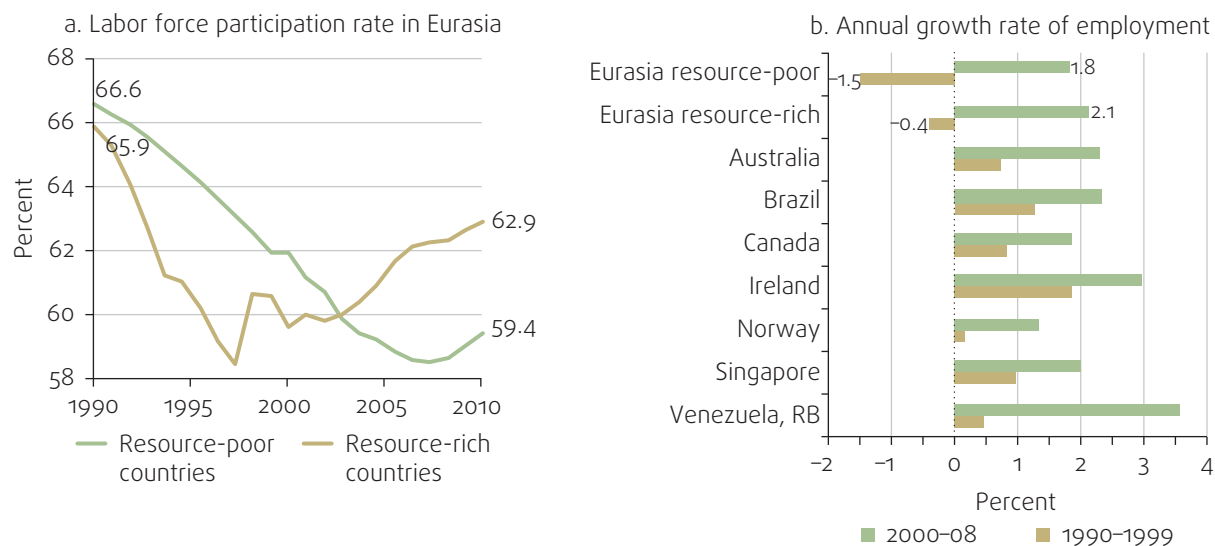
**Figure 3.11. Worldwide, lack of export diversification is associated only with volatility, not employment or productivity growth**



Source: UNSD, n.d.b.

Note: Export revenue concentration is measured as the root of the Herfindahl-Hirschman Index for trade values from UNSD, n.d.b.

**Figure 3.12. Labor force participation began to pick up in resource-rich countries but continued to decline in resource-poor countries until 2009; employment has grown less in Eurasia than in comparator countries**



Source: International Labour Organization data.

Note: Resource-rich weighted average: Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor weighted average: Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan. Population over 15 years of age.

Source: World Bank staff elaborations based on International Labour Organization data.

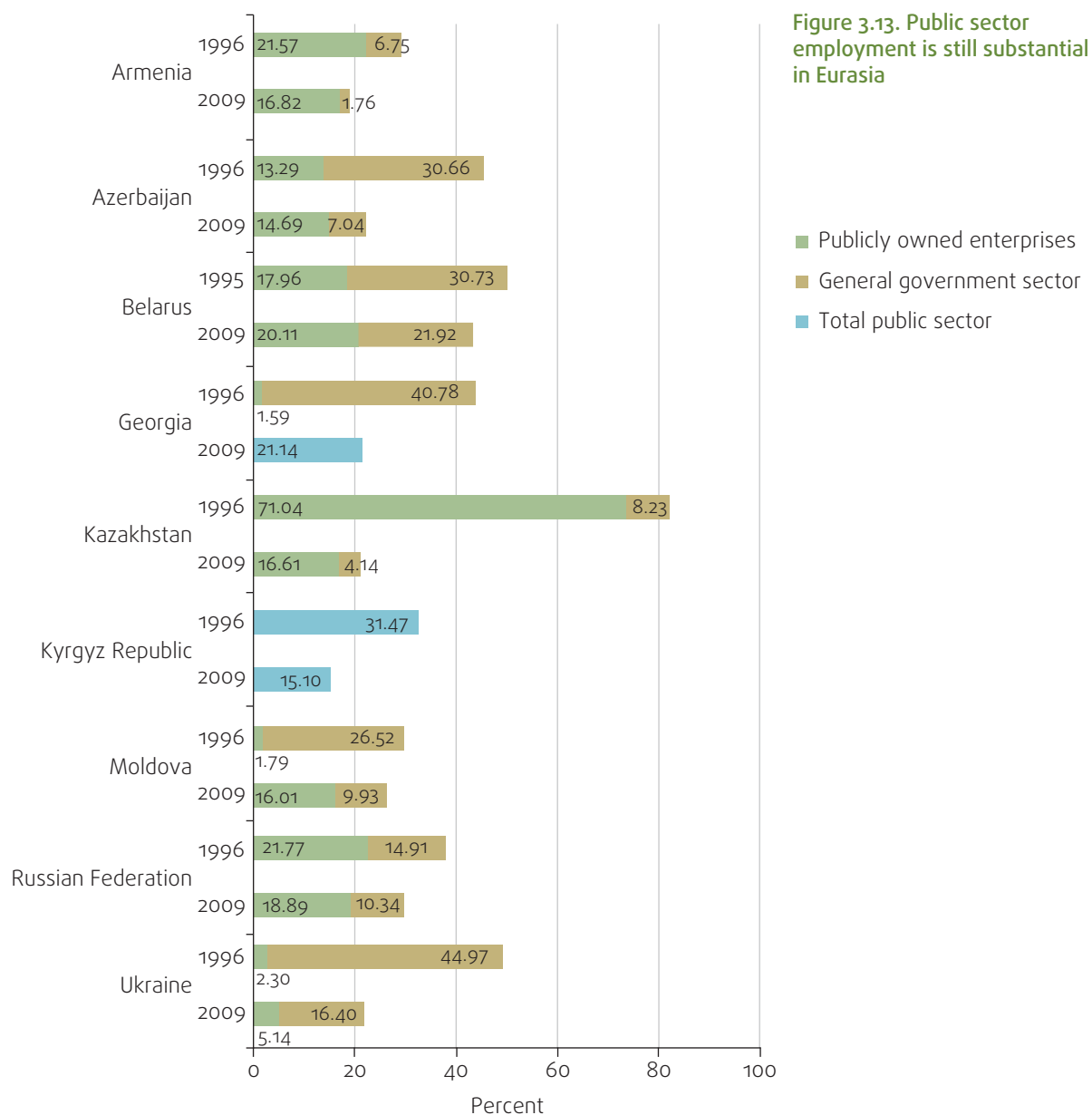
Note: Compound annual growth rate of employment. A population-weighted mean is calculated separately for resource-rich and resource-poor countries. Q: Extra territorial organizations and bodies, as well as X: Not classifiable activities, were excluded from the calculations. Resource-rich countries include Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor countries include Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan.

The gender gap in the labor force has increased. The reduction in labor force participation has been more severe for women. Labor force participation rates for women have been dropping by around 10 percent more, on average, than for men. In 1997, the year in which resource-rich countries experienced the lowest labor force participation rate, the rate was nearly 20 percentage points lower for women.<sup>9</sup>

### Public sector employment is still sizable

How many of the new jobs have been created in the private or public sectors? And which sectors of the economy have contributed more to employment generation? Analysis of the composition of employment sheds light on the type of new jobs that have emerged and on possible consequences for other measures of economic performance, such as productivity.

Owing to the Soviet heritage, the public sector has traditionally commanded a large share of employment in Eurasia.<sup>10</sup> Until the mid-1990s, it dominated most economic activities, directly or through publicly owned enterprises. Public sector employment has since fallen sharply in most of Eurasia, reflecting privatization, but remains substantial (figure 3.13).



Source: World Bank staff elaborations based on International Labour Organization data.

Note: Data for Belarus are for 1995 and 2009. Data for the Kyrgyz Republic (both periods) and Georgia (2009) are for the total public sector only.

In Belarus, for example, the public sector still accounts for more than 40 percent of employment, with equivalent shares in government functions and state-owned enterprises. At under or around 20 percent, the Kyrgyz Republic, Armenia, Georgia, and Azerbaijan have small shares of public employment (by Eurasian standards).

The decline in public employment in Kazakhstan was extremely sharp, from nearly 80 percent in 1996 to just over 20 percent in 2009. The contraction was driven by progress with privatization in the mid-1990s. Ukraine also saw a rapid contraction, from almost half to just over 20 percent, largely owing to shrinking government employment. In Moldova, the share of employment in government bodies declined, though the weight of publicly owned enterprises rose.

Russia's public sector still employs almost a third of the country's labor force. Enterprises owned by federal or lower levels of government accounted for 19 percent of employment in 2009, reflecting a highly pervasive state presence (annex 3C).

### **Employment growth has been driven by services**

Eurasia has witnessed major shifts in its employment structure, with services showing sharp growth driven by labor reallocated from other sectors. While the relationship between employment creation and (lack of) diversification does not seem to hold in Eurasia, annual growth of employment in services has surpassed that in the whole economy, suggesting a prominent role of service activities as employment generators in the last decade.

Construction, as well as wholesale and retail trade, contributed the most to employment generation. Over 1999–2009, jobs in construction saw annual increases of 21 percent in Kazakhstan, 18 percent in the Kyrgyz Republic, and 14 percent in Georgia. Those countries' shares of construction in total employment increased 3.6, 7.2, and 2.7 percentage points, respectively, over the period. Wholesale and retail trade recorded an annual increase of 14 percent in Kazakhstan, 8 percent in the Kyrgyz Republic, and around 5 percent in Armenia, Russia, and Ukraine, leading to a rise in the subsector's share in total employment of nearly 5 percent. In Azerbaijan, the share of trade in total employment declined, owing to an even stronger rise of extractive industries.

In comparator countries, employment in services subsectors also picked up faster than the average for the whole economy—but not as much as among Eurasian countries.<sup>11</sup> In most Eurasian countries, employment in services subsectors, like financial services or transport and communications, grew swiftly over 1998–2009. Indeed, annual employment growth in financial services exceeded 19 percent in Kazakhstan, 8 percent in Russia, and 7 percent in Ukraine.

Georgia and Moldova are exceptions. A shrinking labor force, high unemployment, and low employment growth in most sectors indicate that these two resource-poor countries could not restructure their employment composition.

### **Productivity**

The increase in services' share of employment—mirrored by a decreasing contribution from manufacturing—is neither surprising nor undesirable, as it reflects a central feature of economic growth in industrialized countries. Reallocation of labor from agriculture to manufacturing and services should increase overall productivity and welfare. Growth prospects in the medium and long terms depend, however, on whether the displaced labor goes to sectors with faster or slower productivity growth than the sector they came from.

If slower, economywide growth suffers and may even turn to contraction. Conversely, when labor and other resources move to more productive activities, a path of structural change is defined in which the economy expands even if there is no productivity growth within sectors.

### Improving efficiency within sectors

In the last decade, productivity growth in Eurasia has come mainly from improved use of resources within sectors rather than from reallocation of factors of production to more productive sectors. Productivity growth decomposition can help examine whether labor reallocation has enhanced productivity. Labor productivity growth can be achieved in one of two ways, either within economic sectors—through capital accumulation, technological change, or reduction of misallocation across plants—or through structural change, in which labor moves from low- to high-productivity sectors (box 3.2).

In the years immediately preceding the global economic crisis (1999–2007), economywide compound annual labor productivity growth varied widely in Eurasia, from less than 6 percent in Kazakhstan and Ukraine to more than 21 percent in Azerbaijan, with increases of 12.1 percent in Armenia and the Kyrgyz Republic, 10.8 percent in Georgia, and 8.5 percent in Russia (figure 3.14).

In all countries but Armenia, Kazakhstan, and Ukraine, most (at least two-thirds) of the variation was explained by improvements in labor productivity within sectors, notably Azerbaijan at 16.9 percent. Better use of technology and better access to resources is, therefore, a likely driver of productivity improvements in the last decade.

The structural change component provided a smaller contribution (though in all countries positive) and was more than half in Armenia, Kazakhstan, and Ukraine. In these countries, large reallocations of labor from the public to the private sector induced structural change of the labor market.

#### Box 3.2. Productivity growth decomposition

Following McMillan and Rodrik (2011), labor productivity growth is decomposed as follows:

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k} \Delta y_{i,t} + \sum_{i=n} y_{i,t} \Delta \theta_{i,t}$$

where  $Y_t$  is the economywide labor-productivity level,  $y_{i,t}$  is the sectoral labor-productivity level, and  $\theta_{i,t}$  is the share of employment in sector  $i$ . The  $\Delta$  operator denotes the change in productivity or employment shares between  $t-k$  and  $t$ .

The first term in the decomposition is called the “within” component of productivity

growth and is defined as the weighted sum of productivity growth within individual sectors (with weights being the employment share of each sector at time  $t$ ). The second term reflects “structural change” and captures the productivity effect of labor reallocations across different sectors. It is the inner product of productivity levels (at the end of the time period) with the change in employment shares across sectors. A positive (negative) “structural change” component suggests that structural change in the economy has enhanced (or reduced) productivity.

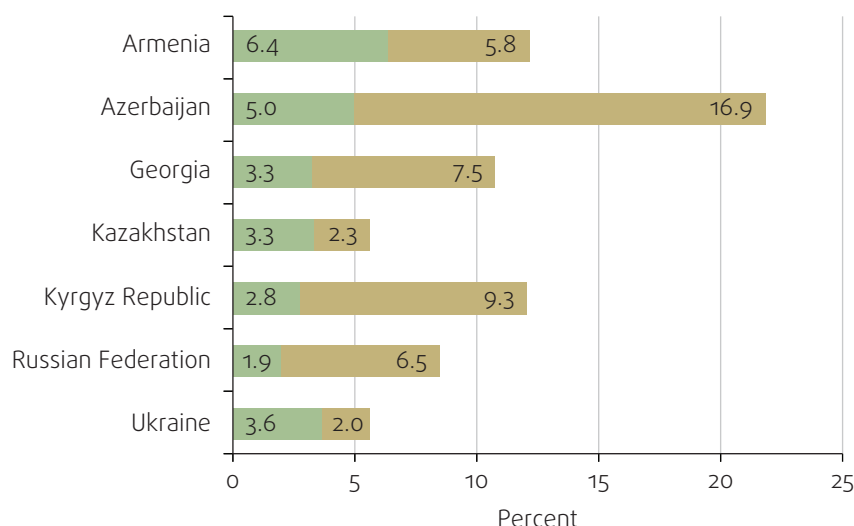
Source: McMillan and Rodrik 2011.



**Figure 3.14. Before 2007, labor productivity growth was impressive, with most of the improvement deriving from better use of resources within sectors**

(Labor productivity growth in Eurasia; structural change versus within-sector contributions)

- Structural change
- Improvements within sectors



Sources: World Bank staff calculations based on International Labour Organization and UN datasets. Value-added figures (from the UN dataset) are in purchasing power parity 2005 U.S. dollars. Data for Armenia, Georgia, Kazakhstan, and Ukraine cover 1999–2007; for Azerbaijan and the Kyrgyz Republic, 1997–2007; and for the Russian Federation, 2000–07.

### A quicker rise in labor costs

The competitiveness of Eurasian manufacturing was not hurt in the last decade, even though some key sectors saw unit labor costs rise faster than output. A country's competitiveness depends largely on the productivity of its tradable sectors. While labor resource reallocation to service activities enhanced productivity from the late 1990s to 2009, it is not so clear how tradable sectors—particularly manufacturing—performed over the same period. A simple way of examining country competitiveness is to track the change in the relative performance of labor productivity against unit labor costs. To the extent that an increase in unit labor costs represents an increased remuneration for labor's contribution to output, competitiveness (of a country or a sector) is harmed when the rise in labor costs is steeper than the increase in labor productivity, assuming that other costs (say, related to capital and land) are not adjusted in compensation.

Data suggest that the competitiveness of manufacturing as a whole was not harmed over 1999–2009. Overall, the rise in manufacturing wages has not outpaced productivity growth. Other nuances are revealed when cross-sector heterogeneity is explored. Table 3.2 identifies the sectors losing competitiveness in six Eurasian countries, with a comparison between the compound annual growth rate of real labor productivity and real unit labor costs.

Azerbaijan and the Kyrgyz Republic have the most sectors with declining competitiveness (six). Unit labor costs shot up from 2004 in Azerbaijan, but productivity stagnated. In the Kyrgyz Republic, the wedge between labor costs and productivity started to grow from 2003 onward.

**Table 3.2. Compound annual growth rate of labor productivity and unit labor costs, by (two-digit manufacturing) sector and country, 1999–2009**

Percent

Sector	Azerbaijan		Georgia	
	Labor productivity	Unit labor cost	Labor productivity	Unit labor cost
Food and beverages	-0.8	17.4	12.4	-2.5
Tobacco products	5.6	9.0	42.8	-12.4
Textiles	6.0	7.5	24.5	-12.0
Wearing apparel, fur	11.6	3.7	14.5	-0.3
Leather, leather products, and footwear	14.3	-0.8	9.6	-4.2
Wood products (excluding furniture)	10.1	12.9	19.0	-6.8
Paper and paper products	25.6	-5.5	18.3	-4.3
Printing and publishing	12.6	-8.4	13.9	-1.2
Coke, refined petroleum products, nuclear fuel	5.5	7.4	10.7	-10.5
Chemicals and chemical products	4.2	7.2	16.6	-2.3
Rubber and plastics	12.1	2.0	9.7	4.7
Nonmetallic mineral products	18.3	-4.2	16.3	-2.9
Basic metals	10.8	4.3	-5.5	18.1
Fabricated metal products	8.1	5.6	17.2	-0.9
Machinery and equipment n.e.c.	14.9	-4.4	22.1	-5.4
Office, accounting, and computing machinery	16.1	2.8	—	—
Electrical machinery and apparatus	18.4	-7.5	24.8	-3.5
Radio, television, and communication equipment	24.2	-3.4	-7.6	5.7
Medical, precision, and optical instruments	15.6	-2.3	18.6	-7.3
Motor vehicles, trailers, semitrailers	17.6	14.3	10.5	-4.2
Other transportation equipment	8.5	-0.6	14.2	-5.0
Furniture; manufacturing n.e.c.	15.1	-0.8	11.2	-1.8
Recycling	10.0	3.9	37.3	-35.3
Total manufacturing	7.3	5.8	14.1	-3.1

Remarkably, Kazakhstan has shrinking unit labor costs in most industries, adding to its overall productivity and thus generating a cost advantage, particularly important for the auto industry and fabricated metal products.

Georgia, not well endowed with natural resources, has improved its position (among Eurasian countries) in tobacco products, food and beverages, and textiles, where unit labor costs contracted an average of 9 percent (while they only slightly declined or even rose in the other Eurasian countries).

In resource-rich countries, except for wearing apparel and recycling sectors in Ukraine, activities with falling competitiveness (such as other transportation

Kazakhstan		Kyrgyz Republic		Russian Federation		Ukraine	
Labor productivity	Unit labor cost	Labor productivity	Unit labor cost	Labor productivity	Unit labor cost	Labor productivity	Unit labor cost
8.6	-4.3	8.8	-4.0	7.1	-2.5	9.4	-3.9
3.9	-2.2	5.8	7.3	8.6	-3.6	12.4	-4.6
13.8	-10.5	-4.5	4.8	11.6	-4.4	14.3	-3.7
16.0	-8.6	38.4	-25.8	7.6	-1.0	1.5	3.7
20.5	-13.8	18.0	-14.2	4.7	2.6	5.6	1.7
16.2	-7.3	11.5	-8.6	10.8	-5.1	12.1	-4.7
24.6	-17.0	11.4	-1.5	9.6	-4.7	7.6	-2.3
12.6	-6.8	5.2	-4.9	7.0	-1.5	3.3	-1.1
1.5	-0.8	11.2	2.2	26.7	-15.6	14.7	-9.0
16.1	-11.1	6.2	-2.3	11.6	-5.3	7.4	-2.3
28.2	-16.5	25.0	-14.1	4.0	0.8	2.3	0.2
17.6	-9.5	4.3	-0.4	6.8	-0.6	8.7	-2.9
12.3	-8.9	10.8	15.2	8.7	-4.7	4.7	0.2
34.2	-19.0	16.2	-9.7	5.8	1.1	10.3	-4.7
18.1	-7.1	7.5	3.0	11.3	-3.2	6.7	0.4
23.0	-11.1	0.0	8.8	3.9	10.9	5.4	10.0
21.3	-13.5	3.7	5.7	7.6	0.2	10.8	-2.6
-4.5	11.3	37.4	-22.0	—	—	—	—
3.6	0.6	4.1	1.7	5.3	0.9	14.2	-4.9
43.3	-23.8	12.0	3.1	3.8	-3.4	11.6	-6.8
-3.8	9.7	-7.1	20.9	0.5	10.4	9.3	-1.7
31.6	-15.3	8.6	-5.7	5.7	0.8	10.7	-2.6
10.9	-5.6	18.7	-17.0	7.6	-2.7	-0.4	2.5
10.7	-5.8	10.9	0.7	10.0	-2.9	8.7	-2.5

Source: World Bank staff elaboration based on International Labour Organization and UN datasets.

Note: For the Russian Federation, the calculations are based on data available from 2000 to 2009. Labor productivity is defined as the ratio of (real) output to number of employees, while unit labor cost is proxied by the real cost of salaries to (real) output. Real values are in purchasing power parity 2005 U.S. dollars. Data are for International Standard Industrial Classification two-digit manufacturing from UNIDO (n.d.). The shaded cells show sectors with declining competitiveness. — = not available.

equipment; radio, television, and communication equipment; and office machinery) are either high- or medium-tech activities, which suggests an inability to upgrade manufacturing in high-tech sectors.

### Volatility

Economies where value-added generation depends on natural resources, and where commodities represent a sizable share of exports, tend to be the more

exposed to commodity price shocks. The ultimate impact on macroeconomic instability depends, however, on the government's ability to conduct policies that manage external distress. For instance, countercyclical fiscal policies can build buffers during commodity price upswings that can be used afterwards during downswings, though their effectiveness also depends on the degree of monetary policy autonomy.<sup>12</sup>

The world has seen several commodity price shocks since the 1980s (figure 3.15). Long-term price cycles can also be identified. The first ran from 1992 to 1998 and can be classified as a long-cycle trough (IMF 2012). The second ended in July 2008, with a long-term peak. But are resource-rich Eurasian countries more exposed to the effects of volatility in commodity prices than are other resource-rich countries? There is too little evidence to tell.

A simple way to assess whether economies, generally, that are more concentrated in extractive industries have been badly hit by commodity price shocks is to examine their economic performance during price cycles. In this way, any comovements between a country's economic performance and commodity price cycles are detected, regardless of the underlying price trend. (Another less simple approach is outlined in box 3.3.)

Table 3.3 displays the compound annual growth rate of GDP per capita of Eurasian countries (adjusted for purchasing power parity). In the long-cycle trough of 1992 to 1998—when commodity prices decreased 2.3 percent a year—per capita GDP went down more in resource-rich Eurasian economies than in other resource-rich countries. During the price expansion cycle of 1999 to 2008, real GDP per capita growth of resource-rich Eurasian countries was also higher than that of their peers. But as both the contraction and the expansion were likely to have been accentuated by the posttransition output collapse and the subsequent recovery in Eurasian countries, there may be insufficient evidence to determine whether growth in Eurasian countries has been more volatile as a direct consequence of their dependence on the export of commodities.

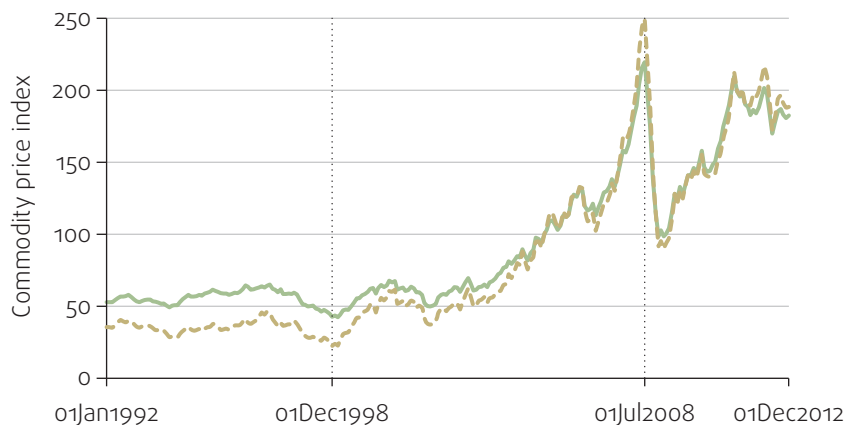


Figure 3.15. Commodity price indexes

(2005 = 100)

— All commodity index  
- - - Energy (fuel) index

Source: World Bank staff elaboration based on IMF, n.d.c.

### Box 3.3. Commodity prices and GDP growth volatility: an impulse-response analysis

An alternative way to illustrate the risks associated with increasing economic concentration in extractive industries is to apply time-series techniques to assess the hypothetical effect of a commodity price shock on real gross domestic product (GDP) growth volatility for each Eurasian country. A three-lag vector autoregressive model with no trend is used for each country and an impulse-response function is estimated.

Volatility of GDP growth and commodity prices are included in the model, as the main objective is to analyze the effects of the latter on the former.<sup>a</sup> GDP volatility is proxied by the three-month moving standard deviation of quarterly real GDP growth, while commodity

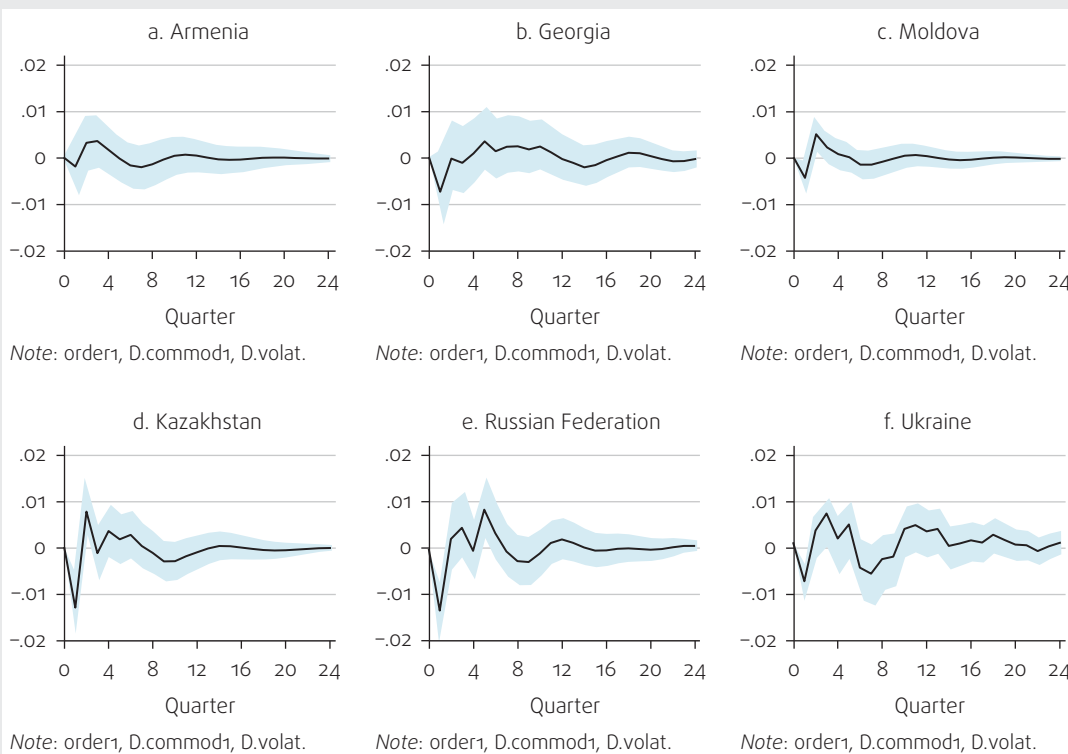
prices are proxied by the three-month moving average of the quarterly Primary Commodity Price Index. Quarterly information on GDP is obtained from the International Monetary Fund's International Financial Statistics (IMF, n.d.b), while purchasing power parity adjustment is made using World Bank conversion factors for 2005. Commodity price indexes—also adjusted for 2005—are from the Primary Commodity Price Index database. An alternative commodity index from the same database, the Energy (Fuel) Price Index, has also been tested, and the model yields similar results.<sup>b</sup>

In addition to GDP volatility and commodity prices, two potential covariates of macroeconomic instability

are included to capture important transmission channels through which commodity prices might influence GDP indirectly: inflation and the exchange rate. The first is measured as the three-month moving average of the quarterly consumer price index, while the latter is measured as the three-month moving average of the quarterly exchange rate. Both variables are from IMF (n.d.b).<sup>c</sup>

Figure B3.3.1 displays, for each country, the set of orthogonalized response functions of GDP growth volatility to one standard deviation commodity price shock (proxied by the All Commodity Price Index). The corresponding confidence intervals, with two standard error brands, are also shown.

**Figure B3.3.1. Impulse-response function: what is the magnitude of the shock to the All Commodity Price Index on GDP growth volatility?**



Source: World Bank staff estimates based on IMF, n.d.a.

Note: The magnitude of the shock corresponds to one standard deviation; orthogonalization is produced via the Cholesky decomposition.

(continued)

### Box 3.3. Commodity prices and GDP growth volatility: an impulse-response analysis (cont.)

Some interesting results emerge. First, in all Eurasian countries the real impact of a shock in commodity prices on the volatility of GDP growth is negative in the very short run (up to the first quarter after the shock), and then it peaks positively just after. Second, although the persistence of the shock does not seem to differ across countries—with almost all the impact being nonexistent after

four years (except for Ukraine, for which the duration is five years), the intensity of the shock is clearly different between countries that are rich in or dependent on natural resources and those that are not.

Resource-rich countries such as Kazakhstan, the Russian Federation, and Ukraine—where mining and quarrying account for a substantial portion of

value-added generation—present the largest positive peak, which occurs in the third quarter after the shock. Results are robust to other commodity price indexes.

While these results do not have a causal interpretation, they suggest that economies that rely more on extractive activities could be more vulnerable to external price shocks.

a. Quarterly GDP data are not available for Armenia, Azerbaijan, Tajikistan, Turkmenistan, or Uzbekistan. Data for the Kyrgyz Republic are available only from the first quarter of 2000 to the fourth quarter of 2012 and are not used due to the limited time coverage.

b. The International Monetary Fund's Primary Commodity Price Index is a weighted average of prices for 51 primary commodities, grouped into three main clusters: energy; industrial inputs (mainly base metals); and edibles (mainly food).

c. Before studying the effects of commodity price shocks on macroeconomic volatility in each country, the stochastic properties of each variable were analyzed through unit root tests. Augmented Dickey-Fuller tests were performed for all variables in each country, and all of them were shown to be nonstationary (with first difference being stationary). In addition, the vector autoregressive lag order was selected based on commonly used choice criteria, such as AIC, HQ, SC, and FPE. For most parts of countries, the lag order chosen was 4.

Table 3.3. Economic performance during long-term price cycles: real GDP per capita growth

		1992–98 slump	1999– 2008 boom	2009–11		1992–98 slump	1999– 2008 boom	2009–11
Resource-rich large	Russian Federation	-5.39	7.31	4.33	Brazil	1.75	2.47	4.19
Resource-rich medium	Ukraine	-10.41	7.70	5.10	Australia	2.94	1.96	0.60
	Kazakhstan	-3.72	8.78	5.88	Canada	2.30	1.62	1.71
	Uzbekistan	-1.50	4.92	5.45				
Resource-rich small	Azerbaijan	-8.19	15.12	1.73	Norway	3.62	1.40	-0.21
	Turkmenistan	-5.85	6.28	10.53				
Resource-poor small	Armenia	4.98	11.21	3.09	Czech Republic	2.11	4.34	1.90
	Belarus	-1.37	8.55	6.68	Finland	3.20	2.83	2.57
	Georgia	-1.84	7.09	5.71	Ireland	6.91	2.67	-0.18
	Kyrgyz Republic	-5.17	3.82	1.40	Lithuania	-0.16	7.53	5.76
	Moldova	-7.77	6.14	6.85	Singapore	3.69	3.44	7.62
	Tajikistan	-11.80	7.95	5.46				

Source: World Bank staff elaboration based on World Bank, n.d.

## Industrial policy will fail without diversified asset portfolios

In resource-rich economies, dependence on natural resources is sometimes regarded as a possible cause of poor long-run economic performance, the so-called “resource curse.” Researchers have proposed a number of channels—often intertwined—through which the negative effects of resource dependence may operate. A popular explanation, commonly termed “Dutch disease,” maintains that high resource exports distort the price of tradables relative to nontradables in a way that places nonresource sectors at a competitive disadvantage. The upshot is that, in the long run, entrepreneurship, with financial and human resources, is drained from nonresource sectors. Because these sectors are assumed to have higher potential spillovers—in terms of productivity, innovation, and job creation—their contraction will have negative repercussions on long-run growth.<sup>13</sup>

Empirical evidence worldwide provides some justification for the risks linked to heavy reliance on extractive industries. Over 1970–90, exporters of natural resources grew more slowly than resource-poor economies, even during commodity price booms. Throughout the period, very few resource-rich developing economies managed to maintain a growth rate of at least 2 percent a year (Sachs and Warner 2001). Resource-dependent economies have also proven to be more volatile (van der Ploeg and Poelhekke 2009), increasing uncertainty for households and firms, with the consequence of dampening incentives to invest in the countries’ future.

## Resource dependence has led to efforts to diversify production

Acknowledging these threats, several Eurasian governments have taken a proactive stance to countering their economies’ heavy reliance on exporting commodities. This has led to active diversification policies designed to provide direct support to nonresource industries and exports. Several countries have been using part of the revenue generated by resource exports to subsidize specific sectors, assuming that otherwise they might lack the potential to compete globally because of their outdated equipment and methods of production.

Traditional economic diversification strategies have been based on government interventions that increase the economic returns to investment in some industries. These industrial policies often aim to shift economic resources toward industries producing sophisticated, high-tech products. The rationale is to provide temporary conditions for firms to learn by doing and eventually to reach international levels of competitiveness. The goal is to achieve faster growth by rapid productivity increases or expansion of global demand for those products (or both).

Quite often, though, state support is not allocated transparently and is directed at propping up inefficient incumbents. Russia, for instance, regulates the provision of state aid in its competition law and allows exceptions for various forms of state aid to specific industries, firms, or regions (box 3.4).

### Box 3.4. State aid in the Russian Federation

In February 2009, the aluminum producer Rusal requested state aid in the form of a convertible bond from Vnesheconombank to refinance billions of dollars of debt. That May, a leading petrochemical holding company, Sibur, was approved for a loan from Vnesheconombank to finance a major polypropylene project. Sibur reportedly requested around \$2.1 billion to finance a polypropylene plant in Tobolsk and a PVC plant in the Nizhny Novgorod region. These are just some of many instances in which the government provided substantial direct support to industries.

Incumbent firms receive preferential treatment from federal and regional authorities in various ways, including tax breaks, investment credits, direct subsidies, guaranteed loans, access to state property, and the creation of special economic zones on their sites. Regional authorities still grant special tax or credit preferences to build local business champions. According to McKinsey Global Institute (2009), “. . . the nonlevel playing field is the key explanation for the lack of restructuring of the old assets and/or investments by best practice companies.”

State aid in the Russian Federation is regulated by the Law on Protection of Competition, which states that state preferences can be granted on the basis of the legal acts of federal executive bodies, authorities of the country's constituent territories, municipal authorities, and other agencies for a number of predefined purposes.

Tax arrears are a form of implicit state aid. Their occurrence varies widely across regions, with Tomsk or Tatarstan reaching only a fifth of the level in Stavropol, Mordovia, or Kemerovo oblast (figure B3.4.1).

The current state-aid regime can distort the market and stifle more-efficient players. Distortions can arise from the fact that rules are not interpreted uniformly across regions. The evidence that state support is often based on a firm's affiliation to business associations and ties to the Soviet era does little to encourage new entrants while rewarding inefficient incumbents. Finally, the presence of state- or municipality-owned corporations benefiting from some form of preferential treatment (such as exclusive rights or

exemptions) is a serious impediment to the emergence of new local players.

A survey of state-aid beneficiaries indicated that in 2007–08 regional authorities were the most active providers of state support: 26 percent of the firms surveyed received support from the regional government, 19 percent received administrative support, and 14 percent financial support. The survey also showed that the regional and local levels provided administrative support more frequently, whereas the federal level focused on financial support. The decision to grant assistance was based on several recurrent criteria: the sector, size, age, and ownership of the enterprise; the estimated investment potential of the host region; the expected ability of the enterprise to generate employment; membership of business associations; export performance; major investments made over 2005–08; and the introduction of product or process innovations.

Source: World Bank 2013.

(continued)

A strategy adopted in some Eurasian countries has been to invest public funds in advanced technologies, but these efforts may be frustrated by a dilapidated research supply base. Overall research and development (R&D) spending in Eurasia,<sup>14</sup> at 0.5 percent of GDP on average in 2009, was far below the average for EU new member states (0.9 percent), the EU as a whole (2 percent), the Organisation for Economic Co-operation and Development average (2.5 percent), and China (1.7 percent) (World Bank, n.d.).

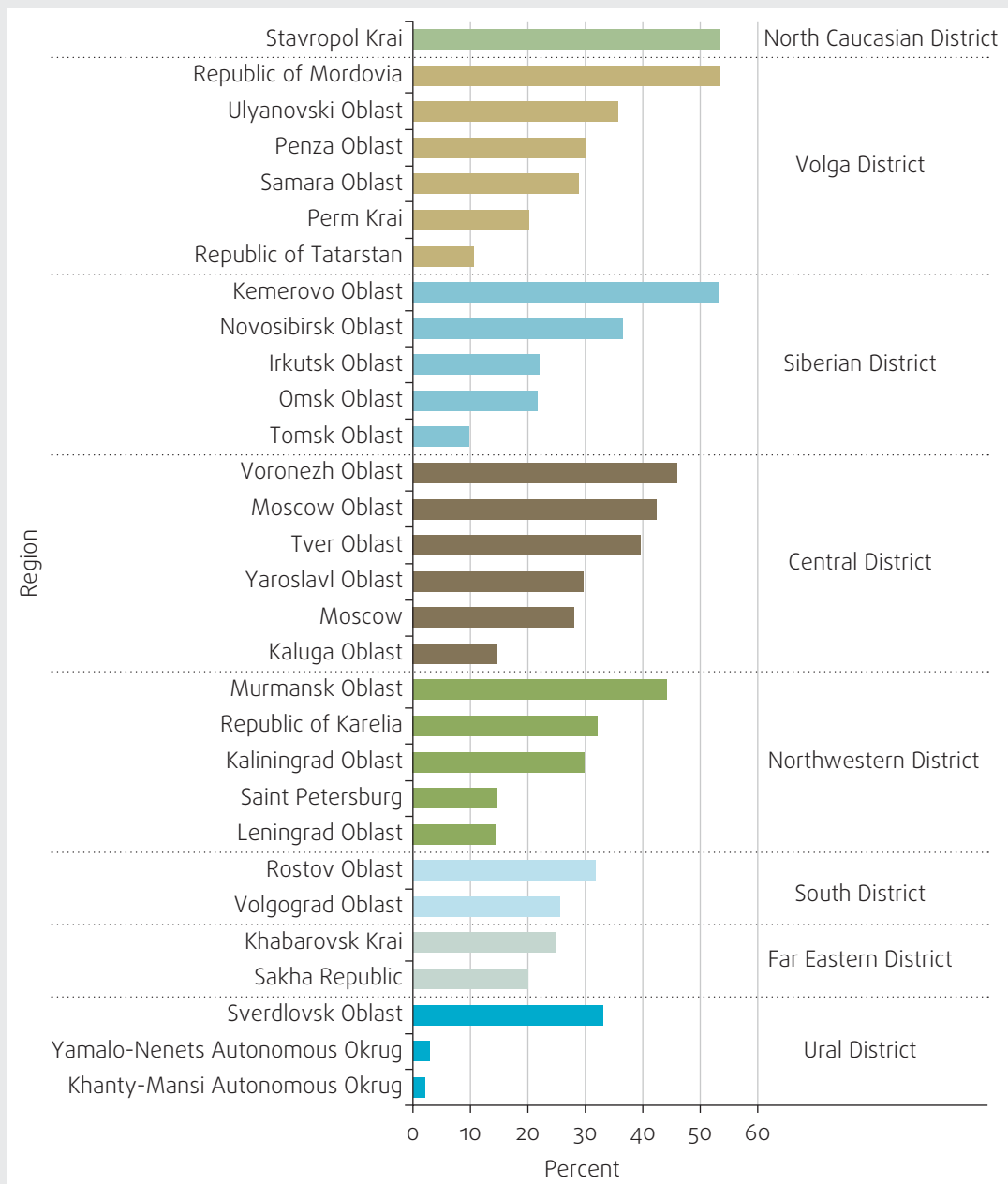
In Russia—the Eurasian country with the highest overall R&D spending (1.2 percent of GDP)—R&D investment in the business sector, the engine of knowledge-based growth, stood at 0.7 percent of GDP, just over half the EU average of 1.2 percent and much lower than top performers like Sweden (2.3 percent) and Finland (2.7 percent) (European Commission, n.d.). Aggravating this plight, national innovation systems are poorly governed. Research institutes and universities struggle to attract motivated young researchers and are often far removed from the needs of the business sector.

Russia has been particularly active in trying to stimulate an innovation-driven economy. In 2006, the government created the Russian Venture Company to stimulate the creation of the venture investment industry. The next year saw the establishment of Rusnano, a \$10 billion technology fund focused on high-tech sectors.



## Box 3.4. (cont.)

Figure B3.4.1. Tax arrears in selected Russian regions as a share of tax revenue, 2010 (percent)



Source: Federal Tax Service.

These state-directed initiatives aim to address financial constraints to the growth of knowledge-intensive sectors. However, venture capital investors are forced to invest in mature or foreign companies. They are particularly affected by the lack of viable exit strategies due to the underdevelopment of the market for initial public offerings and the lack of depth in financial markets. Statistics from the Russian Venture Capital Association show that 90 percent of investment capital is dedicated to financing restructuring or business expansion and only 10 percent is earmarked for early-stage financing of new companies (Russian Venture Capital Association 2013). Other initiatives, like the massive Skolkovo project on the outskirts of Moscow, are unlikely to be successful if the business environment outside this protected enclave does not improve in parallel (box 3.5).

Looking forward, constraints on the state budget and international obligations may limit the scope for direct transfers, tax breaks, or other forms of financial incentives at targeted sectors. For instance, Russia's recent accession to the World Trade Organization requires it to phase out preferential treatment to a number of sectors, such as automotive and chemicals, which have been heavily supported in recent years (see box 2.8 in chapter 2).

## Industrial policy may not generate lasting benefits

The role of industrial policy in economic diversification becomes contentious once other influences are considered. The widely held belief that government

### Box 3.5. A Russian Silicon Valley?

In November 2009, the Russian government announced the creation of the Skolkovo Innovation Center, a high-tech hub on the outskirts of Moscow. A site of 400 hectares is being developed to host a number of high-tech clusters, a technopark, a research university, and an Intellectual Property (IP) Center. High-tech companies and individuals are encouraged to become residents of the city so that they can benefit from special legal, administrative, tax, customs, and immigration regimes. The innovation center is financed primarily by the federal budget, which since inception has invested an estimated \$1.3 billion. Several hundred companies have already become legal residents of Skolkovo under the five technology clusters: biomedical (167 companies), information technology (228 companies), energy efficiency (187 companies), space technology (67 companies), and nuclear technology (61 companies).

Skolkovo enjoys the status of a special economic zone. Special economic zones have existed in the Russian Federation since 2005, providing favorable

regulatory and investment regimes. The global experience suggests that such initiatives can succeed only if they are able to induce the positive spillovers and domestic links needed for long-term, sustainable, autonomous growth of the business sector (Farole and Akinci 2011). Skolkovo may be no exception, with many companies only establishing legal residence in the enclave and conducting their operations elsewhere. Skolkovo will struggle to become a catalyst for knowledge-based development until the surrounding environment becomes more propitious to private entrepreneurship.

Skolkovo's IP Center is emblematic of the ad hoc solutions implemented in Skolkovo. In an enterprise survey conducted in 2006 by the Interdepartmental Analytical Centre in Moscow, 50 percent of respondents cited IP as a major impediment (Gianella and Tompson 2007). The Russian government has since made improvements in the IP legal framework, though uncertainty remains, discouraging both patenting and licensing. Two major pieces of legislation govern IP in Russia. Part IV of the Civil Code

(2008) provides a foundation to treat the IP generated with public funding, while Federal Law 217 (2009) deals exclusively with the use of IP generated with public funds to form start-up companies by universities and research institutes under the Russian Academy of Sciences. The Civil Code language is rather vague, implying that the state retains rights to the IP generated with public funds in defense-related research and in any other case it deems necessary.

The Russian IP regime is still far from international best practice. In the United States, a lack of commercialization of research by universities motivated the Bayh-Dole Act in 1980. The act transfers to the universities the IP rights resulting from publicly funded research, establishes a minimum amount of royalties to be shared with the researcher, and greatly simplifies IP management (which had been subject to more than 20 laws). These changes enabled more universities to afford the investment required to monitor, protect, and market IP and encouraged academic researchers to engage in related activities.

Source: World Bank 2013.

intervention drove export diversification in East Asia, for example, does not take into account other more fundamental changes occurring at the same time (Noland and Pack 2003; Pack and Saggi 2006). Over the two decades of their economic miracle (1960–80), the Republic of Korea and Taiwan, China, accumulated massive physical and human capital, at rates rarely seen in history. This altered their comparative advantage to capital-intensive goods. At the same time, firms in East Asia also managed to achieve efficient sizes and adopt modern technologies. By the late 1980s, enterprises in Korea contributed 80 percent of spending on R&D, with only 20 percent coming from the public sector.

The main lesson from East Asia is that improved access to infrastructure, a highly qualified workforce, and enforced rules of the game that reward investment and innovation are more likely to provide fertile ground for the emergence of a more efficient and diversified production base (box 3.6). This is equivalent to a “horizontal” approach to industrial policy, aimed at raising private returns on investment in physical and human capital across all sectors (EBRD 2008). Once these fundamental constraints are addressed, “vertical” industrial policy, if well designed and governed—no easy feat in countries with weak institutional environments—might boost economic development even more.

### Box 3.6. Eurasia trails as an attractive offshoring location

According to the 2011 A.T. Kearney Global Services Location Index, the two Eurasian countries in the study—the Russian Federation and Ukraine—are unattractive for offshoring, ranking 20th and 38th, respectively, of 50 countries (table B3.6.1). The ranking is topped by Asian countries: India, China, Malaysia, Indonesia, Thailand, Vietnam, and the Philippines are all in the top 10. Russia ranks far below the

other BRICS (Brazil, India, China, and South Africa), and Ukraine lags behind Poland, its neighbor to the west.

Both Russia and Ukraine score relatively well on financial attractiveness (costs related to labor, infrastructure, and tax). On people and skills availability, Russia is a middle performer, whereas Ukraine is ranked in the lower half of the countries surveyed.

But both countries perform dismally in areas linked to the business environment (regulatory framework, quality of infrastructure, cultural exposure, and security of intellectual property rights). Tackling these constraints head-on would yield the greatest benefits in attracting foreign investors.

Table B3.6.1. A.T. Kearney offshoring rankings, 2011

Rank	Country	Financial attractiveness	People and skills availability	Business environment	Total score
1	India	3.11	2.76	1.14	7.01
2	China	2.62	2.55	1.31	6.49
3	Malaysia	2.78	1.38	1.83	5.99
5	Indonesia	3.24	1.53	1.01	5.78
10	Chile	2.44	1.27	1.82	5.52
12	Brazil	2.02	2.07	1.38	5.48
20	Russian Federation	2.48	1.79	1.07	5.34
24	Poland	2.14	1.27	1.81	5.23
38	Ukraine	2.86	1.07	1.02	4.95

Source: A.T. Kearney 2011.

Developing a competitive economy in resource-dependent countries hinges on appropriate policies, their enforcement, and the institutions that underpin them.<sup>15</sup> An economy's competitiveness depends on the efficiency of its producers—in other words, on their ability to optimally employ labor, skills, capital, technology, and all other inputs to the production process. Yet an economy's ability to build its asset base of physical and human capital is determined by individual decisions—by firms, workers, and governments—to invest in these assets. These decisions are, in turn, affected by the incentives to invest and innovate associated with the investment climate—that is, the policy and institutional framework. When the incentives framework is dysfunctional, factor markets are unable to absorb the existing supply of labor, capital, talent, and ideas, hampering the self-discovery that would allow firms to enter new markets and compete on the global stage (Hausmann and Rodrik 2003).

All in all, letting the market choose winners in a competitive environment is a more sustainable diversification strategy than providing direct support to specific producers or sectors, because policy makers often lack sufficient information on which bets will pay off. Direct government involvement increases the risk of political “capture” and rent-seeking, potentially leading to moral hazard and adverse selection of investment initiatives.

Effective competition policy is especially important for letting the market pick winners (see chapter 6). Unlike the experience of earlier reformers in Eastern Europe, changed firm dynamics (entry and exit) in Eurasia have made little difference in productivity growth. Entry rates have been very low; exit rates, though hard to estimate, are probably much lower than in EU new member states (Alam and others 2008).

In Russia over 2001–07, the share of highly concentrated markets increased from 43 percent to 47 percent, a higher incidence than in most developed economies.<sup>16</sup> Most markets are dominated by a few incumbent players, with some Russian regions registering more than 200 dominant firms. Price-cost margins—an empirical measure of intensity of competition—are higher in Russia than in Europe. Firms in sectors with higher margins also tend to be older and larger, have smaller export orientation and R&D intensity, are more likely to operate in local markets, and in some cases are less likely to operate in a competitive market structure.

Isolation from global markets may induce companies to choose less-modern technology and operate at suboptimal scale, thus reducing productivity. More than half of Russia's firms consider local markets their main sales destination—a large proportion, even relative to economies of comparable size and structure, such as Brazil (about 35 percent) (World Bank 2013). Two factors could potentially explain market fragmentation and less competitive markets: transport costs (related to limited transport infrastructure and long distances) and, in countries with some degree of regional autonomy, barriers created by the interventions of regional governments that hamper the entry of firms from outside the region. Consumers and firms in Russia, for instance, face prices 20 percent higher than in comparable economies, with regional price dispersion in key sectors (pharmaceuticals, communication services, and retail gasoline) exceeding what would be explained by other factors that can be assumed to affect prices, such as distance to markets and level of economic activity (World Bank 2013; see also box 3.4).

## Investing in assets

Eurasia's performance over the past two decades has been impressive. After the output collapse in the early 1990s that followed the transition, the region began to recover and became fully integrated with the global economy. These achievements are due largely to the region's ability to exploit its natural resource endowments. Arguably, specialization along their comparative advantages meant that the region's economies became less diversified, with capital and labor flowing to a smaller number of sectors, though apparently without crimping productivity and employment growth.

To conclude, it is worthwhile to reiterate the principal findings of this chapter:

**Eurasian economies have become less diversified.** It is difficult to measure the extent to which an economy is specialized or diversified, because such measurements always involve a somewhat arbitrary choice of the level of aggregation. The best assessment of this report is that Eurasia has become less diversified since the early 1990s. Entire industries—especially within manufacturing—shrank or disappeared in many Eurasian countries. While services have grown, agriculture has not done well. But the main development has been the rise in the share of mining activities.

**Economic efficiency has improved.** Governments are worried about the lack of diversification of production and the reliance on a narrow range of resource-based exports whose prices are volatile. What should concern them more are the trends in overall economic efficiency. Eurasian economies are more efficient today than they were in the mid-1990s. A more concentrated economic structure has not prevented Eurasian economies from generating unsubsidized jobs and increasing the worker productivity. Economic volatility trends are harder to decipher, but it appears that when governments have managed the revenue from natural resources well, the economies have been stable enough to encourage private investment.

**Industrial policy interventions do not seem to have helped much.** Governments have been busy finding ways to channel resource wealth into nonextractive activities. The record is mixed at best. If aggregate output and employment statistics are used as a guide, the money spent subsidizing private businesses and supporting state-owned enterprises has generally not paid off. Public investments in education and infrastructure may have yielded much more.

As the next chapters argue, Eurasia has the advantage of possessing revenue from natural resources that can be invested to build competitive economies integrated with world markets. Yet development based on the exploitation of natural resources needs to be governed, as the rents created make the institutions of resource-dependent countries more vulnerable to capture (chapter 6). Windfall revenue from natural resources may help reinforce vested interests in inefficient political institutions, which in turn will make the creation of better economic institutions—those that drive investment and innovation in the long run—increasingly difficult over time.<sup>17</sup>

Direct government support to specific sectors and firms is a shortcut destined to fail if more fundamental constraints are not addressed. As argued in spotlight two, state-directed initiatives can succeed if they are supported by asset portfolios that match. More important, public resources will be wasted unless government policy focuses on developing underlying assets across the board.

## Annex 3A Employment

Table 3A.1. Annual growth rate of employment in Eurasia, by sector

Percent

Country	Period	A + B: agriculture, hunting, and forestry	C: mining and quarrying	D: manufacturing	E: electricity, gas, and water supply	F: construction
Armenia	2002–08	-0.37	1.24	-4.40	-0.48	10.84
Azerbaijan	1998–2008	-0.07	1.52	1.17	1.90	4.28
Georgia	1998–2007	1.03	-2.80	-4.67	-3.25	13.70
Kazakhstan	1999–2008	11.36	1.94	6.45	1.36	21.35
Kyrgyz Republic	1998–2008	-18.22	5.52	2.44	7.15	17.83
Moldova	1998–2008	-7.05	-0.57	-1.43	0.14	4.03
Russian Federation	1998–2008	-1.19	3.01	0.72	3.04	5.15
Ukraine	1998–2008	-4.57	-10.04	1.45	—	3.17
Australia	1998–2008	-1.89	5.65	0.02	4.22	4.70
Brazil	2002–07	0.5	8.3	4.2	2.9	1.7
Canada	1998–2008	-3.2	3.9	-0.6	2.8	5.3
Iran, Islamic Rep.	2002–08	-2.6	0.3	-2.5	-3.1	9.2
Ireland	1998–2008	-1.3	7.5	-0.8	1.1	6.5
Norway	1998–2008	-4.3	2.1	-1.1	-1.0	2.4
Singapore	1998–2008	6.7	—	-0.6	—	-0.6
Venezuela, RB	1998–2008	1.5	2.9	1.5	-1.3	4.2

G: wholesale and retail H: hotels and restaurants	I: transport, storage, and communication	J: financial intermediation K: real estate, renting, and business activities	L: public administration and defense, compulsory social security	M: education N: health and social work O: other community, social, and personal services activities	P: private households with employed persons	Total
4.69	5.12	9.13	7.94	-4.31	—	0.20
1.62	2.36	6.06	5.98	1.66	—	1.02
0.83	-0.68	-0.97	-6.96	-2.32	-3.69	-0.19
13.90	7.20	19.28	1.22	5.67	18.22	9.44
7.93	6.61	1.46	3.55	0.96	15.69	2.79
0.04	-0.93	0.09	3.04	-1.60	-8.84	-2.98
5.09	2.34	8.49	2.65	-0.08	4.17	2.18
5.60	1.69	7.41	-1.18	1.16	—	0.54
1.73	2.46	5.23	4.15	3.24	-14.91	2.54
4.5	3.4	6.2	3.1	4.3	2.0	3.3
2.2	1.7	2.3	1.7	3.1	-2.1	2.2
0.3	4.4	5.9	0.4	-1.2	-12.1	-0.2
4.3	4.0	6.7	3.6	5.4	1.3	3.5
0.5	-0.9	4.7	0.6	2.8	-10.4	1.2
1.9	5.1	4.5	3.8	2.4	—	2.4
2.6	6.5	3.3	—	3.8	—	3.1

Source: World Bank staff elaborations based on International Labour Organization data.

Note: The value for sectors A and B include also the sector classification E for Singapore. Q: extra territorial organizations and bodies, as well as X: not classifiable activities, were excluded from the calculations. — = not available.

**Table 3A.2. Variation in employment share by sector and country***Percentage points*

Country	Period	A + B: agriculture, hunting, and forestry	C: mining and quarrying	D: manufacturing	E: electricity, gas, and water supply	F: construction
Armenia	2002–08	-1.12	0.03	-2.25	-0.08	2.14
Azerbaijan	1998–2008	-3.92	0.05	0.07	0.08	1.38
Georgia	1998–2007	4.96	-0.07	-2.15	-0.30	2.70
Kazakhstan	1999–2008	3.47	-1.64	-1.56	-1.49	3.60
Kyrgyz Republic	1998–2008	-13.98	0.13	-0.26	0.54	7.19
Moldova	1998–2008	-14.61	0.06	1.45	0.46	3.09
Russian Federation	1998–2008	-3.04	0.13	-2.27	0.22	1.74
Ukraine	1998–2008	-5.01	-3.52	1.22	—	0.64



G: wholesale and retail H: hotels and restaurants	I: transport, storage, and communication	J: financial intermediation K: real estate, renting, and business activities	L: public administration and defense, compulsory social security	M: education N: health and social work O: other community, social, and personal services activities	P: private households with employed persons	Total employment in 2008 (millions)
2.21	0.98	1.16	1.10	-4.21	0.03	1,118
0.87	0.57	1.38	2.37	0.91	-3.77	4,056
0.86	-0.17	-0.20	-2.84	-2.51	-0.22	1,704 <sup>a</sup>
3.89	-1.17	2.73	-3.26	-4.62	0.13	7,857
6.27	1.71	0.08	0.25	-2.35	0.42	2,184
4.02	0.97	0.93	2.28	0.99	-0.16	1,251
3.86	0.13	3.39	0.31	-4.47	0.01	70,965
5.49	0.35	2.33	-0.65	0.38	—	20,972

Source: World Bank staff elaborations based on International Labour Organization data.

Note: Q: extra territorial organizations and bodies, as well as X: not classifiable activities, were excluded from the calculations.  
— = not available.

a. 2007.

## Annex 3B Comparison samples

The following 65 countries are included in the analysis of employment shares in relation to GDP:

Argentina, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bhutan, Bulgaria, China, Costa Rica, Croatia, Cuba, Cyprus, the Czech Republic, Denmark, the Arab Republic of Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, the Republic of Korea, the Kyrgyz Republic, Latvia, Liberia, Lithuania, Luxembourg, Malaysia, Malta, Moldova, Mongolia, Namibia, the Netherlands, New Zealand, Niger, Norway, Peru, Poland, Portugal, Romania, the Russian Federation, Serbia, Singapore, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Uganda, Ukraine, the United Kingdom, and the United States.

The following 104 countries are included in the analysis of value-added shares in relation to GDP:

Afghanistan, Albania, Argentina, Armenia, Austria, Azerbaijan, The Bahamas, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cambodia, Cameroon, the Central African Republic, Chile, China, Colombia, the Democratic Republic of Congo, Costa Rica, Croatia, Cyprus, Denmark, the Dominican Republic, Ecuador, the Arab Republic of Egypt, El Salvador, Estonia, Ethiopia, France, The Gambia, Georgia, Germany, Ghana, Grenada, Guatemala, Honduras, Hong Kong SAR, China, India, Indonesia, Iraq, Italy, Kazakhstan, Kenya, Kuwait, the Kyrgyz Republic, Latvia, Lesotho, Lithuania, Madagascar, Malaysia, Mali, Malta, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, the Netherlands, Nicaragua, Niger, Nigeria, Oman, Pakistan, Paraguay, Peru, the Philippines, Poland, the Russian Federation, Rwanda, Saudi Arabia, Senegal, Serbia, Sierra Leone, Slovenia, South Africa, Sri Lanka, Spain, Sudan, Swaziland, the Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, the United States, Uruguay, Vanuatu, Vietnam, and Zambia.

The following 44 countries are included in the sample to analyze the relationship between value-added and employment shares:

Argentina, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Benin, Bhutan, Bulgaria, China, Costa Rica, Croatia, Cyprus, Denmark, the Arab Republic of Egypt, El Salvador, Estonia, Ethiopia, France, Georgia, Germany, Italy, Kazakhstan, the Kyrgyz Republic, Latvia, Lithuania, Malaysia, Malta, Moldova, Mongolia, Namibia, the Netherlands, Niger, Peru, Poland, the Russian Federation, Serbia, Slovenia, Spain, Tajikistan, Uganda, Ukraine, the United Kingdom, and the United States.

## Annex 3C State ownership in the Russian Federation

State ownership in the Russian Federation is heavy by international standards, even against EU new member states, with a similar legacy of state involvement. State-owned enterprises occupy dominant market positions in their areas of activity, with scope for private participation—including that by foreign investors—tightly controlled. (In 2007, the share of foreign participation in the average Russian company was 2.7 percent, compared with 7.5 percent in the EU's new member states.)

Tariffs have progressively replaced nontariff barriers as the principal instrument for regulating foreign trade, but average tariff rates and tariff dispersion were still higher in Russia than in all countries in the Organisation for Economic Co-operation and Development in the mid-2000s, providing some isolation from international competition. National and subnational governments controlled at least 1 firm in 16 economic sectors (table 3C.1), versus only 9 in the typical Organisation for Economic Co-operation and Development economy in the late 2000s.

**Table 3C.1. A heavy presence of Russian state-owned enterprises, 2008**

(National, state, or provincial government controls at least one firm)

Economic sector	Yes	No
Manufacture of refined petroleum products	X	
Manufacture of basic metals	X	
Manufacture of fabricated metal products, machinery, and equipment	X	
Electricity generation/import, electricity transmission, electricity distribution, electricity supply	X	
Gas generation/import, gas transmission, gas distribution, gas supply	X	
Wholesale trade, including motor vehicles		X
Hotels and restaurants		X
Railway passenger transport, transport via railways, freight transport, operation of transport	X	
Other urban, suburban, and interurban passenger transport	X	
Freight transport by road	X	
Operation of road infrastructure	X	
Water transport	X	
Air transport	X	
Operation of air transport infrastructure	X	
Telecommunications fixed-line service	X	
Operation of water transport infrastructure	X	
Financial institutions (not central banks)	X	
Insurance	X	
Motion picture distribution and projection		X
<b>Total</b>	<b>16</b>	<b>3</b>

Source: Conway, Lysenko, and Barnard 2009.

**Table 3C.2. Russian government participation, selected sectors, 2008**

Sector	Market share			
	No public ownership	Less than 50 percent	50-99 percent	100 percent
Gas industry			X	
Production/import sector			X	
Gas transmission			X	
Gas distribution			X	
Electricity industry			X	
Generation of electricity			X	
Transmission of electricity			X	
Distribution			X	
Supply segments			X	
Rail transport				X
Operation of infrastructure				X
Operation of passenger transport				X
Air transport			X	
Domestic and international traffic combined			X	
Telecommunications			X	
Postal services				X

Source: Conway, Lysenko, and Barnard 2009.

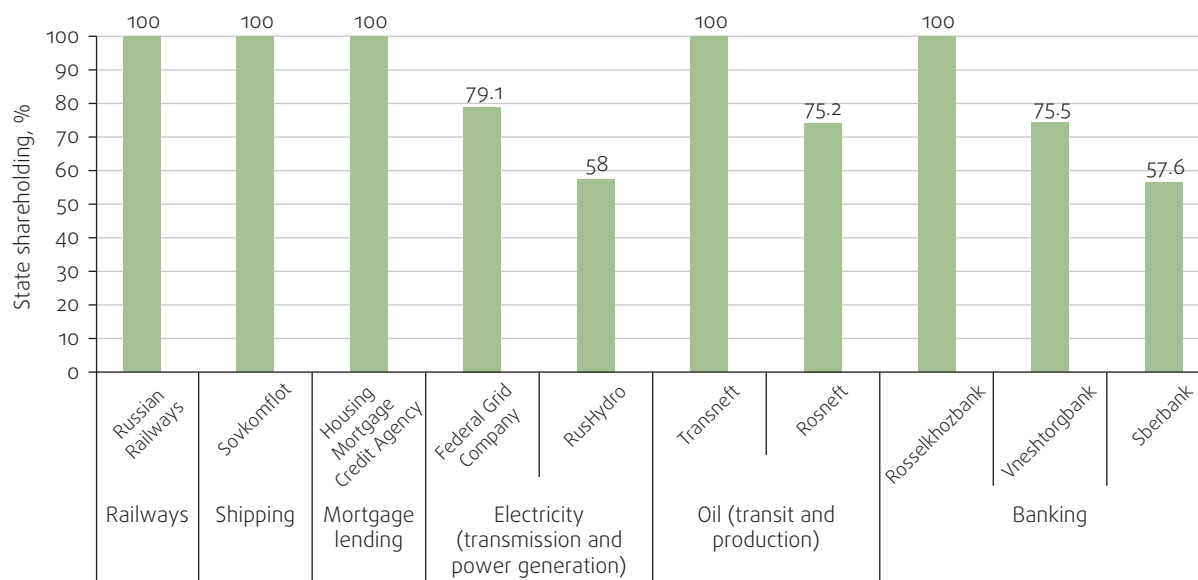
State ownership is markedly pronounced in infrastructure/network industries. The government has a 100 percent market share in rail transport and postal services and more than 50 percent in gas, electricity, air transport, and telecommunications (table 3C.2).

Even though privatization of state-run companies is on the government's agenda, the state still controls the largest producers in many key sectors. Its shareholding is above 85 percent in oil, banking, rail, and electricity: oil production (Rosneft) and the pipeline monopoly (Transneft); leading banks Sberbank and Vneshtorgbank; and the rail and shipping giants Russian Railways and Sovkomflot (figure 3C.1).

The government's dominance of these industries will likely continue, given the existing barriers to trade and investment. There are statutory or other legal limits on the number or proportion of shares that can be acquired by foreigners in electricity and gas generation, transmission, distribution, and supply; in rail, air, and water transport; and in rail, air, and water infrastructure operation (World Bank 2013).

**Figure 3C.1. Russian state participation in selected industries**

(Shareholding, percent)



Sources: Company web pages and [www.vedomosti.ru](http://www.vedomosti.ru) (June 2011).

## Notes

- 1 Commodities also represent the bulk of exports from Eurasia to the rest of the world. Oil, gas, and minerals constitute 72 percent of exports from the Russian Federation, 81 percent from Kazakhstan, and 97 percent from Azerbaijan (UNSD, n.d.b; see chapter 2).
- 2 The aggregate service sector includes International Standard Industrial Classification (one-digit level) sections E–P (see note to table 3.1).
- 3 The exceptions are Kazakhstan, where the Herfindahl-Hirschman Index decreased from 0.49 in 1997 to 0.46 in 2009, and Russia, where the index slightly decreased from 0.53 in 2002 to 0.52 in 2010.
- 4 In Russia—the most industrialized Eurasian country—agriculture over the entire period accounted for only a small share of the economy. It fell from 6.4 percent to 4 percent over 1997–2010 (World Bank, n.d.; calculated as agriculture’s share in gross value added in 2000 U.S. dollars).
- 5 In Moldova, it is 31 percent.
- 6 The value-added shares of Belarus and Tajikistan are higher than the predicted value at 10 percent significance.
- 7 Two alternative specifications are used: (1)  $gr\_Emp_i = \alpha + \beta_1 XRev_i + \beta_2 gr\_WAP_i + \mu_i$ ; and (2)  $gr\_Emp_i = \alpha + \beta_1 XRev(initial)_i + \beta_2 gr\_WAP_i + \mu_i$ , where  $gr\_Emp_i$  is the average annual growth in total employment of country  $i$  over 1996–2011;  $XRev_i$  is the average export revenue concentration (over 1996–2011) of country  $i$ ;  $XRev(initial)_i$  is the initial level of export revenue concentration of country  $i$ ; and  $gr\_WAP_i$  is the  $i$ th country’s average annual growth in working-age population—defined as in World Bank (n.d.)—over 1996–2011.
- 8 Productivity growth is measured as GDP per capita growth (at 2005 prices) from Penn World Tables. No additional controls are included. Two alternative specifications are used to illustrate the relationship between export revenue concentration and productivity growth: (1)  $gr\_GDP_{pc_i} = \alpha + \beta_1 XRev_i + \mu_i$ ; and (2)  $gr\_GDP_{pc_i} = \alpha + \beta_1 XRev(initial)_i + \mu_i$ , where  $gr\_GDP_{pc_i}$  is the average annual growth in GDP per capita of country  $i$  over 1996–2011. To link export market concentration and productivity growth, the two following specifications are used: (3)  $gr\_GDP_{pc_i} = \alpha + \beta_1 XMkt_i + \mu_i$ ; and (4)  $gr\_GDP_{pc_i} = \alpha + \beta_1 XMkt(initial)_i + \mu_i$ .
- 9 This calculation is based on countries for which data are available: Russia, Azerbaijan, Georgia, Kazakhstan, Moldova, Ukraine, and Armenia.
- 10 Public sector employment is defined as that in the general government and in state-owned enterprises. General government includes all government units, social security funds, and nonmarket nonprofit institutions under supervision of public authorities. Public sector also includes enterprises mainly or fully owned or controlled by public authorities.
- 11 See annex 3A.
- 12 Fiscal policy is more effective under an inflation-targeting regime with a flexible exchange rate because monetary policy helps reduce volatility in inflation. The level of net public debt is also important. At high levels of debt, debt reduction should be the priority to help reduce the sovereign risk premium and build credibility (IMF 2012).
- 13 See Bruno and Sachs (1982) and Sachs and Warner (1995, 1997, 2001) for seminal models of Dutch disease. For a diagnosis of Dutch disease in Russia, see Ahrend, De Rosa, and Tompson (2007).
- 14 Data are available for Armenia, Azerbaijan, Belarus, Kazakhstan, the Kyrgyz Republic, Moldova, Russia, Tajikistan, and Ukraine. See chapter 5.
- 15 Rodrik, Subramanian, and Trebbi (2004) explicitly compare the relative importance of institutions, geography, and policies and find that the quality of institutions is the most important determinant of income differences across countries.
- 16 Concentration ratios are calculated using the Herfindahl-Hirschman Index and CR3 methodologies. A highly concentrated industry is defined as one in which the Herfindahl-Hirschman Index is greater than 2,000. See Conway, Lysenko, and Barnard (2009).
- 17 See Acemoglu, Johnson, and Robinson (2005) and De Rosa and lootty (2012) for an empirical assessment.

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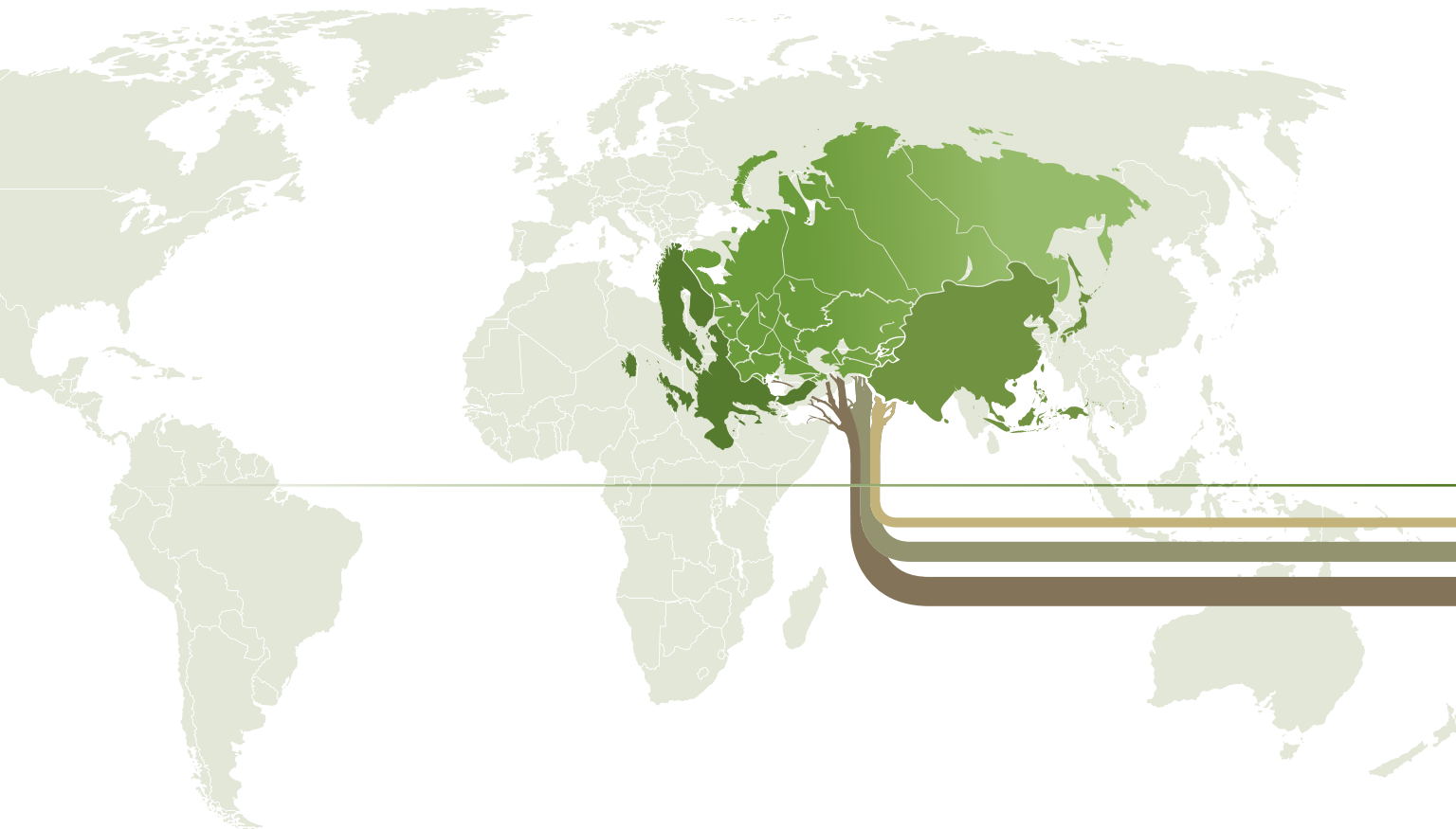


## Spotlight Two



### Industrial Policy

King Abdullah Economic City is a 65-square-mile development at the edge of the Red Sea. Its entrance is an arched gate capped by three domes rising out of the sand. It is one of the four “economic cities” in Saudi Arabia, created with oil money and aimed to help the economy diversify away from oil and to create jobs for its people.



Job creation is a major preoccupation of the Saudi Arabian government: the oil and gas economy accounts for a big share of gross domestic product (GDP), but not of employment, which is common in hydrocarbon economies. Other activities have not proven too attractive: currently, only about half of working-age Saudis are employed. The population is young—about half is under 20 years of age—and the pressure for job creation will only intensify in the coming years.

To create jobs, the country must look outside the oil industry. Hence the economic cities: “The biggest oil refinery produces at most 1,500 jobs. We will produce a million,” claims the governor of the agency in charge of developing these cities (Ouroussoff 2010). The governor adds that the government hopes to entice “the best manufacturing companies, real estate developers, education and health institutions, various service providers and many other economic institutions” to co-locate by building cities from scratch and giving them state-of-the-art infrastructure. The hope is that they would collectively start a self-reinforcing cycle of diversified employment opportunities, learning, innovation and more diversification.

Saudi Arabia is not alone in pursuing such approaches, but is almost matchless in finding the money for them. Many countries have experimented with initiatives to improve the economy under different names: import-substitution strategies, export-led growth, climbing up the value-added chain, innovation, and so on. In resource-rich economies such moves are often equated with economic diversification.

Results have been mixed at best. Import-substitution strategies, for example, now largely abandoned, seemed successful in a few countries, but were disastrous in others. Yet, many resource-rich governments persist in industrial policy, partly because it appears to have sometimes worked, even though the failures outnumber the successes. Why? Are there identifiable reasons for success, and so some valuable lessons for others? The experiences of Finland, Saudi Arabia, and Chile, all countries with sizable natural resources given their relatively small populations, provide some clues.

All three countries studied in this spotlight inherited endowments at the time of independence, which have evolved in accordance with their priorities and circumstances. Table S2.1 summarizes a simple attempt at quantifying the countries’ nonresource endowments in the most recent years available. Among the three, Finland is estimated to have the highest physical capital stock. Human capital is approximated by the Programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD), which again put Finland on top of the three (with the other two countries switching places).

As a proxy for the quality of institutions relevant to economic activity, overall rankings in the Doing Business and World Governance Indicators are used. In the Doing Business 2013 assessment, Finland (top of the three once more), Saudi Arabia, and Chile are the top-ranked countries in the Euro Area, Latin America, and Middle East, out of 185 countries worldwide. In the World Governance Indicators, Finland was again the top performer among the three, with Chile ahead of Saudi Arabia by a large margin.

Table S2.1. Nonresource asset portfolios

	Finland	Saudi Arabia	Chile
Physical capital stock (per capita, 2005 US\$, thousands) in 2011	106.4	52.7	37.1
of which public capital stock	14.1	25.7	3.9
PISA mathematics scores (2009)	541	336 <sup>a</sup>	421
Doing Business overall ranking (2013)	11	22	37
Worldwide Governance Indicators <sup>b</sup> (2012)	98	40	84

Sources: Organisation for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA); World Bank (Worldwide Governance Indicators, World Development Indicators); and World Bank staff estimates.

a. Trends in International Mathematics and Science Study (TIMSS) results from 2007 converted to be comparable to PISA results by OECD.

b. Unweighted average of the percentile ranking, ranging from 0 (lowest) to 100 (highest). Individual indicators are voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption.

These are crude ways of measuring complex and multidimensional matters, but the relationship between endowments (or asset portfolios) and industrial policy is nevertheless helpful. At the risk of oversimplification:

- Finland, with sustained efforts to accumulate human and physical capital and put in place good institutions to regulate enterprise and ensure social service delivery, has been successful in implementing industrial policy in activities that need physical, human, and institutional capital, such as telecoms and other high-tech sectors.
- Saudi Arabia has used its natural resources to build a stock of physical capital, and was successful with an industrial policy in physical capital-intensive sectors such as petroleum refining and chemicals, especially in those segments that do not require highly skilled labor or vigorous entrepreneurship. It has, however, struggled to succeed in activities that require highly skilled workers and institutions that encourage entrepreneurs and innovators.
- Chile is not especially rich in any of these endowments—natural or built. Having experimented with industrial policy in many areas, it has been successful in encouraging high value-added activities in sectors that require natural resources that it has in abundance, such as salmon, wood products, and wine.

The bottom line? The countries appear to be successful only in fostering economic activity for which either they already have the needed resources—built capital and institutions—or they have been able to quickly build or institute the assets that are needed.

## Industrial policy in resource-based economies

The traditional definition of industrial policy is a set of actions aimed at developing particular sectors of the economy.<sup>1</sup> Such interventions in resource-rich countries have several characteristics that distinguish them from actions in other countries. First, a resource-rich country and its government have ready access to funds. Second, the economy often suffers from “Dutch disease.” Third, relatedly, diversifying the economy from the dominant resource-intensive sector is usually a motivating factor in policy making.

Ready access to resource “rents” is, in principle, a blessing. An abundance of natural resources available for export means that the country does not need to export other goods and services to pay for imports. It also means that the government does not have to tax in order to fund public activities, at least not as much as in those countries without abundant natural resources. Government revenues that are not collected from taxpayers tend to attract less scrutiny from the public at large, and thus afford more discretion to policy makers in spending them as they see fit. This freedom cuts both ways: policy makers can use it beneficially to push through long-term policies without fear of being voted out of office, or they may adopt “rentier” behavior, as the need for accountability is less prominent.

Governments of resource-rich countries often try to diversify the economy because commodity prices tend to be volatile, and commodity dependence transmits large swings into the rest of the economy. Nor do natural resource-based sectors provide many jobs.

Resource-rich countries that have been successful in encouraging nonextractive activities seem to have either chosen to subsidize activities that have the requisite asset base—the right mix of natural resources, human and physical capital, and institutions—or have simultaneously altered the asset base to suit the activities being encouraged. Simply put, they have been able to harness natural-resource wealth for productive purposes while involving a sizable part of their population not just in benefiting from the resulting activity but also in creating it. Although it is difficult to define what constitutes national success, some bodies attempt to quantify inhabitants’ well-being.<sup>2</sup> Three successful countries that are both resource-rich and making successful use of industrial policy are those we introduced above.

### Finland

Finland is a small open economy with a per capita income of about \$37,660 (in 2011 purchasing power parity [PPP] dollars) and a population of around 5.4 million. Annual per capita GDP growth has averaged 2.7 percent since 1960. Unemployment averaged 8.3 percent of the labor force between 1980 and 2010, but has been declining since the mid-1990s. Labor force participation for the same period averaged over 75 percent of the population 15–64 years, and the rate for women is about 4.4 percentage points lower than for men. Finland has been a member of the European Union (EU) since 1995 and has belonged to the European Economic and Monetary Union since 1999, when it adopted the euro as its currency.

Since independence from Russia in 1917, Finland has tried to reduce dependence on foreign investors by seeking technology transfer from abroad while limiting foreign influence on the domestic market. Finland used to be an agrarian economy in which wood, paper, and pulp constituted over 80 percent of GDP as late as 1938. From the 1950s through the 1970s, Finland's natural resource-based state-owned enterprises were profitable, and they reinvested the profits. Public savings were channeled partly to support private investment in capital equipment, and partly to start public companies in "strategic" sectors of the economy: basic metal and chemicals, energy, and downstream forestry industries such as paper and pulp.

Unlike the Netherlands and Norway, Finland did not suddenly discover natural resources, and therefore, did not suffer from Dutch disease, which may partly explain why the rapid pace of large investments did not overwhelm the absorptive capacity of the economy. Inclusiveness of the policies, apparently attributable to the famed Finnish pragmatism, also worked in the country's favor: the policy-making regime was "corporatist," marked by cooperation between private and public sectors, and industrial competitiveness, wage moderation, and profitability were prioritized. Support of the working class was ensured by the gradual introduction of social welfare and a public pension system. Such reforms in turn boosted labor supply, particularly of women, mainly due to subsidized child care.

When the oil crises in the 1970s made energy-intensive sectors unprofitable for Finland, policies became export-oriented. This required a shift in the industrial structure to advanced machinery and electronics, and an emphasis on higher value-added segments of the downstream forestry industry. The structural change was supported by financial deregulation, enhanced research and development of new industrial technologies, and transformation of education. Education reforms, which had already started in the mid-1960s, accelerated. Teaching became a high-status profession under government policy, attractive not because salaries were high but because of the autonomy and respect commanded by the profession. Meanwhile, institutions to support implementation of science and technology were set up, such as a Science and Technology Council, the Academy of Finland, and the National Technology Agency (Tekes).

Finland was successful in seeking out export markets in the Eastern bloc while the West suffered recessions triggered by the oil shocks of the 1970s, and subsequently in shifting the focus to the West as their economies recovered. Another turning point came at the beginning of the 1990s when the economy was plunged into a deep recession prompted by the collapse of trade with the Soviet Union, a Western European recession, and a banking crisis due to the rapid deregulation of the financial sector in the 1980s. A policy response appropriate to the depth of the recession was necessary, but shorter-term, macro-oriented measures which had constituted important policy elements were constrained by the common regulations of the EU; negotiations for the EU membership were ongoing, but had already been endorsed by large sections of the society.

Instead, Finland came up with a new industrial policy, which took a "systemic view" (Ylä-Anttila and Palmberg 2007), emphasizing the interdependency among research organizations, universities, companies and industries, particularly on knowledge development and diffusion, innovation, and industrial clusters.

As technological progress and globalization started to accelerate in the early 1990s, the national innovation system and industrial clusters became

the cornerstones of industrial policy. A distinctive characteristic of Finnish technology policy is its “industry-pull” rather than “science-push” approach, with the government playing the role of enabler rather than interventionist. Nokia was both a beneficiary and a leader of this cluster approach emphasizing innovation, and a successful example of Finnish industrial policy.<sup>3</sup> It was a diversified conglomerate until it entered the mobile telephone market in the mid-1980s. It concentrated on information and communications technology in the 1990s, adopting innovation as the driver for its business success. The national policy of creating a business environment supportive of technology-based industries worked in Nokia’s favor, providing skilled labor for its laboratories, and cutting-edge ideas from academic scientists. At the same time, Nokia was an attractive employer for graduates, and a vehicle that transformed ideas into commercial products for the academics.

Over the course of its history, Finland has implemented a series of successful industrial policy interventions in response to economic shocks. These were triggered not by discovery of natural resources but by events which made natural resource-based activities less profitable. Finland’s success is consistent with the main message of this report: efforts to change the production profile of an economy are successful when they are preceded or accompanied by measures to diversify its asset base. Finland shifted the structure of the economy from a dependence on natural resources by putting in place world-class education, health, and infrastructure systems, and by instituting an investment climate that may be the best in Europe.<sup>4</sup> As spotlight three emphasizes, the critical factor in its economic success may have been its push to build its human and physical capital, and improve institutional quality, not its policy to nurture industrial champions such as Nokia.

## Saudi Arabia

Saudi Arabia has a population of 28 million and a per capita income of about \$24,700 (PPP, 2011). Annual per capita GDP growth has averaged 1.1 percent since 1969;<sup>5</sup> unemployment averaged 5.1 percent between 1999 and 2009. Labor force participation for the same period averaged around 52 percent of the working-age population, but with a huge difference between men and women of about 60 percentage points.

The country is rich in natural resources, possessing about a sixth of the world’s known oil reserves. The oil sector accounts for half of GDP and four-fifths of export earnings. Since the first discovery of oil in 1938, Saudi Arabia’s economy has suffered from Dutch disease. Starting around the 1970s, the government has sought to diversify its economic structure so as to reduce volatility stemming from reliance on petroleum, and create more jobs for Saudi Arabians. The government follows five-year development plans: the first few focused on establishing physical infrastructure as a first step, while the later plans (including the current, ninth plan) emphasize diversification.

Early industrialization efforts prioritized developing oil and oil-related industries, including steel, fertilizer, oil refineries, and petrochemicals. These were consistent with the country’s main assets: oil, natural gas, and financial capital. Public sources funded the investments initially, as private capital was unavailable

at the required scale. The government established the Saudi Basic Industries Corporation (SABIC) in 1976, tasked to develop oil-related industries. To facilitate SABIC's and other industrial activities, it also created a Royal Commission in 1975 to develop Jubail and Yanbu, state-of-the-art industrial cities on the Gulf and Red Sea coasts. Also in the mid-1970s, the government gradually acquired shares in the Arab-American Oil Company (Aramco)—originally an American-owned oil company—and nationalized it completely in 1980.

Indirect public support, such as tax holidays, preferential access to credit, favorable leasing of industrial sites, and other incentives, was extended not only to the priority sectors, but also to other industries as well, with the aim of promoting development of non-oil industries. Recipients of such support included industries processing food and those making furniture and other consumer goods. An Industrial Cluster Program was launched at the start of this century targeting five industries: minerals and metals; automotive; plastics and packaging; home appliances; and solar energy. It is supervised by the Ministry of Commerce and Industry and the Ministry of Petroleum and Mineral Resources. King Abdullah Economic City was launched in 2005 as part of a program to place Saudi Arabia in the world's top 10 investment destinations and to create a million jobs for Saudi Arabian youth.

Aramco, SABIC, Jubail, and Yanbu are examples of successful industrial policy. Aramco was the world's largest oil company in 2011 (Helman 2012). SABIC is among the top 10 petrochemical companies (ASD Reports 2011). Jubail and Yanbu are the more successful industrial cities in the country, with total investment exceeding \$130 billion and accounting for the bulk of nonpetroleum exports (Royal Commission website). Hertog (2010) attributes the successes of Aramco and SABIC to their professional management: "Saudi Aramco and SABIC in particular are perceived as institutional 'fortresses' in a system that is otherwise shot through with rent seeking and whose administrative and regulatory capacities are limited." The Royal Commission for Jubail and Yanbu is also reputed for its professional and independent management. In addition, Aramco and SABIC are the most popular employers for Saudi Arabian graduates, and get to pick the brightest and best. Both companies sponsor thousands of national graduate and undergraduate students to study at home and abroad. Aramco supports a college preparatory program that gives Saudi Arabian secondary-school graduates the skills to succeed in universities abroad, and runs vocational colleges that give thousands of local youth the technical skills they need for employment (Wheeler 2011).

Industrial policy to support sectors other than the four cited above has been less successful. An often-cited reason is the lack of workers with relevant skills at competitive wages. The reservation wage, the lowest wage at which someone will accept a job, in Saudi Arabia is too high to make unskilled or semiskilled labor-intensive industries competitive if they employ nationals. The alternative option of endowing workers with skills allowing them to create value commensurate with their wage aspirations has been elusive, despite the initiatives sponsored by the government to improve the education system, such as the King Abdullah University of Science and Technology and the "gifted and creative education" program (Mawhiba), and those sponsored by private corporations like Sony and Intel, including the Creative Science Awards.

Even well-run SABIC has found it difficult to move from the segment of the petrochemicals industry dependent on natural resource inputs to more innovation-intensive segments. In 2007, for example, it acquired GE Plastics for \$11.6 billion, reflecting a high valuation on the numerous patents that company owned and on the market segments it was present in (for example, specialty plastics used in cars, computers, and space technology). But SABIC is still struggling to transform the acquisition into an enhanced domestic innovation base, as it works to complement the patents and advanced materials with homegrown industrial know-how, managerial skills, and other necessary inputs. The acquisition of GE Plastics' U.S. and European manufacturing capacity also left SABIC exposed to recessions in developed economies. The jump in value-added product composition has come at a high price.

To summarize, the oil discovery in 1938 set off a severe bout of Dutch disease in Saudi Arabia. The government has invested oil earnings in physical capital, and created impressive infrastructure and capital-intensive industries. Its more recent investments in human capital have so far yielded fewer results. Successful industries are few and create few jobs, many of which are held by foreigners. Saudi Arabia may still have some attributes of a rentier state (Mahdavy 1970), where citizens pay few taxes and hence perceive government less as a provider of services and more as a distributor of proceeds from the country's natural wealth and provider of public or subsidized employment.<sup>6</sup>

## Chile

Much like Finland, Chile is a small open economy. Its population is about 17 million, and its per capita income is about \$16,330 (PPP, 2011). Annual per capita GDP growth has averaged 2.7 percent since 1960. Unemployment averaged 8.5 percent of the labor force between 1980 and 2011, hovering around high single digits since 1999. Labor force participation for the same period has averaged around 61 percent of the working-age population, with a difference in male and female participation of about 35 percentage points. Chile is the world's biggest copper producer.

During the global depression of the early 1930s, the collapse of global commodity markets prompted the government to encourage alternative industries. The Chilean Economic Development Agency (CORFO) was established in 1939 to implement the country's industrial policy. Forestry first gained policy makers' attention, based on the discovery that Monterey pine thrived with Chile's soil and weather, and grew faster there than in North America or Scandinavia, at the time the dominant exporters in the global timber trade. The government passed several laws in the 1970s providing legal certainty and incentives for planting the trees. The new provisions stated that lands put to this use could not be expropriated, and they were granted cash subsidies of up to 75 percent of start-up costs, and given direct credit lines and other subsidies.

The country had gone through a period pursuing import substitution strategy earlier but, after the military regime took power in 1973 and subsequent return to democracy, has adhered to freer market policies, eschewing sector-specific industrial policy except for forestry. But the special incentive scheme



for forestry continued even during the free-market Augusto Pinochet regime, which judged that Chile could not compete with the developed world in manufacturing unless it took advantage of a cheap and reliable supply of raw materials. Plantation forestry is usually within the reach of many tropical and temperate regions with adequate rainfall, if the government decides to make forestry a priority (Clapp 1995). Having assured a critical mass, the government gradually exited the production of wood, while in parallel created a talent pool of homegrown forestry engineers. Today, wood and wood-derived products are Chile's second-largest exports after copper.

Other than forestry, in the 1970s through the 1990s, the government pursued sector-neutral policies aimed at encouraging new enterprises, diversifying exports, and supporting small and medium enterprises. For example, Fundación Chile, established in 1976, helped set up companies in new sectors and sold them to the private sector when they proved successful. Even though government support was sector-neutral, the success stories have tended to come from resource-based industries, such as wine and salmon cultivation. The bulk of investments made by Fundación Chile are concentrated in agribusiness, marine resources, and forestry—the noncopper natural resources abundant in Chile.

After the Asian crisis of the late 1990s, innovation became the primary focus of industrial policy in Chile. The National Council on Innovation for Competitiveness (NCIC) was founded in 2006 as a public-private partnership to advise the government. Significantly, it announced “strategic industries” for targeting, departing from sector-neutrality. But these industries consisted only of natural resource-based industries.<sup>7</sup>

An assessment by an international evaluation panel (NCIC 2010) found that the national innovation strategy has not yielded the expected results. It finds the structure and elements of the strategy, including the creation of priority clusters, to be appropriate, but that implementation has been slow due to “the relative lack of conduction and empowerment of the Ministerial Committee of Innovation” (NCIC 2010), inadequate relevance of research and development efforts supported by public funds, and the failure of the education system to create human capital adapted to the national labor market.

Chile discovered copper neither suddenly nor recently, but the abrupt conversion by the military government to relatively laissez-faire policies from the import-substitution regime had effects akin to Dutch disease (Palma 2005). As a result, nonmineral sectors contracted with the exception of forestry and related sectors. Chile has not carried out massive investments using the “windfall” as many resource-rich countries do, preferring to keep the government size small in accordance with a liberal ideology.<sup>8</sup> The proceeds were instead absorbed in the sovereign funds. The Copper Stabilization Fund and its successor Economic and Social Stabilization Fund (ESSF) do not make investments but support countercyclical fiscal policies, helping to reduce the impact of volatility injected to the economy by the fluctuations in the copper price. The other sovereign fund, the Pension Reserve Fund, is essentially a savings fund with no withdrawals allowed for a minimum of 10 years.

According to some analysts (such as López 2011), investments in human capital development have been neither large nor effective. Low taxation is conducive

to private investments in sectors in which Chile has natural comparative advantage, but private sector activities have not induced a high rate of labor participation, particularly among women (as seen in the 35 percentage point gap with men). Chile's public institutions, generally considered the best in Latin America, are strong enough to manage its sovereign wealth fund well, but according to the National Council's evaluation (NCIC 2010), not enough to implement its innovation policy aimed at economic development.

## When industrial policy works

All three countries surveyed here used diverse sets of industrial policies, and recently have been implementing measures to encourage innovation through cluster-based interventions. These measures seem to have worked in Finland, but much less so in Saudi Arabia and Chile. With its aggressive infrastructure investments, Saudi Arabia was successful in fostering activities associated with natural resources, such as petrochemicals, fertilizers, steel, and refining. Chile has successfully run an industrial policy to foster activities that had a sizeable asset base: natural resource-based sectors such as forestry, salmon, and wine.

Industrial policy appears to work when it is consistent with the country's endowments of natural, human, physical, and institutional capital. Hence, it is necessary to diversify endowments so as to diversify production and export structures. For most economists, this is unsurprising. For many policy makers, however, this may be an unwelcome insight. Economic diversification will take long because it takes time to build a balanced portfolio of assets. Policy makers in search of quick results may be better off implementing industrial policy only in sectors in which their economy is already adequately endowed. They will be best served by policies to improve education and health, infrastructure and communications, and regulations for private enterprise.

Spotlight contributed  
by Keiko Kubota.

## Notes

- 1 There are many definitions of industrial policy used in the literature. The traditional definition used in this spotlight is sometimes referred to as "vertical industrial policy" to distinguish from other definitions.
- 2 For example, OECD's Better Life Index and Legatum Prosperity Index.
- 3 Nokia was the world's largest maker of mobile phones between 1998 and 2012 (BBC Business News 2012).
- 4 Finland tops many world rankings in education and health care quality (Iwulska 2011), for example, and it is ranked 11th in the World Bank's Ease of Doing Business Indicators.
- 5 Consistent series for Saudi Arabia is available only from 1969.
- 6 Saudi nationals are not subject to income tax in Saudi Arabia, and a religious levy (net worth tax) is not monitored or enforced by the tax authorities unless sale of goods is involved (Ernst & Young 2012).
- 7 National Council states that the public sector has two major tasks: creation of platforms which are useful for all sectors, and making strategic bets on specific industries. Broad-based platforms are financial services, transport and logistics, and construction. Strategic bets are to be placed on copper mining, aquaculture, fruit production, beef, pork and poultry, offshoring services, tourism, and processed foods.
- 8 Central government revenues and expenditures were both around 22 percent in 2012.

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# Chapter Four

## Natural Resources

At the start of the transition, Azerbaijan's oil industry was a shadow of its former self, producing just 2 percent of the oil in the former Soviet Union. As early as the seventh century, oil was dug manually around Baku. It was in a suburb of Baku where the world's first mechanical oil well was dug, in 1846. And it was in Baku where Branobel, the company owned by the brothers Ludvig and Alfred Nobel—the inventor of dynamite and founder of the Nobel Prize—developed, along with numerous other foreign entrepreneurs, an oil industry that accounted for more than half of global oil production by the turn of the twentieth century.

Azerbaijan's fortunes followed Branobel's. After riding high on the back of larger oil extraction with technologically more sophisticated machinery imported from the United States, Branobel disappeared after the 1917 Russian Revolution, when its fields were nationalized. Azerbaijan's oil production declined even more after World War II, while production in the Volga-Urals region of the Soviet Union—now in the Russian Federation—surged.

Today, Azerbaijan is again getting big sums from oil and gas, and the Nobel house on the outskirts of Baku has been beautifully restored, financed from the surge in oil-related revenue since the mid-1990s. The “deal of the century”—the production-sharing agreement (PSA) between Azerbaijan and a foreign consortium led by British Petroleum (now BP) in 1994—has resulted in a quadrupling of oil production from the years before the transition to almost a million barrels a day today. Natural gas fields are being developed, and gas production could double from about 15 billion cubic meters a year at present.

Azerbaijan's dependency on hydrocarbons today appears to be similar to the days of the Nobel brothers. The country exports little other than petroleum and natural gas. Two-thirds of government revenue is directly related to oil and gas. They account for half of gross domestic product (GDP), but their indirect role in the economy is much greater. And people seem to be uncomfortable with this dependence on an industry that proved so fickle in the past.

In one way or another, Azerbaijan's concerns are shared by other resource-rich countries in the region, such as Russia and Kazakhstan. Depending so much for economic growth on an exhaustible resource should be a concern for any

responsible policy maker, even when resources seem abundant. Politicians should ensure that the revenue from national resources is appropriated largely by governments on behalf of the citizens, not cornered or whisked away by a few investors. And everyone in government should be working hard to ensure that these profits are invested in ways that increase the aggregate wealth of countries—that they not end up leaving the countries poorer than when the oil and gas was underground.

To address these concerns, this chapter tries to answer three questions:

**How abundant is Eurasia in natural resources?** Eurasia in aggregate (less so per capita) is one of the world's most abundant regions in nonrenewable natural resources. Estimates of subsoil capital—the present value of the stream of annual resource rents that countries generate from production and exports of oil, gas, and mineral reserves—demonstrate Eurasia's richness. But per capita the region's resource-rich countries have more limited natural resources than do some countries in the Middle East (such as Saudi Arabia) or elsewhere (such as República Bolivariana de Venezuela).<sup>1</sup> Easily the world's largest country by territory, Russia has the lion's share of these resources, but in per capita terms it ranks 8th for natural gas and 19th for oil. Naturally, these rankings can change as more oil and gas are discovered or made profitable to extract by technological advances. Eurasia has 11 percent of the world's agricultural land—mainly in Russia and Kazakhstan. Of the Eurasian countries, 7 are among the top 12 countries in the world in agricultural land per capita. Of course, what really matters is agricultural production, not the availability of arable land.

**How resource-dependent are Eurasia's resource-rich countries?** They appear to be more dependent than abundant. They depend more on natural resources than the resource-rich countries in the Organisation for Economic Co-operation and Development (OECD) and in East Asia but less than those in the Middle East. Mining accounts for more than half of GDP in Azerbaijan and Turkmenistan, a fifth in Kazakhstan and Uzbekistan, and a tenth in Russia. The dependence on resources is even greater for government revenue and total exports. Norway is much more abundant in subsoil capital than Kazakhstan, Russia, and Turkmenistan, but resource-related revenue accounts for a much smaller share of Norwegian exports or fiscal revenue. In Russia, the least resource-dependent country in Eurasia, resources account for half of exports and a third of fiscal revenue. This dependence results in excessive volatility of export receipts and government revenue, adding to overall economic volatility. Resource-rich Eurasia is more volatile than any other region except resource-rich Africa, hurting savings, investment, and economic output, straining government finances, and heightening uncertainty in societies.

**How efficient is Eurasia in converting natural resources into human and physical capital?** Not very. Resource-rich Eurasian countries are quite adept in generating resource rents by discovering, extracting, and exporting nonrenewable resources but less so in collecting government revenue from such rents—and worse still in saving those earnings in reliable ways. Until a few years ago, Azerbaijan and Kazakhstan were depleting their resources faster than they were building their national capital. Eurasia's resource-rich countries have increased their gross national savings (GNS) in recent years but, other than Russia, not enough to compensate for the depletion of their nonrenewable

resources. Not all resource-related revenue was invested in the domestic economy for developing human and physical capital. A substantial amount was invested in foreign assets, intended for use by future generations. In fact, resource-rich Eurasia invested a lower share of its GDP in human and physical capital than did resource-poor Eurasia.

In a nutshell, Eurasia's resource-rich countries discover and extract resources quite effectively. But they need to collect revenue from resource rents more efficiently and save more than they have. And they need to do more to ensure that a larger share of their total savings are invested in the domestic economy. If resource-rich Eurasian countries want to diversify their development—quickly—they need to raise total investment, primarily in education but also in health and infrastructure. Instead of spending the rents from resources on targeted subsidies for a few economic activities, they should improve the investment climate for everyone, make macroeconomic policies predictable, and use some of the resource revenue to reduce government debt.

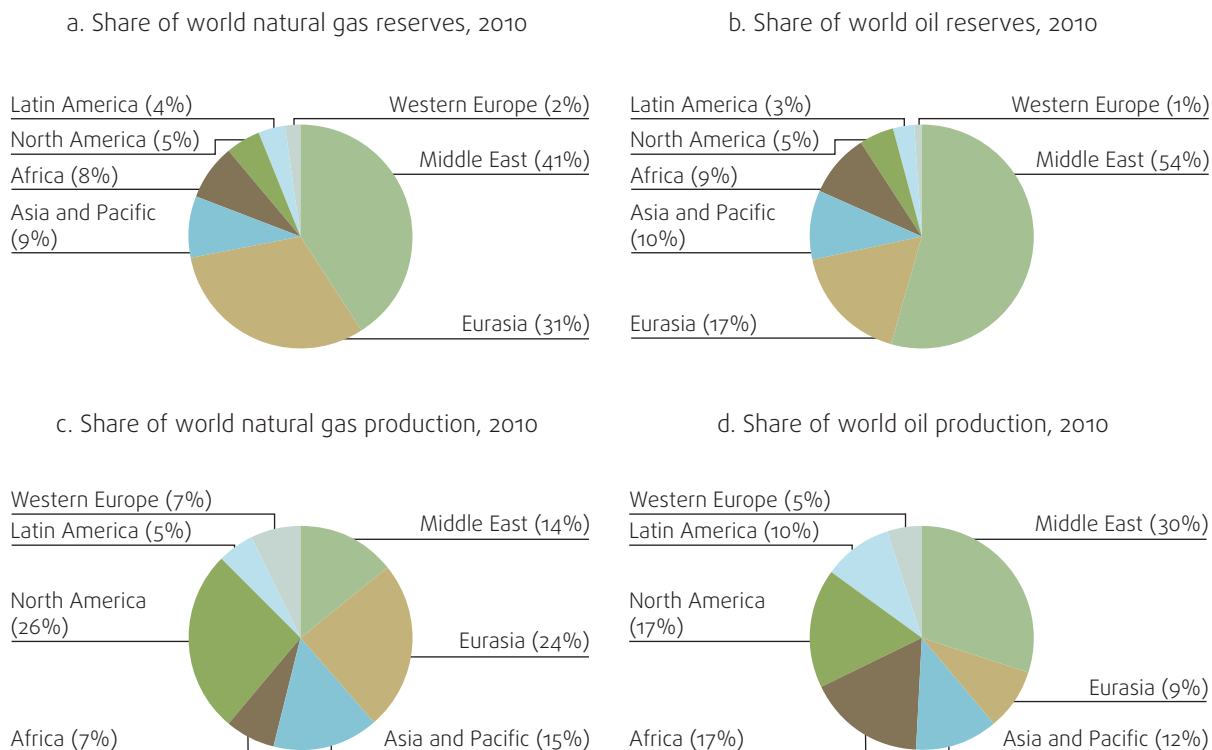
## Eurasians are not the richest in natural resources, though Eurasia is

Eurasia is one of the regions most abundant in natural resources. With about 4 percent of the world's population, Eurasia has 31 percent of the proven natural gas reserves and 17 percent of the oil reserves (figure 4.1).<sup>2</sup> Eurasia also has 23 percent of the world's iron ore, 14 percent of the gold, and 7 percent of the copper. More than a tenth of the world's arable land is in Eurasia. Production is similarly large, amounting to a fourth of global natural gas output and a seventh of petroleum production. But because of its relatively large populations, Eurasia's countries rank lower in per capita "abundance" than resource-rich economies in the Middle East and many countries elsewhere. This section assesses countries' relative resource abundance and their total value of natural resource assets, such as petroleum, natural gas, minerals, and land, using the market value of income generated by such assets over time (box 4.1).

Russia has the bulk of Eurasia's natural resources. It accounts for the largest share of the region's oil, gas, and mineral reserves, as well as two-fifths of the region's agricultural land.<sup>3</sup> It accounts for two-thirds of the region's oil reserves, three-fourths of its gas reserves, more than two-thirds of its iron ore, gold, and copper reserves, and more than nine-tenths of its lead and tin reserves. Per capita, however, Russia has less agricultural land than Kazakhstan and Turkmenistan, less oil than Kazakhstan, and less natural gas than Turkmenistan. Azerbaijan has more oil reserves and oil production than Turkmenistan, per head, but Turkmenistan has more agricultural land and more gas reserves and production per capita than Azerbaijan.

At current rates of extraction, the exhaustion time for proven oil reserves in Eurasian countries is less than it is for natural gas. Kazakhstan's proven oil reserves are likely to last the longest, about 50 years, Russia's a little more than 20. Proven natural gas reserves are projected to last more than 300 years in Turkmenistan, more than 100 years in Russia, and more than 75 years in Azerbaijan—but less than 30 years in Uzbekistan—at current rates of extraction.

**Figure 4.1. Eurasia's share in global resources and production of oil and gas is sizable**



Source: BP 2011.

Russia, Kazakhstan, and Turkmenistan could have, however, high potential for discovering additional reserves of both oil and gas, if more risk capital and better technology can be deployed for more intensive exploration in more difficult terrain (IEA 2011). It is likely that Eurasia has large but unconfirmed natural riches, similar to shale gas finds in the United States.

Natural capital, similarly to physical capital, is the present discounted value of the profit stream that such resources can generate far into the future. Countries with similar initial quantities of land or subsoil assets may thus have different levels of estimated natural capital if they differ in how productively they use their land or in how effectively they exploit their subsoil assets. But Eurasia has low agricultural productivity, ranking just 39th in the world in cereal production and 92nd in livestock.

The economic impact of natural resources depends not only on market demand and the products they can be used to create but also on whether those products are produced by only unskilled labor or by higher physical, human, and institutional capital. In the latter case, productivity is likely to be higher, generating larger profits.



### Box 4.1. The World Bank methodology for estimating natural capital from natural resources

The economic value of a natural resource stock or a built asset, such as physical capital, depends on the market value of the income stream that it generates over time.

Physical capital, entirely the consequence of investments, can be measured in two ways. With investment having an easily identifiable market value, it can be measured as the sum of the value of gross investment minus depreciation. Alternatively, it can be measured as the net present value of the income it is able to produce over its lifetime, which is what an investor is typically willing to pay for a capital good. Estimates of physical capital in World Bank (2011) use the first method, also called the perpetual inventory method.

Natural assets—especially nonrenewable subsoil assets—are distinctive in that

they are not entirely the consequence of investment. Though investment is needed to discover and extract resources, there is an economic surplus or resource rent over and above these investment costs, and rents are generated for a number of years depending on extraction rates and initial stock. Natural capital is measured in World Bank (2011) by the net present value of the resource rents over the life of current reserves given current extraction rates.

Subsoil resource rents are a function of unit rents (which in turn depend on the type of resource, its average extraction cost, and its world price), the level of production/extraction of the resource at the time of the estimate, and the lifetime over which current reserves can generate such rents. Thus, changes in world prices and in extraction levels will change the

capital value of subsoil resources because they affect resource rents.

The actual lifetime of a resource depends on the size of reserves relative to annual extraction and is thus likely to differ across countries. But World Bank (2011) uses a fixed number of years (25) for all 150 countries as the reserve-exhaustion time for estimating subsoil capital. This lowers subsoil capital estimates for countries that have reserves expected to last longer.

Land assets are valued in a similar fashion. Agricultural land is divided into cropland and pastureland. Land-capital estimates take the present value of rents from land over 25 years, though land is a renewable asset.

Source: World Bank 2011.

The period over which resources generate profit depends on whether they are renewable or exhaustible. Reserves of subsoil assets such as oil, natural gas, and minerals are typically nonrenewable and exhaustible, whereas land, forests, and rivers can potentially last forever if managed well.

Natural capital comprises mainly agricultural land, forestry, and subsoil assets (oil, gas, and minerals). *The Changing Wealth of Nations* (World Bank 2011) develops and applies a methodology that captures these dimensions, to compute comparable estimates of total natural capital or natural wealth for 150 countries for 2005 and in 2005 U.S. dollars.<sup>4</sup> Each country's estimated total natural capital is then divided by its 2005 population to estimate per capita natural capital and its major components (subsoil capital and land capital) to permit comparisons across countries, regions, and income groups.

The six resource-rich Eurasian countries have substantial natural capital per capita, five of them with endowments higher than the world average. In these five, subsoil assets account for the majority of natural capital.<sup>5</sup> By contrast, the six resource-poor Eurasian economies have low natural capital, more than 80–85 percent of it land.

However, the resource-rich Eurasian countries are not exceptionally abundant in natural resources per capita. They rank lower than many resource-rich OECD countries and all countries in the Middle East but higher than the EU-12 and East Asia. Within Eurasia, Turkmenistan has the highest natural capital per capita, followed by Russia, Kazakhstan, Azerbaijan, Uzbekistan, and Ukraine. Turkmenistan, Russia, and Kazakhstan rank 12th, 15th, and 17th, respectively, in the world in natural capital per capita (figure 4.2). The countries of Eurasia rank

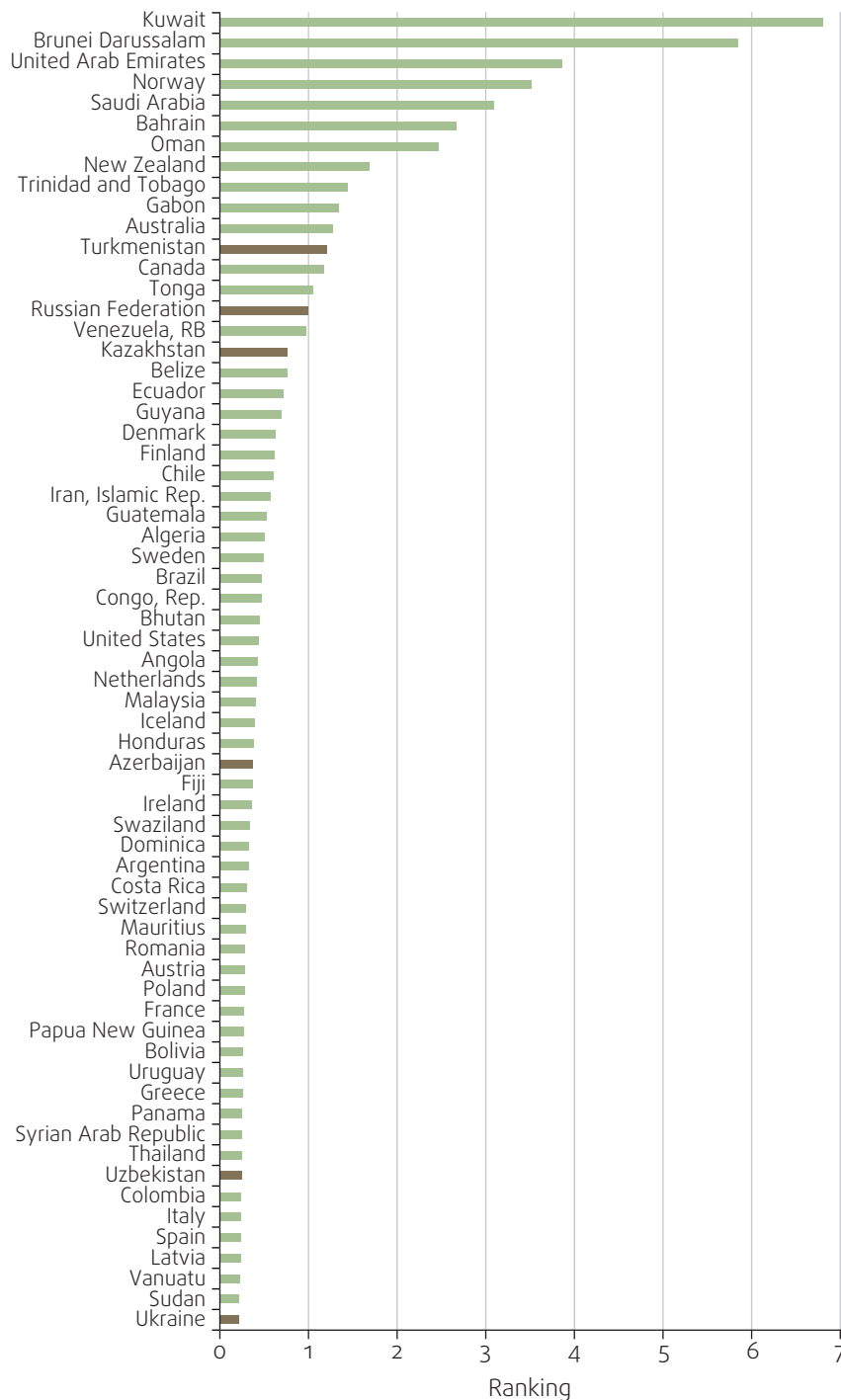


Figure 4.2. Countries ranked by natural capital per capita, 2005

■ Eurasia resource-rich countries  
■ Comparator countries

Source: Rank derived from natural capital estimates in World Bank 2011.

Note: Relative figures, Russian Federation = 1.

**Table 4.1. Changes in natural and subsoil capital in resource-rich Eurasia**  
(2005 = 100)

Country	Natural capital				Subsoil capital				
	2000	2005	2010	Growth, 2000–10 (percent)	2000	2005	2010	Growth, 2000–10 (percent)	Subsoil share in natural capital, 2010 (percent)
Azerbaijan	43	100	195	353	33	100	211	545	92
Kazakhstan	57	100	147	158	43	100	153	259	91
Russian Federation	82	100	104	27	56	100	109	53	84
Turkmenistan	62	100	84	36	54	100	80	36	91
Ukraine	124	100	101	-16	51	100	106	108	42
Uzbekistan	44	100	111	152	31	100	106	245	71

Source: Estimates provided by the World Bank's Environment Department.

**Table 4.2. Mining: share of GDP and employment**

Percent

Country	Gross domestic product		Employment	
	1997	2009–10	1997	2009–10
Azerbaijan	16	49	1	1
Kazakhstan	9	18	4	3
Russian Federation	7	10	2	2
Ukraine	1	6	3	3

Source: World Bank, n.d.

higher based on subsoil capital per capita. Turkmenistan is 10th, Russia 11th, and Kazakhstan 13th.

Natural capital per capita rose in the resource-rich countries of Eurasia over 2000–10 but fell in the rest of the region.<sup>6</sup> The increase was driven mainly by a combination of growth in the production of oil, gas, and minerals, the expansion in reserves of either oil or gas, and, most importantly, higher world prices (table 4.1). Subsoil capital now accounts for more than 90 percent of natural capital in Azerbaijan, Kazakhstan, and Turkmenistan, up from 65 percent to 70 percent in 2000; even in Ukraine, the share of subsoil capital increased nearly two-thirds. The decline in the share of natural capital per capita in the resource-poor countries, by contrast, occurred as these countries built human and physical capital faster than their agricultural land appreciated, with limited productivity gains.

Yet the steep growth in resource-sector GDP over the decade did little to increase employment. Mining accounts for barely 1–3 percent of jobs in resource-rich Eurasia (table 4.2; see chapter 3). Extraction of oil, natural gas, and minerals does not share prosperity through jobs and builds few skills that have broader applicability. It creates the conditions for growth in the rest of the

economy only if institutional structures align with endowments of physical and human capital (chapter 6).

## Eurasians depend more than others on natural resources

The countries of Eurasia are as abundant in natural resources as those of other regions. Eurasian countries are, however, among the most dependent on such resources, as seen in their high shares of natural resources in wealth, GDP, fiscal revenue, and exports. In resource-rich Australia, Canada, Norway, and New Zealand, natural capital accounts for 8–13 percent of overall wealth; in Malaysia and Indonesia, about 20–25 percent. But these figures are 43 percent in Russia, 64 percent in Kazakhstan, and 76 percent in Azerbaijan.<sup>7</sup> Only the most resource-rich countries in the Middle East—Saudi Arabia and Kuwait at about 65 percent and Oman at 55 percent—have shares similar to Eurasia’s.<sup>8</sup>

In fiscal revenue and exports, Eurasia depends more on resources than do resource-rich OECD and East Asian countries. In Russia, 30 percent of government revenue and 56 percent of exports are related to hydrocarbons (figure 4.3).<sup>9</sup> Turkmenistan and Azerbaijan, the most dependent, rely for more than 90 percent of exports and 60 percent of revenue from such resources, while Kazakhstan and Uzbekistan are somewhere in between, with 60 percent for exports and 40 percent for revenue. Most resource-rich countries in the Middle East are far more dependent, deriving nearly 80 percent of revenue and more than 85–90 percent of exports from oil and gas.

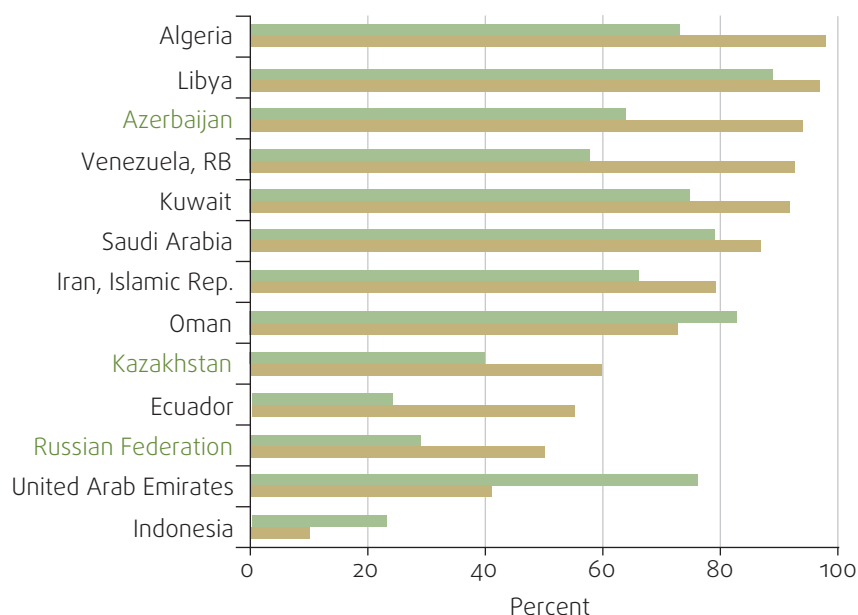


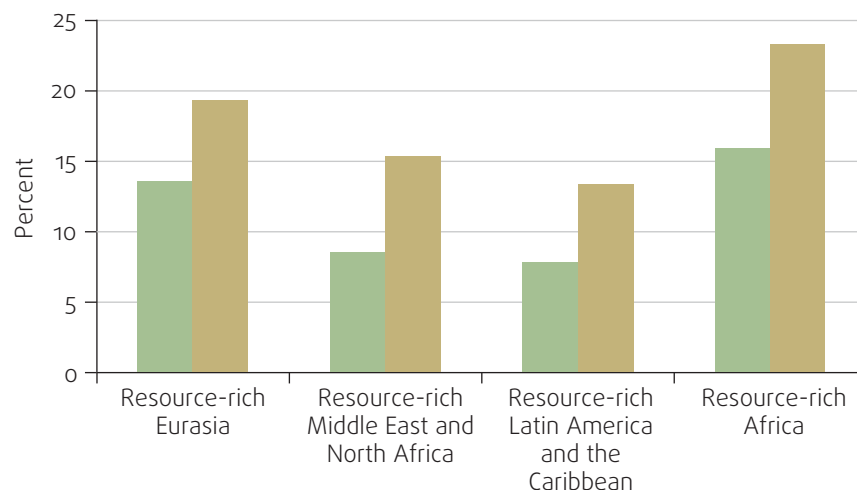
Figure 4.3. Revenue and export dependence on resources, 2006–10 average

■ Resource revenue/  
total revenue  
■ Resource exports/  
total exports

Sources: Computed from IMF 2007, 2012; and World Bank, n.d.

**Figure 4.4. Volatility in GDP growth in resource-rich countries, by region**

- Average GDP per capita growth rate, 1996–2010
- Standard deviation of GDP per capita growth rate, 1996–2010



Source: World Bank staff calculations based on World Bank, n.d.

Natural-resource dependence in Eurasia has been growing. Outside Russia, the share of natural capital in total assets rose over 2000–10, as did the dependence of fiscal revenue and exports on hydrocarbons. In addition, the product diversification in Kazakhstan, Russia, and Uzbekistan has stemmed largely from higher-value products based in natural resources.

Countries whose exports are concentrated in resources such as oil, gas, and minerals have higher volatility in their terms of trade, which results in high volatility of growth (chapter 3) (Baxter and Kouparitsas 2006; Blattman and others 2007; Lederman and Xu 2007). Countries with a high share of resources in exports are proportionately more affected by changes in resource prices. This volatility can undermine savings and investment due to instability of export income, public spending on infrastructure and education, and excess consumption of resource revenue. These increase overall economic volatility—in aggregate demand and output—and reduce private savings and investment.

Resource-rich Eurasia is no different, seeing sharp volatility in its growth in exports and per capita GDP (figures 4.4 and 4.5).

Dependence on revenue from natural resources is often self-reinforcing. That resource-related taxes are easier to collect reduces efforts to raise tax revenue from the nonresource sector. This may be because government capacity to raise revenue is weak, but it may also be because the government wants to reduce domestic taxes as a way of “encouraging” the nonresource sector or of distributing the resource rents. A study of 30 hydrocarbon-rich countries, including Azerbaijan, Kazakhstan, and Russia, found that every 10 percent increase in hydrocarbon revenue reduced other revenue 2 percent (Bornhorst, Gupta, and Thornton 2008).

Revenue volatility often generates increased volatility in public spending. Spending typically rises more than proportionately during a resource boom but falls less than proportionately during a bust, creating a deficit bias that reduces

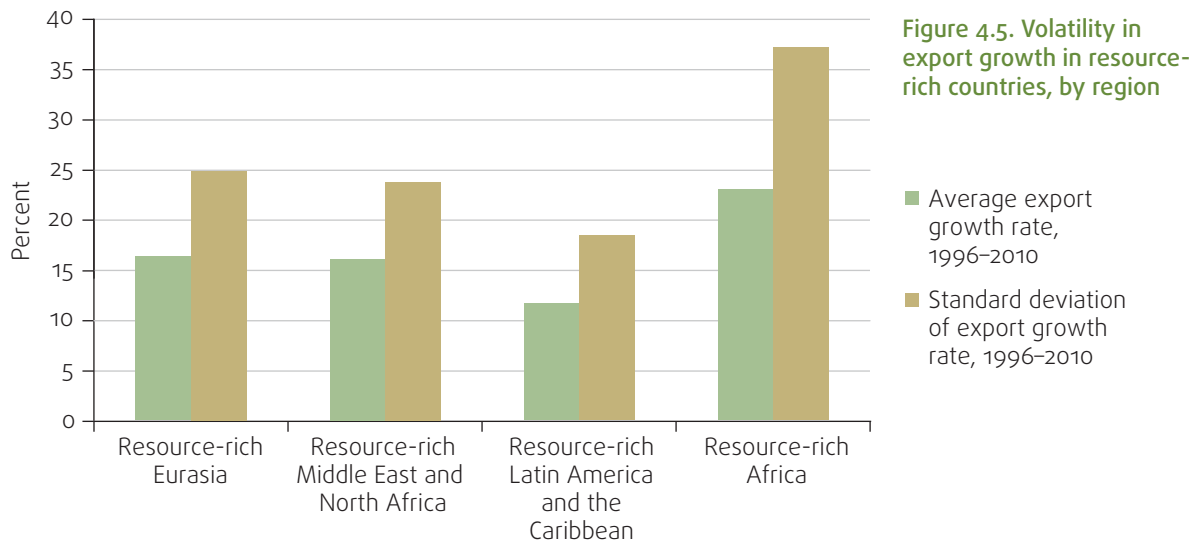


Figure 4.5. Volatility in export growth in resource-rich countries, by region

Source: World Bank staff calculations based on World Bank, n.d.

net public saving. This is more likely when fiscal discipline is weak and when powerful vested interests are bidding up spending when revenue is buoyant but resisting cuts when it falls. (Azerbaijan's changes in spending in response to revenue fluctuations have often enhanced fiscal volatility.)

Revenue volatility also increases fiscal procyclicality, creating considerable instability in public investment (in infrastructure and education, for example). And if adverse price shocks are substantial, this instability can lower total investment over time, as well as its efficiency. Large swings in public investment also create economic instability.

Macrovolatility is problematic for private investment. The uncertainty that such volatility creates for output growth, relative prices, the real exchange rate, and profitability is so profound that it operates as a "volatility tax" on private investment. Investors cannot shift out of an activity without losing their sunk costs. This forces them to wait and see, holding back private investment. Even complementary public investment in infrastructure and human capital may not be enough to offset the volatility tax.

A steadier medium-term public investment path, as well as keeping a share of revenue each year in a stabilization fund to be drawn on when revenue falls heavily, is likely to reduce economic volatility and ensure a higher level of investment over the medium term.

To address problems of volatility in resource revenue, most resource-dependent countries have adopted policy responses comprising stabilization funds and fiscal management using fiscal rules for a countercyclical fiscal policy. Eurasian governments, aware of the difficulties they faced in the 1990s, established stabilization funds for short-term fiscal management and national resource funds, aimed at channeling long-term intergenerational savings (chapter 6).

## Eurasia does least well in converting natural resources into capital

This section reviews good practices on what resource-rich countries should do to convert their natural resource assets into other assets, such as human and physical capital. This is followed by an assessment of the performance of Eurasian countries against those recommendations.

### Countries should save more and invest more at home

Theory suggests that resource-rich countries should save a high share of their income and invest most of it domestically in human and physical capital. They should also exploit their resources effectively to generate resource rents that can tap all productive investment opportunities at home. The resulting public and private investment can help expand the assets required for diversified development.

Extracting resources and generating savings from resource rents with the explicit goal of investing them in foreign assets to be held in an intergenerational savings fund for future generations is often an inferior option to keeping those resources in the ground for use by future generations (box 4.2). This is largely because the conditions required to justify additional extraction of resources for investing in such a long-term fund have been found to be quite stringent and may often not be satisfied in many capital-scarce countries. Typically institutions that discipline government spending are relatively new and untested, and the financial sector for allocating savings is

#### Box 4.2. Leave resources in the ground, or use an intergenerational savings fund?

Countries seeking to distribute the benefits of exhaustible subsoil assets across generations have a choice of leaving resources in the ground for use by future generations or placing savings from the resource rent in foreign assets in an intergenerational savings fund so that the fund's return can benefit future generations. In some circumstances, it may be better to leave the resources in the ground.

While all resource-rich countries should save and invest a high fraction of resource rents, a capital-scarce country should ideally invest all savings in the domestic economy, instead of mostly in foreign assets as a capital-abundant country might decide to do—think of Nigeria and Norway. Although investment in a capital-scarce domestic economy is likely to have high returns initially, continually higher investment or rapid ramping up of investment may be less productive as

constraints of productive capacity in the business sector or absorptive capacity of the government begin to bite. This will bring down the return on extracting, selling, and investing domestically. If that return falls to equal the capital gains on resources left in the ground, further extraction will be suboptimal; the lower the return on domestic investment, the larger the amount of resources optimally left in the ground.

It is conceivable, however, that the expected return on long-term foreign assets becomes higher than the return on domestic investment, as well as higher than the expected capital gains on resources left in the ground. In that event, a case can be made for continued extraction and investment in foreign assets to be accumulated in the savings fund for future generations. But even in that situation, the expected return on foreign assets may be irrelevant if

the probability of the fund surviving and operating in the long term (not being raided and closed by successor regimes) is low. It is far easier to raid assets in a fiscal fund than to explore, extract, export, and earn.

Although these funds are established for the long term, many have not survived long in developing countries. There are numerous examples where funds were raided and closed quickly as governments changed. Also, funds set up by Ecuador and República Bolivariana de Venezuela did not last. Yet funds in Azerbaijan and Kazakhstan have run for more than a decade, with the current governments committed to their protection and effective operation. But their record during the last financial crisis does provide some clues. There is no guarantee that they will survive across generations, especially when regimes and economic circumstances change.

weak; thus the increasing pools of accumulated financial assets are vulnerable to misappropriation and/or closures, as has happened in many countries.

On the other hand, there are also limits on a government's ability to ramp up public investment efficiently or an economy's ability to absorb the resulting capital stock productively.<sup>10</sup> Efforts to improve the efficiency of investment in creating physical and human capital and to increase productivity of such capital have to accompany rising investments.

Although the government is the recipient of the resource windfall, many saving and investment decisions remain with private firms and households. Governments of resource-rich countries must find ways of using the resource windfall to influence those private savings and investment decisions. In so doing, they have five main options.

First, they can strengthen the institutions for doing business in a market economy such that they encourage efficient private investment, something relevant for all economies but especially critical for resource-rich countries.

Second, they can transfer part of the windfall savings to the private sector in three ways: "citizen dividends," social welfare payments, and increased public sector employment. These do not generally provide private recipients with an incentive to have high rates of saving or investment, as they often end up suggesting to recipients that these are permanent transfers, rather than one-off transfers linked to the resource windfall.

Third, they can reduce nonresource taxes. This is likely to be regressive and can increase government dependence on the more volatile resource revenue, thus prompting greater macrovolatility, which can inhibit private investment.

Fourth, they can repay early domestic government debt to the extent the domestic private sector holds part of that debt. The repayment may induce higher domestic investment.

Fifth, if government debt is small or nonexistent, governments could lend to banks, which would on-lend to private investors and raise private investment, though the effectiveness of this approach depends on the capacity of the financial sector to select the most profitable investment opportunities and on the absorptive capacity of the borrowers (households and businesses).

Resource-rich countries should thus discover and extract resources effectively, collect revenue from resource rents efficiently, save adequately, and ensure that most of their total savings are invested in the domestic economy.<sup>11</sup> How well Eurasian countries are doing the above is examined below.

### Efficient extraction and exports will bring larger resource rents

Countries may have oil, gas, and minerals under the ground, but these resources must be discovered through exploration before they can be extracted and exported to generate resource rents. The world has continued to discover hydrocarbons and minerals, spurred by strong demand, improving technology, and still-unexplored terrain. Although individual countries may face greater limits to continued growth in reserves and production than the world as a whole,



exploration may well see the rate of reserve discoveries stay ahead of the rate of extraction for many decades before all terrain is explored.<sup>12</sup> Some countries, including the United States, have been able to explore intensively and benefit from rising resource rents for many decades (Gelb, Kaiser, and Vineula 2012).

Eurasian countries have great potential for further resource wealth, as much of their terrain remains underexplored, despite a steep rise in exploration and extraction during the last decade. Russia was the most explored part of the Soviet Union, but all reports suggest considerable potential for expanding reserves of oil and gas.<sup>13</sup> Azerbaijan, especially Baku, was a highly explored area in Soviet times, but most of the exploration during the last decade or so has been offshore.

The challenge for Eurasian governments—indeed, for all governments with such potential—is to establish adequate incentives for private firms, especially foreign firms, to explore and extract, while ensuring a sufficiently large tax take to maximize benefits for all citizens. Governments have custodial rights over resources on behalf of their citizens, but they typically do not have the risk-capital or technology to explore and extract resources efficiently. They have to depend on the private sector and are often compelled to attract foreign investment. They must do this amid considerable uncertainty of geology and world prices, asymmetries of information between private firms and themselves, and intense pressure for small groups in the country to capture most of the benefits of the resources found and exploited.

The investment regime and the adequacy of infrastructure in the resource sector affect the efficiency with which private firms can explore, extract, and export resources given a country's geology and world prices. Comparing the investment regime's impact on desired outcomes in the resource sector against those of other regimes can be a good basis for assessing the efficiency with which resource rents have been generated so far. Outcome indicators, including growth of reserves of oil, gas, and minerals, the growth of production or exports of such resources, and the growth of resource rents, are all useful.

Eurasian countries have followed different paths for exploiting their oil and gas resources (box 4.3).<sup>14</sup>

Azerbaijan and Kazakhstan have been the best at attracting foreign direct investment (FDI) to their resource sectors, as evident in the trends in FDI per capita, while Turkmenistan and Uzbekistan have so far been the worst. Russia has received a good deal of FDI, but much less in the oil and gas sectors than Azerbaijan and Kazakhstan in per capita terms.

As a result, Eurasia has seen rapid growth in both reserves and production of oil and gas. Over 2000–10, it had the fastest growth in annual oil production and the second-highest growth in oil reserves after Latin America. Production performance in natural gas, as well as reserves, grew at a lackluster pace (table 4.3). Wide variation in performance largely reflects different approaches to exploration and extraction.

Success in discovery, extraction, and exports was reflected in resource rents over 2000–10, which varied from annual average growth of 30 percent for Azerbaijan to 12–14 percent for Turkmenistan and Uzbekistan. Among other countries, only Indonesia came close to these figures (figure 4.6).

### Box 4.3. Investment regimes for extractive industries differ across Eurasia

Azerbaijan and Kazakhstan provided attractive terms to foreign firms under production-sharing agreements (PSAs) with the law declaring that PSA terms prevailed over existing laws if there was any conflict. In case of a dispute between the foreign firm and the state-owned national company, the PSA provides terms for it to be settled through arbitration abroad. The Russian Federation privatized its state-owned resource companies but took a long time to finalize the PSA legislation, leaving considerable ambiguity on how a conflict between PSA terms and domestic laws—especially state laws—would be resolved. On infrastructure for exports, Azerbaijan and Kazakhstan have introduced public-private partnerships, but more needs to be done.

The most attractive characteristic of the PSA regime is the stability and guarantee it provided to foreign investors operating in otherwise difficult and unpredictable conditions. In contrast with a licensing regime that gives the government discretion to change investment terms, the PSA binds the government to its contractual obligations to each investor with which the PSA is signed—and is thus liable for breach of contract. This is the nature of a civil relationship where the parties act more or less as equals in a commercial context. In addition to leveling the legal playing field, the PSA provides a stand-alone tax regime, in which the

investor enjoys predictable tax liability independent of the state tax regime.

The PSA/contract with firms often contained stability provisions, ensuring that the contractor's rights and interests would not be subject to any change without the contractor's consent. Azerbaijan has not modified these terms, but Kazakhstan recently amended the tax terms of existing PSAs through mutual agreement and used the new terms for new PSAs, on the grounds that the earlier terms were inequitable. Overall, the PSA investment regime provided greater protection of property rights and stability of incentives notwithstanding a less favorable general investment climate. Azerbaijan and Kazakhstan, similar to many other countries in other regions, depended mainly on PSAs with clauses on fiscal stability and international arbitration.

Until 2004, Russia depended mainly on domestic private firms in the oil sector, though these private companies obtained relevant technologies where needed through minority participation of Western multinationals. More modern technology resulted in rapid increases in production from existing oil fields. The policy regime shifted sharply after 2004, however, toward increased taxes on the oil sector and greater government and state dominance. Annual average

growth of oil production has fallen, from more than 7 percent over 2001–05 to around 1.5 percent over 2006–11, perhaps due to inadequate increases in discoveries and development of new fields. The gas sector has continued to be a national monopoly, with all aspects highly regulated and controlled. The infrastructure for transporting both oil and gas is a state monopoly and in need of large investments.

Russia's domestic private firms had much more capacity, technology, and capital than similar firms elsewhere and were thus able to expand reserves and production. However, in the coming years oil production is expected to fall unless there is substantial foreign investment that brings in better technology and risk-capital so that oil and gas can be accessed in the country's more difficult terrain.

Turkmenistan and Uzbekistan adopted a third path, preferring to depend mainly on state-owned resource companies, with some modest steps more recently to attract non-Eurasian foreign investment. However, they have had limited success because their terms are not as competitive as other Eurasian countries, their infrastructure for export is less developed, and their disputes with neighbors over offshore areas remain unresolved.

Sources: Baunsgaard 2001; Bayulgen 2010; Johnston 2007; Luong and Weinthal 2010; Smith and Dzienkowski 1989.

To sustain growth in resource rents, Azerbaijan and Kazakhstan need to continue on their path of harnessing foreign investment and technology, while Russia, Turkmenistan, and Uzbekistan need to change their approach. Russia will need to make special efforts to attract foreign investors with better technology and more risk-capital than domestic oil producers can muster. Turkmenistan and Uzbekistan will want to focus on settling their disputes with neighbors on exploration areas and further open their investment regimes.

### Governments should get more revenues from resource rents

Resource rents are shared with private investors. The central issue for governments is to secure a reasonably large share of resource rents as revenue while providing reasonable incentives to private firms to continue investing.<sup>15</sup> Governments must also seek to maximize the net present value of fiscal revenue from resources so that they can use it for the benefit of their citizens.

**Table 4.3. Growth in natural gas and oil, reserves and production, 2000–10**  
*Percent change*

Region/country	Reserves		Production	
	Gas	Oil	Gas	Oil
Eurasia	15.6	45.2	15.9	80.1
Middle East	28.2	8.0	121.4	7.0
Asia-Pacific	31.8	12.6	81.2	6.0
Africa	18.2	41.4	60.4	29.4
Latin America	7.7	144.6	60.9	2.6
North America	31.7	7.9	8.1	-0.7
Azerbaijan	3.3	494	195.6	267.3
Kazakhstan	4.0	59.2	222.7	136.1
Russian Federation	5.9	31.1	11.7	57.1
Turkmenistan	210	9.9	0	49.5
Uzbekistan	-6.8	0	16.1	-50.6

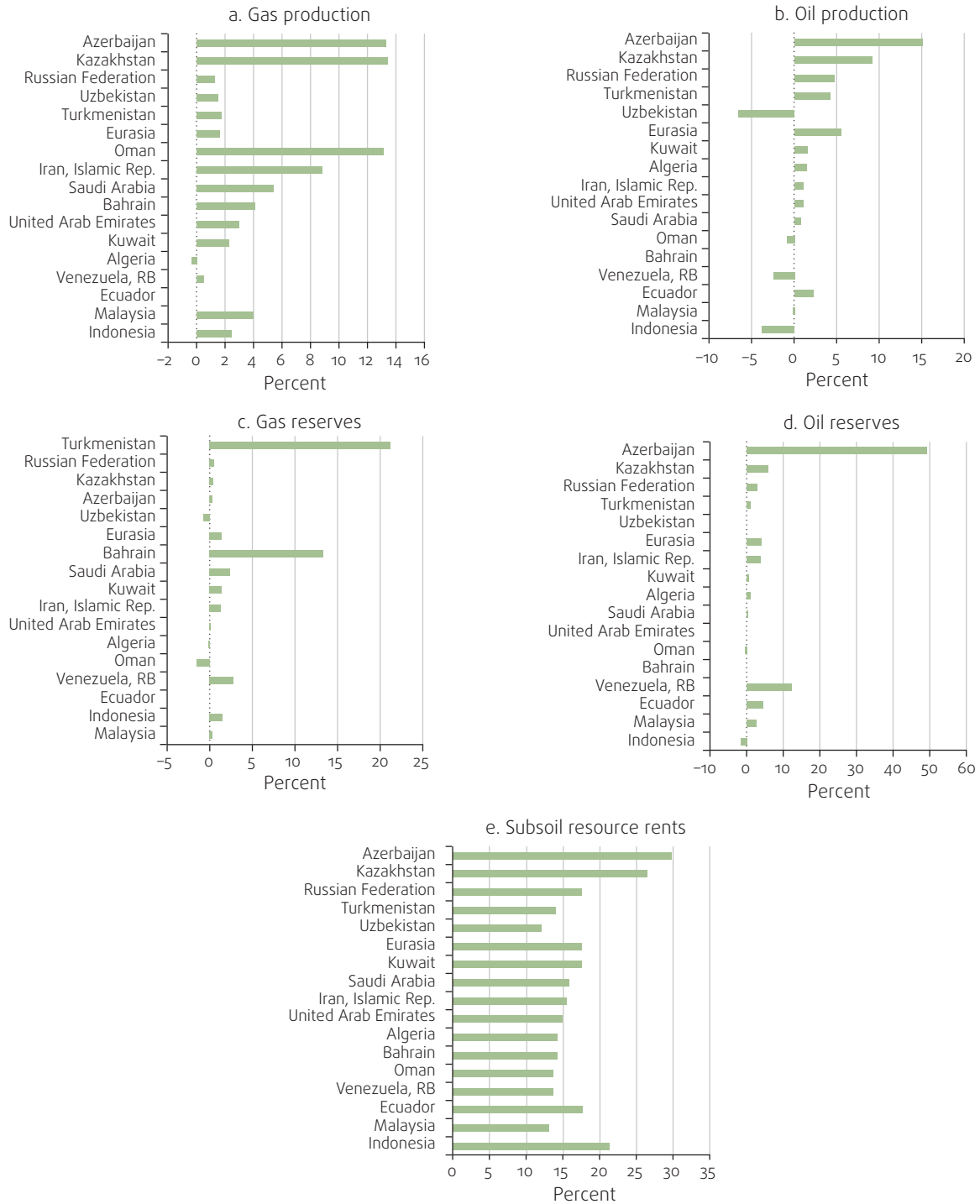
Source: BP 2011.

Eurasian countries—as countries elsewhere—use a mix of tax instruments to affect the size and timing of revenue flows from resources. Bonus payments on signature, discovery, and production (single or staged lump-sum payments) advance the timing of revenue flows. Sliding-scale royalties on gross revenue are often a part of fiscal systems in resource-endowed countries because they secure early revenue, though they may not be very responsive to profitability. Corporate income tax is typically a core component of such arrangements because it ensures that the normal return to equity is taxed at company level. In addition, a tax instrument like the “Brown Tax” is based on a base of net cash flow and tries to target resource rents.<sup>16</sup>

The combination of instruments used, rates, and administration determine how much of the resource rents are converted into resource revenue. The larger the share of resource rents extracted by the government without undermining buoyant private investment in resources, the more efficient the conversion usually is.

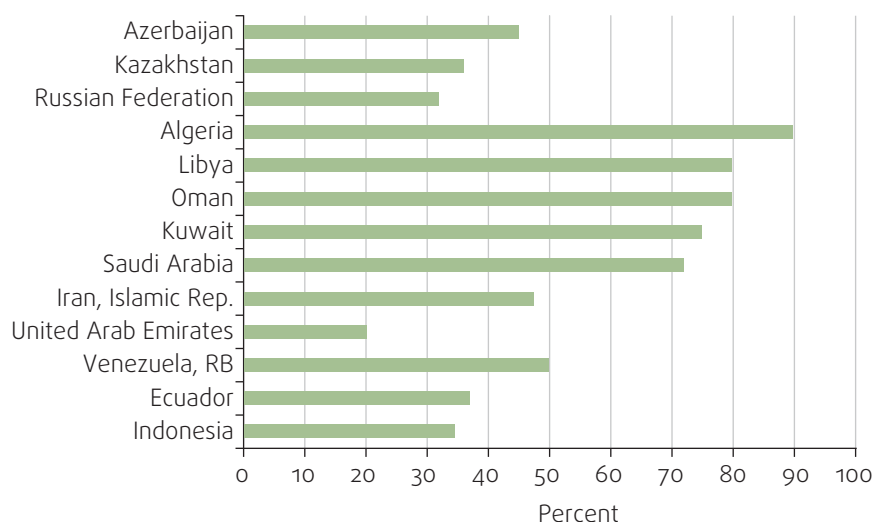
The share of the tax take in total rents is a measure of that efficiency, though combining it with an assessment of the efficiency of the resource tax regime is also important. But the tax take of the three oil exporters in Eurasia is far lower than in most comparators in the Middle East (figure 4.7). Azerbaijan and Kazakhstan, which depended heavily on FDI for exploration and extraction, may have offered a larger share to investors for at least two reasons. First, they were relatively new independent countries and thus required to pay a higher risk-premium to investors than Middle Eastern countries with a longer hydrocarbons track record for FDI. Second, contracts and oil fields in Eurasia are quite new, with most of the oil produced in the early years going toward the investors’ cost rather than profit under the PSAs, making the potential base for extracting revenue smaller than the total rents generated.

Figure 4.6. Annual average growth in production, reserves, and resource rents



Source: BP 2011.

**Figure 4.7. Share of resource revenue in resource rents, 2006–10**



Sources: Computed from data in World Bank 2011, n.d.

As production advanced and the investors' satisfactory experience led to lower risk premia, the share of resource revenue in resource rents rose in both Kazakhstan and Azerbaijan. In Kazakhstan, this share increased from 24 percent in 2005 to 50 percent in 2010; in Azerbaijan, from 24 percent to 62 percent. Still, despite the low revenue collection, a substantial part of the savings was available for investing in the domestic economy but was held in long-term savings funds for future generations.

Part of the rent probably dissipated in two other ways. The state-owned resource companies needed some of the rent to finance their operating costs, which may have been higher than elsewhere because of various inefficiencies. Also, state-owned resource companies were selling energy at subsidized prices. Energy subsidies amounted to 4–5 percent of GDP in Azerbaijan and Kazakhstan (figure 4.8).

### Do savings compensate for resource depletion?

High national savings typically finance high investment in a sustained manner. Whether total GNS are adequate depends on whether they exceed the depreciation of physical capital and the depletion of nonrenewable resources. Only in such a case does investment from these savings avoid a reduction in total economic endowment of natural, human, and physical capital. This is the concept of adjusted net savings (ANS).<sup>17</sup>

When ANS is zero, the total endowment can potentially be kept unchanged provided all such savings are invested in the domestic economy; when ANS is negative, the total endowment is likely to fall; when ANS is positive, the total endowment can potentially grow if all savings are invested.<sup>18</sup> Total savings thus make possible any changes in total endowment, but this is not an either/or scenario. How much of the savings is invested determines the impact on endowment.

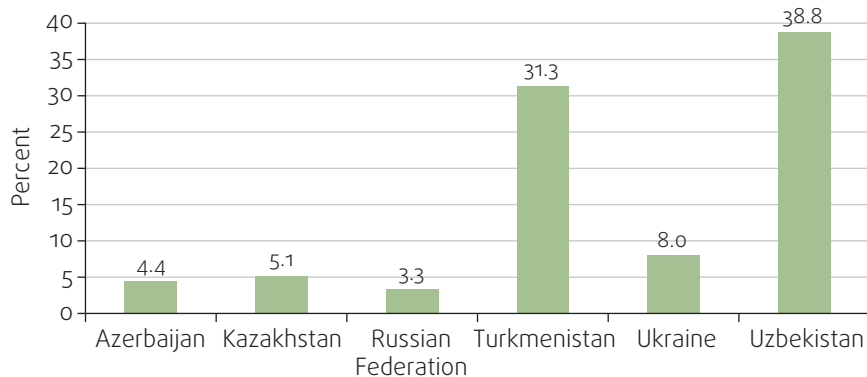


Figure 4.8. Energy subsidies as a share of GDP in resource-rich Eurasia, 2011

Sources: Computed from International Energy Agency data (2009–11) for subsidies and from World Bank, n.d., for GDP.

Some countries have negative ANS, and countries with higher resource rents relative to gross national income (GNI) have more negative ANS (figure 4.9). The average ANS for resource-rich countries is negative and for resource-poor countries is positive. Resource-rich countries appear to find it hard to save enough despite the boost in income that comes from resource abundance.

Resource-rich countries save more than others but at a declining rate, suggesting that the greater the abundance the more difficult it is to increase savings (Atkinson and Hamilton 2003). The resource mismanagement is manifested in government consumption and public wages in particular. The same study finds that countries with high-quality institutions transform resource-wealth into additional savings more easily than others.

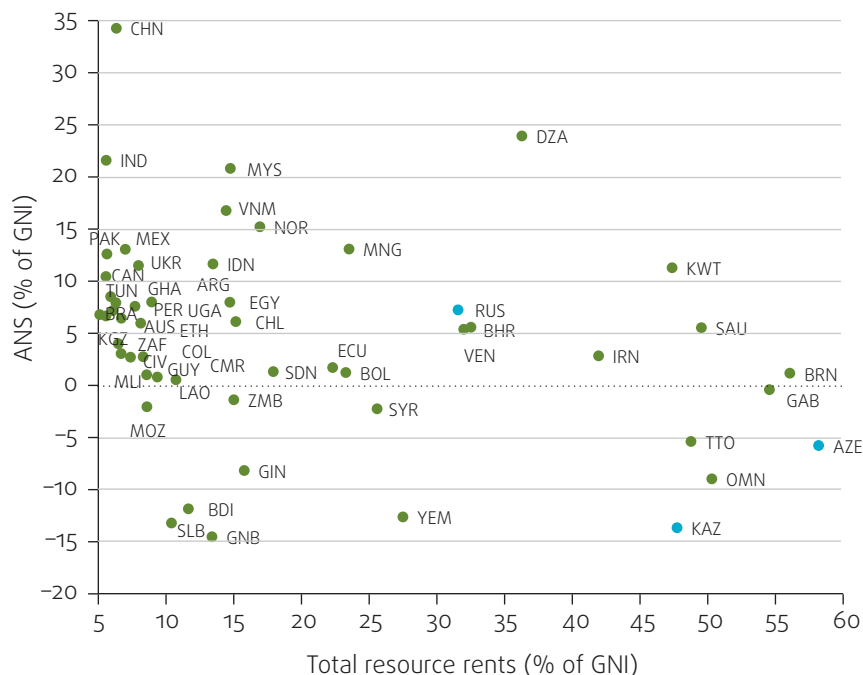
Eurasian countries improved their saving rate over time but could not raise it enough to avoid substantially negative ANS. They increased their GNS in 1998–2010, but this uptick failed to compensate fully for depreciation and resource depletion (figure 4.10). Kazakhstan had negative ANS as a share of GNI every year over 1998–2010. Azerbaijan had the most negative ANS.<sup>19</sup> Russia is the only country in the region that has had enough GNS to ensure a positive ANS throughout the entire period, at around 10 percent over 2008–10. Adequate savings made it possible for the country to have a rising total economic endowment.

The task ahead for Azerbaijan and Russia is to maintain their savings rates, while Kazakhstan, Turkmenistan, and Uzbekistan should increase their GNS steeply, to get close to a zero ANS and avoid continuing reductions in total economic endowments.

These patterns are consistent with the evidence elsewhere. Eurasian countries face some of the same public spending pressures as other resource-rich countries. First, greater resource revenue can create a deficit bias and reduce public savings (discussed above). Second, these spending pressures show themselves through, for example, energy subsidies, unproductive public sector jobs, and higher public sector wages. Most energy subsidies are not only inefficient but also regressive in countries where the poor do not own a car or

**Figure 4.9. Adjusted net savings (ANS) vs. total resource rents, 2000–10**

(Average rents/GNI and ANS/GNI for 2000–10)



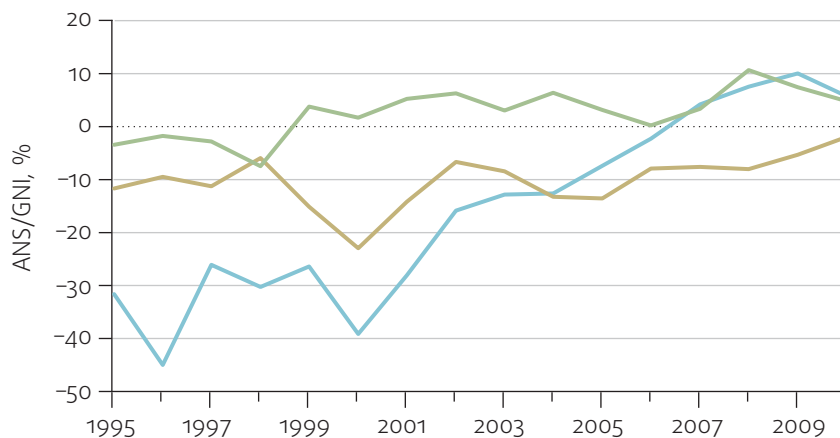
Source: Computed from data in World Bank 2011.

Note: GNI = gross national income.

**Figure 4.10. Annual adjusted net savings (ANS) relative to gross national income (GNI) for three resource-rich Eurasian countries**

(Share in gross national income in Azerbaijan, Kazakhstan, and the Russian Federation, 1995–2010)

- Russian Federation
- Kazakhstan
- Azerbaijan



Source: Computed from data in World Bank 2011.

use much electricity, public sector employment has climbed, and public salaries have risen faster than inflation (in most of these countries).

Third, pay increases for government employees given during a boom are almost impossible to reverse. More generally, spending that leads to increases in consumption is hard to reverse, because habits are formed and political resistance is high. By contrast, fluctuations in investment are easier to manage.

(In all economies, investment is less stable than consumption.) Thus, if changes to government spending cannot be separated from changes to resource revenue, a government should direct the impact of these changes to public investment rather than to private consumption, making it easier to reverse too-rapid pay increases, for example. Each government should therefore decide what sort of spending it can vary (increase and decrease) at little cost and what it will find hard to reverse.

Fourth, international capital markets turn suddenly generous when countries become newly resource-rich and when resource prices are high, often resulting in excessive external borrowing for consumption or investments with low return (Mansoorian 1991; Manzano and Rigobon 2007). Fortunately, governments in these countries have behaved prudently in borrowing from abroad, as have enterprises generally, evident in their low ratios of external debt to GDP. The exception is Kazakhstan, where private sector profligacy undermined public prudence, resulting in large external debt (Esanov and Kuralbeyeveva 2010). Private sector banks went on an external borrowing binge over 2004–07 and on-lent the borrowed funds to households, construction firms, and the real estate sector. When those borrowers could not repay, the government had to finance a large part of the costs of restructuring private banks. Russian private companies also borrowed abroad, but they have been relatively restrained, as seen in their low ratios of external debt to GDP.

There is no easy way to counter these spending pressures, but three options may be considered. First, governments should increase the transparency for all revenue collection and all public spending and make spending agencies accountable to parliament and the public. Second, they should establish a centralized system of financial control and authority, backed up by a strong public financial management system, including an information system that provides real-time information on spending. Third, they should adopt countercyclical fiscal policies, supported by a short-term stabilization fund.

### Save for future generations in human and physical capital, not savings funds

Resource-rich Eurasian countries have invested less of their total savings to build human and physical capital than in the past, in large part because they wanted to keep a share of their savings for future generations. Five of the resource-rich countries invested a large share of their savings in foreign assets. Azerbaijan, Kazakhstan, and Russia held most of those foreign assets in long-term intergenerational savings funds.<sup>20</sup> These funds have accumulated huge assets equivalent to around 45 percent of GDP in Azerbaijan, around 35 percent in Kazakhstan, and around 10 percent in Russia, as of 2011. While part of these foreign assets is useful for stabilization, their size is much larger than needed for that purpose.

In capital-scarce countries, this allocation of a country's savings is inefficient, as the return on domestic investment—especially in human and physical capital—is typically higher than on foreign assets. Such investment, backed up by improved institutions, has helped raise productivity in many economies.



With total GNS insufficient to compensate for resource depletion and with only part of GNS invested in the domestic economy, resource-rich Eurasian countries have had difficulty maintaining their total assets—the sum of natural, human, and physical capital.

If resource-rich Eurasian countries are to diversify their development—and fast—they need to increase total investment, especially in education. They can do this quickly by reducing their investments in foreign assets to levels necessary for stabilization purposes. They can also do this by enhancing the efficiency of public investment, improving the overall private investment climate, and using some of the resource revenue to reduce government debt. (They may also consider lending to the private sector through better-run financial institutions.) There is no reason for resource-rich Eurasian countries to invest less than the resource-poor countries.

## Eurasia: wealthy, dependent, and inefficient

The questions posed at the beginning of this chapter have straightforward answers.

**Eurasian countries are not especially rich in natural resources.** Because it includes Russia and five other naturally well-endowed countries, Eurasia is the richest region in natural resources—oil, gas, minerals, arable land, and forests. It has about a third of the world’s gas, a seventh of the world’s oil, and a tenth of the world’s arable land. But the Middle East has more oil and fewer people than Eurasia, and Latin America has as much farmland and higher agricultural productivity per worker. Besides, 6 of the 12 countries in the region would be classified as resource-poor in global rankings. Per capita, Eurasia is not especially wealthy in natural resources.

**Eurasia appears to be overly dependent on natural resources.** Eurasia is as dependent on oil and gas as is the Middle East, in terms of the shares of export earnings and government revenue. Governments in resource-rich economies rely heavily on natural resources for fiscal revenue, and—through remittances and capital flows—neighboring economies depend a lot on agriculture, mining, and construction in resource-rich countries. This dependence has made policy makers increasingly uncomfortable.

**Eurasian economies have not been efficient in converting natural wealth into built capital.** The estimates of “genuine saving”—the net addition to a country’s capital stock when natural resources are exploited and the proceeds consumed and invested—in Eurasia are among the lowest in the world. Russia has done better than the others (such as Azerbaijan and Kazakhstan), and Eurasia has steadily improved so that the net savings have turned positive since the mid-2000s. But the region still lags behind the countries in the Gulf Cooperation Council in the efficiency of converting mineral wealth into other forms of wealth, and the Council in turn does worse than other resource-rich countries around the world. Eurasia has not done well, though it has become more efficient over time.

Chapters 5 and 6 discuss how Eurasia can do even better.

## Notes

- 1 Natural capital per capita in Azerbaijan, Kazakhstan, Russia, Turkmenistan, and Uzbekistan exceeds the world average of \$7,119 in 2005 dollars for 150 countries (World Bank 2011). Ukraine is included in this resource-rich group, though its total natural capital is less than the world average (though not by much), and its subsoil assets account for around a fourth of its natural capital (compared with three-fourths for the other five).
- 2 Based on 2010 data, Eurasia's gas reserves are second to the Middle East, and its oil reserves are ranked fourth, after the Middle East, Latin America, and Sub-Saharan Africa.
- 3 Russia and Kazakhstan are among the world's top five countries in agricultural land area, of which they have around the same amount as Brazil but less than half that of Australia, China, or the United States. After Russia and Kazakhstan, Ukraine is the most abundant country in Eurasia as measured by agricultural land per capita—and is among the top 12 in the world.
- 4 World Bank 2011. The study covers all Eurasian countries but Kazakhstan and Turkmenistan. Esther Lee, in the World Bank's Environment Department, provided comparable estimates for Kazakhstan and Turkmenistan for 2005 in 2005 dollars, as well as updated estimates for 2000, 2005, and 2010 for all Eurasian countries, such that they can be compared across years. The estimates include only natural resources that have reliable data on price and volume on a regular basis, with data available for an adequately large number of countries. The estimates include crop and pasture (agricultural) land, forests, energy (oil, gas, and coal), and 10 metals and minerals (iron ore, bauxite, copper, nickel, gold, lead, phosphate, tin, silver, and zinc).
- 5 These resources generate the largest unit resource rents and are narrowly based geographically.
- 6 This is based on updated estimates of natural capital per capita for all Eurasian countries for 2000, 2005, and 2010, using the methodology from World Bank (2011).
- 7 For example, advanced and developing countries' share of natural capital in their total endowment is as follows: Finland, 3 percent; Sweden, 2.5 percent; the Netherlands, 2 percent; the United States, 2 percent; Brazil, 19 percent; Chile, 18.5 percent; and Malaysia, 20 percent, all much lower than in Eurasian economies.
- 8 The United Arab Emirates is the exception because of its successful diversification of endowments. Its natural capital share in total endowment is only 22 percent, even though it ranks third in the world in subsoil capital per capita.
- 9 The International Monetary Fund classifies resource-rich developing countries (RRDCs) as low- and middle-income countries whose nonrenewable natural resources (that is, oil, gas and minerals) comprised at least 20 percent of total exports or government revenue from resources at least 20 percent of total revenue (IMF 2012).
- 10 Van der Ploeg (2012) highlights the constraints on ramping up public investment that reduces efficiency while Dabla-Norris and others (2011) estimate that less than half of public investment in low-income countries and a bit more than half in middle-income countries translate into effective capital stock.
- 11 Except for the share of savings that must be invested in foreign assets and held for use in stabilization during a downturn.
- 12 U.S. oil production peaked in the 1970s. Globally, oil reserves and oil production have not peaked, with both rising as new territories are explored and new technology employed (Hamilton 2011). New technology is producing large volumes of oil from unconventional sources in North America and elsewhere.
- 13 Russia had seen the most exploration and extraction activity as part of the Soviet Union, depleting its oil and gas reserves in the Volga-Ural and Southern European regions and moving into Western Siberia in the 1970s and 1980s. But most of its Eastern Siberia and Arctic regions, with their huge potential for oil and gas, remain virtually unexplored. There is also potential for oil and gas from unconventional sources that potentially can be tapped with the latest technology.
- 14 This focuses on countries' strategies for exploration and extraction of oil and gas. While the specifics of the investment and tax regime for minerals differ from those for oil and gas, the broad strategic direction of countries in terms of emphasizing domestic versus foreign private investment or state-owned versus private firms did not differ between oil and gas and minerals for a given country. Azerbaijan and Kazakhstan preferred foreign direct investment for obtaining foreign capital and technology for exploring oil, gas, and minerals, Uzbekistan depended mainly on state-owned enterprises for all activities, and Russia relied on the domestic private sector.
- 15 Where investment regimes are not very attractive, these rents may be the reason that foreign investors are willing to invest in

- resource sectors of such emerging economies when they may be unwilling to invest in other sectors, such as manufacturing or services.
- 16 Broadway and Keen (2010) discuss resource-rent taxation.
  - 17 ANS is equal to GNS minus fixed capital depreciation minus resource depletion. Since national-account GNS estimates exclude public recurrent education spending even though such spending increases human capital, it is included in ANS (ANS = GNS + ES – Depreciation – Depletion). In World Bank (2011), ANS estimates also subtract carbon emission and pollution damage.
  - 18 Note that total endowment per capita may still fall or rise depending on whether population is rising or falling during that period.
  - 19 Turkmenistan and Uzbekistan do not have annual data, but information for a few years shows a significantly negative ANS. Uzbekistan's ANS was negative 14 percent of gross national income; Turkmenistan's was lower than negative 50 percent.
  - 20 Russia recently split the country's fund into a national welfare fund and a reserve fund. Kazakhstan has a national oil fund and Azerbaijan a state oil fund. Using part of these funds' assets for stabilization is in line with the countries' rules. Uzbekistan has an investment fund for stabilization purposes and long-term public investments. Turkmenistan has a Foreign Exchange Reserve Fund and a Stabilization Fund.
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# Chapter Five

## Built Capital

In the late 1980s, spending on research and development (R&D) in the Soviet Union was around 2.4 percent of gross domestic product (GDP), as much as the European Union (EU) average and nearly as much as in the United States. Although the Soviet Union lagged in Nobel Prizes in sciences, many fundamental discoveries and other firsts originated with Soviet scientists and engineers.<sup>1</sup> The first artificial satellite was the Soviet Sputnik, launched in 1957, and the first human in space was Soviet cosmonaut Yuri Gagarin, in 1961. These stunning breakthroughs were enabled by high secondary education attainment, an emphasis on tertiary education for some graduates, and generous funding for fundamental and military-related research.

How times change. Today, many 15-year-olds in Eurasia outside the Russian Federation are functionally illiterate in math, science, and reading.<sup>2</sup> The opportunities afforded these children by the transition to a market economy, by more open borders, and by a world bound more closely are diminished by the poor quality of their education and by a lack of marketable skills. With a large pool of functionally illiterate children, universities are producing few graduates who can push the frontiers of innovation. The developmental impacts of inadequate human capital—low education quality, a lack of skills, and curbed innovation capacity—are severe.

Studies that link quantity and quality of capital to growth and development have been prominent in economics, from Adam Smith (1776) and David Ricardo (1817) to Robert Solow (1956) and Paul Romer (1990). Simply put, a larger stock of capital—especially human capital—leads to faster growth (Bravo-Ortega and de Gregorio 2005). When applied well, this theory has brought remarkable results. The Commission on Growth and Development estimated that countries that maintained high growth for several decades have invested at least a fourth of their output in fixed capital and that their governments have dedicated about 7 percent of GDP to infrastructure and other public capital goods.<sup>3</sup> Japan and the Republic of Korea invested about 31 percent of GDP during their economic

takeoffs. More recently, China has sustained even higher investment rates for several decades.

China, Japan, and Korea have few natural resources, yet they have made big investments in human capital. In Eurasia, by contrast, countries with oversized external and fiscal surpluses, large foreign exchange reserves, and ample hydrocarbon resources underground have not.

Against this background, this chapter asks four questions:

**Does Eurasia have a problem with its capital?** Yes. Eurasia has less capital than it should have, given its history, its ambitions, and the availability of ample resources. The capital gap is less pronounced for the more tangible aspects of capital (physical infrastructure, schools, and hospitals) but widens sharply for the less tangible aspects (quality of infrastructure, quality of education and health delivery, entrepreneurial capital).

The smaller gap in more tangible capital appears to mirror an economy's ability to use resource-related revenue to, for example, build roads, keep children in school longer, and bolster inputs. Achieving higher capital quality and a flourishing entrepreneurial culture is a lot more demanding of institutions. And as chapter 6 will demonstrate, institutional development has a much longer road to travel in Eurasia, especially in the resource-rich areas. The dearth of entrepreneurship, for example, stems from negative attitudes to starting a business, taking risks, and failing in a commercial venture. Popular attitudes are reflected in the institutional setup, which is often openly hostile to entrepreneurs.

**Are the resource-poor Eurasian countries more capital-constrained than the resource-rich ones?** Yes, both in the more and less tangible capital forms. Resource-poor countries tend to be much smaller in area and population than the resource-rich ones—and have less adverse climates. They also have less extensive legacy infrastructure and almost no cities to exploit resources without regard for distance and density. Many governments in resource-poor Eurasia are investing more in physical capital relative to GDP than their resource-rich counterparts. Despite ample hydrocarbon riches and high saving, resource-rich Eurasia has not sustained the high investment rates needed to maintain the physical capital inherited from the Soviet Union.

Public spending on education and health in resource-rich Eurasian countries is also low, an outcome at odds with their low stock of human capital (other than Russia) and their governments' goal to improve human capital. Compounding the problems of low spending on physical and human capital is the poor efficiency of converting subsoil resources into capital. Adjusted net savings—a measure of changes in aggregate wealth—are barely positive in Russia and have only recently shifted from negative to positive in Azerbaijan.

**Is Russia different from other countries in Eurasia?** Seemingly, Russia's infrastructure and education are better than the rest of Eurasia's—but are far behind those of advanced countries and Russia's own aspirations. Yet national averages conceal large differences. Some of Russia's regions boast world-class education, as measured by scores on the Programme for International Student Assessment (PISA) among the top five countries globally. Conversely, education

quality in some of these regions is among the lowest in Eurasia. Still, differences within Russia are narrower than those among Eurasian countries and those between Eurasia and the rest of the world.

**Are there straightforward ways for governments to increase the quantity and quality of capital?** Yes. It appears that governments—especially in the resource-rich economies—could spend much more on infrastructure and education. For some, larger outlays for infrastructure would involve giving up projects now implemented without proper appraisal and with unclear social value. For others, cutting spending on subsidies and untargeted transfers will provide fiscal space. Throughout Eurasia, strengthening the quality of public investment management should help reduce waste and inefficiency over the medium term and make room for far larger outlays. Some resource-rich countries may need to rethink their fiscal rules and frameworks on saving resource-related revenue in saving funds. As chapter 6 clarifies, intergenerational transfers of resources are best accomplished through physical and human capital, if economic rents and investments can be better managed than they are now. For example, most Eurasian countries would benefit from expanding coverage in early childhood development and tertiary education, increasing public spending efficiency, and reducing the mismatch between the education system and the labor market. In health, higher public outlays should be considered in a framework that shifts delivery of care to the preventive and primary stages (rather than treatment) and that expands measures to reduce large out-of-pocket payments by patients.

This chapter suggests that a lack of resources is not the culprit—weak institutions are (remedies are proposed in chapter 6). Many resource-rich countries have failed to use natural abundance to increase capital—such as Argentina and Brazil, whose education quality lags behind Russia’s despite years of trying to catch up. Others, such as Australia, Canada, and the United States, have succeeded in using resources to build capital. Improving the business environment and clarifying rules for public-private partnerships should help bring much-needed private investments in Eurasia’s physical and human capital. Improvements in the institutional environment will be needed to spur entrepreneurship and innovation.

## Physical capital

Eurasia covers an enormous physical space between the EU—the world’s largest economic entity—and East Asia, the most dynamic part of today’s global economy. Eurasia itself is dominated by the sparsely populated areas of Siberia, the Far East, and large parts of Kazakhstan. Connecting people in Eurasia remains a huge challenge 20 years after the transition began.

This partly reflects the difficulty of overcoming the Soviet legacy of dispersed development that created settlements in remote areas without regard for the costs of distance or the benefits of agglomeration. Russia, for example, counts among its urban areas about a thousand “mono-towns,” built around a single industry. Some of these towns, particularly those specializing in extractive industries, are in remote areas that are difficult to access and have harsh conditions (Gho 2011). Among Eurasia’s 12 countries, Kazakhstan, the Kyrgyz

Republic, Tajikistan, and Uzbekistan are landlocked—as far as 3,000 kilometers from the nearest open sea. Just above half of Eurasia’s population lives in cities, a proportion little changed since the mid-1980s and now almost equal to that in East Asia, a region with substantially lower per capita GDP.

Transport networks based on the Soviet mode of development, with Moscow the preeminent center, were extensive in Soviet times, but once price distortions were greatly reduced with the shift to a market economy, the costs of maintenance caused the infrastructure capital stock to rapidly deteriorate. Similarly, urban infrastructure, which was overbuilt to levels above the Soviet Union’s per capita income, proved too costly to maintain and has now settled in quality (and quantity—see below) to a condition more in line with Eurasia’s development.

As with infrastructure, capital tied up in machinery and equipment was dispersed across vast territories. But unlike infrastructure, it was then concentrated in large industrial towns that more often served single industries (the mono-towns). With the breakup of production links established by the center and against competition from low-cost East Asia and the high-capital EU, Eurasia’s capital quickly became obsolete. Even with robust investment, per capita levels of noninfrastructure physical capital fell until the mid-2000s, as rapid depreciation more than offset new investment.

Eurasia’s economy is moving steadily from excessive regional links to increased global integration. Integrating with the rest of the world before integrating regionally is the path followed by East Asia and Western Europe. And as Eurasia travels this path, transport infrastructure adjustments will be important. Airline and information and communication technology (ICT) connectivity will rise further after years of strong development—but from a still-low base. These developments are as natural as the high intensity in natural resources in the region’s output and exports. Eurasia’s governments should facilitate the process by spending more on public infrastructure, including by strengthening public investment management and inviting more private participation. These efforts should help share risks and keep costs down.

### The quantity of Eurasia’s physical capital has fallen too far

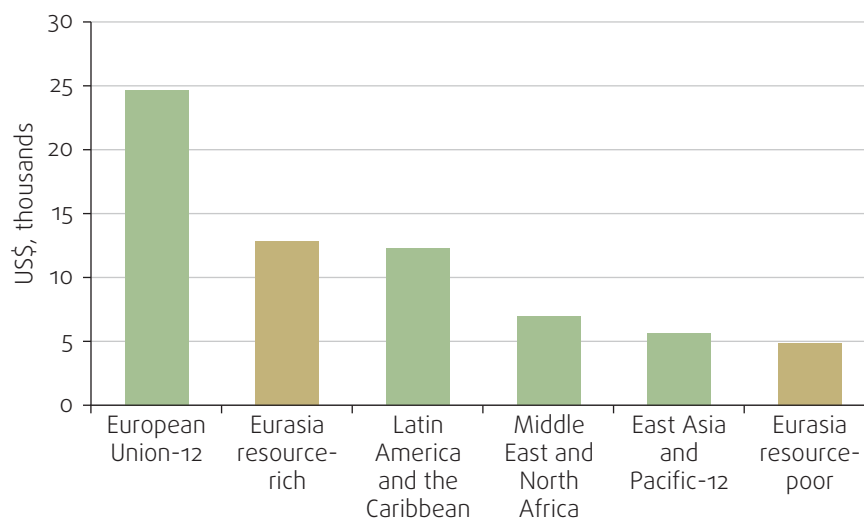
Recent World Bank studies that use the perpetual inventory method with a fixed depreciation suggest that Eurasia’s stock of produced capital—machinery, equipment, and urban land—was in line with its per capita GDP in the mid-2000s (figures 5.1 and 5.2).<sup>4</sup> Per capita physical capital was substantially lower in the mid-2000s than at the start of the transition.

The quantity of physical capital would be even lower if the inefficiencies in public investment are taken into account. The estimates in the previous paragraph assume that public investment spending translates fully into capital stock. A recent study, however, concludes that “the cost of public investment is not the value of public capital. Unlike for private investors, there is no remotely plausible behavioral model of the government as investor that suggests that every dollar the public sector spends as ‘investment’ creates capital in an economic sense” (Pritchett 2000, 3). The study suggests that estimates that ignore the efficiency of investment overstate the amount of physical capital.



**Figure 5.1. Without adjusting for the quality of public investment management, Eurasia’s physical capital is in line with its per capita income . . .**

(Physical capital, thousands of U.S. dollars per capita, 2005)

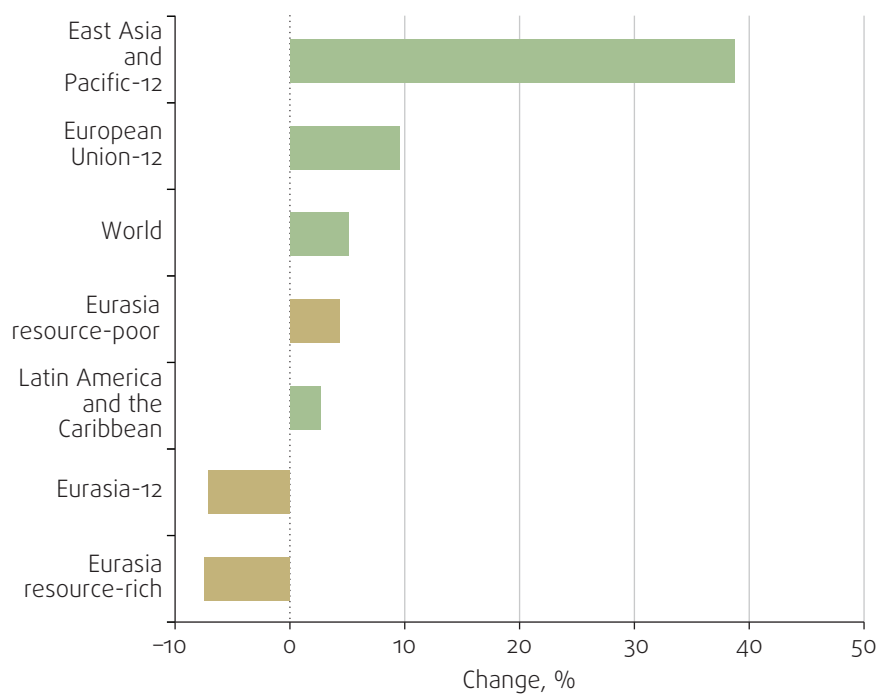


Source: World Bank 2006a; World Bank staff calculations.

Note: Resource-rich Eurasian countries include only Azerbaijan, the Russian Federation, and Ukraine due to data limitations.

**Figure 5.2. . . . after a sharp fall since the start of the century**

(Percent change, 2000–05)



Source: World Bank 2006a; World Bank staff calculations.

Note: Resource-rich Eurasian countries include only Azerbaijan, the Russian Federation, and Ukraine due to data limitations.

Recent estimates correcting for the efficiency of investment indeed suggest that Eurasia's capital stock is much lower than investment numbers imply. One study constructs a new public capital series that explicitly takes into account the efficiency of public investment by using the Public Investment Management Index.<sup>5</sup> While efficiency-adjusted capital stocks throughout the world are lower than stocks estimated from cumulative investment, Eurasia stands out. In Eurasia, the stock of public capital is less than half of what cumulative investment spending suggests, due to the poor quality of investment itself. For individual countries, the capital stocks are discounted 40–65 percent as a result of the Public Investment Management Index.

### Infrastructure is inadequate even without recalculating for investment efficiency

The Eurasian countries began the transition with a quantity of infrastructure in line with the Soviet Union's level of development and its status as a superpower. But infrastructure was allocated inefficiently across a vast territory, and other physical capital was spread less than optimally across sectors under the command system.

Thus, in the 21st century, Eurasia still has a low stock of infrastructure capital. Russia has a rail network just one-third the length of that of the United States and as long as China's, a country with half the territory and half the per capita income (table 5.1). Russia's roads are only as long as France's, a country with one-twentieth its territory; Kazakhstan's are only as extensive as Malaysia's, a country with one-tenth its land area.

Eurasia overall, a region with nearly 22 million square kilometers and about 265 million people, has a road network as long as Brazil's, a country with one-third the territory and three-fourths the population. Such low density means that only about three-fourths of Eurasia's rural population lives within 2 kilometers of an all-weather road—lower than in China and Indonesia (figure 5.3). The country figures vary hugely. Moldova and Ukraine, for example, have a higher railway density than Korea's, and Armenia and Azerbaijan have rail density comparable to the United States' (and four times China's).

**Table 5.1. The Russian Federation's transport network is much shorter than that of the United States**

*km, thousands*

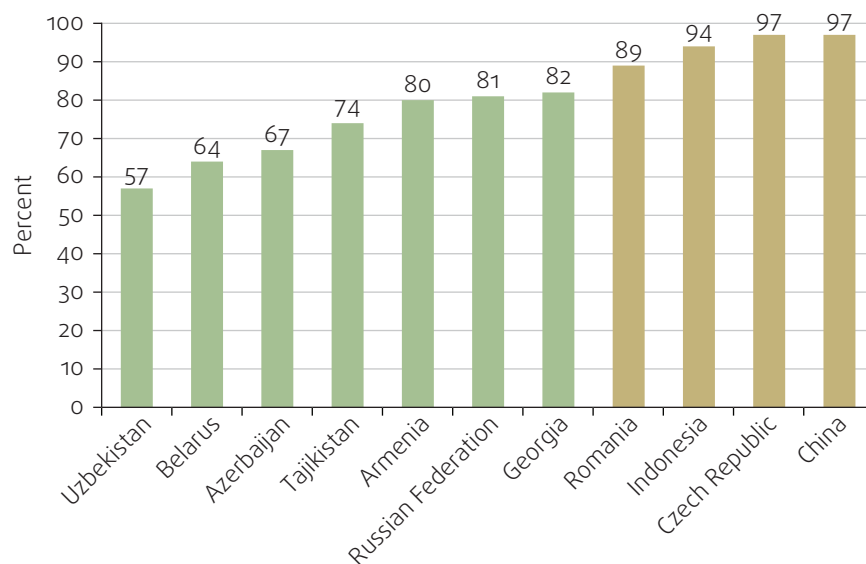
	1992 Russian Federation	1990 United States	2011 Russian Federation	2010 United States
Highways	466	6,187	903	6,507
Railroads	88	240	86	204
Navigable channels	98	42	101	41
Oil pipelines	66	—	65	293
Gas pipelines	140	2,032	167	2,479

*Sources:* For the United States, the U.S. Department of Transportation; for the Russian Federation, the Federal Statistical Service.

*Note:* — = not available.

**Figure 5.3. Fewer Eurasians than comparators live within 2 kilometers of an all-weather road**

(Percent of population)

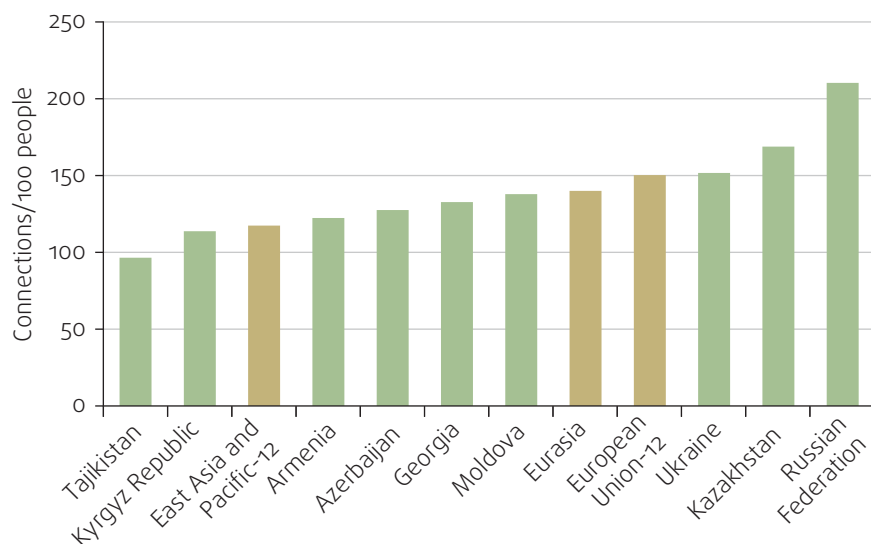


Source: Roberts, KC, and Rastogi 2006.

The coverage of the population by basic infrastructure services has also diminished during the transition—to be in line with Eurasia’s per capita income. Most urban residents and four-fifths of rural residents have access to drinking water—its quality and losses in distribution notwithstanding—a level at par or above that in middle-income countries. Rural access to water is similar to that in the EAP-12, despite Eurasia’s much higher per capita incomes. Reported access to improved sanitation varies from nearly full coverage in the resource-rich countries to 80 percent in the resource-poor countries, and both groups have greater access than the EAP-12 (63 percent). Per capita electric power generation in resource-rich Eurasian countries was about twice the middle-income average at the start of the transition.<sup>6</sup> In sum, “first-generation” infrastructure, which is designed to meet basic human needs, remains in line with per capita incomes.

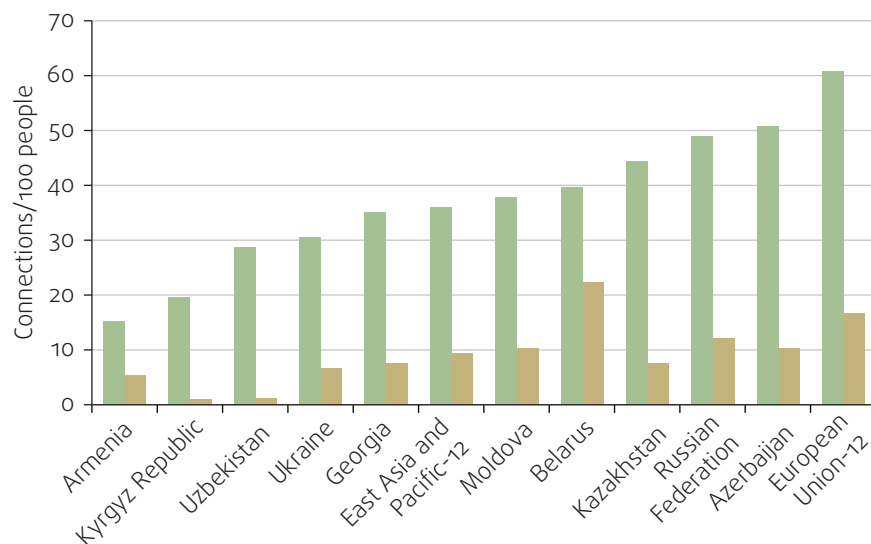
The penetration of ICT in Eurasia is uneven. The larger Eurasian countries started the transition with high access to telecommunications and have maintained it over the last two decades. Telecom penetration in Kazakhstan, Russia, and Ukraine—countries with less-dense transport infrastructure than the smaller countries in Eurasia—is higher than in the EU-12 and the EAP-12 (figure 5.4). Although mobile connections are increasingly common, they are typically underused for data services, largely because of limited broadband availability and high prices. Internet penetration is close to that in the EU-12 in a few countries in Eurasia, but in Armenia and the Kyrgyz Republic it is less than half of that in the leaders in Eurasia (figure 5.5).

Given its rising role in the modern economy, ICT is becoming a bigger problem for doing business, when one compares the results from the 2005 and the 2008 European Bank for Reconstruction and Development (EBRD)-World



**Figure 5.4. Telecommunications access is high in the larger countries of Eurasia . . .**  
(Connections per 100 people)

Source: World Bank, n.d.d.



**Figure 5.5. . . as is Internet and broadband access**  
(Connections per 100 people)

Source: World Bank, n.d.d.

Bank Business Environment and Enterprise Performance Survey. Compared with global broadband leaders, the Eurasian countries have some distance to catch up. For example, about 12 percent of Russia’s households have access to broadband, little different from the rate in China but far behind the 36 percent in Korea, 30 percent in the United States, and 25 percent in Singapore.

The spread of ICT makes it possible for companies and households to bridge distance and division, leapfrogging challenges in physical infrastructure. For example, the transit capacity of Eurasia's transport networks is estimated to double over 2010–20, with the help of ICT (World Bank 2012b). ICT can support trade expansion by facilitating customs clearance and other aspects of the cross-border movement of goods and people. ICT is the most crucial component of trade in business services, notably business process outsourcing.

### Eurasia's quality of infrastructure lags behind its peers

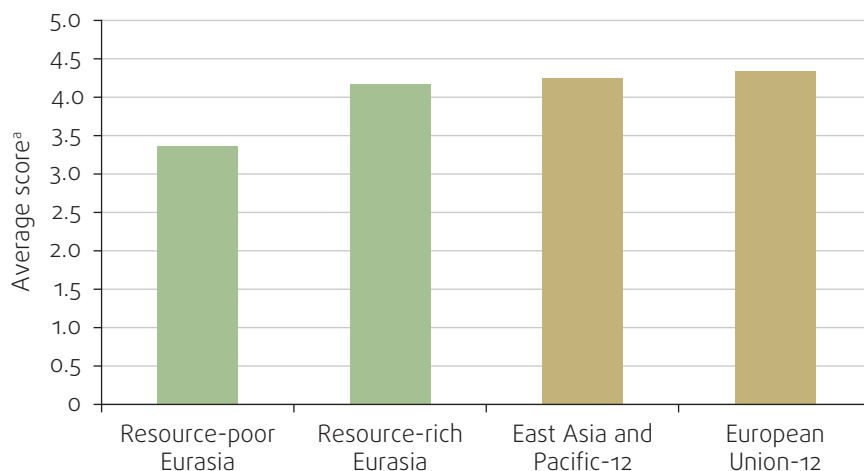
Inadequate maintenance and repairs of the extensive transport networks that Eurasia inherited from the Soviet Union led to steep drops in infrastructure quality. Infrastructure established in cold climates proved too expensive to maintain and was allowed to degrade. Communal infrastructure similarly suffered, as artificially low prices and heavy state subsidies led to persistent underinvestment and less-frequent maintenance. Infrastructure, which did not figure much as an obstacle for doing business in the 1990s, is now one of the greatest obstacles for most countries (figures 5.6 and 5.7).

Harsh climates pose one of the most profound challenges to the quality of transport infrastructure in Eurasia, especially in Siberia, the Far East, and Kazakhstan, where the costs of maintaining roads and railroads exposed to severe cold and to large swings in temperature became excessive once domestic energy prices began rising. These costs should fall as city planners rethink Eurasia's urbanization models and more people begin moving to denser settlements in milder climates.

Man-made disasters have allowed climate shocks to further damage poorly built infrastructure. Over the last two decades, the number of climate-related natural disasters and economic losses associated with extreme climate events has increased. Droughts in 2000–01 are estimated to have cost Tajikistan and Georgia 5–6 percent of their GDPs. Severe floods in Georgia, Russia, and

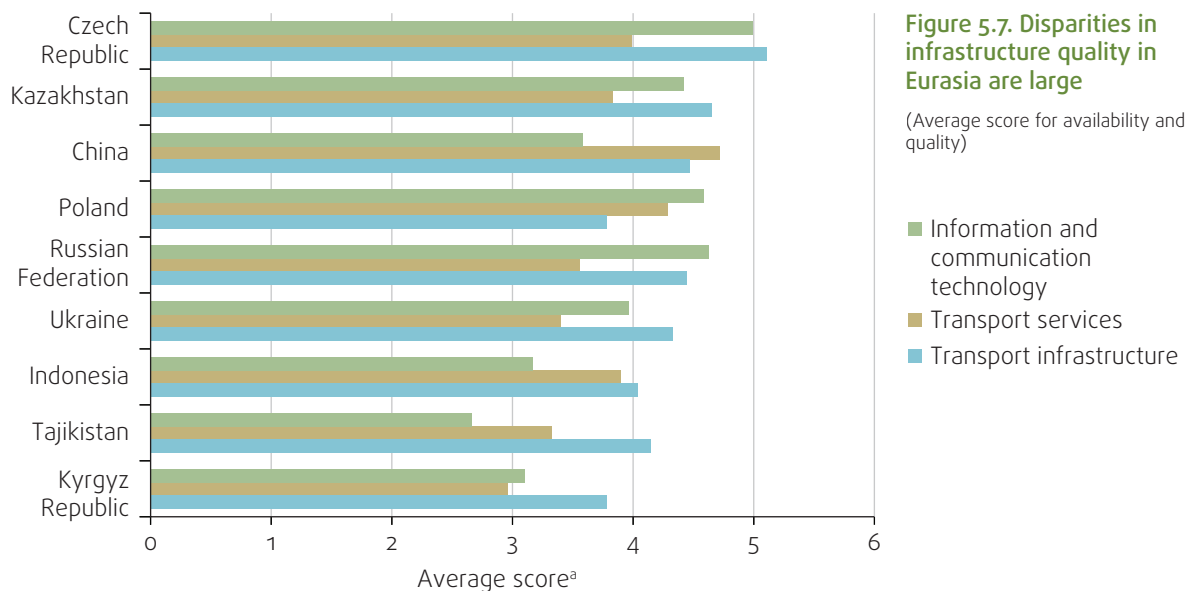
**Figure 5.6. The quality of infrastructure is poor**

(Average score)



Source: Lawrence, Drzeniek Hanouz, and Doherty 2012.

a. A higher score denotes higher quality.



**Figure 5.7. Disparities in infrastructure quality in Eurasia are large**

(Average score for availability and quality)

■ Information and communication technology  
 ■ Transport services  
 ■ Transport infrastructure

Source: Lawrence, Drzeniek Hanouz, and Doherty 2012.

a. A higher score denotes higher quality.

Tajikistan led to landslides and slope failure, drowning people and destroying roads and rail lines. Structures near coastlines, including a Russian oil storage facility on the barrier island of Varandei in the Pechora Sea, are already under threat because of rising sea levels. Warmer temperatures and resulting ground settlement in Russia's permafrost areas have begun to destabilize infrastructure. The effects of poor road design standards coupled with low maintenance showed when roads began to deteriorate due to extreme weather conditions in Central Asia. The Kyrgyz Republic, for example, reports losses of about 200 kilometers of road every year due to difficult terrain, extreme temperatures, excessive loads, and a lack of road maintenance budgets.

The quality and reliability of communal infrastructure are overarching concerns. Although Eurasia has nominally high access rates to improved water and sanitation, the quality and reliability of water systems are often poor. The cost recovery in the provision of water is still low, with water utility revenue estimated to cover only 61 percent of operational costs in Russia. This low revenue base led to underinvestment, a rapid deterioration of infrastructure, and sharp increases in the funds needed to restore the capital stock.

The quality of infrastructure in electricity generation and transmission is also poor. For example, Ukraine has one of the largest power transmission systems in Europe—and one of the oldest. More than two-thirds of the country's almost 30,000 kilometers of transmission lines and 132 substations have exceeded their expected life span. And most substations have old, Soviet-made equipment, which poses a danger to workers. Ukraine's transmission infrastructure is similar to the rest of its infrastructure. The inheritance from the Soviet Union

was extensive, but limited maintenance let much of the infrastructure fall into disrepair, so it needs major rehabilitation or replacement.

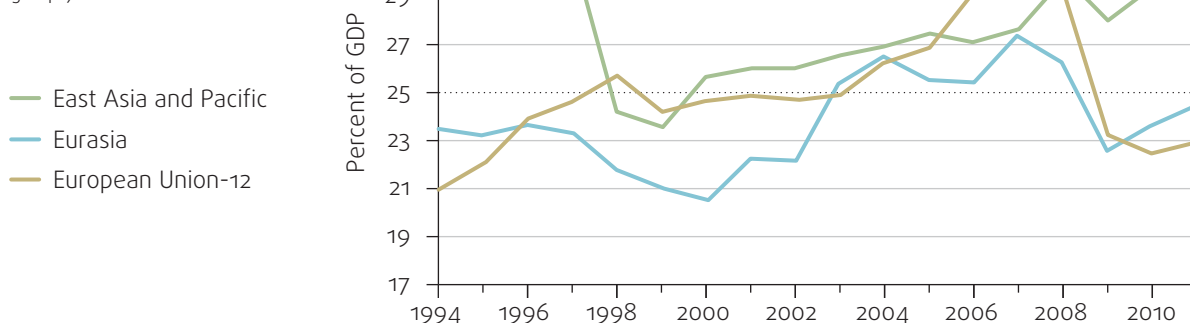
Eurasia is the most inefficient region in consuming and producing energy. Constrained investment has led to reliance on older and even obsolete technology. Nearly 80 percent of all power plants were built before 1980, and most are beyond their design life. As demand for energy in the rest of the world rises, Eurasia will struggle even more to provide affordable energy while making its cities less polluted and more habitable. A 2011 study estimates that by 2030, Eurasia's coal-fired plants will account for a third of electricity generation and nuclear plants for as much as a fifth, while the share of hydropower and natural gas generation will decline (World Bank 2011d). And here is Eurasia's great opportunity—to use hydrocarbon-related revenue to bolster investment that helps scale up energy extraction and production with modern methods and meet the multiple objectives of sustained exports, energy security, and habitable cities. The renewal of energy-sector assets provides an opportunity to contain the carbon footprint and increase the sector's resilience to climate change.

### Fixed capital investment in Eurasia is low

Eurasia's high investment in the 1970s and early 1980s fell sharply with the advent of *perestroika* in the mid-1980s and the transition's early years. The reasons are well known: the breakup of production arrangements within the Soviet Union and with the countries of Eastern Europe, along with the much-reduced role of military buildup and the privatization of state-owned enterprises. Eurasia maintained investment at about 23 percent of GDP a year on average after the transition began, far below the 28 percent that East Asia invested (figure 5.8). Eurasia's rate is lower than the 25 percent that the

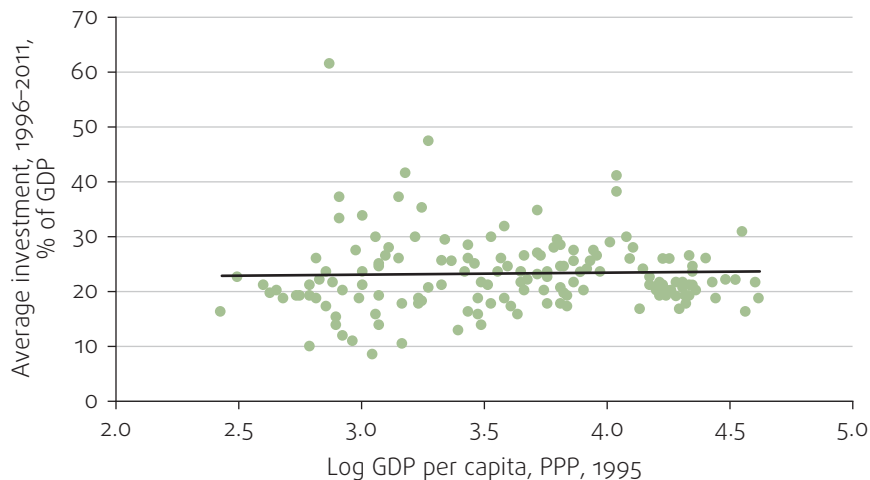
**Figure 5.8. Investment in Eurasia trends up**

(Percent of GDP, median across groups)



Source: Center for International Comparisons, n.d.

Note: Constant prices. The dotted line at 25 percent represents the average as calculated by the Commission on Growth and Development. GDP = gross domestic product.



**Figure 5.9. Globally, low initial per capita GDP is not correlated with high investment**

(Log GDP per capita [purchasing power parity, 1995] and percent of GDP)

Source: IMF World Economic Outlook Database.

Note: GDP = gross domestic product; PPP = purchasing power parity.

Commission on Growth and Development (2008) calculated as the average that several fast-growing countries maintained for several decades.

Lack of resources is not the culprit for low fixed investment. Russia had just three years with an investment rate of 25 percent of GDP or higher since the transition began, and Azerbaijan has had none since 2005 (following the development of the oil fields). Resource-rich countries with relatively low investment rates are a frequent global phenomenon. Brazil, Malaysia since 1998, and the United States have all experienced investment rates below 25 percent of GDP for an extended period. Others, including Turkmenistan and Equatorial Guinea, have invested much more for a prolonged period. Gross fixed capital investment in resource-poor Eurasia, in fact, is 2 percent of GDP higher on average since 2004, with improved business climates facilitating private investment and larger government outlays on infrastructure. Resource abundance and low levels of GDP are not correlated with higher investment—either in Eurasia or globally (figure 5.9).

### **Governments in resource-rich Eurasia underinvest**

A lack of resources, by contrast, has not prevented governments in resource-poor Eurasia from investing more than their resource-rich counterparts. Resource-poor Eurasia invested about 0.7 percent of GDP a year more than resource-rich Eurasia during the last decade. Governments in resource-poor Eurasia now invest almost 7 percent of GDP a year on average, as much as governments in fast-growing East Asia. Across the resource divide, government investment in Kazakhstan, Russia, and Ukraine has been trending down since 2004 (figure 5.10).

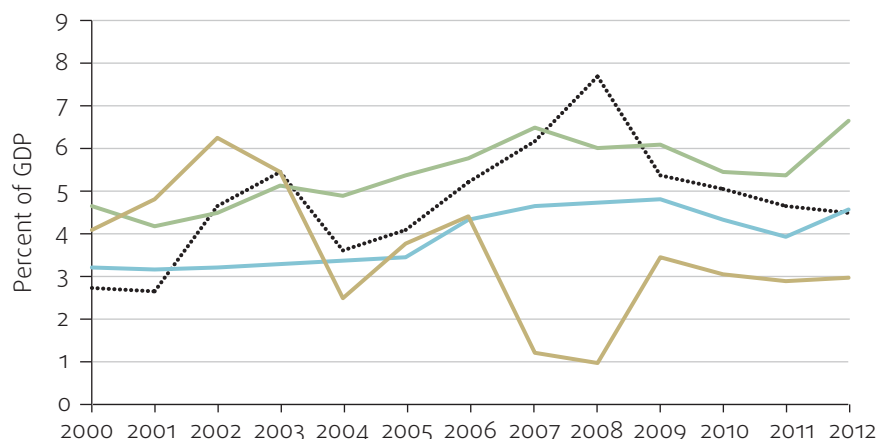
Even here Russia is on its own, this time for the most rapidly declining government investment in Eurasia. Part of the decline reflects government



**Figure 5.10. Despite abundant resources, governments in resource-rich Eurasia invest little**

(Percent of GDP)

- ..... Resource-rich Eurasia
- Resource-poor Eurasia
- European Union-12
- Russian Federation



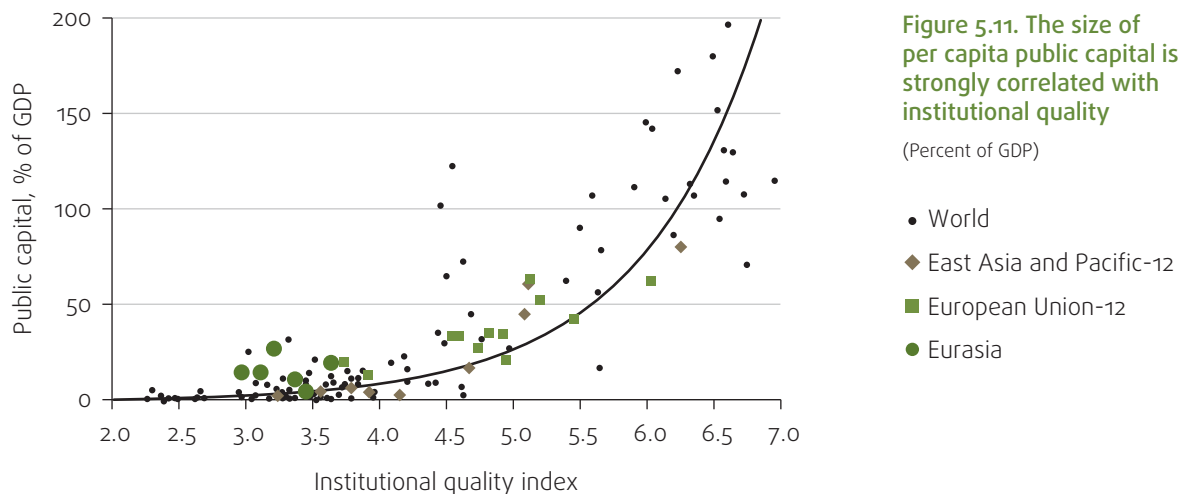
Source: IMF World Economic Outlook Database 2013.

concerns about limited fiscal space with an oversized non-oil deficit, which in Russia amounts to about 10 percent of GDP, against a government target of about 8 percent by 2015. This suggests little scope for increased capital outlays without measures to raise revenue or reduce other spending. In addition, a recently announced fiscal rule stipulates that only after the reserve fund reaches 7 percent of GDP (from the current 4 percent) can the government invest additional oil-related revenue in infrastructure.

This limited fiscal space may be the proximate cause of low government investment in Russia, but the ultimate reasons are institutional, induced by natural resource rents. It is the pervasive nature of such rents that results in low government investment and large outlays on explicit and implicit subsidies and transfers. Bhattacharyya and Collier (2011) show that for many countries natural resource rents do not augment public capital stock. If anything, they are associated with lower public capital stock—evidence of a resource curse.<sup>7</sup> The authors find such evidence for minerals, petroleum, and natural gas but not for the less appropriable agriculture and forestry resources.

Resource-rich countries require much stronger institutions and political commitment than do resource-poor economies, and Eurasia's institutions appear weaker than the abundance of resources warrants. Bhattacharyya and Collier (2011) use the Hall and Jones (1999) institutions index (ranging from 0 to 7) to proxy for "social infrastructure"<sup>8</sup> and find that the resource curse is experienced only by countries below a certain threshold (3.1).<sup>9</sup> Eurasia is only slightly above the threshold, with a score of 3.3, whereas the EU-12 (4.84) and the EAP-12 (4.32) are substantially above it. Improving the quality of institutions (discussed further in chapter 6) is therefore essential for resource-rich Eurasia to escape the trap of low public capital (figure 5.11).

Within Russia's regions, investment is dominated by the large commodity producers. Investment in the largest hydrocarbon-producing federal districts—the Urals and the Far East, for example—is twice as high as in the rest of the country (figure 5.12).

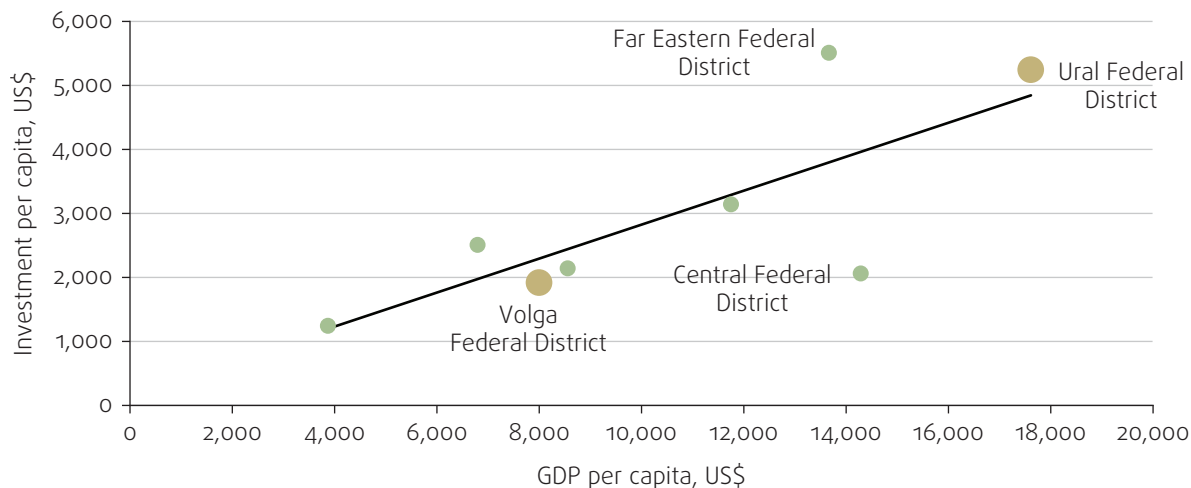


Sources: Authors' calculations based on Hall and Jones 1999. Public capital stock from World Bank, n.d.d, and IMF World Economic Outlook Database 2013.

Note: GDP = gross domestic product.

**Figure 5.12. Investment is higher in the Russian Federation's richer federal districts, but only a small part is due to the government**

(U.S. dollars, 2011)



Source: Federal Statistical Service.

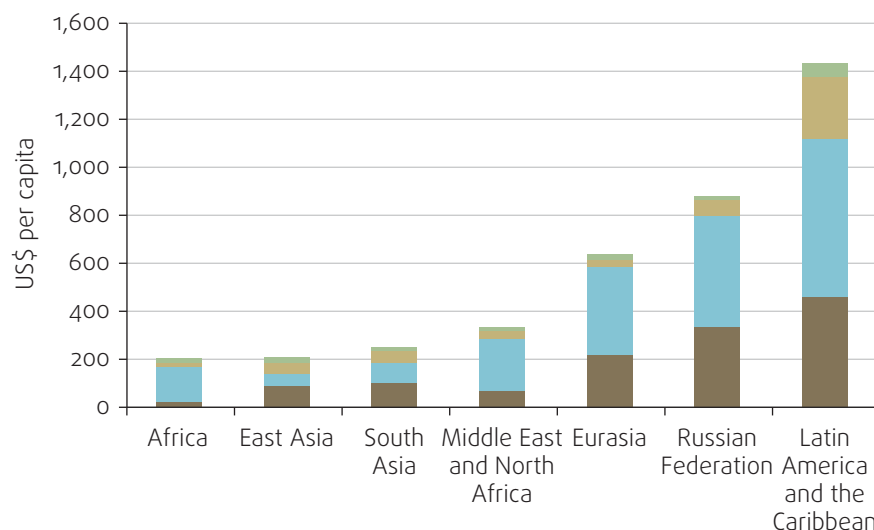
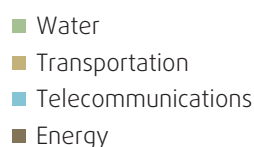
Note: The two districts that account for almost all of the Russian Federation's hydrocarbon production are represented by brown dots.

### Private investors have been wary about public infrastructure

Private participation in infrastructure (PPI) has so far been limited in Eurasia. Over the last decade, there have been 132 infrastructure projects with private participation, for a total investment of \$143 billion. PPI has picked up since

**Figure 5.13. Public-private partnerships in infrastructure are used less in Eurasia than in Latin America**

(U.S. dollars per capita)



Source: World Bank World Development Indicators.

the mid-2000s and now amounts to about \$25 billion a year (compared with nominal GDP of more than \$2.5 trillion in Eurasia). The private sector is much less involved in infrastructure in Eurasia than it is globally, where private companies finance about a fourth of infrastructure outlays. Although PPI in Eurasia does better than in most developing regions, it still amounts to only about half the investment in Latin America and the Caribbean (figure 5.13).

Bringing in the private sector under a transparent and properly regulated framework should help meet the large financing need in Eurasia, diversify risks, and control costs. So far, private investors have targeted only a few sectors in Eurasia, with telecom accounting for 60 percent of the total and energy for a third. Russia dominates the flows, attracting 73 percent of Eurasia's PPI.

Private investment in Eurasia is hampered mainly by the challenging environment for doing business, including limited competition, capture by vested interests, and risks of expropriation or corruption. (Chapter 6 details the key role institutional capital plays in economic development.)

### What Eurasia can do: Invest more, manage better, and regulate sensibly

The resource-rich Eurasian countries should create the space to invest more in infrastructure. That space is often limited by large current expenditures outside education and by limited private sector participation. Still, there is an urgent need to invest more in connecting cities and regions to allow agglomeration economies to take hold, after decades of central planning. Rethinking urbanization will also bring with it requirements for more outlays to help facilitate further increases in Eurasia's urban population. Just over half of Eurasia's population lives in cities, as much as in China but less than in Brazil and far less than in Eurasia's resource-rich comparators.

Public investment management practices need to improve greatly. Eurasia wastes about 50 percent of the funds it invests due to poor practices. And if such waste is not bad enough, fiscal space is heavily curtailed by inefficiently used or stolen capital appropriations. More-efficient public investment management should have well-defined steps to identify potential new projects, as well as clear criteria for preventing a flood of projects entering the process. Procedures for evaluation, selection, execution, monitoring, and post-execution evaluation should also be put in train.

The poor business environment deters private investment, undermining the region's growth prospects. The median ranking of the resource-rich countries in Eurasia on the World Bank's Doing Business Indicators is 92, while that of four resource-rich comparators (Australia, Canada, Chile, and Norway) is 15. Rapidly streamlining the business and regulatory environment is one of the "low-hanging fruits" for the region's authorities.

## Human capital

Human capital is a vital ingredient for economic growth. It is the ultimate source of innovation and productivity and one of the key mechanisms for transferring wealth across generations. Indeed, human capital is the glue that brings together the other factors of production.

Its pace of growth depends on the quantity and quality of education (in the classroom at the primary, secondary, and tertiary levels and at on-the-job training), on the quality of health care, and on the broader social environment.

This section analyzes the quantity and quality of education and health to assess whether human capital is a constraint to growth in Eurasia.

Persistently high and rising education attainment rates—education quantity—are not accompanied by high-quality education outcomes. Resource-rich or resource-poor, the countries of Eurasia outside Russia have functional literacy rates detrimental to long-term development. Poor education quality translates into inadequate skills, and firms are increasingly concerned about the skills of job seekers. Exacerbating the low education quality and perceived skills mismatches are low health indicators that, despite some recent improvements, remain little changed from their level four decades ago.

Education and training institutions play a key role in enhancing the productivity of capital by supplying well-trained graduates and developing innovative ideas that improve existing technologies. Workers whose skills are aligned more closely with the demands of firms are typically more productive and contribute more to the country's economic growth. In addition, they tend to command higher wages and enjoy lower levels of unemployment. By contrast, workers whose skills are misaligned with employers' needs are likely to be unemployed, underemployed, or paid less than others.

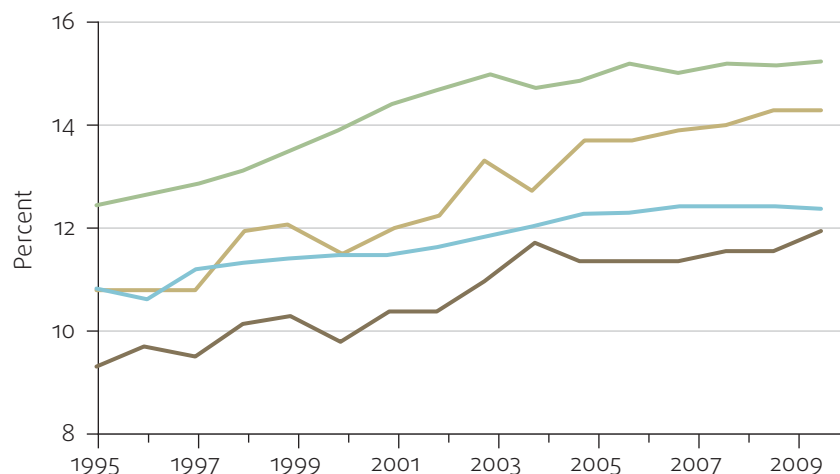
### The quantity of education is about right

Eurasia does not have a problem with the quantity of education as measured by years spent in school and number of instruction hours, with resource-rich

**Figure 5.14. Average years of schooling are rising faster in resource-rich Eurasia than in resource-poor Eurasia**

(Percent, gross terms)

- European Union-12
- Eurasia resource-rich
- Eurasia resource-poor
- East Asia and Pacific-12



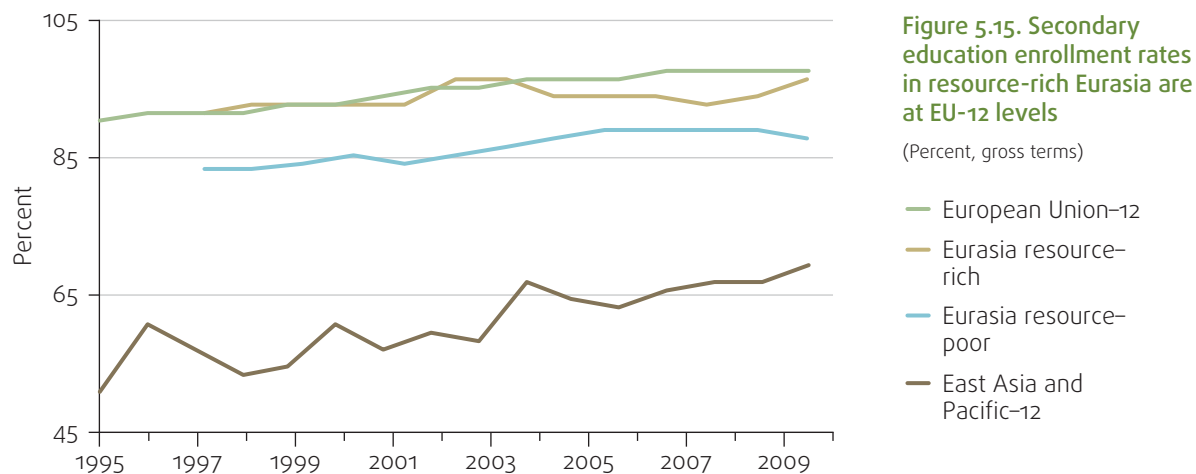
Source: World Bank, n.d.d.

countries making more progress than the resource-poor. Starting with an already high level in the late 1980s, most resource-rich countries further increased the average number of years of schooling (figure 5.14). That length has converged fast with the rate in the EU-12, driven largely by a surge in university attendance over the last 20 years. In resource-poor Eurasia, the average number of years of schooling has risen more slowly, creating a wide gap with the resource-rich part and allowing the EAP-12 countries to catch up. In resource-rich Eurasia, Russia stands out for better education attainment—quantity of schooling—at all levels but more strikingly at the tertiary level.

Comparisons of education attainment are informative but capture only a small part of the picture. Such comparisons create the perception that Eurasia has a high education endowment, even as most countries in Eurasia did not until recently participate in studies measuring education quality, leaving education attainment as a shortcut for human capital.<sup>10</sup>

But the perception is incorrect. The Soviet system placed great emphasis on equalizing the population's access to primary and secondary education. School attendance was mandatory, resulting in high enrollment and completion rates. By the late 1980s, 60 percent of the Soviet labor force had completed secondary education, up from about 43 percent a decade earlier (IMF and others 1991, table IV.6.24). Literacy, understood as the ability to read, write, and carry out elementary math, was almost universal across the region, regardless of ethnic or social origin.

The transition of the last 20 years sustained universal primary school attainment and high secondary school enrollment, albeit with variations. Primary attainment rates remain near 100 percent across Eurasia. It is at the secondary and tertiary levels where disparities have started to appear. Starting from a similar initial position at the beginning of the transition, secondary enrollment rates in resource-rich Eurasia have approached EU-12 rates (figure 5.15). Enrollment in resource-poor Eurasian countries has remained broadly



Source: Datastream and World Bank staff calculations.

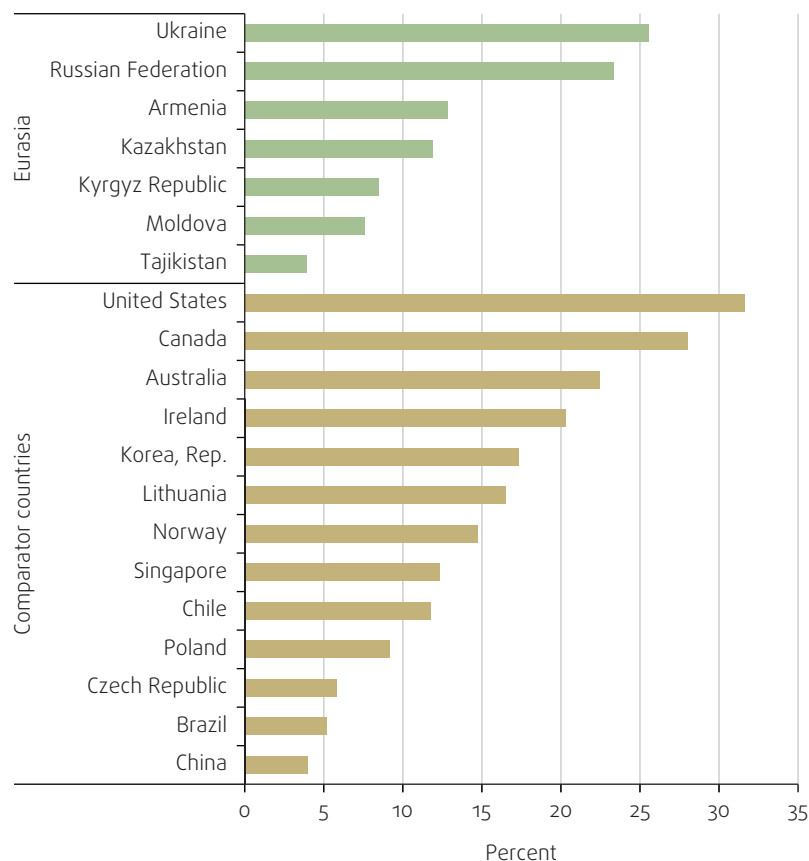
unchanged and high for their per capita income, but it may be overtaken by outcomes in developing East Asia. While secondary enrollment in resource-poor Eurasia rose about 5 percentage points after 1995, it surged 20 percentage points in the EAP-12.

A large share of Eurasian secondary students completes vocational education programs. One of the Soviet legacies is a large number of vocational schools originally designed to supply trained workers to state-owned enterprises (Sondergaard and Murthi 2012). Recent data on completion of vocational education are unavailable, but information on current enrollments are revealing. In Azerbaijan, Belarus, and Uzbekistan, about 15–20 percent of secondary-school students are enrolled in vocational education and training programs. While this proportion is much lower than the two-thirds of secondary students enrolled in vocational schools in the late 1980s, it is still much steeper than that of comparators. It also tends to produce narrow labor market skill sets (World Bank 2009b, 2011a). While this type of specialization was thought to be suitable in the past—or in countries such as Germany and the Czech Republic, where education institutions collaborate very closely with businesses on the skills needed—recent research has questioned a narrowly trained worker’s ability to adapt to fast-changing labor market conditions and production technologies.

Despite fairly strong secondary school attainment rates, the stock of tertiary graduates varies considerably across Eurasia. In 1998, about 12 percent of the Soviet population 20 years or older had completed higher education, a proportion commensurate with rates in Western Europe at the time. Fifteen years later, Eurasia’s attainment levels are widely dispersed. The tertiary education attainment rates for people at least 24 years old in Russia and Ukraine (about 25 percent) are surpassed only by those in the United States and Canada and exceed those in Australia, Ireland, Korea, and Norway (figure 5.16). In resource-rich Kazakhstan, university graduates account for 12 percent of adults, whereas

**Figure 5.16. Tertiary education attainment rates in the Russian Federation and Ukraine are among the highest in the world**

(Percent of 24- to 65-year-olds who have completed tertiary education, 2010)

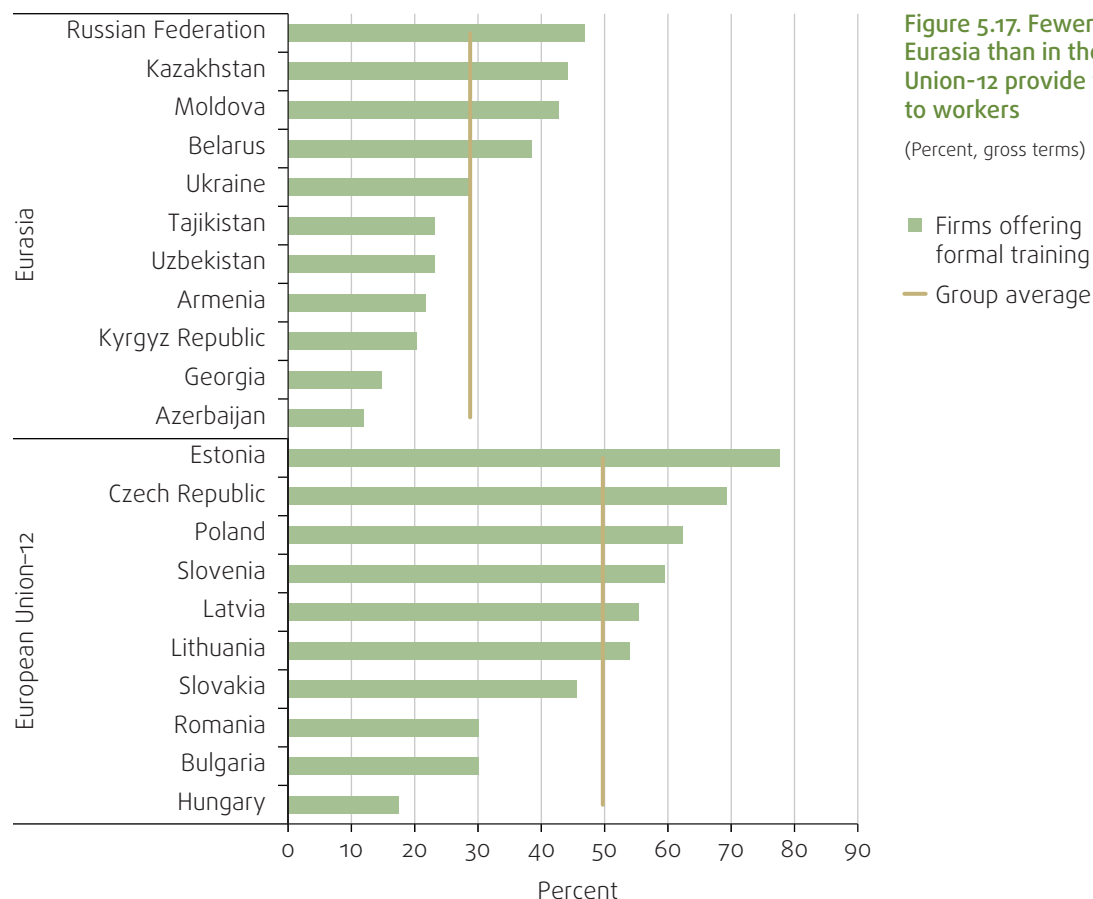


Source: World Bank staff calculations based on Barro and Lee 2011.

in resource-poor Eurasia the median attainment rate is about 9 percent—and has been declining since 1995. Attainment rates in the comparator country groupings—the EAP-12 and the EU-12—have, by contrast, risen steadily.

Learning increasingly takes place after completion of secondary or tertiary education—whether during job searches, on the job, or as part of job-related formal training. In the United States, it is estimated that on-the-job training contributes around a fourth to a half of all human capital (Heckman, Lochner, and Taber 1998). Studies on countries in the Organisation for Economic Co-operation and Development (OECD) demonstrate that adult education and training sharply lift worker productivity.<sup>11</sup>

Few Eurasian firms offer formal training programs to full-time employees, despite international evidence about the importance of post-formal education. While almost 70 percent of Czech firms and 60 percent of Polish firms offer formal training to their full-time employees, only about 45 percent of firms in resource-rich Russia and Kazakhstan do (figure 5.17). In Azerbaijan, Georgia, and the Kyrgyz Republic, less than 20 percent of firms do.



Source: World Bank staff calculations based on EBRD 2009.

### The quality of education is low

The high number of years spent in school and solid enrollment rates in secondary and tertiary levels do not automatically translate into high-quality instruction. Indeed, all six countries of Eurasia other than Russia that participate in PISA perform worse than their international peers.<sup>12</sup> Performance is poor both in resource-rich Azerbaijan and Kazakhstan and in resource-poor Kyrgyz Republic and Georgia: three-fourths of students entering secondary education are assessed as functionally illiterate (figures 5.18 and 5.19).<sup>13</sup> Kazakhstan's GDP per capita is comparable to Costa Rica's, but its PISA scores are about 7 percent lower. Azerbaijan's GDP per capita is about 20 percent higher than Thailand's, but its PISA scores are about 8 percent lower. While there is a chance that secondary schools in the region will reverse part of this deficiency, the danger is that most may not.

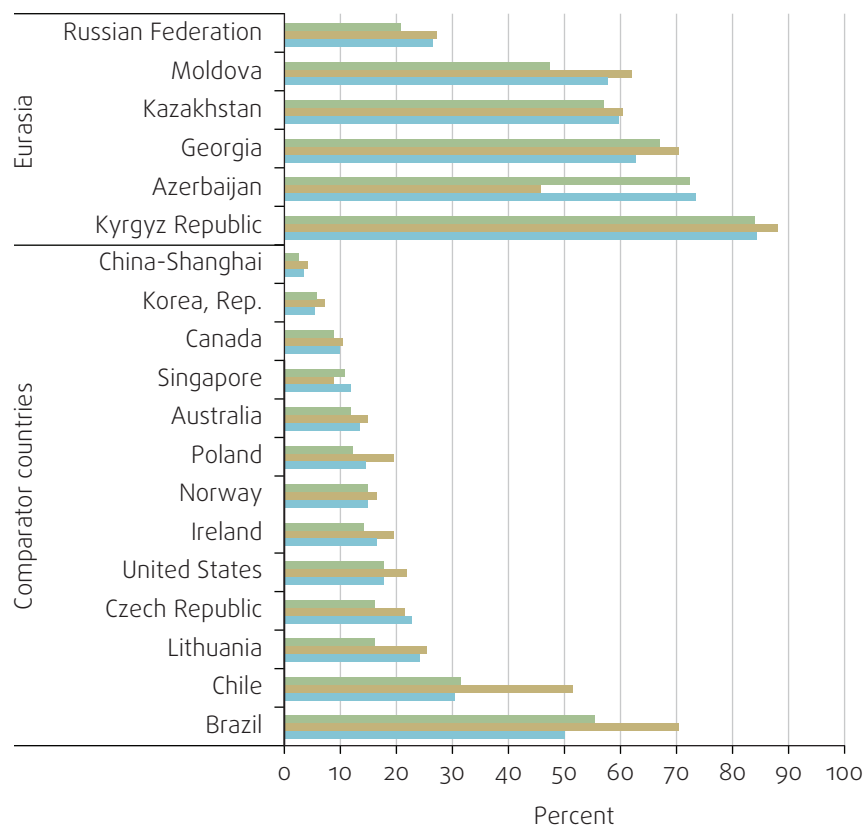
As with physical capital, a lack of resources does not seem to be the cause for the poor quality of education in resource-rich Eurasia (outside Russia). Brazil,



**Figure 5.18. A large portion of Eurasian 15-year-olds are functionally illiterate**

(Scores of 2 or less on the Programme for International Student Assessment, 2009)

■ Science  
■ Mathematics  
■ Reading

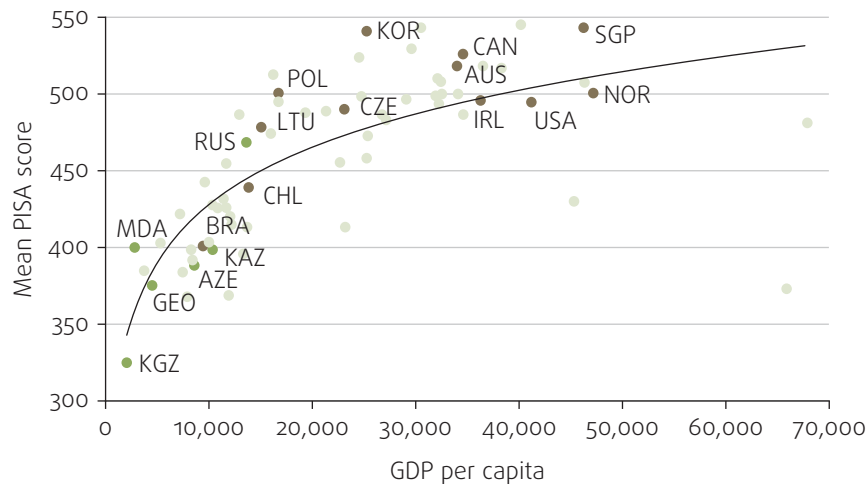


Source: World Bank staff calculations based on data from the Programme for International Student Assessment (2009–10).

another resource-rich country with per capita GDP similar to Kazakhstan's, has functional illiteracy rates only modestly lower than resource-rich Eurasia (outside Russia), as does Malaysia. Indeed, the rating on the quality of institutions—measured by the World Bank's Country Policy and Institutional Assessment among resource-rich countries—and the share of functionally illiterate 15-year-olds has a significant and high negative correlation.

Only a small fraction of Eurasian 15-year-olds are assessed as high performers by the PISA criteria. The OECD defines level 4 on the PISA scale as students who can use well-developed skills and reason flexibly, with some insight, in these contexts. These students can construct and communicate explanations and arguments based on their interpretations, arguments, and actions. In resource-rich Azerbaijan, less than 1 percent of 15-year-olds are high performers in reading, while in Georgia, Kazakhstan, the Kyrgyz Republic, and Moldova the share is a little below 5 percent. Only Russia scores near (but still below) the EU-12 and the EAP-12 (figure 5.19).

And so, many of Eurasia's secondary school students may leave school with low-quality education and skills that are no match for economies integrating



**Figure 5.19. Programme for International Student Assessment (PISA) scores in Azerbaijan and Kazakhstan are below those in countries with similar per capita income**

(Mean scores versus GDP per capita, purchasing power parity)

- Eurasia
- Comparator countries
- Other countries

Sources: World Bank calculations based on data from the Programme for International Student Assessment (2009–10) and World Bank, n.d.d.

globally. A recent survey in Russia found that “80 percent of Russians want their children to get a higher education and only 12 percent believe that success in life can be achieved without a university degree.”<sup>14</sup> And yet none of the Russian universities are in the top 100 worldwide—and only 2 are in the top 500, according to the 2010 Academic Ranking of World Universities. The United States has 154 universities in the top 500, Canada has 23, Australia has 17, and East Asia has 71.<sup>15</sup>

As with physical capital, Russia is also a significant positive outlier on human capital. It performs much better than the rest of Eurasia on education quality and much better than countries with similar per capita incomes. All Russia’s federal districts perform better than the rest of Eurasia and resource-rich Brazil, Chile, and Malaysia. Russia’s education quality has much to do with the history and quality of its education institutions and policies but little to do with the overall institutional environment, where Russia tends to lag behind those three countries.

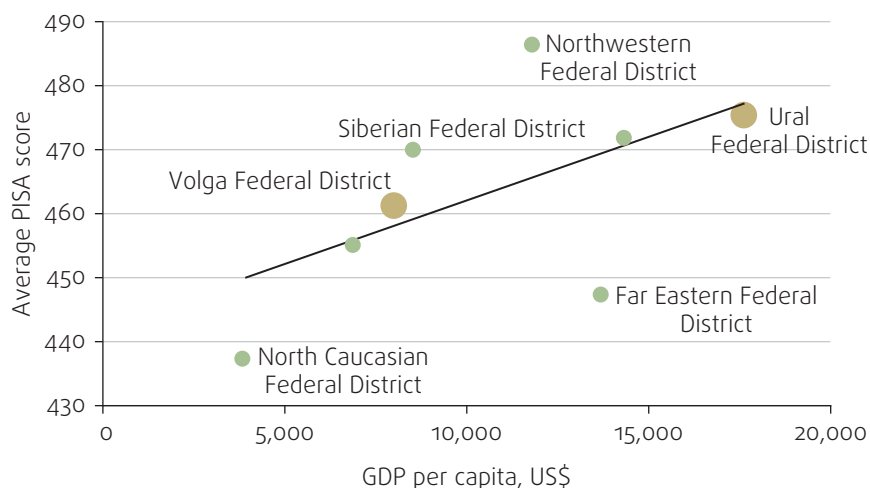
Education quality varies far less in Russia than in Eurasia as a whole. Higher per capita income is strongly correlated with higher PISA scores, but the Urals district, which accounts for most of Russia’s hydrocarbon production, does not have the highest scores (figure 5.20). Remoteness and conflict appear to be the key forces behind the two districts with the lowest scores.

### The skills of job seekers appear inadequate

Companies are voicing strong concerns that Eurasia’s low-quality human capital is increasingly an obstacle to doing business. The Business Environment and Enterprise Performance Survey reveals that 36 percent of Eurasian firms consider worker education and skills a “major” or “very severe” constraint to firm growth in Eurasia (figure 5.21).<sup>16</sup> About half of surveyed firms in resource-rich Kazakhstan and Russia identify inadequate education and skills as a major

**Figure 5.20. Programme for International Student Assessment (PISA) scores vary across the Russian federal districts, but resource abundance is not a major factor**

(Average scores, 2009)

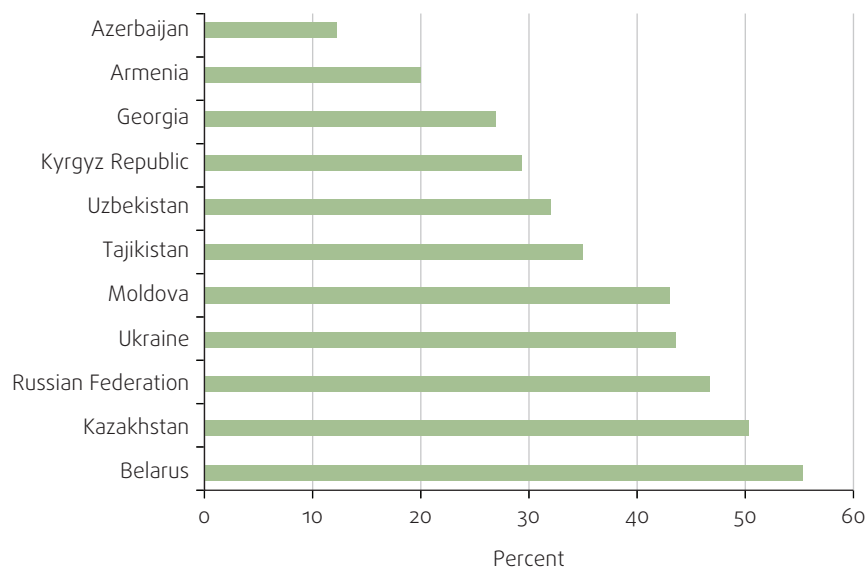


Source: World Bank staff calculations based on data from the Programme for International Student Assessment (2009).

Note: The two districts that account for almost all of the Russian Federation’s hydrocarbon production are represented by brown dots.

**Figure 5.21. Firms are unhappy about poor skills**

(Percent of firms identifying inadequately educated workers as a “major” or “very severe” constraint)



Source: World Bank staff calculations based on Business Environment and Enterprise Performance Survey (EBRD 2009).

constraint to firm growth. Not surprisingly, innovating firms are even more concerned about the skills constraints (EBRD 2012).

There are at least two reasons to be cautious about these results, however. First, these results present relative rankings in countries and do not allow for rigorous cross-country comparisons. For example, Russian workers are very

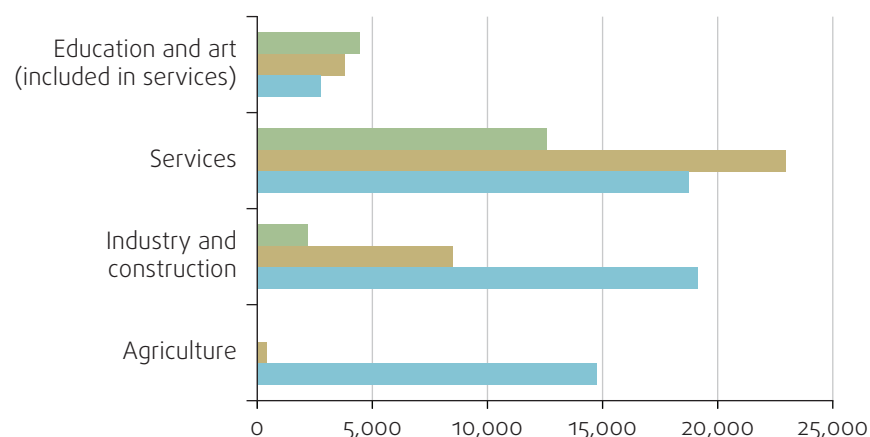
likely more endowed with human capital than workers in the Kyrgyz Republic. However, the 2008 Business Environment and Enterprise Performance Survey ranked skills and education of workers as the most severe problem affecting businesses in Russia, while the factor ranked eighth in the Kyrgyz Republic, with electricity, corruption, and tax rates in the top three slots. Second, for a variety of reasons, including externalities and segmented or otherwise inefficient labor markets, firms may be reluctant to pay a market price for better skills.<sup>17</sup> Few firms in Eurasia are willing to pay for proper worker training, as many expect training to be delivered by the education system. Yet even fewer firms have effective links to secondary and tertiary institutions to try and correct the problems of inadequate skills.

More specifically, firms point out three aspects of worker skills. At the top of employers' concerns is the disparity between the number of students who graduate in each field of study and market demand for hard skills. Firms also want their workers to possess more soft skills. Finally, supervisors and managers demonstrate weak management skills. We consider these in turn.

### Many students have outdated specialties

The demand for highly skilled labor has increased in Eurasia over the last 20 years, as the structure of production has shifted rapidly. Yet education institutions still produce graduates with narrow skills or specialized in fields that are no longer in high demand. There are few signs that either institutions or students are adjusting.

In Azerbaijan, for example, almost 15,000 jobs were created in agriculture over 2007–11 (including subsistence farming), but there were fewer than 500 graduates from higher education or specialized secondary education institutions with specialties in the sector (figure 5.22). In Kazakhstan, by contrast, almost 19,000 agriculture specialists graduated from vocational and higher education schools over 2005–10, even though fewer than 2,000 agriculture jobs were created during that period. Some inflexibility is to be expected given the inability of education systems to adjust immediately to every change in the



**Figure 5.22. The fields creating jobs and those in which students graduate show a mismatch**

(Azerbaijan, average for 2007–11)

- Specialized secondary education graduates
- Higher education graduates
- Jobs created (net)

Source: State Statistical Committee of the Republic of Azerbaijan.

labor market, but the generally substantial inertia in higher or vocational schools is contributing to skills mismatches.

### Many job seekers lack the required soft skills

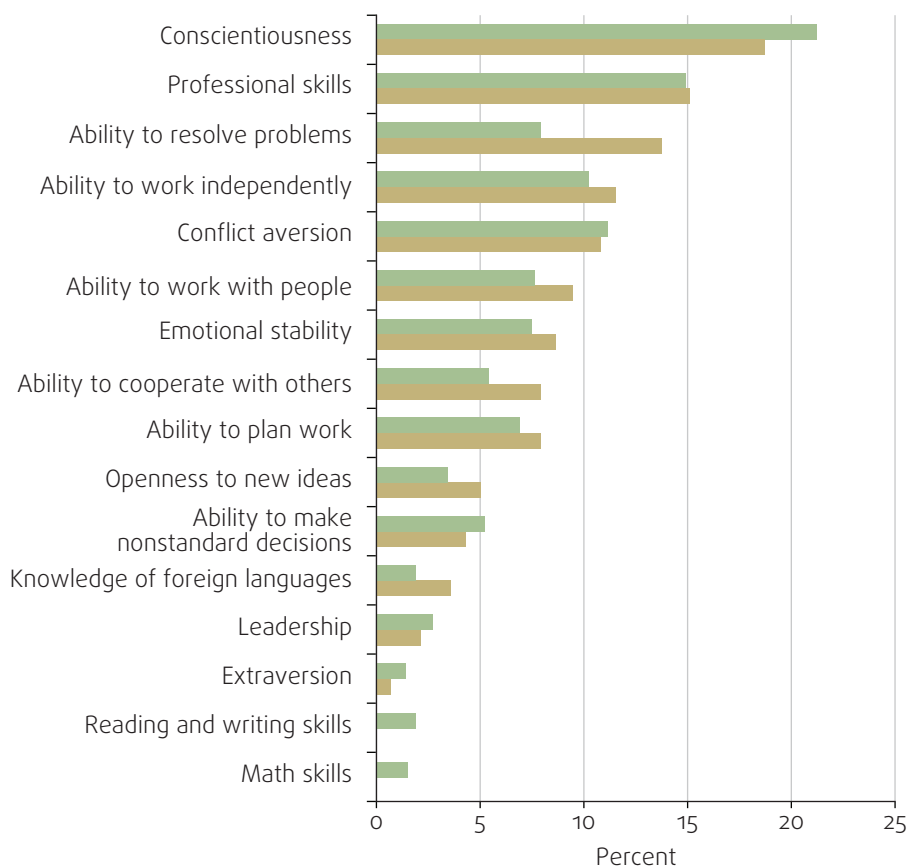
Employers increasingly value soft skills in their employees. These skills include attentiveness, perseverance, impulse control, and sociability. There is ample evidence from around the world that soft skills predict success in life (Heckman and Kautz 2012). However, the Eurasian education system has yet to adapt to this reality by including soft skill-building.

Surveys across Eurasia confirm the value of soft skills to employers. A sample of 500 employers in Kazakhstan rated communication skills, analytical thinking, problem-solving skills, and customer relations skills as fairly important (Ivaschenko 2008). In Russia, employers rated soft skills highly among skills of blue-collar workers. Conscientiousness, which includes an aptitude for efficiency, persistence, and self-discipline, and the ability to work independently are among the traits most desirable to employers, but these traits are lacking among blue-collar workers (figure 5.23). In Armenia, firms ranked soft skills as highly as hard skills among workers in the hospitality industry, highly

**Figure 5.23. Firms in the Russian Federation are unhappy about gaps in soft skills among blue-collar workers**

(Percent of firms identifying a lack of particular skills)

■ Traditional firms  
■ Innovative firms



Source: World Bank, forthcoming.

### Box 5.1. The European Bank for Reconstruction and Development's Management, Organisation and Innovation Survey

The Management, Organisation and Innovation Survey, conducted by the European Bank for Reconstruction and Development (EBRD), was used to gauge the management dimension of human capital in Eurasia.

The survey assesses management practices in 1,800 manufacturing establishments with 50–5,000 employees in 10 transition countries (Belarus, Bulgaria, Kazakhstan, Lithuania, Poland, Romania, the Russian Federation, Serbia, Ukraine, and Uzbekistan), Germany, and India. The survey was targeted at factory, production, or operations

managers close to day-to-day operations of the firm but senior enough to have an overview of management practices. Interviews were conducted face-to-face in the manager's native language.

The survey used three questions that are of utmost importance for the management dimension. One, what do you think about the people management in your firm? Two, what do you think about the organization management in your firm? And three, what do you think about the overall management in your firm?

*Source:* EBRD 2009.

rating skills in customer service, communication, and teamwork, along with knowledge of the history and culture of the country and skills in information technology, sales, and marketing.

### Management skills in Eurasia are poor

Management plays a key role in determining the success or failure of a firm. Bloom and Van Reenen (2007) show that management practices correlate strongly with labor productivity, sales growth, and return on capital employed. The authors collected management practice data from 732 medium-size firms in France, Germany, the United Kingdom, and the United States and found that measures of managerial practice correlated strongly with firm-level productivity, profitability, and survival rates. A similar survey was carried out in some Eastern Europe and Eurasian countries by the EBRD in 2008–09 (box 5.1).

In that assessment, management scores in Kazakhstan, Russia, and Uzbekistan were among the lowest (figure 5.24) (EBRD 2009). Managers in Belarus and Ukraine fared a little better. One aspect of management skills that needs improvement is the ability of managers to consult with workers. In Russia, Kazakhstan, and Ukraine, only half as many managers consult workers as in Germany, Lithuania, and Poland.

### Health outcomes have improved little in four decades

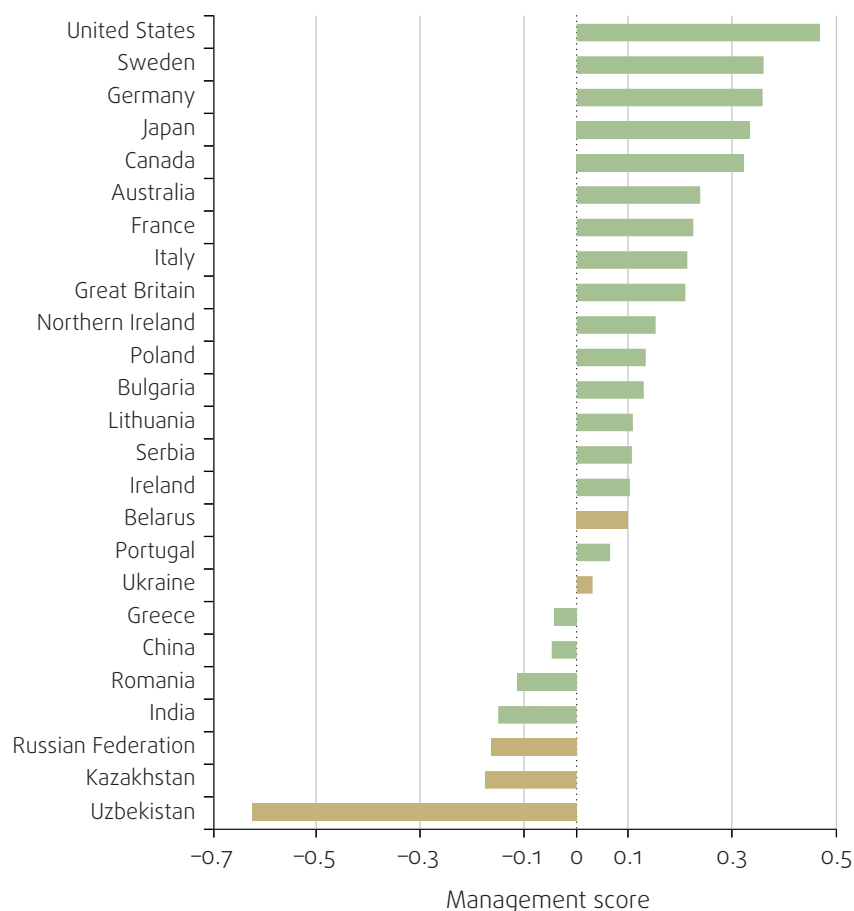
Health is a crucial component of human capital. Longer lives, made more productive by reduced incidence of disease, are typically a goal of public policy in all countries. Eurasia's goal is no different.

Four decades ago, health outcomes in Eurasia were similar to those in comparators, but progress since has been disappointing. One measure of health outcomes, life expectancy at birth, was high in Eurasia. In 1970, Russia's 68 years was comparable to Singapore's, and Ukraine's 70 years was comparable to the United States'. In 2010, Russia's life expectancy had fallen to about

**Figure 5.24. Management scores at Eurasian firms are low**

(Relative to the survey average set at zero)

■ Non-Eurasian firms  
■ Eurasian firms



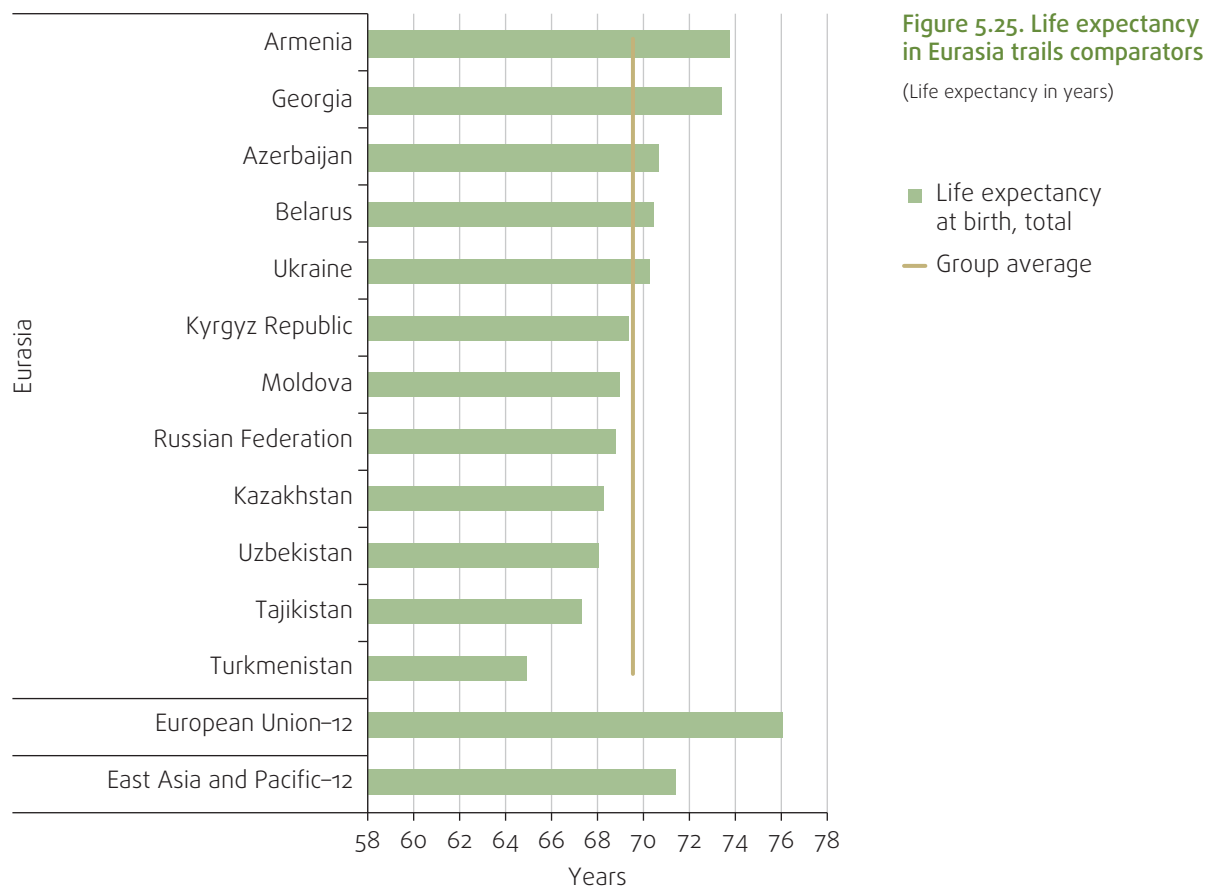
Sources: EBRD 2012 based on EBRD 2009.

12.8 years lower than Singapore's, and Ukraine's was almost eight years lower than the United States' (figure 5.25). These alarming health outcomes are the norm rather than the exception in Eurasia. In Belarus, Russia, and Ukraine, there has been little change in life expectancy in four decades. In Kazakhstan and the Kyrgyz Republic, there was little progress after the transition.

Child mortality is higher in Eurasia than in comparator countries. In resource-rich Azerbaijan, Turkmenistan, and Uzbekistan, the under-five mortality rate is 46–54 per 1,000 live births—30–60 percent higher than in countries with similar levels of per capita GDP (most of which are resource-poor)—but just about 11 in Russia and Ukraine and fewer than 5 in Norway and Singapore (figure 5.26).

## Demographics and migration create challenges

Eurasia will lose a sizable part of its working-age population over the next few decades. Current migration and fertility trends indicate that by 2050 the



Source: World Bank World Development Indicators.

working-age population is expected to increase only in Azerbaijan and Central Asia, by about 14.9 million, but to decrease in the rest of Eurasia by about 41.4 million. Russia alone could lose more than a quarter of its population (figure 5.27).

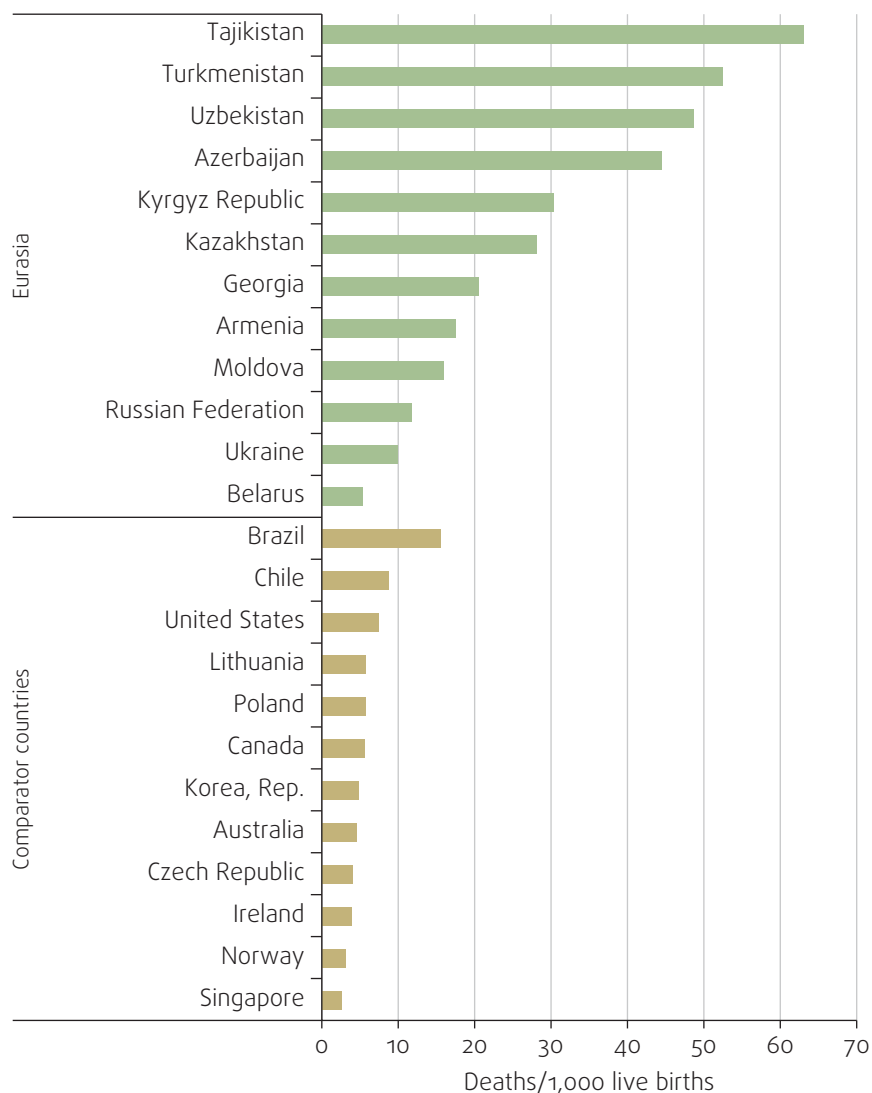
The demographic transition will have huge implications for growth and productivity beyond the fiscal impact, through outlays for pensions and health care for the aging, as well as spending on education to train or retrain migrant workers. For Russia to maintain a constant GDP given the decline in employment that is expected to accompany the reduction in the working-age population, labor productivity will need to rise 20 percent over 2011–50 (World Bank 2012a).

Immigration and emigration patterns affect a country's human capital stock. These patterns can also affect the skills mix of the labor force. International labor movements prompt an examination of how skills deficits or surpluses influence migration patterns across countries in Eurasia and beyond. The stock of emigrants from many Eurasian countries is high, and Russia is the most common destination. At present, about 28 percent of Armenians live outside their country, as do 24 percent of Georgians and 23 percent of Kazakhstanis.



### Figure 5.26. Child mortality rates in Eurasia are high

(Number of deaths for children ages 5 or younger per 1,000 live births, 2011)

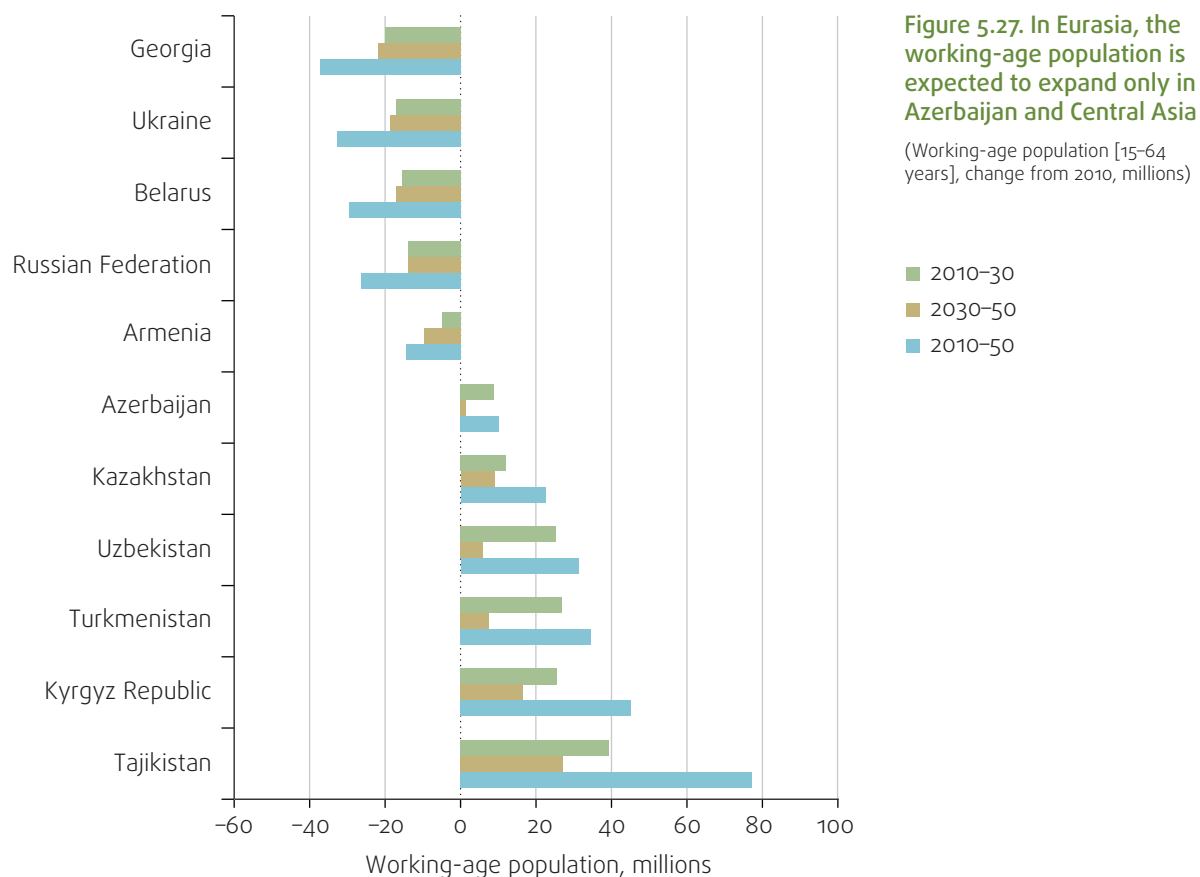


Sources: World Bank World Development Indicators and WHO World Health Statistics.

### Government spending on education is low for most countries in Eurasia

Government education spending in Eurasia is as large relative to GDP as in developing East Asia, but it is substantially lower than in the EU-12. At about 4 percent of GDP, government outlays on education in Eurasia are similar to what Korea spent in the 1970s and early 1980s and higher than what Singapore spends today (figure 5.28).

If private spending in East Asia is included, however, Eurasian education spending compares more unfavorably. In Singapore, for example, government spending accounts for about a quarter of overall outlays on education. Out-



Source: World Bank World Development Indicators.

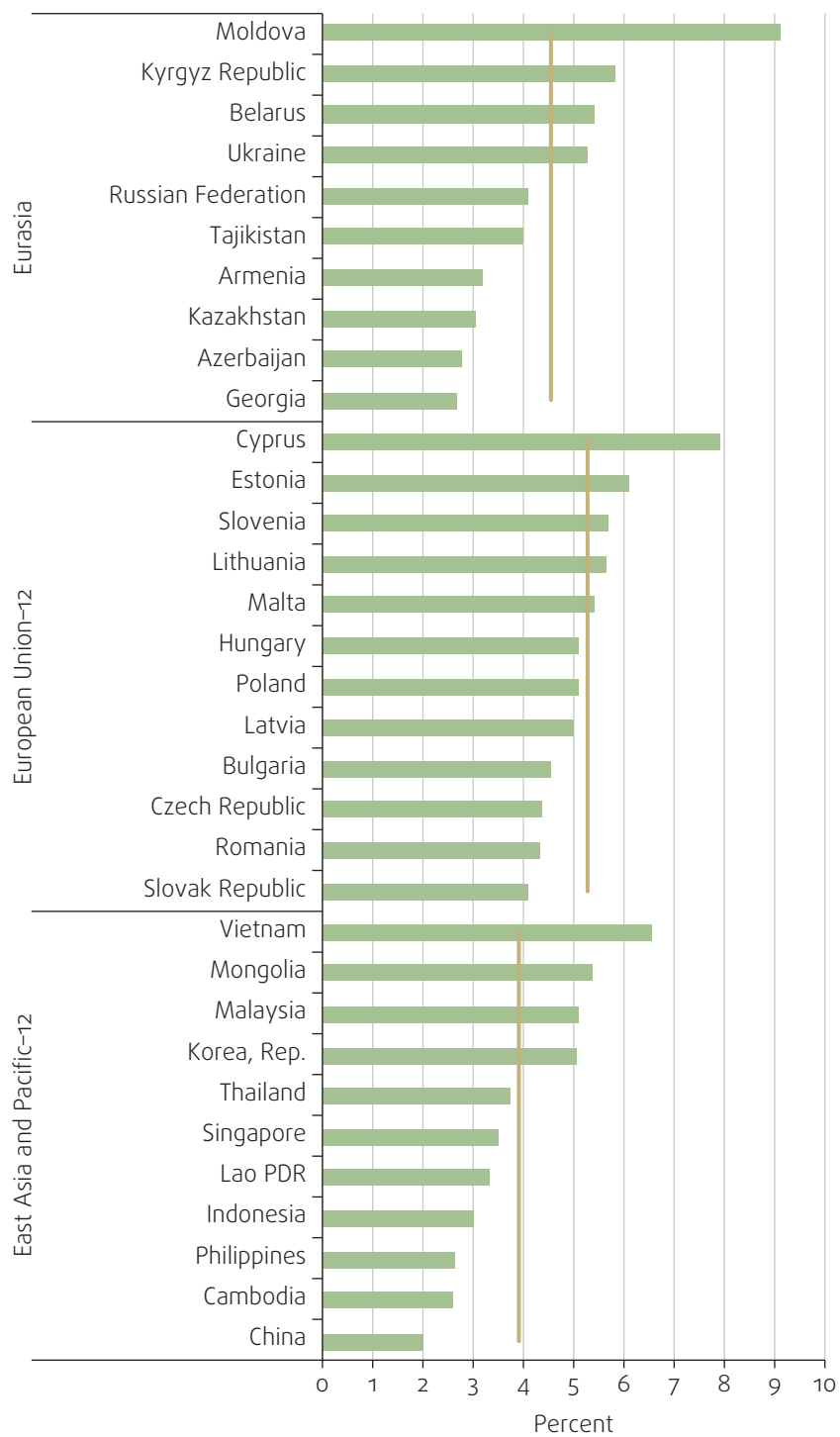
of-pocket spending in Eurasia is modest through high school and has only recently started to rise at the tertiary level. Eurasia's low education spending is in an environment of low overall human capital, exacerbating the difficulty in diversifying its assets from natural resources.

With Russia the exception, Eurasia is less efficient at converting public education resources into education outcomes, such as functional literacy. Within Eurasia, the resource-rich countries spend almost 1.25 percent of GDP less than the resource-poor countries. Most Eurasian countries, especially the resource-rich, spend less than predicted by their GDP per capita or implied by the need to diversify their assets. And apart from Russia, for what they spend they achieve lower functional literacy than predicted—similar to Brazil on both aspects. Russia is closer to Central or Western European countries, spending less but achieving more (figure 5.29). Korea, Lithuania, and Poland are among the better performers on this. Azerbaijan, Kazakhstan, the Kyrgyz Republic, and Moldova perform more poorly than other Eurasian and comparator countries, implying that they need to improve their public spending efficiency for greater education investments to work.

**Figure 5.28. For resource-rich Eurasia, education spending is low**

(Percent of GDP, average over 2008–10)

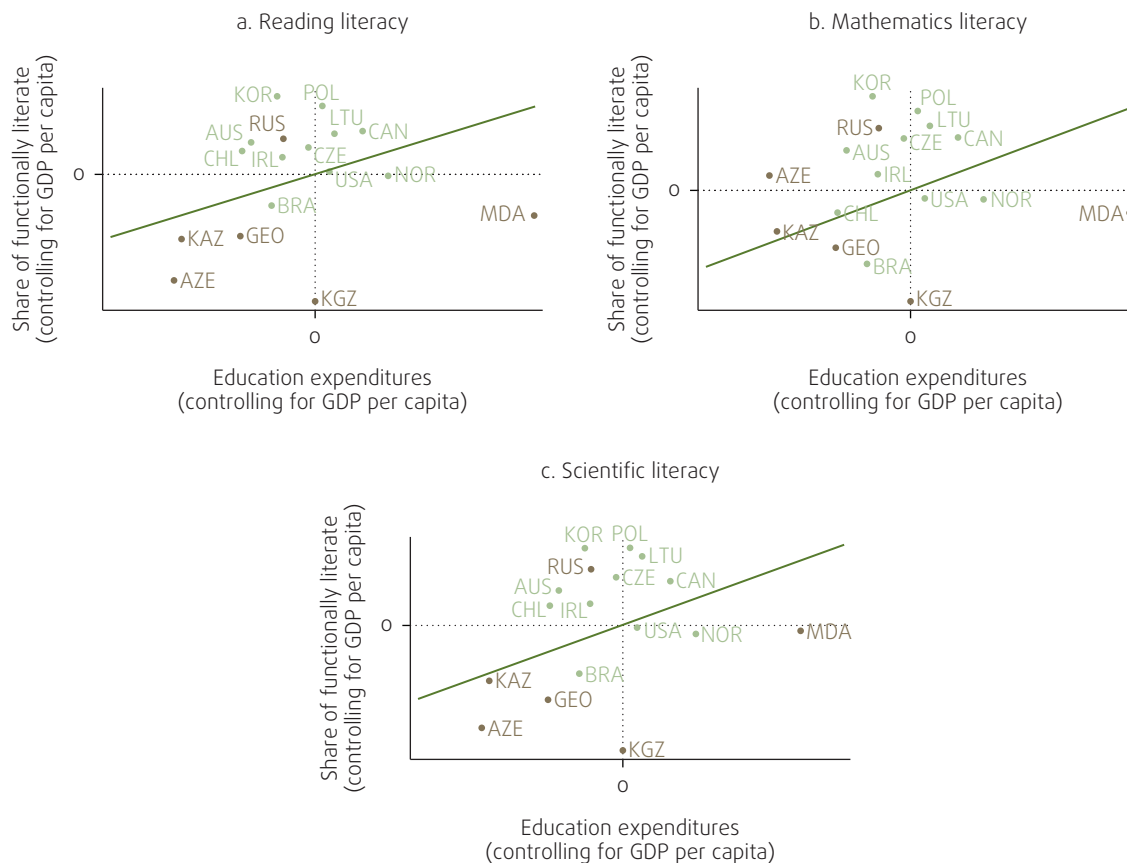
■ Government education spending, % of GDP  
 — Group average



Source: World Bank, n.d.

### Figure 5.29. Plenty of resources but low spending and poor results, except in the Russian Federation

(Functional literacy, or scores of 2 or greater on the Programme for International Student Assessment [PISA], and education spending as a percent of GDP, 2009)



Sources: World Bank staff calculations based on PISA, World Development Indicators, and EdStats.

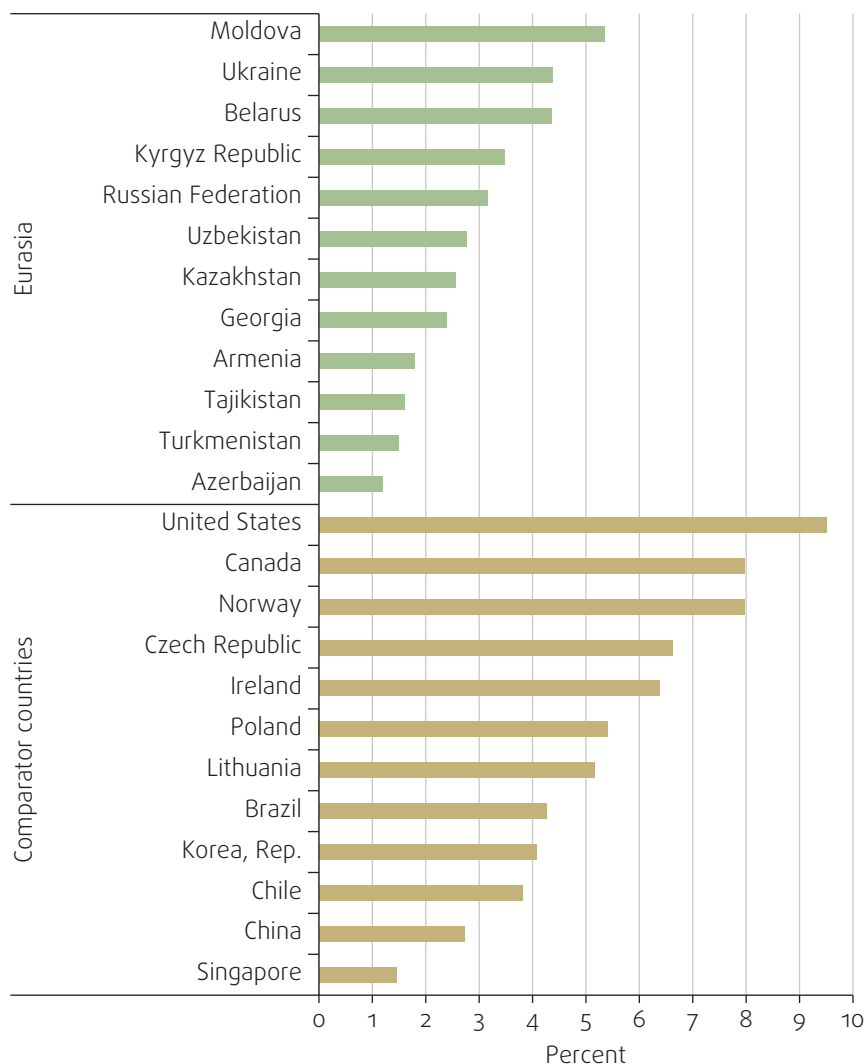
Note: Education expenditures and the share of the functionally literate population among Programme for International Student Assessment test takers are given as the percent deviation from the rate predicted by gross domestic product (GDP) per capita.

### Government spending on health is low

Governments in Eurasia spend less on health than do the EU member states or other transition countries. As with education, resource-rich countries spend less than resource-poor ones. Azerbaijan spends just 1.2 percent of its GDP on health, and Kazakhstan, Uzbekistan, and Russia spend 2.5–3.2 percent. (Although these figures are almost twice as large when measured relative to non-oil GDP, they are still low in most resource-rich countries.) Most governments around the world spend about 5–10 percent of GDP on health, but in Eurasia only Moldova hits the 5 percent threshold (figure 5.30).

**Figure 5.30. Government spending on health is lower in Eurasia than in comparator countries**

(Percent of GDP, 2010)



Source: World Bank staff calculations based on WHO World Health Statistics 2013.

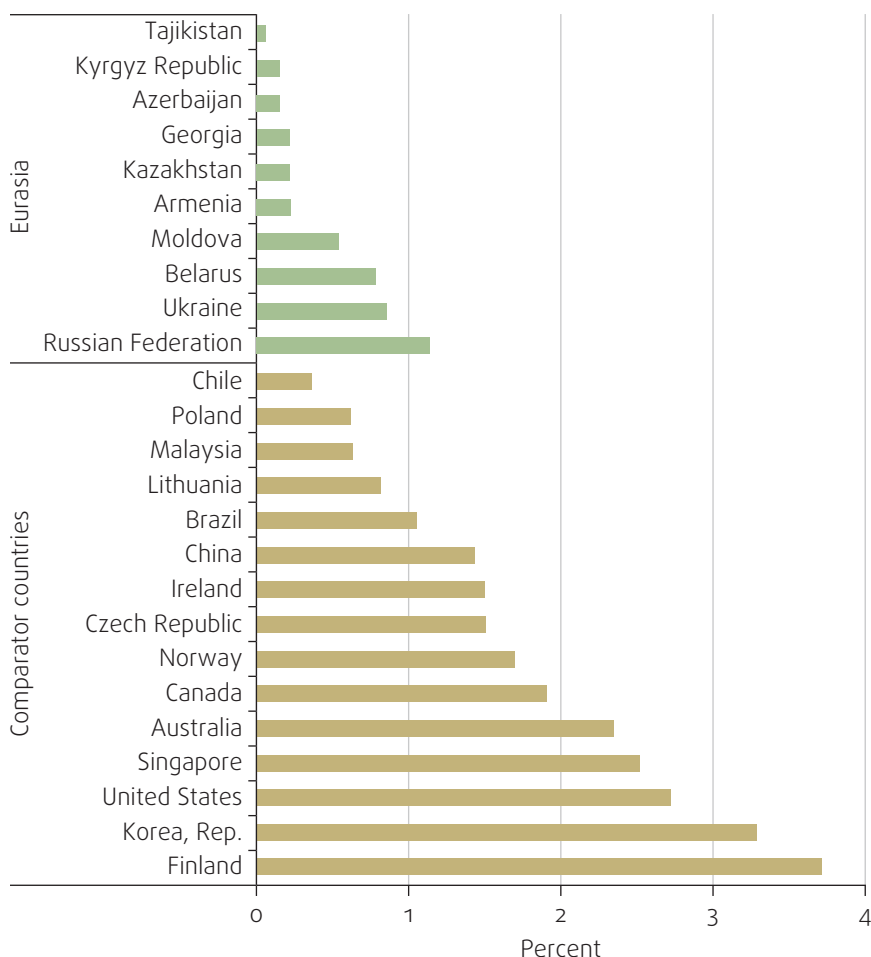
Eurasian countries that spend more public resources on health care as a share of GDP achieve lower mortality rates and higher life expectancy. This positive relationship holds even when adjusting for the effects of GDP per capita—a key determinant of a healthy life—although resource-rich countries do better at converting resources into desirable outcomes. For example, resource-rich Kazakhstan, Russia, Turkmenistan, and Uzbekistan do better than the Eurasian average at converting public health spending into increases in life expectancy, assuming all other factors remain unchanged. Similarly, Azerbaijan, Kazakhstan, and Russia do better than Eurasia on average on disability-adjusted life

expectancy. These outcomes are at rates of health spending much lower than in resource-poor Eurasia and in global comparators.

### Eurasia underinvests in research and development

Future economic growth depends on developing and adopting new technologies. R&D—both fundamental and applied—is the process by which firms master the design and production of goods and services that are new to them, irrespective of whether they are new to the competition (Mytelka 2000). The amount of R&D spending is a broad indicator of a country's capacity for innovation.

Eurasia invests little in R&D. At about 0.4 percent of GDP, its public and private spending on R&D is lower than Latin America's (0.6 percent), Brazil's (1.1 percent), and China's (1.4 percent), and well below the global average of



**Figure 5.31. Eurasia invests little in research and development**

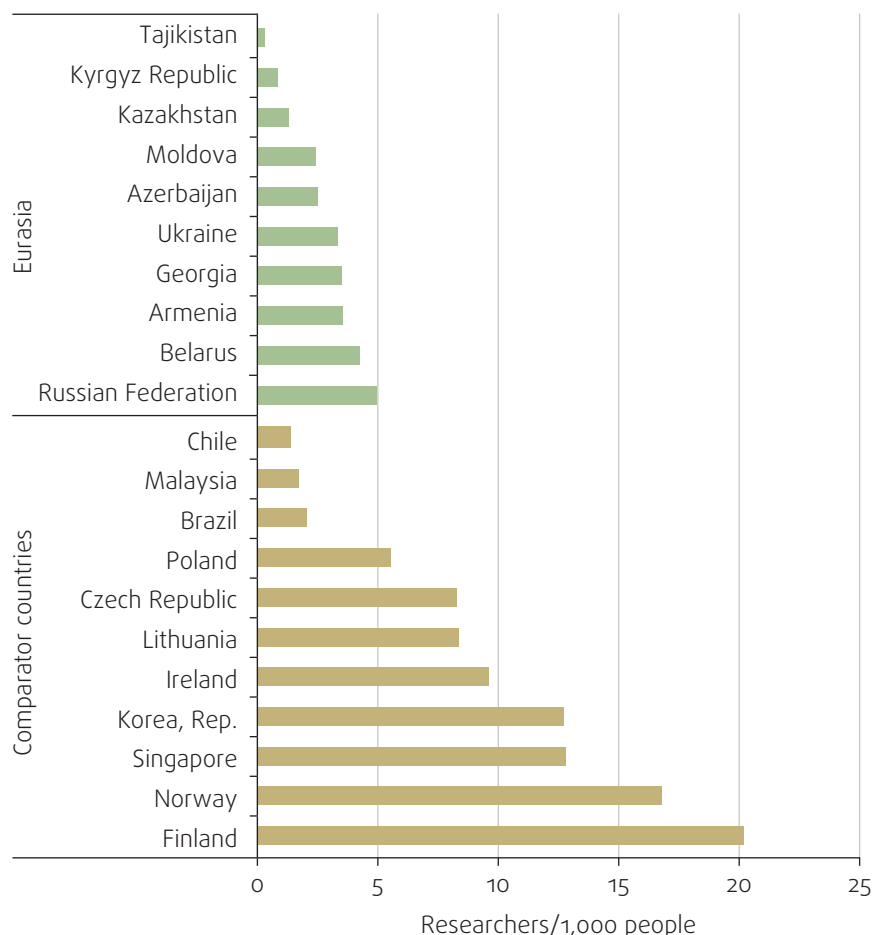
(Percent of GDP, 2007-09 average)

Source: World Bank staff calculations based on data from the UNESCO Institute for Statistics database.

Note: GDP = gross domestic product.

**Figure 5.32. Eurasia has too few researchers**

(Researchers per 1,000 people in the labor force)

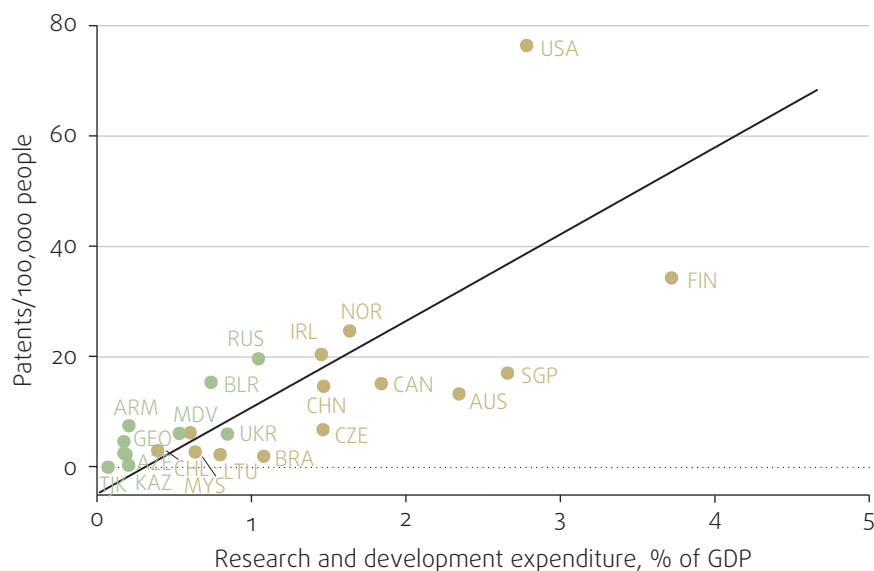


Source: World Bank staff calculations based on data from the UNESCO Institute for Statistics database.

2.4 percent (figure 5.31) (Goldberg and others 2011). Russia invests on par with Brazil and China.

The bulk of R&D in Eurasia is financed by the government and carried out by public research institutes, both legacies of the Soviet Union. State universities do very little R&D, and spending by private universities is minimal. With underdeveloped links among the institutes, universities, and firms, much research carried out by the public research institutes remains detached from job seekers and private firms, hampering innovation.

A massive brain drain in the 1990s (which continues at a slower pace) has culled Eurasia's researcher base. Much reduced funding for R&D—to barely a fifth that at the start of the transition—has also cut the number of researchers (figure 5.32).<sup>18</sup> In Russia, their number declined by more than half from the start of the transition, and the rate per 1,000 people in the labor force is just a fourth that in Finland. Falls in Belarus and Ukraine were equally dramatic. The



**Figure 5.33. Eurasia registers more patents than do comparators relative to spending on research and development**

(Patents per 100,000 people versus outlays on research and development, percent of GDP, 2008)

- Eurasia
- Comparator countries
- Fitted values

Sources: World Bank staff calculations based on data from the UNESCO Institute for Statistics database and World Bank, n.d.d.

paucity of researchers and funding does not position Eurasia well for increased homegrown innovation—fewer researchers generate less output. Eurasia’s share of scientific publications declined to 3.3 percent of the world total by 2008 from 4.6 percent in 2002, while the share produced by developing countries overall rose from 20 percent to 30 percent. Russia’s 2.7 percent share of the global total is now similar to that in resource-rich Brazil.

Most of the R&D in Eurasia remains focused on fundamental research, resulting in more patents than in the EU-12 and the EAP-12, adjusted for the level of R&D (figure 5.33). Armenia, Belarus, and Russia seem to be more productive than their comparator countries. Russia and Singapore, for example, have registered about the same number of patents per 100,000 people, though Singapore spends more than twice as much as Russia relative to GDP. The number of patents is only one measure of performance, while the “value” of the patent, measuring the stream of revenue a product or an innovation might command in the market, would be a more appropriate measure.

### What governments can do: spend better and spend more

Human capital is a major constraint to growth in Eurasia. On the education side, poor outcomes, frequent provision of a university education without a job-market purpose, and rising concerns about inadequate skills are jolting the authorities into action.

Most countries—including all resource-rich countries in Eurasia—have room to spend more on education. Efficiency needs to be improved as well. At the secondary level, for example, there are too few children per teacher, resulting in much lower teacher salaries and inefficient school sizes. Korea and Singapore excelled in education with twice the number of pupils per teacher than Russia.



The arrangements could be supported by financial instruments for performance outcomes, including block grants to schools in return for meeting learning outcomes (Sondergaard and Murthi 2012). Closer to home, education reforms in Poland produced substantial improvements in education outcomes (box 5.2).

Increased education spending needs to be accompanied by robust monitoring and evaluation mechanisms based on data in order to understand what contributes to desirable outcomes. For example, recent research on Russia demonstrated that quantitative inputs, such as pupil-teacher ratio, average school size, and number of schools, are significantly correlated with costs per student but not with education outcomes (World Bank 2011c). At the same time, education outcomes are found to be better in regions with a lower share of students in multiple shifts and a lower share of teachers past retirement age, which both measure the quality of inputs.

Delays in cognitive development during the early years of a child's life lead to reduced employability, productivity, and overall welfare. Russia and Ukraine have achieved good coverage of preprimary schools, but most other Eurasian countries are behind (figure 5.34). Chile, the Czech Republic, and Korea, relevant comparators for Eurasia, all have markedly higher preprimary gross enrollment rates. Governments should consider expanding the coverage of early childhood development in much of Eurasia. The costs of these programs generally dwarf the benefits. Nobel laureate James Heckman (2011) estimates that every dollar invested in high-quality early childhood development yields a 7–10 percent annual return, while early childhood development provided to disadvantaged children has even higher yields.

Access to high-quality tertiary education also needs to be expanded across Eurasia. With enrollment rates (other than in Russia) well below those in comparator countries, there is substantial room for increasing the reach of tertiary education in most Eurasian countries. But expanding access without quality (including in Russia) would be a mistake, and much can be done about quality.

### Box 5.2. Education reforms in Poland

The improvement in Poland's student performance has been impressive. Poland's Programme for International Student Assessment reading score improved from 479 in 2000, below the Organisation for Economic Co-operation and Development average, to 500 in 2009, above that average. These test scores rank ninth in the world for reading, ahead of France, Germany, Sweden, the United Kingdom, and the United States.

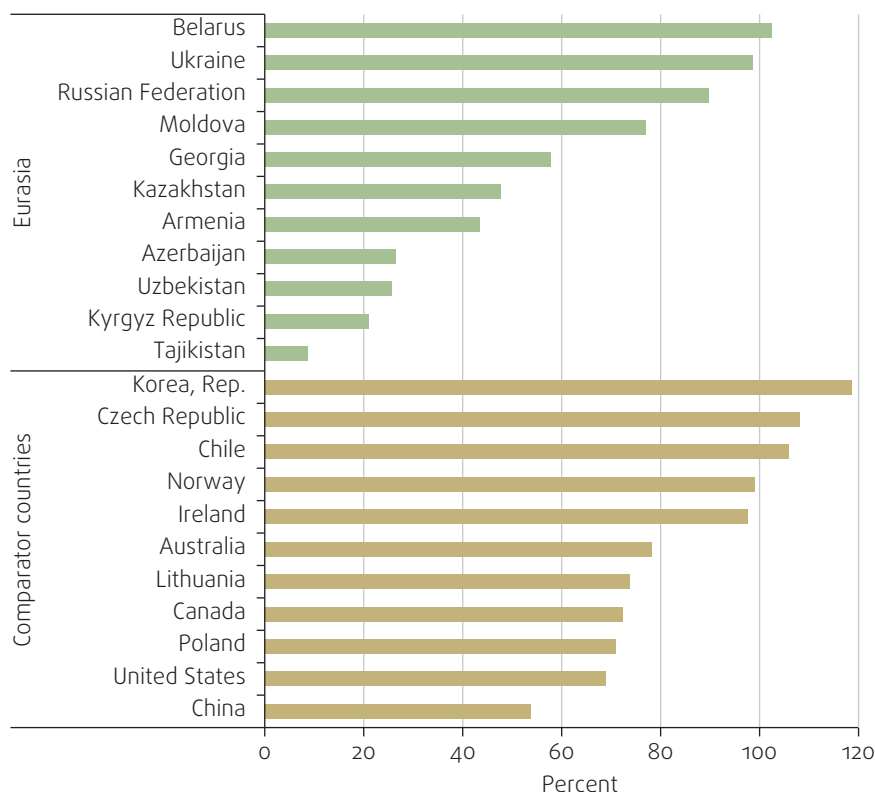
The Education Act in 1999 is credited with much of the improvement, in three main ways. First, the reform reduced the primary school cycle from eight to six years and added three years of comprehensive lower secondary school (or gymnasium) before students could make a vocational

tracking decision. Before the reform, primary school was followed by tracking into vocational or academic programs.

Second, the reform increased the number of hours of instruction. Only 1 percent of Polish students received more than four hours of language class in 2001; this proportion had reached 76 percent by 2006.

Third, the reform made substantive changes to school curricula. The concept of core curricula was implemented, giving schools both the autonomy and responsibility to build their own curricula in a preset general framework. The overall teaching approach was also changed.

Source: Adapted from Mahfooz and Hovde 2010.



**Figure 5.34. Preprimary education coverage varies a lot across Eurasia**

(Gross enrollment, percent)

Source: UNESCO Institute for Statistics, n.d., compiled by World Bank, n.d.a.

Note: Figures for Eurasia are from 2011, except for the Russian Federation and Georgia (2009). Figures for the comparators are from 2010.

Improving quality will need the education system to be better aligned with the labor market. Stronger and more effective links between secondary schools and universities, employers, and the government should help gradually reduce the mismatch for both hard and soft skills—and ultimately lead to an institutional arrangement that ensures that education institutions are a source of dynamism while economic dynamism passes into the education system (chapter 6). And given the cost of secondary and tertiary education, granting diplomas that have too little relevance for the job market imposes a heavy loss on the government budget and on society as a whole.

In the health sector, there is a need to reduce reliance on out-of-pocket payments by patients. When modest, such payments offer a useful mechanism to control costs and ensure that patients do not visit doctors without reason. But out-of-pocket payments make up a bigger portion of health spending in Eurasia than in many other regions, and the more a country relies on these payments for health financing and the more common catastrophic episodes become, the greater the inequality in use across socioeconomic groups (Smith and Nguyen 2013). Ultimately, too-high out-of-pocket payments can push people just above the poverty line into poverty, eroding their human capital.

Eurasian countries should thus refocus their health care to the preventive and primary levels. Many of these countries have excess hospital infrastructure—another Soviet legacy. Reducing hospital capacity, shifting care to primary physicians, and smartly procuring drugs will play a key role in improving efficiency.

## Entrepreneurship

Entrepreneurship is at the core of economic development. The entrepreneur—the agent of “creative destruction”—is the driving force in growth of output and employment when creating new industries, products, and jobs to replace dying businesses or disappearing occupations (see, for example, Schumpeter 1934; Leibenstein 1968; Kirzner 1973; Drucker 1985; Baumol 1990). While the importance of physical and human capital is well understood in Eurasia, entrepreneurship is still a relative newcomer in the region’s popular consciousness, and so entrepreneurial “capital” remains in scarce supply after 20 years of transition.

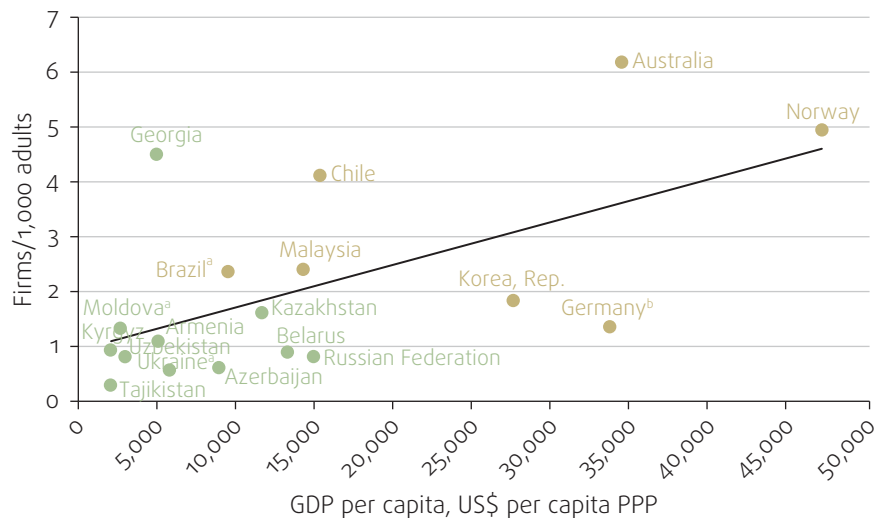
This paucity largely reflects decades-old attitudes to risk-taking and to business success and failure. Successful enterprises are starting to be seen as crucial pillars of progress, but a generally hostile attitude to business failure still prevails, reinforced by legal obstacles and punishment, with the ultimate effect of hampering business creation.

Entrepreneurship depends on the incentive and reward structure of the economy. Cumbersome regulations on firm entry, operation, and exit, as well as weak competition in potential markets, may discourage would-be entrepreneurs from taking risks and embarking on new endeavors. Similarly dampening are weak protection of property rights and other restraints on entrepreneurs appropriating the benefits of their contribution to the economy. Firm entry and operation (and therefore their growth) are also constrained by poor access to finance. These aspects are the subject of this section.

Given the multifaceted nature of entrepreneurship, the first challenge is finding a suitable measure that can be compared across countries and over time. For this section, we use the proxy of firm entry defined as the number of newly registered limited liability companies per 1,000 working-age people.<sup>19</sup> This proxy is imperfect for several reasons: it may miss a wide proportion of start-ups that are not incorporated; it may understate the intensity of entrepreneurship in countries with large informal sectors; and it may overstate the propensity for entrepreneurship if owners register their business for purposes other than embarking on a new enterprise, including tax evasion and capital flight.

### Ambivalent attitudes, tepid entrepreneurship

Except in Georgia, fewer firms are incorporated in Eurasia than would be predicted by per capita incomes. Adjusted for population, entrepreneurs register twice as many companies in Malaysia and three times as many in Chile as in Russia (figure 5.35). Similarly, only half as many firms are registered in Kazakhstan as in Brazil. And while the pace of entrepreneurial activity appears to have picked up modestly in some of the countries from the low of 2005, firm creation is on the decline in Kazakhstan and Russia (figure 5.36).



**Figure 5.35. Entrepreneurs in most of Eurasia start fewer firms than predicted by per capita GDP**

(Number of firms per 1,000 adults, 15–64 years, 2011)

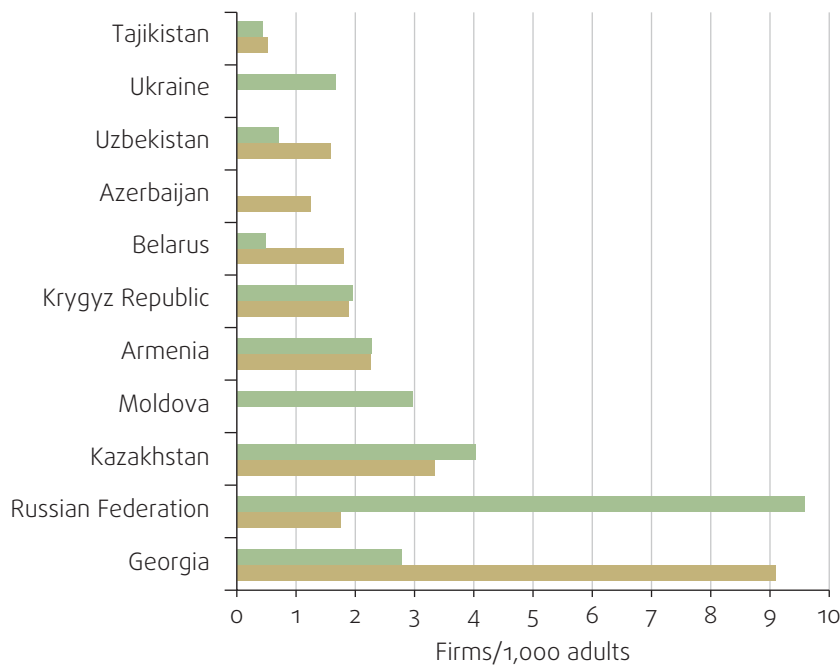
● Eurasia  
● Comparator countries  
— Fitted values

Source: World Bank, n.d.c.

Note: GDP = gross domestic product; PPP = purchasing power parity.

a. Data for Brazil, Moldova, and Ukraine are for 2009.

b. Data for Germany are for 2010.



**Figure 5.36. Business creation has declined sharply in the Russian Federation but surged in Georgia**

(Number of firms per 1,000 adults, 15–64 years, 2005, 2011)

■ 2005  
■ 2011

Source: World Bank, n.d.c.

According to the Global Entrepreneurship and Development Index (GEDI, n.d.)—a measure of entrepreneurial attitudes, aspirations, and activity—Kazakhstan, Russia, and Ukraine rank at the bottom of 118 countries, lagging behind all EU-12 and EAP-12 countries. (These results are in line with responses to a different survey measuring preferred employment) (Acs 2010). Similarly, according to the 2010 Life in Transition Survey (World Bank and EBRD 2010), more than half of Eurasian citizens would prefer to work for a state-owned enterprise or the government, compared with 40 percent in the OECD (World Bank and EBRD 2010). A 2009 survey by the Public Opinion Foundation in Russia revealed that a huge 70 percent of the 16–26-year-olds interviewed preferred a job with government or a state-owned enterprise (Kalioma 2009, <http://www.rg.ru/2009/04/07/molodezh-rabota.html>). A survey in 2012 in Kazakhstan returned similar results: 39 percent of the young interviewees preferred to be employed in the public sector.

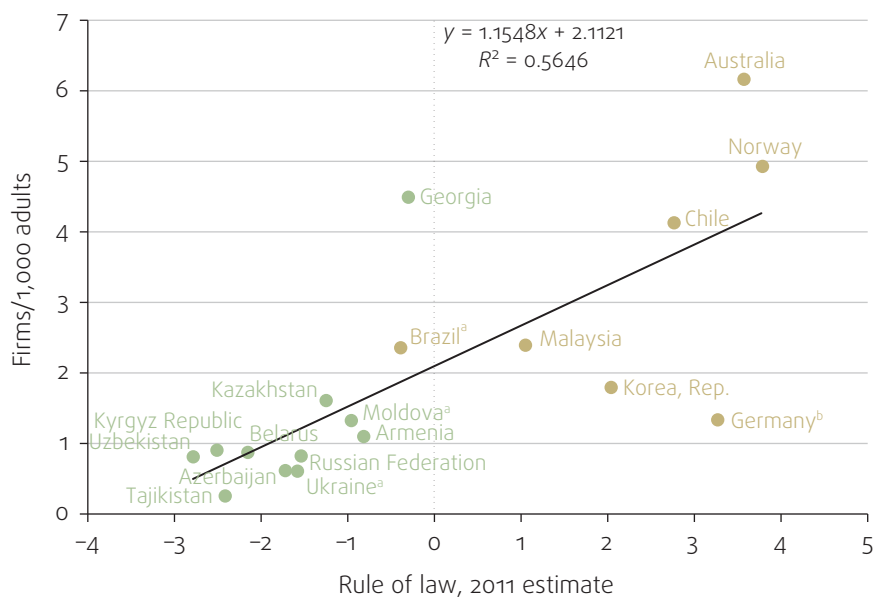
### Limited competition undermines entrepreneurship

Low business creation in Eurasia also reflects constraints on the broader regulatory and business-enabling environment (chapter 6). One of the most important determinants is the protection of property rights—the ability of the legal system to enforce contracts that help entrepreneurs appropriate the returns to their efforts and risk-taking and ward off threats of expropriation. The rule of law is weak in all Eurasian countries, presenting a fundamental constraint to business creation. Even so, entry density for most of them is below that predicted by the rule-of-law index (figure 5.37).

#### Figure 5.37. The legal systems of Eurasia are a drag on entrepreneurship

(Number of firms per 1,000 adults, 15–64 years, 2011)

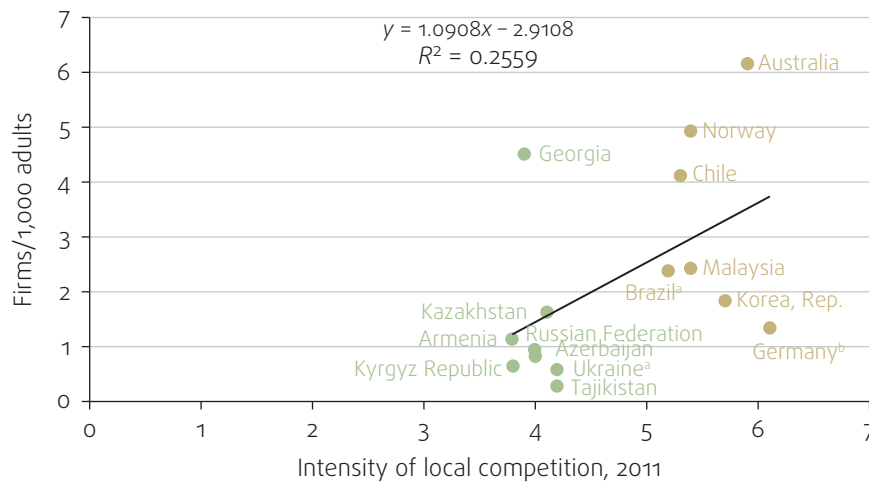
- Eurasia
- Comparator countries
- Fitted values



Source: World Bank, n.d.c.

a. Data for Brazil, Moldova, and Ukraine are as of 2009.

b. Data for Germany are as of 2010.



**Figure 5.38. Weak competitive pressures suggest entrenched incumbents**

(Number of firms per 1,000 adults, 15–64 years, 2011)

- Eurasia
- Comparator countries
- Fitted values

Source: World Bank, n.d.c.

a. Data for Brazil and Ukraine are as of 2009.

b. Data for Germany are as of 2010.

Market competition is crucial for achieving higher productivity and living standards by allowing the efficient reallocation of resources among firms. It also signals acceptance of new entrants and clear rules of the game for newcomers. By stifling innovation in existing firms and entry of new firms, however, anticompetitive behavior unchecked by clear rules reduces firm efficiency (Nicoletti and Scarpetta 2003; Conway and others 2007). Competitive markets for labor, capital, and other inputs provide signals to entrepreneurs about the profitability of different economic activities. This process may be driven by incumbent firms or by new entrants. Both have an opportunity to expand and grow as a result of improved processes, introduction of new products, and marketing or organizational innovations. The contestability of markets is likely to be strongly linked to firm entry, across all developing regions and globally.

Yet the perceived intensity of competition is low in Eurasia, indicating a strong presence of incumbent interests. These are likely to obtain favorable treatment from authorities—regulatory or otherwise—implying that potential new entrants are dissuaded from entering. Similar to entry density, entry rates appear lower than would be predicted, this time by the low standards of market competition (figure 5.38).

### Tough rules on exit discourage entry

The exit of inefficient firms and the allocation of their assets to more productive enterprises are as important for economic growth as business creation. Regulatory barriers or weak enforcement of competition policy often allow unproductive firms to remain open. When coupled with subsidies or other quasi-fiscal support, inefficient incumbents may be able to remain large

players in the market, preventing potentially more efficient firms from entering it (Dixit 1989).

Orderly business exit is crucial in shaping the incentives to establish a new enterprise. In fact, the risk of failure is the very essence of entrepreneurship. Legal systems that impose excessive costs or stigmatize failure do not facilitate entrepreneurship. Barriers to exit can therefore be interpreted as a form of barrier to entry—and the decision to exit as a trade-off between the expected future profits from remaining in the market versus those of exiting.

Firm exit in Eurasia, as measured by the number of years required to resolve insolvency, varies widely, from around a fairly moderate two years in Armenia, Kazakhstan, and Russia to a cumbersome and drawn-out process in the Kyrgyz Republic and Uzbekistan.

### Poor access to finance discourages expansion

Ease of access to finance is crucial for business creation. Start-ups and small companies are especially affected by credit constraints (Aghion, Fally, and Scarpetta 2007). Banks around the world are typically risk-averse and rely on past performance, current turnover, and liquidity of the firm when considering whether to grant a loan. If entrepreneurs lack informal channels, including loans from family, lenders' risk aversion usually stops entrepreneurs in their tracks.

Eurasian firms rely much less on bank loans than do comparators, due to the difficulty in obtaining finance (box 5.3). Enterprise surveys show that a large part of private investment was funded by their retained earnings. Only 25 percent of enterprises in Eurasia used bank loans to finance investment, against 75 percent in Thailand, 52 percent in Slovenia, and 50 percent in Malaysia. Within Eurasia, credit is hardest to access in Tajikistan, whose banking system suffers from a large stock of distressed cotton debt. Enterprises in Uzbekistan finance the highest share of investment internally (more than 90 percent)—only 8 percent of firms there use banks for this.

### Risk-taking can be made more profitable

Entrepreneurship requires opportunities to take risks, create a business, and fail but without persuasion, stigma, or persecution. Economic freedom enshrined in the rule of law and supported by government leadership is crucial for entrepreneurship. Resource-rich Eurasia ranks 150 on average according to the Index of Economic Freedom, well behind the EAP-12 (96) and the EU-12 (48) (Heritage Foundation 2013). Giving companies and individuals more economic freedom would go a long way toward creating an environment propitious to stronger growth in entrepreneurship.

Streamlining the business and regulatory environment, especially rules for orderly firm exit and measures to support competition, are crucial for encouraging entrepreneurs to take risks. These steps are often politically difficult, as they involve disrupting collusive behaviors or the “capture” that is linked to powerful vested interests. They are, nonetheless, essential if a culture of taking risk—with the appropriate rewards and failure—is to take a firmer hold.

### Box 5.3. Why is access to finance difficult in Eurasia?

Development of a sound financial system is an area in which many Eurasian countries have not caught up with comparators, keeping access to finance a pervasive problem and financial intermediation unable to serve the needs of the economy (as reflected in the low credit-to-GDP ratio and the high share of firms using internal resources to finance investment).

Why is it so difficult to access finance in Eurasia? First, the public's mistrust of banks leads to limited deposit penetration, constraining availability of finance for the private sector's productive investment (figure B5.3.1). The average deposit-to-GDP ratio in Eurasia was 20 percent in 2008, less than half the EU-12's and well below East Asia's. Deposit penetration is especially low in Azerbaijan, the Kyrgyz Republic, and Tajikistan—and less than 1 percent of households in Turkmenistan had a formal bank account in 2011. Intermediation efficiency is also low, reflecting a lack of competition in some countries. This has kept average net interest margins high—5.2 percent in Eurasia

versus 2.6 percent in the EU-12 and 3.6 percent in developing Asia in 2008.

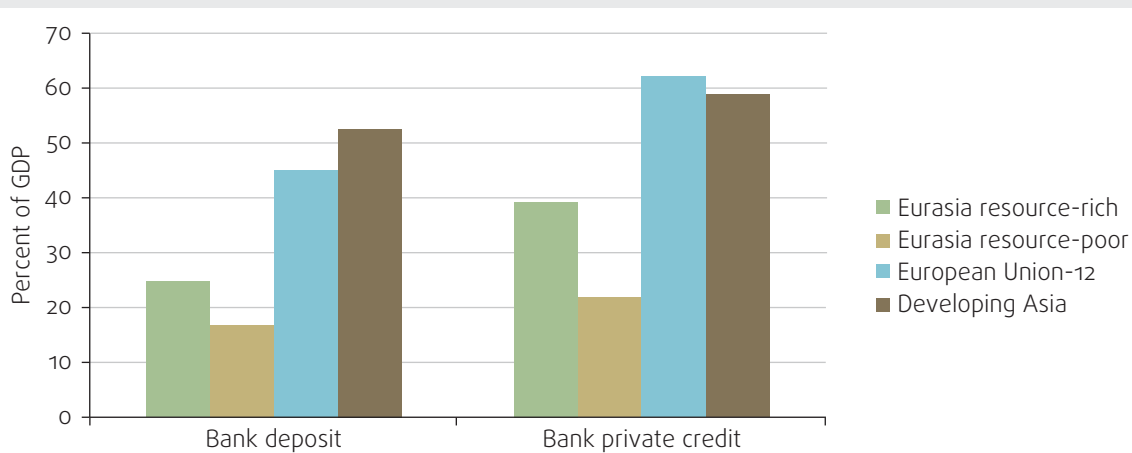
Second, the allocation of financial resources to productive private sector projects is crowded out by a large amount of lending to state-owned enterprises and widespread government-subsidized lending. In Belarus, for example, the banking system is dominated by state-owned banks, which mainly play a quasi-fiscal function by providing directed lending and on-lending to state-owned enterprises without proper credit assessment (World Bank 2012b). Likewise, directed credit through state-related banks is very common in Azerbaijan and Kazakhstan. The distorted resource allocation has not only undermined private sector development but also led to increasing asset quality deterioration in state-owned banks and weakened the banking system.

Third, access to credit is constrained by the inefficient mechanism to resolve insolvency, which discourages banks from taking risks, particularly with potential new investors and small enterprises,

for which credit information is harder to get than for large or incumbent firms. Shortcomings in the collateral regime have also discouraged lending to small enterprises and potential entrepreneurs who do not have collateral.

Access to credit has become even more difficult since the global financial crisis. Before then, owing to weak corporate governance, poor prudential regulations, and ineffective bank supervision, Eurasian banks had been increasingly engaged in risky behavior, seeking funding from foreign banks—particularly foreign banks in Western Europe—to expand credit. When the crisis hit in 2008, new foreign funding dried up and the large inflows of the boom reversed, triggering a credit crunch and deep recessions. The nonperforming loan ratio shot up in many countries, hurting banks' balance sheets and forcing many to deleverage (figure B5.3.2). Other banks became more risk-averse in light of macroeconomic uncertainties, thus reducing lending and increasing their interest rates.

Figure B5.3.1. Financial intermediation is severely constrained by low deposit penetration



Source (figure): World Bank, n.d.b.

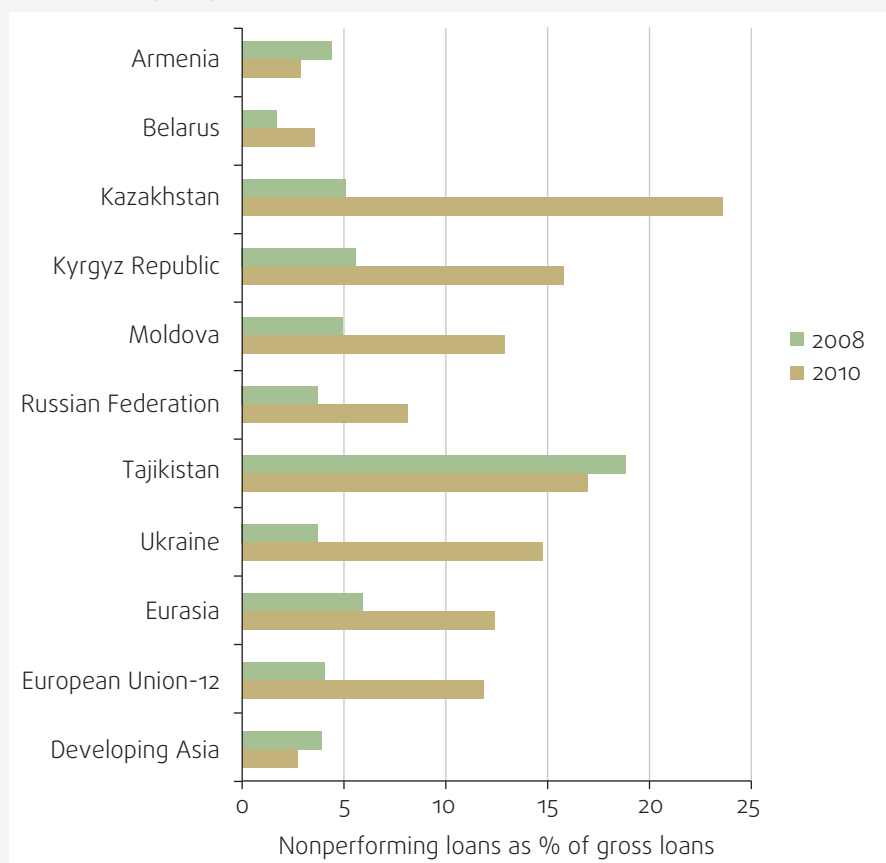
Note: Turkmenistan and Uzbekistan, and Kyrgyz Republic and Tajikistan, are excluded from resource-rich and resource-poor groups, respectively. GDP = gross domestic product.

(continued)



## Box 5.3. (cont.)

Figure B5.3.2. Poor risk management and lending practices have led to severe deterioration in banks' asset quality



Source (figure): World Bank, n.d.b.

Source (box): Authors based on World Bank 2012b.

## Built capital: a strength of Eurasia's past, a threat to its prosperity

This chapter comes to four straightforward conclusions.

**Eurasia is not doing well in building capital.** Eurasia has less capital than it should have given its history and its available resources. The gap is less pronounced for quantity than for quality. Or, put another way, Eurasia does better in the more tangible aspects of capital than in the more intangible aspects. These differences reflect the ability to use resource-related revenue to

bolster inputs, build roads, and keep children in school longer. Achieving higher capital quality and a flourishing entrepreneurial culture is a lot more demanding of institutions. And as chapter 6 proposes, institutional development has a much longer road to travel in Eurasia, in both the resource-rich and resource-poor countries.

**Resource-poor countries are building capital more efficiently.** Most governments in resource-poor Eurasia invest a bigger share of their GDP in physical capital than do most of their resource-rich neighbors. Despite hydrocarbon riches and ample savings, resource-rich Eurasia has not maintained the investment rates needed to improve infrastructure. Government spending on education and health in resource-rich Eurasia is also low, an outcome at odds with the low stock of human capital in these countries (other than Russia). Eurasia's adjusted net savings—a measure of the efficiency with which an economy converts natural resources into built capital—is barely positive in Russia and has only recently become positive in Azerbaijan and Kazakhstan.

**Russia is different.** Russia's infrastructure and education are better than the rest of Eurasia's, but Russia lags behind advanced countries and its own aspirations. Averages conceal large differences within Russia. There are world-class regions, with education quality in the top ten. And there are regions where education quality is the lowest in Eurasia. Nonetheless, differences within Russia are smaller than the differences among Eurasian countries and the difference between Eurasia and the rest of the world.

**Governments in Eurasia should increase investment in education and infrastructure.** The resource-rich economies could spend a lot more on education and infrastructure. Rationalization of spending on subsidies and untargeted transfers will provide the needed fiscal space in the poorer countries. Throughout Eurasia, better public investment management should help reduce waste and inefficiency and make room for greater outlays. And some resource-rich countries may need to rethink fiscal rules and fiscal frameworks that lead them to save large amounts of resource-related revenue in saving funds. Intergenerational transfers of resources are best accomplished through physical and human capital, provided that a more efficient management of economic rents and their investment is achieved. Chapter 6 clarifies.

## Notes

- 1 Scientists born in the Soviet Union or the Russian empire won 9 Nobel Prizes in physics, chemistry, and medicine from 1945 until 1991, against 29 born in Germany and 97 in the United States. See [www.nobelprize.org](http://www.nobelprize.org).
- 2 That is, while they can read and write simple sentences, they cannot apply what they read to solving problems.
- 3 The Commission on Growth and Development (2008) calculated that a sample of 13 countries that grew more than 7 percent a year for three decades invested an average of 25 percent of GDP a year. This threshold seen in successful resource-poor countries was referred to in Gylfason (1999).
- 4 These studies are World Bank (2006) and Sugawara (2012).
- 5 The study is Gupta and others (2011). The Public Investment Management Index is the average of the score for each stage of the public investment process: project appraisal, project selection, project implementation, and project evaluation. Scores for the individual stages range from 0 to 1 and the total from 0 to 4. A higher score denotes a more efficient process. The index is described in Dabla-Norris and others (2011).

- 6 Eurasia lost 10 gigawatts of electricity generation capacity throughout the 1990s and only saw a small rebound in 2000–05, mainly in Russia.
- 7 In the absence of resource rents, resource-rich countries would have had a 30 percentage point increase in the ratio of public capital stock to GDP.
- 8 Hall and Jones (1999) define the social infrastructure index as the average of five categories (law and order, bureaucratic quality, corruption, risk of expropriation, and government repudiation of contracts). The index ranges from 0 (the lowest) to 7. Due to data revisions in 1996 and 1997, risk of expropriation and government repudiation of contracts were combined in a new indicator, contract viability. The numbers from the social infrastructure index used here are an average of the four new indicators over 2003–12. The benchmarks used by Bhattacharyya and Collier (2011) are adjusted in line with the revised dataset.
- 9 The unadjusted institutional index score threshold is 3.1. For comparison, Mexico averages 3.3 under the original methodology; after adjustments for data availability, Mexico scores 4.1.
- 10 Barro and Lee (1993) presented education attainment for a broad set of countries.
- 11 OECD (2004) shows that employee training affects wage growth of young or highly educated employees and that training employees allows them to attain and maintain the competencies required to bring productivity in line with market wages of older and low-educated workers.
- 12 PISA is a reading, math, and science test for 15-year-olds administered by the OECD. Among Eurasian countries, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, and Russia take part. The Trends in International Mathematics and Science Study is a test for 4th and 8th graders. Armenia, Georgia, Kazakhstan, Russia, and Ukraine participate.
- 13 The OECD defines reading literacy as “proficiency in retrieving information, understanding texts at a general level, interpreting them, reflecting on the content and form of texts in relation to their own knowledge of the world, and evaluating and arguing their own point of view.” The OECD defines mathematical literacy as “the ability to put mathematical knowledge and skills to use rather than just mastering them in a school curriculum.” The OECD defines scientific literacy as “the capacity to use scientific knowledge, to identify questions, and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and human interactions with it.”
- 14 A study undertaken by the Russian Public Opinion Research Center, as cited in Smetanina (2012).
- 15 The Academic Ranking of World Universities uses six objective indicators to rank world universities: number of alumni winning Nobel Prizes and Fields Medals; number of staff winning Nobel Prizes and Fields Medals; number of highly cited researchers selected by Thomson Scientific; number of articles published in journals of nature and science; number of articles indexed in Science Citation Index–Expanded and Social Sciences Citation Index; and per capita performance with respect to the size of an institution.
- 16 Firms are asked to identify constraints from a menu of 14 items: tax rates; corruption; electricity; skills and education of workers; access to finance; crime, theft, and disorder; tax administration; telecommunications; courts; access to land; business licensing and permits; transport; labor regulations; and customs and trade regulations.
- 17 Paul Krugman (2012) wrote in a *New York Times* blog entry: “Whenever you see some business person quoted complaining about how he or she can’t find workers with the necessary skills, ask what wage they’re offering. Almost always, it turns out that what said business person really wants is highly (and expensively) educated workers at a manual-labor wage. No wonder they come up short.”
- 18 Researchers are defined by the United Nations Economic, Social and Cultural Organization as “professionals engaged in the conception or creation of new knowledge, products, processes, methods, and systems and also in the management of the projects concerned.”
- 19 World Bank Group Entrepreneurship Snapshots.

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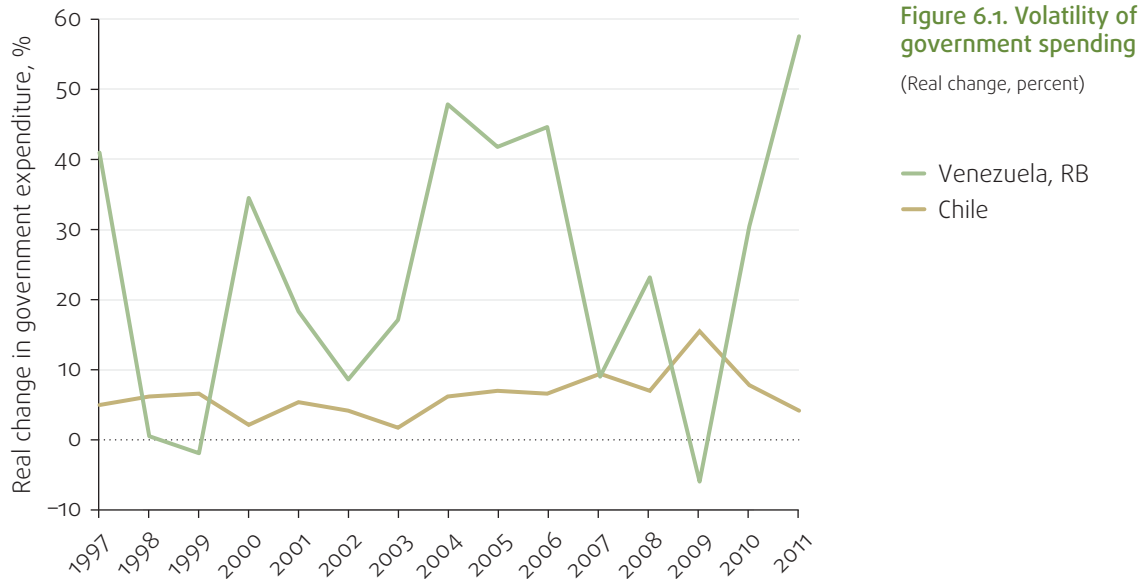
# Chapter Six

## Economic Institutions

Chile and República Bolivariana de Venezuela have many common attributes. As Spanish colonies, the two Latin American countries share historical antecedents. Since the 1930s, both have relied on natural resources for exports—copper in Chile’s case and crude oil in Venezuela’s. But their development trajectories have diverged during the last three decades. In 1983, Chile’s per capita income was about three-quarters that of Venezuela. Two decades later, Chileans had an average income almost twice that of Venezuelans. When asked why Chile did so much better than RB Venezuela, many development experts might reply with a single word: institutions. This chapter is about the institutions in Eurasia—and how they must be changed for the region to develop.

But “institutions” is a term both overused and underspecified. This report makes matters more specific in the context of diversified development by focusing on three areas of economic institutions: managing volatile resource rents, providing public services, and regulating economic activity.

Chile has done better than República Bolivariana de Venezuela in all these three areas. This has resulted in diverging economic performance—in measures of volatility, productivity, and employment. Government spending has been much more volatile in RB Venezuela (figure 6.1). Chile’s governments, by contrast, by adhering to fiscal rules for almost three decades, appear to have strengthened the consensus for stable public finances. RB Venezuela has succumbed to the temptation of using oil revenue for creating public sector jobs, while Chile has kept government employment modest and promoted public-private partnerships in education and essential infrastructure. Public enterprises still dominate the economic landscape in RB Venezuela, whereas Chile had privatized 94 percent of financial institutions and enterprises by the mid-1990s. Chile ranked 37th of 185 countries on the World Bank’s Doing Business Indicators in 2013—the best in Latin America—whereas RB Venezuela ranked 180th, sixth-worst in the world.



Source: World Bank staff estimates from World Development Indicators data.

This chapter asks whether the quality of institutions in Eurasia resemble those in Chile or RB Venezuela. The answer is no for both countries. Azerbaijan, Kazakhstan, and the Russian Federation have steadily improved the arrangements for managing resource rents, providing social services, and regulating enterprises. But they have not yet attained the institutional standards of Chile. The other resource-rich Eurasian economies—Turkmenistan, Uzbekistan, and Ukraine—are even further behind. While the six resource-poor Eurasian countries have all improved their capacities to deliver public services and regulation of business activity—especially Georgia, but also Armenia, Belarus, the Kyrgyz Republic, Moldova, and Tajikistan—they need to do much more.

This chapter surveys the quality of institutions in the dozen Eurasian countries that are the subject of this report, the dozen or so East Asian emerging economies that have become middle- and high-income economies during the last generation, and the dozen European countries that have joined the European Union (EU) in the last decade.<sup>1</sup> But comparing these three neighboring groups is useful only to a point. Resource-led development is arguably more demanding of national institutions than are development strategies in countries that are labor-abundant such as China in East Asia, or those that belong to an association that includes the world's most advanced economies in the world, such as Poland in Central Europe. Unassisted by the external anchor provided by the EU, and facing the additional internal pressures to manage the sizable rents associated with the exploitation of natural resources, Eurasia's development is more institutionally challenging. So the most reliable comparators for resource-rich emerging economies are other resource-rich countries at varying stages of development. To inform



policy makers, this report relies on the experiences of a dozen countries whose development resources have played a leading role.<sup>2</sup>

Compared with the more successful resource-rich countries, Eurasia faces sizable shortfalls in the quality of economic institutions. These gaps must be closed quickly, but doing so will not be easy. In prioritizing the efforts to upgrade institutions, it is useful to know the answers to four additional questions:

**In which policy areas are Eurasia’s institutional development gaps greatest?**

That is, benchmarking sensibly, have countries in the region done better at managing resource rents, providing public services, or regulating private enterprise? The chapter shows that gaps exist in all areas but also highlights the importance of governance that underlies economic institutions, notably the need to curb vested interests and enforce a vibrant competition framework.

**Should special mechanisms in resource-rich countries such as oil funds be used for short-term stabilization or long-term development?** That is, should the arrangements for managing resource rents such as oil funds be designed with the relatively modest objective of maintaining macroeconomic stability over the business cycle? Or should they have longer-term objectives such as boosting productivity and employment? This chapter provides evidence in favor of the former—that is, of using these instruments just for reducing volatility.

**Have weaknesses in Eurasia’s institutions become a drag on productivity growth?** That is, have Eurasian countries compromised investments in infrastructure and the quality of essential services like primary health and secondary education? While productivity has increased since the mid-1990s, there is evidence of slowing productivity growth, related in part to a growing shortfall in education and infrastructure and to weak competition.

**Are regulatory frameworks governing private enterprise up to the difficult task of encouraging job creation in resource-dominated economies?** That is, have the design and enforcement of private sector regulations offset or exacerbated the poor employment potential of extractive industries? Greater resource-dependence implies that countries in Eurasia may have to make their business environments much more job-friendly than successful economies in Eastern Europe and East Asia.

As this chapter elaborates, Eurasia has room for greater productivity and so faster economic growth—if its institutions improve.

## Weak governance in all three policy areas

Eurasia has made many efforts to improve institutional quality over time, but weaknesses remain. First, Eurasia’s fiscal institutions have been ineffective in protecting the economy from boom-bust cycles of commodity prices—indeed, sometimes feeding rather than taming macroeconomic turbulence. The macroeconomic uncertainty and unpredictability generated by poor management of natural resource rents discourages businesses from making the major investment decisions needed to move up the value chain. Second, the quality of public services in essential areas, such as infrastructure and

education, is not yet comparable to that in the EU new member states and East Asia. Finally, the earlier regulatory reforms often just remained “on the books” without generating marked gains in the business environment, with powerful vested interests still restricting competition. Many firms in Eurasia, particularly state-owned enterprises (SOEs), still operate inefficiently in the absence of robust competition. Barriers to international trade and foreign direct investment (FDI) hamper penetration into new export markets and limit adoption of advanced foreign technology. Cumbersome licensing systems consume time that could otherwise be used for more productive activity. Discretionary enforcement of regulations and pervasive corruption raise uncertainty and discourage business. Deficient rule of law, particularly with regard to property rights, is detrimental to innovation.

This section reviews each policy area in turn by benchmarking Eurasia against worldwide comparators.

### Managing resource rents: erratic enforcement of rules

Natural resource rents can be an important source of development finance, and countries like Chile and Malaysia have used them well as levers for broader development. However, as is well known, resource-rich countries face a host of complicated policy issues that are challenging even in economies with strong governance and administrative capacity. As discussed in chapter 4, the extent of negative macroeconomic impacts of natural resources—ranging from revenue volatility to misallocation of resources, concerns about Dutch disease, and fiscal and external sustainability in the face of eventual resource depletion—depends largely on the country’s institutional quality (Mehlum, Moene, and Torvik 2006).

Resource-rich countries face challenges linked to the volatility of resource revenue and to the depletion of resources. Revenue volatility requires the transmission of volatility in output, fiscal policy, and real exchange rates to be insulated—which can be costly—while resource depletion calls for rules to govern intertemporal consumption and investment decisions, with long-term implications for developing nonresource sectors, intergenerational equity, and fiscal sustainability.

It is important to focus on volatility management because volatility in natural resource revenue can drive volatility in output, government spending, and real exchange rates, which raises risk and uncertainty and thereby damages investment and growth. A stable macroeconomic environment is necessary for the private sector to flourish. Fiscal policy is the first line of defense against commodity price volatility and its impact on aggregate demand. Ensuring macroeconomic stability in resource-rich countries depends primarily on how well fiscal policy is insulated from commodity price volatility. While monetary and exchange rate policies can facilitate macroeconomic stability, the conduct of these policies in conjunction with an expansionary fiscal policy could create tensions with their policy objectives—to stabilize prices, the exchange rate, and the financial system. Success depends heavily on the design of rules that tether stabilization funds to the overall fiscal framework.

### Stabilization funds introduced

Cognizant of the challenges, the three largest hydrocarbon-rich countries—Azerbaijan, Kazakhstan, and the Russian Federation—all have developed institutional frameworks that include a sovereign wealth fund to help guide fiscal policy in the context of volatile natural resource income.<sup>3</sup> Azerbaijan established the State Oil Fund in 1999 in view of forthcoming oil revenue. The National Fund of the Republic of Kazakhstan was founded in 2000. Russia established the Oil Stabilization Fund in 2004 and then restructured it in 2008, separating it into the Reserve Fund and the National Welfare Fund. The legal and operational frameworks of these institutions differ, but they all share the common primary objective of insulating the domestic economy from volatility and uncertainty of commodity revenue.

Kazakhstan's operational rule has been modified several times to address design weaknesses. Before 2010, transfers from the National Fund to the budget were determined by a formula. However, the parameters of the formula were subject to the annual approval of Parliament, exposing the system to political manipulation (Kemmerle 2012). The current rules were introduced in 2010 under a "New Concept" and updated in 2012. The new rules require the National Fund to transfer to the state budget \$8 billion plus or minus 15 percent every year, depending on the cyclical position of the economy, and to restrict its use to supporting the industrial program detailed in the Strategic Plan for 2020. The rule also restricts off-budget use of resources in the National Fund. In Russia, until the global financial crisis, the authorities adhered to a rule that limited the non-oil deficit to 3.7 percent of GDP; that is, it limited the fiscal deficit to be financed by oil-related revenue.<sup>4</sup> In both Russia and Kazakhstan, the remaining resource income is accumulated in the relevant fund and invested mainly offshore, to sterilize the economy against real appreciation of the currency.

In Azerbaijan, the operating framework that integrates the State Oil fund and fiscal policy has yet to be established, and thus transfers from the State Oil Fund to the state budget are determined in a discretionary manner.<sup>5</sup>

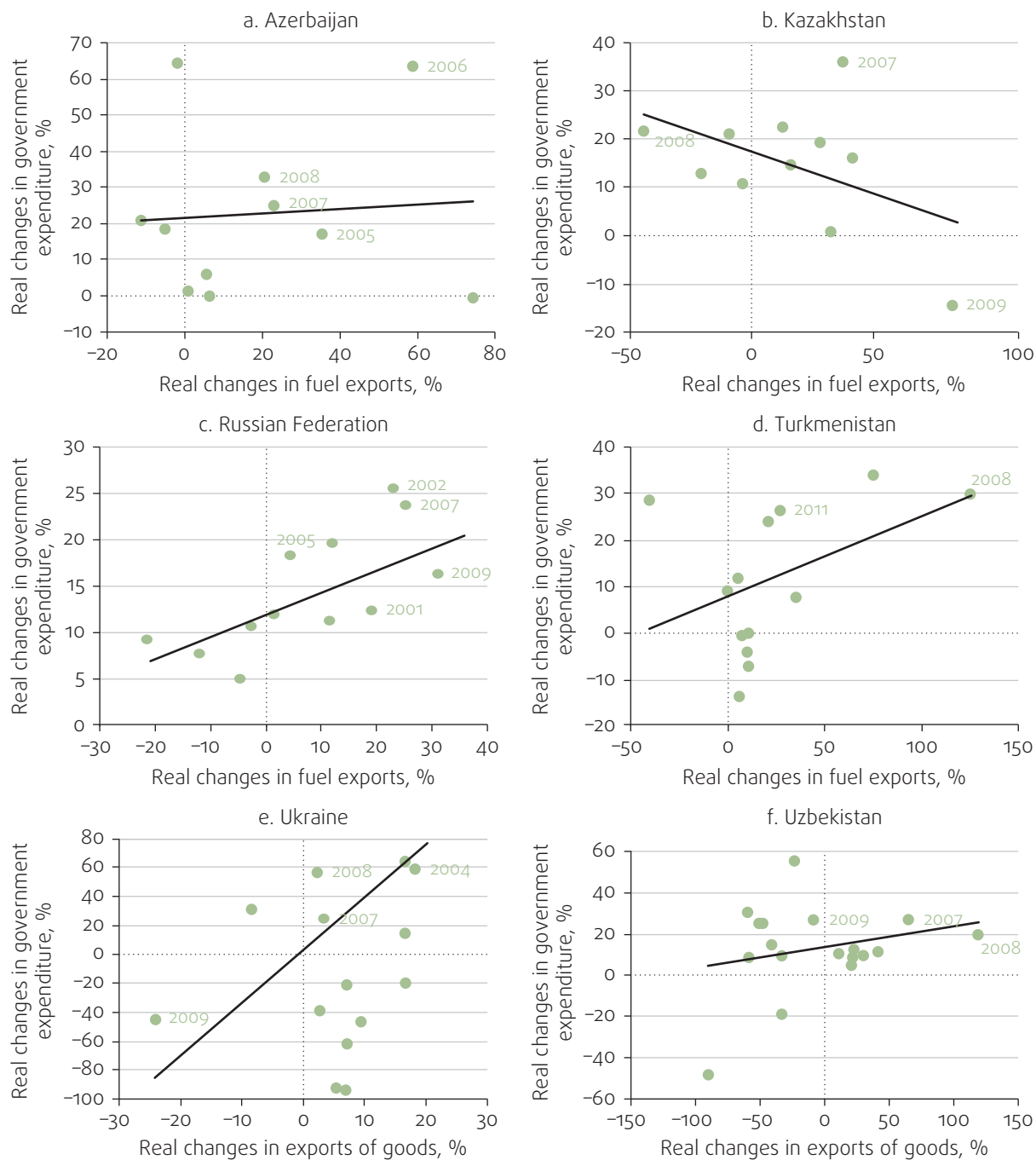
Developments in Turkmenistan and Uzbekistan have not been assessed because statistics and other facts are either unavailable or unreliable.

### Eurasia's institutional frameworks have not prevented boom and bust

How have the institutional frameworks in Eurasia performed during the recent commodity boom-bust cycle? The evidence is not encouraging. The institutional arrangements have not been as effective as expected in alleviating cyclical pressures and insulating the economy from commodity-price volatility. As a result, output, government spending, and real exchange rates have fluctuated widely, harming investment and growth.

Shortcomings in design and enforcement have led to this disappointing outcome. The degree of fiscal expansion varied, but in Azerbaijan, Kazakhstan, and Russia government spending rose sharply in the run-up to the crisis (figure 6.2), financed by windfall resource revenue. The nonresource fiscal position deteriorated rapidly as a result. Deficiencies in the operational framework made it easier to circumvent the rules, while commitment to fiscal discipline lapsed

Figure 6.2. Fiscal policy was expansionary during the boom



Source: World Bank staff estimates.

Note: For Ukraine, exports of goods are used to examine fiscal procyclicality, given the country's large nonfuel mineral exports. Data on fuel exports are not available for Uzbekistan and thus exports of goods are used as a proxy.

during the height of the commodity boom, even as a sizable part of resource-related revenue was saved. Increased spending was used to boost public investment and raise public remunerations, stimulating nonresource sector growth.

As in many other resource-poor countries in Europe and Central Asia, there was a surge in capital inflows to the region during the 2000s in the form of FDI and external borrowing by banks to fund domestic loan portfolios, which stabilization funds do not sterilize. With accommodative monetary policy coupled with weak prudential regulations and ineffective bank supervision, ample liquidity in the banking system led to rapid credit growth, mostly directed at households and adding to the rapid growth of domestic demand, ignited by the fiscal expansions. Over 2005–08, domestic demand growth in the resource-rich countries averaged 13 percent a year, well above the annual GDP growth rate, giving rise to overheating pressures.

Azerbaijan saw the largest fiscal expansion. Real government outlays grew 40 percent a year over 2006–08, when world energy prices and Azerbaijan's oil production were rising fast (see figure 6.2a). In addition, the State Oil Fund continued to finance large projects directly, outside the national budget framework. Increased public spending, including off-budget spending through the State Oil Fund, was marked for narrowing critical infrastructure gaps in water, electricity, and the like. The rapid growth in spending led to overheating pressures given the country's limited absorptive capacity, fueling inflation. Although the State Oil Fund is a stabilization fund by definition, the absence of a clear operational framework that links it to fiscal policy has led to an increasing amount of oil revenue being transferred to the national budget, contributing to fiscal procyclicality.

In Russia, the Reserve Fund failed to prevent rapid growth of government spending during the height of the oil-price boom. While the statutory fiscal rules limit the amount of natural resource income that can be transferred to the federal budget, the rules were circumvented through regular use of supplemental budgets, preventing the stabilization mechanism from operating effectively. Since 2005, Russia's fiscal policy has become increasingly expansionary, allowing more of the oil revenue windfall to pass through to the economy. The partly sterilized oil revenue, the high liquidity from large capital inflows—reflecting accelerated foreign borrowing by SOEs and the banking sector—negative real interest rates, and a tightly managed exchange rate fed a boom in credit and domestic demand.

Kazakhstan may be the only resource-rich Eurasian country that has implemented prudent countercyclical fiscal policy for most of the recent past, though its institutional framework has hardly prevented government revenue volatility (Kempe 2012). As figure 6.2b shows, Kazakhstan's fiscal policy is characterized by a negative relationship between growth of government spending and fuel exports, suggesting that fiscal policy has played a countercyclical role most of the time, notwithstanding wide fluctuations in government revenue. This is remarkable. However, in 2007, faced with public pressures, the country relaxed fiscal policy through tax cuts and acceleration in spending, fueling domestic demand.

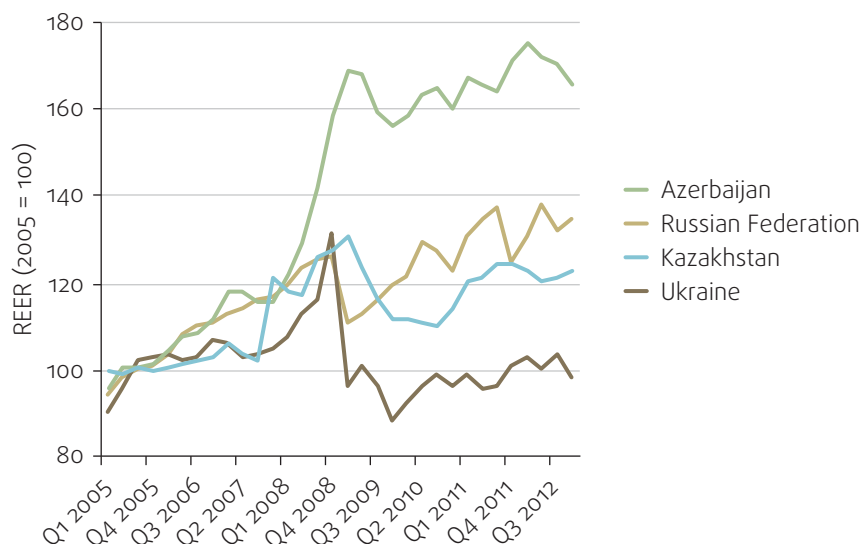


Figure 6.3. Currencies have steadily appreciated

Source: IMF, n.d.

Note: REER = real effective exchange rate.

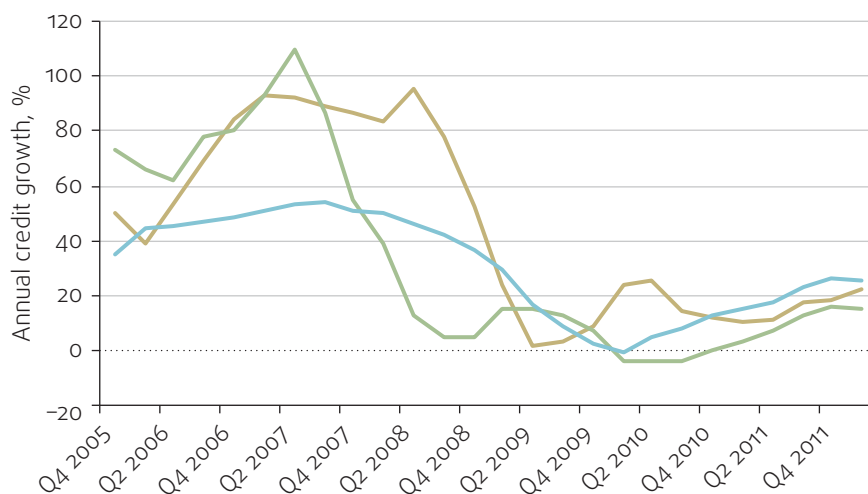
Over 2006–08, inflationary pressures were building up rapidly, driven by the expansionary fiscal policy and the domestic demand boom stimulated by foreign capital inflows. Temporary administrative measures were implemented for selected food items, but they were largely ineffective. Property prices were also on the rise, and an increasing proportion of domestic and foreign investment was going into real estate. Limited exchange rate flexibility contributed to a further build-up of inflationary pressures, further exacerbating real appreciation (figure 6.3).

The resource-poor Eurasian countries also enjoyed buoyant growth, benefiting indirectly from the bullish international commodity markets through increased demand for their exports and remittance inflows from their resource-rich neighbors, especially Russia. Growth was lifted by strong domestic demand financed by large foreign exchange inflows, contributing to increased government revenue, which was used mainly to increase public spending, including civil service remunerations.

With the outbreak of the global financial crisis, international commodity prices fell and global demand plummeted. In response, all resource-rich Eurasian countries promptly introduced anticrisis packages to stimulate nonresource sectors, tapping the ample fiscal savings accumulated during the boom years. Although Azerbaijan weathered the impact of the crisis fairly well, Kazakhstan and Russia experienced an abrupt end to the economic boom—similarly to many resource-poor countries in Eurasia and beyond—as a sudden reversal of capital inflows caused a credit crunch and a sharp contraction in demand. These in turn

**Figure 6.4. With the onset of the crisis, credit slowed sharply**

— Kazakhstan  
— Azerbaijan  
— Russian Federation



Source: World Bank staff estimates.

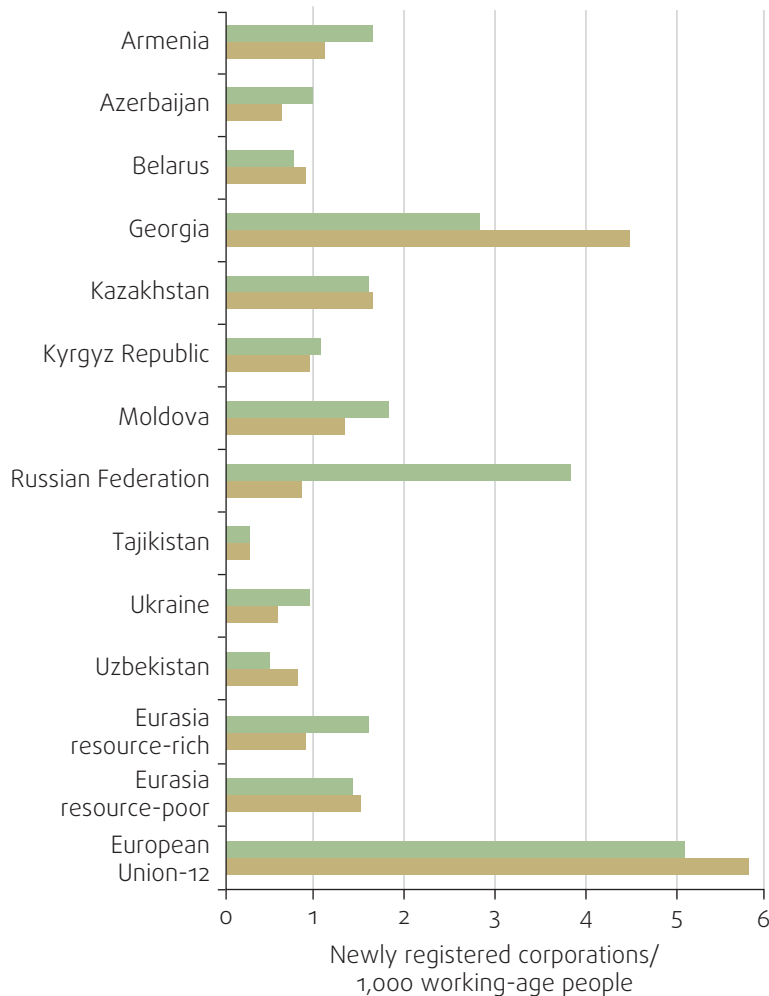
led to a fall in real estate prices, nominal exchange rate depreciation, and, consequently, a serious deterioration in banks' asset quality.

Kazakhstan, which is more integrated with global financial markets than other Eurasian countries, was the most affected by the turmoil. Its nonperforming loan ratio shot up to 23 percent in 2010 from 5 percent in 2008, and its growth slowed from 10 percent before the crisis to about 1 percent just after. Russia's output contracted almost 8 percent in the same year, as the initial policy response to the crisis, though quick and substantial, was circumscribed by policy vulnerabilities that had built up before the crisis. The volatile macroeconomic environment and banking sector turmoil hit market confidence hard, causing a longer-term impact on the real economy. Private investment plunged at the onset of the crisis and remains weak, as reflected in slow credit growth (figure 6.4). In Russia, new business creation has fallen dramatically, and in many other countries the pace of new business creation has not returned to precrisis levels (figure 6.5). The macroeconomic turbulence in resource-rich Eurasia spilled over to the resource-poor countries through sharp reductions in remittances and in demand from the resource-rich region, especially from Russia.

How have other resource-rich countries managed volatility of commodity prices? And how do Eurasia's resource-rich countries compare with them? Let us go back to Chile and República Bolivariana de Venezuela, the two countries mentioned at the start of this chapter (box 6.1).

### Provision of public services: infrastructure and education need a lift

The quality of public institutions has a strong bearing on a country's productivity and competitiveness.



**Figure 6.5. Business creation was negatively affected by the crisis**

(Newly registered corporations per 1,000 working-age people)

■ 2008  
■ 2011

Source: World Bank staff estimates.

The quality of public service provision in Eurasia is generally lower than in the EU-12 and East Asia, according to the World Economic Forum's 2012–13 Global Competitiveness Index (figure 6.6). While Eurasia does as well as the comparator countries in providing public health services, it is weak in delivering infrastructure and education services. Eurasia's weakness in public service provision stands out even more when compared with other resource-rich countries. Chapter 5 presents the argument for boosting infrastructure and education.

### Regulating enterprise: weak regulations and poor enforcement fail to ensure competition

The state has an important role to play in the third policy area—regulating private enterprise—and enforcing the “rules of the game.” But the formation of regulations in Eurasia is often vulnerable to capture by special interests, and



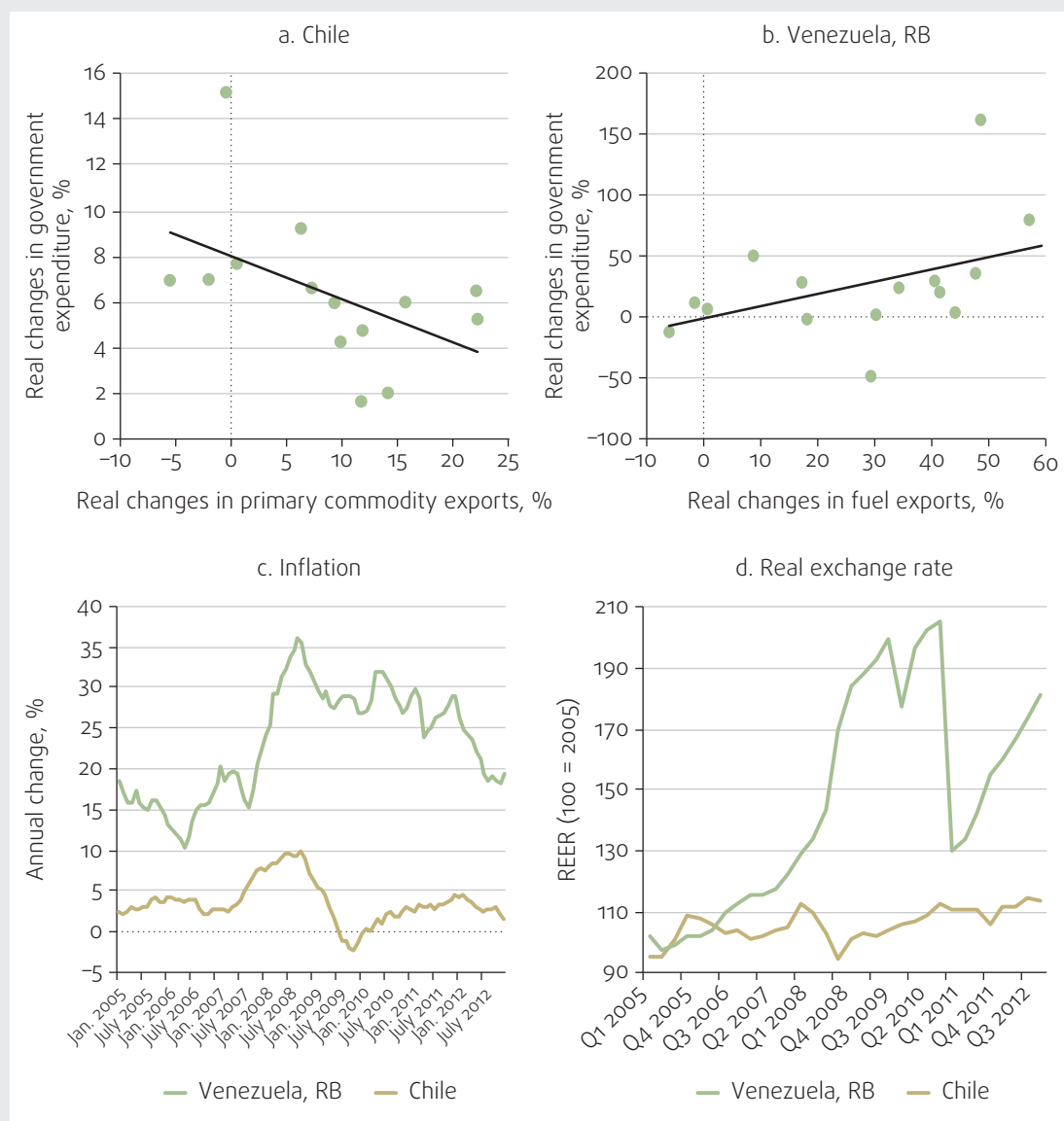
### Box 6.1. Chile has managed volatility well, but República Bolivariana de Venezuela has not

Chile has done a much better job of managing volatility than Eurasia has, while RB Venezuela has done worse. While Chile has enjoyed a stable macroeconomic environment throughout the past two decades, RB Venezuela has experienced highly volatile inflation and a highly

volatile real exchange rate (figure B6.1.1). The reasons have much to do with the management of resource rents. Chile has pursued fiscal discipline, anchored by a structural balance rule designed to facilitate countercyclical fiscal policy to offset copper price volatility. Government

outlays have been increased during periods of low copper prices to boost demand—and contained during commodity booms to mitigate risks of overheating pressures. In sharp contrast, RB Venezuela’s fiscal policy has been procyclical, influenced heavily by world commodity developments.

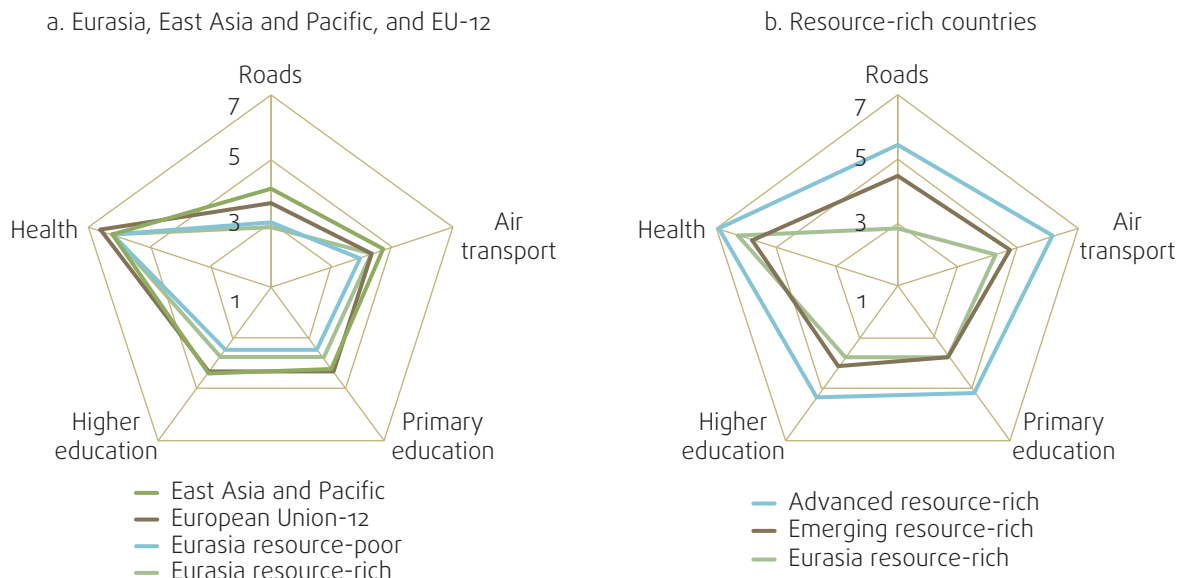
Figure B6.1.1. Chile and República Bolivariana de Venezuela: selected indicators



Source: IMF, n.d.; World Bank staff estimates.

### Figure 6.6. Public service provision is weak

(Global Competitiveness Index, 7 = best)



Source: World Economic Forum 2012.

Note: Resource-rich countries include Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan. Resource-poor countries include Armenia, Belarus, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan. The European Union-12 includes Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia. East Asia and Pacific includes Cambodia, China, Indonesia, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam. Advanced resource-rich countries include Australia, Canada, the Netherlands, Norway, the United Arab Emirates, and the United States. Emerging resource-rich countries include Botswana, Chile, Malaysia, Nigeria, Saudi Arabia, and República Bolivariana de Venezuela.

enforcement through administrative and judicial systems is frequently selective and uncertain.

Effective regulations promote private sector development by addressing market failures arising from the presence of externalities, by shaping the rules of the game, and by meeting important social and environmental goals. It is increasingly recognized that well-designed and enforced rules and regulations on competition can reap large long-term growth and welfare dividends through better allocation of resources, lower prices, innovation, higher productivity, greater formal employment opportunities, and improved competitiveness with trading partners (see OECD 2011; World Bank 2013c).

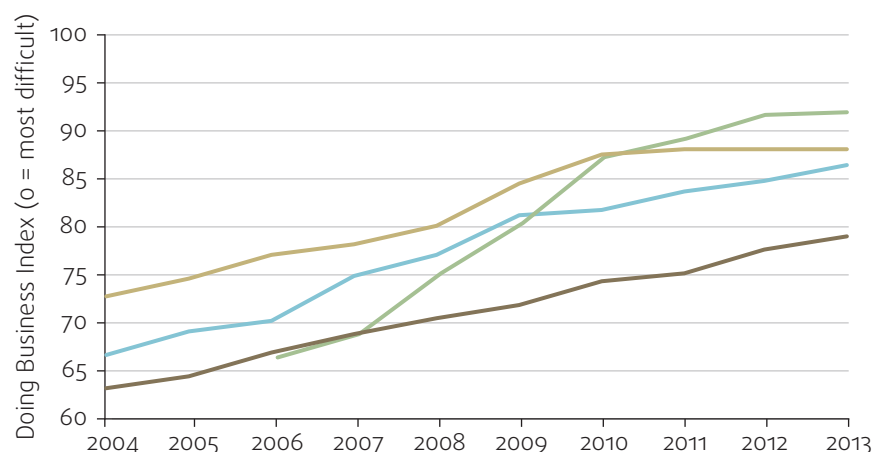
#### How has Eurasia done in regulating enterprise?

Not so well. Progress in some areas is undermined by a partial and often inconsistent approach to reform that leaves large gaps in the regulatory framework for business. According to *Doing Business*, Eurasia has gradually improved its business environment (figure 6.7). The overall Doing Business Index, which measures the burden of compliance with regulations, shows a strong improvement in resource-poor Eurasian countries, especially Georgia,

**Figure 6.7. Overall, Doing Business Indicators have improved sharply in the past decade**

(Evolution of Doing Business Indicators)

- European Union-12
- Eurasia resource-rich
- Eurasia resource-poor
- East Asia and Pacific



Source: World Bank 2013a.

whose business environment is now more favorable than that in the Eurasian resource-rich countries and the EU-12. Progress has been notable in the area of business start-up, but little progress has been made in trading across borders.

But *Doing Business* rankings do not tell the whole story. The perception of market participants, as measured by the Worldwide Governance Indicators (World Bank, n.d.c), paints another picture (box 6.2). There is a widespread perception that Eurasia's business regulatory framework improved little over 1996–2011, particularly in resource-rich countries, and that the government's ability to implement sound policies and regulations remains ineffective (figure 6.8). Resource-rich Eurasian countries also perform far worse than other resource-rich countries. Large heterogeneity is seen within Eurasia, with Georgia having the most favorable regulatory environment, reflecting the sweeping regulatory reforms prompted by the Rose Revolution, which began in 2004. Business regulations are worst in Turkmenistan, Uzbekistan, and Belarus—and they actually deteriorated in Turkmenistan and Ukraine over 1996–2001 (see figure 6.8).

Specific to the extractive sector, efforts toward greater transparency have been supported by the Extractive Industries Transparency Initiative (EITI).<sup>6</sup> Azerbaijan was one of the first countries to join the EITI in 2003. It achieved the "EITI Candidate" status in 2007 and became compliant in 2009. Kazakhstan formally became an EITI candidate country in 2007 and EITI compliant in 2013. The Kyrgyz Republic also became EITI compliant in 2011, while Tajikistan and Ukraine are in candidate status.

Results from Business Environment and Enterprise Performance Surveys (EBRD and World Bank 2005, 2008/09) are consistent with the above view about Eurasia's regulatory environment. The most striking finding from the 2008/09 survey is the sharp increase in senior management time spent complying with regulations (figure 6.9). In 2008/09, senior managers in Russia spent 20 percent of their work hours dealing with the requirements of government regulations, nearly four times as much as in 2005, reducing the time that could be used for productive activities.

### Box 6.2. Doing Business Indicators, Worldwide Governance Indicators, Business Environment and Enterprise Performance Surveys, and Global Competitiveness Index: how do they differ?

**The World Bank's Doing Business Indicators** measure the burden of business regulations for registered small and medium-size companies in the largest business city in 185 countries. (Turkmenistan is one of the few countries that do not take part.) Doing Business captures 10 dimensions of business regulations: starting a business; dealing with construction permits; getting electricity; registering property; getting credit; protecting investors; paying taxes; trading across borders; enforcing contracts; and resolving insolvency. Indicators are compiled based on inputs provided by local respondents (professionals who routinely administer or advise on the legal and regulatory requirements). Because of the focus on legal and regulatory arrangements, most of the respondents are legal professionals, such as lawyers, judges, and notaries. Freight forwarders, accountants, architects, engineers, and other professionals answer the surveys related to trading across borders, taxes, and construction permits.

The Doing Business Indicators have limitations. They do not, for example, measure the full range of factors, policies, and institutions that affect the quality of the business environment, including security, the prevalence of bribery and corruption, market size, macroeconomic stability, the state of the financial

system, or the training and skills of the labor force. Moreover, the indicators assume that firms know the applicable regulations and comply with them and so do not account for time that may be lost figuring out what needs to be done or how to comply with regulations.

**The Business Environment and Enterprise Performance Surveys** for Eastern Europe and Central Asian countries, conducted jointly by the World Bank and the European Bank for Reconstruction and Development, are firm-level surveys of a representative sample of an economy's nonagricultural businesses. The surveys cover a broad range of topics, including access to finance, corruption, infrastructure, crime, competition, and performance measures. Data are collected from face-to-face interviews with top managers and business owners in more than 130,000 companies in 135 countries. The data reflect business conditions from a firm's perspective at the country level and are useful for comparing the impacts of reforms on firms.

**The World Bank's Worldwide Governance Indicators** measure six dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. They cover 215 economies for 1996, 1998, 2000, and each year 2002–12. The indicators are compiled based on

several hundred individual variables measuring perceptions of governance, drawn from 33 data sources constructed by 30 different organizations. These individual measures of governance are assigned to categories capturing the six dimensions of governance, and an unobserved components model is used to construct six aggregate governance indicators for each period.

**The World Economic Forum's Global Competitiveness Index** is based on survey and factual data. The source of survey data is the World Economic Forum's Executive Opinion Survey. Survey questions ask participants to evaluate, on a scale of 1 (worst) to 7 (best), the current condition of their operating environment. The indices are based on a representative sample of survey responses across countries. The sample is designed to be representative of the national business sector, both in the share of production by industry and size of companies and the range of company types (domestic, foreign, and partly state-owned). Sample size varies by the size of the economy. The World Economic Forum has taken steps to mitigate the possibility of country-specific perception bias. It selects companies by international exposure, so that executives are in a position to compare the situation with those of other countries; and it attempts to exclude outliers from computations.

### Some formalities have been reduced, but it is still hard to run a business

Despite reduced registration formalities and minimum capital requirements for business start-ups, starting operations and running businesses remain difficult because other regulations—those for getting licenses, access to factors and inputs, international trade—remain onerous and time-consuming.

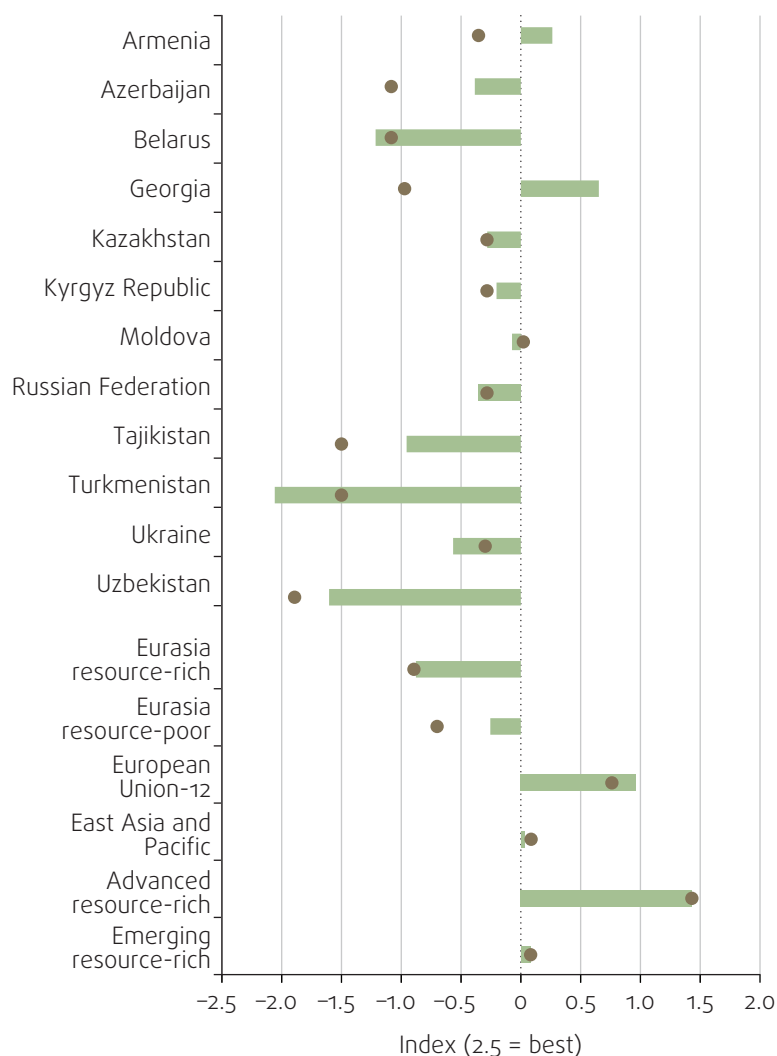
Obtaining licenses and permits incurs a heavy administrative burden. According to Business Environment and Enterprise Performance Surveys, a far larger share of firms identified business-related licenses and permits as a major obstacle to business in 2008/09 than in 2005 in Belarus, Kazakhstan, Russia, and Ukraine (figure 6.10). In Armenia in contrast the share of firms identifying this obstacle was markedly reduced.

Getting construction-related permits—that is, obtaining all necessary approvals to build a simple warehouse and connect it to water, sewage, and a fixed

**Figure 6.8. Market participants do not feel the improvement in regulations on the books**

(Regulatory quality)

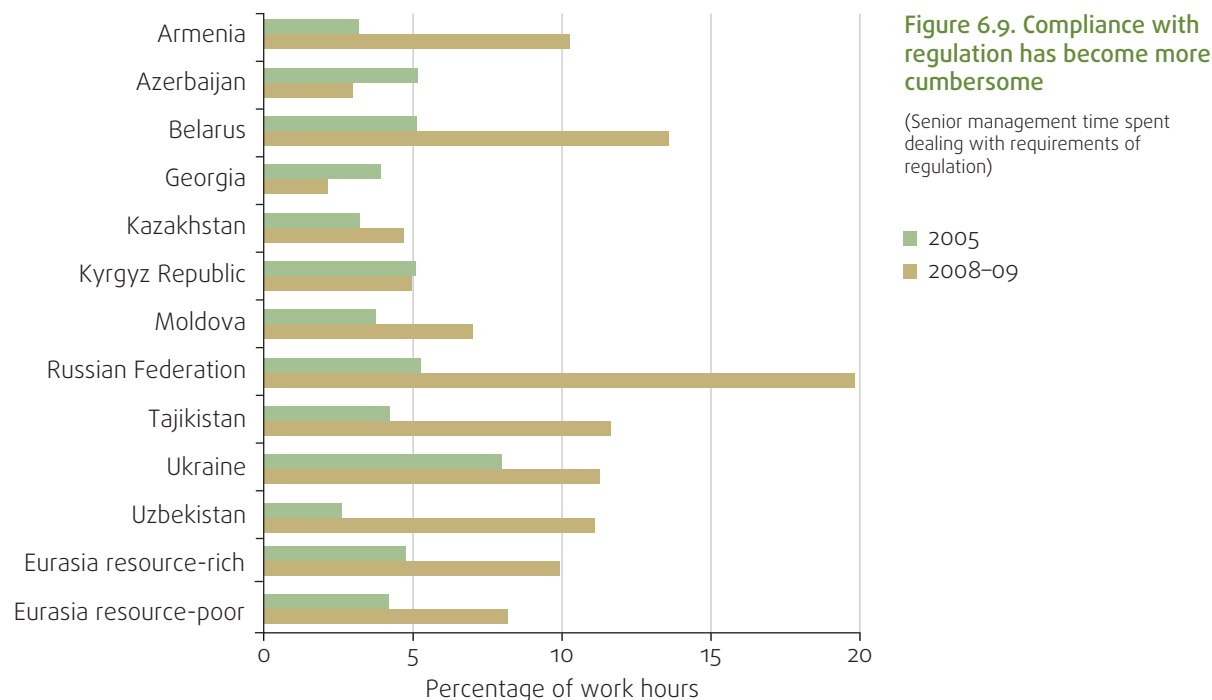
● 1996  
■ 2011



Source: World Bank, n.d.c.

telephone line—is harder in Eurasia’s resource-rich countries than in resource-poor countries, involving more procedures, higher cost, and longer wait time (figure 6.11). According to *Doing Business*, getting such permits in Russia requires 42 procedures and 344 days. The most time-consuming part is to obtain the development plan for the land plot at the Moscow Architecture and City Planning Committee, which consumes more than a third of the total wait time.<sup>7</sup>

Obtaining operating licenses is also time-consuming. It takes 57 days for firms to obtain an operating license in Russia, more than twice as many as the Eurasian average. The approval process may be used to discourage business entries in certain sectors. For example, in Russia, it takes 82.5 days to obtain a license to



Sources: EBRD and World Bank 2005, 2008/09.

do business in manufacturing, particularly chemicals and chemical production, compared with 34.6 days for retail services. Obtaining operating licenses and construction permits often entails giving gifts to government officials (figure 6.12). On average, 25 percent of firms were expected to give gifts to government officials to obtain an operating license in 2008/09. Bribery is more frequent for construction permits.

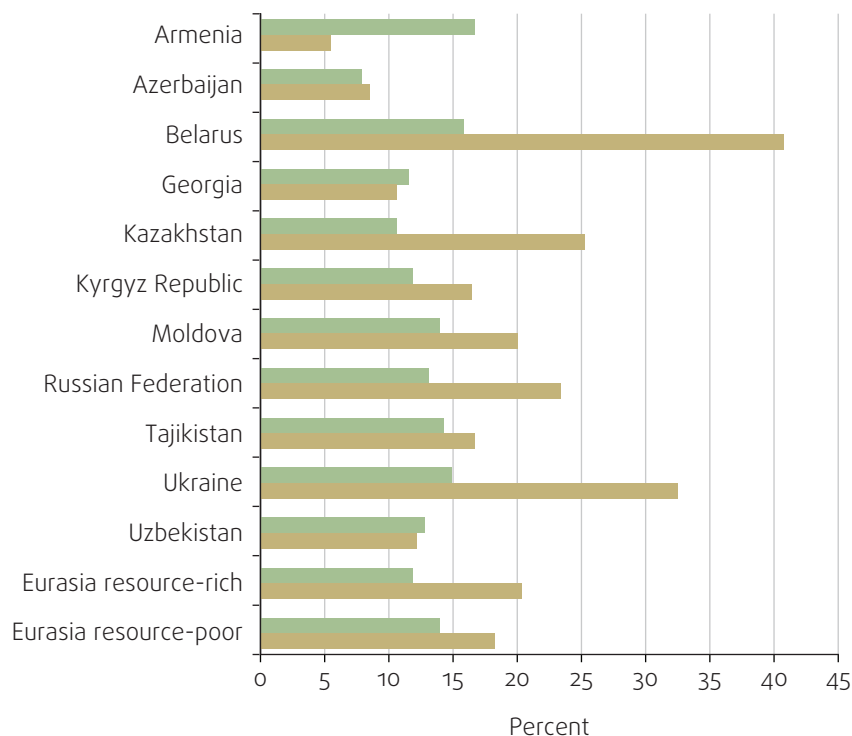
Labor market regulations are quite flexible in Eurasia and do not differ much from those in Organisation for Economic Co-operation and Development (OECD) countries, according to the Institute for the Study of Labor's Employment Protection Legislation Index (Muravyev 2010). Within Eurasia, Georgia and Kazakhstan have the most liberal labor policies (figure 6.13). By contrast, Moldova's are restrictive, making it very hard for firms to dismiss redundant employees or hire new ones.

Regulations for international trade are extensive and compliance is time-consuming, inhibiting access not only to export markets but also to intermediate inputs of foreign origin and foreign technology (figure 6.14). In this area, Eurasia has made very little progress over the past 15 years, and it is far behind the comparator countries. According to *Doing Business*, Kazakhstan, Tajikistan, and Uzbekistan are the world's worst three countries for ease of trading across borders. Cross-border trade is also difficult for the Kyrgyz Republic, ranked 176th of the 185 countries. Documentation requirements are especially heavy in Uzbekistan, where firms have to process 13 documents to export and 14 to import.

### Figure 6.10. Getting a license is a major obstacle to doing business

(Percentage of firms identifying business licenses and permits as a major obstacle)

■ 2005  
■ 2008-09



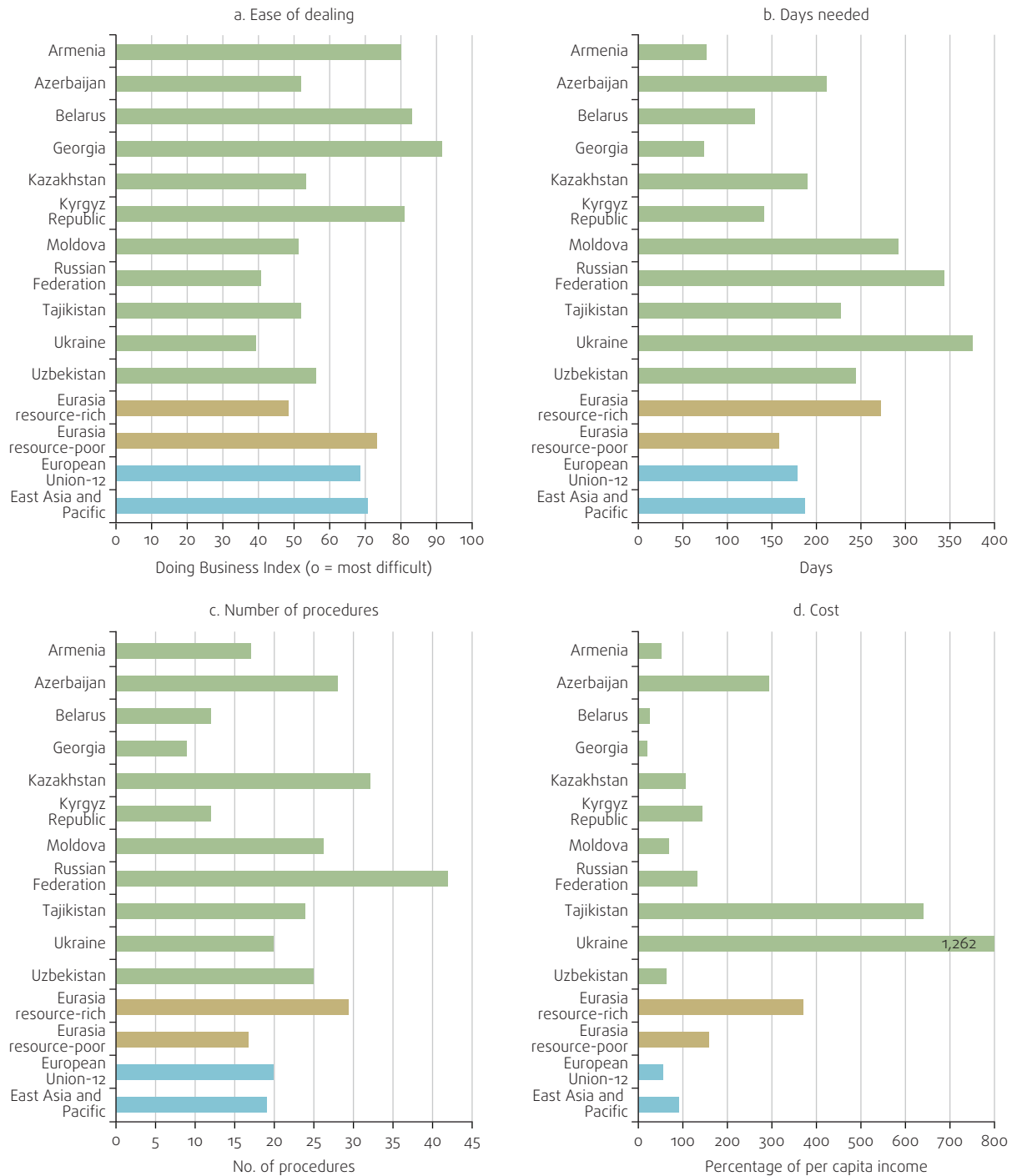
Sources: EBRD and World Bank 2005, 2008/09.

Cumbersome regulatory requirements for trade may have created opportunities for bribery. In Uzbekistan, with the most unfriendly trade-related procedures in Eurasia, more than 70 percent of firms were expected to give gifts to public officials to secure an import license, according to the 2008/09 Business Environment and Enterprise Performance Survey. And despite the trade policy reforms in Georgia that led to its moving sharply up the *Doing Business* rankings, the Business Environment and Enterprise Performance Surveys show that 43 percent of firms there were expected to offer a gift to get an import license. Russian exporters face a 20 percent higher probability of tax inspection than nonexporting firms (World Bank 2013c).

Nonregulatory barriers to trade are also substantial in Eurasia. A variety of means are used to discourage trade and protect domestic industries. Turkmenistan, for example, applies many times higher excise rates on imported goods than on goods produced locally. In Uzbekistan, distortions and indirect restrictions in the foreign exchange market serve as discriminatory barriers against imports.

Eurasia also falls behind its comparator countries in all six aspects of trade logistics, according to the World Bank's Logistics Performance Index (figure 6.15). Inefficient and slow customs procedures, inadequate infrastructure, and a lack of reliable logistics services all hurt costs, timeliness, and supply-chain reliability and so hurt exporters' competitiveness. Customs inefficiency is a

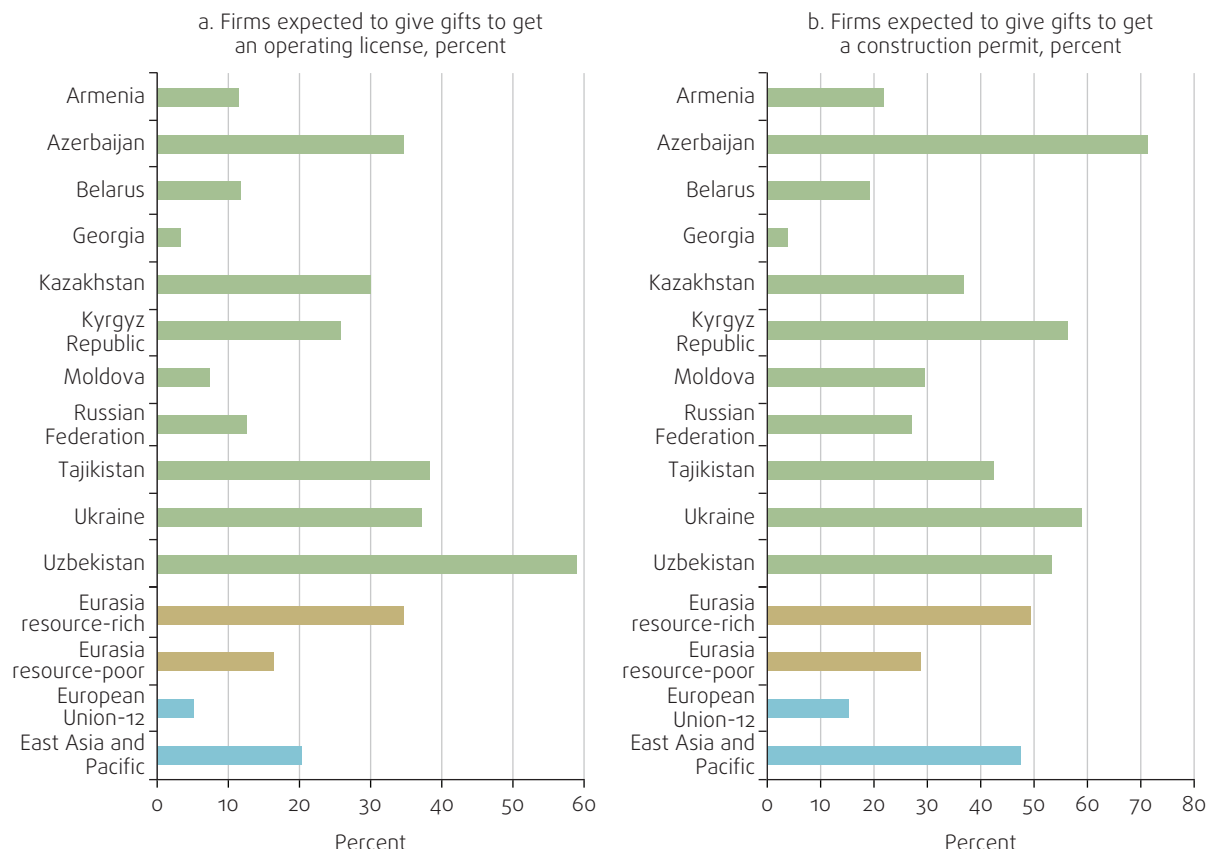
Figure 6.11. Dealing with construction-related permits



Source: World Bank 2013a.



Figure 6.12. Widespread bribery of public officials



Source: EBRD and World Bank 2008/09.

major concern in Tajikistan and the Kyrgyz Republic, where it takes more than 20 days and 15 days, respectively, to clear customs, versus 3.3 days in the EU-12 and 5.8 days in East Asia.

Rules governing FDI in Eurasia are restrictive, discouraging inflows (particularly in nonresource sectors). According to the OECD's FDI regulatory restrictiveness index for 2012, Russia had the 12th most restrictive FDI regime of 56 economies.

Besides formal restrictions, governments' control in key industries has discriminatory effects on foreign investors. Foreign ownership and control are generally difficult for airlines, railways, and energy industries, which are typically dominated by government monopolies (chapter 3). Foreign participation is also restricted for other sectors that the government regards as important for national security, while informal restrictions may also apply to media, banking, insurance, and tourism. In Kazakhstan, while no sectors of the economy are legally closed to foreign investors, restrictions are still in place, including a 20 percent ceiling for media outlets and 49 percent in telecommunications.

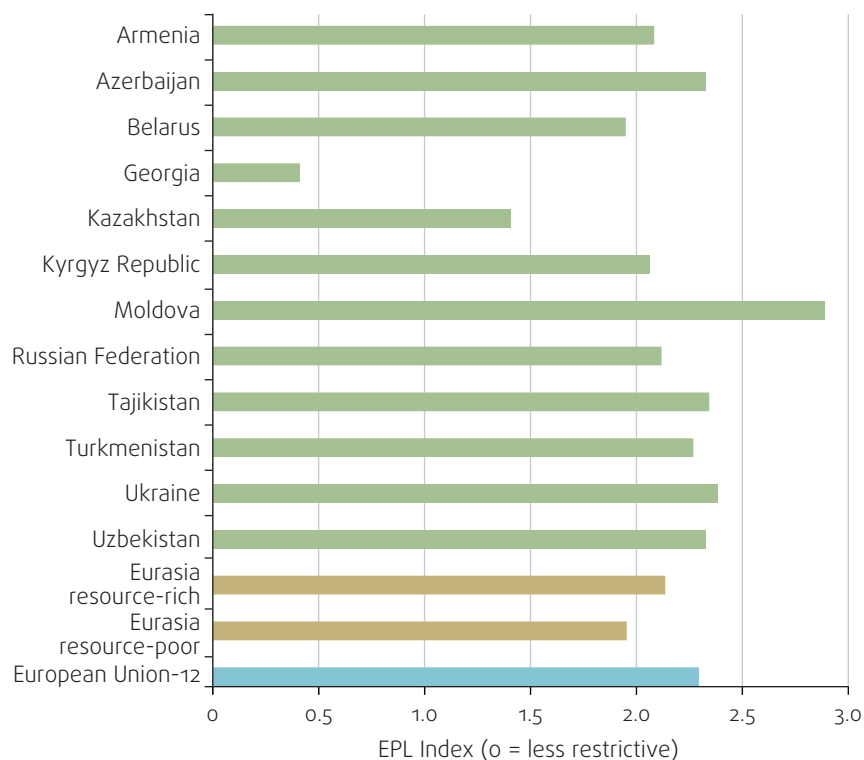


Figure 6.13. Employment protection legislation (EPL) is not cumbersome

Source: Muravyev 2010.

Note: Data are for 2009, except for the European Union-12 (2007).

Other policies may discriminate. In Azerbaijan, international firms are required to present a certificate attesting that a foreign worker is free from yellow fever, hemorrhagic virus, HIV, hepatitis B and C, and mental disorders—but only from approved medical facilities in the country. Kazakhstan’s Expatriate Workforce Quota and Work Permit Rules require the workforces of medium-size and large firms to be 90 percent local, making it hard for firms to obtain an expatriate work permit in highly technical fields where Kazakhstan cannot supply the skilled workers (U.S. Department of State 2012). In Turkmenistan, foreign investors face higher tax rates than most local companies. In Uzbekistan, currency conversion is one of the biggest problems for foreign firms, making profit repatriation difficult.

Insolvency proceedings can be cumbersome, time-consuming, and costly in Eurasia, holding back the entry decision of would-be entrepreneurs and reducing the availability of risk capital. *Doing Business 2013* assesses that resolving insolvency is far harder in the Kyrgyz Republic and Ukraine than in the other four resource-rich countries in Eurasia.<sup>8</sup> An efficient mechanism to resolve insolvency makes rehabilitating distressed but viable businesses easier, reduces the cost and time for bankruptcy proceedings, and increases the recovery rate for creditors. A good insolvency regime can therefore promote the creation of new firms, by encouraging entrepreneurs to take risks and innovate, and promote healthy competition in the economy (chapter 5). Firm entry across

**Figure 6.14. Restrictive trade regulations discourage nonresource trade and limit access to advanced technology**



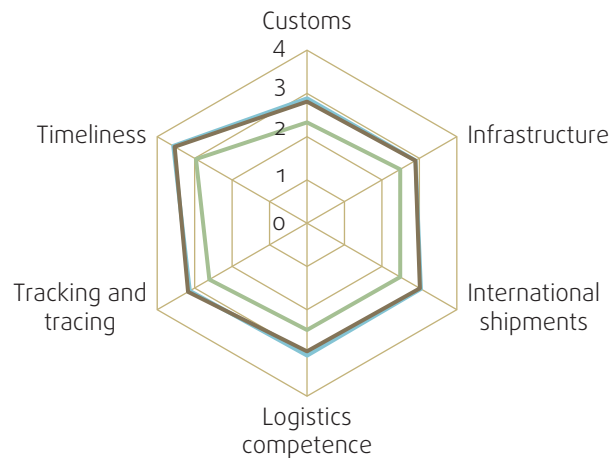
Source: World Bank 2013a.

Source: EBRD and World Bank 2008/09.

**Figure 6.15. Trade logistics are poor**

(Logistics Performance Index, 5 = best)

- European Union-12
- East Asia and Pacific
- Eurasia



Source: World Bank, n.d.a.

Eurasia appears, however, lower than the burden of closing a business would justify (figure 6.16).

### Capture by powerful interests limits competition

Inconsistent enforcement of laws and regulations and pervasive corruption are typical symptoms of weak governance, and Eurasia is far behind comparator

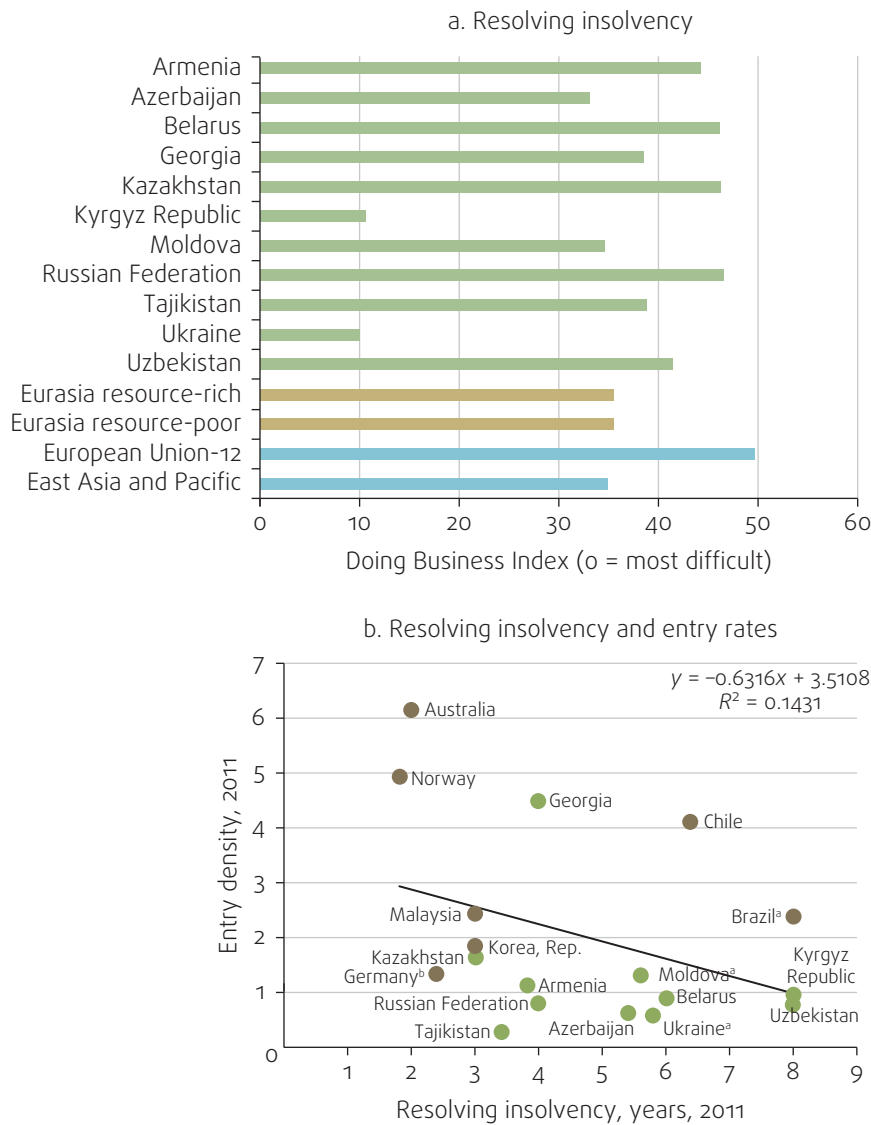


Figure 6.16. Lengthy processes in closing a business raise the cost of failure and reduce the incentives to start one

Source: World Bank 2013a.

a. Data for Brazil, Moldova, and Ukraine are for 2009.

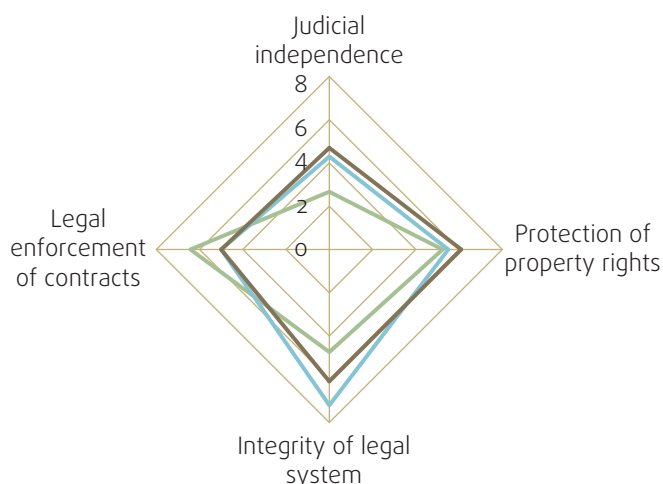
b. Data for Germany are for 2010.

countries in all elements of governance and transparency. Rule of law, corruption, and accountability are especially problematic (figure 6.17). Among the subcomponents of the rule of law, Eurasia appears particularly weak on judicial independence, integrity of the legal system, and protection of property rights. Firms in Eurasia repeatedly complain that the judiciary is subject to political influences and—particularly in Ukraine—that the legality of government actions or regulations is difficult to challenge in court. Although private ownership is enshrined in legislation across Eurasia, enforcement of property rights is weak, which translates into a major deterrent to firms that wish to invest and innovate and constrains financial development. Firms in Russia and Ukraine are least protected in their property rights among Eurasian countries. In Belarus, the reversibility of privatization deals poses a serious concern of appropriability—that is, the investors’ ability to capture profits generated from their investment or innovation.

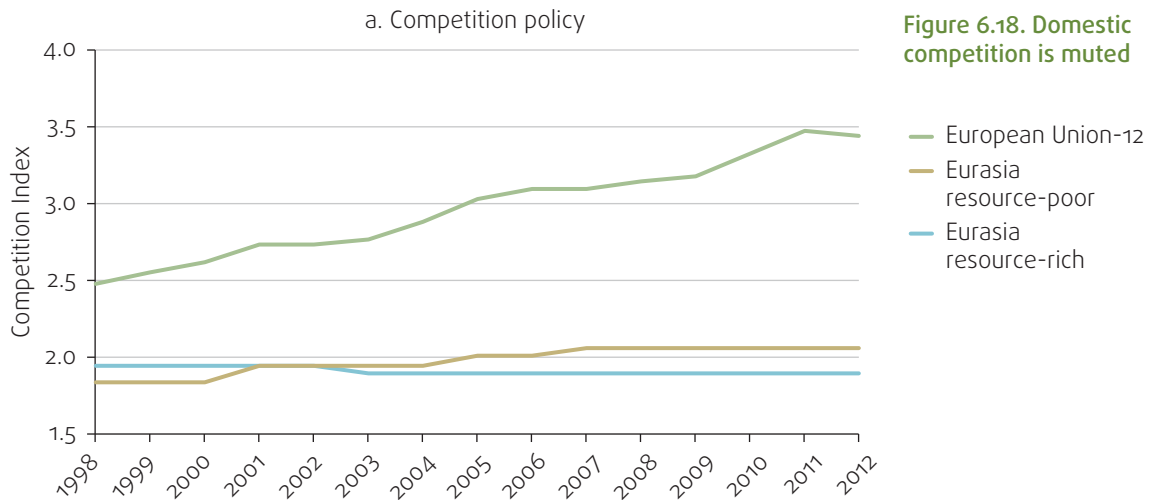
Powerful vested interests that effectively capture lawmakers and the judiciary lie at the root of the failure to translate formal regulatory improvements into a favorable environment for private enterprise in Eurasia—colloquially, “the playing field is not level.” Corporate activity is often dominated by less productive incumbents, many of which are owned partly or wholly by the public sector or have close links to the political establishment. In some countries, these firms maintain better access to natural resources, markets, credit, and licenses than private entities do. More-efficient enterprises, especially small and medium-size firms and start-ups, cannot compete with public sector entities and incumbent firms on an equal footing. Government commitment to competition seems shallow, in stark contrast with the rapid progress in the EU-12 countries (figure 6.18). According to the World Economic Forum, Eurasia ranks 119th (on average) of 144 countries on the intensity of competition in local markets, and worse on antimonopoly policy.<sup>9</sup>

Figure 6.17. Weak rule of law

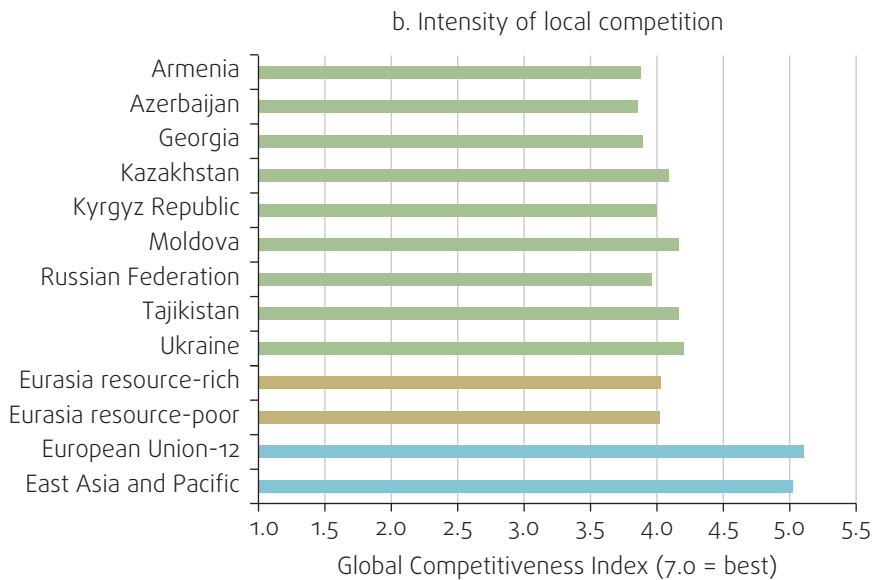
- East Asia and Pacific
- European Union-12
- Eurasia



Source: Fraser Institute 2012.



Source: World Bank and EBRD 2010.



Source: World Economic Forum 2012.

In Ukraine, SOEs are allowed to acquire inputs and capital goods without following transparent competitive bidding procedures prescribed by the state procurement law. In Turkmenistan, wool carpets produced at state factories are exempt from customs duties, whereas private carpet producers are subject to 100 percent customs duties for exporting carpets. Similarly in Russia, state corporations are exempt from competition law and many other laws meant to ensure competition, allowing SOEs to dominate the market and reducing the scope for private involvement (World Bank 2013c).

Incumbent firms are also given preferential treatment in the form of the provision of cheap inputs, lower tax rates, or even tax exemptions. In Russia, energy is provided at a discounted rate to large, less productive incumbent companies (steel and cement plants), while new forms of retail organizations face tax liabilities eight times larger than those for existing wholesale markets (World Bank 2013c). In Belarus and Turkmenistan, the financial sector—dominated by state-owned banks—channels a predominant share of financing to less productive firms, including SOEs, at subsidized rates, crowding out private investment.

Why then is the playing field not level? This is surprising given that the legal framework for competition in Eurasia was assessed by the OECD (annex 6C) and rated adequate with only a few remaining legal gaps in some countries. (The least advanced were Belarus and Turkmenistan.) Most Eurasian countries had adopted modern competition laws quite early in the transition process, such that by 1999 all but two (once more, Belarus and Turkmenistan) had enacted modern competition frameworks, with regulatory bodies in charge of enforcing legislation.

Implementation efforts remain weak and uneven, partly because of limited institutional capacity, resource constraints, and a lack of relevant information but mainly because of the inability of young competition agencies to resist anticompetitive and distortive policies aimed at favoring businesses that are directly or indirectly connected to political parties or to the legislative or executive branches.

The enactment and early implementation of competition law was often stopped or overruled by distortive government interventions and biased court decisions. Recent examples from Russia and Ukraine are a good illustration of how government discretionary decisions can undermine competition, create dominant market position, and worsen market efficiency. In 2012, Ukraine's cabinet passed a decision allowing state-owned companies to acquire inputs and capital goods without following transparent competitive bidding (tender) procedures prescribed by the state procurement law. This, to a large extent, undid the efforts that went into passing a procurement law aligned with best international practice and, more important, created a gap that will feed corruption, preclude the private sector from competing in state purchases, and increase state budget spending. Similar setbacks have arisen in Russia, where SOEs are not subject to provisions of the state procurement law, competition law, bankruptcy law, and many other laws relevant for efficient market operations (such as disclosure and audit of income statements, balance sheets, and other financial reports).

## Fiscal institutions to manage volatility

Should the fiscal institutions for managing resource rents such as oil funds be designed with the relatively modest objective of steadying government revenue over the business cycle, or should they have longer-term objectives such as boosting productivity and employment? Weaknesses in the overall governance framework would suggest that Eurasian countries are best advised to use fiscal instruments for the still crucial but more short-term objective of reducing volatility.

Countries rich in natural resources face the challenges of resource revenue exhaustibility and volatility. Resource exhaustibility calls for intertemporal consumption, savings, and investment decisions, with long-term implications for the development of nonresource sectors, intergenerational equity, and fiscal sustainability. Revenue volatility, on the other hand, gives rise to a mechanism to prevent the transmission of fluctuations into output, fiscal policy, and real exchange rates.

Addressing these immediate and long-term considerations simultaneously is a complex policy challenge. Because of that, it is no surprise that very few countries are achieving both goals. Many resource-rich emerging and developing countries have adopted some form of fiscal institutions to manage volatility while attempting to address longer-term objectives, by building productive capital to foster alternative engines of growth and saving part of resource rents for future generations informed by the intertemporal framework.

Nonetheless, the record is poor. Evidence suggests that the greater use of fiscal institutions has neither shielded countries from procyclicality nor helped build the productive capital—physical and human—needed to foster nonresource sectors (box 6.3). Empirical studies attribute unanimously the disappointing outcome to political and administrative constraints (for example, Arezki and Brückner 2011; Arezki, Lederman, and Zhao 2011; van der Ploeg 2011). In the face of large natural resource rents, inadequate political institutions make it difficult for countries to resist pressures to increase spending and lower taxes, which may induce higher fiscal profligacy and encourage rent-seeking activity. Weak implementation capacities add to these constraints.

There is a negative correlation between government effectiveness and macroeconomic volatility, measured by the volatility of inflation, suggesting that countries with weak institutions tend to adopt poor economic policies to manage volatility of commodity prices (figure 6.19). The same exercise using indicators of the quality of infrastructure and of human capital also shows that countries with weak institutions tend to fail in using natural resource rents effectively to build the productive assets needed to foster nonresource sectors (figures 6.20 and 6.21).

How should Eurasia manage natural resource rents? With weak institutions, simultaneously addressing multiple policy objectives of resource management may be too ambitious for Eurasia. Given that the region as a whole has a fairly long reserve horizon, perhaps the best strategy for the Eurasian resource-rich countries may be, for now, to focus on the narrower (but important) policy objective of managing volatility while working hard to raise the quality of institutional capital closer to the level of Chile.

Volatility management is crucial because volatility in natural resource revenue can result in volatility of GDP, government outlays, and the real exchange rate. Such macroeconomic volatility prompts consumers and businesses to be more cautious, hampering investment and growth. While macroeconomic stability alone is not sufficient for long-term growth, it is absolutely essential.

Public finances can be delinked from fluctuations of resource revenue. The mechanism should be designed to control the expansion of government spending by filtering large inflows of resource revenue that could be excessive



### Box 6.3. Stabilization funds

Following the first establishment by Kuwait in 1953, a number of countries have introduced special fiscal institutions, such as stabilization funds and fiscal rules, to help the implementation of fiscal policy in the face of commodity price volatility.

But apart from a handful of exceptions (such as Chile), successful examples of stabilization funds are very few in developing countries. The empirical evidence of the effectiveness of stabilization funds—both case studies and econometric—is tenuous at best. On the one hand, studies find that countries with a stabilization fund have attained stabilization goals. For example, a cross-country analysis by Shabsigh and Ilahi (2007) shows that stabilization funds are associated with stable inflation at low levels, though there is a statistically weak negative association between the presence of stabilization funds and volatility of real exchange rates. Sugawara (2013) finds robust results that stabilization funds have contributed to smoothing government spending. Merlevede, Schoors, and van Aarle (2009) find that the introduction of the oil stabilization fund in the Russian Federation has mitigated economic fluctuations caused by the oil price shocks, as reflected in the decline in oil elasticity of government spending.

On the other hand, researchers fail to find evidence that stabilization

funds have effectively insulated the domestic economy from the volatility of commodity prices. Fassano (2000) examines six stabilization funds (Norway, Chile, República Bolivariana de Venezuela, Kuwait, Oman, and the U.S. state of Alaska) and finds mixed results about the effects of the funds on fiscal management. Crain and Devlin (2003) employ panel data covering 71 countries over 1970–2000 and show that stabilization funds can actually increase the volatility of government spending in oil-exporting countries because these funds do not ensure fiscal restraint. Davis and others (2001) find that government spending tends to be less correlated with fluctuations in resource exports in countries with resource funds than in those without, but the causal relationship is reverse, meaning that countries with prudent fiscal management tend to establish stabilization funds.

More recent studies focus on the role of institutions in influencing the effectiveness of stabilization funds in resource-rich countries. A seminal work by Ossowski and others (2008) finds that the quality of governance institutions—measured by government stability and corruption—had a significant impact on the fiscal outcome in oil-rich countries over 1992–2005. However, when controlling for the quality of governance institutions, the study finds no evidence that fiscal institutions helped constrain

spending growth during the oil boom, suggesting that stabilization funds need to be accompanied by strong governance institutions to overcome a voracity effect of resource windfall. A similar conclusion is drawn by Bagattini (2011), who finds that stabilization funds have led to better fiscal outcomes but that the rules and governance of the funds are crucial factors in determining their success.

Case studies of Norway and Chile reinforce the argument that institutions play a more dominant role for the functioning of stabilization funds. Norway and Chile have been able to stabilize over the business cycle and from resource revenue-induced spending volatility because they are well endowed with institutional capital and thereby have good fiscal frameworks in place. One cannot attribute their success simply to the existence of stabilization funds.

Overall, the empirical literature emphasizes the importance of governance institutions. The introduction of a stabilization fund itself is not a substitute for fiscal prudence. Whether a particular stabilization fund is effective in shielding the domestic economy from volatility in global commodity development depends largely on government commitment to fiscal discipline and macroeconomic management, rather than on stabilization funds.

or volatile by investing in offshore assets. The operational rules anchoring fiscal policy should be simple but transparent for effective implementation and greater accountability. Kazakhstan's fixed transfer rule, or its variant, is appropriate for smoothing expenditures.

Rules that involve the estimation of long-term commodity prices or business cycles (such as Chile's structural balance rule) are complex to implement and, in Eurasia, unlikely to have a big advantage over a credible, clear, and simple rule. Besides being technically demanding, the estimation of variables could be influenced by political interests. Countries with structural balance rules have on occasion discovered systematic biases in the calculation of permanent output and other variables, which have had to be corrected later.<sup>10</sup> To mitigate this risk and maintain credibility of fiscal policy, Chile uses independent boards of experts to set key parameters and recommend policy to government.

Unspent resource rents can be saved for liquidity purposes and invested in offshore financial assets, which can be drawn down to increase government

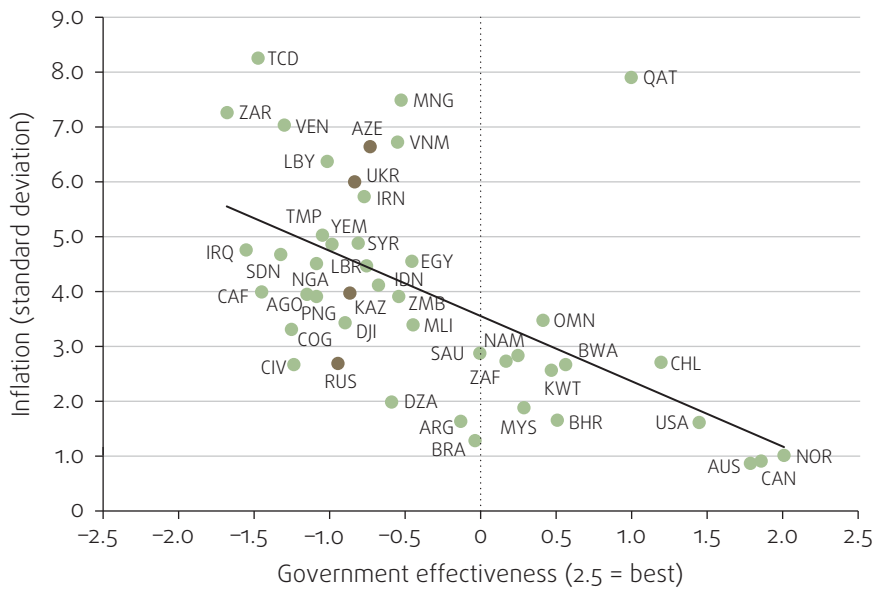


Figure 6.19. Volatility and government effectiveness in resource-rich countries

Sources: World Bank, n.d.c; IMF, n.d.; World Bank staff estimates.

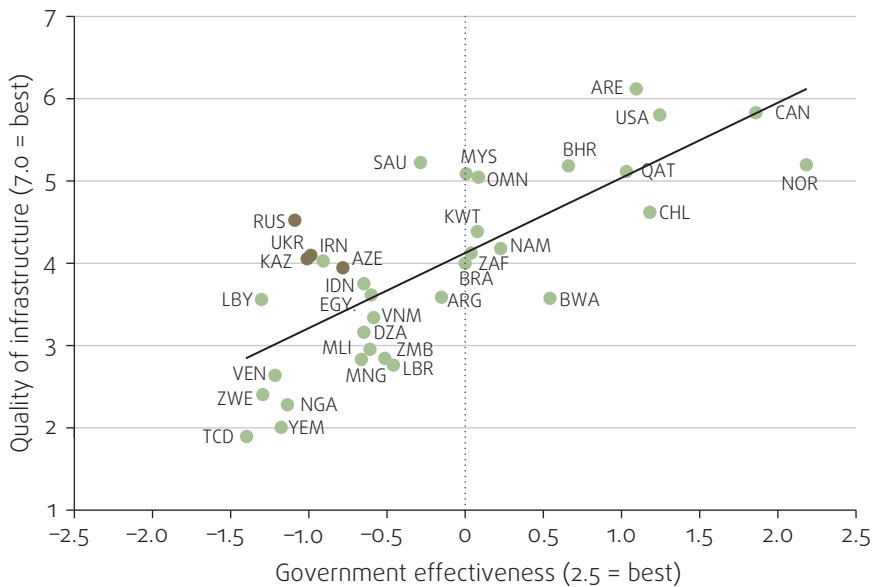
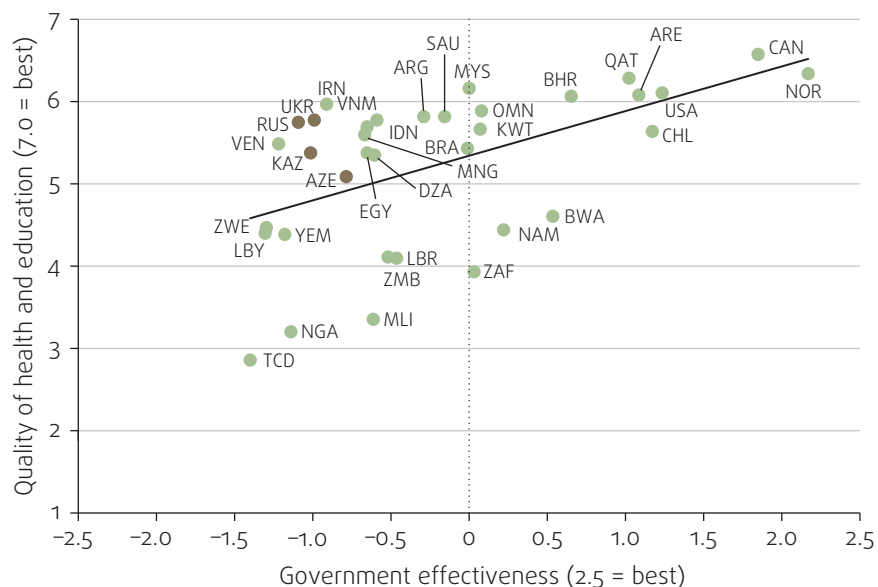


Figure 6.20. Quality of infrastructure and government effectiveness in resource-rich countries

Sources: World Bank, n.d.c; IMF, n.d.; World Economic Forum 2012.

spending during periods of low commodity prices or in the event of an external shock. Often, countries create a separate fund with the explicit objective of saving resource rents for future generations. But experience shows that these funds can seldom withstand political pressure and survive long, except

Figure 6.21. Quality of health and education and government effectiveness in resource-rich countries



Sources: World Bank, n.d.c; IMF, n.d.; World Bank staff estimates.

in a few countries (chapter 4). A large pool of resources kept in the funds is always a tempting target for politicians to exploit—for example, to expand public employment to increase political patronage networks. Considering this, there may be a merit of keeping resources longer in the ground, rather than extracting them and building financial assets that are more easily raided. This could be achieved by managing the issuance of exploration and production licenses in a way that shifts resource production and the corresponding flows of resource rents into the future.

Stronger fiscal institutions need to be accompanied by improved macroeconomic policy coordination and more prudent banking sector regulation and supervision. The boom and bust Eurasia experienced recently were driven by the policy failure to effectively sterilize resource windfalls and foreign capital inflows, the latter not subject to stabilization funds. In the face of a surge in capital inflows, monetary policy needs to play a greater role in ensuring macroeconomic stability, along with tightened fiscal policy. At the same time, prudential regulations and bank supervision should be strengthened to protect the financial sector from volatile capital inflows and prevent asset bubbles.

## The role of public institutions in increasing productivity

High productivity is crucial for sustaining high growth. Rapid productivity gains were fairly easy to achieve in the first years of recovery from the deep transitional recession until 2007. Using excess capacity, shedding excess labor,

and acquiring foreign machinery and equipment made huge productivity gains possible in a short time.

Eurasia's healthy economic performance before the financial crisis was powered by rising total factor productivity (TFP; figure 6.22). Over 1999–2007, increases in TFP were the dominant driver of output expansion, accounting for nearly 90 percent of real GDP growth, while growth in labor and capital made a limited or even a negative contribution. The main force behind TFP growth during this



Source: Conference Board and World Bank staff estimates.

period was the efficiency gains from the transition process, which entailed major structural changes, with the reallocation of excess capacity to more productive sectors of the economy.

Over time, capital accumulation grew to account for a larger component of output expansion, while labor's contribution became more limited, particularly in the resource-poor Eurasian countries. At the same time, and very clearly since 2005, TFP growth slowed, as productivity gains from first-generation reform were wearing off.

How does Eurasia's growth pattern compare with those of other regions? A growth-accounting exercise for the EU-12 and East Asia shows an interesting contrast with Eurasia's growth composition (figure 6.23). In the EU-12 and East Asia, factor accumulation has been the main driver of output growth since the late 1990s, while in Eurasia this started only in the mid-2000s. In East Asia, sustained capital accumulation supported by a high saving rate has had a particularly strong impact on output growth over the past 15 years.

Growth accounting for other resource-rich countries also highlights the unique growth pattern of resource-rich Eurasia (figure 6.24). In both advanced and emerging resource-rich economies, growth has been driven mainly by factor accumulation, not productivity growth, confirming that the rapid TFP growth in Eurasia in the early years was driven primarily by the transition process.

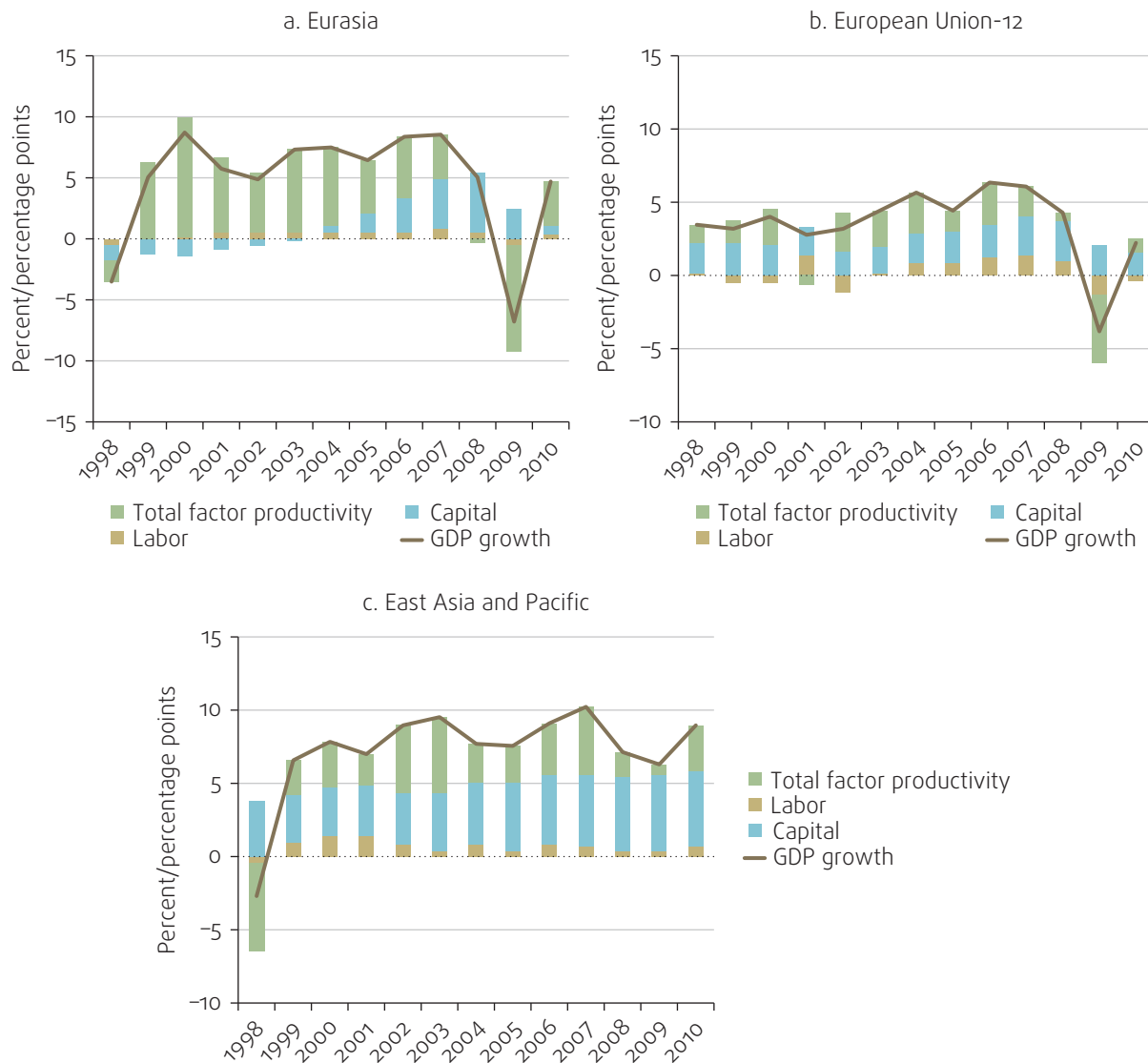
### Considerable scope for increasing productivity

Many firms in Eurasia, particularly SOEs, still operate inefficiently in the absence of robust competition. The quality of education services and poor infrastructure also serve as major obstacles for firm efficiency. Removing these impediments will go a long way toward facilitating sustained growth in employment, productivity, and output.

In a recent study, Peña (2013) benchmarks the performance of Eurasian firms against European peers and sheds light on the role of underlying assets in explaining differences in productivity across countries.<sup>11</sup> Eurasian firms are, on average, less productive than their European peers, and the gap seems to be explained largely by differences in asset portfolios (spotlight three). An estimate of the relative contribution of physical capital, human capital, and economic institutions to firm-level productivity is illustrated in figure 6.25. In all countries, underlying assets explain the bulk of firm productivity, once other differences in firm, sector, and country characteristics are accounted for. The role of economic institutions—here proxied by red tape, informality, access to finance, and competition—is particularly prominent, accounting for more than 50 percent of TFP in the average Eurasian country. When physical endowments and, especially, human capital are added, the total share of covariates representing underlying assets is even higher, explaining almost three-quarters of the productivity of Eurasian firms. The pattern in Russia is somewhat different, with variables connected with human capital, international integration, and innovation playing a larger role.

Industry-level analysis confirms that value-added growth in Eurasian industry is significantly affected by the quality of the institutional environment.

Figure 6.23. Growth pattern comparison: Eurasia, the EU-12, and East Asia and Pacific



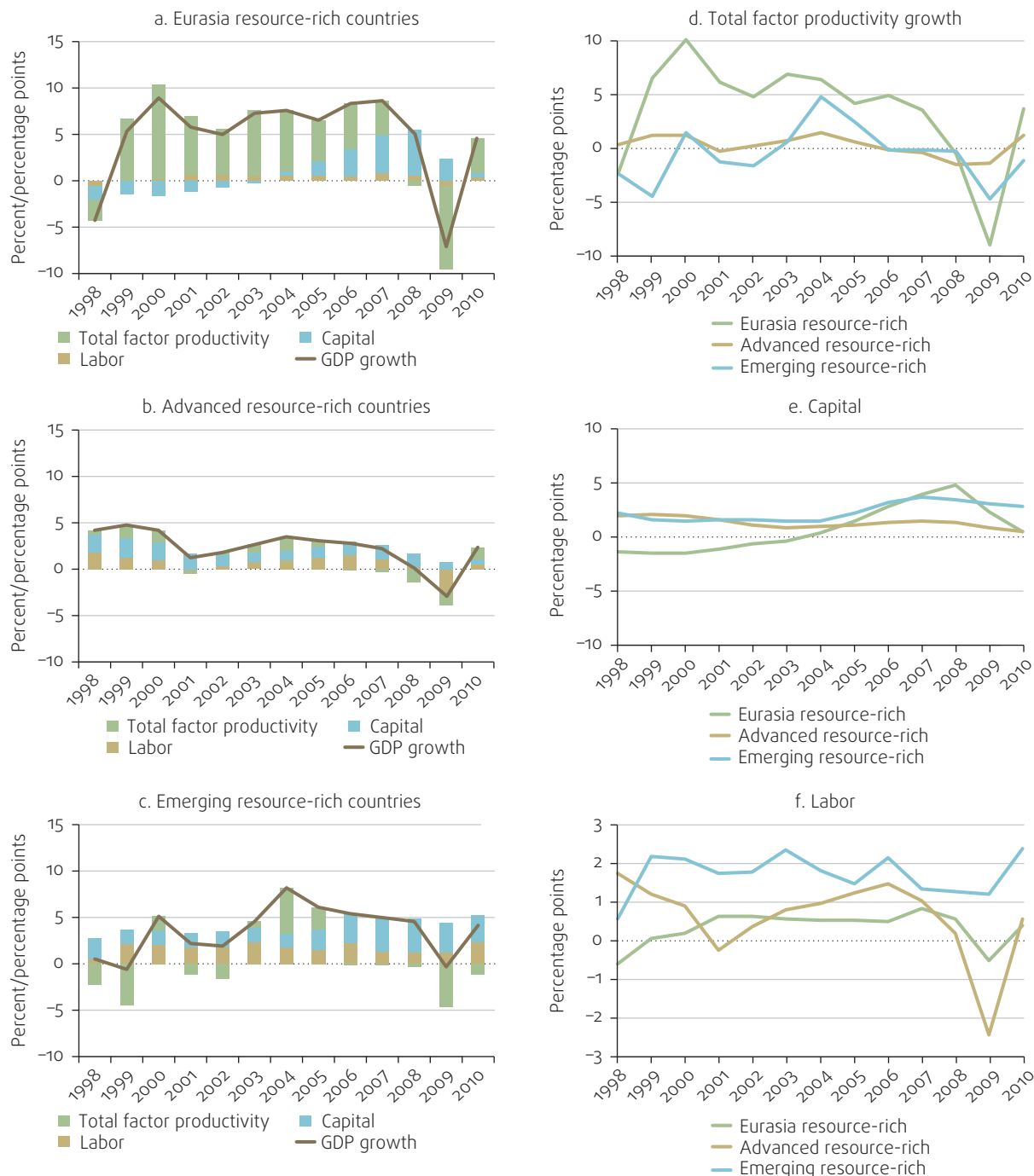
Sources: Conference Board and World Bank staff estimates.

Note: Weighted by GDP. The EU-12 excludes the Czech Republic. East Asia and Pacific excludes the Lao People's Democratic Republic, Mongolia, and Papua New Guinea.

A 1 percentage point gain in rule of law is estimated to increase value-added growth 0.23 percentage point (annex 6B).

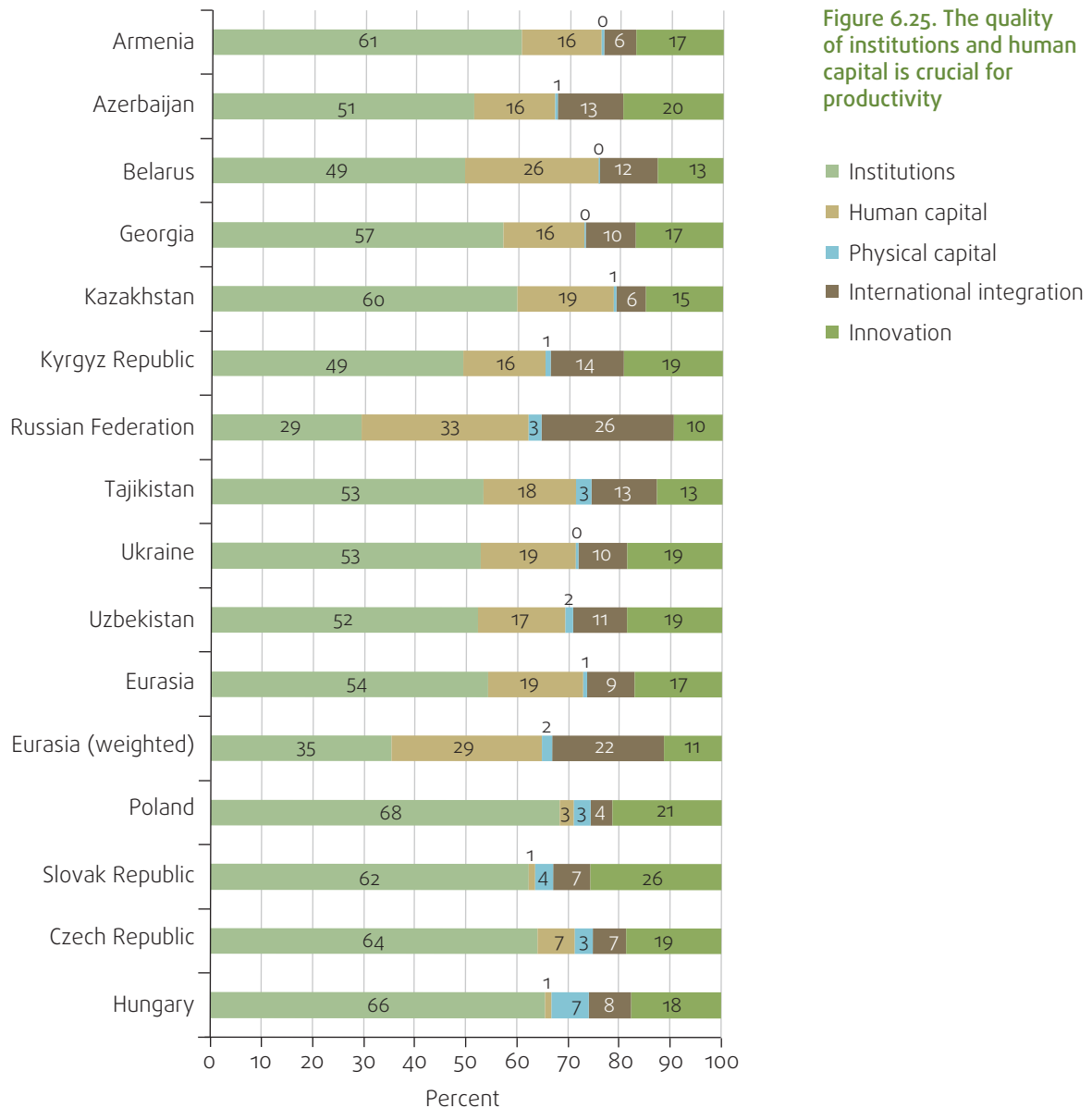
Another illustration from Russian firm-level data confirms that variables connected with adequate public services (infrastructure and education) and with the business environment (regulation and competition) explain up to 36 percent of aggregate log TFP (figure 6.26).<sup>12</sup> Of the 20 statistically significant

Figure 6.24. Comparison with other resource-rich countries



Sources: Conference Board and World Bank staff estimates.

Note: Figures are weighted averages. Emerging resource-rich countries excludes Botswana.



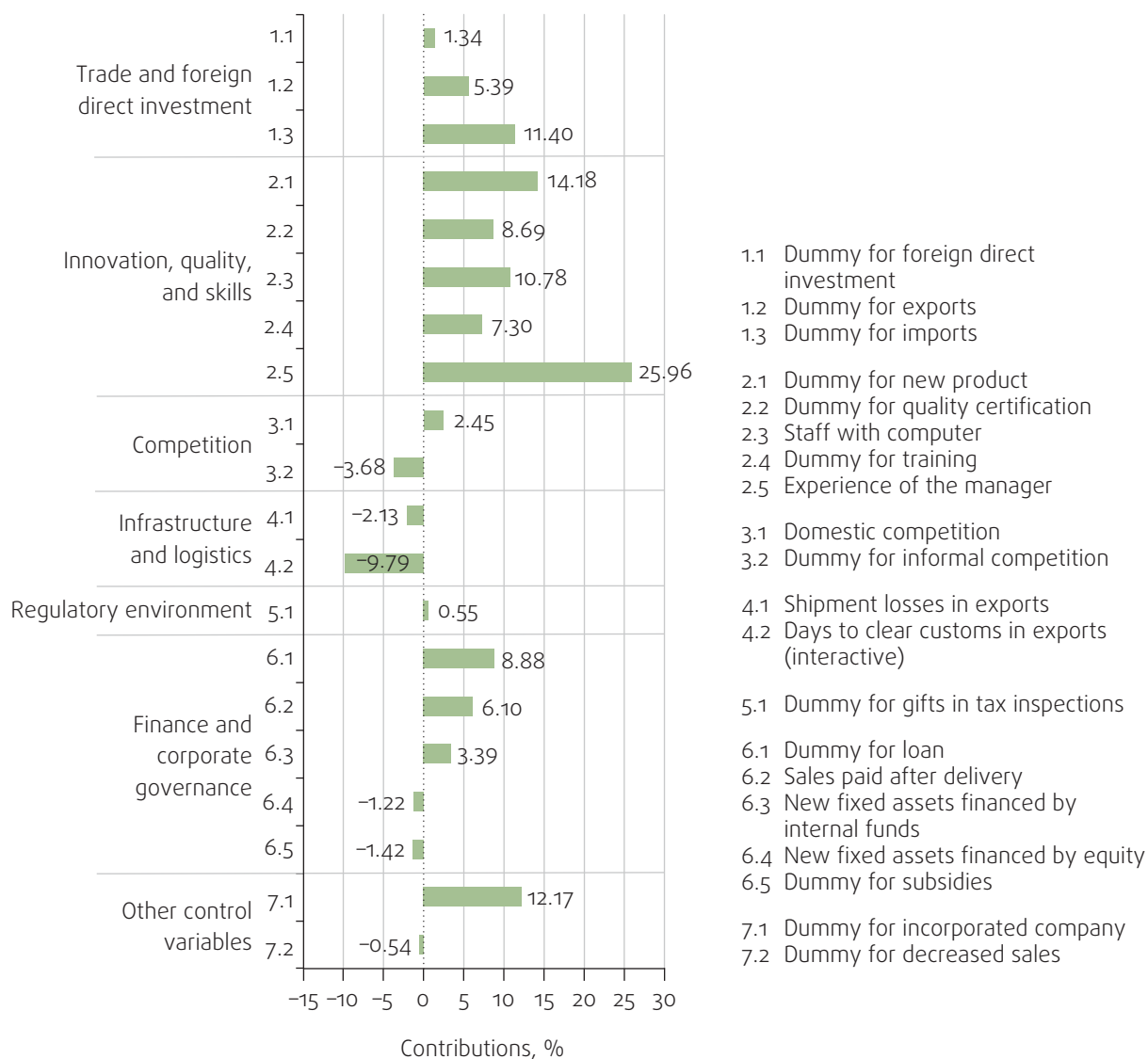
Sources: Peña 2013 based on EBRD and World Bank 2009.

Note: A methodological explanation is provided in annex 6A (equation 4). The graph illustrates the portion of estimated “demeaned” (excluding firm, industry, and country fixed effects) total factor productivity (TFP) associated with each block of explanatory variables. The explanatory variables reflect survey responses by firms on various features of the business environment that are (positively or negatively) related to TFP. These are: institutions (red tape, informality, access to finance, and competition); human capital (labor skills); physical capital (infrastructure); international integration (exports, imports, and foreign direct investment); and innovation (foreign technology, information and communications technology, and process innovation). Eurasia (weighted) represents contributions weighted by GDP.



**Figure 6.26. Determinants of productivity in Russian firms**

(Contributions of measured variables to aggregate log, total factor productivity, percent)



Source: World Bank 2013c.

variables, 17 are related to the “investment climate” and cover public service provision and the business environment.

Distortion of competition has an adverse impact on productivity. A decomposition of Russia’s productivity shows that the current contribution of the allocative component (how much of the output is commanded by the more productive firms) to aggregate productivity in the country (about 20 percent)

corresponds to half the value for Brazil in the early 2000s.<sup>13</sup> Firms facing domestic competition display an estimated 19 percent higher productivity and are 8 percent more likely to export than firms that do not face such competition. Public subsidies seem to be associated with lower productivity, while informal competition negatively influences TFP, employment, and investment in research and development.<sup>14</sup>

Among other variables, innovation, labor skills, and exporting and importing activities are all associated with higher TFP. Technological upgrades—defined as the share of staff with access to a computer, import activity, and quality certification (an indication of technical conformity)—and managerial skills appear among the most relevant factors. Innovation-related variables (investing in research and development, introducing a new product, and holding a quality certification) contribute to roughly 46 percent of the total effect of investment climate variables on firms' export propensity. The positive contribution of the dummy for incorporated companies can be seen as evidence of the importance of efficient corporate governance rules.

### Public services as productivity enablers

Weaknesses in public service provision in Eurasia stem from poor prioritization of spending and an inadequate focus on results. Eurasia could follow the lead of OECD countries and shift to performance-oriented public sectors that emphasize efficiency and accountability. Eurasian countries need systems—including enlisting private companies, academic institutions, and nongovernmental organizations—to monitor indicators of public service delivery. The role of external performance audit will also become important in determining whether delivery units comply with their contractual obligations, on the basis of which they receive budget financing.

The global economic crisis has provided an opportunity and impetus to rethink and accelerate public sector reforms, especially in improving public expenditure management. It is important that these lessons not be lost as business returns to usual after the crisis. Increased efficiency can be achieved by identifying functional categories of unproductive spending to target for cuts in the medium term and by creating room for priority expenditures. This approach would require systematic reviews of public spending to identify the scope for service delivery improvements and to advance institutional reforms.

### Regulations for economic activity

Apart from imposing additional costs, regulation can be manipulated with the objective of creating unfair competitive advantages for some firms (not necessarily the most productive) with welfare losses for the rest of the economy. In the long run, an economy where competition is restricted, by captured regulation or by other means, will be less productive because its firms will face reduced incentives to be efficient and adopt new technologies. The consequences may be particularly severe for economies far from the technological frontier, such as those of Eurasia, since the ability to adopt new technologies is essential to productivity growth and convergence to the levels of more developed economies (see Aghion and Griffith 2005; Aghion and Howitt 2005; Acemoglu, Aghion, and Zilibotti 2006).

Promoting equal opportunities for businesses can be achieved through systematic elimination of distortions and enforcement of transparent rules. These include: phasing out of tax exemptions, tax expenditures, and special benefits granted to selected sectors and companies; enforcement of transparent and cost-effective procurement rules with minimal or no exclusions; improved governance standards and stronger financial discipline and oversight for SOEs; and competitive allocation of budget resources for state programs along with quality monitoring and reporting on achieved results.

The approach to competition policy in Eurasia should be expanded to include institutional aspects, as well as the overall regulatory framework. The competition environment in which businesses operate not only is shaped by the provisions normally included in competition legislation (antitrust laws, for example) but also spans other types of government interventions and the regulations that govern business entry, operation, and exit. The key policy and regulatory functions of competition agencies are set up in line with a narrow definition of competition: professional capacity, available information, and reporting format do not allow the assessment of complex legal, institutional, and political economy considerations and their impact on competition. Taking a broader view of competition policy will help reduce the costs faced by firms and curb the power of special interests (box 6.4).

The strengthening of competition agencies should be seen in the context of a better distribution of roles and responsibilities in the public sector. The main task of competition agencies should be a complex assessment of all legal and regulatory aspects relevant for advancing a fair and equal competition environment. For instance, competition laws often provide state regulatory bodies with special legal rights in regulating monopolies or granting privileges, preferences, or subsidies when broader policy goals or public interest justify it. These state interventions are justified when the sum of benefits from correcting market failures exceeds the costs and losses incurred by intervening in individual markets. Competition agencies should have a special role in reviewing and monitoring legal and regulatory acts that potentially undermine competition to process reported violations and take corrective actions.

## Fostering job creation through a better business environment

Eurasia's transition to a market economy in the 1990s was accompanied by a sharp decrease in total employment, as less-productive firms contracted or disappeared and survivors became more efficient by shedding excess labor. But despite liberal labor market regulations, Eurasia's rapid economic expansion in the 2000s did not create many net jobs.

### Jobs have not been created quickly enough

Employment opportunities remained comparatively limited even during the rapid economic expansion that Eurasia experienced before the global economic crisis. Net employment grew 6.5 percent over 2003–08 in Eurasia, compared with 9 percent in the EU-12 and 12 percent in East Asia. Employment rose

### Box 6.4. Competition policy in Eurasia: narrow or broad?

A competition legal framework can be defined with regard to the competition law itself (*narrow definition*) or to the competition law and other business-related legislation affecting all aspects of economic competition (*broad definition*) including business entry, operation, and exit.

In the narrow sense, the Organisation for Economic Co-operation and Development (OECD) definition envisages the following areas to be covered by the competition law itself:

- Market dominance, defined as an abuse of market power by dominant firms or attempts of not-yet-dominant firms to monopolize markets. Abusive practices typically include predatory pricing, loyalty rebates, tying and bundling, refusals to deal, margin squeeze, and excessive pricing.
- Monopolistic agreements and concerted actions, defined as horizontal agreements between companies not to compete with one another by means of price-fixing, output restrictions,

market allocation, and bid rigging (the submission of collusive tenders).

- Unfair competition, defined as a fraudulent, deceptive, or dishonest trade practice that is prohibited by the law.
- Antitrust investigation, defined as an inquiry conducted by any antitrust investigator for the purpose of ascertaining whether any person is or has been engaged in an antitrust violation.
- Implications for infringers, defined as legal consequences of being involved in violation of competition law.

There is growing consensus that the relevant criteria for evaluating competition policy implementation must be broader and capture three main dimensions: legal enforcement, competition advocacy, and institutional effectiveness.

Early empirical studies (Dutz and Vagliasindi 2000a, 2000b) found a robust positive relationship between effective competition policy implementation and the expansion of more efficient private

firms. They also found that competition authorities in transition economies must expand their traditional role of investigating alleged anticompetitive practices by enterprises to pursuing cases against government bodies whenever their conduct restricts competition. Competition authorities must also act as advocates of competition principles in legislative and regulatory activities of the government and educate all key economic actors of the benefits of competition. For maximum impact, the competition promotion activities should seek to enhance the entry opportunities for new enterprises and provide support to innovative firms and activities.

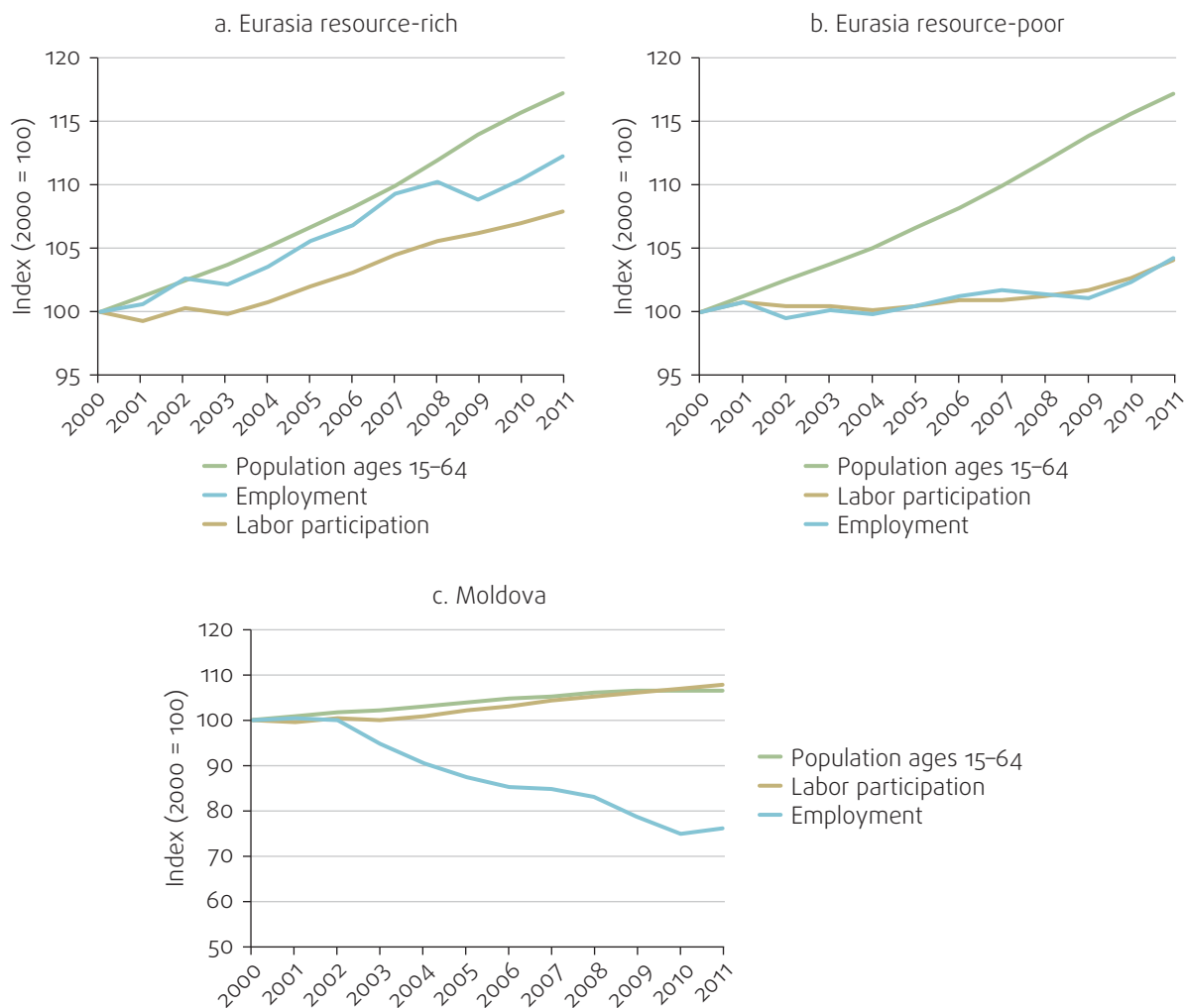
Merely having a competition law on the books, or having an up-and-running competition agency, is not sufficient for effective implementation. To foster the entry and growth of enterprises, competition authorities should safeguard against undue influence from pressure groups and be more accountable to all stakeholders, including civil society.

Source: Shkurupiy 2013.

1.2 percent a year over 2003–08 in Eurasia, far slower than the average GDP growth of 9.4 percent. During the boom period of 2003–08, 1 percentage point of GDP growth was associated with only 0.07 percentage point of employment growth in Eurasia, versus 0.23 percentage point in the EU-12 and 0.12 percentage point in East Asia. And while the working-age population rose in most countries, Eurasia's labor force stagnated or even declined over 2000–11, as in some countries many workers emigrated for work (figure 6.27). In Moldova, for instance, the labor force contracted 25 percent over the period, against working-age population growth of 6.6 percent.

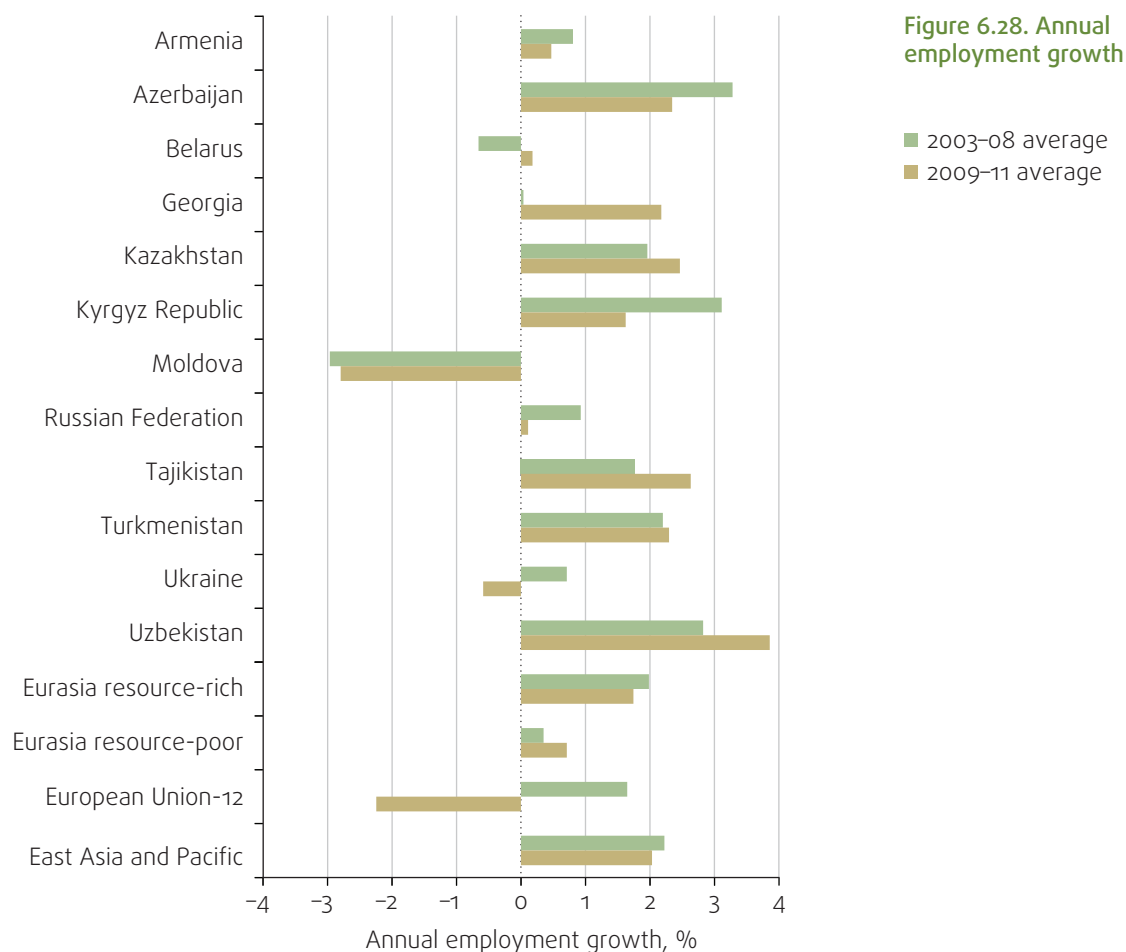
Employment gains differed considerably across countries in the boom years (figure 6.28; see chapter 3). Labor market outcomes were much more favorable in the resource-rich countries, where employment rose 11.5 percent from 2003 to 2008 against 1.6 percent in the resource-poor countries. Job creation was particularly robust in Azerbaijan, where the private sector was the driver of job creation in resource-poor sectors, such as information and communications technology, construction, and hotel and restaurant sectors, supported by large government spending facilitated by buoyant resource rents. In Kazakhstan, the public sector, including firms under Samruk-Kazyna (the National Welfare Fund), has been a major contributor to rapid job growth. Labor market performance was more disappointing in resource-poor countries, despite strong economic growth.

Figure 6.27. Changes in labor participation, working-age population, and employment



Source: World Bank staff estimates.

Eurasia's precrisis growth translated into steep real wage increases. Over 2003–08, real wages more than doubled, averaging 15 percent annual growth. Across the world, only China experienced wage growth of comparable size, but unlike in other regions, Eurasia's real wage growth outpaced GDP and labor productivity growth over the past decade (figure 6.29).<sup>15</sup> To some extent, the sharp wage increases in Eurasia are the consequence of the rebound from the very low levels following the transition to a market economy. In Russia, real wages had fallen to less than half their 1990 level before recovering after 2000 and climbing above 1990 levels only in 2006–07. Similarly, real wages in Ukraine



Source: World Bank staff estimates.

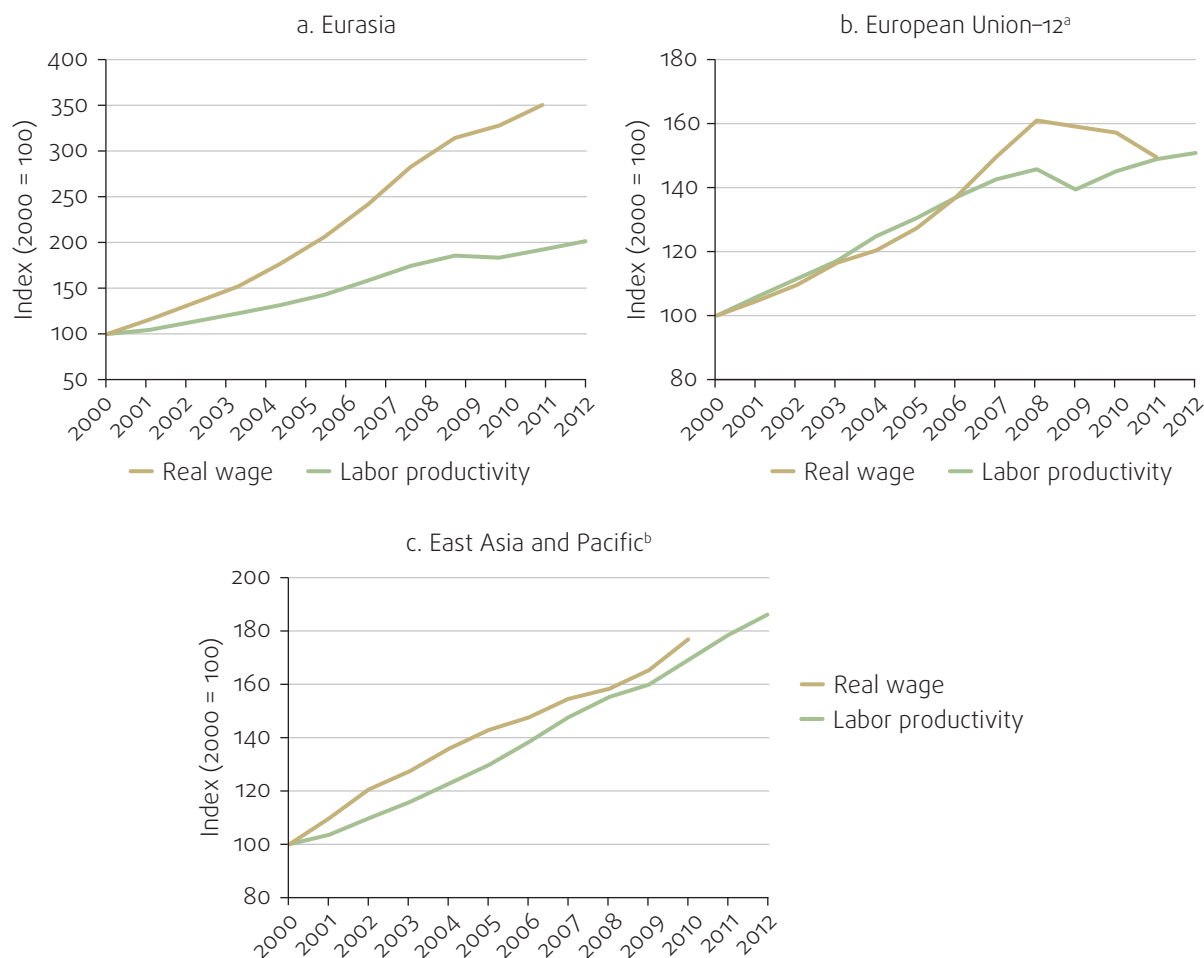
fell sharply over 1992–99 before showing a more than threefold gain by 2009 (World Bank 2013b).

Despite the rapid wage increases, Eurasia—especially its resource-poor countries—still has lower labor costs than other regions. However, the region loses luster when compared with developing East Asia (excluding the Republic of Korea and Singapore), which offers better-skilled labor at lower costs, as well as a better business climate.

### Making market institutions job-friendly

Why did the strong growth of the past decade not translate into jobs? Labor market institutions in Eurasia are not restrictive by comparative standards. Hence, the answer must be broader and encompass the overall regulatory conditions for doing business. Indeed, a recent World Bank study, finds that

Figure 6.29. Labor productivity and real wage growth



Source: World Bank 2013b.

a. Includes Bulgaria, the Czech Republic, Estonia, Hungary, Poland, and Romania.

b. Includes China, Indonesia, the Republic of Korea, and Malaysia.

the labor markets' lukewarm response to growth in Eurasia reflects poor overall regulation (World Bank 2013b). The study—based on regression analysis of employment creation in 20 European and Central Asian economies—finds that better-functioning market-oriented institutions and a stronger business environment are associated with longer periods of positive and sustained employment growth. While some Eurasian countries with a poor business climate experienced high employment growth during some years, advanced reformers, essentially EU-12 countries, were the only group that systematically experienced positive and significant annual employment growth over a period

of six to eight years in the 2000s. Further, the study finds that the payoff to reform often materializes with a lag and only among countries that have managed to implement and sustain broad reform agendas.

The extent to which countries have moved toward a market economy has fundamentally affected the relationship between growth and employment creation. Except for Georgia, Eurasian countries have been “late modernizers,” with uneven progress that focused on some areas and neglected others. Reforms with the largest impact on employment creation have been particularly slow. These include lowering the cost of restructuring (privatization and enterprise restructuring), leveling the playing field in product markets (competition), and improving the overall governance structure. Russia, for example, greatly improved its trade and foreign exchange policies but did not sufficiently reform its market institutions, notably by curbing the state’s direct or indirect role in the economy.

Employment growth is positively correlated with several governance indicators, including more corruption control, better regulation, more government effectiveness, and greater voice and accountability. Better competition policy and improved governance lead to higher employment creation among late modernizers (Richter and Witkowski 2013). Reforms that directly tackle labor market rigidities and imperfections are certainly important, but they become more relevant once these “first-generation” reforms have taken place (box 6.5).

The importance of governance and regulation for employment creation is confirmed by firm-level evidence. Employment growth is positively associated with a less burdensome regulatory environment, decreased incidence of corruption, access to higher-quality infrastructure, and judicial and bureaucratic efficiency. The same drivers of employment growth are important for high-

### Box 6.5. Labor market institutions

The laws, practices, policies, and conventions that fall under the umbrella of “labor market institutions” determine what kinds of employment contracts are permissible; set boundaries for wages and benefits, hours, and working conditions; define the rules for collective representation and bargaining; proscribe certain employment practices; and provide for social protection for workers.

The last two decades have seen major controversies over the role and impacts of labor market institutions. Research in the 1990s typically found that strong protective legislation slowed job growth and increased unemployment in

Organisation for Economic Co-operation and Development (OECD) countries, thus leading to policy recommendations in support of flexible rules for protecting employment and setting wages and hours, and unemployment and welfare systems that minimized work disincentives.

A parallel body of evidence did not yet exist for developing countries, but the dominant policy message was similar: while institutions were introduced with good intentions and had a role in addressing market failures, they often had unintended negative consequences in both efficiency and equity. However, the numbers over the last decade imply

that the overall impact of employment protection legislation and minimum wages is smaller than the intensity of the debate would suggest.<sup>a</sup> It is likely that employment legislation and regulation will become a more binding constraint as other barriers to employment related to the overall business environment disappear. Firms in advanced modernizers are more likely to identify labor regulation as a binding constraint to employment creation than firms in intermediate and late modernizers, while the latter are more likely to complain about the negative impact of, say, corruption. Labor market institutions are not the only determinants of labor market performance.

Source: World Bank 2013b.

a. See Betcherman (2012) for a comprehensive review of the literature.



growth firms and other firms alike. Greater concentration of market power is significantly associated with slower growth (World Bank 2013b).

Direct state intervention in the economy is also likely to hamper employment growth. Governance problems and biased regulation that favor SOEs undermine competition among enterprises, weakening the most potent incentive to reduce costs and innovate. These problems are particularly acute in network sectors, such as energy and transport, which have a large impact on the performance of the private sector. Results from an accounting decomposition exercise suggest that GDP growth and changes in public sector employment are the two largest contributors to changes in private sector employment during 2000–10 (Soto 2013). Countries that have failed to successfully reform the SOE sector are paying a high price in terms of productivity and employment growth. In Belarus, overemployment in SOEs is estimated to stand at more than 25 percent in the industry and construction sector alone. Labor hoarding in SOEs continues to hinder productive labor reallocation. Again in Belarus, around 15 percent of workers in SOEs are in loss-making enterprises (World Bank 2012b).

## From tangible improvements to investments in intangible assets

To conclude, it is worthwhile to revisit the questions posed at the beginning of this chapter. What are Eurasia's weaknesses? How should resource rents be used? Are public services a drag on productivity growth? Is economic activity being regulated well?

### **Eurasia's development gaps are greatest in the least tangible aspects.**

The less tangible the outcomes or results, the greater the institutional gaps in most Eurasian economies. Countries in the region have done better at managing resource rents, less well in providing high-quality public services such as education and infrastructure, and least well in regulating production in a manner that promotes competition among enterprises and encourages entrepreneurship.

**Oil funds should facilitate short-term stabilization, not finance long-term development.** The conclusion of this chapter is that the arrangements for managing resource rents such as oil funds should be designed with the modest objective of maintaining macroeconomic stability over the business cycle. Countries in the region have to improve in how they do this. There is evidence that oil and gas revenue has been used in Azerbaijan, Russia, and Turkmenistan in ways that have made their economies more volatile. More important, it is clear from the experiences of disciplined governments, such as Kazakhstan's, during times of crisis that this task will be made easier if the longer-term objectives of boosting productivity and employment are left to other instruments of economic policy.

**Weak institutional quality is becoming a drag on productivity growth in Eurasia.** While productivity has increased since the early 1990s, there is evidence of slowing productivity growth since the early 2000s. This is related at least in part to a growing shortfall in education and infrastructure and to weak

competition. The slowdown in TFP growth may be the single most worrying feature of Eurasia's economies, because it characterizes both resource-rich and resource-poor economies.

**The regulation of private enterprise does not adequately encourage job creation.** Jobs should be a special concern in the resource-rich economies of Eurasia. The design and enforcement of private sector regulations do not appear to have exacerbated the weak employment potential of extractive industries, but they have not offset it either. Greater resource dependence implies that countries in Eurasia have to make their business environments much more job-friendly than successful economies in Eastern Europe and East Asia. For Eurasia, the biggest imperative is instituting the rules and mechanisms that foster competition. Put simply, many countries have to streamline the rules for starting, operating, and closing a business, and all have to ensure that these regulations are implemented in ways that do not favor SOEs or cater to the special interests of influential investors.

It is clear that the asset portfolios of countries in Eurasia are weighted toward "hard" endowments: natural resources; physical infrastructure; and access to basic health, primary and secondary education, and other public services. This is especially true of the resource-rich countries. As their softer assets are examined—the quality of public services, the robustness of the rules and instruments to manage resource rents, and the ability of governments to create an environment friendly to enterprise and innovation—the portfolios start to look lopsided. This is not news.

But given the special needs of resource-rich economies, the extent and depth of these weaknesses are especially disturbing for Eurasia. If more than half of all grade 9 students are functionally illiterate, the quality of education is unacceptably low. If health systems have not yet adjusted to aging populations and the maladies that accompany prosperity, the institutions that govern them have not been updated. If the rules for private enterprise have been changed for the better but governments still play favorites in implementing them—by sheltering SOEs from competition or by succumbing to the narrow interests of oligarchs—then a fresh round of improvements in institutions is necessary. If sensibly designed rules for managing the revenues from natural resources over booms and busts have not been able to reduce the volatility of government spending to acceptable levels, then both the design and implementation of the fiscal rules and oil funds should be reassessed.

Over the last decade, Eurasian economies have improved the efficiency of public investments so that (at least) Azerbaijan, Kazakhstan, and Russia now add more to their tangible nonresource assets than what they deplete through extraction of natural resources. But they have not commensurately improved the quality of institutions that manage public saving, even less the delivery of essential services such as education, and less still the implementation of the rules for private enterprise. These are the intangibles needed for development. If this is the case, Eurasian economies may be weakening their asset portfolios even as they add to the endowments that they can see and measure. Even as they keep growing their incomes, their development may be becoming less diversified.

Why should this be a problem when poverty rates in the region are down, incomes are up, and quality of life gets better every year? It is commonly proposed that the weaknesses are apparent in the composition of exports and economic activities, which have become more concentrated since the days of the Soviet Union. Actually, the reasons are related to economic efficiency, proxied by recent trends in productivity, employment, and volatility. While it is difficult to prove, the evidence appears to point to a systematic slowdown in productivity growth in the region during the last decade. While it may be too soon to say for sure, Eurasian economies have exhibited an excess volatility that will inevitably discourage long-term investment and employment creation. While their circumstances have been unique, Eurasia's policy makers should be aware that the experience of others indicates that resource-intensive development paths are especially demanding of institutions.

This report proposes that national asset portfolios consist of natural resources, built capital, and public institutions. It shows that, with some effort, these can be estimated to provide an approximate yet informative quantitative estimate of the extent of diversification of a country's asset portfolio. Spotlight three contrasts the portfolios for successful resource-rich countries with those of Eurasian countries. By juxtaposing their strengths and weaknesses—assessed in chapters 4, 5, and 6—with the experience of countries like Norway, Canada, Australia, the United Arab Emirates, and Chile, it is possible to identify the pressing priorities for reform. While the specifics will differ somewhat among countries in the region, it is not difficult to conclude that what Eurasia's resource-rich economies need most is what East Asians had identified as a priority for themselves more than a decade ago: a shift in governance from the "rule of man" to the "rule of law." Eurasia's toughest task now is to strengthen its softest structures.

## Annex 6A Endowments and total factor productivity: evidence from Business Environment and Enterprise Performance Surveys

Peña (2013) applies robust microeconomic techniques to microlevel data from the 2008–09 Business Environment and Enterprise Performance Surveys to explore the determinants of total factor productivity (TFP) in Eurasian countries.

TFP is assumed to be explained by three main blocks of investment climate variables, which can have a positive or negative effect. The first captures the endowments (physical capital, human capital, and institutions) available in the economy. It encompasses the following covariates as proxies for endowments: infrastructure (physical capital); labor skills (human capital); and red tape, degree of informality, financing sources, and competition (institutions). The second group of explanatory variables captures the extent of firm-level innovation. It contains (dummy) variables that reflect the use of foreign technology, information and communications technology, and process innovation. The third group captures the extent to which the firm is integrated with the global market. It contains (binary) variables on exports, imports, and foreign direct investment (FDI) inflows. Firm characteristics such as age and legal status, as well as industry-size-region (or country) fixed effects are used as additional controls in the model.

The assumed data-generating process for the TFP equation is:

$$\omega_i = \alpha_p + \alpha_l' I_i + \alpha_x' X_i + \alpha_E' E_i + \delta_D' D_i + \delta_Z' Z_i + \varepsilon_i \quad (6A.1)$$

where  $\omega$  stands for productivity (or TFP), which is associated with the implicit level of “competitiveness” of the firm. The vector  $I$  contains a set of innovation variables;  $X$  is a vector of international integration variables;  $E$  contains the endowments of physical capital, human capital, and institutions, including competition variables (for example, competition from foreign and domestic firms or from suppliers, and the number of competitors in firms’ main market). Finally,  $D$  contains a set of industry-size-region (or country) variables, while  $Z$  contains other controls, like the age or legal status of the firm.

Once the model is estimated and TFP is assessed at the firm level, the demeaned (log) productivity is computed. This isolates the share of firm-level productivity associated with the  $I$  (innovation),  $X$  (international integration), and  $E$  (endowments) vectors of control variables. The firm-level demeaned productivity is defined as:

$$\omega_i^d = \hat{\alpha}_l' I_i + \hat{\alpha}_x' X_i + \hat{\alpha}_E' E_i + \hat{\delta}_D' D_i \quad (6A.2)$$

Firm-level demeaned TFP can be interpreted as the portion of a firm’s productivity associated with the degree of innovation ( $I$ ), international integration ( $X$ ), and endowments ( $E$ ). Thus, alternative demeaned TFP measures can be computed, each associated with a specific set of covariates. For instance,

the endowments-demeaned TFP is the portion of firm productivity associated with the domestic endowments under which firms operate and is defined as:

$$\omega_i^{dE} = \widehat{\alpha}_E^{rE_i} \quad (6A.3)$$

The relative impact of each block of explanatory variables on average TFP can also be computed. All covariates are considered except the firm characteristics and the industry- or country-specific effects. To evaluate the impact of each block of explanatory variables on the sample mean of each dependent variable, the following formula was used:

$$100 = \left( \frac{\widehat{\alpha}_I \bar{I} + \widehat{\alpha}_X \bar{X} + \widehat{\alpha}_E \bar{E} + \widehat{\delta}_D \bar{D} + \widehat{\delta}_Z \bar{Z}}{\bar{\omega}} \right) \quad (6A.4)$$

With this method, each block of variables has a percentage impact over the sample mean of TFP.

## Annex 6B Determinants of value-added growth: industry analysis

A panel of cross-country and cross-industry observations is used to assess the drivers of industrial expansion in Eurasian countries. The panel covers 1996–2009 and includes Armenia, Azerbaijan, Kazakhstan, Moldova, Russia, Tajikistan, and Ukraine.<sup>16</sup>

The following regression is estimated to assess the impact of physical capital, human capital, and the business environment on value-added growth at the industry level:

$$\begin{aligned} \text{Growth}_{i,k,t} = & \alpha + \beta_1 \text{Industry share}_{i,k,t} + \beta_2 \text{GDP growth}_{i,t} + \beta_3 \text{capital formation}_{i,t} \\ & + \beta_4 \text{domestic consumption}_{i,t} + \beta_5 \text{government expenditures}_{i,t} + \beta_6 \text{export}_{i,t} \\ & + \beta_7 \text{exchange rate}_{i,t} + \gamma_{pc} \text{physical capital}_{i,t} + \gamma_{pc,k} \text{Industry}_k \\ & \times \text{physical capital}_{i,t} + \gamma_{ic} \text{institutional capital}_{i,t} + \gamma_{ic,k} \text{Industry}_i \\ & \times \text{institutional capital}_{i,t} + \gamma_{hc,k} \text{human capital}_{i,t} + \gamma_{hc,k} \text{Industry}_k \\ & \times \text{human capital}_{i,t} + \gamma_{nc} \text{natural capital}_{i,t} + \gamma_{nc,k} \text{Industry}_k \\ & \times \text{natural capital}_{i,t} + \sum_j \delta_j \text{Country}_j + \sum_l \delta_l \text{Industry}_l + \sum_u \delta_u \text{year}_u + \varepsilon_{i,k,t} \end{aligned}$$

where  $\text{Growth}_{i,k,t}$  is the average annual growth rate of value added at time  $t$  of industry  $k$  in country  $i$ . GDP growth is the annual growth rate of GDP, and capital formation is the annual growth rate of the gross fixed capital formation. In addition, changes in aggregate demand (final consumption from households and the government) are assumed to influence production on the demand side. *Domestic consumption* is included as the change in final domestic consumption over GDP, and *government expenditures* are included as the annual change in government expenditures over GDP. To capture external demand, the change in the *export* volume is included with the change in the real *exchange rate*.<sup>17</sup>

Physical capital is a crucial growth determinant. Without access to capital, it is difficult for firms to expand production. *Physical capital* is proxied by the capital stock per worker. The data are obtained from World Bank (n.d.b).

The legal system is essential for supporting industrial development. Good governance and judicial independence are preconditions for an efficient business environment. A functional legal system protects outside investors by enforcing contracts and reducing corruption, thus facilitating better allocation of capital, greater availability of external finance, and the creation of new firms. A business environment characterized by secure property rights and enforceability of contracts improves firm productivity. To capture the *institutional capital* effect, the model includes changes in rule of law (obtained from World Bank n.d.c).<sup>18</sup>

Years of schooling are included to account for *human capital*. Better-qualified employees are essential for productivity, especially in more-sophisticated industries. Further, natural capital, obtained from World Bank (n.d.b), accounts for the natural endowment of countries.

Table 6B.1. Value-added growth for Eurasian countries (shown without the industry-specific effects)

	(1)	(2)	(3)
	Growth	Growth	Growth
	Pooled ordinary least squares	Panel regression	General method of moment
Lag industry growth (percent)	n.a.	n.a.	0.0172* (0.00985)
Industry share (percent)	-1.036* (0.392)	-0.799*** (0.149)	-0.721*** (0.190)
GDP growth (percent)	1.105*** (0.445)	1.403* (0.785)	1.381* (0.747)
Change of fixed capital formation (percent)	0.558* (0.181)	0.454 (0.597)	0.378 (0.518)
Change of domestic consumption of GDP (percent)	0.861*** (0.0666)	0.697*** (0.107)	0.790*** (0.051)
Change of government expenditures of GDP (percent)	4.63e-10*** (5.59e-11)	0.0611 (0.141)	0.0765 (0.312)
Change in export growth (percent)	0.391* (0.218)	0.451*** (0.0765)	0.414*** (0.101)
Change of the exchange rate (percent)	-0.583 (0.250)	-1.060*** (0.0907)	-1.083*** (0.154)
Change of the capital stock per capita (percent)	0.545*** (0.197)	1.498 (4.360)	3.693 (3.530)
Change in the rule of law (percent)	0.233** (0.0924)	0.169** (0.0822)	0.233*** (0.0112)
Change in natural capital (percent)	-0.114*** (0.0119)	-0.0236*** (0.00415)	-0.173* (0.0914)
Years of schooling	-5.921 (6.340)	-3.515 (17.83)	-6.841 (15.62)
Constant	121.9* (40.59)	144.4*** (9.676)	133.5*** (22.46)
Observations	929	863	836
R-squared	0.299	0.6719	n.a.
Number of instruments	n.a.	n.a.	78
Hansen-test	n.a.	n.a.	0.484
Arellano-Bond test for AR(1)	n.a.	n.a.	0.035
Arellano-Bond test for AR(2)	n.a.	n.a.	0.975

Sources: World Bank staff calculations based on UN data and World Bank, n.d.b. The measurement of physical capital stock is taken from World Bank staff calculations generated by applying the perpetual inventory method on investment flows and subtracting annual depreciation of the capital stock. Physical capital stock is divided by the labor force to account for the relative abundance of labor. The institutional capital indicator is the rule-of-law rating from World Bank, n.d.c, by Kaufmann, Kraay, and Mastruzzi 2010. Human capital is measured by average years of schooling, a widely used indicator constructed by Barro and Lee 2011 on education attainment of the population older than 15 years.

Note: Robust standard errors are in parentheses (\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1). Country, industry, and time fixed effects are included in each specification. The panel regression covers 1996–2009. The system general method of moment estimator takes the dynamic structure of industry growth into account. n.a. = not applicable.

Each industry is likely to require different conditions in terms of business environment, capital intensity, and labor skills. Hence, the policy indicators shaping the business environment, physical capital, natural capital, and human capital are interacted with a dummy for each industry.

To account for country, industry, and time unobservable effects, country, industry, and year fixed effects are included.

As shown in table 6B.1, the larger the industry, the lower is growth in its value added on average. The faster GDP grows in the country, the higher the growth in individual manufacturing sectors. Domestic consumption is more important than government expenditures. The effect of the growth of government expenditures is remarkably small. The domestic market is more important than export markets as a driver of value-added growth, as shown by the coefficients for export growth and the negative coefficient for the real exchange rate.

An efficient business environment helps value-added growth in manufacturing. A 1 percentage point change in rule of law increases value-added growth 0.23 percentage points (columns 1 and 3).

Human capital measured by years of schooling is, in general, not significant, both in isolation and when interacting with individual industries.

Finally, countries with larger natural resource endowments are more likely to lag in industry growth.



## Annex 6C The legal framework for competition in Eurasia

Table 6C.1. An assessment by the Organisation for Economic Co-operation and Development

Country	Area of regulation					
	Dominance	Monopolistic agreements and concerted actions	Unfair competition	Antitrust investigation	Implications on infringes	Control over economic concentration
Armenia	1/3 of market, abuse of DP prohibited	Prohibited	Prohibited	In place	In place	In place
Azerbaijan	35 percent, abuse of DP is prohibited	Horizontal prohibited, rule-of-reason approach to vertical	Prohibited	In place	In place	In place
Belarus	At the discretion of ME	Prohibited with exemptions	Prohibited	In place	In place	In place, but some vague procedures
Kazakhstan	35 percent, 100 percent—monopolistic	Concept of anticompetitive agreements and actions	Prohibited	In place	In place	In place
Kyrgyz Republic	35 percent, DP and monopolistic activity prohibited	Prohibited, exceptions in the interest of market	Prohibited	In place	In place	In place
Moldova	35 percent, abuse of DP and restraint of competition prohibited	Prohibited	Prohibited	In place	In place	In place
Russian Federation	35–70 percent (single and collective dominance), DP may be acceptable	Horizontal and vertical are prohibited with exemptions	Prohibited	In place	In place	In place
Turkmenistan	Prohibited but not specified by the law (indirectly in criminal and civil codes only)	Prohibited indirectly (for foreign investors)	Prohibited but not specified by the law	—	Civil and criminal responsibility	— No antitrust regulator
Ukraine	35 percent, dominant or monopolistic position	Anticompetitive actions prohibited with exemptions	Prohibited	In place	In place	In place

Sources: World Bank staff, based on various Organisation for Economic Co-operation and Development sources accessed at [www.oecd.org](http://www.oecd.org).

Note: No information available for Georgia, Tajikistan, or Uzbekistan. DP = dominant position; ME = Ministry of Economy; — = not available.

## Notes

- 1 The East Asian countries are Cambodia, China, Indonesia, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam. The EU new member states are Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia.
- 2 The countries are Australia, Botswana, Canada, Chile, Malaysia, the Netherlands, Nigeria, Norway, Saudi Arabia, the United Arab Emirates, the United States, and RB Venezuela (see spotlight two).
- 3 Other resource-rich Eurasian countries—Turkmenistan, Ukraine, and Uzbekistan—have also established a sovereign wealth fund. Limited information suggests that the funds are for sterilizing and accumulating foreign exchange revenue and for providing loans and equity investments to strategically important sectors.
- 4 Russia's new fiscal rule proposes a ceiling on federal spending equal to the sum of oil revenue at the base oil price, non-oil revenue, and a net borrowing of 1 percent of GDP. All excess oil revenue (revenue generated due to the oil price exceeding the base price) would be added to the Reserve Fund until its balance reaches 7 percent of GDP. Beyond this threshold, revenue would be split between the National Wealth Fund and priority development projects. In case the oil price drops below the base price, the resulting shortfall of revenue would be covered by the Reserve Fund.
- 5 While a 2004 Presidential Decree articulates the Long-Term Oil Revenue Management Strategy based on the permanent income approach, the operational framework that integrates the State Oil Fund and fiscal policy has not yet been established.
- 6 The EITI was announced in 2002 at the Johannesburg World Summit for Sustainable Development. EITI is a voluntary global initiative consisting of a set of seven standards to promote revenue transparency and accountability in resource-rich countries. The standards require companies to publish what they pay and governments to disclose revenues from oil, gas, and mining.
- 7 *Doing Business* tracks administrative requirements in a country's capital or most important economic center. In Russia, subnational *Doing Business* results suggest a wide variation in a number of regulatory areas across Russian regions.
- 8 The name of this indicator was changed in 2012 from "closing a business" to "resolving insolvency" to reflect the fact that the case assesses the efficiency of insolvency proceedings and considers different outcomes.
- 9 World Economic Forum 2012. Eurasian countries are Armenia, Azerbaijan, Georgia, Kazakhstan, Moldova, Russia, Tajikistan, and Ukraine.
- 10 For example, based on an econometric analysis using data on 33 countries, Frankel (2011) finds that official GDP and budget forecasts tend to be overoptimistic (on average) and that the bias is larger at longer horizons and during economic booms. The conclusion is that official forecasts, if not shielded from political pressures, tend to embellish predictions, and the problem is magnified if the government is formally subject to a budget rule.
- 11 Annex 6A provides a methodological description of this analysis.
- 12 World Bank 2013c. In the application, variables connected with public services and with the business environment are broadly termed as the "investment climate." In addition to "investment climate" variables, other factors explaining aggregate log TFP included in the analysis were export propensity, foreign ownership, innovation, employment, industry/region/size effects, and the constant technical efficiency term (constant term of the TFP equation).
- 13 The Olley and Pakes (2006) method allows decomposing aggregate TFP into an average component and an allocative efficiency component. The former reflects the productivity of the average firm, while the latter provides a measure of the efficiency with which resources are distributed among producers.
- 14 To evaluate how competition is related to the endogenous variables of the system, four variables approximating four measures of competition were defined: domestic, foreign, customer, and informal.
- 15 See chapter 3 for an assessment at the sectoral level.
- 16 Due to data restrictions, the other Eurasian countries could not be included in the model.
- 17 To avoid endogeneity problems, these country-specific variables are included with one lag.
- 18 The financial and regulatory environment indicators are interpolated to account for numerous missing values.

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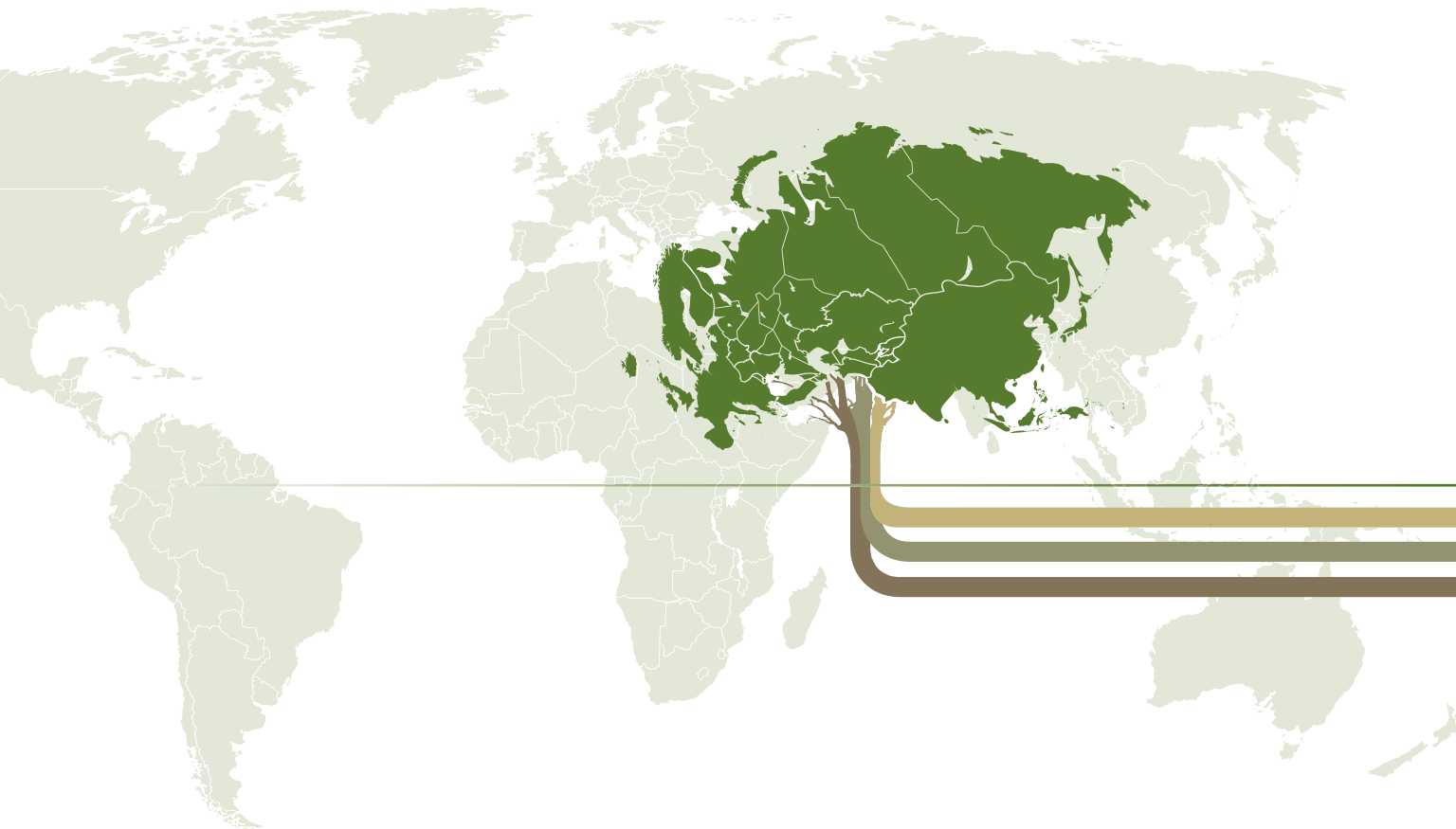


## Spotlight Three



### Natural Development

From the Amazon rubber boom to the current oil-dependent economies, economic history provides many cautionary tales about the hazards of relying on a single commodity or a narrow set of economic activities. The transformation of Nokia from a resource sector enterprise to a telecom giant in Finland has been used as an example of the miracles that activist industrial policies can bring about. Nokia's decline may now be used to warn policy makers in resource-dependent economies about the dangers of not being diversified.



Actually, as this report shows, Nokia and Finland provide a completely different lesson. The real lesson is that even countries with undiversified production profiles—those that depend on a few subsectors—can become ever more productive, be prolific at creating jobs, and have stable economies. They can do this by diversifying their asset portfolios. Countries with undiversified economies will prosper if instead of being distracted by attempts to subsidize non-resource-related activities their governments fulfill their core mandate: providing public services that make people more productive, creating an investment climate that encourages employment growth, and managing resource rents to reduce volatility.

Look at what has happened to Nokia and Finland. Between 1998 and 2007, Nokia contributed a quarter of Finnish economic growth. In 2000, it accounted for almost 30 percent of the country's exports. By 2011, its revenues represented 20 percent of Finland's gross domestic product (GDP). In the decade to 2007, Nokia sometimes paid close to 25 percent of Finland's corporation tax collections. Nokia used many subcontractors, so these numbers should be seen as lower bound estimates of Nokia's importance in the Finnish economy since they do not incorporate what economists call "multiplier effects."

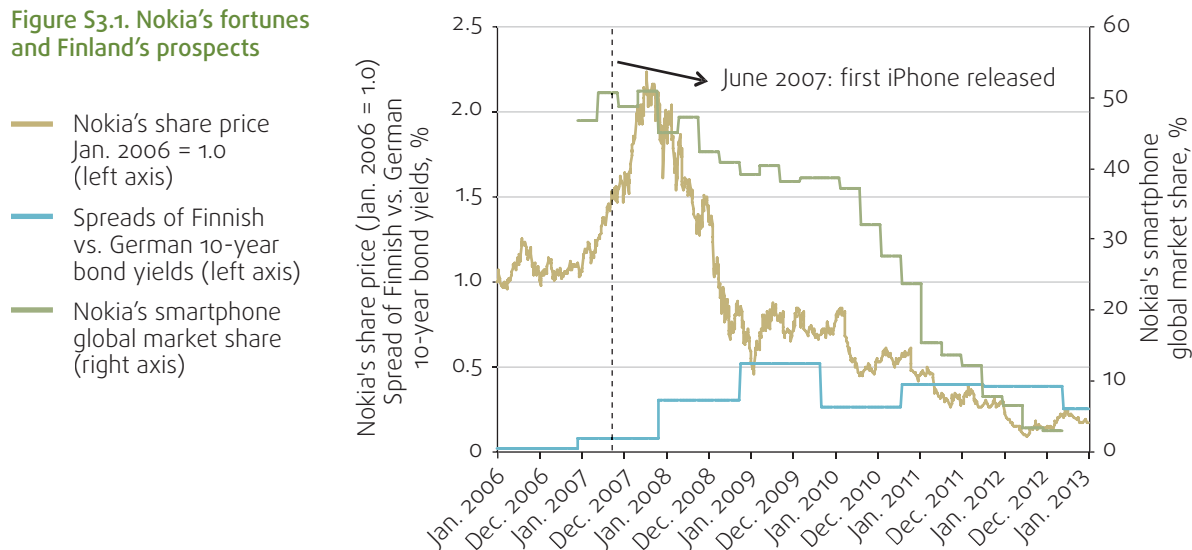
Then came the tumble. Just as lower-cost rubber from Asian plantations in the early 20th century ended the Amazon's rubber boom, the release of the iPhone by Apple in 2007 precipitated the end of Nokia's good run. Its share price fell by more than half between 2007 and 2008 (and is now worth around one-tenth of its 2007 peak). The company has struggled to compete in a growing global market of smartphones, and its share in that market fell from 50 percent to 3 percent by end-2012 (figure S3.1). In 2013 it might have sold fewer mobile phones than Samsung even in Finland.

Financial markets were quick to see what Apple and Samsung could do to Nokia, but as of 2013 it may be too early to assess the effects of Nokia's problems on the Finnish economy. Markets, though, do not seem to weigh Nokia's struggles heavily when evaluating Finland's future—at least in bond yields: the spread between Finnish and German 10-year bond yields—a common indicator of credit risk and future economic performance—has remained close to zero, despite the Euro Area's great uncertainties.

Markets seem to look past the problems of Finland's "single superstar" in assessing its collective economic strengths and weaknesses. Their views reflect confidence in the country's ability to manage GDP volatility, make Finnish workers more productive, and create jobs that can sustain high standards of living. There is even some evidence that the public policies to spur innovation (which were speeded up rather than slowed down by Nokia's problems) may be paying off in the form of scores of knowledge-based start-ups (*Economist* 2013).



**Figure S3.1. Nokia's fortunes and Finland's prospects**



Sources: World Bank staff based on data from Fidelity; ECB; and Statista.

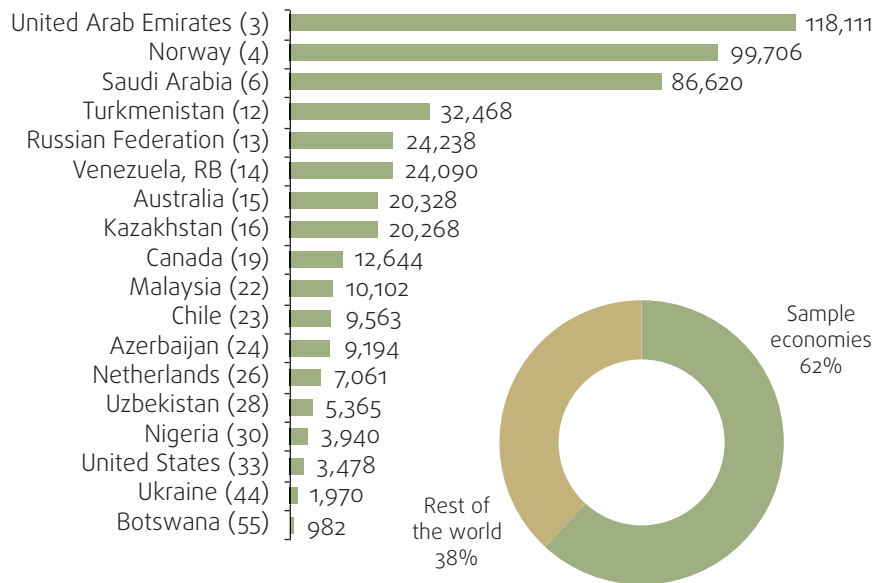
On the social side, even though Finland's growth has slowed, the country has avoided economic crisis and social suffering. Of course, this should not be surprising. Finland has a participatory and representative government which fosters respect for the rule of law; it has good infrastructure and excellent systems of public education and health; and it has perhaps the best business climate in the Euro Area.

Is Finland's experience the exception or the rule? Do resource-rich countries have to end their dependence on natural resources in order to achieve desired development goals? If not, what distinguishes development success from failure? To help answer such questions, this report commissioned 12 case studies of resource-rich countries around the world (see Gogova, Luna, and Pruchnik 2013). Six of them are obvious success stories: Australia, Canada, the Netherlands, Norway, the United Arab Emirates, and the United States. Another six are emerging economies at various stages of development: Botswana, Chile, Malaysia, Nigeria, Saudi Arabia, and República Bolivariana de Venezuela. This spotlight summarizes their experience, and contrasts it with that of the six resource-rich economies in Eurasia: Azerbaijan, Kazakhstan, the Russian Federation, Turkmenistan, Ukraine, and Uzbekistan.

The short answers to the questions: Finland's experience is not an exception. The common success factor is a balanced portfolio of economic assets—natural resources, human and physical capital, and institutions. And the failure to develop can generally be traced to premature efforts to diversify the economy from resource-based products by subsidizing activities intensive in assets that are scarce or unavailable.

## Resource-rich economies: a representative sample

The experiences of the 18 countries in this spotlight are representative of resource-rich economies around the world. Separately, the countries rank between 3rd and 55th in subsoil assets per capita. Together, they account for about two-thirds of the world's natural capital (figure S3.2).



**Figure S3.2. Subsoil natural resource wealth per capita, 2005**

(Constant 2005 U.S. dollars)

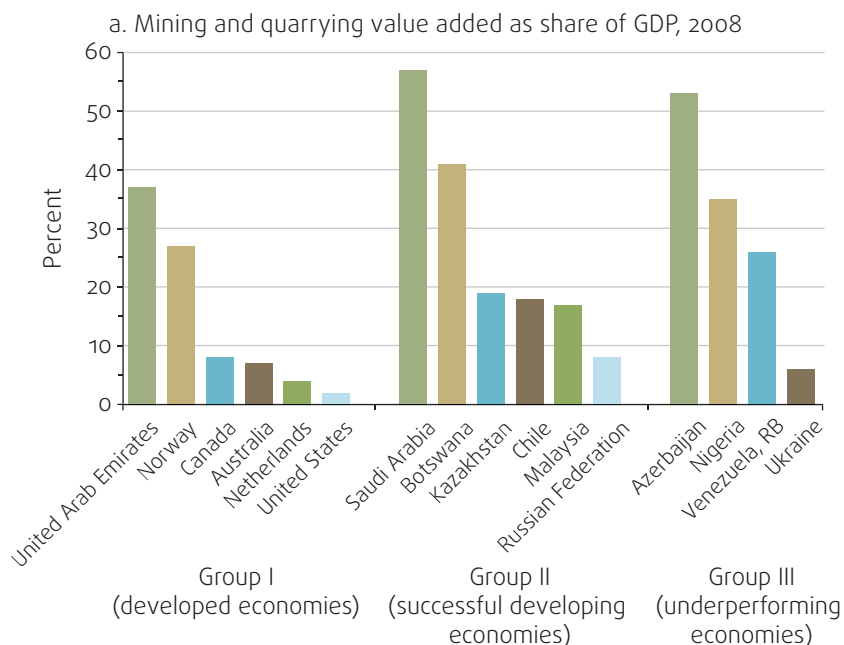
Source: World Bank 2010.

Note: The number in parentheses indicates the global rank of each country in subsoil assets per capita; the pie chart indicates aggregate subsoil resource wealth for both the sample economies and the rest of the world.

“Sowing the oil” to diversify the economy has been a long-standing goal for many of the countries surveyed here. But only a few have managed to break free from dependence—defined either as a share of domestic production, exports, or government revenues—on their most abundant resource or resources. Most resource-rich economies—developed and developing<sup>1</sup>—still rely on their natural resource wealth as an important economic sector in its own right, for export receipts, and for government revenue (figure S3.3).

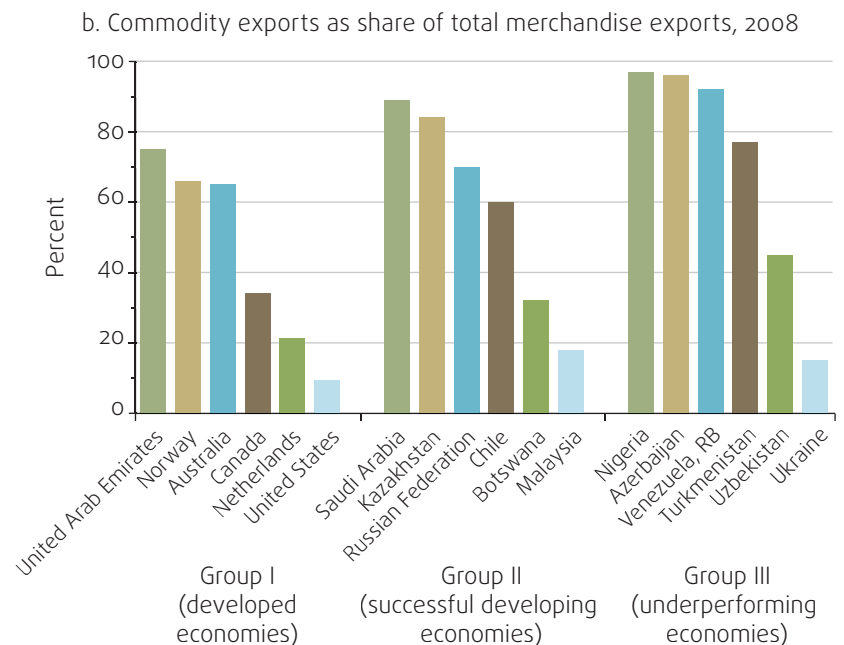
Exports from the developed countries in the countries surveyed tend to be more diversified than from the other two groups, except for the United Arab Emirates, Norway, and Australia, which have higher levels of export product concentration. Norway and the United Arab Emirates actually have more concentrated exports than Chile, Kazakhstan, and RB Venezuela—countries with less than half their per capita incomes. The most diversified country is the United States. Azerbaijan, Nigeria, Saudi Arabia, and RB Venezuela are the least diversified. Their attempts to redirect economic activity away from oil have generally been unsuccessful, and oil still accounts for about 90 percent of total merchandise exports. Natural resources have dominated Eurasia’s export basket for over two decades.

**Figure S3.3. Natural resource dependence, developed and developing economies**



Source: UN Statistics Division.

Note: Data for Turkmenistan and Uzbekistan are unavailable.



Source: UN Comtrade.

Note: SITC (Standard International Trade Classification) Rev. 3, sections 27, 28, 32, 33, 34, 68. Data reflect exports of raw commodities only, and do not include manufactured goods. The share of commodity exports for Ukraine rises to 50 percent of all merchandise exports when section 67 (Iron and Steel) reported under manufactured goods is added. The number is 15 percent when using the existing aggregation of sectors.

(continued)

c. Herfindahl-Hirschman Index, exports of products, Harmonized System 1988/92 6-digit, 2010

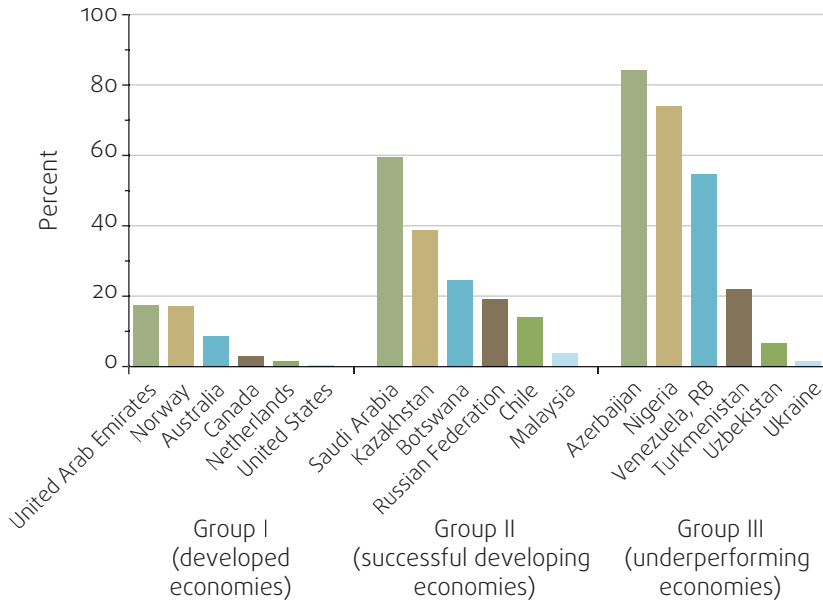
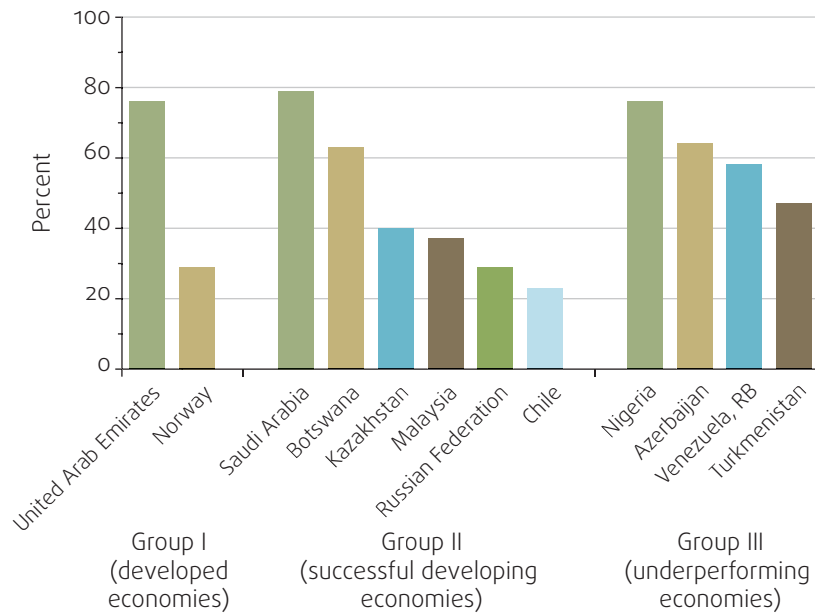


Figure S3.3. Natural resource dependence, developed and developing economies (cont.)

Source: UN Comtrade.

Note: SITC (Standard International Trade Classification) Rev. 3, sections 27, 28, 32, 33, 34, 68.

d. Resource revenue as share of total fiscal revenue, 2006–10



Source: IMF 2012.

Note: Data for United States, Netherlands, Australia, Canada, Uzbekistan, and Ukraine are unavailable.

Governments may try to spur diversification by developing sectors outside the country's comparative advantage through industrial policies. Some of the countries analyzed here have managed to become competitive in new sectors. But their success has been most notable in sectors that are intensive in assets prominent in their asset portfolios. For example, Chile successfully exports goods that are natural-resource intensive; Malaysia has encouraged manufacturing and export of products that are highly labor intensive; and the United Arab Emirates has become a major exporter of services, emerging as the logistical, trade, and tourism hub of the Middle East. But despite their success in creating new industries, all three stay dependent on natural resources.

## Development outcomes and asset portfolios

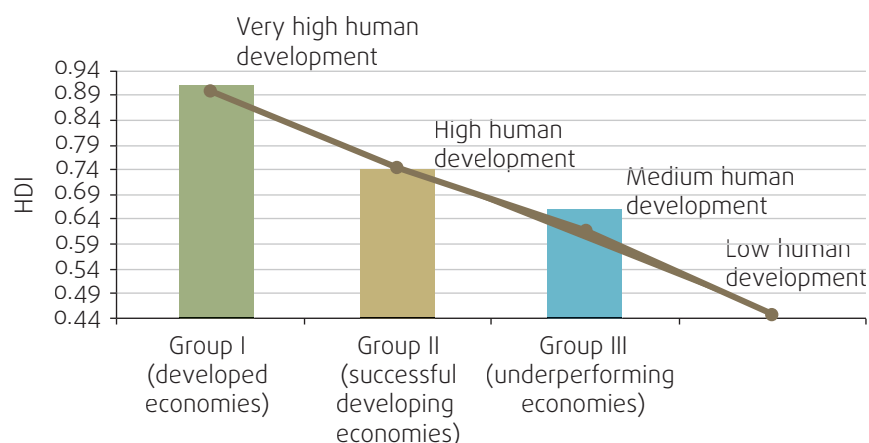
The 18 countries in this spotlight are heterogeneous in how much they have diversified their asset portfolios. But three groups of countries can be discerned, depending on their levels of development—mainly their per capita income levels:

- Group I: developed economies, represented by Australia, Canada, the Netherlands, Norway, the United Arab Emirates, and the United States
- Group II: successful developing economies, represented by Botswana, Chile, Kazakhstan, Malaysia, Russia, and Saudi Arabia
- Group III: underperforming economies, represented by Azerbaijan, Nigeria, Turkmenistan, Ukraine, Uzbekistan, and RB Venezuela.

The average per capita income in 2012 for groups I, II, and III is \$39,000, \$16,000, and \$7,000, respectively, in purchasing power-adjusted 2005 prices. The average Human Development Indexes for the same year are 0.91, 0.76, and 0.67. Group I has good development outcomes, Group II has satisfactory outcomes, while Group III is obviously underachieving—hardly surprising, although even Group III achieves medium human development according to the *Human Development Report* (figure S3.4).

**Figure S3.4. Categories of development outcomes**

- Human Development Index (HDI) category



Source: UNDP 2013.

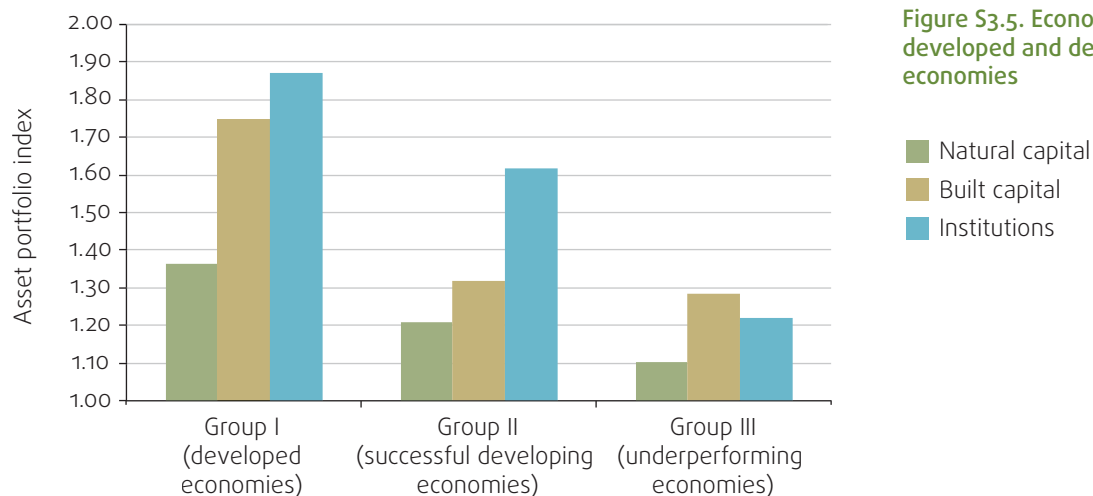


Figure S3.5. Economic assets, developed and developing economies

Sources: World Bank staff estimates based on data from World Bank; IMF; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.

Their asset portfolios—the mix of natural resources, human and physical capital, and institutional quality—are shown in figure S3.5. The best available estimates of natural, built (the average of human and physical capital), and institutional capital are available from the World Bank (2013). These assets are proxied by subsoil assets per capita, average years of schooling, capital stock per capita, and institutional quality. The quality of institutions is in turn an average of four indicators: inflation volatility (which proxies the quality of institutions to ensure monetary stability and sound fiscal management—chapter 6); government effectiveness (which reflects the quality of public services); political institutions (measured by the Polity IV Project indicators, which record key qualities of executive authority and political competition—see annex S3B); and the quality of the regulatory environment (measured by the scores—not ranking—in the World Bank’s Ease of Doing Business Indicators).

## Gaps between the groups—and how to close them

The countries in Group I possess the highest level of subsoil assets per capita largely because of the United Arab Emirates and Norway, but all have been able to successfully diversify their asset portfolios. In contrast, Group III has lower levels of all three types of capital. What distinguishes Group I from Group II is the much higher built capital in the former—the gap in institutional assets is not nearly as large. And what distinguishes Group II from Group III is the quality of institutions—the gap in built capital is small.

It is hard to identify policy priorities at this level of aggregation, but the suggested sequencing is that Group II economies first develop their institutions (the need for catch-up in built capital comes later). The policy priority for Group III and Group II economies is the quality of institutions, not built capital. Figure S3.5 also suggests that for resource-rich economies, the quality of institutions makes the difference between success and failure at a relatively early stage of development.

The use of oil rents for public investments in infrastructure has helped the United Arab Emirates outperform countries like Australia and Norway in infrastructure quality measured by, for example, the World Bank's Logistics Performance Index (LPI). Human capital has increased too, putting the United Arab Emirates in the high human development category (UNDP 2013).

Countries in Group II have also taken steps to transform resource rents into other assets, and their stock of human and physical capital has grown over the years. But what really differentiates them from Group III is the improvement in institutions that has helped them convert resource rents into economic assets. Botswana, Chile, and Malaysia are reaping the benefits of early efforts to diversify through improvements in income status and economic outcomes. Kazakhstan, Russia, and Saudi Arabia are following their footsteps and catching up, as the process of industrialization started later there.

The institutional capital of Chile is as high as that of developed countries and it is ranked first in Latin America and the Caribbean, according to the Ease of Doing Business Indicators. The copper-rich nation has lower levels of physical capital than other countries in the group but has made more progress in building its human capital. Chile comes first in Latin America on the highest number of years of schooling and PISA<sup>2</sup> scores. Other contributing factors are the role of government in ensuring a stable macroeconomic framework, a robust set of rules for using copper-related revenues, and structural improvements.

Similar to Chile, efforts to promote exports and foreign direct investment in Malaysia were made possible by an improved rule of law, a transparent legal framework, and business-friendly regulations, which discouraged rent-seeking and provided a relatively level playing field for domestic and foreign enterprises. The mid-1980s witnessed the beginning of government programs promoting more high-tech products and skills upgrading. Policies included liberalizing skilled immigration, a dramatic expansion in enrollment in polytechnics, exchange relations with universities in Australia and Canada, and skills development programs jointly sponsored by governmental and educational institutions (Gelb 2010).

Unlike Malaysia and Chile, Botswana is a sparse, landlocked country. Still, it does well in many dimensions of economic management and governance, and has managed its diamond wealth capably. These gains are evident in improved education and health, and in four decades of sustained economic growth. Botswana did not start with favorable conditions in 1966 after gaining independence from the United Kingdom: it had only about 40 university graduates and 100 people with secondary education (Harvey and Lewis 1990). Today, the country has more than 16,000 students in universities, and 33 percent of its population has secondary schooling.

Saudi Arabia has diversified its economic assets less than these three countries. It does well on business indicators, but the gap between de jure and de facto institutions is large. Its large infrastructure investments have increased its physical capital. However, government education programs have only limited impact, and education remains a constraint to private sector development.

Kazakhstan and Russia complete Group II. Kazakhstan scores lower than Russia in human capital, with achievements closer to those of the other Eurasian countries covered by PISA. But both fall short on institutional capital relative to the other four Group II countries, even if they do better than other Eurasian countries (figure S3.6).

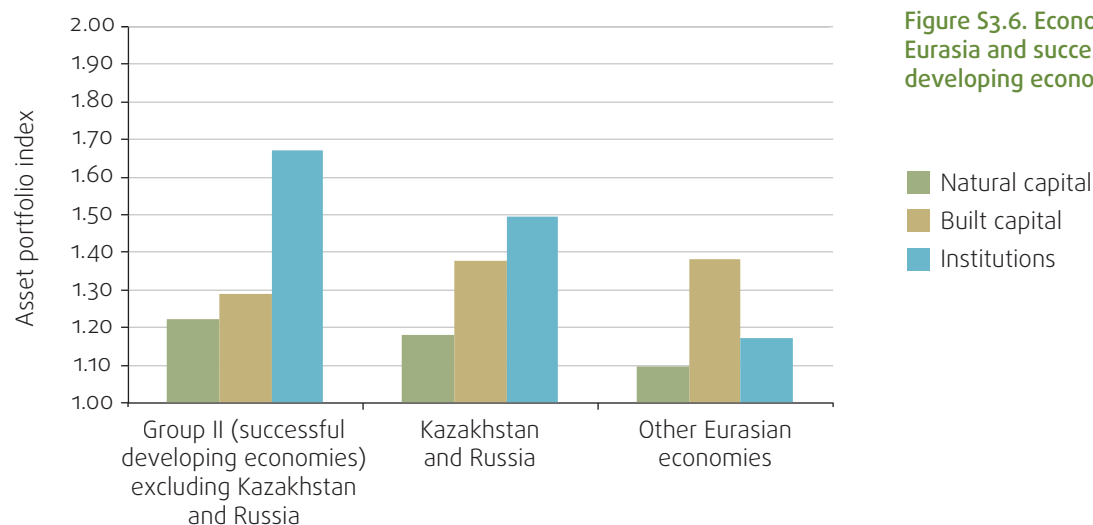


Figure S3.6. Economic assets, Eurasia and successful developing economies

Sources: World Bank staff estimates based on data from World Bank; IMF; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.

Note: Other Eurasian economies are Azerbaijan, Turkmenistan, Ukraine, and Uzbekistan.

Countries in the third group have not done as well. Nigeria and RB Venezuela exemplify the difficulties associated with establishing the arrangements to manage resource rents. Although Nigeria's strengthened macroeconomic policies over the last few years are paying off, oil has been a destabilizing factor rather than a developmental asset for several decades. Since the discovery of oil in the 1970s, Nigeria has seen high output and public spending volatility in line with the boom-bust cycles of the world oil market. Yet the many years with oil money have not put an end to poverty or unemployment and have, instead, brought stagnation.

The poor economic performance of RB Venezuela during the last few decades stands in sharp contrast to its strong growth and development fueled by oil production and exports at the start of the last century. RB Venezuela's growth has stalled since interventionist policies were launched in the 1970s and the oil sector was nationalized, culminating in collapsing oil production as well as tumbling income levels and economic indicators in the late 1970s. All this was matched by a secular decline in human, physical, and institutional capital.



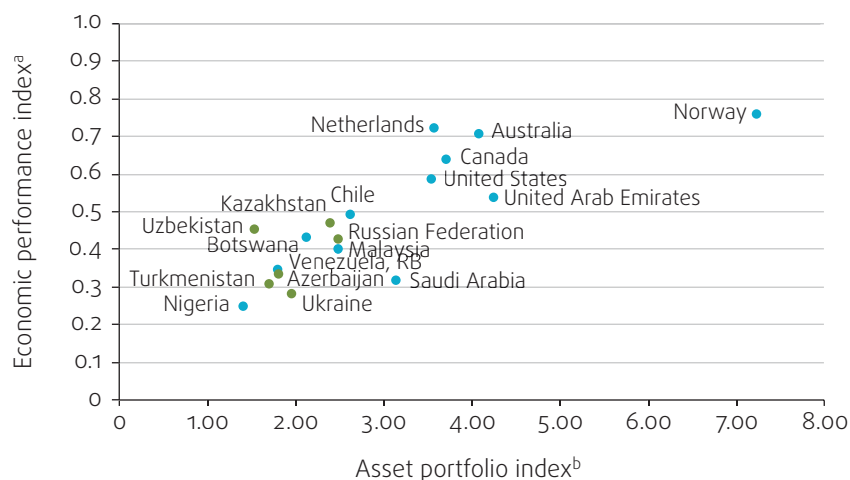
It is striking that in their natural and built capital, Russia and Kazakhstan—Eurasia’s Group II economies—are not especially different from Azerbaijan, Turkmenistan, Ukraine, and Uzbekistan—Eurasia’s Group III economies. But they have done better in improving the quality of their institutions. Yet Kazakhstan and Russia still compare unfavorably with the more successful Group II economies—Botswana, Chile, Malaysia, and Saudi Arabia—in their institutional quality.

## Asset portfolios and economic performance

To assess the level of diversification of the asset portfolio and how it affects economic performance, we constructed two indexes: an aggregate asset portfolio index and an index of economic performance. The first helps in rating the 18 economies according to their economic assets: natural resources, built capital, and national institutions. The second is an average of three measures: productivity growth, economic stability, and employment creation. Higher values of these indexes indicate more diversified assets and better outcomes.

Countries that have more diversified assets appear to have better economic outcomes (see figures S3.7 and S3.8, which plot the index of economic outcomes against that of diversification of asset portfolios). The correlation between outcomes and diversification is even stronger when institutions are given more weight. Recall from chapters 1 and 3 that the measures of economic performance show no correlation with measures of economic diversification such as export concentration. The contrast with the findings in figures S3.7 and S3.8 is striking. Diversified asset portfolios are a much better predictor of economic performance than are measures of diversified production profiles.

**Figure S3.7. Asset portfolio diversification and economic performance**



Sources: World Bank staff estimates based on data from World Bank; IMF; Penn World Table; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.

Note: The asset portfolio index here uses equal weights of 0.33 each for natural capital, built capital, and institutions.

a. Higher values indicate better outcomes.

b. Higher values indicate more diversified portfolio.

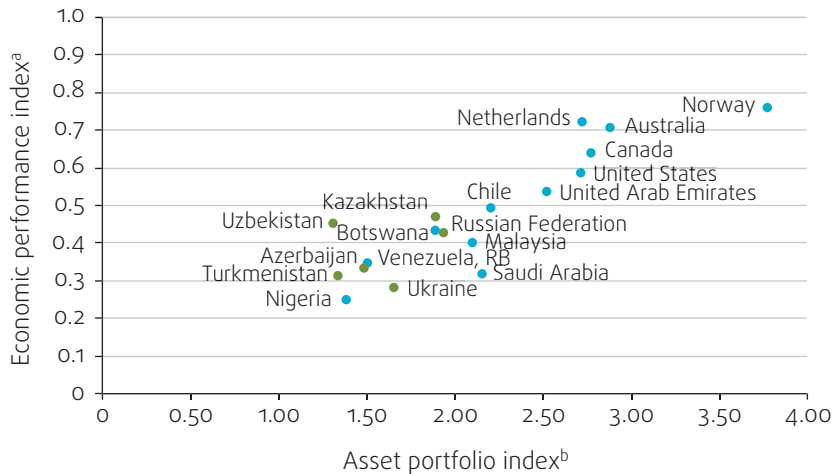


Figure S3.8. Asset portfolio diversification and economic performance, with institutions emphasized

Sources: World Bank staff estimates based on data from World Bank; IMF; Penn World Table; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.

Note: The asset portfolio index here uses weights of 0.5 each for total capital (natural plus built) and institutions.

a. Higher values indicate better outcomes.

b. Higher values indicate more diversified portfolio.

The performance of Group I, where growth in productivity and in employment has been on the rise, is impressive. Output volatility has smoothed out over the years, muting the effect of large export price swings. Still, their experience shows that high incomes and development do not necessarily provide insurance against the resource curse. (The Netherlands was already a developed economy when natural gas deposits were discovered, and Dutch disease hit. Despite its debilitating effects, the economy bounced back, because it had three other sources of capital beyond natural resources—human, physical, and institutional.)

Norway does well in all three measures of economic performance: it has been able to engineer output stability, high productivity levels, and impressive employment rates. It has the lowest output volatility after the United States for 2000–10, and unemployment was just 3.3 percent in 2011. Its success in harnessing oil wealth is associated with the high level of asset diversification at the time of oil discovery in 1968.

A more recent example of how to use abundant natural resources for economic performance comes from the United Arab Emirates, whose macroeconomic policies do well in shielding the economy from commodity price fluctuations. This has helped lower output volatility. Aggregate employment growth rates are also among the highest in the Gulf.

Successful asset diversification in Chile, Malaysia, and Botswana has led to relatively robust economic performance. These three have higher levels of institutional capital than the other countries in Group II. Chile's strongest points may be macroeconomic stability and fiscal discipline in using its copper-related revenues. These policies have helped to lower output volatility and facilitate countercyclical policy interventions. Malaysia's most impressive achievements

have been productivity and employment growth, although output and public spending remain volatile. Botswana's diversified asset portfolio is associated with increased living standards, improved education, and four decades of sustained growth; productivity and employment growth have been more erratic.

Despite reducing output volatility, productivity growth in Saudi Arabia has remained below the average in the Middle East. Another challenge the country faces is the need to create employment for nationals, who account for less than half the labor force. The response includes relying on an overexpansion of government employment. The Gulf countries share similar characteristics in how they segment the labor force: foreign workers occupy the larger share of the labor force, whereas nationals occupy highly paid and prestigious public sector jobs—the Gulf Syndrome. Its negative impact has been offset by the higher productivity of nonnationals. Foreign labor is highly elastic and available at competitive wages. Russia and Kazakhstan outperform most resource-rich countries as their economic outcomes have marked an improvement in all three economic outcomes.

Group III countries exhibit the difficulties associated with establishing and improving the institutions and policies required to manage resource rents, provide public services, and regulate private enterprise. Their economic outcomes remain unsatisfactory. Development in Nigeria has been hampered by voracious public spending that outpaced oil revenues in the 1980s and the 1990s. Poor institutions have led to a shrinking labor force and stagnating productivity. The story of RB Venezuela is also one of turbulent development and periodic economic collapse—since the 1970s mainly attributable to weak institutions. Uzbekistan does relatively well in resource-rich Group III Eurasian countries in economic performance—low output volatility and strong productivity growth. It surpasses all economies in its group; indeed it does better than Russia in the economic performance index (annex S3B).

## Diversifying naturally

Governments in countries with natural resources are understandably drawn to the possibility of using them to subsidize less-volatile nonextractive activities such as high-tech manufacturing, financial services, and construction. The global experience summarized in the three spotlights in this report suggests a better (though longer-term) strategy for diversification: governments should use the rents from natural resources to invest in education and infrastructure, combined with efforts to improve the arrangements to regulate private enterprise evenhandedly. Implemented well, this approach will improve economic performance—stabilizing the economy, boosting employment, and increasing productivity. It might lead to greater economic diversification but—more important—it will bring about a more diversified development.

Spotlight contributed by  
Dobrina Gogova, with inputs  
from Hernan Winkler.

## Annex S3A Development outcomes

Table S3A.1 contains key development outcomes of the 18 resource-rich economies analyzed in spotlight three. The development indicators include per capita income, life expectancy, and the Human Development Index.

**Table S3A.1. Development outcomes in selected economies**

Country	GDP per capita, PPP (constant 2005 international \$) 2012	Life expectancy at birth 2011	HDI value 2012
<b>Group I (developed economies)<sup>a</sup></b>	<b>39,368</b>	<b>80.1</b>	<b>0.91</b>
Australia	35,669	81.8	0.94
Canada	35,936	80.9	0.91
Netherlands	36,599	81.2	0.92
Norway	47,547	81.3	0.96
United Arab Emirates	37,392 <sup>b</sup>	76.7	0.82
United States	43,063	78.6	0.94
<b>Group II (successful developing economies)<sup>a</sup></b>	<b>15,682</b>	<b>69.7</b>	<b>0.76</b>
Botswana	14,639	53.0	0.63
Chile	15,848	79.0	0.82
Kazakhstan	11,973	68.9	0.75
Malaysia	14,775	74.3	0.77
Russian Federation	15,177	69.0	0.79
Saudi Arabia	21,678 <sup>b</sup>	74.1	0.78
<b>Group III (underperforming economies)<sup>a</sup></b>	<b>6,946</b>	<b>66.8</b>	<b>0.67</b>
Azerbaijan	9,156	70.7	0.73
Nigeria	2,294	51.9	0.47
Turkmenistan	9,121	65.0	0.70
Ukraine	6,394	70.8	0.74
Uzbekistan	3,095	68.3	0.65
Venezuela, RB	11,613	74.3	0.75

Sources: World Bank; UNDP 2013.

Note: HDI = Human Development Index; PPP = purchasing power parity.

a. Group average, unweighted.

b. 2011.

## Annex S3B Indexes for outcomes and diversification

The overall diversification of assets within the economic portfolio of each country is summarized in a multiplicative index (asset portfolio index). The overall efficiency of economic performance of each country is summarized in a composite index (economic performance index). The measures used to construct the two series are listed in table S3B.1.

Table S3B.1. Measures used to construct the economic performance and asset portfolio indexes

### Asset portfolio

Indicator	Measure	Year	Source
Natural capital	Subsoil assets 2005, per capita values; constant 2005 US\$	2005	<i>The Changing Wealth of Nations</i> , World Bank
Human capital	Average years of schooling of people 15+ years of age	2000–11	Robert Barro and Jong-Wha Lee, "A New Data Set of Educational Attainment in the World, 1950–2010"
Physical capital	Capital stock, per capita, thousands of constant 2005 US\$	1995–2010	World Economic Outlook, IMF
Institutional capital	Ease of Doing Business, Distance to Frontier measure	2006–13	Doing Business, World Bank
	Political Institutions, Polity 2	2005–11	Polity IV Project, Political Regime Characteristics and Transitions, 1800–2012
	Government Effectiveness, Estimate of Governance series	1996–2011	Worldwide Governance Indicators
	Inflation volatility, YoY % change in CPI based on quarterly data, 4-year moving standard deviation	2005–12	International Financial Statistics, IMF

### Economic performance

Indicator	Measure	Year	Source
Productivity level	Labor productivity [=GDP/EMPTOT], constant 2005 US\$	1995–2010	World Development Indicators (WDI), World Bank
Productivity growth	Labor productivity [=GDP/EMPTOT], constant 2005 US\$, growth rate (%)	1995–2010	World Development Indicators (WDI), World Bank
Output volatility	Volatility, real per capita GDP growth, %, 5-year moving standard deviation	1995–2010	Penn World Table Version 6.3
Employment level	Employment participation, % working-age population (ages 15+)	1995–2010	World Development Indicators (WDI), World Bank
Employment growth	Employment participation, % working-age population (ages 15+), growth rate (%)	1995–2010	World Development Indicators (WDI), World Bank

Note: CPI = consumer price index; YoY = year on year.

Table S3B.2. Asset portfolio data and index components

	Data						
	Natural capital	Human capital	Physical capital	Institutions			
	Subsoil assets per capita 2005 (1)	Average years of schooling 2000–11 (2)	Capital stock per capita 1995–2010 (3)	Doing Business, DTF 2006–13 (4)	Polity 2 2005–11 (5)	Government effectiveness 1996–2011 (6)	Inflation volatility 2005–12 <sup>a</sup> (7)
Australia	20,328.50	11.97	111.15	79.69	10.00	1.77	-0.68
Azerbaijan	9,194.07	11.20	2.09	57.81	-7.00	-0.81	-3.24
Botswana	981.75	8.46	14.97	64.06	8.00	0.56	-1.55
Canada	12,643.73	11.63	87.30	83.64	10.00	1.90	-0.58
Chile	9,562.67	9.40	13.04	67.81	9.86	1.19	-0.66
Kazakhstan	20,267.90	10.21	14.98	57.48	3.57	-0.58	-1.66
Malaysia	10,102.13	9.09	16.07	74.59	4.71	1.05	-1.12
Netherlands	7,060.97	11.23	105.86	75.39	10.00	1.90	-0.40
Nigeria	3,940.22	5.00	2.87	50.78	4.00	-1.03	-2.27
Norway	99,705.80	12.50	162.38	82.11	10.00	1.91	-0.66
Russian Federation	24,237.80	9.76	19.94	55.33	4.57	-0.47	-1.44
Saudi Arabia	86,620.15	7.39	29.78	68.16	-10.00	-0.24	-0.99
Turkmenistan	32,468.38	9.90	8.24	..	-9.00	-1.48	..
Ukraine	1,970.10	11.13	10.33	46.20	7.00	-0.70	-2.81
United Arab Emirates	118,110.73	8.56	68.58	67.15	-8.00	0.80	-1.92
United States	3,478.15	12.51	96.13	84.69	10.00	1.61	-0.95
Uzbekistan	5,365.13	10.00	2.09	43.05	-9.00	-1.00	..
Venezuela, RB	24,090.45	6.89	21.04	37.10	1.71	-0.94	-2.29

Index									
Natural capital	Built capital			Index capital	Institutions				
	Subsoil assets per capita 2005	Average years of schooling 2011	Capital stock per capita 1995-2010		Built capital	Doing Business, DTF 2006-13	Polity 2 2005-11	Government effectiveness 1996-2011	Inflation volatility 2005-12
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1.17	1.93	1.68	1.80	1.48	1.89	2.00	1.96	1.90	1.94
1.07	1.83	1.00	1.41	1.24	1.44	1.15	1.20	1.00	1.20
1.00	1.46	1.08	1.27	1.14	1.57	1.90	1.60	1.59	1.67
1.10	1.88	1.53	1.71	1.40	1.98	2.00	2.00	1.93	1.98
1.07	1.59	1.07	1.33	1.20	1.65	1.99	1.79	1.91	1.83
1.16	1.69	1.08	1.39	1.28	1.43	1.68	1.27	1.56	1.48
1.08	1.54	1.09	1.32	1.20	1.79	1.74	1.75	1.75	1.75
1.05	1.83	1.65	1.74	1.40	1.80	2.00	2.00	2.00	1.95
1.03	1.00	1.00	1.00	1.01	1.29	1.70	1.13	1.34	1.37
1.84	2.00	2.00	2.00	1.92	1.95	2.00	2.00	1.91	1.96
1.20	1.63	1.11	1.37	1.29	1.38	1.73	1.30	1.63	1.51
1.73	1.32	1.17	1.25	1.49	1.65	1.00	1.37	1.79	1.45
1.27	1.65	1.04	1.35	1.31	..	1.05	1.00	..	1.03
1.01	1.82	1.05	1.43	1.22	1.19	1.85	1.23	1.15	1.36
2.00	1.47	1.41	1.44	1.72	1.63	1.10	1.67	1.47	1.47
1.02	2.00	1.59	1.79	1.41	2.00	2.00	1.91	1.81	1.93
1.04	1.67	1.00	1.33	1.19	1.13	1.05	1.14	..	1.11
1.20	1.25	1.12	1.18	1.19	1.00	1.59	1.16	1.33	1.27

Sources: World Bank staff estimates based on data from World Bank; IMF; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.

Note: The values of the indicators in the Data section of this table are rescaled using the “min-max” method. The rescaled scores are presented in the Index section of the table. They are calculated by first subtracting the minimum score and then dividing by the difference between the minimum and maximum score. The maximum rescaled score is equal to 2 and the minimum rescaled score is equal to 1 in order to avoid 0 index values during the process of multiplication. The asset portfolio index is a multiplicative index. It has three main components: natural capital, built capital, and index institutions. The built capital component, column (11), is the unweighted average of columns (9) and (10): average years of schooling and capital stock per capita. The unweighted average of natural capital, column (8), and built capital, column (11), compose the index capital, column (12). The index institutions, column (17), is constructed as the unweighted average of the four indicators under institutions: Ease of Doing Business (distance to frontier measure), political institutions (Polity IV Project), government effectiveness (Estimate of Governance series), and inflation volatility. DTF = distance to frontier; .. = negligible.

a. Lower values indicate higher inflation volatility in the Data section.

**Table S3B.3. Multiplicative asset portfolio index**

a. Product of three types of economic assets: natural capital, built capital, and index institutions—columns (8), (11), and (17) in table S3B.2.

	Natural capital (1)	Built capital (2)	Index institutions (3)	Multiplicative index (4)=(1)x(2)x(3)
Australia	1.17	1.80	1.94	4.07
Azerbaijan	1.07	1.41	1.20	1.81
Botswana	1.00	1.27	1.67	2.12
Canada	1.10	1.71	1.98	3.71
Chile	1.07	1.33	1.83	2.61
Kazakhstan	1.16	1.39	1.48	2.39
Malaysia	1.08	1.32	1.75	2.49
Netherlands	1.05	1.74	1.95	3.57
Nigeria	1.03	1.00	1.37	1.40
Norway	1.84	2.00	1.96	7.23
Russian Federation	1.20	1.37	1.51	2.48
Saudi Arabia	1.73	1.25	1.45	3.13
Turkmenistan	1.27	1.35	1.03	1.75
Ukraine	1.01	1.43	1.36	1.96
United Arab Emirates	2.00	1.44	1.47	4.24
United States	1.02	1.79	1.93	3.53
Uzbekistan	1.04	1.33	1.11	1.53
Venezuela, RB	1.20	1.18	1.27	1.80

b. Product of two types of economic assets: index capital and index institutions—columns (12) and (17) in table S3B.2.

	Index capital (1)	Index institutions (2)	Multiplicative index (3)=(1)x(2)
Australia	1.48	1.94	2.88
Azerbaijan	1.24	1.20	1.48
Botswana	1.14	1.67	1.89
Canada	1.40	1.98	2.77
Chile	1.20	1.83	2.20
Kazakhstan	1.28	1.48	1.89
Malaysia	1.20	1.75	2.10
Netherlands	1.40	1.95	2.72
Nigeria	1.01	1.37	1.38
Norway	1.92	1.96	3.77
Russian Federation	1.29	1.51	1.94
Saudi Arabia	1.49	1.45	2.16
Turkmenistan	1.31	1.03	1.34
Ukraine	1.22	1.36	1.65
United Arab Emirates	1.72	1.47	2.53
United States	1.41	1.93	2.72
Uzbekistan	1.19	1.11	1.31
Venezuela, RB	1.19	1.27	1.51

Sources: World Bank staff estimates based on data from World Bank; IMF; Barro and Lee; Worldwide Governance Indicators; and the Polity IV Project.



Table S3B.4. Economic performance index

Country	Data					Composite index
	Output volatility	Employment growth	Employment level	Productivity level	Productivity growth	
Australia	-0.82	0.33	60.09	70,429.54	1.31	
Azerbaijan	-7.79	0.17	58.78	5,462.36	7.52	
Botswana	-5.05	0.31	60.00	13,837.47	1.89	
Canada	-1.65	0.21	60.94	68,643.37	0.95	
Chile	-2.57	0.24	51.16	20,279.92	2.01	
Kazakhstan	-4.73	0.19	63.19	8,763.59	4.34	
Malaysia	-3.98	-0.09	60.02	14,053.67	2.35	
Netherlands	-1.45	0.49	60.76	79,405.10	0.90	
Nigeria	-5.95	-0.07	51.51	3,023.27	2.55	
Norway	-1.54	0.31	63.21	128,218.57	1.02	
Russian Federation	-3.94	0.13	55.22	12,446.87	2.71	
Saudi Arabia	-3.48	-0.21	47.42	40,277.84	-0.44	
Turkmenistan	-6.89	0.10	53.73	5,860.53	6.23	
Ukraine	-4.87	-0.17	53.27	4,315.60	1.77	
United Arab Emirates	-3.60	0.18	74.54	58,630.13	-3.97	
United States	-1.47	-0.25	61.73	88,355.53	1.71	
Uzbekistan	-2.87	0.16	52.97	1,755.10	2.40	
Venezuela, RB	-6.40	0.43	58.16	14,534.45	-0.81	

Country	Index					Composite index
	Output volatility <sup>a</sup>	Employment growth	Employment level	Productivity level	Productivity growth	
Australia	1.00	0.78	0.47	0.54	0.46	0.71
Azerbaijan	0.00	0.56	0.42	0.03	1.00	0.34
Botswana	0.39	0.76	0.46	0.10	0.51	0.44
Canada	0.88	0.61	0.50	0.53	0.43	0.64
Chile	0.75	0.66	0.14	0.15	0.52	0.49
Kazakhstan	0.44	0.59	0.58	0.06	0.72	0.47
Malaysia	0.55	0.22	0.46	0.10	0.55	0.40
Netherlands	0.91	1.00	0.49	0.61	0.42	0.72
Nigeria	0.26	0.24	0.15	0.01	0.57	0.25
Norway	0.90	0.75	0.58	1.00	0.43	0.76
Russian Federation	0.55	0.50	0.29	0.08	0.58	0.43
Saudi Arabia	0.62	0.06	0.00	0.30	0.31	0.32
Turkmenistan	0.13	0.47	0.23	0.03	0.89	0.31
Ukraine	0.42	0.11	0.22	0.02	0.50	0.28
United Arab Emirates	0.60	0.58	1.00	0.45	0.00	0.54
United States	0.91	0.00	0.53	0.68	0.49	0.59
Uzbekistan	0.71	0.55	0.20	0.00	0.55	0.45
Venezuela, RB	0.20	0.92	0.40	0.10	0.27	0.35

Sources: World Bank staff estimates based on data from World Bank; and Penn World Table.

Note: The values of the indicators in the Data section of this table are rescaled using the “min-max” method. The rescaled scores are presented in the Index section of the table. They are calculated by first subtracting the minimum score and then dividing by the difference between the minimum and maximum score. The maximum rescaled score is equal to 1 and the minimum rescaled score is equal to 0. The economic performance index is a composite index constructed as the unweighted average of the three economic outcomes: labor productivity level and growth, output volatility level, as well as employment participation growth and level.

a. Lower values indicate higher output volatility in the data section.

## Notes

- 1 The countries are grouped into three: developed economies, successful developing economies, and underperforming economies, discussed further in this spotlight.
- 2 Programme for International Student Assessment of the Organisation for Economic Co-operation and Development.

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# Selected Indicators



Table A1. Basic indicators

Table A2. Trade

Table A3. Economic structure

Table A4. Natural capital

Table A5. Capital

Table A6. Institutions

Sources and definitions for tables A1–A6

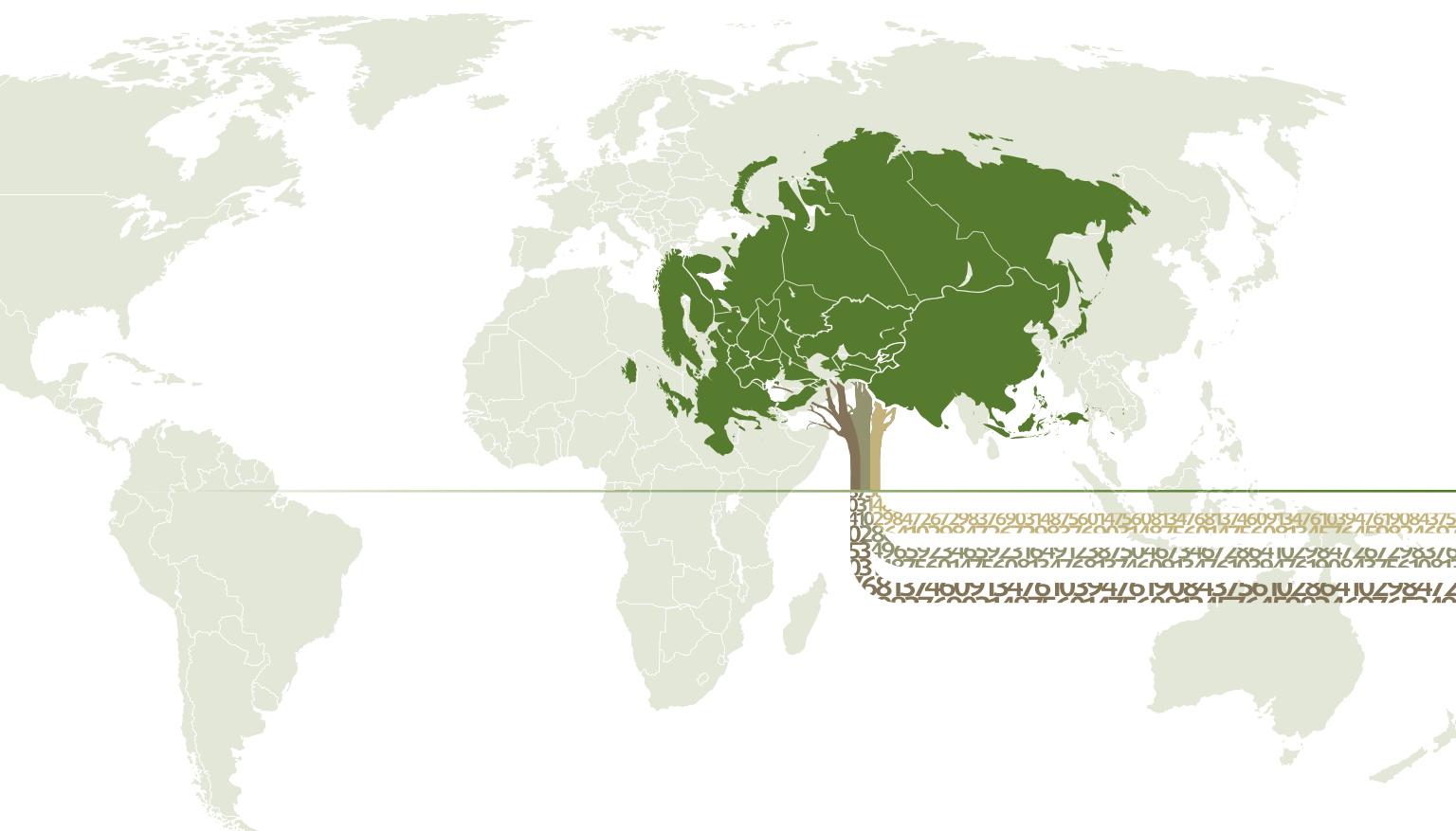


Table A1. Basic indicators

	Land area, thousands sq. km 2011	GNI, per capita, current US\$ 2012	GDP			Population		
			Per capita, PPP, constant international \$ 2012	PPP, constant international \$, billions 2012	Real, per capita, growth, percent 2000–12	Total, thousands 2012	Working age, percent 2012	Old age, percent 2012
Eurasia resource-rich								
Azerbaijan	82.7	6,050	9,156	85	11.7	9,298	72.1	5.7
Kazakhstan	2,699.7	9,730	11,973	201	7.2	16,797	68.0	6.6
Russian Federation	16,379.1	12,700	15,177	2,178	5.3	143,533	71.6	13.0
Turkmenistan	469.9	5,550	9,121	47	7.1	5,173	67.3	4.1
Ukraine	579.3	3,500	6,394	292	5.1	45,593	70.5	15.3
Uzbekistan	425.4	1,720	3,095	92	5.2	29,777	66.8	4.3
Eurasia resource-poor								
Armenia	28.5	3,720	5,727	17	8.1	2,969	69.3	10.3
Belarus	202.9	6,530	13,427	127	7.2	9,464	71.1	13.8
Georgia	69.5	3,280	5,086	23	5.9	4,512	68.1	14.3
Kyrgyz Republic	191.8	990	2,077	12	2.9	5,582	65.6	4.2
Moldova	32.9	2,070	2,951	11	4.8	3,560	72.2	11.2
Tajikistan	140.0	860	1,936	16	5.9	8,009	61.0	3.2
European Union new member states								
Bulgaria	108.6	6,870	12,178	89	4.8	7,305	67.5	18.9
Croatia	56.0	13,290	16,148	69	2.7	4,267	67.0	18.0
Cyprus	9.2	26,000	23,475	21	0.6	1,129	70.8	12.0
Czech Republic	77.2	18,130	23,763	250	2.8	10,515	69.2	16.2
Estonia	42.4	15,830	18,722	25	4.8	1,339	66.5	17.8
Hungary	90.5	12,390	17,033	169	2.1	9,944	68.3	17.0
Latvia	62.2	14,180	15,946	32	5.9	2,025	66.9	18.5
Lithuania	62.7	13,850	18,776	56	5.9	2,986	69.3	15.6
Poland	304.8	12,670	18,297	705	3.9	38,543	71.0	14.0
Romania	230.2	8,420	11,443	244	4.3	21,327	70.0	15.0
Slovak Republic	48.1	17,170	21,257	115	4.2	5,410	72.3	12.7
Slovenia	20.1	22,710	24,320	50	2.0	2,058	68.8	17.1
East Asia								
Cambodia	176.5	880	2,150	32	6.2	14,865	63.5	5.3
China	9,327.5	5,740	7,958	10,748	9.4	1,350,695	73.3	8.7
Indonesia	1,811.6	3,420	4,272	1,054	3.9	246,864	65.6	5.1
Korea, Rep.	97.1	22,670	27,991	1,400	3.7	50,004	72.9	11.8
Lao PDR	230.8	1,260	2,522	17	5.3	6,646	60.6	3.8
Malaysia	328.6	9,800	14,775	432	3.1	29,240	68.2	5.2
Mongolia	1,553.6	3,160	4,708	13	6.1	2,796	69.1	3.8
Papua New Guinea	452.9	1,790	2,498	18	1.6	7,167	58.8	2.9
Philippines	298.2	2,470	3,803	368	2.9	96,707	61.6	3.8
Singapore	0.7	47,210	53,266	283	3.3	5,312	73.8	9.7
Thailand	510.9	5,210	8,459	565	3.6	66,785	72.1	9.4
Vietnam	310.1	1,400	3,133	278	5.7	88,776	70.6	6.6

	Land area, thousands sq. km 2011	GNI, per capita, current US\$ 2012	GDP			Population		
			Per capita, PPP, constant international \$ 2012	PPP, constant international \$, billions 2012	Real, per capita, growth, percent 2000-12	Total, thousands 2012	Working age, percent 2012	Old age, percent 2012
Resource-rich								
Australia	7,682.3	59,570	35,669	809	1.7	22,684	67.1	14.0
Botswana	566.7	7,720	14,639	29	3.8	2,004	62.7	3.6
Canada	9,093.5	50,970	35,936	1,253	1.1	34,880	68.8	14.8
Chile	743.5	14,280	15,848	277	3.1	17,465	68.9	9.7
Kuwait	17.8	44,730 <sup>a</sup>	43,231 <sup>b</sup>	135 <sup>c</sup>	1.0 <sup>d</sup>	3,250	72.9	2.2
Netherlands	33.7	48,250	36,599	614	0.9	16,768	66.3	16.4
New Zealand	263.3	30,620	25,689	114	1.2	4,433	66.1	13.6
Nigeria	910.8	1,430	2,294	387	3.7	168,834	53.1	2.7
Norway	304.3	98,860	47,547	239	0.8	5,019	65.9	15.5
Saudi Arabia	2,149.7	18,030 <sup>a</sup>	21,678 <sup>b</sup>	602 <sup>c</sup>	0.8 <sup>d</sup>	28,288	67.4	2.9
United Arab Emirates	83.6	36,040 <sup>a</sup>	37,392 <sup>b</sup>	334 <sup>c</sup>	-4.3 <sup>d</sup>	9,206	85.2	0.4
United States	9,147.4	50,120	43,063	13,518	0.9	313,914	66.7	13.6
Venezuela, RB	882.1	12,470	11,613	348	1.9	29,955	65.2	6.0

Note: GDP = gross domestic product; GNI = gross national income; PPP = purchasing power parity.

a. 2011.

b. 2011.

c. 2011.

d. 2000-11.

Table A2. Trade

	Exports, percentage of GDP		Imports, percentage of GDP		Commodity exports, percentage of total merchandise exports 2010–11
	Goods 2010–11	Services 2010–11	Goods 2010–11	Services 2010–11	
<b>Eurasia resource-rich</b>					
Azerbaijan	51.1	4.8	13.7	8.3	96.6
Kazakhstan	44.3	2.6	22.0	6.8	83.1
Russian Federation	26.4	3.1	16.4	4.9	75.2
Turkmenistan	—	—	—	—	81.6
Ukraine	36.4	13.2	45.5	8.8	21.5
Uzbekistan	—	—	—	—	33.4
<b>Eurasia resource-poor</b>					
Armenia	13.5	8.7	34.9	11.5	33.0
Belarus	54.0	8.7	65.1	5.3	22.8
Georgia	21.4	14.0	44.9	9.1	57.4
Kyrgyz Republic	36.9	16.2	62.8	18.8	10.2
Moldova	22.6	13.9	63.7	12.9	3.8
Tajikistan	8.6	7.3	61.4	9.8	59.2
<b>European Union new member states</b>					
Bulgaria	47.9	13.9	54.6	8.3	25.4
Croatia	21.0	20.0	34.5	6.5	14.5
Cyprus	10.4	31.5	32.5	14.6	27.0
Czech Republic	57.2	10.9	55.7	8.7	4.6
Estonia	60.0	25.5	62.9	15.7	12.9
Hungary	70.0	15.4	66.9	12.0	4.3
Latvia	38.5	16.1	48.0	9.1	20.8
Lithuania	58.6	13.5	64.6	9.1	32.1
Poland	36.6	7.1	39.2	6.2	9.4
Romania	27.9	6.3	34.8	4.9	9.0
Slovak Republic	77.9	6.8	76.1	7.6	7.6
Slovenia	55.9	12.8	58.3	9.5	7.3
<b>East Asia</b>					
Cambodia	37.6	16.0	50.5	9.5	1.9
China	24.8	2.7	21.1	3.3	2.1
Indonesia	21.9	2.5	17.7	3.7	36.8
Korea, Rep.	47.5	8.6	44.1	9.3	10.1
Lao PDR	23.4	6.9	29.1	3.8	40.5
Malaysia	79.8	12.9	63.0	13.2	18.8
Mongolia	50.9	7.5	58.0	16.5	84.1
Papua New Guinea	60.6	3.3 <sup>d</sup>	37.2 <sup>a</sup>	29.1 <sup>a</sup>	36.7
Philippines	17.9	7.8	24.8	5.6	8.1
Singapore	174.0	46.9	144.0	46.2	22.7
Thailand	61.7	11.4	54.6	14.6	5.0
Vietnam	73.1	7.1	75.7	9.5	9.8



	Exports, percentage of GDP		Imports, percentage of GDP		Commodity exports, percentage of total merchandise exports 2010–11
	Goods 2010–11	Services 2010–11	Goods 2010–11	Services 2010–11	
Resource-rich					
Australia	19.2	3.9	17.4	4.4	68.5
Botswana	36.7	2.6	42.5	4.9	13.0
Canada	25.4	4.8	25.7	6.1	32.4
Chile	32.6	5.1	26.9	6.1	62.0
Kuwait	56.7	6.6	14.3	11.0	92.9
Netherlands	62.8	12.7	55.4	11.2	21.8
New Zealand	22.8	7.0 <sup>a</sup>	21.1 <sup>a</sup>	7.2 <sup>a</sup>	9.3
Nigeria	35.7	1.4	22.8	9.7	96.1
Norway	31.5	9.3	18.0	10.3	61.7
Saudi Arabia	59.5	2.2	21.2	15.3	85.8
United Arab Emirates	—	—	—	—	60.5
United States	9.5	3.9	14.2	2.8	10.9
Venezuela, RB	23.0	0.6	12.3	4.1	94.0

Note: GDP = gross domestic product; — = not available.

a. 2010.

Table A3. Economic structure

	Sector composition of gross value added				Economic performance		
	Agriculture, Hunting, and Forestry, percent 2010 <sup>a</sup>	Mining and Quarrying, percent 2010 <sup>a</sup>	Manufacturing, percent 2010 <sup>a</sup>	Services, other, percent 2010 <sup>a</sup>	Output Growth Volatility, percent 1995-2008	Employment Growth, percent 1995-2008	Labor Productivity Growth, percent 1995-2008
<b>Eurasia resource-rich</b>							
Azerbaijan	5.9	48.9	5.1	40.0	7.3	2.5	8.0
Kazakhstan	6.2	18.1	11.0	64.6	3.7	0.6	4.8
Russian Federation	4.0	9.9	15.0	71.1	3.7	0.6	3.3
Turkmenistan	—	—	—	—	5.8	2.6	6.4
Ukraine	8.3	6.6	15.8	69.3	5.0	-0.5	2.7
Uzbekistan	—	—	—	—	2.2	2.8	2.1
<b>Eurasia resource-poor</b>							
Armenia	18.8	2.8	10.7	67.6	5.4	-0.4	9.0
Belarus	10.2	0.4	26.6	62.9	4.3	-0.6	6.6
Georgia	8.3	1.0	12.0	78.7	7.5	-0.5	6.9
Kyrgyz Republic	18.8	0.7	18.2	62.4	5.2	2.1	2.1
Moldova	14.1	0.4	12.4	73.1	6.2	-1.6	4.2
Tajikistan	21.8	0.0	16.4 <sup>f</sup>	61.7	7.5	1.8	2.2
<b>European Union new member states</b>							
Bulgaria	5.3	2.0	16.4	76.3	2.9	0.8	2.7
Croatia	5.5	0.8	17.1	76.7	3.9	-0.2	4.3
Cyprus	2.3	0.4	6.6	90.7	1.8	2.7	1.1
Czech Republic	2.4 <sup>b</sup>	1.2 <sup>b</sup>	25.5 <sup>b</sup>	67.1 <sup>b</sup>	2.3	0.2	3.4
Estonia	3.3	1.4	16.4	79.0	3.1	-0.1	5.8
Hungary	4.0	0.2	22.3	73.9	1.5	0.3	2.7
Latvia	4.1	0.5	12.2	83.2	4.3	0.4	5.5
Lithuania	4.2	0.4	18.8	76.6	4.8	0.1	5.8
Poland	4.3	2.3	18.9	74.5	1.8	0.6	4.1
Romania	7.4	1.1	22.4	69.0	4.2	-0.4	4.0
Slovak Republic	3.5	0.6	24.2	71.7	2.9	1.0	4.0
Slovenia	2.5	0.4	22.1	75.0	1.6	0.9	3.2

	Sector composition of gross value added				Economic performance		
	Agriculture, Hunting, and Forestry, percent 2010 <sup>a</sup>	Mining and Quarrying, percent 2010 <sup>a</sup>	Manufacturing, percent 2010 <sup>a</sup>	Services, other, percent 2010 <sup>a</sup>	Output Growth Volatility, percent 1995-2008	Employment Growth, percent 1995-2008	Labor Productivity Growth, percent 1995-2008
<b>East Asia</b>							
Cambodia	36.5	0.6	15.8	48.4	2.3	3.4	4.6
China	10.1 <sup>f</sup>	5.2 <sup>f</sup>	32.5 <sup>f</sup>	37.5 <sup>f</sup>	1.4	1.0	8.4
Indonesia	15.3	11.2	24.8	48.7	3.4	1.7	2.0
Korea, Rep.	2.9	0.3	28.3	68.5	3.4	1.1	3.5
Lao PDR	29.7	9.6	10.1	50.7	1.0	2.5	3.9
Malaysia	10.5	11.7	25.2	52.7	3.3	2.6	2.6
Mongolia	19.6	20.8	7.2	52.4	2.6	2.3	3.2
Papua New Guinea	32.9	31.1	6.0	32.4	4.0	3.0	-1.6
Philippines	12.3	1.4	21.4	64.8	1.8	2.4	1.9
Singapore	0.0 <sup>d</sup>	0.0	22.2	77.8	3.8	2.8	2.7
Thailand	10.9	3.2	31.5	54.5	3.6	1.6	1.9
Vietnam	20.6	10.9	19.7	48.9	1.0	2.3	4.9
<b>Resource-rich</b>							
Australia	2.5	7.8	10.2	79.3	0.9	2.3	1.4
Botswana	2.4	32.9	4.0	60.6	2.5	3.2	2.4
Canada	1.6	8.6	14.1	75.6	1.4	1.9	1.0
Chile	3.3	18.7	11.6	66.4	2.1	2.1	2.5
Kuwait	0.2	49.4	5.1	45.3	5.0	3.7	1.1
Netherlands	2.2	3.3	13.9	80.5	1.2	1.8	1.0
New Zealand	5.4	1.3	14.5	78.7	1.7	2.2	0.6
Nigeria	32.4	36.6	2.5	28.4	2.3	2.4	2.3
Norway	1.1	29.4	9.1	60.2	1.2	1.5	1.2
Saudi Arabia	2.5	47.4	10.2	40.0	2.4	3.4	-0.5
United Arab Emirates	0.8	30.3	9.3	59.6	3.8	8.4	-3.1
United States	1.1 <sup>e</sup>	1.9 <sup>e</sup>	14.3 <sup>e</sup>	90.6 <sup>e</sup>	1.0	1.2	1.7
Venezuela, RB	5.7	28.4	13.6	52.3	6.3	3.4	-0.3

Note: — = not available.

a. Most recent available year (see definitions).

b. Discrepancy between total economy and sum of industries since data by industry is not revised.

c. Due to data limitations the components do not add up to 100.

d. Includes quarrying.

e. Discrepancy between components and total as data for individual industries include all taxes less all subsidies.

f. Includes mining and quarrying, and electricity, gas, and water supply.

Table A4. Natural capital

	Arable land, % of land area 2000–11	Forest area, % of land area 2000–11 <sup>a</sup>	Total natural resource rents, % of GDP 2000–11	Natural wealth per capita, constant 2005 US\$ 2005	Proven oil reserves, billion barrels 2011 <sup>b</sup>	Proven gas reserves, trillion cubic meters 2011 <sup>b</sup>
<b>Eurasia resource-rich</b>						
Azerbaijan	22.4	11.3	52.0	11,684	7.0	1.3
Kazakhstan	8.4	1.2	42.8	23,916	30.0	1.9
Russian Federation	7.5	49.4	30.1	31,317	88.2	44.6
Turkmenistan	3.8	8.8	41.0	37,866	0.6	24.3
Ukraine	56.1	16.6	7.7	6,899	—	0.9
Uzbekistan	10.3	7.7	63.7	7,652	0.6	1.6
<b>Eurasia resource-poor</b>						
Armenia	15.8	9.7	1.2	3,139	—	—
Belarus	27.7	41.9	2.5	5,972	—	—
Georgia	8.2	39.6	0.9	3,334	—	—
Kyrgyz Republic	6.8	4.8	6.0	2,992	—	—
Moldova	55.6	11.1	0.2	4,148	—	—
Tajikistan	5.5	2.9	1.2	1,762	—	—
<b>European Union new member states</b>						
Bulgaria	29.8	34.2	2.3	5,560	—	—
Croatia	15.5	34.1	1.6	5,559	—	—
Cyprus	10.9	18.7	0.0	9,397	—	—
Czech Republic	41.5	34.3	0.7	4,595	—	—
Estonia	14.6	52.6	2.4	16,221	—	—
Hungary	50.8	22.1	0.9	5,974	—	—
Latvia	17.4	53.3	1.8	7,346	—	—
Lithuania	30.8	33.8	1.6	6,014	—	—
Poland	41.0	30.3	1.7	8,894	—	0.1
Romania	39.4	28.2	4.1	9,058	0.6	0.1
Slovak Republic	29.2	40.1	0.4	4,979	—	—
Slovenia	8.6	61.9	0.2	4,467	—	—
<b>East Asia</b>						
Cambodia	21.5	60.0	2.3	2,467	—	—
China	12.4	21.1	6.5	4,013	14.7	3.1
Indonesia	12.3	53.2	12.5	4,926	4.0	3.0
Korea, Rep.	16.6	64.1	0.0	2,642	—	—
Lao PDR	4.8	69.4	9.6	4,444	—	—
Malaysia	5.5	63.4	13.8	12,750	5.9	2.4
Mongolia	0.5	7.2	24.6	5,477	—	—
Papua New Guinea	0.6	64.5	40.7	8,569	—	0.4
Philippines	17.2	25.1	2.0	3,468	—	—
Singapore	1.1	3.3	0.0	2	—	—
Thailand	30.2	37.1	4.1	7,810	0.4	0.3
Vietnam	20.7	42.3	14.0	3,630	4.4	0.6

	Arable land, % of land area 2000–11	Forest area, % of land area 2000–11 <sup>a</sup>	Total natural resource rents, % of GDP 2000–11	Natural wealth per capita, constant 2005 US\$ 2005	Proven oil reserves, billion barrels 2011 <sup>b</sup>	Proven gas reserves, trillion cubic meters 2011 <sup>b</sup>
Resource-rich						
Australia	6.1	19.7	6.8	39,979	3.9	3.8
Botswana	0.4	20.8	3.5	5,420	—	—
Canada	4.9	34.1	5.4	36,924	175.2	2.0
Chile	2.0	21.6	14.4	18,870	—	—
Kuwait	0.6	0.3	51.9	213,112	101.5	1.8
Netherlands	30.2	10.8	1.7	13,193	—	1.1
New Zealand	2.4	31.4	2.7	52,979	—	—
Nigeria	37.5	11.5	35.8	6,042	37.2	5.1
Norway	2.8	32.2	16.7	110,162	6.9	2.1
Saudi Arabia	1.6	0.5	50.9	97,012	265.4	8.2
United Arab Emirates	0.7	3.8	23.2	120,989	97.8	6.1
United States	18.1	33.1	1.4	13,822	30.9	8.5
Venezuela, RB	3.0	53.6	32.1	30,567	296.5	5.5

Note: GDP = gross domestic product; — = not available.

a. Data are reported for 2000, 2005, 2010, and 2011.

b. End-of-year values.

Table A5. Capital

	Physical capital				
	Road density (km of road per 100 sq. km of land area) 2008–10 <sup>a</sup>	Telephone lines (per 100 people) 2010–12	Fixed broadband Internet subscribers (per 100 people) 2010–12	Gross fixed capital formation (% of GDP) 2005–12 <sup>a</sup>	Capital stock per capita (thousands of constant 2005 US\$) 2005–11
<b>Eurasia resource-rich</b>					
Azerbaijan	61.0	17.6	9.8	22.9	6.4
Kazakhstan	3.5	26.0	7.5	26.3	19.3
Russian Federation	5.7	30.8	12.6	20.9	22.4
Turkmenistan	—	10.7	0.0	37.1	6.2
Uzbekistan	—	6.9	0.6	22.4	2.1
Ukraine	28.0	27.9	7.2	21.9	11.3
<b>Eurasia resource-poor</b>					
Armenia	25.9	18.9	4.8	34.3	6.9
Belarus	41.6	44.5	22.0	33.2	22.7
Georgia	27.1	28.7	7.5	22.7	4.1
Kyrgyz Republic	17.0	9.2	1.2	24.5	1.7
Moldova	38.0	33.3	9.8	26.5	4.9
Tajikistan	—	5.4	0.1	17.8	1.3
<b>European Union new member states</b>					
Bulgaria	17.5	30.6	16.2	26.2	19.3
Croatia	51.9	39.9	19.4	23.4	34.8
Cyprus	134.0	35.6	18.6	20.6	77.9
Czech Republic	165.8	21.5	15.7	25.3	50.9
Estonia	128.7	34.9	24.6	27.6	40.4
Hungary	212.8	29.7	21.9	20.5	40.1
Latvia	107.3	23.0	20.4	27.1	26.8
Lithuania	124.9	21.4	18.8	21.8	22.6
Poland	125.3	18.0	14.8	20.5	30.3
Romania	34.3	21.6	15.0	26.6	21.7
Slovak Republic	89.2	19.1	13.6	24.2	35.3
Slovenia	192.2	42.7	23.9	24.7	69.0
<b>East Asia</b>					
Cambodia	21.9	3.4	0.2	18.2	1.4
China	40.3	21.2	11.3	42.6	12.9
Indonesia	24.0	16.1	1.1	28.7	3.7
Korea, Rep.	105.0	60.7	36.7	28.6	82.7
Lao PDR	16.0	1.7	0.8	28.4	1.4
Malaysia	40.5	15.9	7.4	22.4	18.7
Mongolia	0.7	6.6	3.1	36.9	8.9
Papua New Guinea	—	1.9	0.1	17.2	—
Philippines	—	3.8	2.0	19.9	4.3
Singapore	472.2	38.7	25.6	23.9	115.8
Thailand	9.3	9.6	5.4	26.7	13.3
Vietnam	48.0	13.1	4.5	33.6	2.8

	Physical capital				
	Road density (km of road per 100 sq. km of land area) 2008–10 <sup>a</sup>	Telephone lines (per 100 people) 2010–12	Fixed broadband Internet subscribers (per 100 people) 2010–12	Gross fixed capital formation (% of GDP) 2005–12 <sup>a</sup>	Capital stock per capita (thousands of constant 2005 US\$) 2005–11
Resource-rich					
Australia	10.6	46.7	24.4	27.6	156.5
Botswana	4.0	7.3	0.7	29.0	26.4
Canada	11.6	53.0	31.8	22.1	126.5
Chile	10.4	19.5	11.5	21.9	28.1
Kuwait	36.7	18.3	1.7	17.6	78.9
Netherlands	329.2	42.9	38.8	18.7	131.2
New Zealand	35.1	42.6	25.9	21.7	91.7
Nigeria	—	0.5	0.1	—	3.7
Norway	29.0	31.4	35.6	20.4	195.4
Saudi Arabia	—	16.1	6.0	19.6	46.8
United Arab Emirates	5.0	22.4	11.1	21.0	136.8
United States	66.5	46.0	27.3	17.2	124.3
Venezuela, RB	—	25.0	6.1	20.9	25.3

Note: GDP = gross domestic product; — = not available.

a. Averages calculated on the basis of available data.

(continued)

Table A5. Capital (cont.)

	Human capital			
	Health expenditure, public (% of GDP) 2005-11	Public spending on education, total (% of GDP) 2005-11 <sup>a</sup>	Average years of schooling (of adults) 2011	PISA reading scores 2009
<b>Eurasia resource-rich</b>				
Azerbaijan	1.0	2.8	11.2	362
Kazakhstan	2.3	2.7	10.4	390
Russian Federation	3.6	3.9	9.8	459
Turkmenistan	1.5	—	9.9	—
Ukraine	4.0	5.8	11.3	—
Uzbekistan	2.5	—	10.0	—
<b>Eurasia resource-poor</b>				
Armenia	1.7	3.1	10.8	—
Belarus	4.3	5.4	9.3	—
Georgia	1.9	2.8	12.1	—
Kyrgyz Republic	3.4	5.8	9.3	314
Moldova	5.1	8.3	9.7	—
Tajikistan	1.4	3.7	9.8	—
<b>European Union new member states</b>				
Bulgaria	4.1	4.2	10.6	429
Croatia	6.4	4.3	9.8	476
Cyprus	2.9	7.2	9.8	—
Czech Republic	6.0	4.2	12.3	478
Estonia	4.4	5.4	12.0	501
Hungary	5.3	5.2	11.1	494
Latvia	4.0	5.3	11.5	484
Lithuania	4.7	5.1	10.9	468
Poland	4.7	5.2	10.0	500
Romania	4.5	4.0	10.4	424
Slovak Republic	5.5	3.9	11.6	477
Slovenia	6.2	5.5	11.6	483
<b>East Asia</b>				
Cambodia	1.2	2.1	5.8	—
China	2.3	—	7.5	see note b
Indonesia	1.1	3.1	5.8	402
Korea, Rep.	3.7	4.5	11.6	539
Lao PDR	1.2	2.8	4.6	—
Malaysia	2.1	4.8	9.5	—
Mongolia	3.0	5.2	8.3	—
Papua New Guinea	3.2	—	4.3	—
Philippines	1.4	2.6	8.9	—
Singapore	1.2	3.2	8.8	526
Thailand	2.8	4.3	6.6	421
Vietnam	2.4	5.9	5.5	—



	Human capital			
	Health expenditure, public (% of GDP) 2005-11	Public spending on education, total (% of GDP) 2005-11 <sup>a</sup>	Average years of schooling (of adults) 2011	PISA reading scores 2009
Resource-rich				
Australia	5.9	4.8	12.0	515
Botswana	4.3	8.4	8.9	—
Canada	7.5	5.0	12.1	524
Chile	3.1	3.7	9.7	449
Kuwait	2.1	4.2	6.1	—
Netherlands	9.1	5.6	11.6	508
New Zealand	7.6	6.3	12.5	521
Nigeria	2.1	—	5.0	—
Norway	7.6	6.8	12.6	503
Saudi Arabia	2.6	6.0	7.8	—
United Arab Emirates	2.1	—	9.3	495 <sup>c</sup>
United States	7.7	5.5	12.4	500
Venezuela, RB	2.3	3.6	7.6	—

Note: GDP = gross domestic product; PISA = Programme for International Student Assessment (of the Organisation for Economic Co-operation and Development); — = not available.

a. Averages calculated on the basis of available data.

b. Four different scores are reported by Shanghai (China) (556); Hong Kong SAR, China (533); Chinese Taipei (495); and Macao SAR, China (497).

c. Represented by Dubai.

Table A6. Institutions

	Inflation volatility, YoY change in quarterly CPI 2005–12 <sup>a</sup>	Government effectiveness, –2.5 (weak) to 2.5 (strong) 2005–12 <sup>b</sup>	Global Competitiveness Index, rank 2012–13 <sup>c</sup>	Ease of Doing Business Index, rank 2012–13 <sup>c</sup>
<b>Eurasia resource-rich</b>				
Azerbaijan	3.2	–0.7	46	67
Kazakhstan	1.7	–0.4	51	49
Russian Federation	1.4	–0.4	67	112
Turkmenistan	–	–1.5	–	–
Ukraine	2.8	–0.7	73	137
Uzbekistan	–	–0.9	–	154
<b>Eurasia resource-poor</b>				
Armenia	2.2	–0.2	82	32
Belarus	7.9	–1.1	–	58
Georgia	2.6	0.1	77	9
Kyrgyz Republic	4.5	–0.8	127	70
Moldova	2.2	–0.7	87	83
Tajikistan	2.7	–1.0	100	141
<b>European Union new member states</b>				
Bulgaria	1.8	0.0	62	66
Croatia	0.9	0.6	81	84
Cyprus	0.9	1.4	58	36
Czech Republic	0.9	1.0	39	65
Estonia	1.4	1.1	34	21
Hungary	0.9	0.8	60	54
Latvia	1.9	0.6	55	25
Lithuania	1.7	0.7	45	27
Poland	0.5	0.5	41	55
Romania	1.2	–0.2	78	72
Slovak Republic	0.8	0.9	71	46
Slovenia	0.7	1.0	56	35
<b>East Asia</b>				
Cambodia	4.0	–0.9	85	133
China	1.3	0.1	29	91
Indonesia	2.0	–0.3	50	128
Korea, Rep.	0.5	1.1	19	8
Lao PDR	1.9	–1.0	–	163
Malaysia	1.1	1.1	25	12
Mongolia	4.3	–0.5	93	76
Papua New Guinea	2.1	–0.8	–	104
Philippines	1.1	0.0	65	138
Singapore	1.1	2.2	2	1
Thailand	1.4	0.3	38	18
Vietnam	3.6	–0.2	75	99

	Inflation volatility, YoY change in quarterly CPI 2005–12 <sup>a</sup>	Government effectiveness, –2.5 (weak) to 2.5 (strong) 2005–12 <sup>b</sup>	Global Competitiveness Index, rank 2012–13 <sup>c</sup>	Ease of Doing Business Index, rank 2012–13 <sup>c</sup>
Resource-rich				
Australia	0.7	1.8	20	10
Botswana	1.6	0.6	79	59
Canada	0.6	1.8	14	17
Chile	0.7	1.2	33	37
Kuwait	1.2	0.1	37	82
Netherlands	0.4	1.8	5	31
New Zealand	0.8	1.8	23	3
Nigeria	2.3	–1.1	115	131
Norway	0.7	1.9	15	6
Saudi Arabia	1.0	–0.2	18	22
United Arab Emirates	1.8	0.9	24	26
United States	0.9	1.5	7	4
Venezuela, RB	2.2	–1.0	126	180

Note: CPI = consumer price index; YoY = year on year; – = not available.

a. Higher values indicate higher volatility.

b. Estimate of governance (ranges from approximately –2.5 [weak] to 2.5 [strong] governance performance).

c. A high ranking (a low numerical rank) means better country performance.

## Sources and definitions for tables A1–A6

Table A1a. Basic indicators

Indicator	Sources	Definitions
Land area, thousands sq. km, 2011	World Bank	Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones. In most cases the definition of inland water bodies includes major rivers and lakes.
GNI per capita, current US\$, 2012	World Bank	Gross national income (GNI, formerly gross national product), per capita expressed in U.S. dollars. To smooth fluctuations in prices and exchange rates, the series is adjusted by the World Bank's Atlas method.
GDP, per capita, PPP, constant international \$, 2012	World Bank	Gross domestic product (GDP), per capita converted to international dollars using purchasing power parity (PPP) rates. Data are in constant 2005 international dollars.
GDP, PPP, constant international \$, billions, 2012	World Bank	GDP, adjusted by PPP, expressed in billions of constant international dollars.
Real, per capita, GDP growth, percent	World Bank	Annual average percentage growth rate of GDP per capita based on constant local currency over 2010–12. Aggregates are based on constant 2005 U.S. dollars.
Population total, thousands, 2012	World Bank	Total number of people living in country in 2012. The data shown are midyear. The series is expressed in thousands.
Working-age population, percent, 2012	World Bank	Working-age population, expressed as a percentage of total population, in 2012. The working-age population is defined as people ages 15–64.
Old-age population, percent, 2012	World Bank	Old-age population, expressed as a percentage of total population, in 2012. The old-age population is defined as people ages 65 and older.

Table A2a. Trade

Indicator	Sources	Definitions
Exports of goods, percentage of GDP	World Bank	Exports of all movable goods to the rest of the world, as a percentage of GDP. Average over 2010–11.
Exports of services, percentage of GDP	World Bank	Exports of services to the rest of the world, as a percentage of GDP. Services refer to economic output of intangible commodities that may be produced, transferred, and consumed at the same time. Average over 2010–11.
Imports of goods, percentage of GDP	World Bank	Imports of all movable goods from the rest of the world, as a percentage of GDP. Average over 2010–11.
Imports of services, percentage of GDP	World Bank	Imports of services from the rest of the world, as a percentage of GDP. Services refer to economic output of intangible commodities that may be produced, transferred, and consumed at the same time. Average over 2010–11.
Commodity exports, percentage of total merchandise exports	UN Comtrade	Commodity exports to the rest of the world, as a percentage of total merchandise exports. Commodities comprise SITC Rev. 3, sections 27, 28, 32, 33, 34, and 68. Average over 2010–11.

Table A3a. Economic structure

Indicator	Sources	Definitions
Agriculture, Hunting, and Forestry, Value Added, percent, 2010	UN, National Accounts Main Aggregate Database	Percentage distribution (shares) of Value Added in Agriculture, Hunting, and Forestry. Agriculture, Hunting, and Forestry corresponds to ISIC Rev. 3 A-B and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. The series used to calculate the percentage distribution are in current prices. Most recent available year for Kazakhstan and Mongolia is 2009; for Norway and Slovenia is 2008; for Australia, Croatia, Lithuania, Nigeria, Korea, Rep., Poland, Romania, and Slovak Republic is 2007; and for Canada, Czech Republic, Hungary, Netherlands, New Zealand, and Papua New Guinea is 2006.
Mining and Quarrying, Value Added, percent, 2010	UN, National Accounts Main Aggregate Database	Percentage distribution (shares) of Value Added in Mining and Quarrying. Mining and Quarrying corresponds to ISIC Rev. 3 C. The series used to calculate the percentage distribution are in current prices. Most recent available year for Kazakhstan and Mongolia is 2009; for Norway and Slovenia is 2008; for Australia, Croatia, Lithuania, Nigeria, Korea, Rep., Poland, Romania, and Slovak Republic is 2007; and for Canada, Czech Republic, Hungary, Netherlands, New Zealand, and Papua New Guinea is 2006.
Manufacturing, Value Added, percent, 2010	UN, National Accounts Main Aggregate Database	Percentage distribution (shares) of Value Added in Manufacturing. Manufacturing corresponds to ISIC Rev. 3 D. The series used to calculate the percentage distribution are in current prices. Most recent available year for Kazakhstan and Mongolia is 2009; for Norway and Slovenia is 2008; for Australia, Croatia, Lithuania, Nigeria, Korea, Rep., Poland, Romania, and Slovak Republic is 2007; and for Canada, Czech Republic, Hungary, Netherlands, New Zealand, and Papua New Guinea is 2006.
Services, other, Value Added, percent, 2010	UN, National Accounts Main Aggregate Database	Percentage distribution (shares) of Value Added in Services, other. Services, other corresponds to ISIC Rev.3 E-P. The series used to calculate the percentage distribution are in current prices. Most recent available year for Kazakhstan and Mongolia is 2009; for Norway and Slovenia is 2008; for Australia, Croatia, Lithuania, Nigeria, Korea, Rep., Poland, Romania, and Slovak Republic is 2007; and for Canada, Czech Republic, Hungary, Netherlands, New Zealand, and Papua New Guinea is 2006.
Output Growth Volatility, percent	World Bank	Average of output growth volatility over 1995–2008. Output growth volatility is computed as a 5-year moving standard deviation of annual growth rate in real GDP per capita (using years $t-4$ to $t$ ).
Employment Growth, percent	World Bank	Average annual percentage growth in employment over 1995–2008, expressed as a percent.
Labor Productivity Growth, percent	World Bank	Average growth rate in labor productivity, defined as real GDP divided by total employment over 1995–2008, expressed as a percent.

Table A4a. Natural capital

Indicator	Sources	Definitions
Arable land (% of land area)	World Bank	Arable land includes land defined by the Food and Agriculture Organization as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow. Land abandoned as a result of shifting cultivation is excluded. Average over 2000–11.
Forest area (% of land area)	World Bank	Forest area is land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agricultural production systems (for example, in fruit plantations and agroforestry systems) and trees in urban parks and gardens. Average for years 2000, 2005, 2010, and 2011.
Total natural resources rents (% of GDP)	World Bank	Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. Average over 2000–11.
Natural capital per capita, constant 2005 US\$, 2005	World Bank	Natural capital is sum of crop, pastureland, timber, non-timber forest, protected areas, oil, natural gas, coal, and minerals.
Proven oil reserves, billion barrels, 2011	Statistical Review of World Energy, British Petroleum	Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.
Proven gas reserves, trillion cubic meters, 2011	Statistical Review of World Energy, British Petroleum	Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.

Table A5a. Capital

Indicator	Sources	Definitions
Road density (km of road per 100 sq. km of land area)	World Bank	Road density is the ratio of the length of the country's total road network to the country's land area. The road network includes all roads in the country: motorways, highways, main or national roads, secondary or regional roads, and other urban and rural roads. Average over 2008–10.
Telephone lines (per 100 people)	World Bank	Telephone lines are fixed telephone lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included. Average over 2010–12.
Fixed broadband Internet subscribers (per 100 people)	World Bank	Fixed broadband Internet subscribers are the number of broadband subscribers with a digital subscriber line, cable modem, or other high-speed technology. Average over 2010–12.
Gross fixed capital formation (% of GDP)	World Bank	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 System of National Accounts, net acquisitions of valuables are also considered capital formation. Average over 2005–12.

(continued)

Table A5a. (cont.)

Indicator	Sources	Definitions
Capital stock per capita, thousands of constant 2005 US\$	Naotaka Sugawara, "Physical Capital Stocks in ECA" (World Bank 2012)	Average capital stock per capita over 2005–2011, expressed in thousands of constant 2005 U.S. dollars. The calculation of capital stock is based on the Perpetual Inventory Method, using the investment (gross fixed capital formation) data taken from the World Bank and IMF. For transition economies, data in the early 1990s are also considered.
Health expenditure, total (% of GDP)	World Bank	Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation. Average over 2005–11.
Public spending on education, total (% of GDP)	World Bank	Public expenditure on education consists of current and capital public expenditure on education and includes government spending on educational institutions (both public and private), education administration, as well as subsidies for private entities (students/households and other private entities). Average over 2005–11. Due to data limitations the year coverage varies by country.
Average years of schooling (of adults), 2011	Barro-Lee	Average years of schooling of adults is the years of formal schooling received, on average, by adults over age 15.
PISA reading scores, 2009	Organisation for Economic Co-operation and Development (OECD)	The Programme for International Student Assessment (PISA) measures performance of 15-year-old students across three scales: reading, mathematics, and science. The survey covers 75 participating countries ranked based on their respective scores. The scores reported here are on the reading scale.

Table A6a. Institutions

Indicator	Sources	Definitions
Inflation volatility	International Finance Statistics, IMF	The year-on-year percent change in consumer price index (CPI) based on quarterly data, four-year moving standard deviation. Average over 2005–12.
Government effectiveness	Worldwide Governance Indicators	Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The series used is Estimate of governance and ranges from approximately –2.5 (weak) to 2.5 (strong) governance performance. Average over 2005–12.
Global Competitiveness Index, 2012–13	World Economic Forum	The Global Competitiveness Index (GCI) measures the microeconomic and macroeconomic foundations of national competitiveness in 144 economies. The GCI is constructed as the weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into 12 pillars of competitiveness and rank the participating economies from 1 to 144, with the first place being the best.
Ease of Doing Business Index (1 = most business-friendly regulations), 2012–13	World Bank	Ease of Doing Business ranks economies from 1 to 185, with first place being the best. A high ranking (a low numerical rank) means that the regulatory environment is conducive to business operation. The index averages the country's percentile rankings on 10 topics covered in the World Bank's Doing Business surveys. The ranking on each topic is the simple average of the percentile rankings on its component indicators.

Development policy discussions in Eurasia often become debates about how economies can be made more diversified. For a region that is resource-rich, this is to be expected. But Eurasian economies have in many ways become less diversified during the past two decades. At the same time, people are much better off today than they were in the 1990s: poverty has been cut in half, incomes have increased fivefold, and education and health have improved noticeably since the tumultuous days following the collapse of communism. Eurasia's economies have become more efficient: they are more integrated with the global economy and more productive at home. The region has also become better at converting natural wealth into productive capital; since the mid-2000s, it has built more in assets than the mineral wealth it has used up. But most countries in Eurasia have yet to learn the main lesson from the experience of resource-rich countries in other parts of the world. What distinguishes success from failure are the institutions to manage volatility, ensure high-quality education, and provide a competition regime that levels the playing field for enterprises. Development success comes from more diversified asset portfolios—a better balance between natural resources, capital, and institutions. This report, written by the Europe and Central Asia Region of the World Bank with the support of the Eurasian Development Bank, hopes to make the task of creating such portfolios a little easier.



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