



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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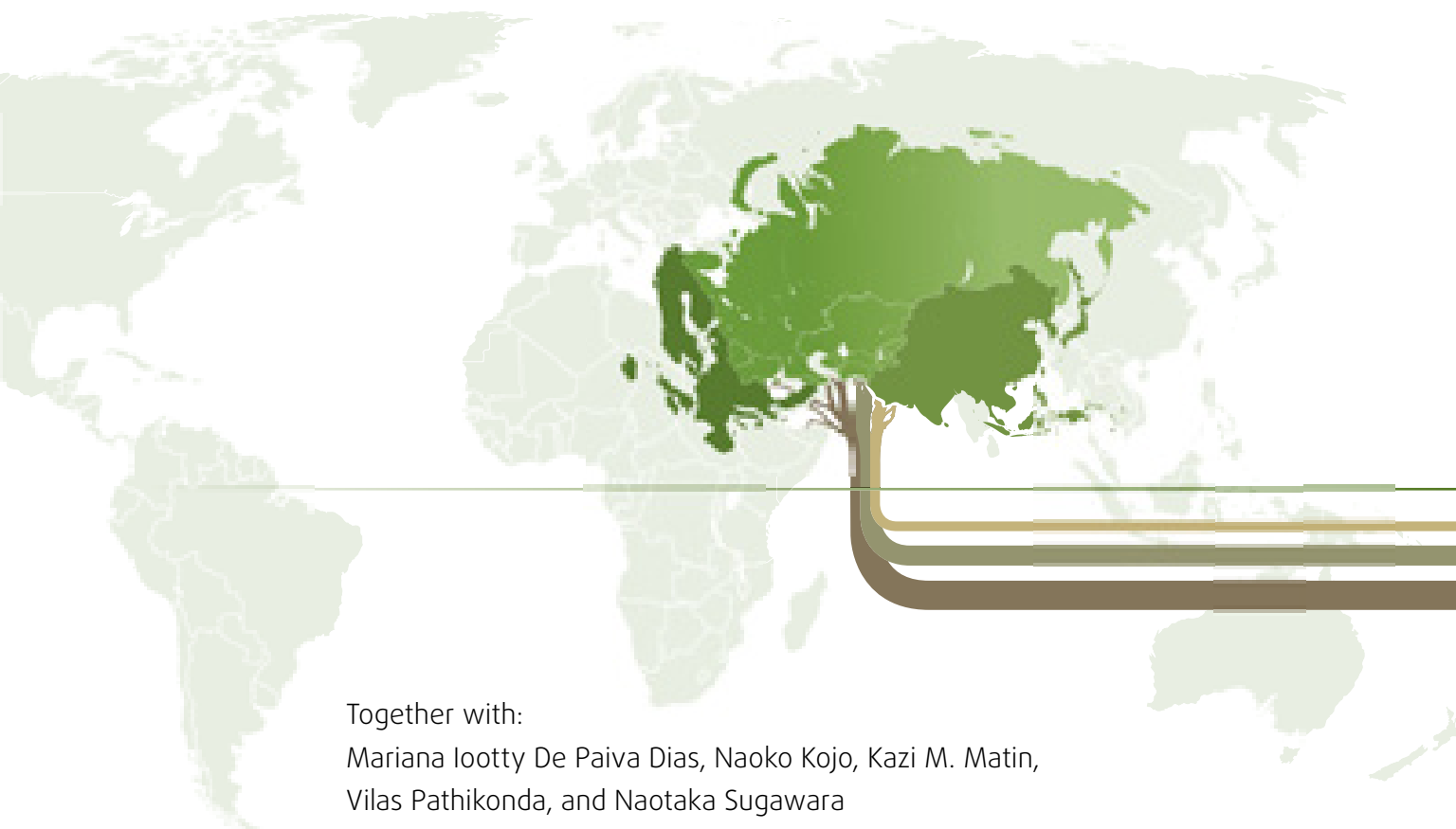
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Foreword

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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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 | 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). 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 |
|------------|--------------------------|------------|----------------------------------|------------|-------------------------------------|
| AGO | Angola | GAB | Gabon | OMN | Oman |
| ARE | United Arab Emirates | GEO | Georgia | PAK | Pakistan |
| ARG | Argentina | GHA | Ghana | PER | Peru |
| ARM | Armenia | GIN | Guinea | PNG | Papua New Guinea |
| AUS | Australia | GNB | Guinea-Bissau | POL | Poland |
| AUT | Austria | GUY | Guyana | QAT | Qatar |
| AZE | Azerbaijan | IDN | Indonesia | ROM | Romania |
| BDI | Burundi | IND | India | RUS | Russian Federation |
| BEL | Belgium | IRL | Ireland | SAU | Saudi Arabia |
| BHR | Bahrain | IRN | Iran, Islamic Republic of | SDN | Sudan |
| BLR | Belarus | IRQ | Iraq | SGP | Singapore |
| BOL | Bolivia | ITA | Italy | SLB | Solomon Islands |
| BRA | Brazil | KAZ | Kazakhstan | SYR | Syrian Arab Republic |
| BRN | Brunei Darussalam | KGZ | Kyrgyz Republic | TCD | Chad |
| BWA | Botswana | KOR | Korea, Republic of | TJK | Tajikistan |
| CAF | Central African Republic | KWT | Kuwait | TKM | Turkmenistan |
| CAN | Canada | LAO | Lao People’s Democratic Republic | TMP | Timor-Leste |
| CHL | Chile | LBR | Liberia | TTO | Trinidad and Tobago |
| CHN | China | LBY | Libya | TUN | Tunisia |
| CIV | Côte d’Ivoire | LTU | Lithuania | UGA | Uganda |
| CMR | Cameroon | LVA | Latvia | UKR | Ukraine |
| COG | Congo, Republic of | MDA | Moldova | USA | United States |
| COL | Colombia | MEX | Mexico | UZB | Uzbekistan |
| CZE | Czech Republic | MLI | Mali | VEN | Venezuela, República Bolivariana de |
| DEU | Germany | MNG | Mongolia | VNM | Vietnam |
| DJI | Djibouti | MOZ | Mozambique | YEM | Yemen, Republic of |
| DZA | Algeria | MYS | Malaysia | ZAF | South Africa |
| ECU | Ecuador | NAM | Namibia | ZAR | Congo, Democratic Republic of |
| EGY | Egypt, Arab Republic of | NGA | Nigeria | ZMB | Zambia |
| EST | Estonia | NLD | the Netherlands | ZWE | Zimbabwe |
| ETH | Ethiopia | NOR | Norway | | |
| FIN | 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.¹

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.² 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.³ 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).

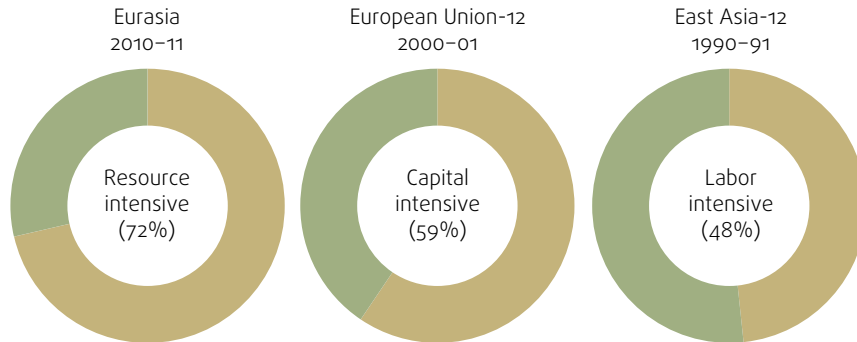


Figure O.1. Three dozen countries, three ways to integrate and grow

(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 (and see the "20 questions, 20 answers . . ." section 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.

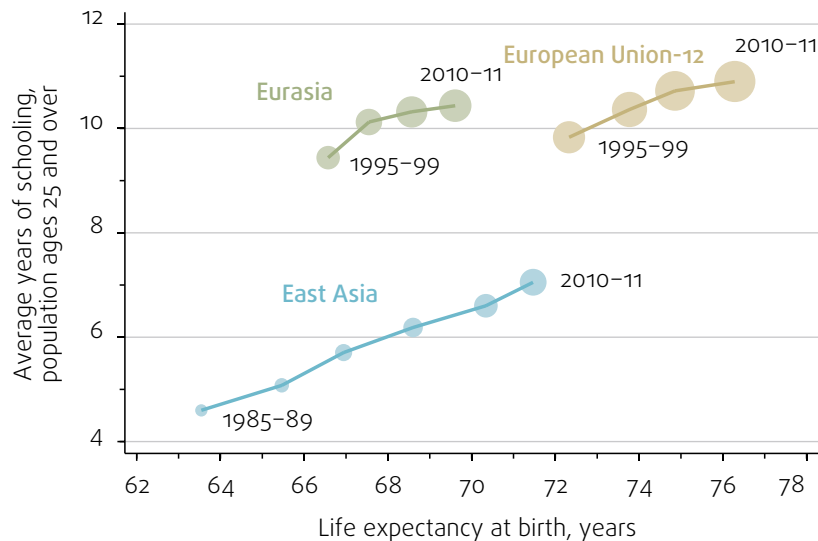


Figure O.2. Natural resources have served Eurasia well

(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).

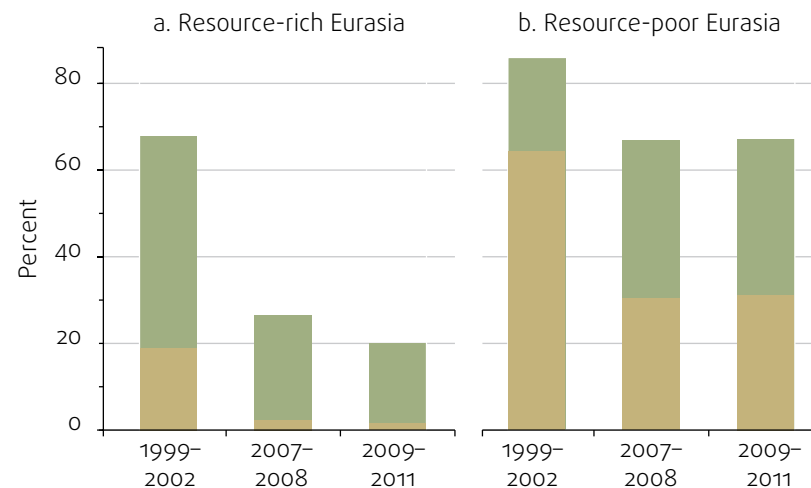
The better development outcomes in the region coincided with high commodity prices in the rest of the world. Natural resources are helping the economies of Eurasia, are giving people a helping hand, and have made its governments solvent.

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.”⁴ 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.”⁵ 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.

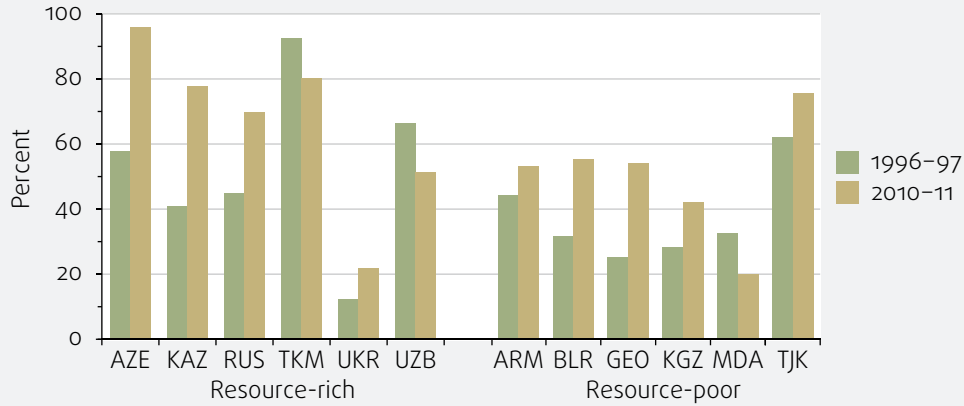
Assets. It gets even more complicated when we try to measure what really matters—a nation’s economic assets. World Bank (2011) provides the best available estimates of a nation’s wealth and its decomposition into three types of capital: natural, produced, and intangible. Among these three assets, natural 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)

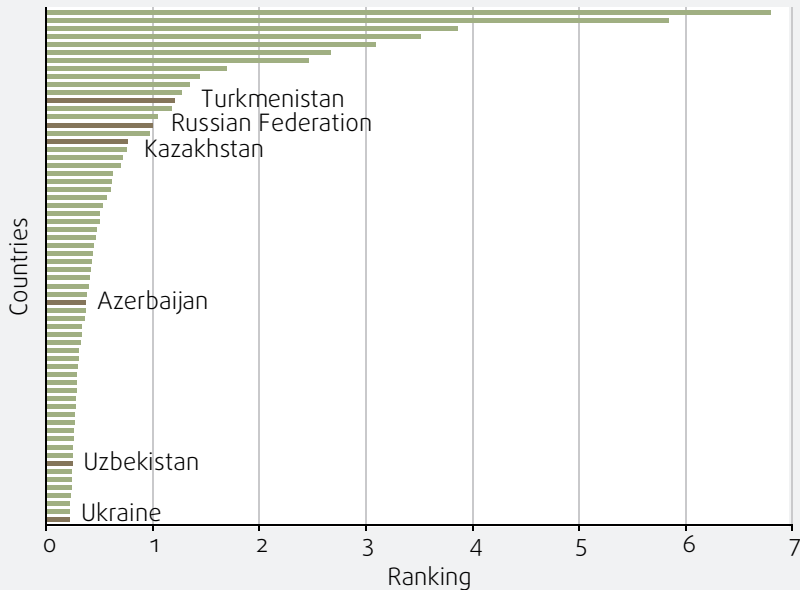


Source: World Bank staff calculations based on United Nations Comtrade; see chapter 2.

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.

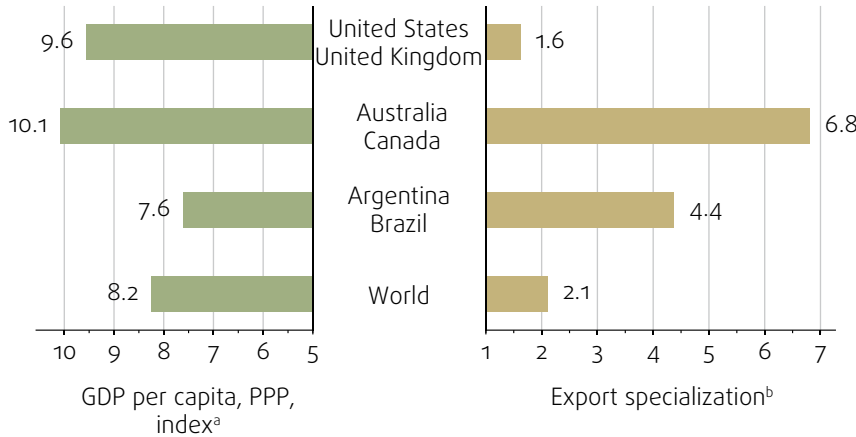


Figure 0.4. Diversification is neither necessary nor sufficient for development

(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.⁶

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.

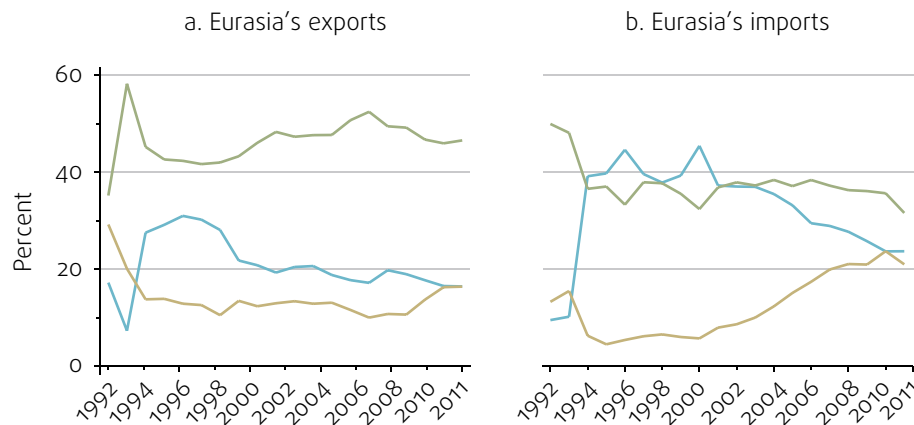


Figure 0.5. More trade with Europe, growing imports from East Asia

(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.

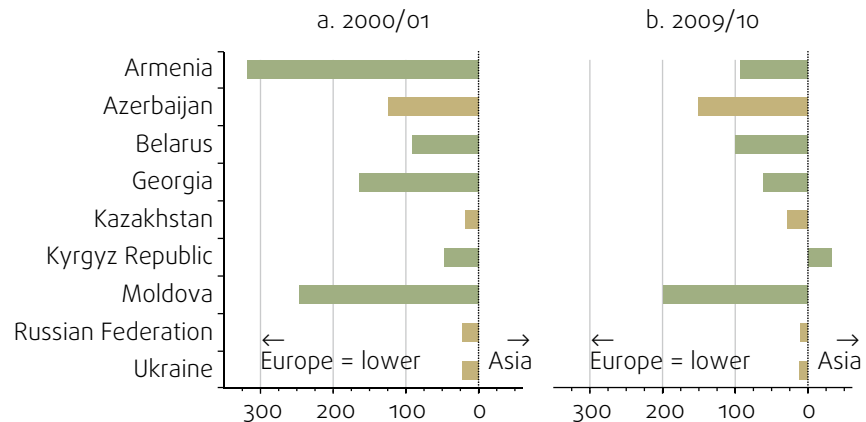
A quick look at a map of Europe and Asia leaves little doubt that physical distance cannot explain why Eurasia trades so much more with Europe than with Asia. Since the 1990s, Europe has reduced trade costs with Eurasia, incorporating the biggest economies such as Russia and Ukraine into the greater 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).

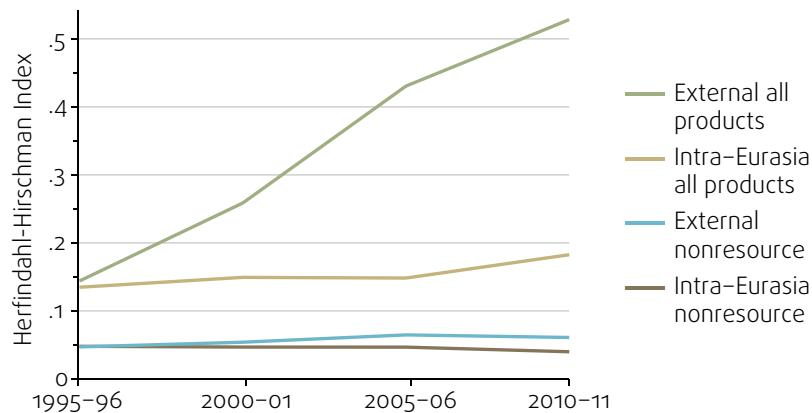


Figure 0.7. Resource-related trade outside Eurasia has made exports less diversified

(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).

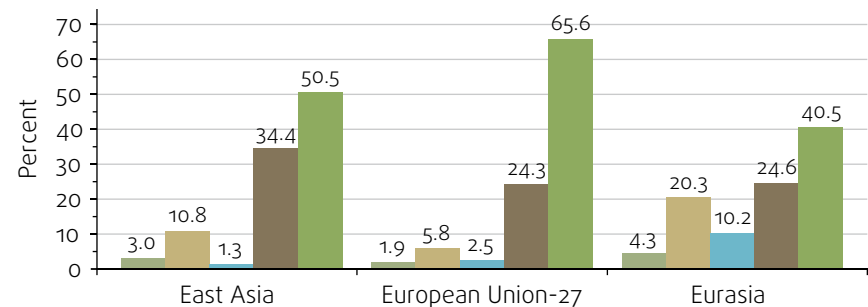
Eurasia’s policy makers could pay more attention to recent research, including by the World Bank, indicating that what matters for development is not so much what a country makes at home and sells abroad, but how it goes about making these goods and services. This does not mean a small role for government. “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 2009.⁷ 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 O.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.

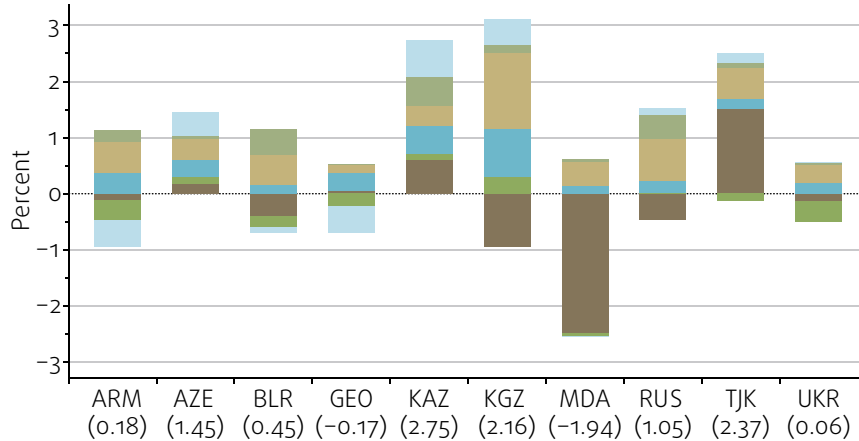


Figure O.9. More jobs in services, fewer in industry

(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.

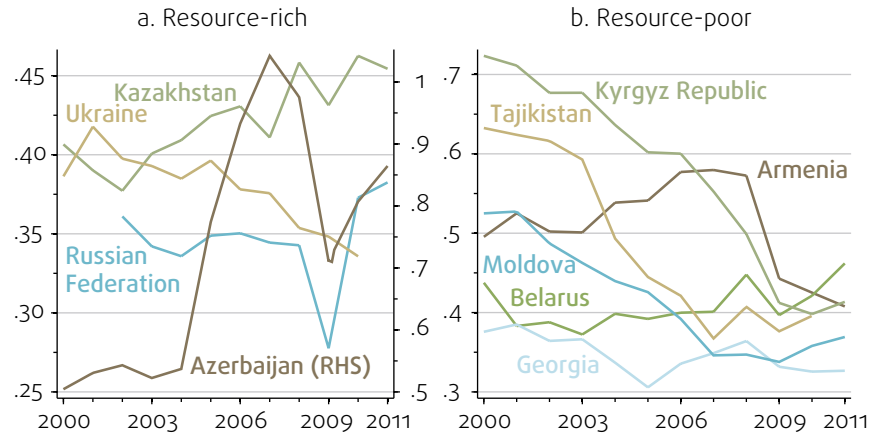
Note: The one-digit-level employment data classified by ISIC (International Standard Industrial Classification) Revision 3 are used. The period covered is 2000–10 (or 2011, if available), except for Armenia (ARM, 2002–08) and Georgia (GEO, 2000–07). The number in parentheses below the country code is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



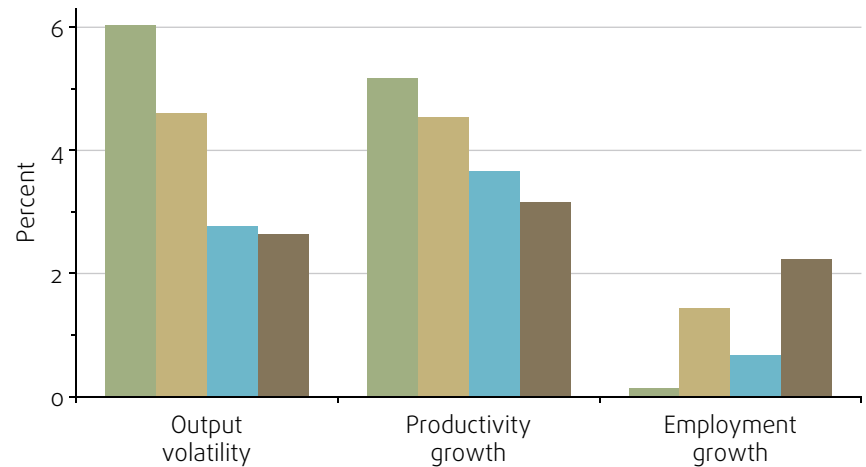
Source: World Bank staff calculations based on United Nations National Accounts Statistics; see chapter 3.

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?

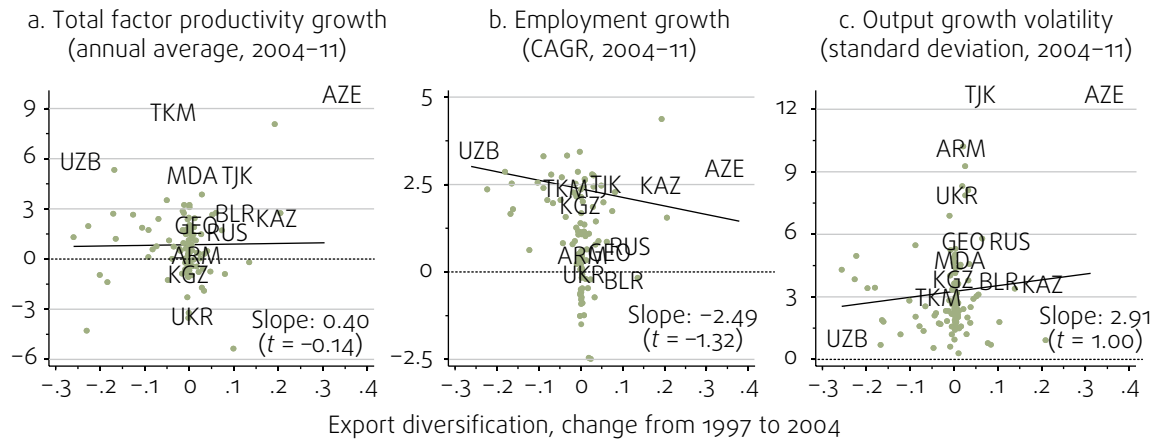
These numbers should reassure Eurasia's policy makers that the region's economies have made progress over the past two decades, a time of structural upheaval and economic crisis. A closer look shows that the performance does not seem to depend much on whether a country diversified its exports and production,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

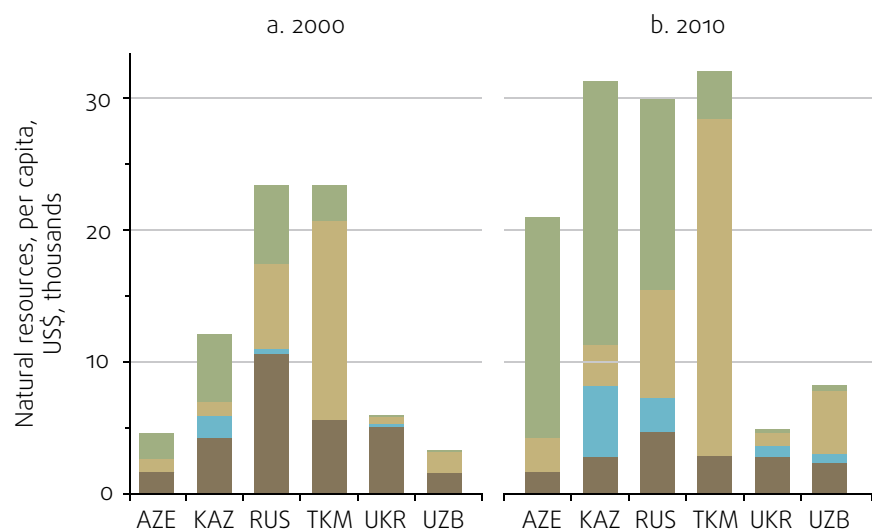
Where (natural) wealth accumulates

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 O.13).

Figure O.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.

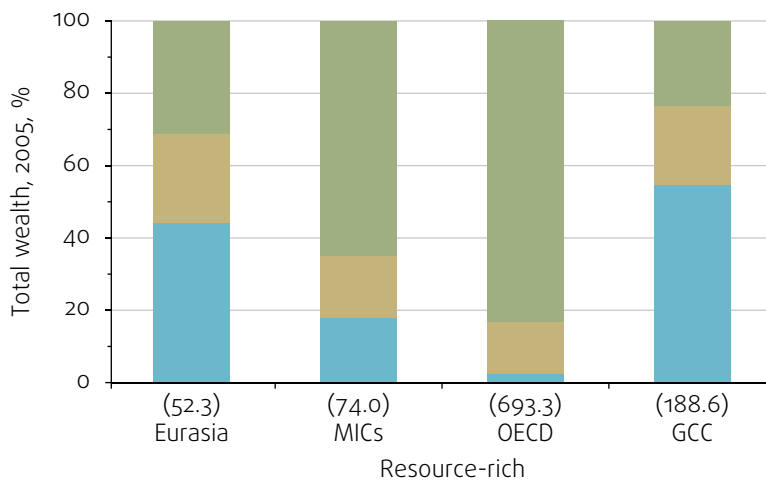


Figure O.14. The Gulf is the most resource-rich part of the world

(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.

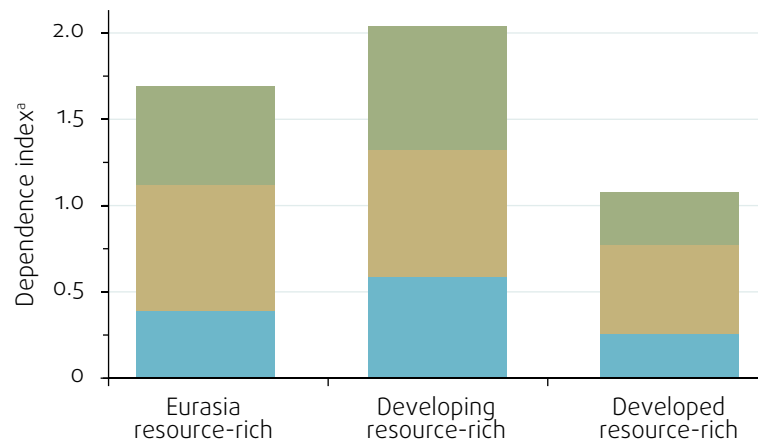
Russia is 15th when countries are ranked by natural capital per capita. But the combined population of the top 14 countries (topped by Kuwait, Brunei Darussalam, the United Arab Emirates, Norway, Saudi Arabia, Bahrain, and Oman, with Turkmenistan in 12th place between Australia and Canada) is just 110 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.

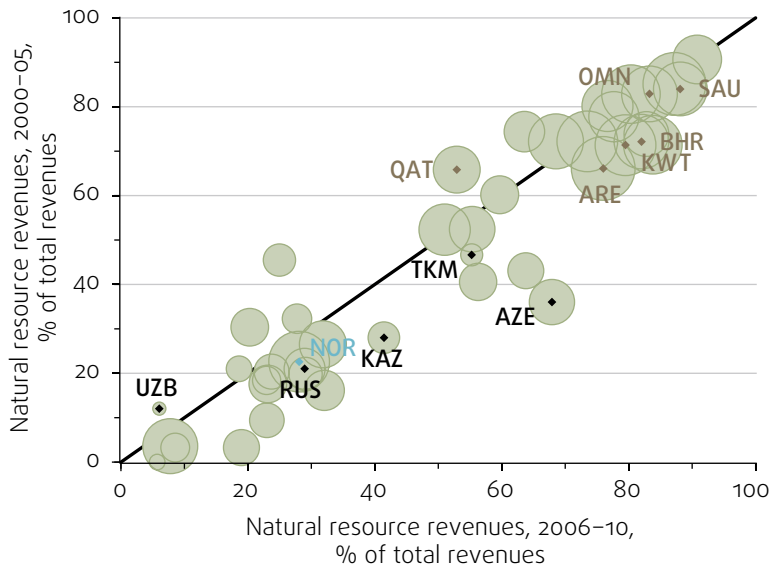


Figure 0.16. Governments in Eurasia have become more dependent on resources

(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 0.16. 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 .

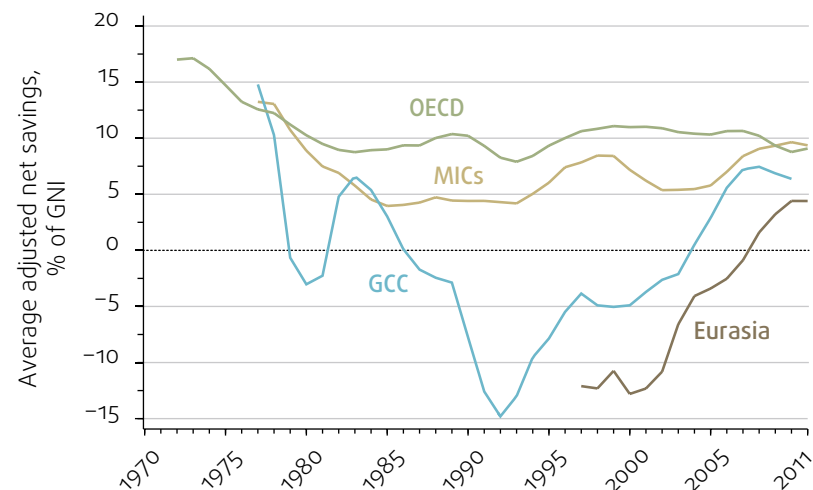
Norway also uses a state-owned company to produce and process oil, but it is obvious that Eurasians have not yet been able to achieve Norwegian efficiency in natural resource management. In Eurasia increasing oil and gas production has required sensible laws to attract foreign investors. Countries that 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).⁸ 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.

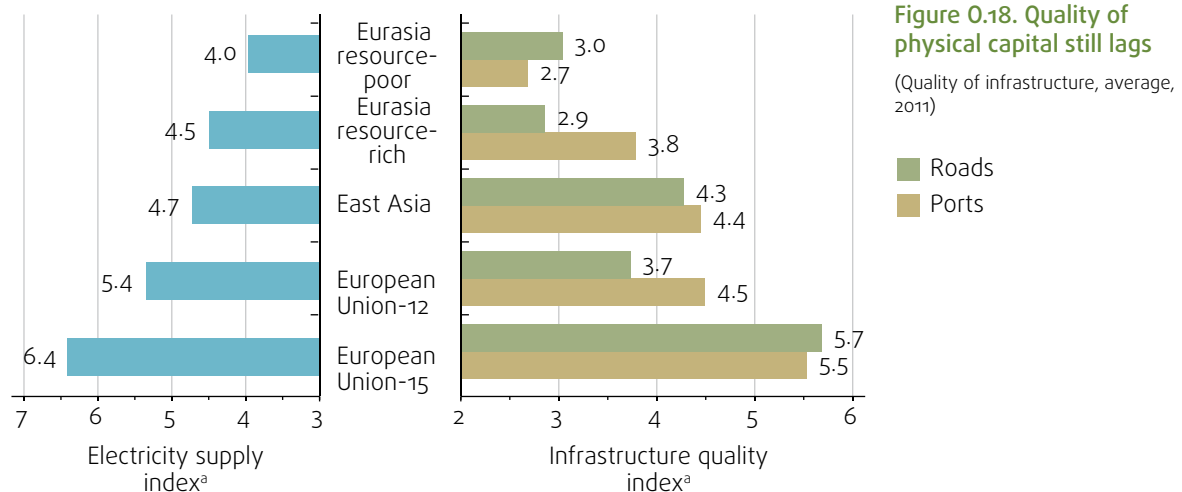


Figure 0.18. Quality of physical capital still lags

(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.

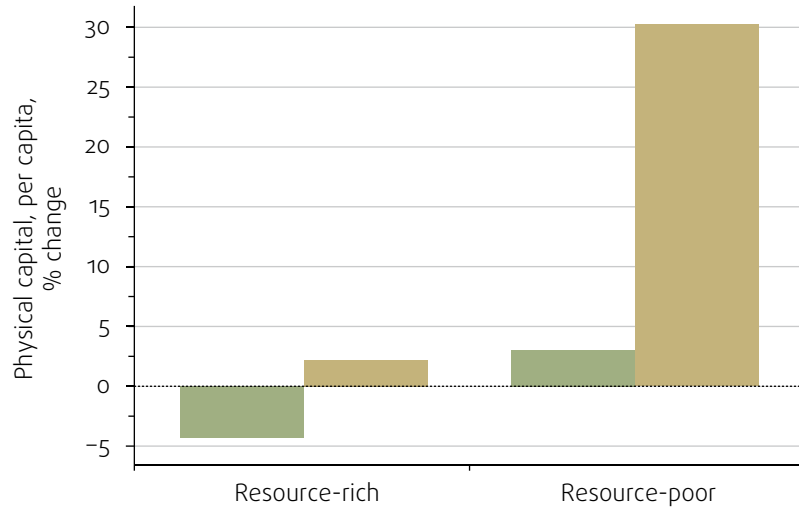
a. Index range is 1 to 7 (best).

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

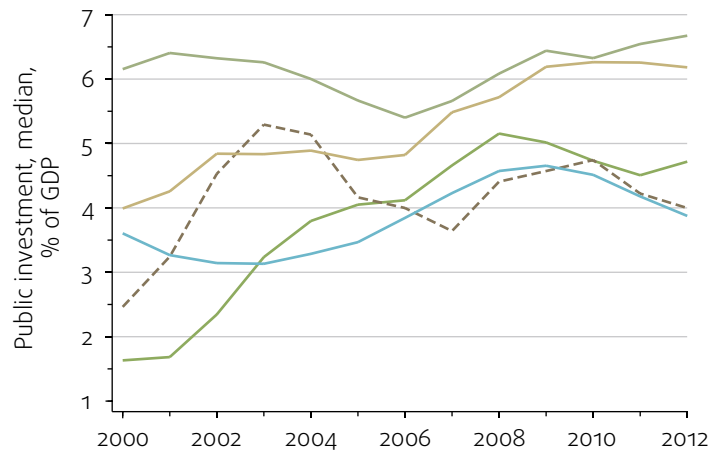


Source: World Bank staff calculations based on World Bank 2011; see chapter 5.

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).

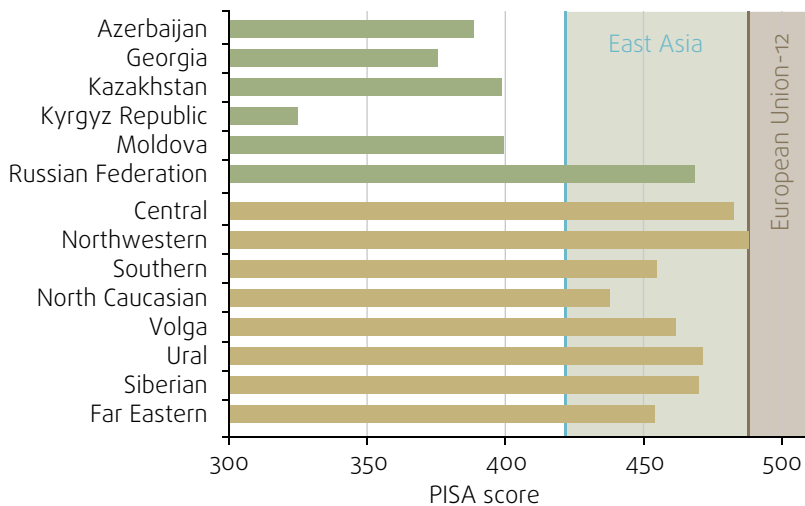


Figure 0.21. The Russian Federation’s education outcomes are the exception

(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.

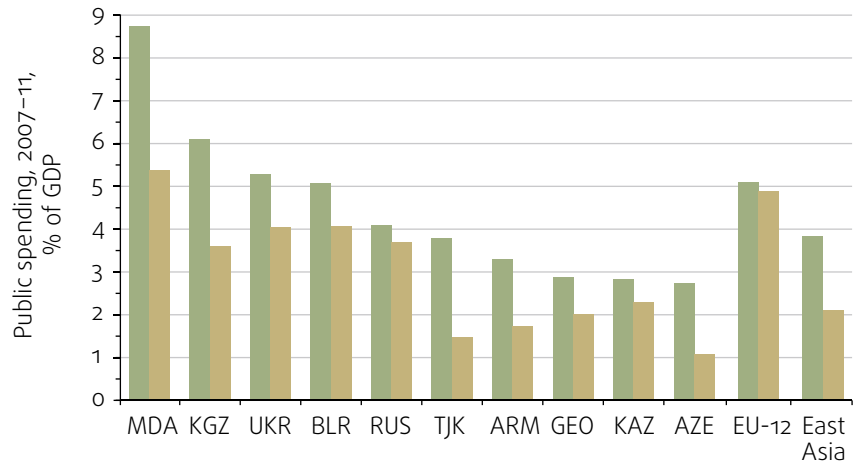
Note: The score is an average of math, science, and reading. The median values of East Asian (excluding Shanghai) and European Union-12 countries are presented.

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.⁹ 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.¹⁰

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.¹¹ 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.¹² 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.

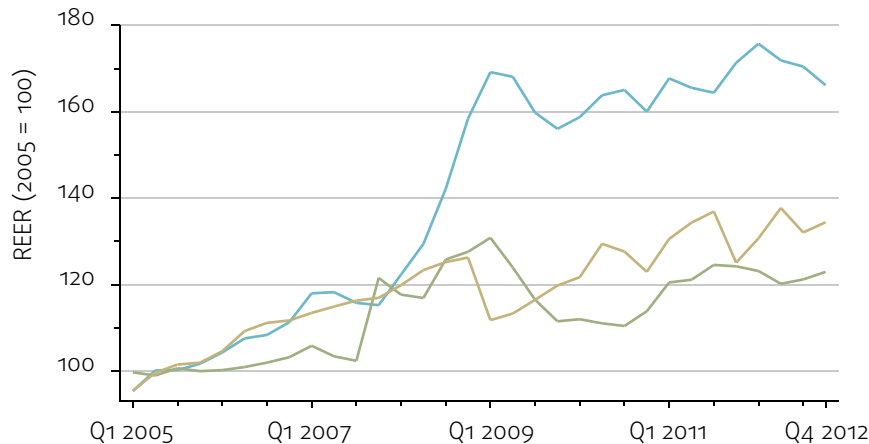


Figure O.23. Risking the “Dutch disease” in Azerbaijan

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

— Azerbaijan
— Russian Federation
— Kazakhstan

Source: IMF International Financial Statistics; see chapter 6.

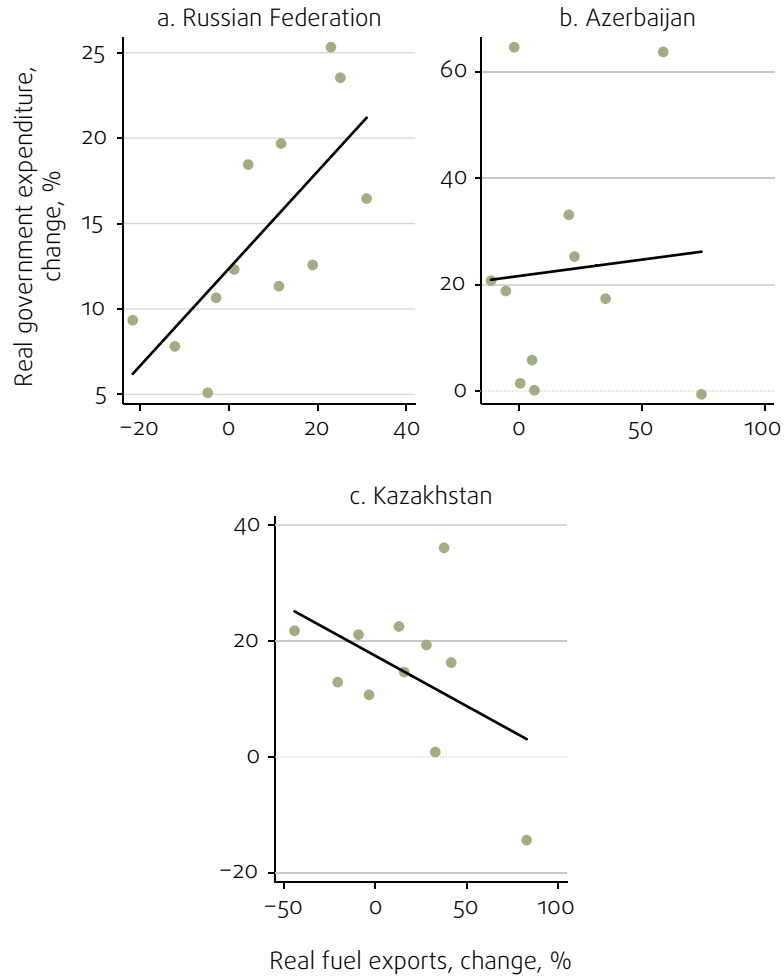
Much like staving off other diseases, the way to avoid Dutch disease is that economies must stay healthy. The most important part of this regimen is for governments to avoid spending more when times are good, which feeds the glut in private markets caused by high oil prices. Russia has often deviated 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 O.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 O.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.

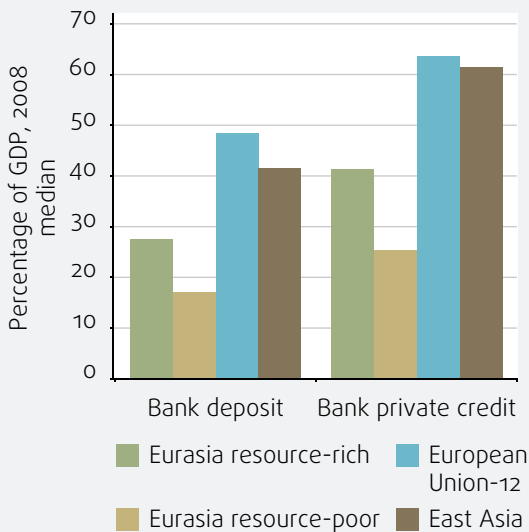
Kazakhstan is no exception. Eurasian countries have yet to develop solid financial systems for three reasons. First, the public’s mistrust of banks means that many do not deposit their savings. The median deposit-to-GDP ratio in Eurasia was 22 percent in 2008, less than half the EU-12’s (49 percent) 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.

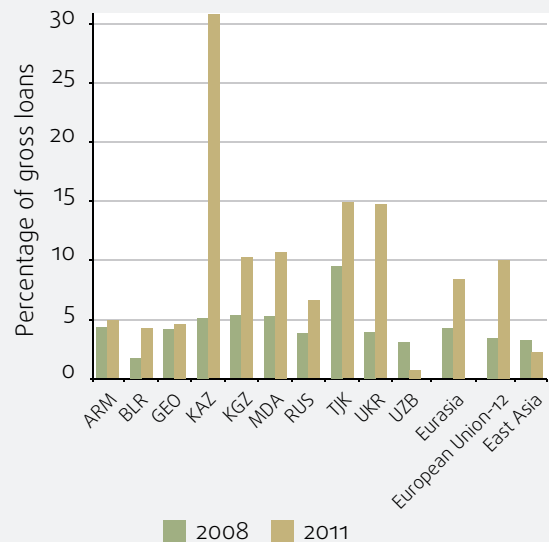
Figure B0.2.1. Low deposits



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.

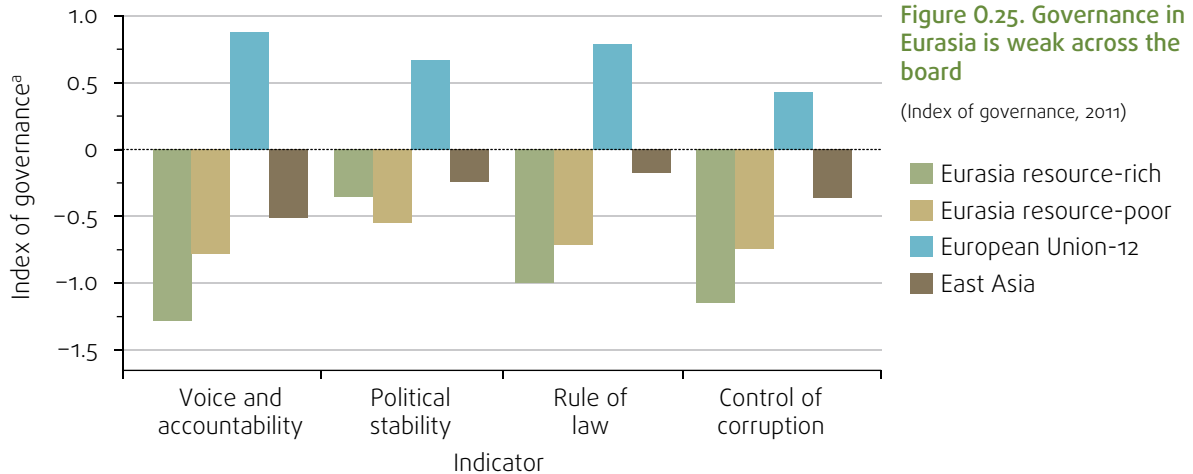
What should governments do? First, with institutions to discipline government spending untested and banks still prudentially weak, Eurasian governments could consider keeping the size of oil funds small. With appreciating currencies, it may be difficult to get high rates of return on investments abroad, 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).

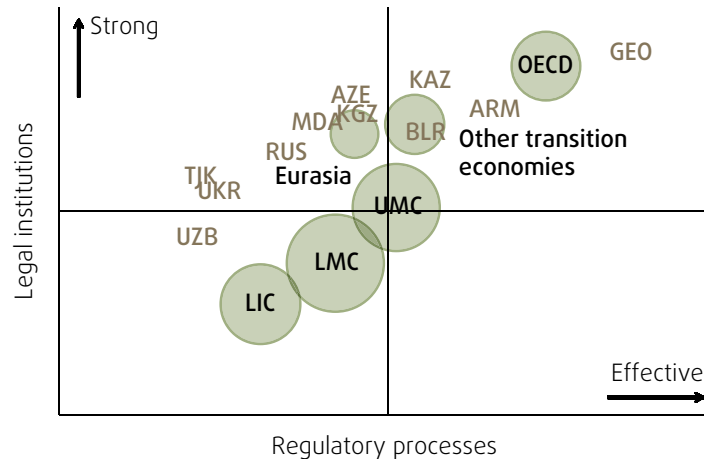
Improving education outcomes will be more difficult, but it is certainly possible. A study at the World Bank has identified the three steps to better education in the region: measure learning outcomes through international and national assessments; increase autonomy and introduce accountability based 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.

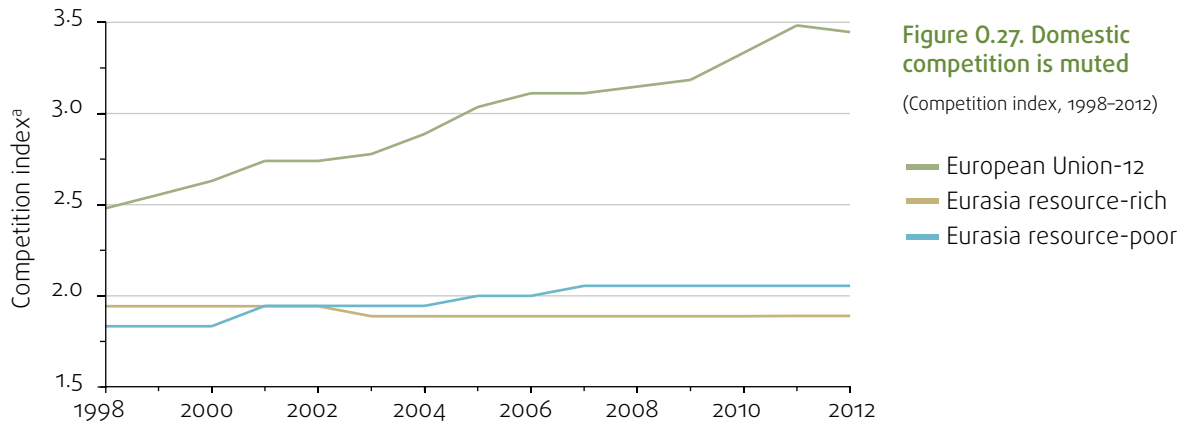


Figure O.27. Domestic competition is muted

(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.¹³

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

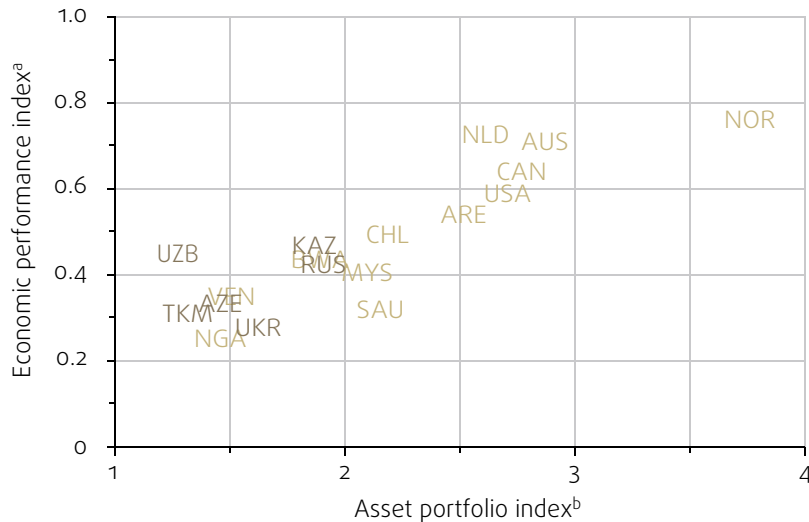


Figure 0.28. What really matters: built capital and economic institutions

(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.

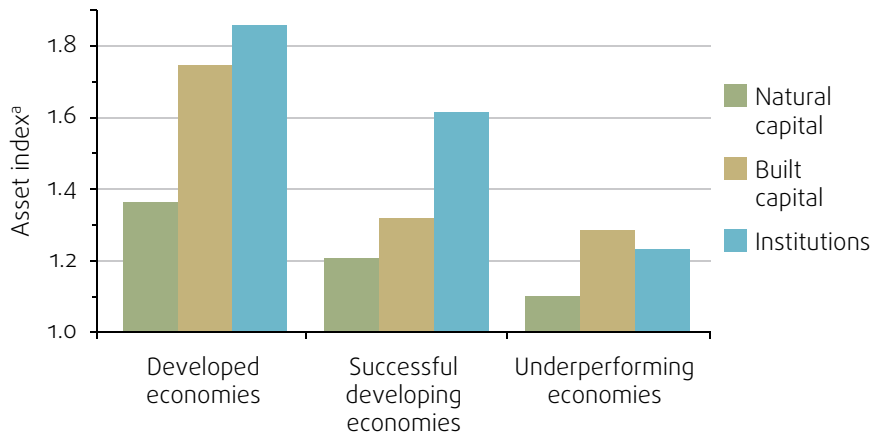


Figure 0.29. To succeed, resource-rich emerging economies have to build institutions sooner

(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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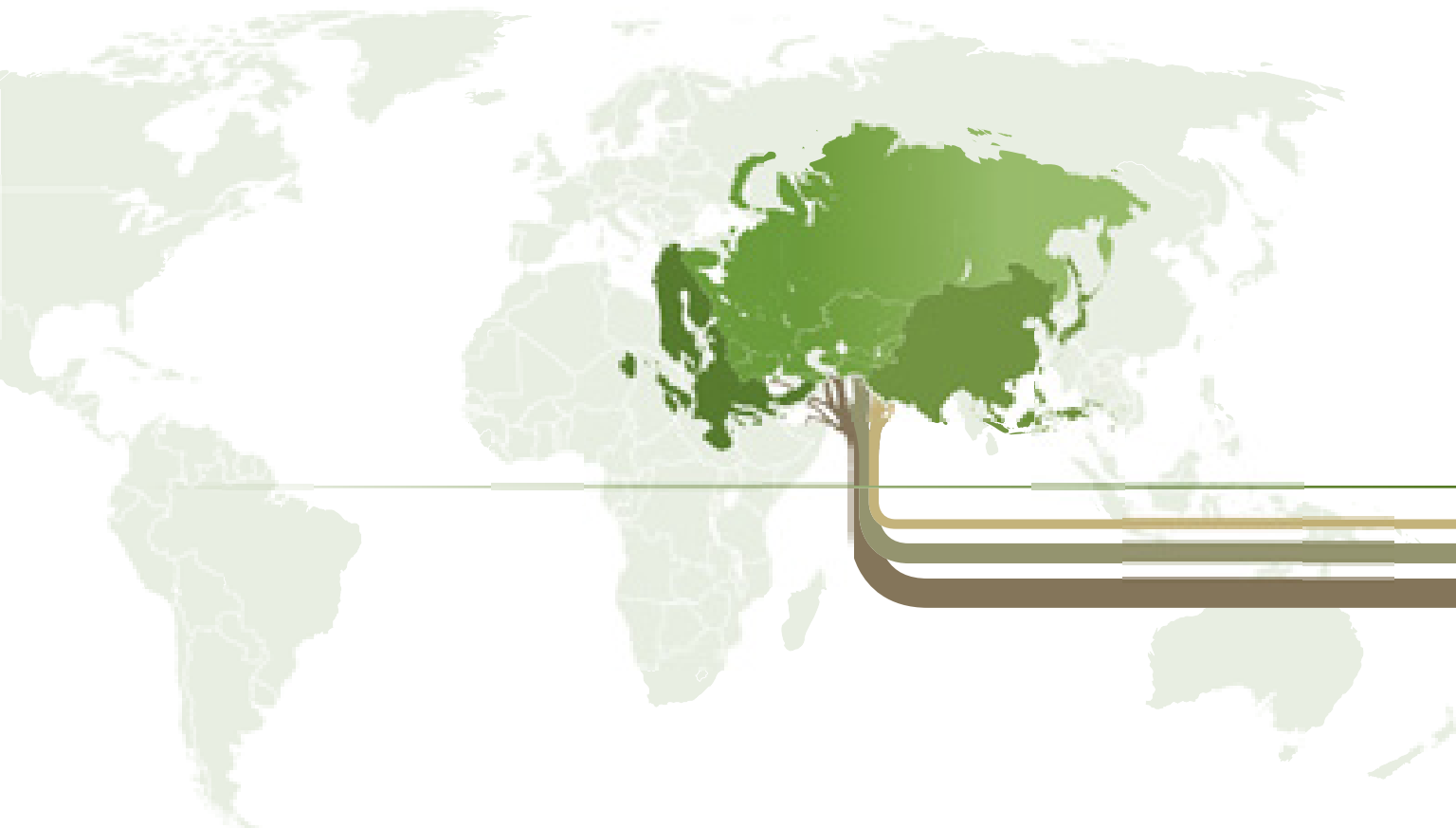
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Spotlight One



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

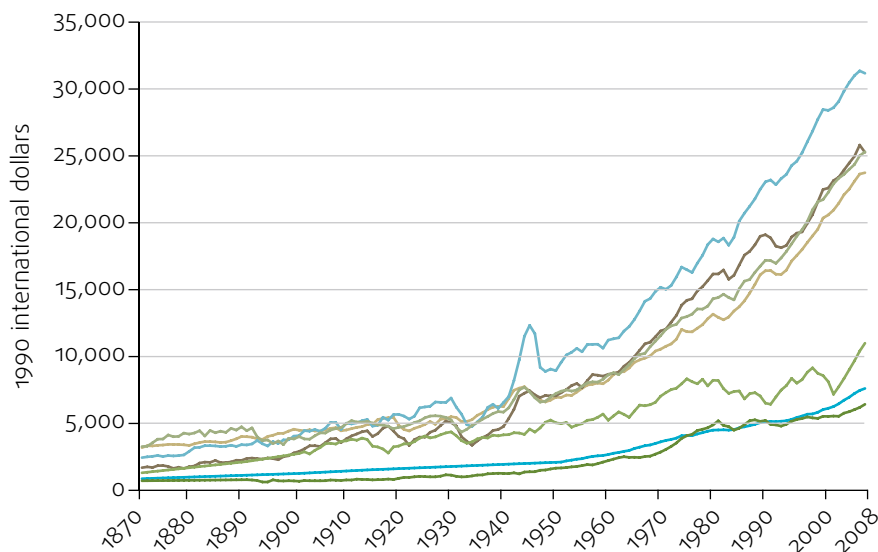
Ever since the industrial revolution made the United Kingdom a great power, the process of economic diversification away from natural resources has been associated with that of long-term economic growth. A classical view of the British industrial revolution is one of a mainly agrarian society making 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.

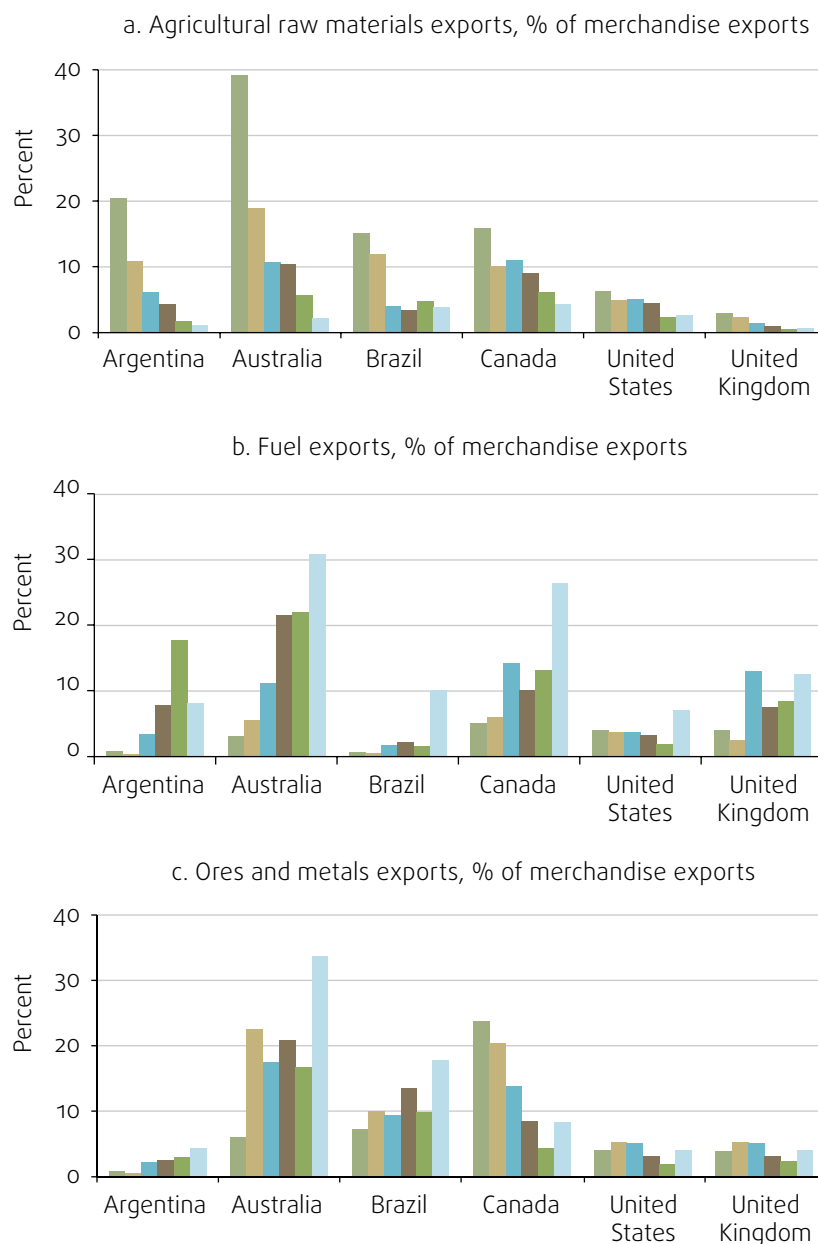
Regardless of the initial trigger of economic growth in the United Kingdom and the United States, economic conditions in both countries were suitable for this initial impulse not to dissipate quickly. The case of California is illustrative. The dramatic fall in the cost of energy brought about by the 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.¹

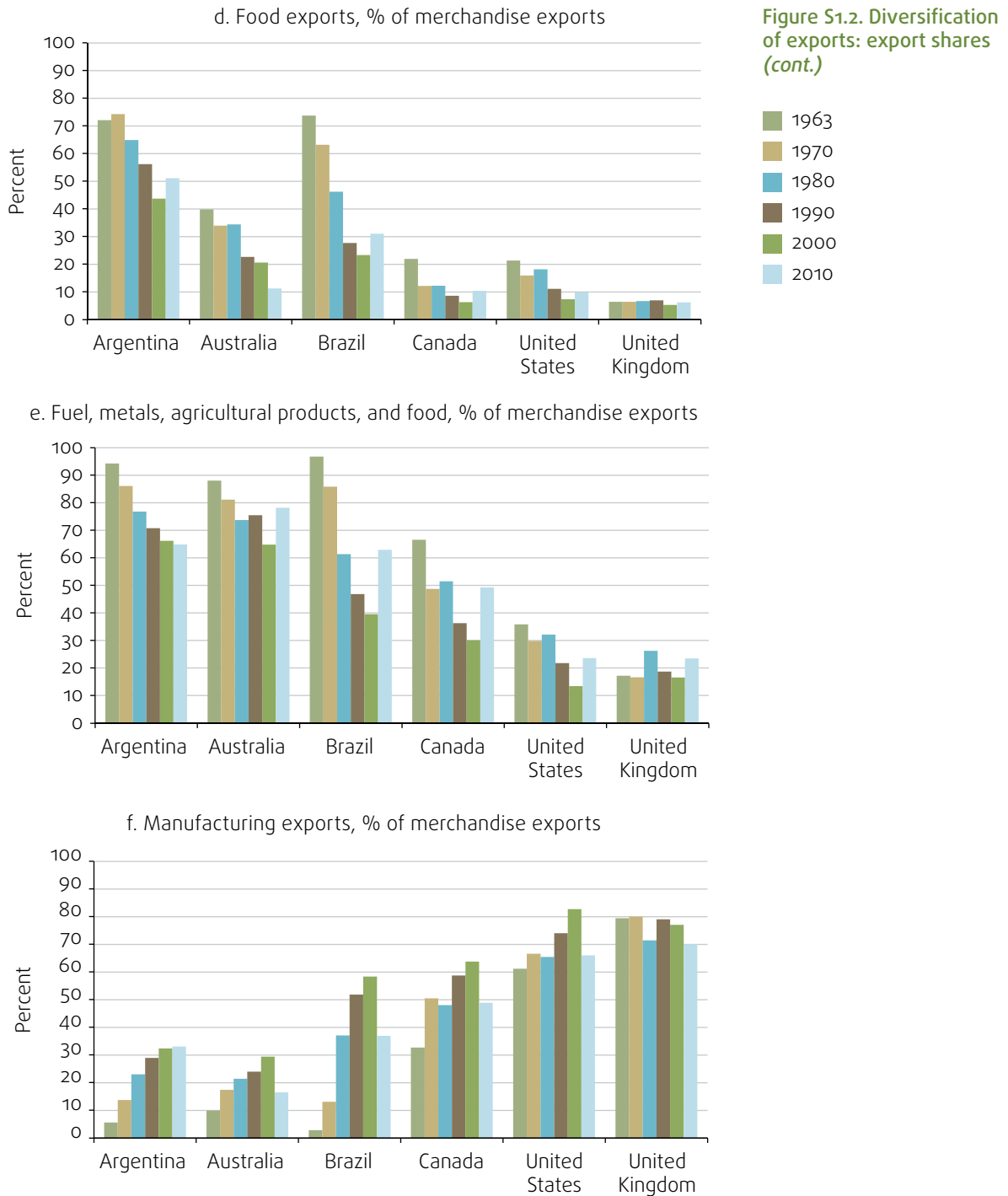
The United States and the United Kingdom—two examples of economic development accompanied by economic diversification—have displayed little dependence on natural resource exports since 1960 (figure S1.2): manufactured exports have represented at least 60 percent of total merchandise exports ever since. 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)



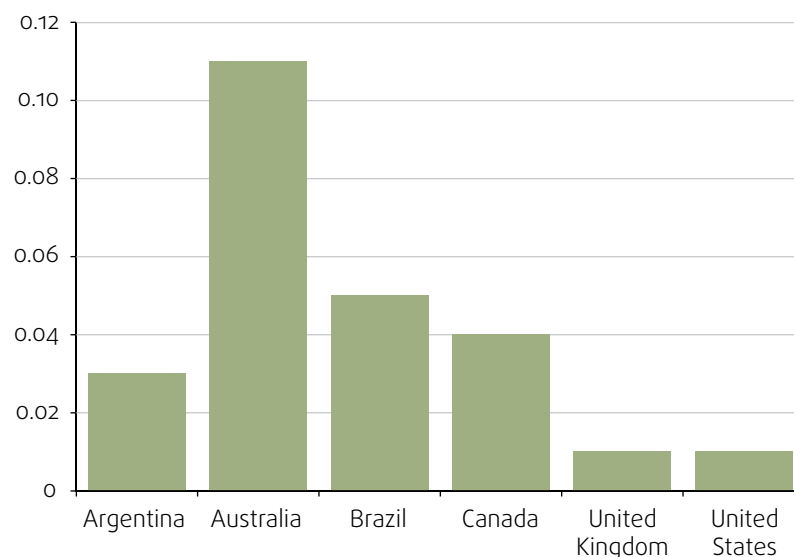
Source: World Bank World Development Indicators (WDI) 2013.

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.

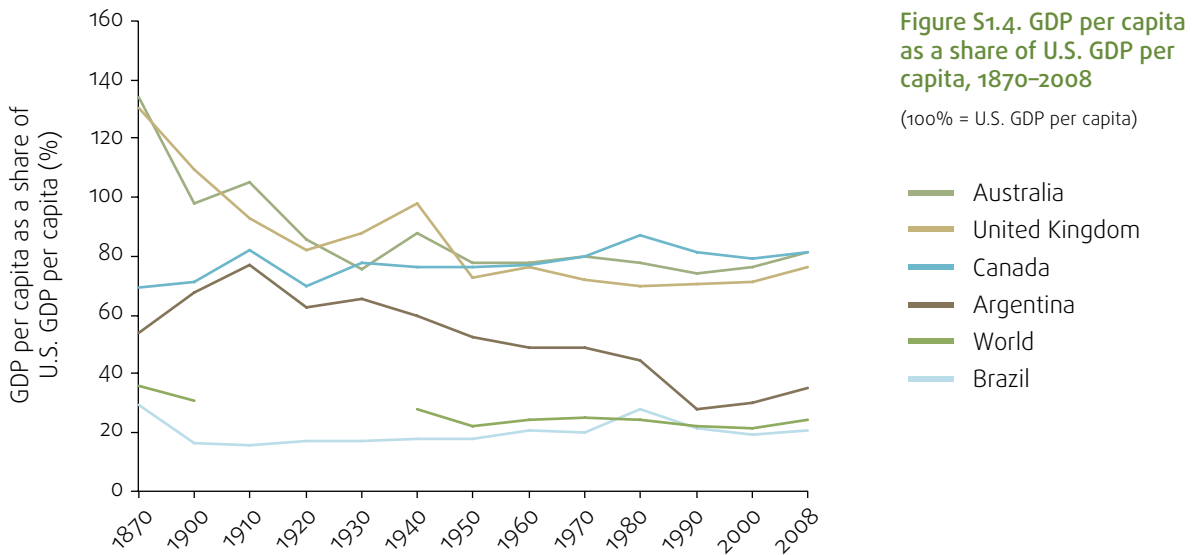
Industrialization in both Argentina and Brazil was achieved at the expense of growing disequilibrium in three critical dimensions (Fishlow 1990): policy-induced exchange overvaluation discriminated against exports, making the balance of payments and access to essential inputs more precarious; the increase 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.

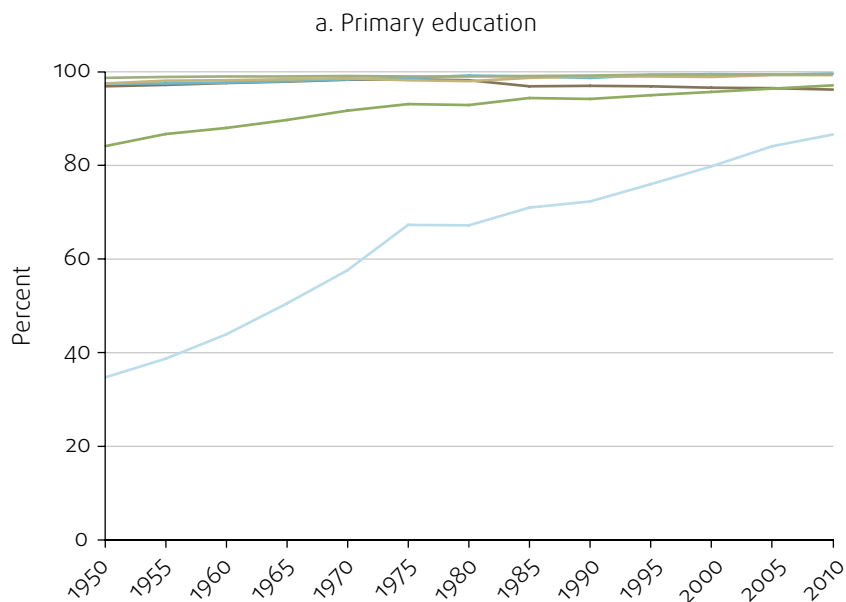
The project to replicate the British industrial revolution in Latin America by building factories would therefore seem to have been ill conceived, suggesting that a host of other factors and policies beyond diversification was responsible for both industrialization and development in the United Kingdom—and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

Diversification of production: neither necessary nor sufficient for development

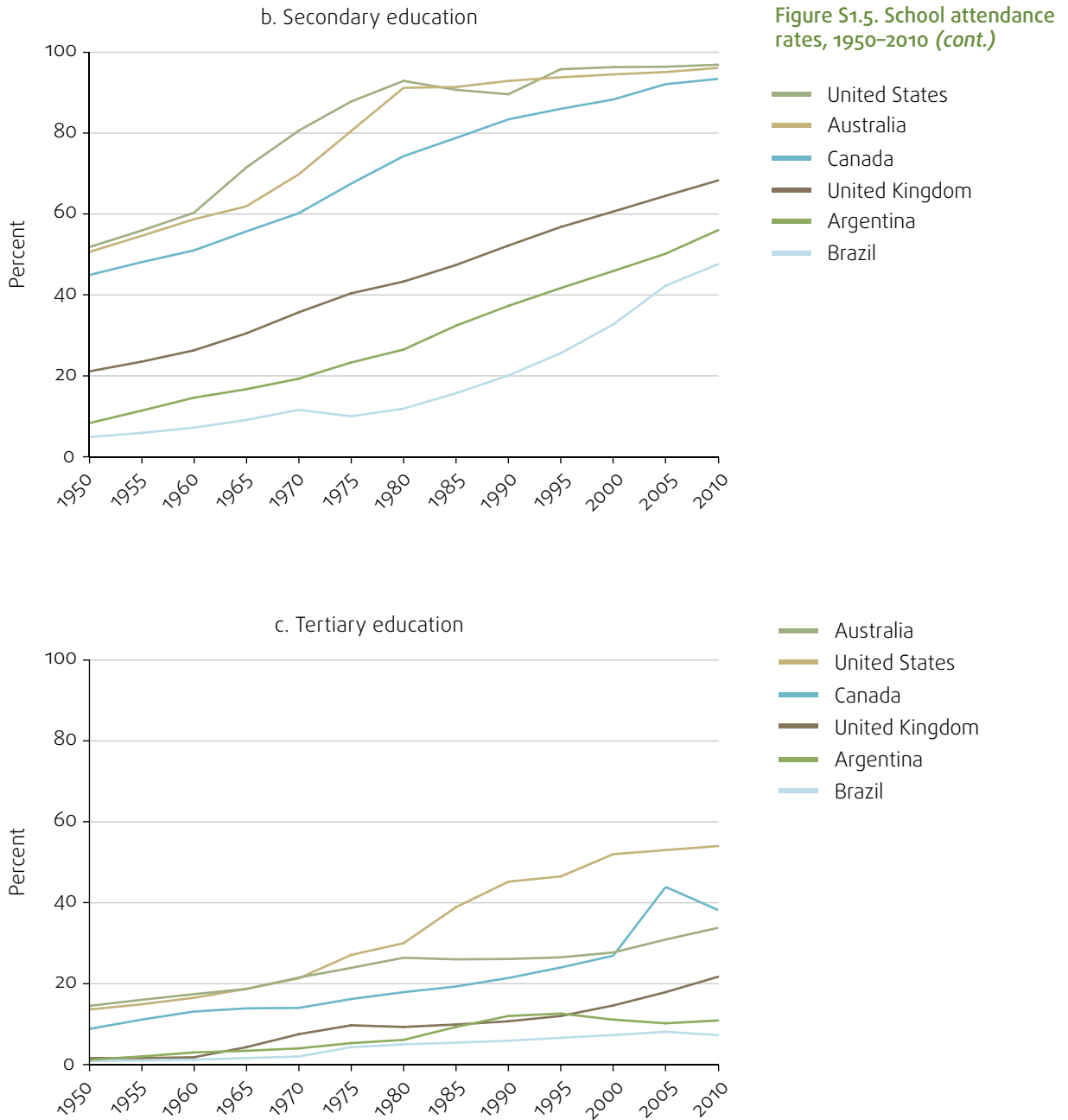
The experience of these countries suggests that there is no clear correlation between economic diversification and development. While the United States and the United Kingdom managed to develop and diversify their economies at the same time, the experience of Australia and Canada shows that development 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



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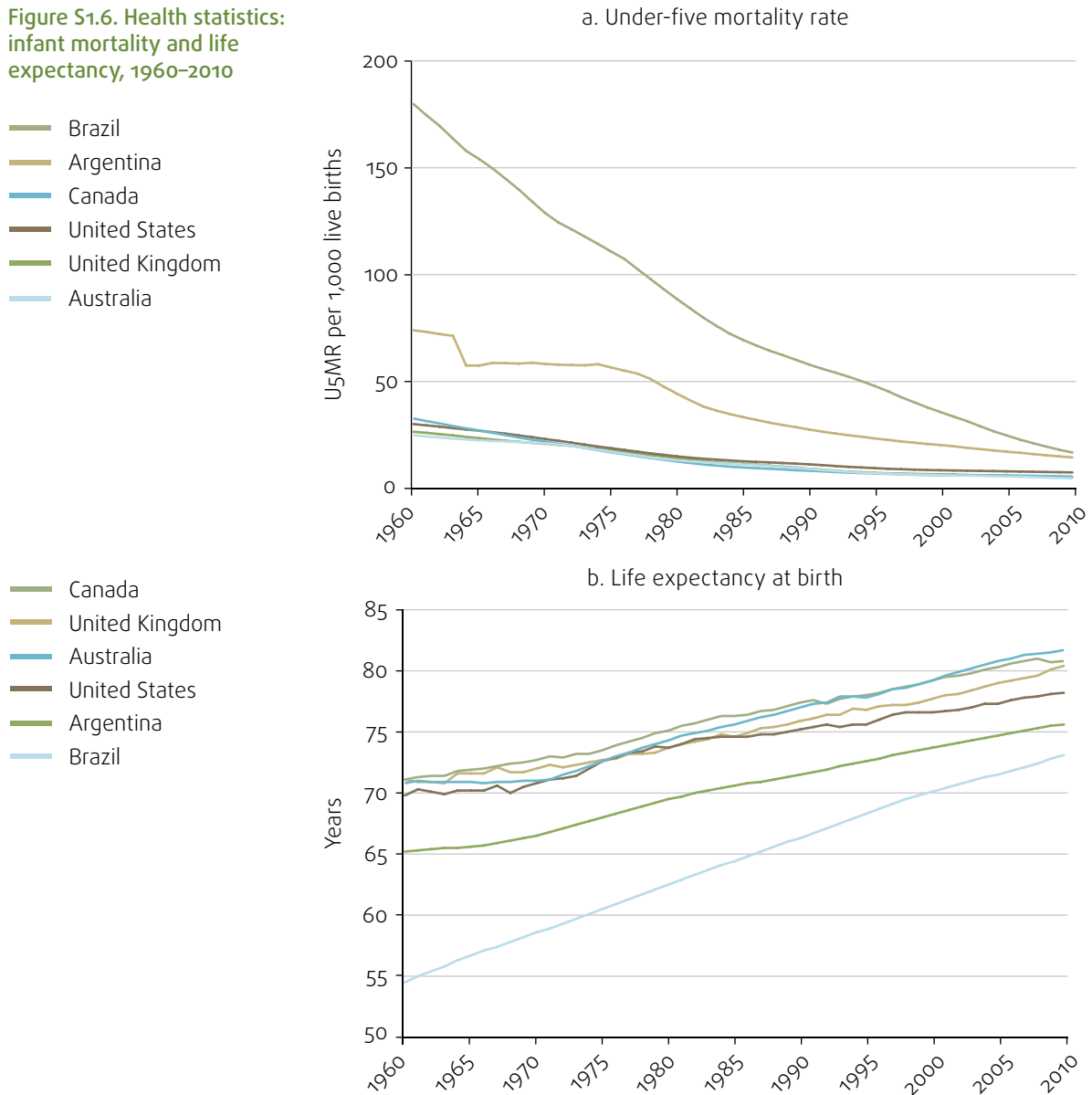


Source: Barro and Lee 2010.

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

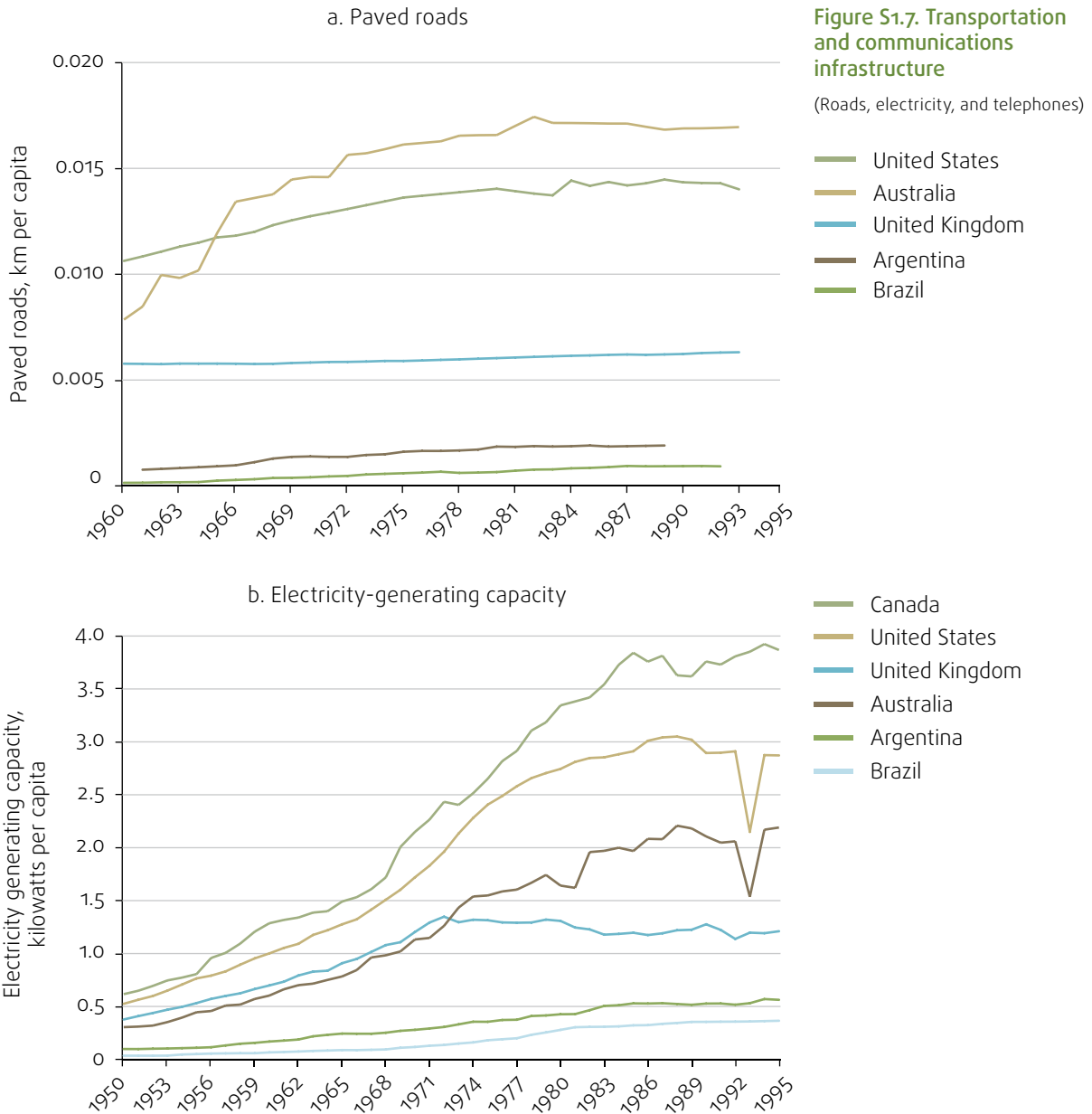


Figure S1.7. Transportation and communications infrastructure

(Roads, electricity, and telephones)

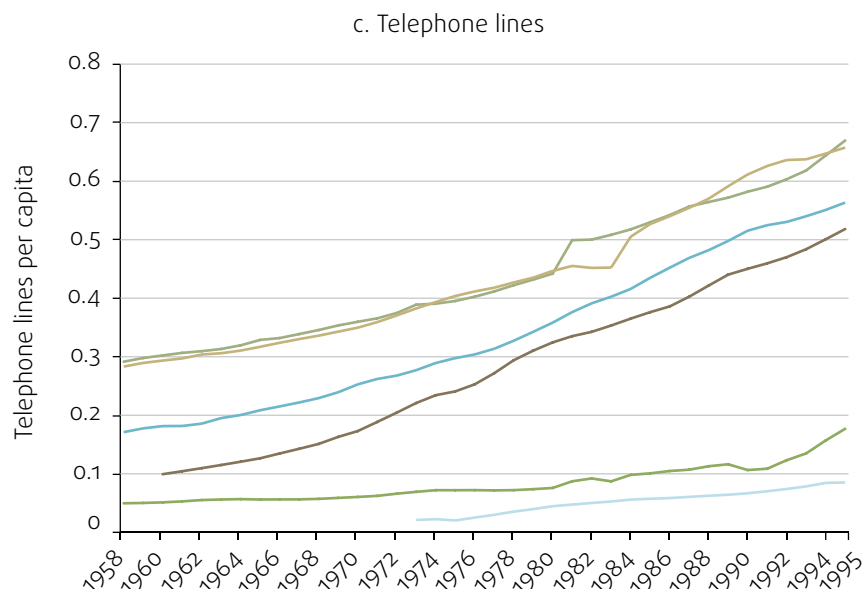
- United States
- Australia
- United Kingdom
- Argentina
- Brazil

- Canada
- United States
- United Kingdom
- Australia
- Argentina
- Brazil

(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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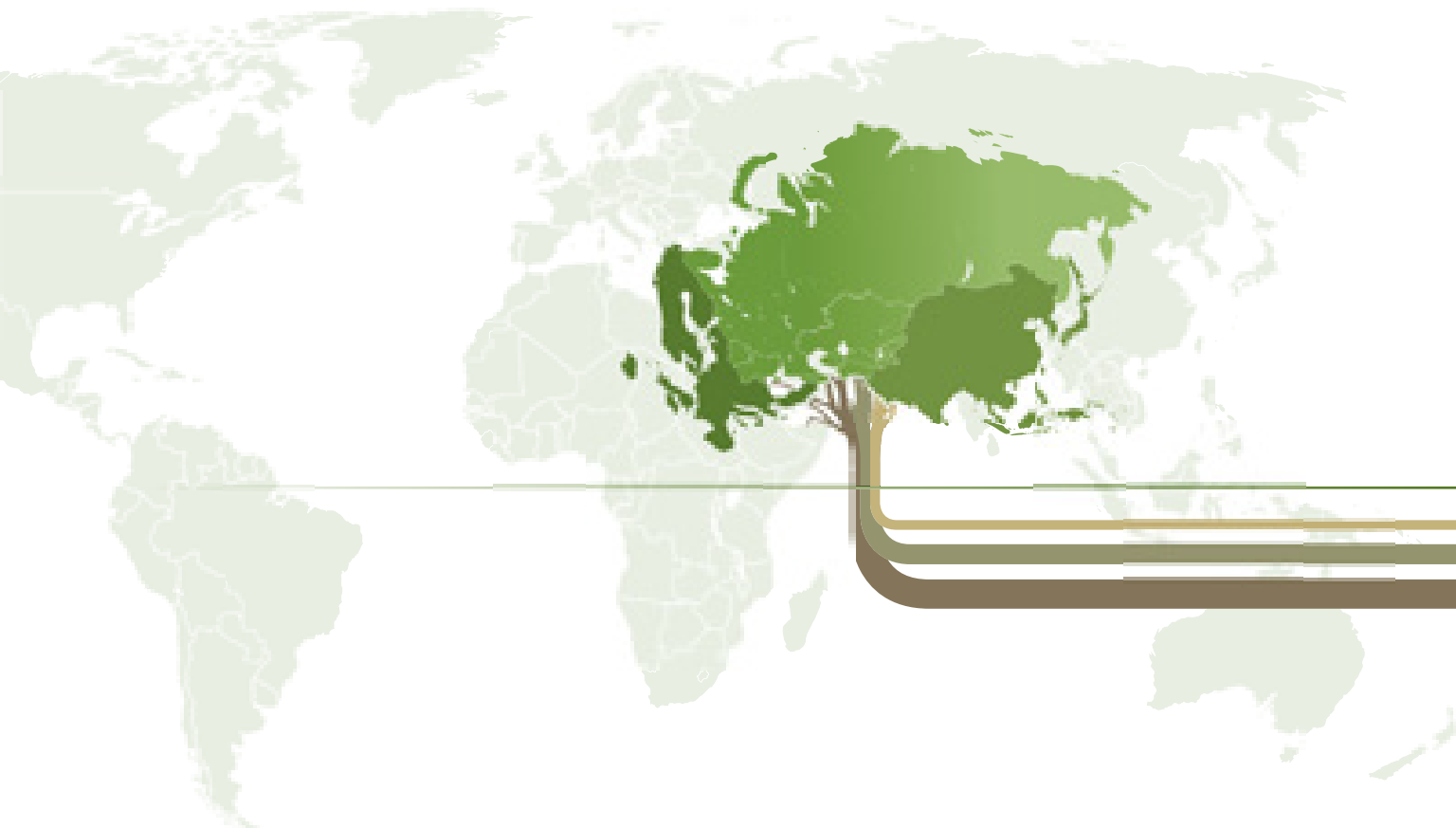
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Spotlight Two



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 ^a | 421 |
| Doing Business overall ranking (2013) | 11 | 22 | 37 |
| Worldwide Governance Indicators ^b (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.¹ 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.² 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.³ 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.⁴ 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;⁵ 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.⁶

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.⁷

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.⁸ 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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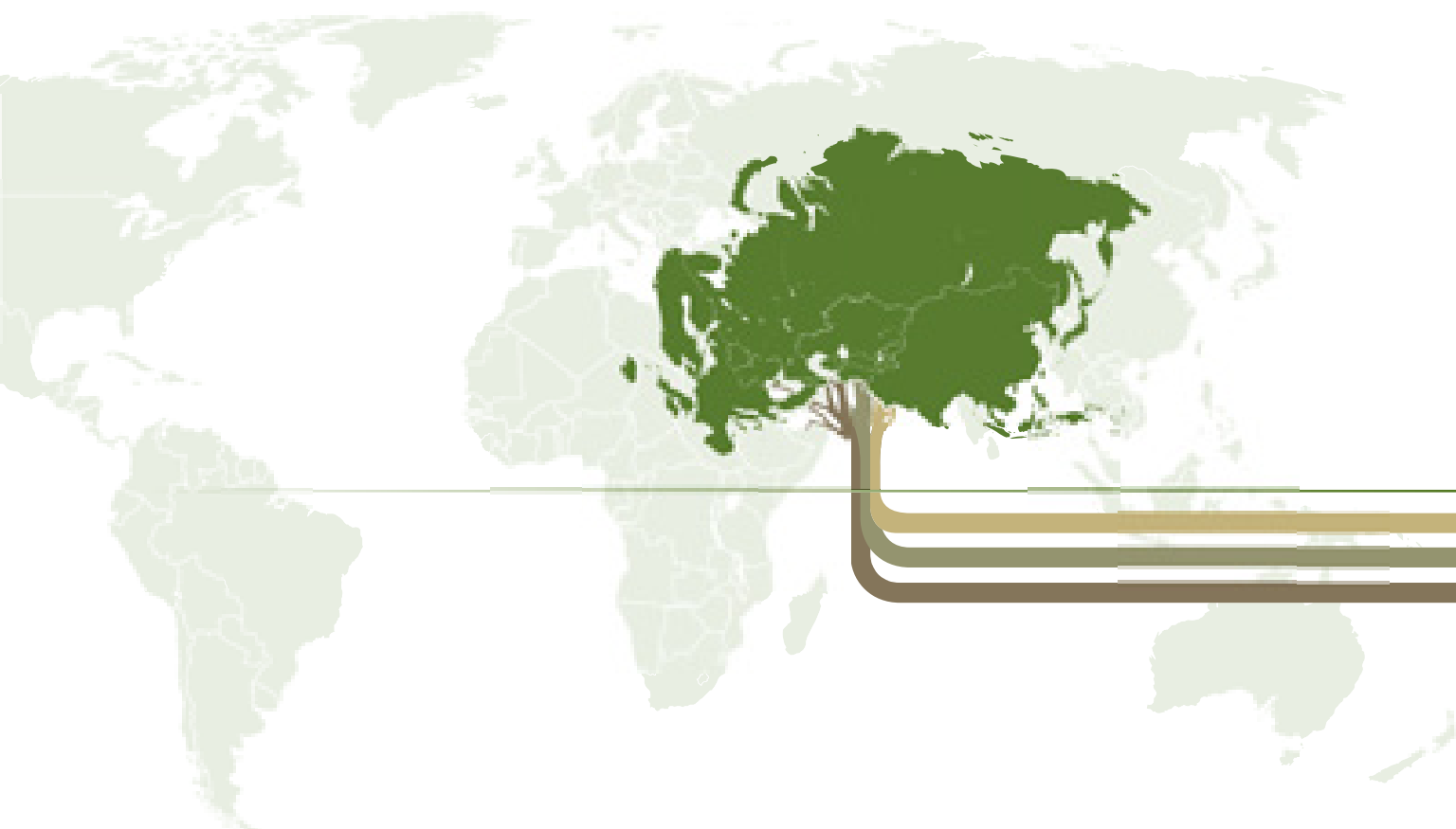
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Spotlight Three



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.

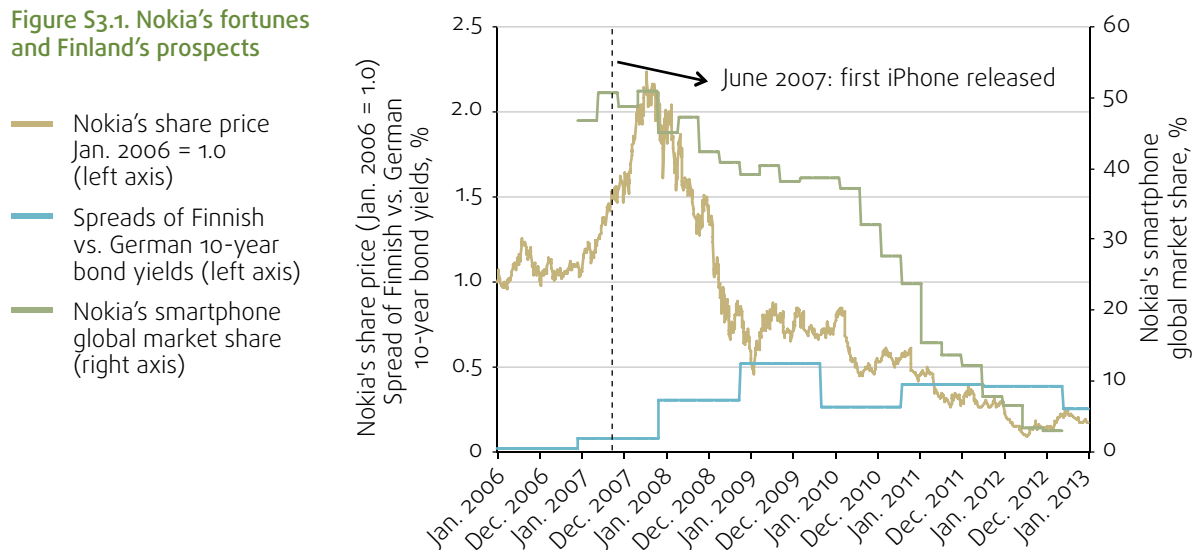
Look at what has happened to Nokia and Finland. Between 1998 and 2007, Nokia contributed a quarter of Finnish economic growth. In 2000, it accounted for almost 30 percent of the country's exports. By 2011, its revenues represented 20 percent of Finland's gross domestic product (GDP). In the decade to 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).

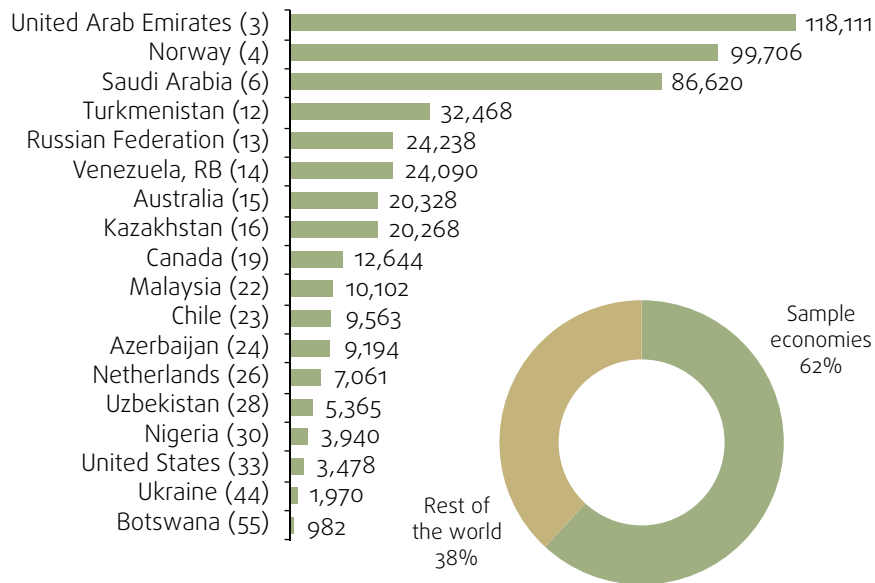


Figure S3.2. Subsoil natural resource wealth per capita, 2005

(Constant 2005 U.S. dollars)

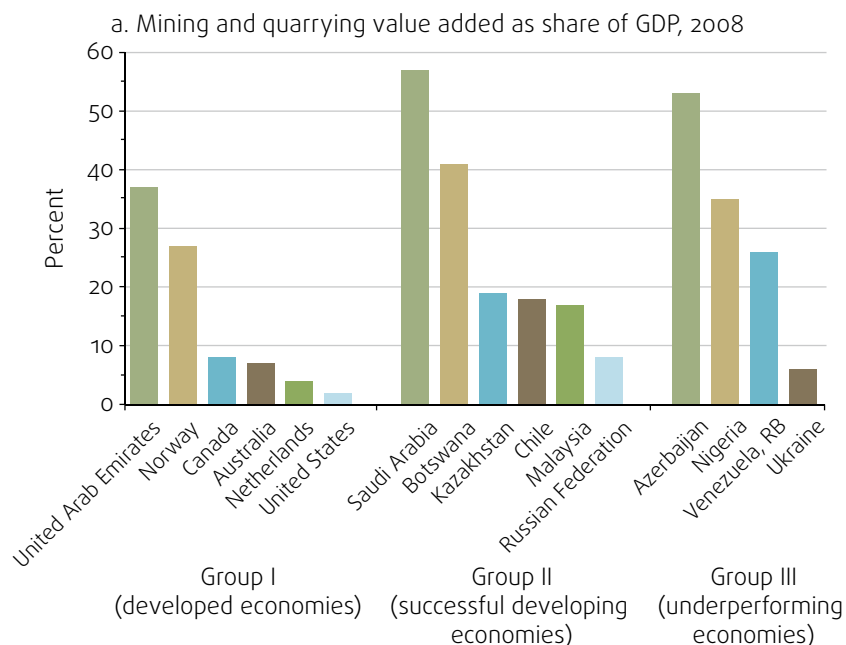
Source: World Bank 2010.

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 developing¹—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).

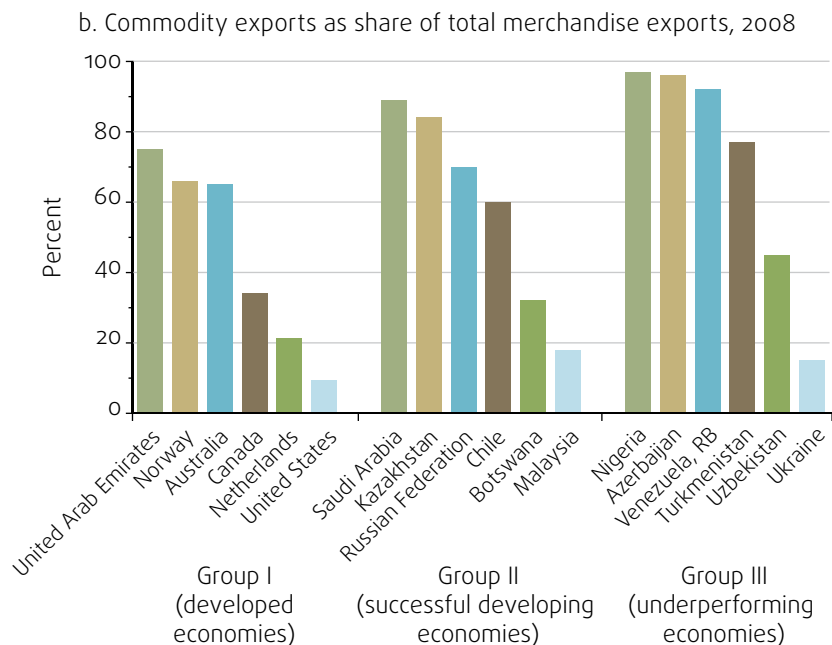
Exports from the developed countries in the countries surveyed tend to be more diversified than from the other two groups, except for the United Arab Emirates, Norway, and Australia, which have higher levels of export product concentration. Norway and the United Arab Emirates actually have more concentrated 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

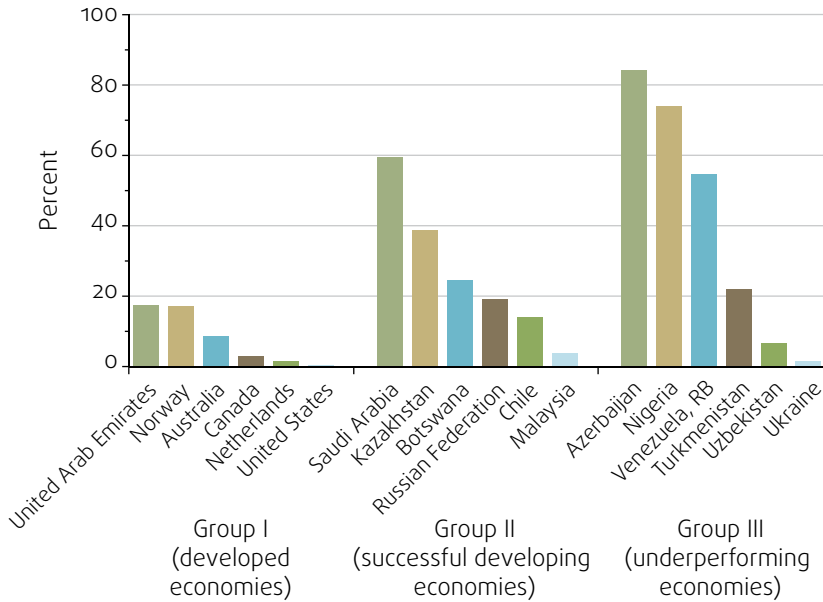
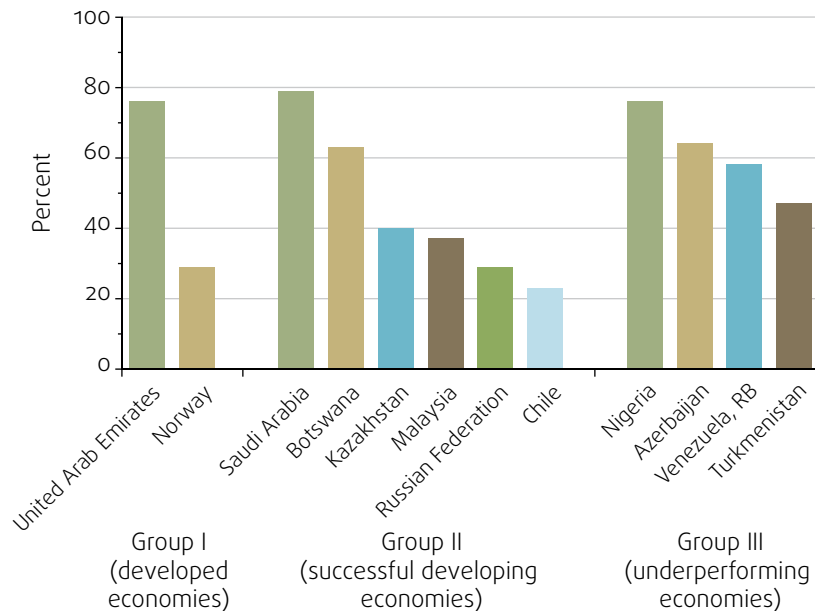


Figure S3.3. Natural resource dependence, developed and developing economies (cont.)

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

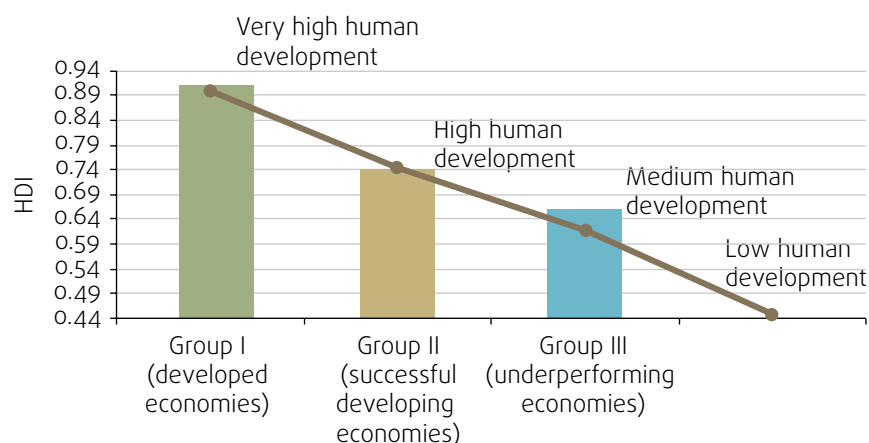
The 18 countries in this spotlight are heterogeneous in how much they have diversified their asset portfolios. But three groups of countries can be discerned, depending on their levels of development—mainly their per capita income levels:

- 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.

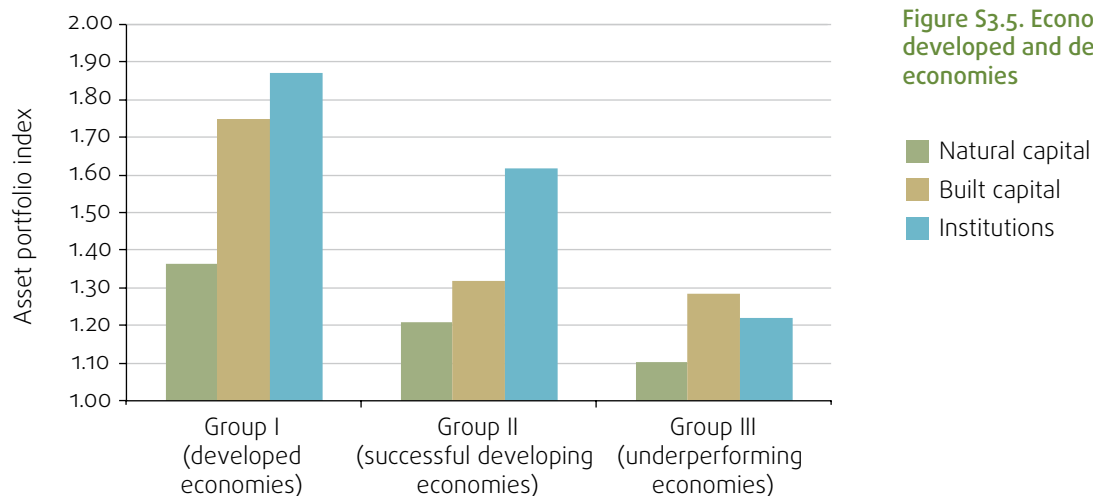


Figure S3.5. Economic assets, developed and developing economies

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 PISA² 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).

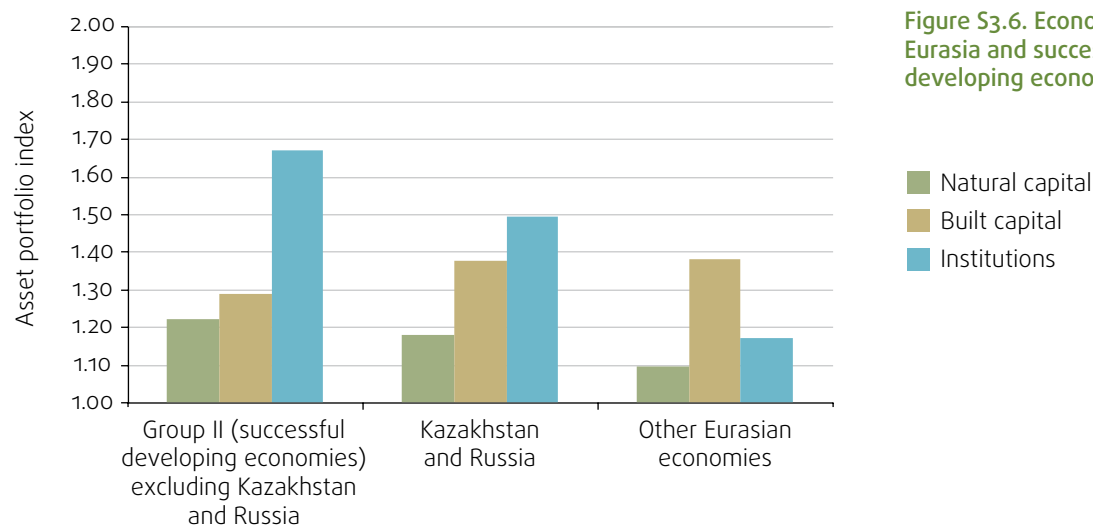


Figure S3.6. Economic assets, Eurasia and successful developing economies

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.

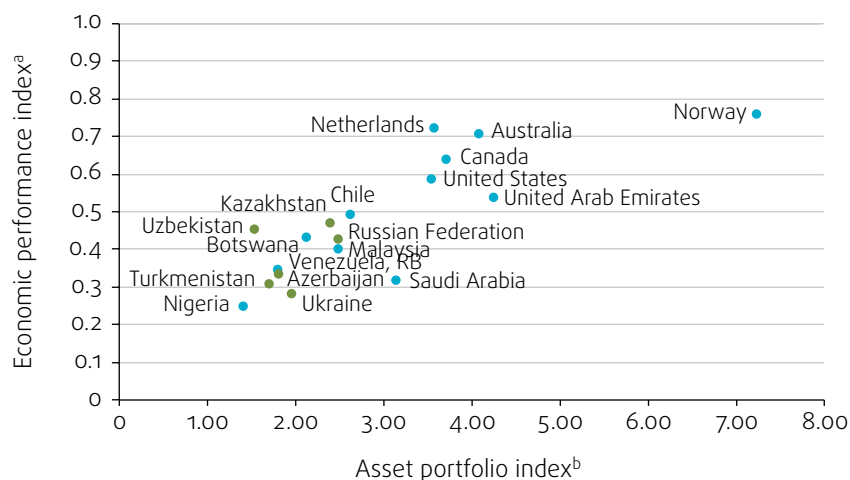
It is striking that in their natural and built capital, Russia and Kazakhstan—Eurasia’s Group II economies—are not especially different from Azerbaijan, Turkmenistan, Ukraine, and Uzbekistan—Eurasia’s Group III economies. But they have done better in improving the quality of their institutions. Yet Kazakhstan 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.

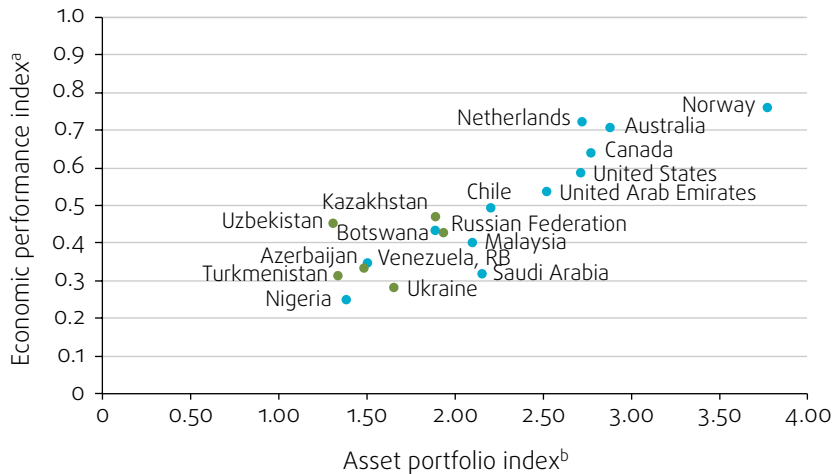


Figure S3.8. Asset portfolio diversification and economic performance, with institutions emphasized

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 |
|---|--|----------------------------------|-------------------|
| Group I (developed economies)^a | 39,368 | 80.1 | 0.91 |
| 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 ^b | 76.7 | 0.82 |
| United States | 43,063 | 78.6 | 0.94 |
| Group II (successful developing economies)^a | 15,682 | 69.7 | 0.76 |
| 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 ^b | 74.1 | 0.78 |
| Group III (underperforming economies)^a | 6,946 | 66.8 | 0.67 |
| 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 ^a (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 | Index institutions |
| (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 ^a | 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

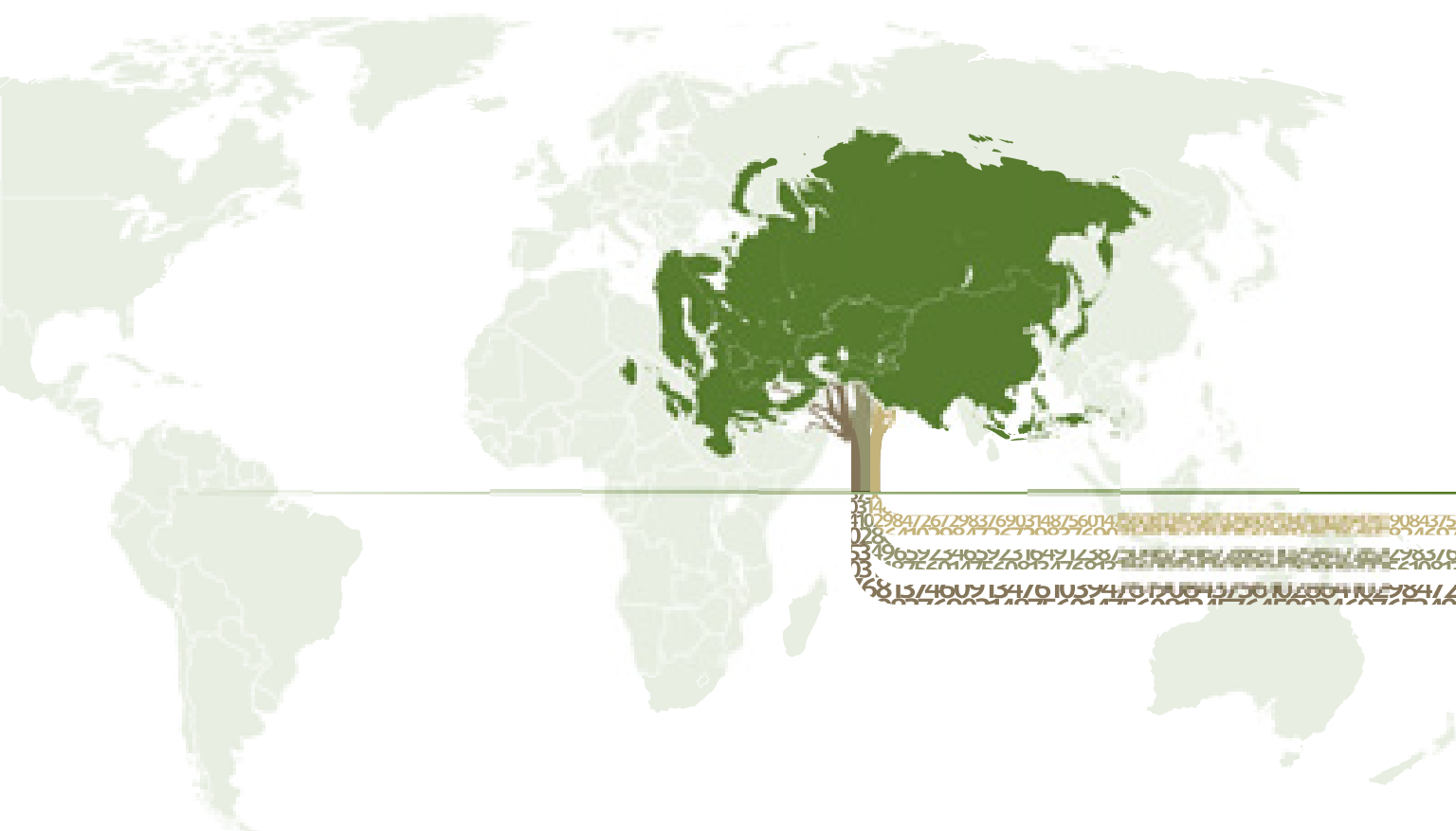


Table A1. Basic indicators

| | 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 ^a | 43,231 ^b | 135 ^c | 1.0 ^d | 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 ^a | 21,678 ^b | 602 ^c | 0.8 ^d | 28,288 | 67.4 | 2.9 |
| United Arab Emirates | 83.6 | 36,040 ^a | 37,392 ^b | 334 ^c | -4.3 ^d | 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 | |
| Eurasia resource-rich | | | | | |
| 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 |
| Eurasia resource-poor | | | | | |
| 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 |
| European Union new member states | | | | | |
| 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 |
| East Asia | | | | | |
| 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 ^d | 37.2 ^a | 29.1 ^e | 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 ^a | 21.1 ^a | 7.2 ^a | 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 ^a | Mining and Quarrying, percent 2010 ^a | Manufacturing, percent 2010 ^a | Services, other, percent 2010 ^a | Output Growth Volatility, percent 1995-2008 | Employment Growth, percent 1995-2008 | Labor Productivity Growth, percent 1995-2008 |
| Eurasia resource-rich | | | | | | | |
| 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 |
| Eurasia resource-poor | | | | | | | |
| 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 ^f | 61.7 | 7.5 | 1.8 | 2.2 |
| European Union new member states | | | | | | | |
| 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 ^b | 1.2 ^b | 25.5 ^b | 67.1 ^b | 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 ^a | Mining and Quarrying, percent 2010 ^a | Manufacturing, percent 2010 ^a | Services, other, percent 2010 ^a | Output Growth Volatility, percent 1995-2008 | Employment Growth, percent 1995-2008 | Labor Productivity Growth, percent 1995-2008 |
| East Asia | | | | | | | |
| Cambodia | 36.5 | 0.6 | 15.8 | 48.4 | 2.3 | 3.4 | 4.6 |
| China | 10.1 ^f | 5.2 ^f | 32.5 ^f | 37.5 ^f | 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 ^d | 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 |
| Resource-rich | | | | | | | |
| 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 ^e | 1.9 ^e | 14.3 ^e | 90.6 ^e | 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 ^a | Total natural resource rents, % of GDP 2000–11 | Natural wealth per capita, constant 2005 US\$ 2005 | Proven oil reserves, billion barrels 2011 ^b | Proven gas reserves, trillion cubic meters 2011 ^b |
|---|---|--|---|--|---|--|
| Eurasia resource-rich | | | | | | |
| 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 |
| Eurasia resource-poor | | | | | | |
| 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 | – | – |
| European Union new member states | | | | | | |
| 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 | – | – |
| East Asia | | | | | | |
| 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 ^a | Total natural resource rents, % of GDP 2000–11 | Natural wealth per capita, constant 2005 US\$ 2005 | Proven oil reserves, billion barrels 2011 ^b | Proven gas reserves, trillion cubic meters 2011 ^b |
|----------------------|---|--|---|--|---|--|
| 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 ^a | Telephone lines (per 100 people) 2010–12 | Fixed broadband Internet subscribers (per 100 people) 2010–12 | Gross fixed capital formation (% of GDP) 2005–12 ^a | Capital stock per capita (thousands of constant 2005 US\$) 2005–11 |
| Eurasia resource-rich | | | | | |
| 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 |
| Eurasia resource-poor | | | | | |
| 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 |
| European Union new member states | | | | | |
| 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 |
| East Asia | | | | | |
| 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 ^a | Telephone lines (per 100 people) 2010–12 | Fixed broadband Internet subscribers (per 100 people) 2010–12 | Gross fixed capital formation (% of GDP) 2005–12 ^a | 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 ^a | Average years of schooling (of adults) 2011 | PISA reading scores 2009 |
| Eurasia resource-rich | | | | |
| 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 | — |
| Eurasia resource-poor | | | | |
| 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 | — |
| European Union new member states | | | | |
| 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 |
| East Asia | | | | |
| 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 ^a | 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 ^c |
| 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 ^a | Government effectiveness, –2.5 (weak) to 2.5 (strong) 2005–12 ^b | Global Competitiveness Index, rank 2012–13 ^c | Ease of Doing Business Index, rank 2012–13 ^c |
|---|--|--|---|---|
| Eurasia resource-rich | | | | |
| 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 |
| Eurasia resource-poor | | | | |
| 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 |
| European Union new member states | | | | |
| 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 |
| East Asia | | | | |
| 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 ^a | Government effectiveness, –2.5 (weak) to 2.5 (strong) 2005–12 ^b | Global Competitiveness Index, rank 2012–13 ^c | Ease of Doing Business Index, rank 2012–13 ^c |
|----------------------|--|--|---|---|
| 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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INSTITUTIONS: INTANGIBLE ARRANGEMENTS TO MANAGE RESOURCE REVENUES, PROVIDE SOCIAL SERVICES, AND REGULATE ECONOMIC ENTERPRISE



CAPITAL: TRANSPORT AND COMMUNICATIONS INFRASTRUCTURE, PLANT AND MACHINERY, AND SCHOOLS, COLLEGES, HOSPITALS, AND CLINICS



NATURAL RESOURCES: SUBSOIL WEALTH SUCH AS MINERALS AND OIL AND GAS, AND OTHER ASSETS SUCH AS FORESTS AND FARMLAND