UP_i-46.qxd 3/27/08 1:44 PM Page i

OVERVIEW

UNLEASHING PROSPERITY

UP_i-46.qxd 3/27/08 1:44 PM Page ii

UP_i-46.qxd 3/27/08 1:44 PM Page iii

OVERVIEW

UNLEASHING PROSPERITY

Productivity Growth in Eastern Europe and the Former Soviet Union

THE WORLD BANK
Washington, D.C.

© 2008 The International Bank for Reconstruction and Development/The World Bank
1818 H Street, NW
Washington, DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org
E-mail: feedback@worldbank.org

All rights reserved

1 2 3 4 11 10 09 08

This volume is a product of the staff of the International Bank for Reconstruction and Development/The World Bank. The findings, interpretations, and conclusions expressed in this volume do not necessarily reflect the views of the Executive Directors of The World Bank or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgement on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development/The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please send a request with complete information to the Copyright Clearance Center Inc., 222 Rosewood Drive, Danvers, MA 01923, USA; telephone: 978-750-8400; fax: 978-750-4470; Internet: www.copyright.com.

All other queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2422; e-mail: pubrights@worldbank.org.

Cover photo by: Mikhail Malyshev/iStockphoto.
Cover design: Naylor Design, Inc.

This booklet contains the Overview, along with a list of contents, from the forthcoming book, *Unleashing Prosperity: Productivity Growth in Eastern Europe and the Former Soviet Union*. To order copies of the full-length book, published by the World Bank, please use the form provided at the back of this booklet.

UP_i-46.qxd 3/27/08 1:44 PM Page v

Contents

Overview

1. Patterns of Aggregate Productivity Growth
2. Sectoral Patterns of Productivity Growth
3. Firm Productivity Growth
4. The Future Role of Public Policy

Bibliography

UP_i-46.qxd 3/27/08 1:44 PM Page vi

UP_i-46.qxd 3/27/08 1:44 PM Page 1

Overview

Productivity isn't everything, but in the long run it is almost everything.
—Paul Krugman

Introduction

The countries of Eastern Europe and the Former Soviet Union (the Region, hereafter) experienced a productivity surge over 1999–2005 that drove up living standards and reduced poverty. Productivity growth is probably the single most important indicator of a country's economic progress. It is only through increases in productivity that firms may enjoy good prospects for higher profits so they may invest in new technologies, create jobs, pay more in wages and dividends, and apportion wealth. The efficiency of labor and capital rose rapidly in the Region, especially in the middle-income countries of the Former Soviet Union (averaging 6 percent during 1999–2005). Output growth during this period was mainly driven by increased productivity, whereas the accumulation of labor and capital played a small role. The surge in productivity drove up living standards. The Region's real income per capita (in constant dollar equivalents of purchasing power parity [PPP]) rose from

UP_i-46.qxd 3/27/08 1:44 PM Page 2

US$5,903 in 1998 to US$8,411 in 2005, lifting about 50 million people out of poverty.

Part of the productivity gains derived from increased capacity utilization, especially in the Commonwealth of Independent States (CIS—Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan). After a deep fall in output in the early phase of the transition, output per capita recovered in many countries. As firms began using their excess labor and capital, which had become idle during the deep transitional recession, output increased, and this is captured in TFP estimates.

Part of the productivity gains also derived from major structural changes in the economies of the Region, as resources were progressively shifted to higher-productivity uses in response to changed economic and institutional incentives. The transition to a market economy involved a substantial reallocation of factors (labor and capital) across sectors. Many workers moved out of manufacturing and into services, a sector that had been underdeveloped under central planning. In the low income CIS countries, however, labor shifted out of manufacturing into agriculture and there was little progress in the development of a modern service sector.[1]

But most of the productivity surge was driven by firm dynamics. From a microeconomic perspective, productivity growth may be decomposed into three main sources: productivity gains within existing firms, the reallocation of resources across existing firms, and firm turnover (the entry of new, more-productive firms and the exit of obsolete firms). Faced with radical changes in the Region's economies, firms were forced to adapt their behavior. Some seized new opportunities, occupying new market niches that had not been available during central planning. Many obsolete firms that were supported by state subsidies were restructured or closed down. Firms that survived managed to enhance productivity by investing in worker skills and adopting new technologies, abandoning old production lines and introducing new ones, producing new products, and accessing new markets.

Domestic reforms and external factors contributed to the productivity surge. Macroeconomic stability, a better governance and business environment, stronger competition, skill development, financial deepening, and investments in infrastructure, particularly in information and communication technology (ICT), were key drivers of productivity growth. Globalizing factors also contributed to the increase in productivity, especially in the new European Union (EU) member states (the EU-10: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic,

UP_i-46.qxd 3/27/08 1:44 PM Page 3

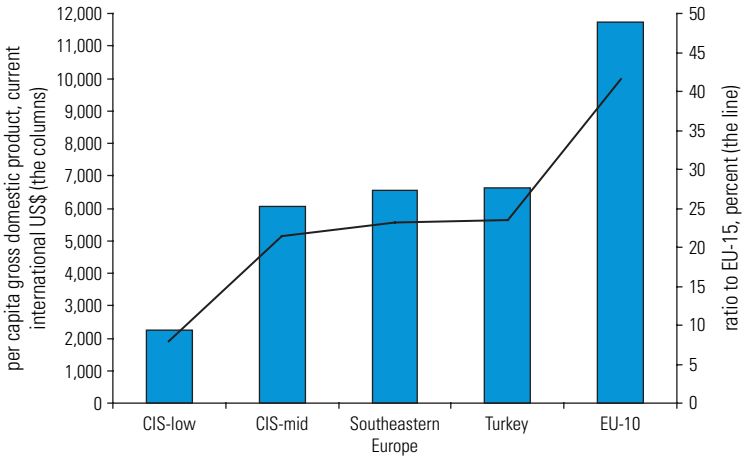
and Slovenia). In these countries, trade and foreign investment played a significant role in productivity growth by stimulating technological transfers and innovation.

Notwithstanding the recent gains, significant challenges remain in sustaining productivity growth. This is especially evident in the wide disparities in annual per capita income in the Region, ranging from US$300 in Tajikistan to US$8,000 in Poland, as well as the disparities in income per capita between the early reformers—the EU-10—and the EU-15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom, see figure 1). Narrowing these income gaps calls for more rapid productivity growth.

But the room for more rapid productivity growth may be constrained by the limited ability of firms to adopt new technologies (driven by deficiencies in the education system, labor market rigidities, skill shortages, weak private sector involvement in research and development (R&D), and shallow financial markets), the out-migration of labor, and declining populations in many countries (World Bank 2007b). In addition, while investment rates are comparable with those in advanced market economies, the countries of the Region lag in the quality of infrastructure. New vintages of capital are needed to expand the Region's technological frontier. Policy shortcomings—particularly with respect to macroeconomic management (to cope with volatility, real exchange appreciation, and inflationary pressures), the weak investment climate, and the inadequacy of social safety nets

FIGURE 1

A Large Income Gap Divides the Region, Which Also Lags Behind the EU-15



Sources: World Bank staff calculations; World Development Indicators Database 2007.

UP_i-46.qxd 3/27/08 1:44 PM Page 4

to protect and train workers adversely affected by firm restructuring and closures—may also limit the ability of policy makers to sustain productivity growth.

Addressing these challenges will require sustained, even accelerated policy and institutional reforms. The heterogeneity of the Region means that the specific mix of policy reforms needed to sustain productivity growth varies across countries. This report argues that, for the late reformers (most of Southeastern Europe [SEE: Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Serbia and Montenegro (now separate and independent)] and the CIS), policy reforms aimed at accelerating reallocation are a top priority, whereas, for the early reformers (most of the EU-10, plus Turkey), policy reforms aimed at improving the ability of firms to innovate and compete in global markets are a top priority. Though reform priorities vary significantly even within the two broad groups of countries, the evidence is clear: the intensity and speed of reforms matter for productivity growth.

Measuring productivity growth is difficult. The measure most commonly used is labor productivity because it is easy to calculate and interpret. It captures how much output is produced, on average, by each unit of labor employed in production. Labor productivity growth thus gauges the increase in the amount (or value) of output generated per worker. Another measure is total factor productivity (TFP) growth, which refers to increases in output not attributable to increases in labor or capital inputs. TFP growth captures efficiency gains from the technological progress embodied in firm-level improvements, such as better production management methods, better customer support, and better distribution channels for the delivery of goods and services. Both labor and TFP growth may be estimated for the economy as a whole, for a sector of the economy, or for an individual firm.

This report integrates an impressive array of data sets to assess the macro, sectoral, and micro underpinnings of productivity growth in the Region. It builds on aggregate estimates of productivity comparable across countries and over time. It then explores industry and firm-level heterogeneity to understand more clearly the roots of observed aggregate economic performance. Its creative use of new firm-level data sets provides fresh insights into the policy and microeconomic foundations of growth in the Region. The new data include corporate financial data on more than 60,000 firms in 14 countries of the Region (the Amadeus Database) and a harmonized firm-level database drawing on a manufacturing census for 8 countries.[2] These microeconomic data sets permit productivity dynamics

UP_i-46.qxd 3/27/08 1:44 PM Page 5

to be studied through a decomposition of aggregate productivity growth into the reallocation of labor across firms, firm turnover, and internal firm efficiency. They also permit the evolution of firm demographics to be examined over time, such as firm survival rates, average firm size among entering firms, and the rates of the creation and destruction of firms and jobs. Other data derived from international reviews of policy reforms (the Doing Business Database, the Economic Freedom of the World Database, the European Bank for Reconstruction and Development [EBRD] transition indicators) and from enterprise surveys (the Business Environment and Enterprise Performance Survey [BEEPS] Database) shed light on the policy and regulatory constraints to reallocation and firm productivity growth.

The analysis in this report exploits these data to answer the following questions:

- *What can we learn from the productivity patterns in the Region?* What are the roles of capital accumulation and labor participation and the combined efficiency of these factors in driving output growth?
- *What are the sources of productivity growth in the Region?* How important has the reallocation of resources across and within sectors been in explaining the productivity surge in the Region?
- *Is the transition process over in some countries?* Are countries still struggling to restructure their economies?
- *What is the role of policy reforms in productivity growth?* How do policy drivers influence the pace of reallocation and firm productivity growth? What are the remaining barriers to sustained productivity growth? Which policy reforms will be needed to sustain productivity growth?

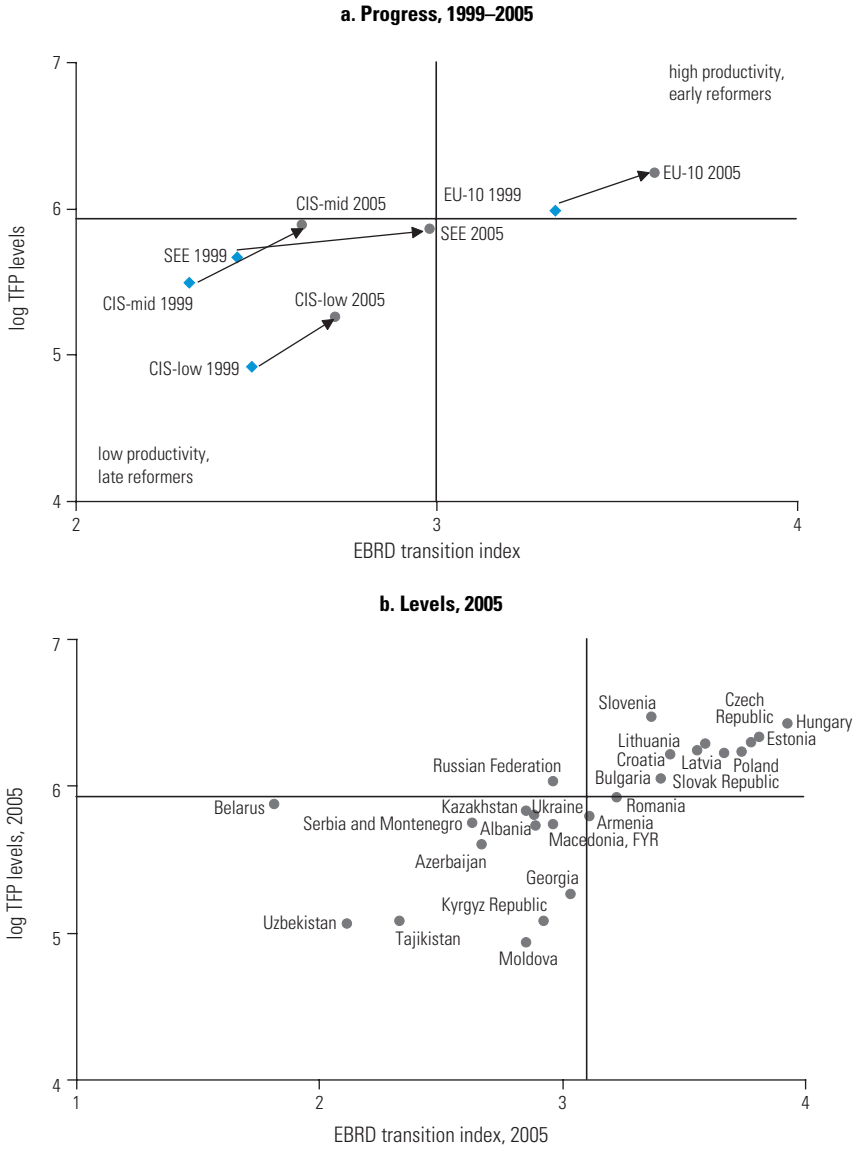
The Region shows great diversity in productivity performance and progress in reform (figure 2). Two broad groups of countries emerge from the analysis: the more productive, early reformers (the EU-10 and Turkey) and the less productive, late reformers (most of the CIS and the SEE). The main challenge in the EU-10 and Turkey is to boost innovation to compete successfully in global markets, while the primary challenge in the CIS and SEE is to accelerate reallocation to address the legacy of the transition.

The more-productive early reformers: the EU-10 and Turkey. The EU-10 recovered earlier from the initial economic collapse and pursued deep and pervasive structural reforms. Most of these countries display higher productivity levels and are now well-functioning market economies. In these early reformers, the role of firm turnover and

UP_i-46.qxd 3/27/08 1:44 PM Page 6

FIGURE 2

Productivity and Progress in Reform in the Region



Sources: EBRD 2006; Amadeus Database 2006.

reallocation in productivity growth has declined. The productivity surge is now mainly driven by firm efficiency gains stemming from technological innovation, robust competition, and the penetration of new export markets. After more than a decade of sustained policy reforms, resources have shifted from lower- to higher-productivity uses. Existing firms have been restructured, shed excess labor, and acquired foreign technologies. New productive firms have

UP_i-46.qxd 3/27/08 1:44 PM Page 7

emerged, and obsolete firms have closed down. Turkey, the only nontransition country in the Region, is in a group by itself, but it reflects many of the productivity trends shown by the EU-10. Since the 2001 financial crisis, Turkey has been going through its own economic transformation and has undertaken bold reforms to stimulate productivity growth and integrate with the global economy. As in the EU-10, domestic and import competition, export penetration in new markets, and innovation have spurred increases in firm efficiency.

The less-productive late reformers: SEE, CIS-mid, and CIS-low. These countries show lower levels of productivity; most of them undertook reforms in the late 1990s and are still dealing with the substantial misallocation of resources inherited from central planning. Among the late reformers, the contributions of firm turnover and reallocation to productivity growth are increasing. Firm efficiency is also playing an important role in aggregate productivity growth, but is mainly driven by transitory factors, especially the utilization of excess capacity and labor shedding. Most CIS and SEE countries continue to face significant resource misallocation and are still some way from the end of the transition. Rapid productivity gains were fairly easy to achieve during the first years of recovery from the deep transitional recession. The scope for productivity-enhancing reallocation was then large. In addition, firms in these countries were so far from the technology frontier that the acquisition of foreign machinery and equipment, combined with favorable terms of trade and the utilization of excess capacity, made extremely large productivity gains possible within a short time. Sustained and strong productivity growth over the longer term will prove more difficult as excess capacity is used up. Recent efforts to promote privatization and firm restructuring are steps in the right direction.

Three central messages emerge from our analysis:

- *For some countries in the Region, recognizing that the transition is over is now important.* As markets develop and resources are allowed to flow to more productive uses, the legacy of transition progressively weakens. This is reflected in the productivity patterns in countries. In most of the EU-10, the contributions of reallocation and firm turnover to aggregate productivity growth have declined. Productivity is mainly driven by efficiency gains within individual firms. The productivity patterns in these countries resemble those of advanced market economies. This is not to suggest that differences in productivity across firms disappear altogether as countries move out of transition. These differences will always exist as a result of technological innovation, the penetration of new export markets,

UP_i-46.qxd 3/27/08 1:44 PM Page 8

and other factors. But the drivers of firm productivity growth will no longer be specific to the transition. Reallocation and firm turnover will continue to play a role, but they will tend to be associated with the business cycle as in advanced market economies.

- *Accelerating reallocation and removing barriers to firm entry and exit are top priorities among the late reformers in sustaining strong productivity growth*. In most of the CIS and SEE, but also in some EU-10 countries, such as Romania, the contributions of the reallocation of resources and of firm turnover (or net entry) to productivity growth are quite substantial; they are larger than those in advanced market economies. The fact that productivity dispersion across firms is still higher in these countries than in advanced market economies suggests that there is ample room for productivity gains derived from reallocation and firm turnover. But reallocation does not occur automatically. Its nature and speed depend on factor mobility, which, in turn, is affected by the policy environment. Trade openness may facilitate shifts of labor from agriculture toward higher-productivity activities in the manufacturing and service sectors. Greater access to finance may also promote the movement of labor toward industry and services by alleviating liquidity constraints in firms that are hiring. Investments in human capital and greater labor market flexibility may accelerate the reallocation process by increasing worker mobility. Such a set of policies, combined with streamlined regulations for start-ups to encourage the entry of new, more-productive firms and stronger product market competition to spur the exit of obsolete firms, may also contribute to sustaining productivity growth. These efforts to improve firm-level efficiency should be complemented by adequate social safety nets to help mitigate the short-term costs of reallocation among workers who are displaced or pushed out of the workforce.

- *Fostering innovation and international competitiveness is a top priority among early reformers in sustaining productivity growth*. Turkey and most of the EU-10 have achieved impressive results in economic liberalization, the privatization of state-owned enterprises, and opening up their economies to international trade and capital flows. But the integration of goods, services, and capital markets into the world economy is only a first step. Globalization calls for new forms of organization in production to compete in international markets. Innovation, a key driver of productivity growth, requires firms that are less vertically integrated, as well as greater integration into global production chains. It requires greater mobility within and

UP_i-46.qxd 3/27/08 1:44 PM Page 9

across firms and more flexible labor markets. And it requires greater reliance on market finance and higher investment in R&D and in tertiary education. Innovation-led productivity growth thus calls for policies that increase private sector participation in R&D so as to support skill-based industries and move up the value chain in exports. It also calls for deeper financial sectors that are able to facilitate the financing of new capital. Service sector regulations that facilitate the entry of new players, particularly in services and network industries, will prove important in fostering innovation. Promoting greater competition in financial services and infrastructure-related services, such as telecommunications and transport, will also be important.

What Are the Patterns of Productivity Growth?

Although output, productivity, and prosperity have all risen significantly in the Region since 1999, large gaps remain among countries and sectors. Rapid productivity gains have driven economic growth and helped eliminate some disparities across the Region. But productivity still varies from country to country because of differences in production structures and firm strategies.

Productivity-Driven Output Growth Has Brought Unprecedented Prosperity

Across the Region, strong output growth since 1999 has reversed much of the economic decline that occurred during the early days of the transition. The transition started in the early 1990s with a dramatic recession; the deeper contractions occurred in the CIS and SEE (figure 3). Output declined in virtually all transition economies in the initial years. Output fell by about 15 percent in the EU-10 and by 35–40 percent in the CIS. The speed and extent of the economic recovery that followed varied widely across the Region. The CIS reached the nadir in 1998 when the financial crisis unfolded in the Russian Federation.

Brisk growth, particularly in the CIS, led to a rapid increase in living standards. By the end of 2005, the per capita gross domestic product (GDP) in the CIS was about 50 percent higher than it had been in 1998, though some of the countries had not yet reached pretransition income levels (figure 3). In the EU-10, GDP was about 15 percent higher than the level in 1993. Annual income per capita in the

UP_i-46.qxd 3/27/08 1:44 PM Page 10

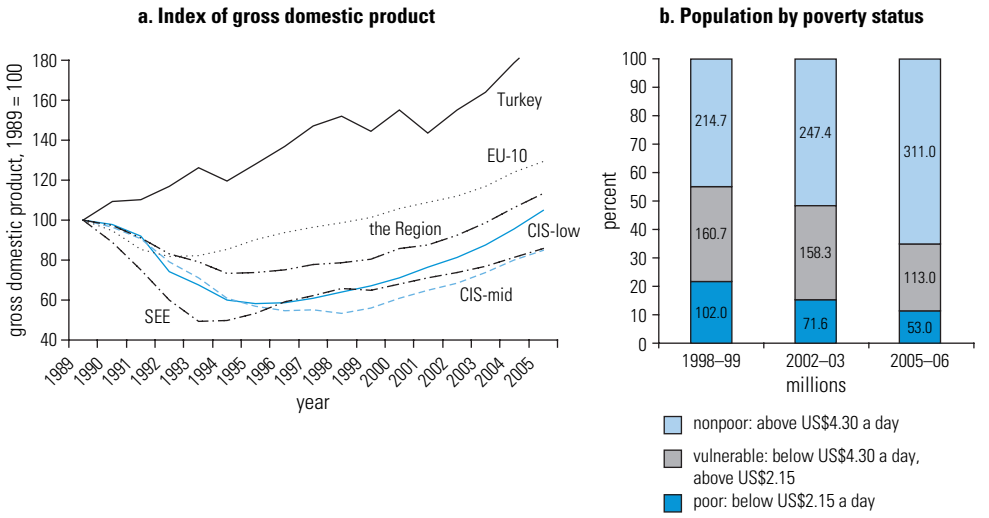
Region, in constant PPP dollars, went from US$5,807 in 1998 to US$8,398 in 2005. By this measure, the Region is now richer than Latin America. This strong growth lifted about 50 million people out of absolute poverty (defined as US$2.15 a day in 2000 PPP dollars) within a population of nearly 400 million (figure 3).

Economic growth was mostly driven by productivity gains; TFP growth accounted for over 80 percent of total output growth in the Region over 1999–2005, much higher than other regions (figure 4).[3] In some countries, but particularly in the CIS, part of the productivity gains derived from the utilization of excess capacity, which is normal during a recovery. Since 1990, TFP growth has surged, particularly in the CIS (figure 5). This is mainly a reflection of the growth rebound in these countries from the deep contractions of the 1990s. In most of the EU-10, in contrast, productivity growth has been steady since the mid-1990s. These countries were early reformers and made the strongest strides in building the institutional foundations of a market economy, developing a vibrant private sector, and opening up to international trade and foreign finance.

However, the contribution of capital and labor accumulation to the Region's growth performance has been disappointing. The small role of capital stock accumulation and employment growth in the Region's growth performance contrasts with the experience of rapidly growing economies in East Asia, where factor accumulation is the main driver of output growth (figure 4). A similar message emerges from the

FIGURE 3

Gross Domestic Product Rose, and Poverty Fell Dramatically

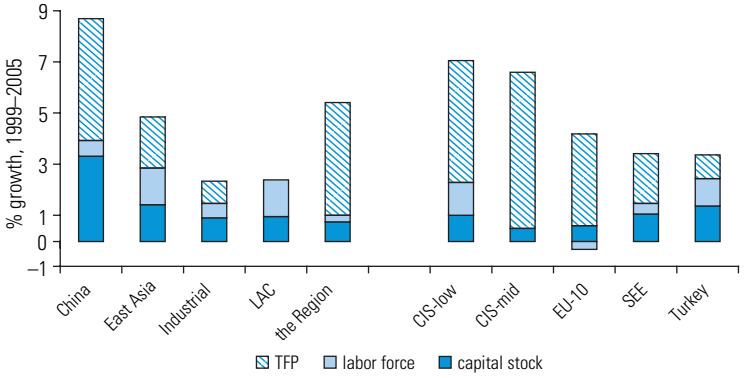


Sources: World Bank staff calculations; World Development Indicators Database 2007; household budget surveys; poverty lines in 2000 PPPs.

UP_i-46.qxd 3/27/08 1:44 PM Page 11

FIGURE 4

TFP, More Than Labor or Capital, Has Boosted Growth

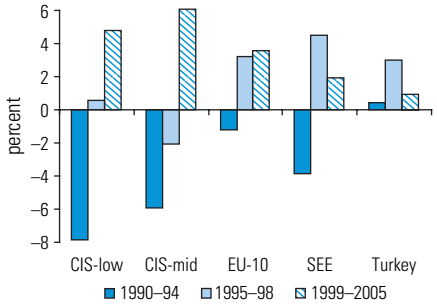


Source: World Bank staff calculations (see appendix 1A).

Note: CIS = Commonwealth of Independent States; EU = European Union; LAC = Latin America and the Caribbean; SEE = Southeastern Europe.

FIGURE 5

TFP Has Rebounded across the Region Since 1990



Source: World Bank staff calculations (see appendix 1A for data sources).

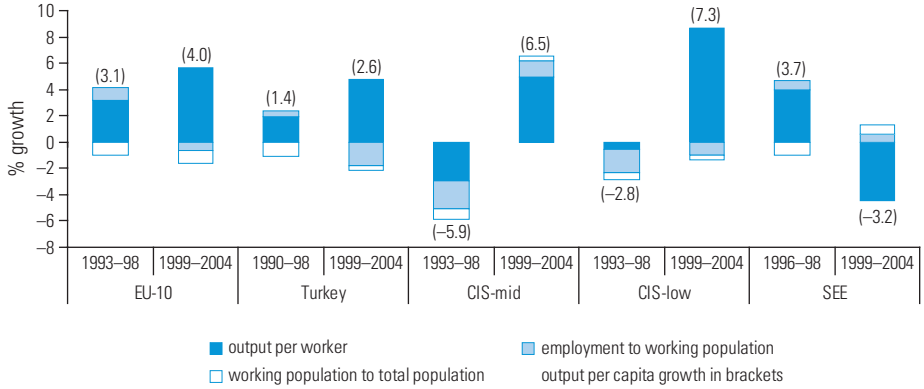
decomposition of the growth of GDP per capita. Growth in income per capita from 1999 to 2004, (figure 6) owes more to growth in labor productivity than to employment growth (the share of the working-age population to total population) or favorable demography (the employment share of the total population).

Labor supply and demand factors explain the small contribution of labor input to total output growth. A shrinking working-age population, out-migration, declines in labor participation, and high unemployment rates stifled labor supply, thereby contributing to disappointing labor outcomes. Indeed, the employment rate has continued to fall in many countries since 1998 (figure 7). While the employment rate is generally higher in the CIS (relative to the

UP_i-46.qxd 3/27/08 1:44 PM Page 12

FIGURE 6

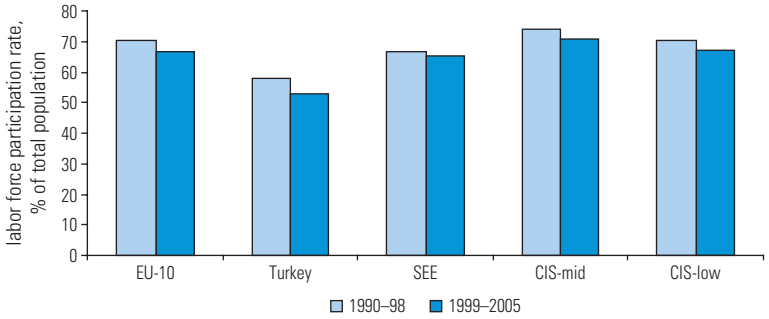
Labor Productivity, More Than Employment or Population Growth, Raised per Capita Income, 1999–2004



Source: World Bank staff calculations.

FIGURE 7

The Share of Workers in the Working-Age Population Has Fallen



Sources: World Bank staff calculations; World Development Indicators Database 2007.

EU-10, where the rate is short of the Lisbon target of 70 percent), many jobs in the CIS are in low-productivity occupations. These constraints are compounded by deficiencies in the higher education system, which worsen skill mismatches, and rigidities in labor market regulations, which make it difficult for firms to hire workers and slow the pace of the reallocation of workers.

The small role of capital accumulation in the Region's growth partly reflects inefficiencies and low investments in new vintages of capital. In the context of a declining labor force, sustaining per capita income growth will depend on capital deepening (increasing the physical capital per worker) and on additional productivity gains. The small impact of capital accumulation on output growth, particularly

UP_i-46.qxd 3/27/08 1:44 PM Page 13

in the CIS, also reflects adjustments in the corporate sector that have delayed new investments and led to the disposal of old capital stock. In the EU-10, investment rates have not been low, but depreciation rates are high, and infrastructure provision still lags considerably relative to the EU-15. Even more critical than the quantity of capital investments is the quality of the investments. The EU-10 countries have invested the most in ICT. The use and production of ICT have propelled labor productivity growth (figure 8).

A Substantial Gap in Productivity Remains across the Region

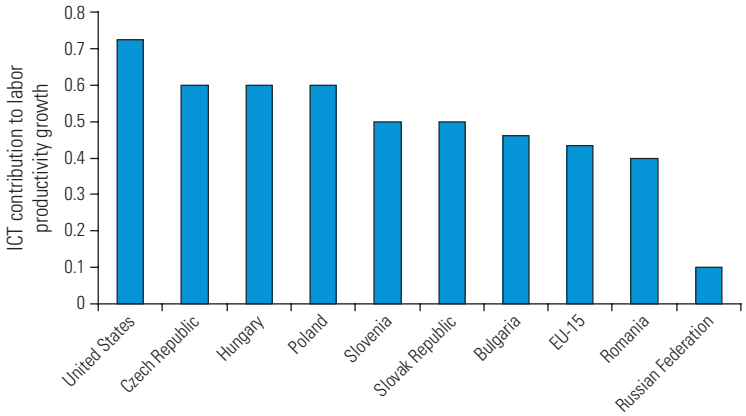
Despite the productivity surge, wide gaps in productivity still divide the Region. Productivity levels in the EU-10 in 2005 were more than twice those in poorer CIS countries (figure 9). Narrowing this gap in productivity calls for sustained productivity growth in these countries.

What Are the Sources of Productivity Growth?

The economic transition from central planning brought gains in efficiency throughout the Region. Many countries saw a dramatic shift of resources toward the service sector, which was underdeveloped under centralized regimes. This shift increased labor productivity in agriculture and manufacturing partly because of labor shedding. While these structural changes contributed to increased productivity growth, firm efficiency gains accounted for most of the surge in productivity and

FIGURE 8

Investments in ICT Contributed to Labor Productivity Growth, 1995–2004

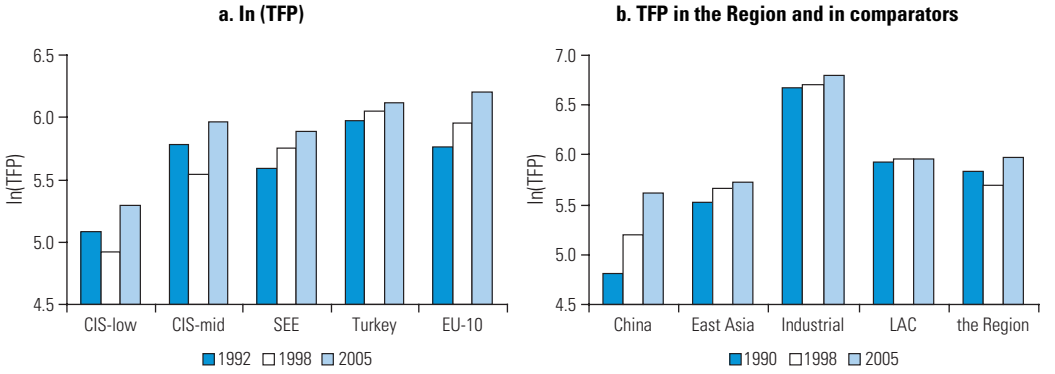


Source: Piatkowski and van Ark 2007.

UP_i-46.qxd 3/27/08 1:44 PM Page 14

FIGURE 9

TFP in the Poorest Countries in the Region Is Only Half the Level in the EU-10



Source: World Bank staff calculations.

brought about a remarkable boost in job flows, although the net employment impact varied across countries, subregions, and industries.

The Reallocation of Resources toward Services Has Boosted Aggregate Productivity

There has been substantial resource reallocation toward services (figure 10). The economies of the Region faced significant challenges in resource allocation at the start of the transition because of serious structural distortions inherited from central planning, namely, an oversized manufacturing sector and an underdeveloped service sector. The service sector has grown relative to agriculture and industry across the Region. In the EU-10, the share of services in total value added rose dramatically, from 40 percent in 1999 to 60 percent in 2005. Labor also shifted toward services.

These sectoral shifts were related to the overindustrialization of the economies, especially in the CIS, although the magnitude of labor reallocation differed across countries. First, many workers moved out of manufacturing as industries adjusted to market forces. This is reflected in significant declines in the share of employment in industry, especially in the CIS, where it fell by around 13 percentage points. Second, workers shifted to market-based services in both the EU-10 and the CIS. At the beginning of the transition, these economies had small service sectors. These sectors grew in response to demand and increased their share in employment by around 16 and 9 percentage points in the EU-10 and the CIS, respectively, moving closer to the patterns observed in advanced market economies. Third, labor in the low income CIS countries shifted

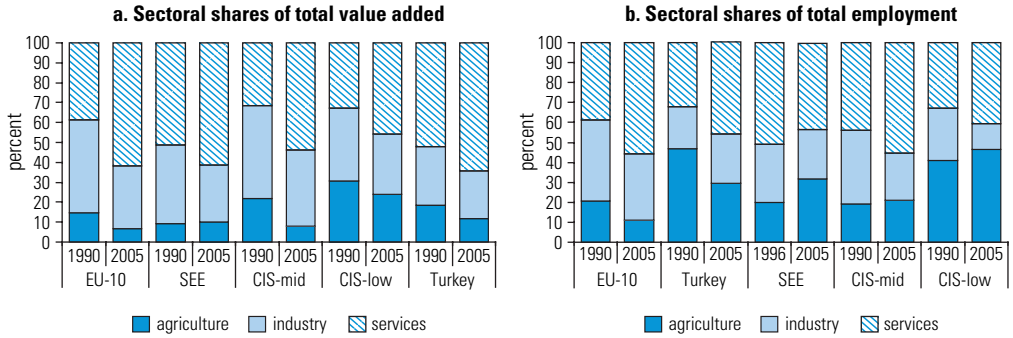
UP_i-46.qxd 3/27/08 1:44 PM Page 15

to agriculture, which increased its employment share by around 20 percentage points. This occurred because agriculture played the role of a social safety net and absorbed displaced labor from urban industries.

The broad shift to services drove up overall productivity levels. Since value added per worker is the lowest in agriculture and the highest in services in most countries (the exception is the CIS), the shift in employment away from agriculture and manufacturing into services raised labor productivity (figure 11).

FIGURE 10

The Share of Services in Value Added and Employment Has Risen

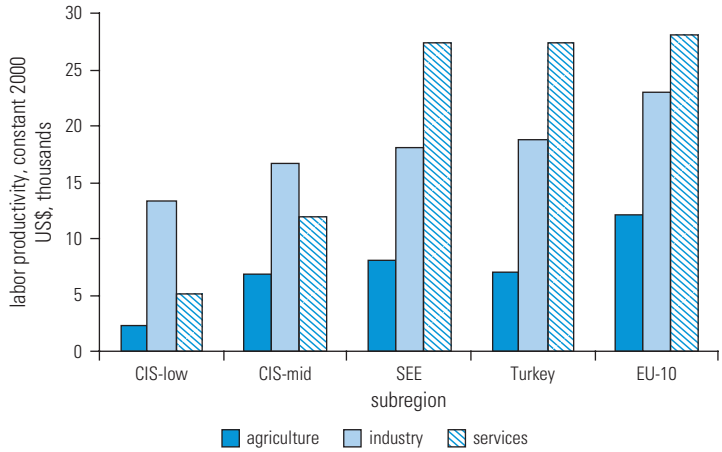


Sources: World Bank staff calculations; World Development Indicators Database 2007.

Note: Employment is proxied by labor force participation. The definition of services in the World Development Indicators Database includes government services and market services. The definition of industry covers manufacturing, construction, electricity, gas, and water.

FIGURE 11

Higher Value Added per Worker in Services Raised Overall Labor Productivity in Most Countries 1999–2004



Sources: World Bank staff calculations; World Development Indicators Database 2007.

UP_i-46.qxd 3/27/08 1:44 PM Page 16

Efficiency Gains within Sectors Have Been More Important Than Cross-Sectoral Shifts

The sources of aggregate productivity growth may be divided into three components, as follows:

- The *within* effect captures the impact of productivity growth in individual sectors on aggregate productivity in the economy.
- The *between* effect captures the impact of the reallocation of employment across sectors. A positive between effect means that aggregate productivity rises because the sector displays higher than average productivity and labor is moving into the sector or because the sector has lower than average productivity and labor is leaving the sector.
- The *cross* effect captures the impact of the reallocation of employment into sectors exhibiting growing productivity. A positive cross effect means that aggregate productivity increases because employment has moved to sectors showing positive productivity growth (or out of sectors with negative productivity growth).

The sectoral reallocation effects have been substantial in the Region, but they tend to cancel each other out. Labor is generally moving to sectors with high productivity levels (services) and out of sectors with low productivity levels (agriculture). This is reflected in a positive between term. At the same time, labor is moving out of sectors with increasing productivity growth (agriculture, manufacturing) and into sectors with decreasing productivity growth (services). This is reflected in a negative cross term.

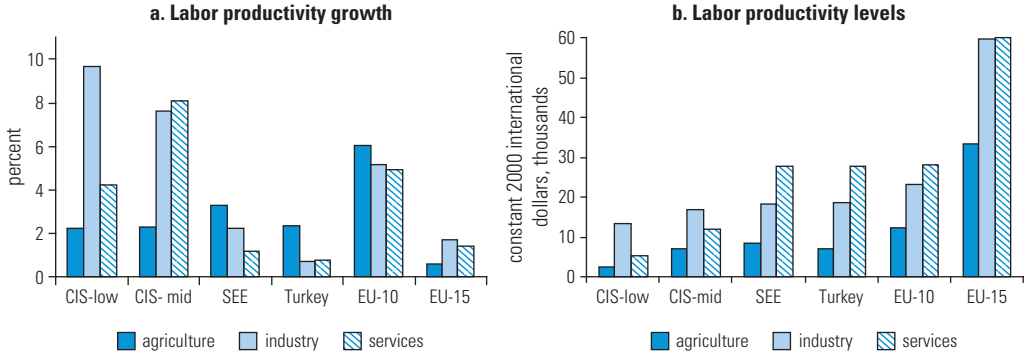
Productivity growth in manufacturing and agriculture exceeded productivity growth in services, although the patterns varied across countries. In Turkey and the SEE, agricultural productivity growth exceeded productivity growth in manufacturing and services (figure 12). In the EU-10, productivity grew more rapidly in manufacturing and agriculture than in services. Productivity growth in the CIS has been the highest in the Region, particularly more recently, and has followed a similar pattern across all three sectors, reflecting a broad-based economic recovery after the deep recession.

In agriculture, labor shedding seems to be the main driving force behind the strong productivity surge in the Region. In labor-intensive regions (typically in countries such as Albania, Armenia, Georgia, and the Kyrgyz Republic), a shift from large-scale collective farming to small-scale individual farming caused dramatic gains in technical efficiency, but relatively small losses in scale efficiency. In capital- and land-intensive regions (in countries such as the Czech Republic,

UP_i-46.qxd 3/27/08 1:44 PM Page 17

FIGURE 12

Labor Productivity Growth was High, Particularly in the CIS, 1999–2004



Sources: World Bank staff calculations; World Development Indicators Database 2007.

Hungary, and the Slovak Republic), gains in labor productivity arose primarily because large farms shed labor as they were privatized and because of intersectoral labor reallocation as workers moved away from agriculture to more rapidly growing industries in manufacturing and services. In countries in which neither type of reform was implemented vigorously, productivity gains were generally modest. During the first stage of transition, trade liberalization, the elimination of subsidies, price liberalization, and land reforms were required to accelerate farm restructuring and facilitate the sectoral reallocation of labor. As countries progress along the transition path, an improved investment climate and stronger competition in services are needed to improve within-farm productivity growth and provide off-farm job opportunities.

Productivity growth in manufacturing has been driven by efficiency gains in industries with higher capacity for innovation.[4] High-technology manufacturing industries led the productivity growth in the manufacturing sector, exhibiting the highest annual average productivity growth rates. This group of manufacturing industries employs a large share of highly skilled workers, produces ICT goods, or uses a relatively large amount of ICT capital. The high-technology group includes manufacturers of office machinery, electrical and electronic equipment, and optical instruments. Low-technology manufacturing industries, such as traditional consumer goods manufacturing, posted a lower average productivity growth. Not surprisingly, high-technology industries display higher TFP growth in countries showing more progress in the liberalization of key service industries, deeper financial markets, a more highly skilled workforce, more flexible labor markets, and more R&D investments by the private sector.

UP_i-46.qxd 3/27/08 1:44 PM Page 18

Productivity growth in services has been driven by backbone industries such as transport, telecommunications, and financial intermediation. These industries have shown higher productivity levels and a greater propensity to use or produce ICT such as retail trade, transport, telecommunications, and financial intermediation services. The productivity growth in these sectors during 1997–2004 surpassed the average productivity growth achieved among the EU-15. Nevertheless, a substantial gap remains in productivity levels.

The strong performance of these service industries suggests that there is a potential for growth driven by services. The efficiency of backbone services is crucial to the productivity of other sectors in the economy and for integration into global markets. It also enables firms to participate in the global fragmentation of the production of services, which leads to increased service exports.

The potential gains will not be achieved automatically, however. The penetration and efficient use of ICT in services are still limited. Investments in ICT in services will bring about large productivity gains. Policy makers in the Region can play a major role in sustaining the momentum of growth in the service sector by pursuing service liberalization across the board, removing regulatory barriers that limit competition in various service industries, and attracting more foreign direct investment (FDI) and greater trade flows.

Firm Dynamics Contributed to Productivity Growth More Than Sectoral Changes Did

The analysis of cross-sectoral shifts hides substantial firm dynamism within industries. The reallocation of workers and firms from less-productive activities to more-productive activities is important in promoting productivity growth in any market economy, but it assumed a greater role in transition economies because of the highly distorted industrial structures inherited from central planning. Faced with the radical transformation of the economy, firms in all countries were forced to adapt their behavior. Some firms increased productivity through *defensive* restructuring (labor shedding), while others did so through *strategic* restructuring (the adoption of new technologies). New firms entered the market, occupied emerging niches and displaced obsolete firms that had been forced to exit the market.

Evidence at the firm level reveals how individual enterprises managed to reallocate resources, improve efficiency, and enter or exit business operations. It also sheds light on the obstacles that firms face in these tasks. Drawing on firm-level data, one may

UP_i-46.qxd 3/27/08 1:44 PM Page 19

decompose aggregate productivity growth into three main components, as follows:

- The *within* component accounts for the productivity growth taking place within firms.
- The *reallocation* component captures the productivity gains derived from the reallocation of labor across firms. It is the sum of two terms: between and cross. The between component reflects gains that arise as high-productivity firms acquire greater market share or as low-productivity firms lose market share. The cross component reflects increases in aggregate productivity that arise as firms showing high productivity growth gain market share (or as firms showing low productivity growth lose market share).
- The *net entry* component (also known as firm turnover or firm churning) reflects the productivity gains resulting from the creation of new, more productive firms and the exit of obsolete firms. This component is calculated as the sum of two terms: firm entry and firm exit.

This decomposition of labor manufacturing productivity growth draws on empirical work carried out by Bartelsman and Scarpetta (2007) and Brown and Earle (2007). Their findings suggest the following:[5]

- *Productivity gains within existing firms account for the bulk of productivity growth, especially in early reformers*. In some early reformers, within-firm productivity growth accounts for more than 80 percent of total manufacturing productivity growth. In late reformers, it accounts for between 30 and 60 percent of overall manufacturing productivity growth.
- *The reallocation of labor across existing firms plays a significant role in productivity growth, especially in late reformers*. Reallocation rates are particularly large in countries that are still addressing the resource misallocations inherited from central planning. Reallocation amounts to 15–20 percent of total manufacturing productivity growth in early reformers, but may account for up to 70 percent of total manufacturing productivity growth in some late reformers. Reallocation rates are higher in the latter group of countries, ranging from 15 to 30 percentage points. In early reformers, reallocation rates are only about 6 percentage points. In late reformers, the cross term tends to be negative. This implies that firms experiencing an increase in productivity have also lost employment share (that is, the productivity growth of these firms

UP_i-46.qxd 3/27/08 1:44 PM Page 20

has been associated with restructuring and downsizing rather than expansion).

- *Firm churning is also an important driver of productivity growth in transition economies, especially among the late reformers*. Firm turnover is also an important driver of total productivity growth in advanced market economies, accounting for 20–50 percent of total productivity growth. In these countries, the exit effect is positive (that is, the least productive firms exit the market, thereby helping to raise the average productivity of firms that survive), whereas the entry term has tended to be negative.[6] In late reformers, in contrast, the entry term tends to be positive and contributes about 10 percent to aggregate manufacturing productivity growth.

Efficiency Gains within Firms Drive the Bulk of Productivity Growth

The bulk of productivity growth arises from efficiency gains within existing firms. This is axiomatic in regard to healthy market economies, but it is also true in transition economies. Nonetheless, firms improve their productivity in different ways, reflecting variations in the broader country business environment in which they operate. In late reformers, within-firm productivity growth is mostly driven by the utilization of excess capacity and by defensive restructuring (shedding labor and adopting other cost-cutting strategies). In Russia, the available survey data suggest that capacity utilization rates in manufacturing industries have increased appreciably since 1999. In contrast, in early reformers, firms improve their productivity through strategic restructuring, that is, by investing in new technologies and improving the value added content of products and exports. Figure 13 compares the contributions to manufacturing productivity growth (expressed in percentage points) in Hungary and Ukraine.

The available empirical evidence shows a great deal of firm heterogeneity. Firm manufacturing productivity patterns vary according to several factors, including location, firm size, ownership, and industry.

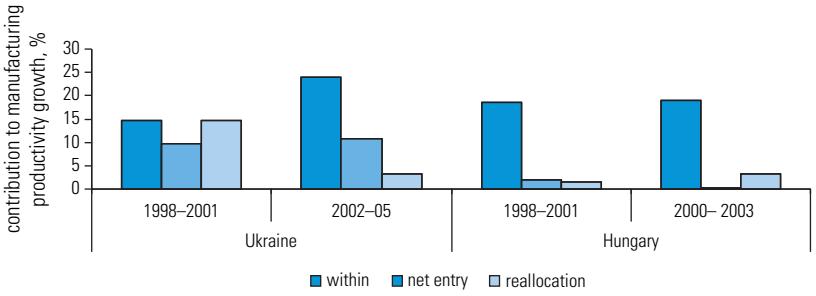
- *Location*. Firms located in rapidly reforming areas enjoy higher productivity growth than those located in laggard areas reforming slowly. This is the case in Ukraine. Similarly, firms located in areas with better transport infrastructure tend to exhibit higher productivity growth relative to firms located in areas with greater transport deficiencies.

- *Firm size*. Among large firms (250 or more employees), within-firm productivity gains are larger relative to small firms (less than

UP_i-46.qxd 3/27/08 1:44 PM Page 21

FIGURE 13

As Transition Proceeds, Productivity Growth Is Driven Mainly by Efficiency Gains within Firms



Source: Brown and Earle 2007.

50 employees) and medium firms (50 to 249 employees), although the reallocation effects are larger among small firms. Among large firms, the net entry contribution to total productivity growth is often negative.

- *Firm ownership*. In the new private sector (private firms established since the beginning of transition), manufacturing productivity growth is higher relative to the old private sector (firms established prior to the transition). Within-firm productivity growth is nearly twice as high in the new firms relative to the old firms in Hungary and Russia. In Russia and Ukraine, the reallocation effects are larger among the new firms relative to the old firms. There are also different productivity patterns among state-owned firms and private firms. Reallocation tends to contribute more to productivity growth among private firms relative to state-owned firms. This is the case in Hungary and Romania. However, in Russia and Ukraine, private firms are still less productive, on average, than state-owned firms. The contribution of the reallocation of resources among incumbent firms is also much greater among private firms in Hungary and Romania than among private firms in Russia and Ukraine. These differences are related to the modes of privatization and the degree of market competition (see the next section). Foreign-owned firms tend to show higher productivity growth than domestic private or state firms, except in Russia. The large productivity growth enjoyed by foreign firms is driven mainly by within-firm productivity growth.

- *Industry*. Firms operating in ICT-related industries display higher productivity growth. Firms operating in ICT-related industries rely on strategic restructuring, thereby improving their productivity by

UP_i-46.qxd 3/27/08 1:44 PM Page 22

adopting new and better ways to produce goods. In contrast, firms in non-ICT industries tend to engage in defensive restructuring to increase productivity, mostly by shedding labor. Overall, firms in non-ICT industries tend to show lower productivity growth than firms operating in ICT industries. Firm entry also plays an important role in boosting productivity in ICT-related industries, whereas the contribution of new firms to productivity growth is negative in non-ICT industries. This is particularly the case in the early reformers, where a large number of new firms emerged in industries with greater opportunities for innovation. The better performance of companies operating in ICT-intensive sectors may be considered evidence of the presence of technological spillovers. If a firm operates in a high-technology environment, it is more likely to absorb new developments quickly and to boost productivity more extensively. Similarly, firms in industries that depend on external financing tend to enjoy higher productivity growth, particularly in countries with deeper financial markets. In late reformers, there is also a productivity growth gap between industries that are highly reliant on external financing and those that depend little on external financing, although the gap is similar across countries.

Firm Churning Contributes to Productivity Growth

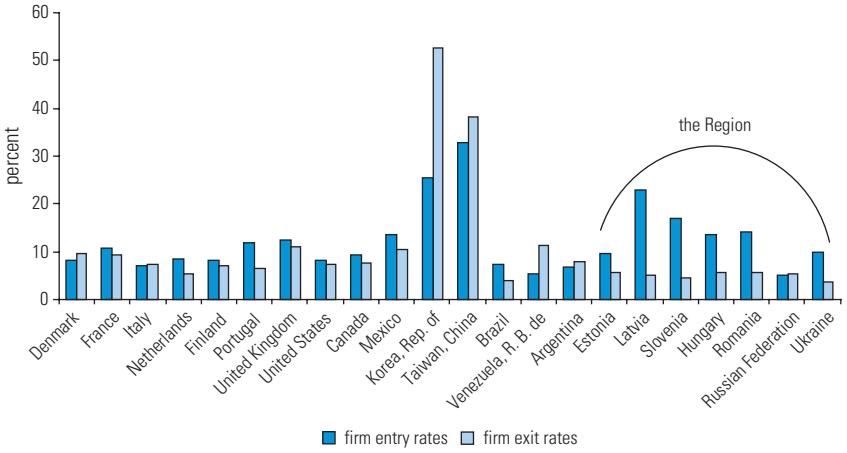
The process of creative destruction, whereby a significant number of businesses start up or close their operations, encourages firms to experiment and learn. It rewards success, and it punishes failure. Healthy market economies exhibit fairly high rates of firm entry and exit; from 5 to 20 percent of firms enter or exit the market every year. In the Region, about 20 percent of firms have been created or destroyed during the past decade (figure 14).

Firm turnover is an important driver of productivity growth in transition economies, especially in late reformers. In early reformers at the start of the transition, the contribution of net entry was large and accounted for between 20 and 40 percent of total productivity growth. Over time, the relative contribution of net entry declined and converged to levels similar to those observed in advanced market economies. In late reformers, the contribution of firm churning to total productivity growth is still substantial and has been increasing in recent years. In Russia, net entry accounted for over 17 percent of total manufacturing productivity growth in 1998–2001 and increased to 46 percent in 2001–04. In most late reformers, where low-productivity firms—because they are sheltered from competitive pressures—have managed to contain job destruction, the effect of firm entry also tends to be larger

UP_i-46.qxd 3/27/08 1:44 PM Page 23

FIGURE 14

Business Start-Ups Have Exceeded Business Exits in Most Countries



Sources: Bartelsman and Scarpetta 2007; Brown and Earle 2007.

than the effect of firm exit. This suggests that entering firms may still have to undergo downsizing and restructuring.

The size and timing of firm churning vary across countries. In Hungary, at the onset of the transition, a large share of firms closed down and were replaced by new, small ventures, largely as a response to privatization reforms (figure 15). Over time, net firm flows declined to values fairly close to those observed in advanced market economies. In late reformers, such as Russia, firm turnover flows were remarkably low, and, during the second half of the 1990s, firm exit rates exceeded firm entry rates. After the 1998 crisis, this trend was reversed, and the number of new firms exceeded the number of firms that disappeared. The size of firm churning also varies across industries. Firm turnover rates (especially if they are weighted by employment) are higher in service industries (especially in trade) than in manufacturing industries. However, in most countries, some high-technology industries experiencing rapid technological change and market experimentation showed relatively high entry rates in the 1990s (for example, office computing and office equipment, as well as radio, television, and communications).

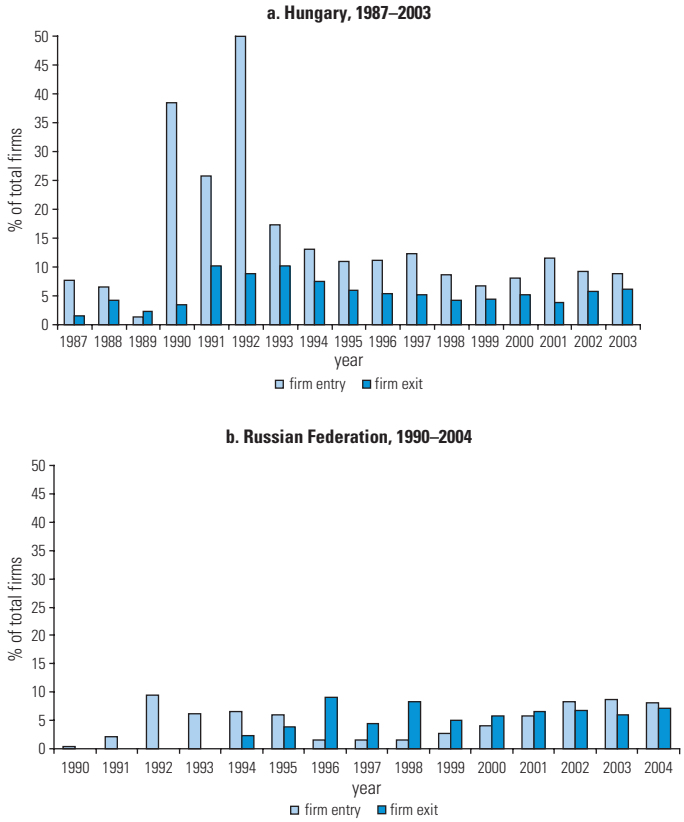
The productivity performance of entrants relative to incumbents varies across countries:

- *Entrants tend to show higher productivity than incumbents* in countries where reforms are lagging, while, in early reformers, the relative productivity is lower among entrants than among incumbents, though it tends to rise among entrants as they age. In Hungary and

UP_i-46.qxd 3/27/08 1:44 PM Page 24

FIGURE 15

Hungary's Reforms Led to Increased Firm Entry, While the 1998 Crisis Prompted Firm Exit in the Russian Federation



Source: Brown and Earle 2007.

Note: Firm flow data in the early years of the transition may be affected by data quality issues.

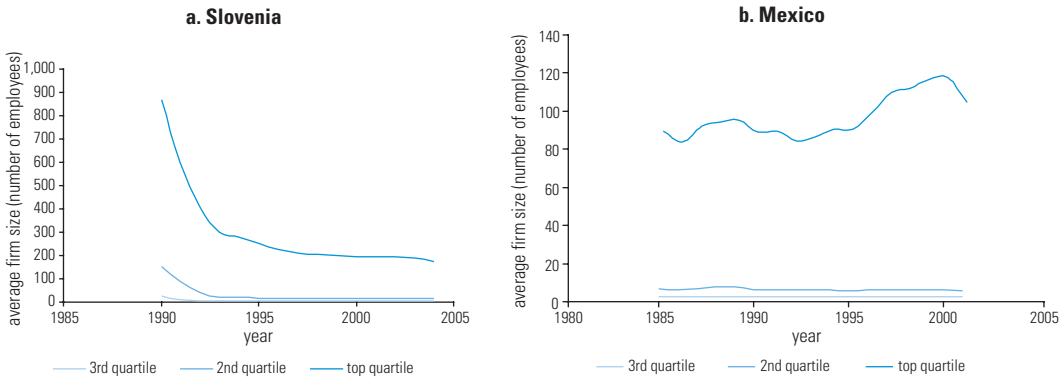
Romania, entrants are less productive than the average incumbent, which might signal that they are experimenting more. This pattern is similar to the one observed in the Organisation for Economic Co-operation and Development (OECD), where entrants often lack experience, and small size often makes new firms less productive. In contrast, in Georgia, Russia, and Ukraine, entrants are (on average) more productive than incumbents. They have been able to fill niches, mostly in market services, that were underdeveloped or nonexistent during central planning (figure 16).

- *Entrants tend to be small relative to incumbents in most countries*. Under the centrally planned system, there were relatively few small firms, but, during the transition, the number of small firms shot up, particularly in business service activities. At the same time, many of the entrants that failed during the initial years were also relatively small.

UP_i-46.qxd 3/27/08 1:44 PM Page 25

FIGURE 16

In Slovenia, the Largest Manufacturing Firms Have Shrunk, While, in Mexico, They Have Expanded



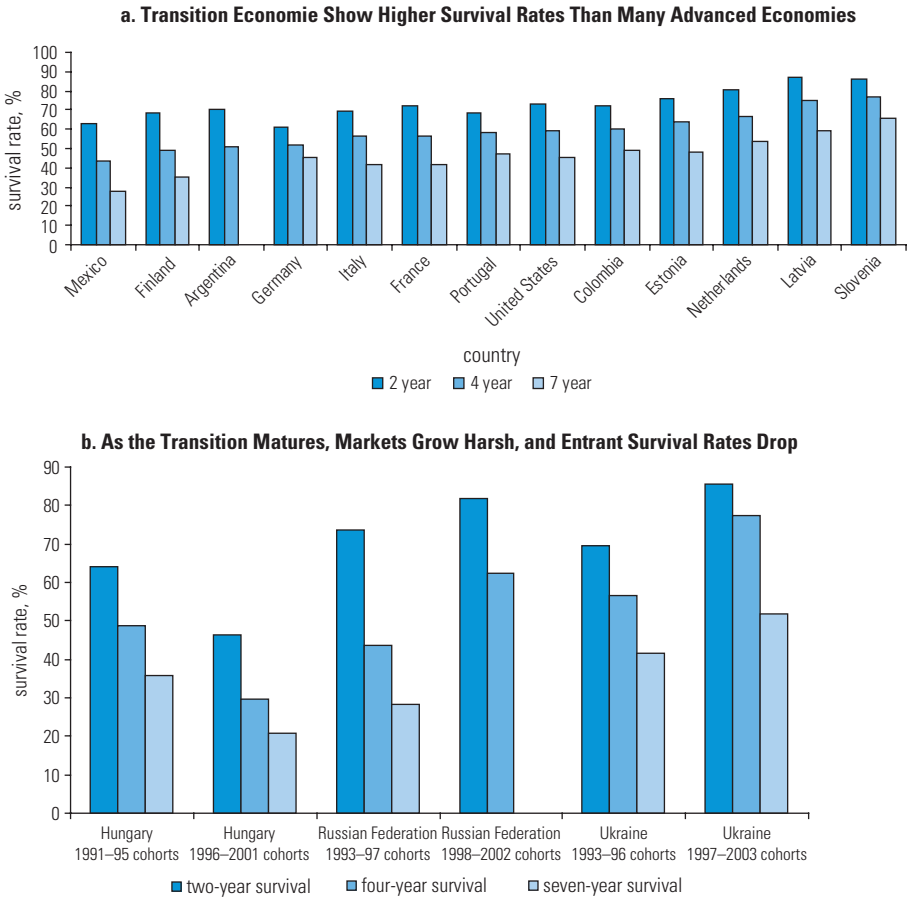
Source: Bartelsman and Scarpetta 2007.

- *Entrants tended to exhibit high survival rates at the beginning of the transition.* An understanding of post-entry performance sheds light on the market selection process, which separates successful entrant firms that survive and prosper from entrant firms that stagnate and eventually exit. Survival rates after entry are higher in Russia and Ukraine. In Estonia, Latvia, and Slovenia, but also in Romania and Hungary, around 70 percent of entering firms survive at least four years. In contrast, in Mexico, firm survival rates are much lower, pointing to harsher market selection or higher variance in the quality of entrants. It may also be that entrants in the transition economies were actually restructured firms that reentered the market with employees who possessed experience and with established connections with customers and suppliers. Such an advantage is likely to diminish over time (figure 17).
- *As countries progress along the transition path, the market becomes harsher and the survival rate of entrants drops.* Entrants show rapidly declining probabilities of survival (especially in Russia, where less than 10 percent of entrants are still in business after seven years). In Hungary, 25 percent of entrant firms are no longer active in the market after two years; the figure is 50 percent after five years, and, after seven years, about 70 percent of new firms have exited. Failure rates among young businesses are high in all market economies, but, in industrial countries, about 50–60 percent of new firms are still in business after seven years. In the Baltic states (Estonia, Latvia, and Lithuania), entrants face an environment that is slightly less harsh than the environment in the EU; about

UP_i-46.qxd 3/27/08 1:44 PM Page 26

FIGURE 17

Entrants Survival Rates Are Higher In The Region Than In Advanced In Economies



Source: Brown and Earle 2007.

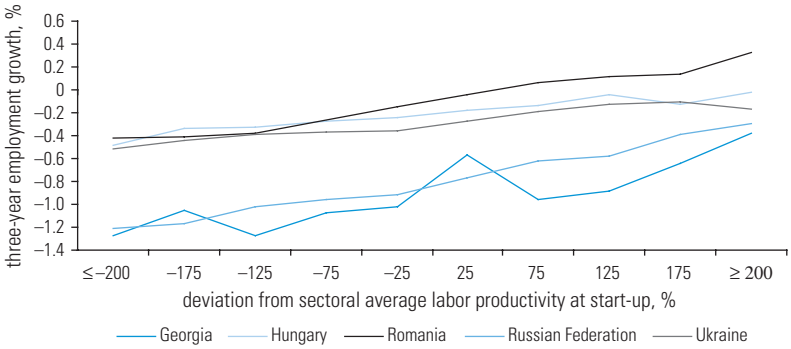
70 percent of entrants survive at least four years, and 50–60 percent survive at least seven years.

- *Successful entrants that exhibited higher initial productivity tend to create more jobs*. The probability of employment growth is strongly associated with a firm's initial productivity performance. In many countries in the Region, the most productive entrants provided the most stable employment over the first three years of firm operations (figure 18).
- *But, even successful entrants have not expanded significantly in the Region; this is especially true of large firms in manufacturing.* At the start of the transition, firms in Estonia, Latvia, and Slovenia exhibited substantial declines in size, especially in manufacturing. The largest

UP_i-46.qxd 3/27/08 1:44 PM Page 27

FIGURE 18

Entrants with Higher Labor Productivity Are More Successful at Maintaining the Workforce



Source: Brown and Earle 2007.

quartile of firms in manufacturing was particularly affected. In Slovenia, the average size among firms in the largest quartile had dropped from more than 800 to 200 employees by the early 2000s. In the Baltic states, no sign of an increase in firm size has been apparent. Indeed, the size of the largest firms in Estonia, Latvia, and Slovenia declined during the transition. The question remains whether firms in these countries are able to benefit fully from the opportunities of economic integration into the EU and an enlarged market. The lack of growth in large manufacturing firms contrasts with the case of Mexico. In Mexico, there has been a rapid expansion in the mean size of manufacturing firms in the largest quartile from 80 to 120 employees per firm (figure 16), and the average size of the largest firms grew rapidly during the first years following the adoption of the North American Free Trade Agreement.

Resource Reallocation across Existing Firms Contributes to Productivity Growth

The reallocation of labor across existing firms also contributed to productivity growth, and its role was particularly large at the start of the transition. In countries at the early stages of transition, the between term tended to be large and positive, indicating that firms with higher than average productivity levels were gaining market share. At the same time, the contribution to total productivity growth of the cross term (shifts of resources toward firms with higher than average productivity growth) is negative. This suggests that firms experiencing an increase in productivity were also losing employment shares, that

UP_i-46.qxd 3/27/08 1:44 PM Page 28

is, their productivity growth was associated with restructuring and downsizing rather than with expansion.

The rapid pace of restructuring in transition economies is not evidence of the competitive conditions observed in healthy market economies. The pace of entry and exit and the contribution of reallocation to productivity in mature economies point to an ongoing, steady-state process that exerts pressure on incumbents to perform well. In late reformers, which are not so far along in the transition process, reallocation is less an indicator of the overall state of competitiveness of the market and more a reflection of a major change in the supply side of the economy. In early reformers, the pattern is different. Once the net entry rate has become settled, a lack of correlation between the net entry component of growth and incumbent growth may be more indicative of problems in competition.

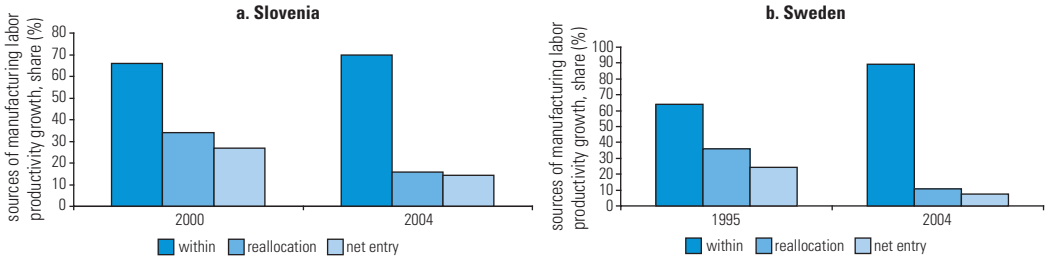
As the transition matures, the role of reallocation and firm turnover in aggregate productivity growth declines, converging toward the patterns observed in advanced market economies. Not surprisingly, the contributions of reallocation and net entry (or firm churning) to overall productivity growth decrease as countries move along the transition path. After the major distortions inherited from the central planning period have been addressed and after the pre-transition void in certain activities has been filled, productivity decompositions in advanced reformers tend to converge toward those observed in advanced market economies (figure 19).

Reallocation, Firm Turnover, and Within-Firm Productivity Growth Reinforce Each Other

The analysis above focuses on the direct contributions of firm productivity gains within existing firms, labor reallocation across existing

FIGURE 19

The Role of Reallocation and Firm Turnover in Productivity Growth in Early Reformers Is Now Similar to That in Advanced Market Economies



Sources: Bartelsman and Scarpetta 2007; Brown and Earle 2007.

UP_i-46.qxd 3/27/08 1:44 PM Page 29

firms, and firm churning to overall productivity growth. The contributions of labor reallocation and firm turnover are often interpreted in the literature as a reflection of a process of creative destruction, while the within-firm contribution is interpreted as a reflection of more traditional sources of productivity growth (the average firm becomes more productive with advancing technology). But, rather than alternatives, these effects (within-firm productivity growth, labor reallocations, and firm churning) may be closely related. A stronger pace in firm creation and destruction may also influence the decisions of domestic firms about efficiency-enhancing investments. The entry of productive firms may increase the contestability of the market, forcing some firms to exit, but also raising the pressure on incumbents to perform more effectively.

Notwithstanding the observed decline in the role of labor reallocation and firm turnover among early reformers, the process of creative destruction is still active in the Region. Among the early reformers, the transition is over, but the Schumpeterian process of creative destruction is not. The large contributions of reallocation across sectors and firm turnover have now declined to the levels observed in advanced market economies. But this does not mean that reallocation and firm turnover will be unimportant for productivity growth. In advanced market economies, these factors tend to be correlated with the business cycle, and this is likely to be the case in the early reformers as well. The fact that productivity dispersion in the Region is still greater than it is in the United States suggests that there is plenty of room in the Region for significant productivity growth via reallocation and firm turnover.

While, in advanced market economies, new entrants exert pressure on incumbents to perform more efficiently, this is not the case in the Region. This is so for the following reasons:

- In advanced market economies, the greater competitive pressure exerted by entrants induces incumbents to perform more efficiently. In the OECD, there is a strong, positive, and statistically significant correlation between the contribution of net entry and the productivity growth of incumbents (Bartelsman and Scarpetta 2007). There is also evidence that sectors with many entrants push incumbents in these sectors to increase their productivity. But, even in the OECD, the impact of entry on the productivity of incumbents varies across industries. Based on data on firms in the United Kingdom over 1987–93, a study by Aghion (2006) finds that the effect of entry on productivity growth is more positive in industries that are close to the technological frontier than in industries that are not close to the frontier.

UP_i-46.qxd 3/27/08 1:44 PM Page 30

- In the Region, firm churning does not exert pressure on incumbents to improve productivity. Particularly among late reformers, the relationship between the performance of incumbents and net entry is weaker (figure 20). The lack of pressure from new firms on incumbents reflects weaker market competition. It may also be partly caused by the high failure rates among new businesses.

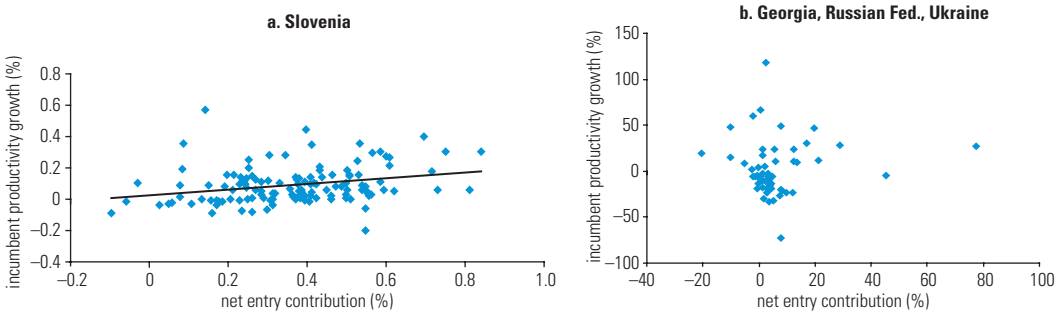
Distortions in market structure and institutions also affect productivity growth. Allocative efficiency has improved in the Region, although it remains low by international standards. Early in the transition, resources were locked in lower-productivity firms, on average, but the allocation rapidly improved over time with the exit of poor firms and the movement of resources toward more-productive firms. But even early reformers—the EU 10—still display lower allocative efficiency than the EU-15 and the United States, suggesting that there is room for additional adjustments (figure 21).

Firm Dynamics have Brought About a Remarkable Surge in Job Flows

At the beginning of the transition, gross and net firm flows were large relative to industrial and other emerging economies. Firm-level data on a sample of countries in the Region and a number of comparator countries provide insights on the size of firms and job dynamics. In modern economies, gross rates of job creation and destruction range between 5 and 20 percent, adding up to job turnover of up to 40 percent. A significant part of this job turnover (often 30–50 percent) is due to the entry and exit of firms. In the Region, job reallocation rates across

FIGURE 20

In Late Reformers, Firm Turnover Has Not Spurred Productivity Gains in Existing Firms

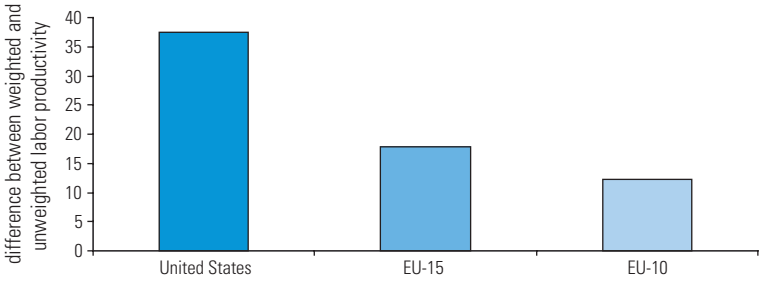


Sources: Bartelsman and Scarpetta 2007; Brown and Earle 2007.

UP_i-46.qxd 3/27/08 1:44 PM Page 31

FIGURE 21

Allocative Efficiency Remains Low in the Region



Source: Bartelsman and Scarpetta 2007.

Note: The figure shows the average Olley-Pakes cross term in manufacturing.

firms surged rapidly in response to transition. Job reallocation (the sum of job creation and destruction) increased dramatically, from less than 10 percent of the workforce before the transition to about 20 percent in the 1990s. As the transition moved forward, net firm flows declined and, at the end of the 1990s, had reached values fairly close to those observed in other countries.

Firm turnover contributed substantially to overall job creation during the earlier stages of the transition, but the contribution declined over time. Firm entry outpaced firm exit at the start of the transition, contributing significantly to job creation (25 to 50 percent). New firms not only displaced obsolete incumbents during the transition phase, but also filled markets that had previously been either nonexistent or poorly populated. After firms had filled these pre-transition voids, job creation arose increasingly from the expansion of surviving firms.

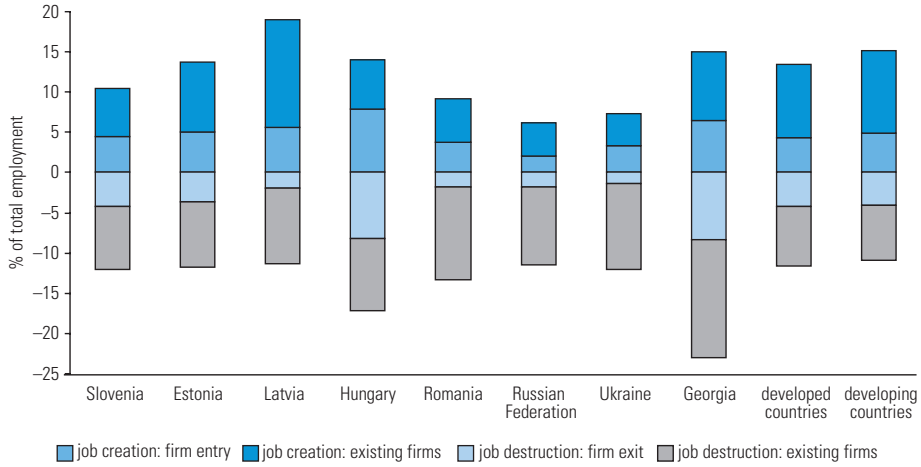
The contribution of firm exit to job destruction followed different trends across countries. In the OECD, firm exit is strongly correlated with job destruction. This is not the case in the Region, particularly among the late reformers. In these countries, the share of job destruction by continuing firms is much larger than the share of job destruction resulting from firm exit (figure 22). These patterns confirm earlier findings that existing firms in late-reforming countries resorted to defensive restructuring to improve productivity by downsizing and shedding redundant labor.

In countries where job flows were not synchronized, job creation lagged behind job destruction. Job destruction generally surged first, but the response of job creation varied across countries; it caught up rapidly with job destruction in the leading reformers, but remained

UP_i-46.qxd 3/27/08 1:44 PM Page 32

FIGURE 22

Labor Shedding at Existing Firms Was the Main Source of Job Destruction



Sources: Bartelsman and Scarpetta 2007; Brown and Earle 2007.

less consistent than job destruction for prolonged periods in the lagging reformers. In countries lagging in market-oriented reforms, such as Russia, stringent labor market regulations discouraged job creation, and as a result, job destruction rates exceeded job creation. In some instances, these unsynchronized job flows gave rise to unemployment (or underemployment, that is, low-productive employment in the informal sector). In contrast, in early reformers, such as Hungary, job creation rapidly caught up with job destruction, giving rise to synchronized job flows (figure 23).

In services, job creation exceeded job destruction owing to the growing role of services in the Region. The service sector, underdeveloped during the central planning period, grew and gained shares in value added and employment. The growth in the sector also reflected an explosive expansion in new firms in markets that had previously been nonexistent or poorly populated. As a result, there were net employment gains in most countries (figure 24).

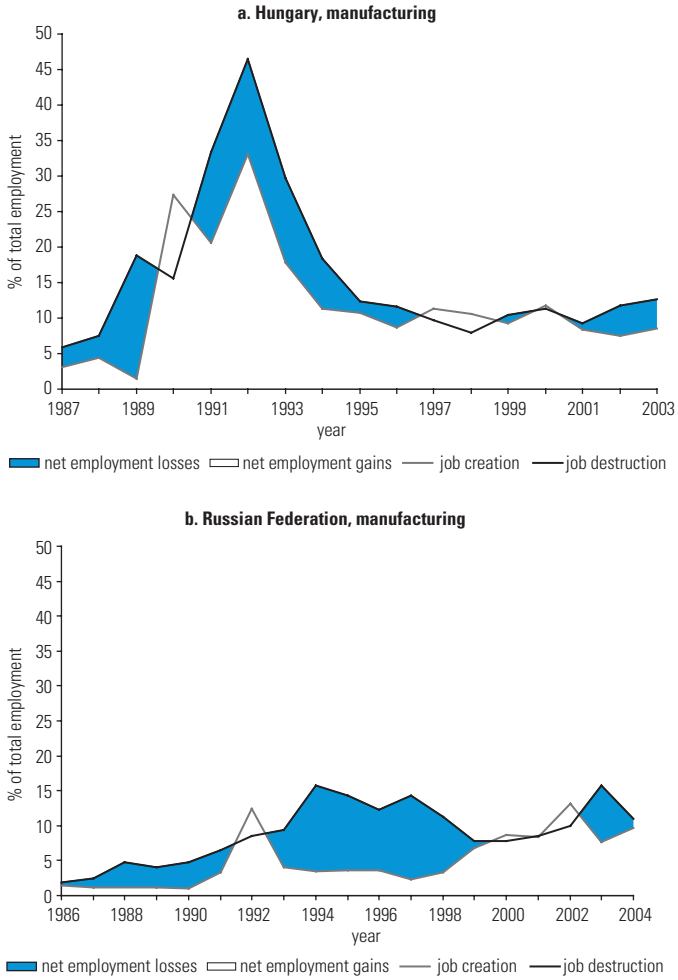
In Sum, Policy Reforms Should Stimulate Productivity and Remove Barriers to Firm Expansion

In late reformers, there is still a large misallocation of resources across firms, industries, and locations. This ongoing economic distortion calls for policy reforms to accelerate the pace of reallocation so that resources flow from less- to more-productive uses. The process of creative destruction (that is, the exit of unprofitable firms and the

UP_i-46.qxd 3/27/08 1:44 PM Page 33

FIGURE 23

Sometimes Unsynchronized Job Flows Gave Rise to Net Employment Losses



Source: Brown and Earle 2007.

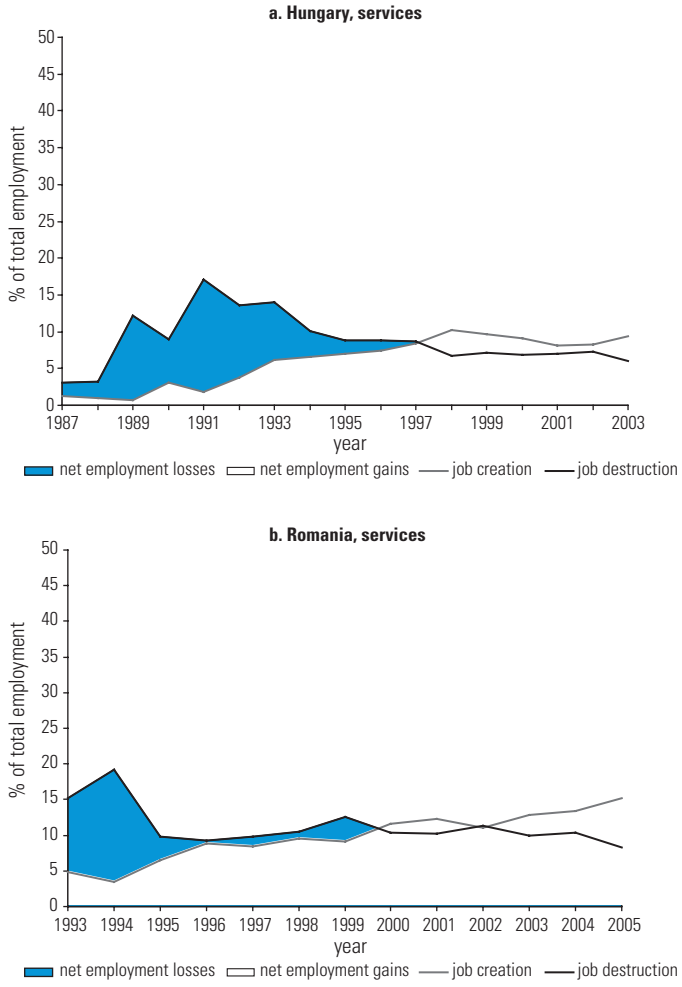
entry of more-productive ones) needs to be invigorated through privatization and stronger market competition.

Although productivity increases are largely driven by within-firm adjustments, firm entry and exit should play an important role in sustaining productivity growth in the years to come. By continuing to protect ailing firms and contain firm exit, the late reformers have not been able to free resources from less-productive uses for more-productive uses. Similarly, restrictive product land factor markets and the uncertain business environment discourage firm entry and

UP_i-46.qxd 3/27/08 1:44 PM Page 34

FIGURE 24

In Services, Job Creation Outpaced Job Losses



Source: Brown and Earle 2007.

the adoption of better technologies. To foster labor reallocation across and within sectors and firms, policies need to encourage workers to adapt to changing demands for labor and skills, for instance through reforms in the education sector.

In the early reformers, the main challenges revolve around stimulating innovation within firms and encouraging the expansion of successful firms. These countries also need to focus on reducing any remaining barriers to firm entry. In this regard, credit constraints, labor market rigidities, and deficiencies in tertiary and vocational education are likely to act as barriers to entry and innovation. Restrictive product, labor, and service markets may discourage the entry and growth

UP_i-46.qxd 3/27/08 1:44 PM Page 35

of new firms and may reduce innovative efforts and technology spillovers, and this negatively affects productivity growth.

While entry may be relatively easy for small businesses, firm survival seems to be more difficult. In addition, even though reallocation may enhance productivity in the economy as a whole, there are losers in the process. The losers include owners of obsolete businesses and displaced workers. The high incidence of business failures and job losses in some countries, such as Romania, is a clear source of concern.

The net employment losses observed in some countries of the Region are also the result of policy barriers that slow the pace of the reallocation of resources. The barriers include limited factor mobility (credit market frictions and rigidities in labor markets) and other regulatory constraints affecting firm entry and firm performance. It is, therefore, not surprising to observe that, in these countries, the informal economy still plays an important role as a temporary buffer by creating (less-productive) jobs.

Which Policies Drive Productivity Growth?

The decisions of firms to improve productivity are influenced by the incentive framework in which the firms operate, and the incentives are created or reinforced through government policies and institutions. The strong productivity performance in the Region has been a reflection of improvements in individual sectors and firms. Moreover, firms that have performed well in a particular sector tend to be located in countries that have made the most progress in reforming the policy and regulatory environment. Differences in the productivity performance across firms within the same industries, even during the growth episode in the late 1990s, have revived the debate over which policies drive productivity growth in the Region. What effect has globalization had on productivity? How do government policies and other features of the business environment contribute to firm and industry productivity growth? Which policies should be advocated?

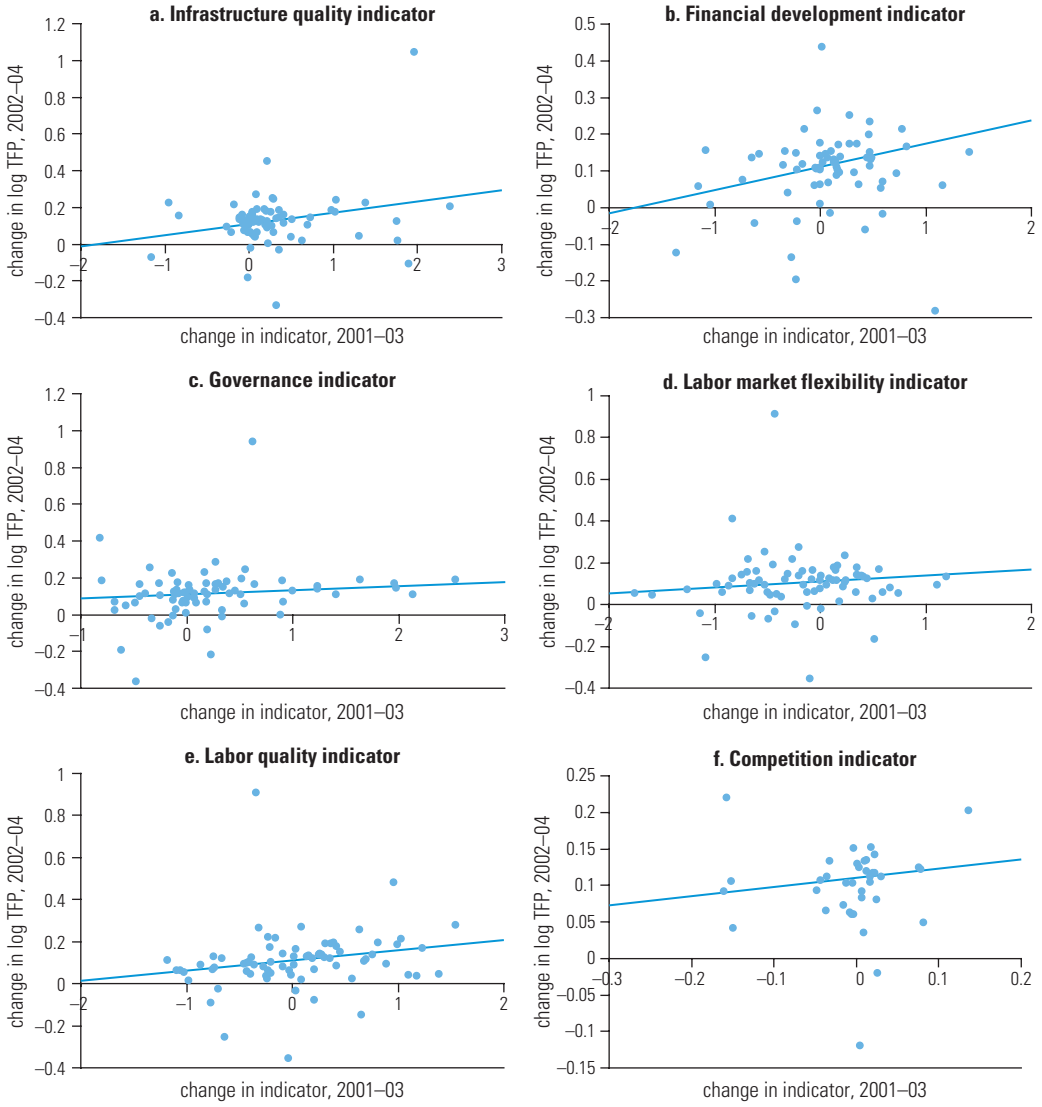
Policy Reforms Boost Firm Productivity

Evidence shows that firm productivity growth is associated with infrastructure quality, financial development, labor market flexibility, the quality of labor, good governance, and market competition (figure 25). The findings presented in this study are consistent with the findings of the large, cross-country empirical literature. Aggregate

UP_i-46.qxd 3/27/08 1:44 PM Page 36

FIGURE 25

Policy Reforms Boost Firm Productivity



Sources: Amadeus Database 2006; BEEPS 2002, 2005.

Note: The dependent variable is the change in log TFP from 2002 to 2004, subtracting the effects of all other regressors in the full model. See appendix 3 for the estimation methodology and model specification.

cross-country regressions, while generating useful insights, only provide crude indicators of the factors behind the productivity performance of individual countries. This analysis is bound to mask substantial variations within countries and within sectors because of the heterogeneity of firm responses to the policy and business environment in which the firms operate.

UP_i-46.qxd 3/27/08 1:44 PM Page 37

The empirical evidence suggests five areas for policy action: promoting good governance and macro stability, strengthening competition, investing in labor and technology, investing in infrastructure, and deepening the financial sector.

Ensuring Good Governance and Macroeconomic Stability

Improvements in governance lower transaction costs among firms by protecting and enforcing property rights, curbing burdensome administrative and judicial rulings, and ensuring good regulatory quality. Sound macroeconomic management holds inflation and fiscal deficits in check to maintain a stable economic environment. More broadly, good governance and macroeconomic management increase predictability and reduce risk in the business environment, which facilitates investment decisions by entrepreneurs. Improvements in corporate governance also contribute to firm productivity growth by increasing the accountability for poor performance.

The transition economies, especially the middle-income ones, must address their remaining macroeconomic vulnerabilities so as to sustain growth momentum. Notwithstanding recent gains in the acceleration of growth, some risks have re-emerged and grown in the light of the recent global credit crunch. Recent rapid growth may slow down. Inflationary and external pressures are building again as a result of the past few years of rapid growth, the quick expansion of credit, and rising food and energy import prices. Current account and budget deficits have grown in some countries. These excess demand pressures have generated concern over macroeconomic vulnerabilities and need to be addressed to provide the necessary, basic macroeconomic stability and governance. Toward this end, prudent fiscal and monetary policies must be maintained to reach stable inflation at low levels, a balance in banking and corporate sector governance regulations, effective supervision, sound competition policies that encourage efficiency, and the development of institutional structures and economic policy processes that permit rapid policy adjustments in response to shocks.

Strengthening Competition

Competition has a pervasive and long-lasting impact on economic performance because it affects the incentive structure among economic actors by encouraging innovative activities and by selecting more-efficient activities over less-efficient activities. At the start of the transition to a competitive market economy, the pressure to increase capacity utilization and institute privatization was the main trigger

UP_i-46.qxd 3/27/08 1:44 PM Page 38

of firm restructuring and productivity growth. In the longer term, however, productivity improvements need to be sustained through policies aimed at accelerating the reallocation of resources and promoting the introduction of new technologies. The contribution of entrants to productivity growth is thus critical, and it is particularly strong in higher-technology sectors.

Competition is needed in both product and service markets to foster productivity growth. Dynamic efficiency gains from product market competition, however, are unlikely to be achieved without well-functioning service markets. Service liberalization enhances the quality and availability of services through competition and economies of scale. The benefits of service liberalization are not limited to the service sector; they affect all economic activities. Given that services contribute an average of around 10–20 percent to the production cost of products and account for all trading costs (transport, trade finance, insurance, communications, and distribution services), the savings from stronger competition by foreign providers and the gains in competitiveness on international markets among services and goods may be substantial.

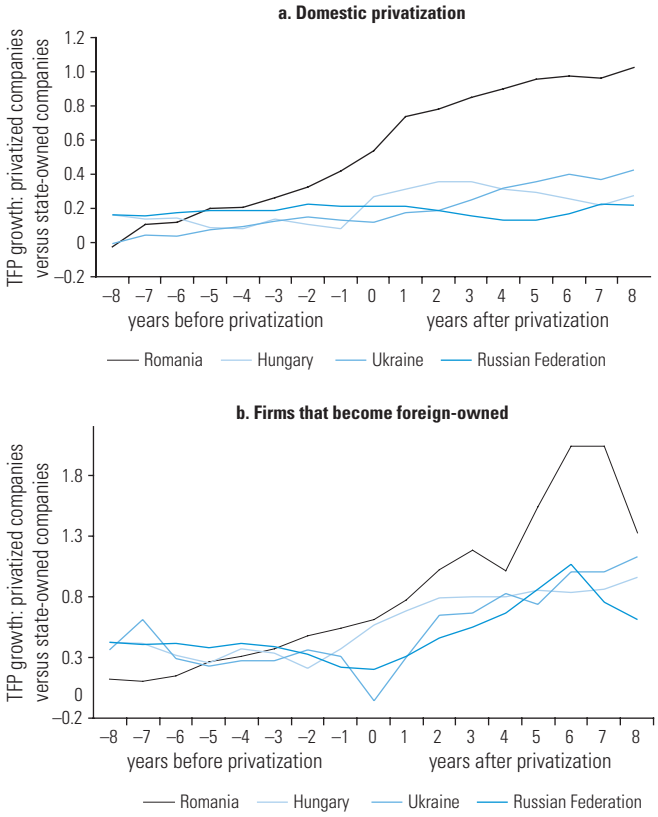
Privatization may also play an important role in productivity growth. Privatization reforms have been the main trigger of firm churning and restructuring in transition economies. The net impact of privatization on productivity growth has varied from country to country because transition countries have relied on different methods of privatization and have transferred ownership at a varying pace (figure 26). FDI may also provide domestic firms with access to more efficient technologies and open opportunities for entrants as suppliers, users, or service providers to foreign affiliates.

Policies to strengthen domestic competition are working but need to be reinforced. Since the start of the transition, the promotion of the entry of more-productive firms and the exit of old, less-productive firms has been a focus of public policy and has been seen as a key driver of economic transformation. Entry has best been promoted through the development of a positive investment climate, while the exit of old firms has best been accomplished through the imposition of market discipline. The imposition of market discipline—for example, through the hardening of budget constraints, the introduction of market competition, the enforcement of bankruptcy procedures, and better performance measurement—forces older firms to restructure and become more productive and compete or else face closure. But these policies primarily target reallocation and firm turnover, not within-firm productivity growth. For the latter, competition policies must facilitate integration with global

UP_i-46.qxd 3/27/08 1:44 PM Page 39

FIGURE 26

Privatization Has Raised TFP Especially in Countries That Attracted FDI



Source: Brown and Earle 2007.

production networks, integrate domestic factor and product markets, and strengthen the regulatory framework for service sector competition. An important new aspect of policies aimed at promoting within-firm productivity growth is the establishment of links between upstream production and downstream services.

Investing in Labor and Technology

A skilled workforce is essential for firm productivity growth because it enables firms to adopt new, better technologies. It also helps in accelerating the reallocation of resources. Skilled workers are more proficient at dealing with rapid change and are more flexible in moving across jobs. In the Region, high-technology sectors are absorbing younger and more highly skilled workers than are low-technology sectors, but many firms are facing increasing shortages in skills. A recent

UP_i-46.qxd 3/27/08 1:44 PM Page 40

World Bank report (Desai and Goldberg 2007) on the investment climate in Russia finds that shortages of management and technical skills in Russia have originated in deficiencies in the higher education and public research system and underinvestment in training at the firm level, which are common deficiencies in the Region. Training policies may help improve the productivity of labor across the Region. In some countries (the Czech Republic and Poland, for example), training policies have evolved to accommodate the increased demand for skills. In particular, they have focused on involving private training suppliers and on giving incentives for firms to provide formal training, although evidence on the effectiveness of such programs is patchy.

Countries need to exploit fully their fairly high human capital stock, solid scientific base, and well-developed research institutions to absorb and diffuse new technologies from abroad. Investing more and more effectively in higher education and promoting technological adoption and adaptation are key to catching up with the technological frontier, expediting growth, and accelerating convergence. Globalizing forces provide a substantial opportunity for countries to acquire labor skills and technology though FDI, licensing, and imports of capital goods. The low spending on R&D in the Region—at less than 1 percent of GDP compared with the EU's target of 3 percent—limits the potential for technology development, while the public nature of the spending restricts efficient application. Bringing in more private partnerships in R&D, as is the practice in more advanced countries, may help relieve financing constraints on the absorption and diffusion of new technologies and help any such investment generate higher returns.

Investing in Infrastructure

Improved infrastructure is important for firm productivity growth. Training alone will not suffice to enhance the capacity of firms to innovate. Firms in countries with access to modern telecommunications services, reliable electricity supply, and efficient transport links are more productive that those operating in countries without these advantages. In many countries in the Region, infrastructure deficiencies negatively affect firm productivity growth. Building and maintaining roads, ports, electricity grids, and telecommunications networks are expensive; so, it is not surprising that poor countries in the Region have more problems with infrastructure. Nonetheless, the challenge of modernizing infrastructure is not merely an issue of finding financing. The origin of the difficulties in infrastructure provision in the Region is weak competition, insufficient

UP_i-46.qxd 3/27/08 1:44 PM Page 41

investments in operations and maintenance, and an inadequate regulatory framework.

Deepening the Financial Sector

Greater financial market sophistication allows firms to take on more innovative and risky projects by offering payment services, mobilizing savings, and allocating financing to firms wishing to invest. If these markets work well, they give firms of all types the ability to seize promising investment opportunities. They reduce the reliance of firms on internally generated cash flows and money from informal sources, such as family and friends, giving the firms access to external equity and facilitating entry into product markets. Constraints to the development of the financial sector—such as entry barriers, restrictions on foreign banks, and state ownership of banks—hurt the financial system and its ability to increase firm productivity growth. Empirical analysis in the Region has shown that firm productivity growth is associated with deeper financial markets and better access to credit from foreign and private banks.

A multipronged financial sector agenda needs to be followed to deepen financial intermediation, promote post-entry firm growth, and strengthen the impact of financial markets on productivity growth generally. Such an agenda, which needs to be tailored to specific country situations, should cover the completion of the privatization of state banks, the strengthening of the prudential framework for bank and nonbank intermediation, the improvement of bank supervision, the strengthening of financial reporting and transparency requirements for bank ownership, and the improvement of credit information systems and collateral regimes. Transition countries have achieved a great deal in the establishment of banks and capital markets, but the contribution of the financial sector to productivity and growth has been uneven. The financial sector in many countries in the Region remains underdeveloped relative to that in other countries at the same level of income. More recently, across the Region, there has been rapid growth in bank credit, much of which is highly skewed toward consumer lending. Whatever firm lending takes place is primarily concentrated in large firms. Indeed, little credit has flowed to new or existing small and medium-sized private enterprises, even though the experience of the EU-10 and Turkey suggests that financial deepening and the development of credit sources located outside firms are essential in promoting expansion and economies of scale within firms after start-up. Financial credit for rural enterprises and farm growth is even scarcer.

UP_i-46.qxd 3/27/08 1:44 PM Page 42

Going Forward: Productivity Growth Requires a Differentiated Policy Agenda across Countries

Although all countries in the Region need to continue their reform efforts, their priorities in public policy will depend on their development path. Thus, the primary challenge for the CIS and SEE remains the need to address the transition legacy, while the main challenge for the EU-10 and for Turkey is to boost innovation and productivity growth so as to catch up with the income levels of the EU-15 (table 1).

For the CIS and SEE, the greater initial misallocation of resources and the slower path of transition suggest that productivity gains may still be tapped by facilitating firm restructuring, promoting the net entry of firms, easing access to credit, and simplifying trade practices to capture advantages from trade and greater openness.

For the EU-10, which have largely addressed the legacy of transition, the transition is over. Gains will still accrue from efficient reallocation and churning, as in even the most advanced economies. But the bulk of productivity gains are likely to be tapped through within-firm productivity growth by way of greater competition, more technological imitation and innovation, better absorption of new skills and technology, and additional development of new products and markets. These countries are now competing in the same markets as the more advanced European economies and are catching up with the technological frontier. The success of the EU-10 and of Turkey in moving ever closer to the income levels of the EU-15 largely depends on how well firms and workers are able to move rapidly into new products and markets and make production processes more efficient.

Priorities need to be set in each country based on the relative importance of the three channels of productivity growth at the firm level: within-firm productivity growth, reallocation across firms and sectors, and net entry. Increasing competition, opening the economy to trade, and hardening budget constraints on state enterprises will strengthen the ability of firms to take advantage of each of these channels. But policies may be differentiated across these channels. For instance, financial deepening and the development of sources of credit outside firms are essential in promoting within-firm growth, as the evidence on Turkey suggests.

However, enterprise restructuring and labor reallocation processes might generate some labor costs. This may be mitigated through adequate social safety nets to support workers who have been laid off during firm restructuring (World Bank 2002; Alam et al. 2005; Chawla, Betcherman, and Banerji 2007). In the CIS, where the

UP_i-46.qxd 3/27/08 1:44 PM Page 43

TABLE 1

Late Reformers Must Complete the Transition; Early Reformers Must Foster Innovation

Stage	Reforms
First phase of convergence: late reformers in which the initial level of misallocation was greater and transition reforms proceeded slowly	Address the transition legacy: • Facilitate firm entry, restructuring, and exit by – improving the business environment, particularly business licensing, taxation, and legal and judicial reform – hardening the budget constraints to close or privatize loss-making public enterprises • Lower the cost of, and improve access to, credit • Accelerate the behind-the-border agenda to deepen the gains from trade openness, particularly the liberalization of services and the improvement of trade facilitation and logistics such as information technology, infrastructure, port efficiency, and customs regimes
Second phase of convergence: early reformers in which the misallocation of resources has been substantially corrected relative to their peers, but which are still lagging the EU-15	The second- or third-generation reform agenda: sustain productivity gains and foster innovation as a source of growth by • deepening bank and nonbank financial intermediation • adopting competitive product and labor market regulations • improving the quality of human capital (tertiary education) • investing in knowledge (R&D) and new technologies (ICT)

Source: Compiled by the authors.

challenge of restructuring is still relevant and poverty and inequality remain concerns, providing adequate levels of social assistance must be a policy priority. In the EU-10, which can afford more generous safety nets, formal unemployment insurance schemes are being expanded and provide the best way to protect workers displaced by enterprise restructuring. The guaranteed employment, retirement security, and consumer subsidies of the former socialist systems have become obsolete. In many instances, these were fiscally unaffordable, as countries sought to balance expenditure demands with revenues. The best method for protecting the most vulnerable workers involves two steps: removal of the barriers to the entry of new enterprises, thereby creating additional employment opportunities, and the targeting of social assistance on those workers whose skills and experience mean that they are less likely to be employed in the new enterprises.

Conclusion

The countries of the Region have shown strong productivity growth during 1999–2005 that has driven up living standards and reduced poverty. Both domestic and globalizing factors have contributed to this, but significant challenges remain in sustaining productivity

UP_i-46.qxd 3/27/08 1:44 PM Page 44

growth. Public policies can play an important role but they need to be carefully tailored to each country's situation.

Notes

The bibliography is in the report, *Unleashing Prosperity* (forthcoming).

1. The low income CIS countries (low-CIS or CIS-low) are Armenia, Azerbaijan, Georgia, the Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.
2. These data have been collected by independent researchers Eric J. Bartelsman, David J. Brown, John S. Earle, and Stefano Scarpetta. Earlier sets of the data have been used by these researchers in analyses in published papers.
3. The TFP estimates tend to be controversial because of measurement errors. This is particularly true in transition economies, where the quality of the capital stock series remains problematic. Nevertheless, robustness tests applied to the capital stock series ensure that the relative changes indicated in productivity patterns across countries and over time are reliable.
4. The analysis of productivity patterns in manufacturing and service industries focuses on a group of countries (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia) for which harmonized industry-level deflators are available.
5. A cautionary note is in order on comparisons between productivity growth decompositions across countries. The decomposition of aggregate productivity growth might yield somewhat different results depending on the time horizon (three-year rolling periods or five-year rolling periods). The entry component tends to be larger over longer horizons because more of the entry effect is a within effect over time. Also, the within and entry terms may be influenced by noise and imperfect deflators that might lead to an upward bias in absolute magnitudes. Nevertheless, the broad trends across countries are maintained. Brown, Earle, and Telegdy (2007) correct for this last problem by comparing the productivity of entrants with the sectoral weighted average for the same year.
6. A negative entry effect results if the entrants are less productive than the average incumbents; this does not necessarily point to a lack of dynamism. In vibrant and technologically advanced sectors, many high-risk entrants may exhibit low average productivity, and market selection weeds out all but the most productive entrants, which will eventually overtake incumbents.

UP_i-46.qxd 3/27/08 1:44 PM Page 45

UNLEASHING PROSPERITY

PRODUCTIVITY GROWTH IN EASTERN EUROPE AND THE FORMER SOVIET UNION

Many countries of Eastern Europe and the Former Soviet Union have seen an economic resurgence over the past five years, especially in the Commonwealth of Independent States. Both domestic and global factors have contributed to the productivity surge and helped to narrow the productivity gap between lower and higher income countries. This report analyzes the policy-driven improvements in productivity in the region, using multiple data sets and econometric techniques.

PRODUCT	STOCK #	PRICE	QTY	SUBTOTAL
Unleashing Prosperity: Productivity Growth in Eastern Europe and Former Soviet Union **(ISBN: 978-0-8213-7279-1)**	**D17279**	**US$35**		
			Subtotal	
			Geographic discount*	
			Shipping and Handling**	
			Total US$	

** Geographic discounts apply – up to 75% depending on ship-to country. See http://publications.worldbank.org/discounts.*

*** Within the US, charges on prepaid orders are $8.00 per order. Institutional customers using a purchase order will be charged actual shipping costs. Outside of the US, customers have the option to choose between non-trackable airmail delivery (US$7 per order plus US$6 per item) and trackable couriered airmail delivery (US$16.50 per order plus US$8 per item). Non-trackable delivery may take 4-6 weeks, trackable delivery takes about 2 weeks.*

ORDER ONLINE AT www.worldbank.org/publications

Customers in the United States
Complete this form and mail it to World Bank Publications, P.O. Box 960, Herndon VA 20172-0969 or fax it to 703-661-1501. To charge by credit card, either order online or call 800-645-7247 or 703-661-1580.

Customers outside the United States
Contact your local distributor for information on prices in local currency and payment terms (http://publications.worldbank.org/booksellers). If you do not have a distributor, order online or fax this form to +1-703-661-1501 or mail it to World Bank Publications, P.O. Box 960, Herndon VA 20172-0969, USA.

MAILING ADDRESS

Name _____

Organization _____

Address _____

City _____ State ____ Zip _____

Country _____

Phone _____ Fax _____

Email _____

METHOD OF PAYMENT

☐ Charge my:

☐ Visa ☐ Mastercard ☐ American Express

Name _____ ____

Card # _____

Signature_____

Exp. Date_____

☐ Enclosed is my check in US$ drawn on a U.S. bank and made payable to the World Bank.

TO ORDER
World Bank Publications
www.worldbank.org/publications
By phone: +1-703-661-1580 or 800-645-7247 •
By fax: +1-703-661-1501 •
By mail: P.O. Box 960, Herndon, VA 20172-0960, USA
Questions? E-mail us at books@worldbank.org
AVAILABLE AT BETTER BOOKSTORES

THANK YOU FOR YOUR ORDER

WORLD BANK Publications | *The reference of choice on development*

UP_i-46.qxd 3/27/08 1:44 PM Page 46