BOX 3.1 EMDE regional labor productivity trends and bottlenecks

The post-crisis slowdown in productivity growth was particularly severe in East Asia and Pacific, Europe and Central Asia, and Sub-Saharan Africa amid slowing investment growth, financial market disruptions, and a post-crisis commodity price slide. Meanwhile, productivity growth in Latin America and the Caribbean and the Middle East and North Africa—the slowest even before the global financial crisis—has fallen to near-zero as investment collapsed amid political uncertainty, episodes of financial stress in major economies, and falling commodity prices. As a result, the pace of catch-up to advanced-economy productivity levels has slowed in most regions since the global financial crisis and, in some regions, productivity is even falling further behind. In almost all regions, productivity gains from the reallocation of labor from low-productivity to higher-productivity sectors have slowed sharply. To boost productivity, policies are needed to address key obstacles to productivity growth. Some of these obstacles are shared across EMDE regions, including resource-reliant economies, widespread informality, shortcomings in education, and weak governance, and some are region-specific bottlenecks.

Introduction

Although common across all EMDE regions, the post-crisis productivity growth slowdown has differed markedly in severity. Generally, it was more pronounced in more open EMDE regions that are closely integrated into advanced-economy supply chains. Meanwhile, in regions with a large number of commodity exporters, productivity growth has fallen close to zero. As a result, to varying degrees, the catch-up to advanced-economy productivity levels has slowed since the global financial crisis and, in some regions, productivity is even falling further behind. Policy priorities to reignite productivity growth differ across regions.

This box draws out differences in regional productivity trends and policy priorities (summarizing Boxes 2.1-2.6).[1] Specifically, it addresses the following questions:

- How has the evolution of productivity varied across regions?
- What factors were associated with stronger productivity growth?

For the purposes of this box, productivity is defined as labor productivity—that is, real GDP per worker (at 2010 prices and exchange rates).

Evolution of productivity

Post-crisis labor productivity growth slowdown. An exceptional pre-crisis surge in productivity growth was broad-based across regions, with productivity in more than 50 percent of economies in each region except The Middle East and North Africa (MENA) growing faster than the advanced economy average (Rodrik 2011; Roy, Kessler and Subramanian 2016; Figure 3.1.1). Since the global financial crisis (2013-18), however, productivity growth has slowed from pre-crisis (2003-08) rates in all EMDE regions.

The slowdown was particularly steep in East Asia and the Pacific (EAP), especially in China, as well as in Europe and Central Asia (ECA) and Sub-Saharan Africa (SSA). In these regions, investment growth has declined sharply from pre-crisis levels amid a policy-guided public investment slowdown in China (EAP), financial system disruptions associated with the Euro Area crisis (ECA), and the commodity price collapse of 2014-16 (ECA, SSA). However, in all three regions, there were important exceptions to the sharp slowdown. In EAP, the slowdown was concentrated in China while productivity growth continued to be robust in other major EAP economies, especially some ASEAN economies (the Philippines and Vietnam), as FDI and investment growth remained robust (Box 2.1). In ECA, the slowdown was muted in agricultural economies in Central Asia that shifted their economic ties towards China and in Central European economies that continued to integrate into Western European supply chains and benefited from investment financed by European Union structural funds. In SSA, productivity growth accelerated in agricultural commodity exporters.

The slowdown was mildest in South Asia (SAR), in part because the region is the least open EMDE region to global trade and finance, continued to urbanize rapidly, and, as a predominantly commodity-importing region, benefited from the commodity price slide. In MENA, the slowdown was mild since limited links to global financial markets insulated commodity-importing economies from global financial stress.

Post-crisis productivity growth across regions. Productivity growth in Latin America and the Caribbean

Note: This box was prepared by Gene Kindberg-Hanlon with research assistance from Shijie Shi.

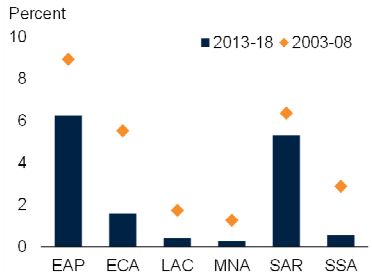
[1] To be as representative of each region as possible, this box uses a broader sample than the main text in Chapter 3, resulting in a shorter time horizon under consideration. This box and the regional boxes cover a sample containing 127 EMDE economies, compared to 74 in the main text.

BOX 3.1 EMDE regional labor productivity trends and bottlenecks (*continued*)

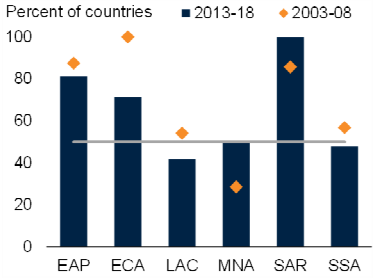
FIGURE 3.1.1 Evolution of regional labor productivity

The post-crisis slowdown in labor productivity growth was particularly severe in EAP, ECA and SSA as these regions struggled with slowing investment growth, financial market disruptions, and weaker commodity prices. In EAP and ECA, the slowdown in productivity growth has reflected both a slower pace of capital deepening and weaker TFP growth. In MENA and SAR, TFP has continued growing or stabilized after earlier contractions (MENA).

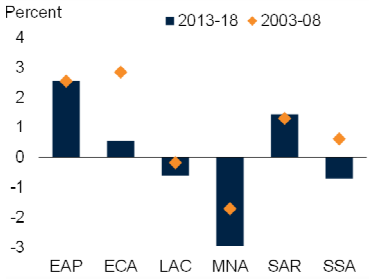
A. Labor productivity growth in EMDE regions



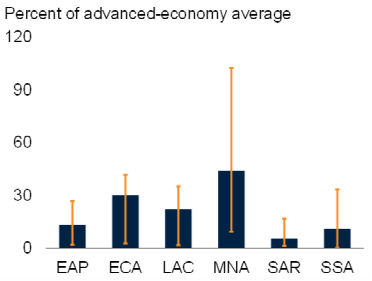
B. Share of economies growing faster than the average advanced economy



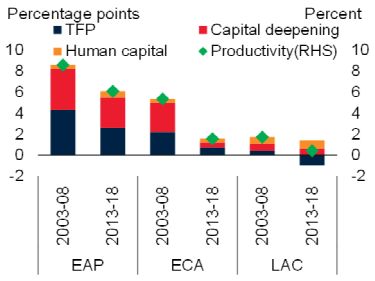
C. Annual rate of productivity convergence, 2003-08 and 2013-18



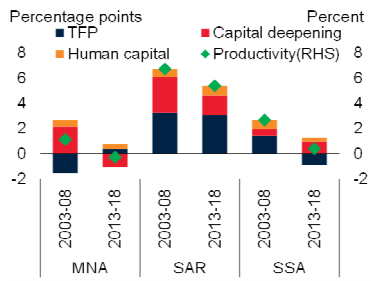
D. Regional average productivity differentials, GDP-weighted, 2018



E. Contributions to regional productivity growth; EAP, ECA, LAC



F. Contributions to regional productivity growth: MNA, SAR, SSA



Source: International Monetary Fund; Penn World Table; The Conference Board; World Bank, World Development Indicators.

A.B.C.D. Productivity refers to output per worker at 2010 prices and exchange rates. Sample includes 35 advanced economies (AE) and 16 EMDEs in East Asia and the Pacific (EAP), 21 EMDEs in Eastern Europe and Central Asia (ECA), 25 EMDES in Latin America and the Caribbean (LAC), 14 EMDEs in Middle East and North Africa (MNA), 7 EMDEs in South Asia (SAR), and 44 EMDEs in Sub-Saharan Africa (SSA).

A. GDP-weighted average labor productivity growth.

B. Share of economies with faster productivity growth than the advanced-economy average in each period.

C. Rate of convergence calculated as the difference in productivity growth rates with the average advanced economy divided by the log difference in productivity levels with the average advanced economy. Regional rate of convergence is the GDP-weighted average of EMDE members of each region.

D. Whiskers show the range within the region as a percent of the advanced economy average while bars show the GDP-weighted average level of productivity relative to advanced economies. Productivity reflects output per worker measured in US dollars at 2010 prices and exchange rates.

E.F Aggregates calculated using GDP weights at 2010 prices and exchange rates. The sample includes 92 emerging market and developing economies (EMDEs), including 8 East Asia and Pacific, 21 Europe and Central Asia, 19 Latin America and the Caribbean, 12 Middle East and North Africa, 2 South Asia, and 30 Sub-Saharan Africa economies.

Click here to download data and charts.

(LAC), MNA, and SSA—even before the crisis, the slowest—has fallen to near zero as investment collapsed amid political uncertainty, episodes of financial stress in major economies, and falling commodity prices (Box 2.3). As a result, productivity growth in the majority of EMDEs in LAC, MNA, and SSA now lags that in advanced economies and, on average in these regions, productivity levels are diverging from those in advanced economies. In contrast, productivity growth continues above 5 percent in EAP and SAR, where investment growth is still higher than in other EMDE regions (EAP, SAR) or the shift towards more productive sectors has accelerated (SAR). In these two regions, productivity continues to converge towards advanced-economy levels at approximately the pre-crisis pace.

Regional dispersion of productivity. On average, productivity in EMDEs was just 19 percent of the

BOX 3.1 EMDE regional labor productivity trends and bottlenecks (*continued*)

advanced-economy average in 2018.[2] Among EMDE regions, average labor productivity is highest in the MNA (45 percent of the advanced-economy average), LAC and ECA (about 22-30 percent, respectively) and lowest in SAR (6 percent) and SSA (11 percent). However, these regional averages disguise wide dispersion within some regions, especially MNA, ECA, and SSA. In some Gulf Cooperation Council (GCC) countries in MNA, for example, productivity is near advanced-economy averages whereas in heavily agricultural economies, such as the Arab Republic of Egypt and Morocco, it amounted to 10 percent of the advanced-economy average (Box 2.4). Similarly, close trade integration with Western Europe and, increasingly, China and major reforms since the collapse of the Soviet Union have helped raise average productivity levels in ECA to the second-highest among EMDE regions (30 percent). However, there is wide heterogeneity, with Poland producing around 38 percent of the advanced economy average worker, while some agricultural economies in Central Asia produce just 3 percent (Box 2.2). In SSA, LICs produce about 2 percent of the advanced economy average whereas oil exporters such as Gabon produce 33 percent (Box 2.6). In contrast, closely integrated EAP has a narrower range of productivity levels (2-25 percent of the advanced-economy average).

Capital deepening versus total factor productivity growth. Productivity growth can be decomposed into the use of factor inputs (human or physical capital) or the effectiveness of their use (total factor productivity, or TFP, Figure 3.1.1). In EAP and ECA, the post-crisis slowdown in productivity growth has reflected both a slower pace of capital deepening and weaker TFP growth, albeit to varying degrees. Two-fifths of the slowdown in EAP reflected slowing capital deepening, the remainder slowing TFP growth. In EAP, a policy-guided move towards more sustainable growth in China and trade weakness weighed on investment and capital deepening. In ECA, most (two-thirds) of the productivity growth slowdown reflected a collapse in investment growth as conflict erupted in parts of the region, sanctions were imposed on the Russian Federation, political and economic shocks unfolded in Turkey, financial systems transformed after the Euro Area debt crisis, and the commodity price collapse hit commodity exporters (Arteta and Kasyanenko 2019).

[2] In this section, GDP-weighted averages of productivity are used to compare productivity levels across economies—in the main text, simple averages are used.

In MNA and SAR, in contrast, TFP continued growing at the pre-crisis pace (SAR) or stabilized after earlier contractions (MNA), even as capital deepening slowed sharply (SAR) or reversed (MNA). In MNA, the oil price collapse of 2014-16 weighed heavily on investment in oil exporters and political tensions discouraged investment in commodity importers. However, macroeconomic and structural reform efforts helped stem pre-crisis contractions in TFP. In SAR, persistent post-crisis investment weakness—in part due to disruptive policy changes and tapering growth of FDI inflows—was offset by productivity-enhancing sectoral reallocation, as labor moved out of agriculture into more productive sectors amid rapid urbanization (Box 2.5).

Conversely, in SSA and LAC, TFP contracted. In major LAC economies, continued post-crisis credit extension or intensifying economic distortions (such as trade restrictions and price controls) allowed unproductive firms to survive to a greater extent than pre-crisis. In SSA, the contraction in TFP was partly offset by accelerating capital deepening as a number of countries invested heavily in public infrastructure, typically financed by debt.

Regional sources of productivity growth and bottlenecks

A wide range of factors have weighed on productivity growth since the global financial crisis, but their relative role has differed across regions. In all regions other than SAR, productivity gains from the reallocation away from low-productivity (usually agriculture) sectors to higher-productivity sectors have slowed (Enache, Ghani, and O'Connell 2016). In addition, the pre-crisis pace of improvements in various aspects of the supporting environment for productivity growth has slowed. Productivity levels in all regions remain less than half of those in advanced economies, providing significant scope for faster productivity growth. However, significant bottlenecks to productivity convergence remain, many of which differ across regions.

Sectoral reallocation

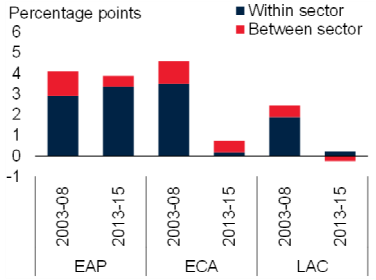
Declining gains from sectoral reallocation. In all regions except MNA, switching employment from low-productivity sectors to sectors with above-average productivity levels supported productivity growth during 2003-08, especially in EAP, ECA, and SSA (Figure 3.1.2). In SSA, it accounted for more than half of growth in the median economy during 2003-2008 (Diao, McMillan, and Rodrik 2017).

BOX 3.1 EMDE regional productivity trends and bottlenecks (*continued*)

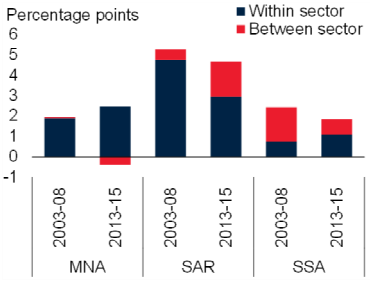
FIGURE 3.1.2 Sectoral contributions to regional productivity growth

Since the global financial crisis productivity gains from sectoral reallocation have faded across all regions (with the exception of SAR). In SAR and SSA, around half of employment is in the agricultural sector, which only accounts for around 20 percent of output, reflecting low productivity in this sector. The wide dispersion of sectoral productivity levels within regions demonstrates the importance of introducing measures to reduce misallocation and boost productivity in the weakest sectors.

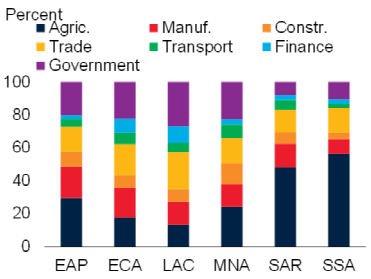
A. Within and between sector contributions to regional productivity growth: EAP, ECA, LAC



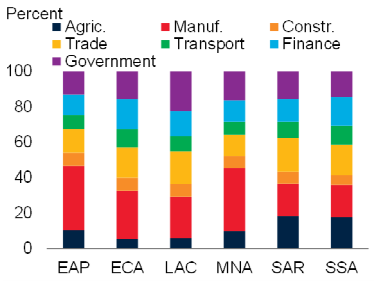
B. Within and between sector contributions to regional productivity growth: MNA, SAR, SSA



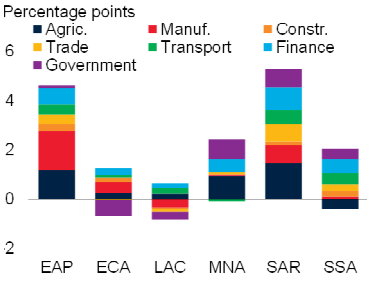
C. Composition of employment by sector, 2015



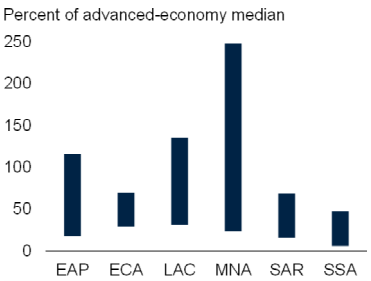
D. Composition of value-added by sector, 2015



E. Sectoral contribution to aggregate productivity growth, 2013-15



F. Sectoral productivity levels dispersion within regions, 2015



Source: APO productivity database; Expanded African Sector Database; Groningen Growth Development Center Database; Haver Analytics; ILOSTAT; OECD STAN; United Nations; World KLEMS.

Note: Sample includes 46 EMDEs, of which 8 are LICs and 9 East Asia and Pacific, 6 Europe and Central Asia, 6 Latin America and the Caribbean, 3 Middle East and North Africa, 3 South Asia, and 19 Sub - Saharan African economies.

A.B. Median contribution for each region. Growth within sector shows the contribution of initial real value added-weighted productivity growth rate of each sector and 'between sector' effect shows the contribution arising from changes in sectoral employment shares.

E. Median contribution to productivity growth.

F. Range of (regional averages of) sector-specific productivity levels relative to advanced-economy average productivity for the same sector in 2015, valued at 2011 purchasing power adjusted exchange rates. The range for MNA excludes sectoral productivity for mining which exceeds 1000 percent of the advanced-economy average.

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Since the global financial crisis, however, productivity gains from sectoral reallocation have faded across all regions (with the exception of SAR). In commodity-reliant regions such as LAC, MNA, and SSA, this in part reflected lower absorption of labor by services and construction sectors as real income losses in resource sectors spilled over into weaker demand. In EAP, it reflected slowing labor reallocation as overcapacity was gradually being unwound. In ECA, high-productivity manufacturing, financial, and mining sectors suffered during the Euro Area debt crisis and the post-crisis commodity price collapse. Meanwhile, in SAR, the move of labor out of low-productivity agriculture into more productive sectors accelerated as rapid urbanization continued and strong consumption growth fueled employment in higher-productivity trade services.

Looking ahead, further sectoral reallocation continues to have a high potential to lift productivity growth in SSA and SAR, where low-productivity agriculture accounts for around 50 percent of employment and 20 percent of output. Substantial gaps in productivity between sectors

BOX 3.1 EMDE regional productivity trends and bottlenecks (*continued*)

remain, offering the potential for further aggregate productivity gains from resource reallocation between sectors.

Bottlenecks to productivity growth

Several bottlenecks to higher productivity are shared, to varying degrees, by multiple EMDE regions. These include commodity-reliance, widespread informality, poor education, and weak governance. Other bottlenecks are mostly region-specific.

Reliance on commodity exports. In LAC, MNA, and SSA, commodities account for over 20 percent of exports on average. In ECA, they account for 30 percent of exports, largely due to Russia, where around 60 percent of exports are (mostly energy) commodities. Economies that are highly reliant on a narrow range of commodity exports can also suffer from misallocation and procyclical trends for productivity growth (Frankel 2010). Conversely, producing across a broad range of sectors can insulate economies from external shocks, and can facilitate knowledge transfer to strengthen productivity (Kraay, Soloaga, and Tybout 2002; Schor 2004). In EAP, for example, high pre-crisis productivity growth was spurred by rapid integration into global supply chains and attraction of FDI which enabled a substantial increase in the range and sophistication of production in the region (Wei and Liu 2006).

Weak governance and institutions. In most EMDE regions, governance and business climates are less business-friendly than in advanced economies. The largest distances to the frontier (the most business-friendly climates) are in SSA, SAR, and LAC, but also in pockets of ECA (Central Asia and Eastern Europe) and MNA (North Africa). In all regions, a large majority of EMDEs fall below the global average for tackling corruption. Poor institutions have been associated with weak firm productivity and inefficient government investment in productivity-augmenting infrastructure (Cirera, Fattal-Jaef, and Maemir 2019). In EAP, poor corporate governance in some sectors contributes to resource misallocation and weighs on productivity.

Informality. Informality is pervasive in EMDEs, although there are large differences in the productivity of informal sectors across regions. Informal firms are less productive than those in the formal sector and, by competing on more favorable terms, can deter investment and erode the productivity of formal firms (Amin, Ohnsorge, and Okou 2019). In all regions except MNA, the informal sector accounts for 25-40 percent of official GDP (22 percent of GDP in MNA); however, reflecting heterogeneity in productivity levels, informal employment (measured as self-employment) varies widely from 22 percent (MENA) to 62 percent (SSA) of total employment (World Bank 2019a).

Limited human capital. Higher-skilled and better-educated labor forces tend to adopt new technologies, including new ICT and manufacturing technologies, more readily and more effectively (World Bank 2019c). In EAP and ECA, expected years of schooling for children are now within one year of advanced economies on average, but SAR and SSA lag more than 3 years behind the advanced-economy average (Figure 3.1.3). Even where years of schooling are on par with advanced economies, education can be ineffective where learning outcomes are poor (World Bank 2018a). In learning-adjusted terms, which controls for the quality of education in addition to years of attainment, SAR and SSA lag substantially (six or more learning-adjusted years) behind advanced economies.

Region-specific factors. In each region, some challenges to improving or sustaining productivity growth are notable:

- In **EAP**, the region faces challenges in sustaining productivity growth as rapid trade integration, which spurred productivity growth in the 2000s, fades. With maturing supply chains and weak global trade, the priority has shifted towards improving the allocation and efficiency of investment, including in a wider range of sectors (World Bank and DRCSC 2019).

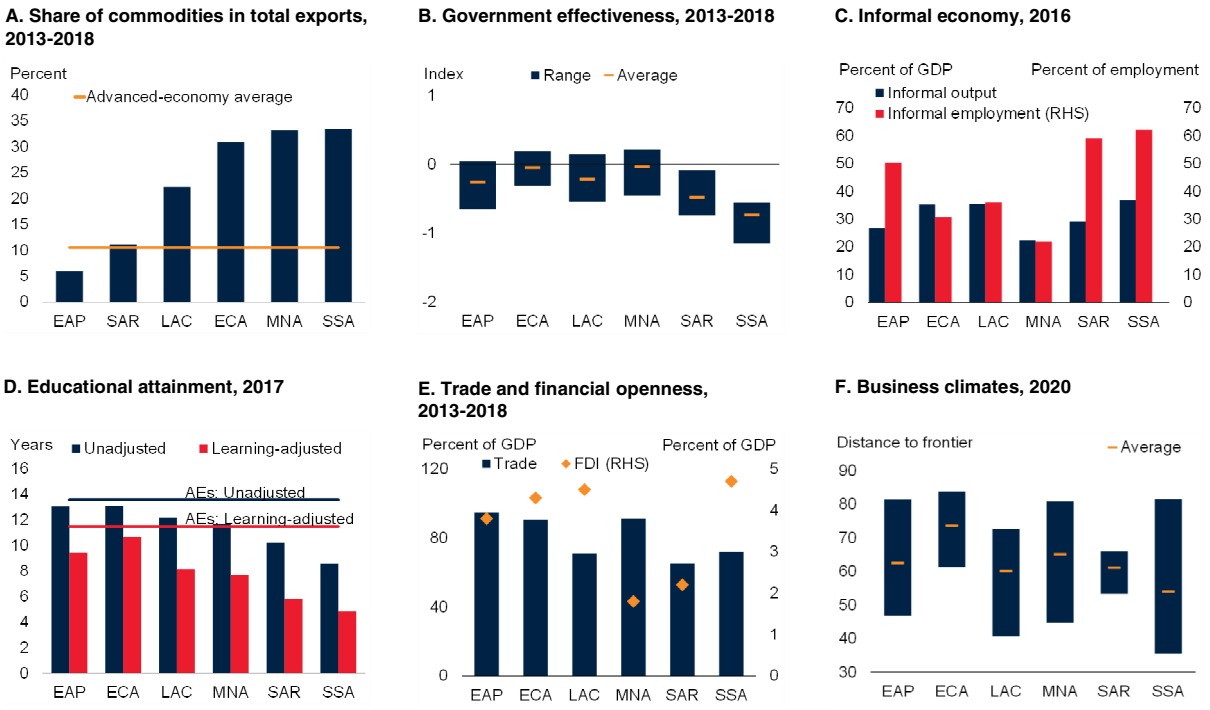
- In **ECA**, reform momentum has stalled in many economies since the global financial crisis. This follows on the heels of a period of rapid progress in the 1990s and 2000s in the transition to market-based economies and, in Central Europe, in the accession to the European Union (Georgiev, Nagy-Mohacsi, and Plekhanov 2018). Restrictive product market and services regulations now hinder competition and deter foreign investment.

- In **MNA**, the government accounts for a large share of employment relative to other regions. About one-fifth of the workforce is employed in the public sector. This is in part driven by a sizable wage premium for public-sector workers and a bias in the education system toward training for public sector employment. The non-GCC private sector is anemic, with lower firm turnover than in other EMDE regions.

BOX 3.1 EMDE regional productivity trends and bottlenecks (*continued*)

FIGURE 3.1.3 Potential bottlenecks to productivity growth

Several bottlenecks to higher productivity are shared, to varying degrees, by EMDE regions. These include undiversified economies, weak governance, widespread informality, poor learning outcomes, and low trade and financial openness.



Source: United Nations; World Bank, Doing Business, Human Capital Project, World Development Indicators, Worldwide Governance Indicators.

A. Exports of metals, agricultural and energy products in percent of total exports. GDP-weighted average for each region. Average during 2013-2018.

B. WGI index defined as capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formation and implementation, and the credibility of the government's commitment to such policies. Bars show interquartile range.

C. Average informal output (DGE-based estimates, percent of official GDP) and employment estimate (self-employment, percent of total employment) in each region. Based on World Bank (2019a).

D. Expected years of schooling and learning-adjusted years of schooling from the World Bank's Human Capital Project. Learning-adjusted years of schooling uses harmonized cross-country test scores to adjust the average years of schooling.

E. Unweighted average of trade (exports plus imports) in percent of GDP and net foreign direct investment inflows in percent of GDP.

F. Unweighted average distance to frontier measure of the ease of doing business score from the 2020 Doing Business Indicators. A higher value indicates a business climate that is closer to best practices. Bars show range.

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- In **LAC**, productivity could be boosted by policies to improve innovation and competition. Greater trade integration and more welcoming environments for FDI could lift productivity growth through knowledge and technology transfers.
- In **SAR**, productivity has been held back by below-average international trade integration and FDI, which limits technology and knowledge spillovers, and restricted access to finance from a banking system that is heavily state-dominated.
- In **SSA**, low productivity reflects the presence of large agricultural sectors, including widespread subsistence agriculture. A policy priority is therefore to lift productivity in the agricultural sector. In addition, SSA economies tend to be involved in supply chains only at early stages of production, producing primary products, and have few exporting firms.