

Spillovers are a key factor shaping the path of the global economy and the risks around it, but their nature is changing. The growing clout of emerging markets means that shocks originating there—including those of a noneconomic nature—are playing an increasingly important role around the world. Illustrating these trends, this chapter examines the global impact of China's rebalancing toward a more sustainable growth model, and the effects of increasing migration flows on the originating and recipient economies. While the source and transmission channels of these spillovers vary, a common theme is that, despite the negative short-term impact on recipient economies, they offer potential gains in the long term. If handled well, China's economic transition will eventually result in more sustainable global growth, and migration can help reduce challenges from population aging in recipient countries. Based on recent IMF publications and new analytical work by the IMF Spillover Taskforce, this chapter documents these spillovers and discusses policy implications at the national and multilateral level.¹

Introduction

As in the past, economic spillovers across national borders continue to shape global prospects, but their

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¹The IMF introduced specific reports on spillovers in 2011. Until 2013, these reports focused on the external effects of domestic policies in five systemic areas: China, the euro area, Japan, the United Kingdom, and the United States. Since 2014 the reports took a more thematic approach focusing on global, cross-cutting issues centered on economic policies. Beginning with this *World Economic Outlook* report, spillovers analysis will be highlighted in every other report.

scope has expanded. While previous spillover analysis has mostly focused on economic shocks emanating from advanced economies—such as shifting monetary policies in systemic economies—the increasing clout of emerging market economies, which explained the bulk of global growth over the past decade and now represent more than 50 percent of global GDP in purchasing-power-parity terms, suggests that they are a significant source of spillovers shaping the global outlook. In addition, noneconomic shocks are playing a more important role.

The global repercussions of China's welcome transition to a more balanced growth path furnish a case in point. China's rapid, investment-driven growth in the past decade fostered a remarkable expansion of global trade and boosted commodity prices (Figure 4.1). More recently, China's necessary slowdown in investment and its current transition to consumption-led growth has coincided with a very sharp decline in global trade growth.² Given the size and openness of the Chinese economy—the sharp increase in its share of global imports over the past decade has made it a main source (top 10) of export demand for over 100 economies that account for about 80 percent of world GDP—the potential for large spillover effects has increased. This suggests that China's transition has the potential to change the global outlook and the risks surrounding it. Not surprisingly, possible bumps around China's transition count among the risks to the global recovery, along with the persistent weak demand and low productivity growth in some key advanced and emerging market economies (see Chapter 1).

The rising trend in migration, compounded by refugees fleeing geopolitical conflicts, is an example of a noneconomic development with significant spillovers. The rapid increase in economic migration has become a pressing issue, and the ongoing refugee crisis in the Middle East and North Africa has added

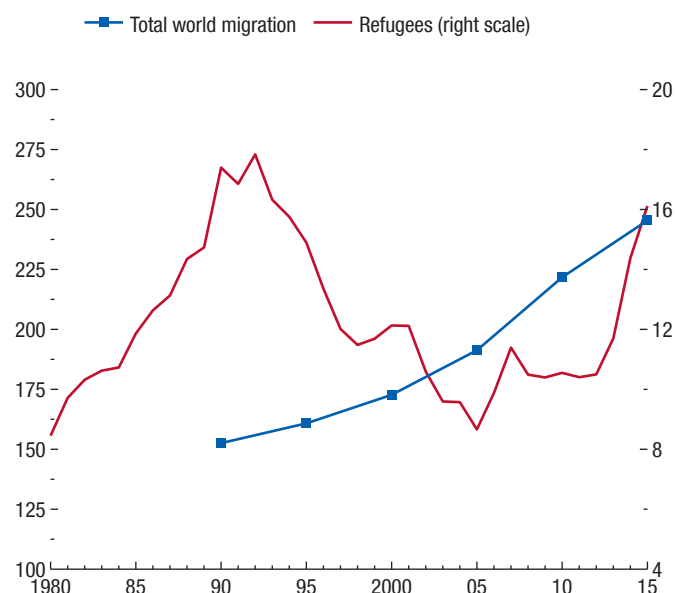
²See Chapter 2 in this *World Economic Outlook* report.

Figure 4.1. China: GDP and Trade Growth
(Percent change, year-over-year)



Source: IMF staff calculations.

Figure 4.2. Number of International Migrants and Refugees
(Millions)



Sources: United Nations High Commissioner for Refugees; and IMF staff calculations.

to this trend.³ The number of international migrants increased from 150 million in 1990 to 250 million as of the end of 2015 (Figure 4.2). And refugee flows—driven by geopolitical factors, wars, and conflict—have surged over the past couple of years, and continue, with over half a million applications for asylum during the first half of 2016. This surge increased the number of refugees to about 16 million as of the end of 2015—although they still represent a small share in total migration. Large migration, whether triggered by economic or noneconomic forces, has significant repercussions both for sending and for receiving countries. Moreover, against a background of low growth along with rising inequality in many countries, migration can add to anxiety about globalization, and feed a political climate that stalls structural reforms and growth.

The first part of this chapter focuses on the impact of China’s transition on the global economy, with an emphasis on the complexities of its diverse transmission channels. The following section focuses on migration issues and their impact on source and recipient econ-

omies. Both sections document spillovers and discuss policy issues at the national and multilateral level.

China’s Transition

Rapid growth has made China one of the largest economies in the world, and its increasing global links lifted trade and economic activity across the world during its expansion. In this context, China’s economic transition toward more balanced growth also has global repercussions, transmitted through trade and commodity markets and amplified by financial markets. These repercussions entail a negative direct impact on global demand, an indirect impact through prices—notably for commodities—and an effect on exchange rates and asset markets. However, some countries stand to gain, such as commodity importers—including some emerging markets—and producers of labor-intensive goods, as China moves up the value chain and imports more consumption goods. A well-managed transition will benefit the global economy in the long term: it will result in more sustainable growth in China, improved resource allocation, and a reduction of risks of a disruptive adjustment—which credit booms have often triggered in other economies. China can help by managing its transition well, notably by accepting

³Migrants are defined as individuals who are living in countries other than their country of birth.

the slowdown and by clearly communicating its policy intentions. Globally, it will be important to avoid protectionism and continue to facilitate trade-integration initiatives.

Slowdown, Rebalancing, and Transmission Channels of Spillovers

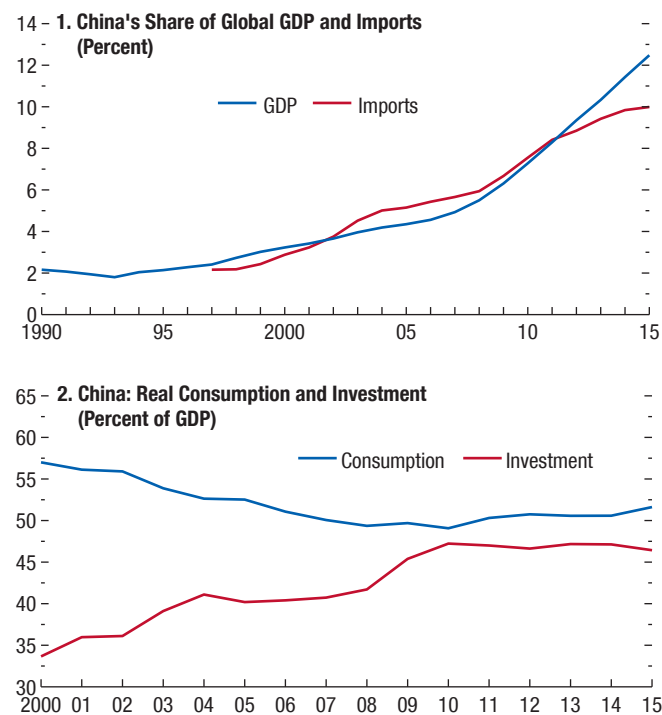
As the second largest economy in the world, China has become a significant source of global demand. GDP growth averaged 9.6 percent since 2000, increasing China's share of global GDP from about 3 percent to almost 13 percent in 2015 (Figure 4.3, panel 1).⁴ Since the early 2000s this growth has been fueled by investment and exports as the economy built infrastructure and housing, and leveraged its abundant labor supply to boost manufacturing. Reinforcing this trend, China's response to the global financial crisis prompted a further push to infrastructure investment in 2009–10—increasing by an average of 17 percent in each of those years. The large size of the economy implies that developments in China had significant spillovers to the global economy through its demand for trade-partner exports. Given the key role of infrastructure investment in China's expansion, commodity exporters also benefited from the boost in prices caused by stronger demand in China, particularly for base metals.

More recently, China has begun to rebalance its economy from investment and exports toward consumption, partly reversing its contribution to global trade growth in previous years.⁵ Economic growth has slowed, and rebalancing implies that investment has slowed faster than consumption—between 2010 and 2015, the consumption share of GDP rose from about 49.1 percent to 51.6 percent, while the investment share fell from about 47.2 percent to 46.4 percent, both in real terms (Figure 4.3, panel 2). This implies a sharper decline in demand for imports and commodities than the slowdown in headline GDP growth would suggest, given that investment activity is more import intensive and relies more heavily on commodities. In fact, a striking development of the slowdown in the Chinese economy in 2014–15 is the disproportionate deceleration in exports and imports—GDP growth fell from 7.8 percent in 2013 to 6.9 percent in 2015,

⁴Based on GDP at market exchange rates.

⁵For a richer discussion of China's economic rebalancing, see IMF (2015g).

Figure 4.3. China: Global Clout and Rebalancing



Source: IMF staff calculations.

while export and import growth fell by 7 percentage points and 8 percentage points, respectively, over this same period.

Spillovers from China are transmitted primarily via trade links. A deceleration in China's domestic demand affects imports from trading partners—and more generally, global trade. But this impact differs among countries—creating winners and losers from China's rebalancing—and the analysis of the trade channel is not straightforward, for several reasons:

- China has become deeply integrated into global supply chains, which implies that it often transmits shocks from other countries. The analysis of spillovers needs to differentiate China's direct impact on global demand by disentangling variations in GDP growth due to its own demand from those associated with global shocks.
- Countries have different exposures to China's final demand. While total exposure—the share of exports to China relative to total exports—plays a role, countries differ in terms of sectors of the Chinese economy to which they are exposed. With China's investment demand slowing disproportionately,

exporters of investment goods—such as some countries in the euro area—will be more affected than exporters of consumption goods. Finally, China is now producing at home some previously imported intermediate goods (onshoring), adding complexity to the analysis.

- As China moves up the value chain, reducing its production of some labor-intensive goods, opportunities are being created for countries with abundant labor to take its place in the production of these goods, particularly in southeast Asia.

Another important transmission channel relates to China's impact on global prices, particularly in commodity markets. China is both a large producer and consumer of commodities. Its demand for commodities surged since the early 2000s, particularly in energy and base metals markets; by the end of 2014 China's demand for metals accounted for more than 40 percent of global demand. Its large footprint in commodity markets suggests that a slowdown in China's demand can have a material and lasting impact on prices, particularly given short-term price-inelasticity of supply in commodity markets and the additional increases in the supply of metals in recent years.⁶ Chinese industries may also be contributing to global "overcapacity" in some sectors, for example, steel and cement. Subsidies on key production inputs—such as energy—as well as credit flows to loss-making enterprises have contributed to an excessive expansion of capacity in these industries and are hindering their adjustment, depressing global prices.

Direct spillovers through financial channels are still limited but will increase, and developments in China are already affecting global asset prices. China's financial integration into global markets remains limited, which suggests that direct financial spillovers from China—for example, through the adoption of domestic financial regulation affecting credit growth or China's foreign assets and liabilities—have been modest so far. However, financial linkages are increasing, and the scope for financial spillovers is likely to increase, as China eases capital-account restrictions. Moreover, developments in China are already affecting volatility in financial markets. For example, policy uncertainty over the past year—related to the exchange rate regime and renminbi depreciation, and the response to a

domestic-equity-market adjustment—was coupled with falling global equity prices and exchange rate depreciation in emerging market economies.

Increasing Clout in Global Trade

As China became a larger and more open economy after its accession to the World Trade Organization, spillovers to the rest of the world increased. Its rapid growth over the past 15 years has made China a key player in global trade—its share in global imports increased from 3 percent in 2000 to approximately 10 percent as of 2015. The gradual increase in China's trade suggests that spillovers could vary over time. Furceri, Jalles, and Zdzienicka (2016) perform time-varying coefficient analysis using local projection methods on a sample of 148 countries over 1990–2014, and show that spillovers from a 1 percentage point negative shock to China's final demand growth have nearly doubled over the past two decades (Figure 4.4). These shocks now have a cumulative impact on global GDP of about 0.25 percent, after one year. This coefficient is broadly in line with those in other studies, which find spillovers between 0.1 percent and 0.2 percent on global GDP, but this new research better exploits rich cross-time dynamics and showcases the increased importance of spillovers from China in recent years and their potential to increase in the future.⁷

Trade links stand out as the main transmission channel of spillovers from China in this recent research, which finds that countries' exports to China, and a larger share of manufacturing exports in total exports, increase the magnitude of spillovers.⁸ In particular, a 10 percent rise in exports to China is associated with an increase in the spillover coefficient of about 0.01—that is, close to 5 percent.

Given the importance of this channel, what is the direct impact of China's transition on global

⁷Other work on GDP-to-GDP spillovers includes Cashin, Mohaddes, and Raissi (2016); Cesa-Bianchi and Stratford (2016); Dizioli and others (2016); IMF 2014; Hong and others (2016); Duval and others (2014); and Dizioli, Hunt, and Maliszewski (2016).

⁸See Furceri, Jalles, and Zdzienicka 2016, which introduces the countries' time-varying coefficients into a rich panel environment. The panel captures the importance of different factors in explaining the evolution of spillover coefficients, including exports to China, the composition of such exports (commodities and manufacturing), and financial factors—as captured by the Chicago Board Options Exchange Volatility Index (VIX).

⁶See IMF (2015a).

trade? New research (Blagrove and Vesperoni 2016) addresses two critical empirical challenges to answering this question. First, to capture China's direct role as a source of spillovers, China-specific final demand shocks—that is, those not associated with external demand—were estimated. Second, the Organisation for Economic Co-operation and Development (OECD) Trade in Value Added (TiVA) database was used to build country-specific China-demand shocks to account for the impact of rebalancing, which implies that spillovers depend on countries' exposures to various sectors in China, specifically its secondary sector (associated mainly with investment) as opposed to its tertiary sector (mainly consumption).⁹

The evidence suggests that China's transition has played a role in the recent slowdown in global exports and that its impact has differed across countries.¹⁰ Panel vector autoregression estimates for a sample of 46 advanced and emerging market economies show that for a country with an average trade exposure to China, a 1 percentage point negative shock to China's final demand growth (in one quarter) reduces export growth rates by 0.1–0.2 percentage point over the course of a year.¹¹ This finding suggests that, just as China fostered strong global-trade growth during the expansion, its transition is likely playing a role in the current slowdown. Estimated impacts differ across countries, with those in Asia most affected: in level terms, following a 1 percent shock to China's final demand, exports in these countries are reduced by nearly 1 percent after a year (Figure 4.5). Commodity exporters and countries with stronger trade linkages to China's manufacturing sector are also affected significantly, with much smaller effects in other countries.¹² In line with these results, in-sample projections help

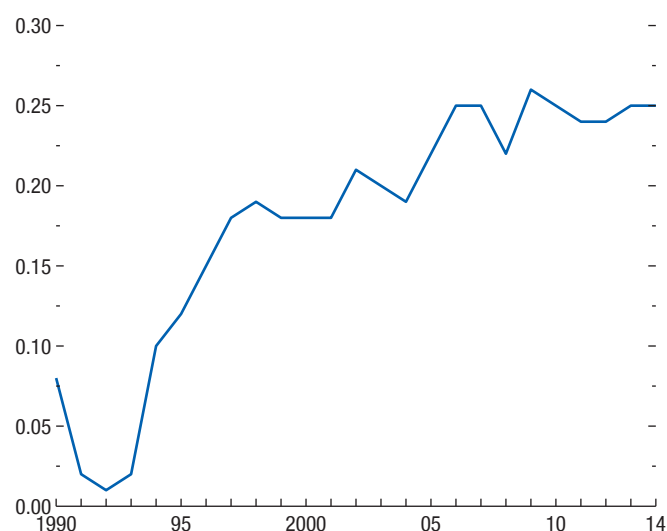
⁹These data allow for the identification of partners' exports that are directed to specific sectors in China's final demand, even if those exports reach China indirectly, through a third country.

¹⁰A broader analysis of the determinants of the global trade slowdown (which the China-specific impact provided here complements) is provided in Chapter 2 of this *World Economic Outlook* report. The chapter finds that overall weakness in economic activity has been the primary restraint on trade growth, which is consistent with results suggesting that weaker demand in China played a role in the reduction of global export growth.

¹¹The limited availability of TiVA and quarterly trade volume data requires the use of a relatively small sample (2013:Q1–2015:Q3).

¹²Although data limitations prevent an examination of trade spillovers for low-income and developing countries in this analysis, Drummond and Xue Liu (2013) point to an important role for changes in China's investment in explaining export dynamics in sub-Saharan Africa.

Figure 4.4. Spillovers from China over Time
(Average response of GDP to a 1 percentage point shock to growth in China, percent)



Source: Furceri, Jalles, and Zdzienicka (2016).

Note: Sample includes 148 advanced and emerging market economies.

explain the dynamics of the recent deceleration in global trade (Figure 4.6). These projections suggest that about a sixth of Asia's export-growth slowdown in 2014–15 could be explained by China's transition, with smaller impacts elsewhere.¹³

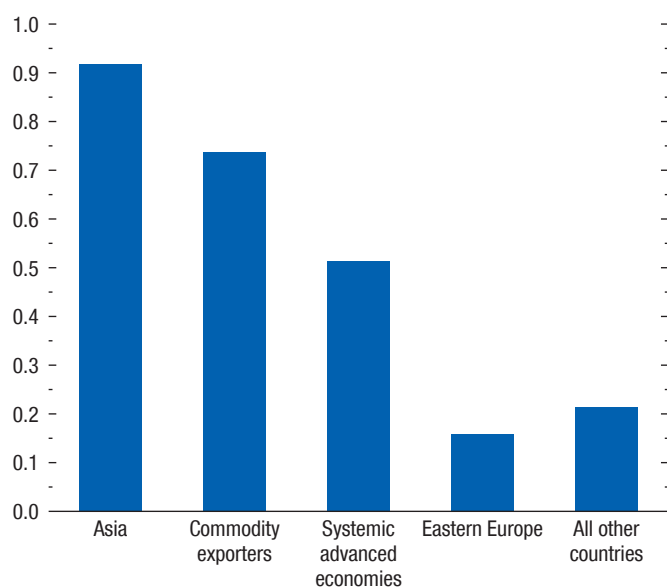
Demand rebalancing—from public investment to private consumption—has a negative, albeit modest, impact on global activity. Disentangling the impact of a general slowdown from that of demand rebalancing is challenging. Hong and others (2016), using TiVA data, find that the impact of growth-neutral rebalancing is likely to be modest, but stronger in emerging Asia. Using the IMF's Flexible System of Global Models (FSGM), Dizioli, Hunt, and Maliszewski (2016) reach a similar conclusion.¹⁴ Simulating a scenario in which public investment in China declines by 1.5 percent of GDP each year for five years, and transfers to liquidity-constrained households rise by an equivalent amount, demand rebalancing would reduce import demand from China: investment is more import intensive than consumption, and a shift

¹³Since the first quarter of 2014 China's transition may have depressed average export growth rates in a group of six Asian countries by about 1 percentage point a quarter, and less than half this amount in advanced and other emerging market economies.

¹⁴For details on the FSGM, see Andrle and others (2015).

Figure 4.5. Impact on Exports of a 1 Percent Shock to China's Demand after One Year

(Percent; GDP-weighted average)



Source: Blagrove and Vesperoni 2016.

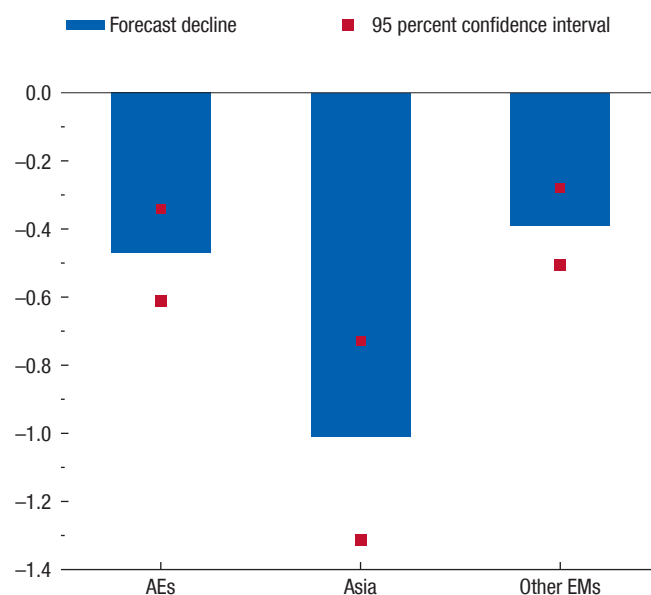
Note: Asia = HKG, IDN, KOR, PHL, SGP, THA. Commodity exporters = AUS, BRA, CHL, COL, RUS, ZAF. Eastern Europe = CZE, EST, HUN, LTU, LVA, POL, SVK, SVN, TUR. Systemic advanced economies = DEU, JPN, USA. All other countries = ARG, AUT, BEL, CAN, CHE, DNK, ESP, FRA, FIN, GBR, GRC, ISR, IRL, ISL, ITA, LUX, MEX, NLD, NOR, NZL, PRT, SWE. Data labels in the figure use International Organization for Standardization (ISO) country codes.

in demand toward the latter triggers a net reduction in imports. The effect on China's GDP depends on assumptions about the impact of public investment on productivity—that is, if the latter is negligible, GDP would fall in the short term but then recover afterward. Assuming some impact on productivity, however, would imply a permanent decline in GDP below baseline. From a global perspective, under both scenarios, GDP falls by less than 0.1 percent after five years, with emerging Asia most affected.

Finally, structural shifts and higher wages in China's transition play a role as well, affecting both trade volumes and global prices. One such shift is China's move to a higher position in the value chain, which prompted a return to domestic production (onshoring) of previously imported intermediate goods, but led to opportunities for some countries. Another shift relates to the persistent buildup of capacity in some sectors of the Chinese economy, which is likely affecting global prices. More specifically,

Figure 4.6. Decline in Average Export Growth Rate Attributed to China Demand, 2014:Q1–2015:Q3

(Percent)



Source: Blagrove and Vesperoni 2016.

Note: Blue bars depict the marginal impact of weaker GDP growth in China (relative to the January 2012 *World Economic Outlook* (WEO) forecast) on average export growth rates from 2014:Q1 to 2015:Q3. They represent the difference between an unconditional forecast (with China's growth rates based on the January 2012 WEO baseline) and a conditional forecast with the same information set, but adding estimated China demand shocks. AE = advanced economy; EM = emerging market economy.

- *Onshoring*—China is increasingly producing intermediate inputs domestically (Figure 4.7).¹⁵ IMF (2016c) provides evidence that the gradual increase of production of domestic intermediate goods in China has displaced imports from trade partners. This effect has been strongest in recent years and seems to be affecting imports of more sophisticated goods as China increasingly produces more complex medium-high-technology, capital-intensive goods—generally referred to as moving up the value chain. Dizioli, Hunt, and Maliszewski (2016) show that onshoring in China likely entails little change to global GDP, but could have a mild negative

¹⁵A number of indicators support this conclusion, including recent increases in the domestic-value-added content of China's exports (from about 50 percent in 2000 to just under 60 percent in 2011, according to Organisation for Economic Co-operation and Development–World Trade Organization Statistics on Trade in Value Added data), a steady decline in processing trade, and declining import intensity in some sectors. See Dizioli and others (2016).

effect on countries that trade more with China. To produce a greater share of exported goods domestically, China must increase its capital stock, implying stronger investment. Although China's import demand declines because of onshoring, which depresses activity in Asia and the euro area, the boost to domestic investment offsets these negative spillovers, resulting in little change to global GDP or commodity prices.

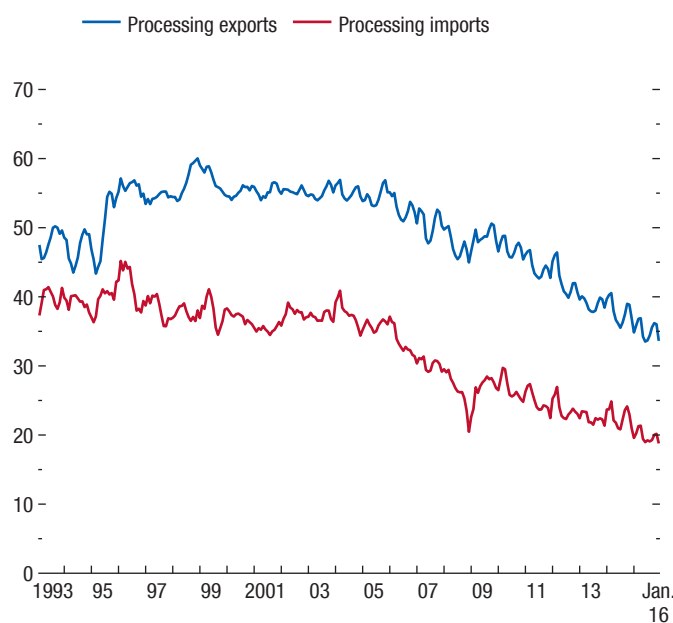
- *Market shares in labor-intensive goods*—Some countries stand to benefit from China's move up the value chain. This is the case for economies positioned to replace China's production of labor-intensive goods or to supply consumer goods to the Chinese market. The decline in China's export market shares of some labor-intensive consumer goods suggests a loss of competitiveness in these categories in recent years (see IMF 2016c and Abiad and others 2016). IMF 2016b discusses how countries such as Cambodia, Lao P.D.R., Myanmar, and Vietnam stand to benefit from China's rise up the value chain.
- *Overcapacity*—In the context of economic expansion during the 2000s, China has built up large capacity in certain sectors, notably those associated with infrastructure investment (for example, steel and cement). As the Chinese economy slows, excess capacity in these sectors has the potential to drive down global prices. Measuring overcapacity is complicated, and a thorough analysis of the issue is beyond the scope of this chapter, but a number of economic indicators—including declining profit margins in some sectors, as well as more conventional measures of capacity relative to total demand—point to overcapacity in some industries in China.¹⁶ An analysis of the spillovers to trade-partner inflation from overcapacity in China is provided in Chapter 3 of this *World Economic Outlook* report—it suggests that lower prices across a number of goods have been associated with lower import prices from China.

A Large Footprint in Commodity Markets

As with intermediate and final goods, China's demand for commodities has increased markedly over the past two decades. Since the mid-1990s China's

¹⁶See IMF (2016f), IMF (2016i), Morgan Stanley Research (2016a) and (2016b), among others.

Figure 4.7. China: Processing Trade
(Percent of total exports, three-month moving average)

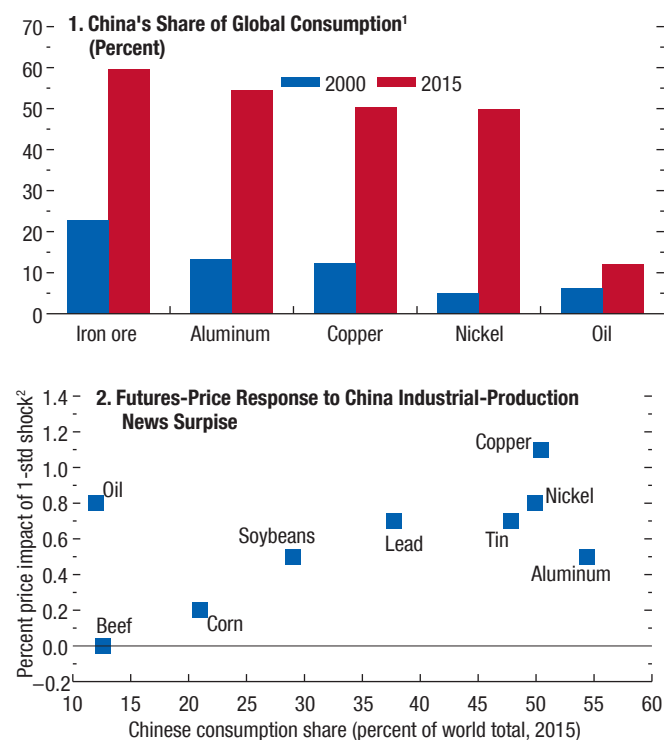


Sources: CEIC China database; and IMF staff calculations.

share of global demand for base metals—iron ore, aluminum, copper, and nickel—has risen from about 3 percent to about 40 percent (Figure 4.8, panel 1), while its share of demand for oil has increased from about 1 percent to 11 percent. Some food items show the same pattern—for instance, China's share of demand for soybeans represents 30 percent of global demand.¹⁷ At the same time, China is a major producer of some metals, and domestic supply has increased substantially over the same period.

This large footprint in commodity markets implies that both China's boom and its ongoing economic transition have had a significant impact on commodity markets. China's rapid economic growth in the 2000s likely played a role in the sharp increase in prices. In particular, the infrastructure-investment-led stimulus following the global financial crisis (which arguably created incentives for commodity producers—including China—to build capacity), contributed to higher commodity prices. Subsequently, China's growth transition and the ensuing slowdown in demand for com-

¹⁷For a more thorough discussion of global base metals demand and supply, see IMF (2015a).

Figure 4.8. A Large Footprint in Commodity Markets

Sources: Bloomberg L.P.; Kolerus, N'Diaye, and Saborowski 2016; World Bureau of Metal Statistics; U.S. Department of Agriculture; and IMF staff calculations.

¹ Latest available data for oil are from 2014.

² 1-std = one standard deviation.

modities have proved suppliers' previous production decisions overly optimistic. The result is oversupply and lower prices in many commodity markets. This has likely affected economies that are beyond production value chains in which China plays a critical role. Moreover, analysis in Nose, Saxegaard, and Torres (2016) indicates that there are spillovers from extractive to nonextractive sectors within these economies, which implies that the effects of negative terms-of-trade shocks are not limited to the extractive sector.

Shocks to economic activity in China have a significant impact on commodity prices, which is stronger in markets in which China's footprint is larger. Kolerus, N'Diaye, and Saborowski (2016) assess this impact under two analytical approaches. One gauges the response of commodity prices in futures markets to surprises in Chinese industrial-production data announcements using high-frequency data, while the other uses a more structural approach to assess the cumulative impact of shocks to China's demand on commodity prices at quarterly

frequency.¹⁸ These are complementary approaches that look both at market pricing of new information and at the economic significance of the price response to activity shocks. Both find that China's shocks have a significant impact on commodity prices; effects are larger in markets in which China represents a greater share of global demand (Figure 4.8, panel 2). Results from a structural vector autoregression also suggest that these effects are economically significant—over a one-year horizon, a 1 percent change in industrial production growth leads to a 5–7 percent increase in metal prices and a rise in fuel prices by about 7 percent.¹⁹ Conversely, high-frequency data offer an additional insight, showing that initial market reactions in commodity futures markets are larger when financial market uncertainty—as proxied by the Chicago Board Options Exchange Volatility Index (VIX)—is higher.

China's commodity price clout has increased over time. Structural vector autoregression estimates of 1-year price elasticities to China's demand estimated over a 10-year rolling window—estimated consecutively for each year, beginning in 1986–95, and ending with the 2006–15 window—show that the sensitivity of commodity prices to China's demand was negligible before China's accession to the World Trade Organization (Figure 4.9). However, since the early 2000s the sensitivity of oil and metal prices to China's demand has become statistically significant and has increased. For instance, the impact of developments in China on the price of iron ore rose throughout the sample period, in line with its increasing footprint in this market—from 3.5 percent of total demand in 1986 to 52 percent in 2015. Similar patterns are observed for copper and aluminum.

In line with these findings, recent IMF research suggests that weak demand in China accounts for a significant portion of the decline in commodity prices since 2013. Analysis in IMF 2016c builds on the strong common factor in commodity-price fluctuations—typically interpreted as a reflection of global economic conditions—and estimates a factor-augmented vector autoregressive model for a sample of about 40 com-

¹⁸In the first approach, future commodity prices at daily frequency are regressed on China's industrial production announcement surprises—that is, deviations of industrial production growth from the median Bloomberg consensus before the announcement. The second approach employs a structural vector autoregression to estimate the reaction of commodity prices to Chinese demand using quarterly data from 1986 to 2015.

¹⁹Aastveit and others (2012); Gauvin and Rebillard (2015); Roache (2012); and Roache and Rousset (2015) also find that shocks to China's demand have a significant impact on commodity prices.

modity prices and shocks to economic activity in China and in the rest of the world. The estimates suggest that most of the decline in commodity prices is explained by shocks to economic activity in the rest of the world until 2013, but that China's demand shocks have played a significant role since then, and that the effect on nonfuel commodity prices is larger. These estimates are corroborated by simulations using the IMF's FSGM.²⁰

The decline in commodity prices will benefit commodity importers, including some emerging market and developing economies. Lower prices may dampen spillovers from trade in some countries, notably in Asia. Dizioli, Hunt, and Maliszewski (2016) conduct simulations of a gradual slowdown in China over the course of five years that reduces the level of GDP by about 5 percent by 2020 compared with a baseline in which it does not decelerate (Figure 4.10). This shock entails a reduction in investment and consumption in China and thus compression of its demand for imports. Weaker demand also depresses commodity prices—oil and metals prices are lower by about 7 percent. The simulation suggests that oil exporters are significantly worse off: Latin America suffers moderate output losses, and emerging Asia, the euro area, and Japan experience losses in between. Lower commodity prices are behind the positive impact in the United States.²¹ An interesting insight from this exercise is that, despite being strongly affected through trade channels, spillovers to emerging Asia are comparable to those in the euro area because the region's heavy reliance on imports of commodities curbs direct spillovers from trade. Indeed, staff calculations indicate that while the impact of lower commodity prices in Asian economies partially offset spillovers through trade, commodity exporters in all regions have experienced negative spillovers from both channels (Figure 4.11).²²

Financial Markets

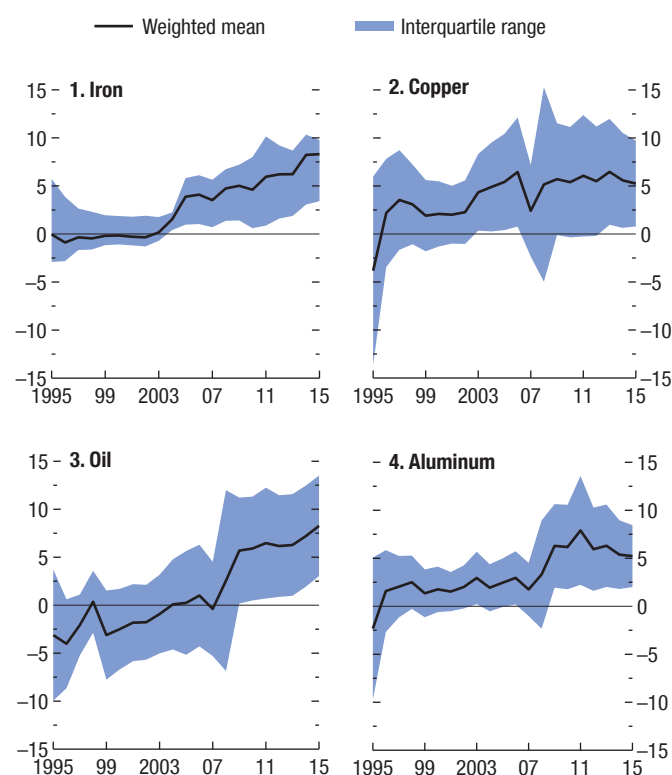
Direct transmission of spillovers through financial channels is still limited, but developments in China

²⁰Simulations are presented in IMF 2016e.

²¹The impact of lower commodity prices is complex. For exporters, it will reduce export values and negatively impact the terms of trade, but will also affect domestic growth more broadly, by tightening credit conditions and weakening balance sheets, which can also erode the fiscal position (see IMF 2015b, IMF 2015f, and IMF 2016g). The impact on commodity importers depends on the pass-through of lower prices to consumers and their impact on real interest rates in the presence of monetary policy constraints—that is, the zero lower bound.

²²Calculations are based on the empirical analysis in the previous two sections and on country shares of commodity exports in Gruss (2014).

Figure 4.9. Cumulative One-Year Price Impact from a 1 Percent Shock to China's Industrial Production (Percent)



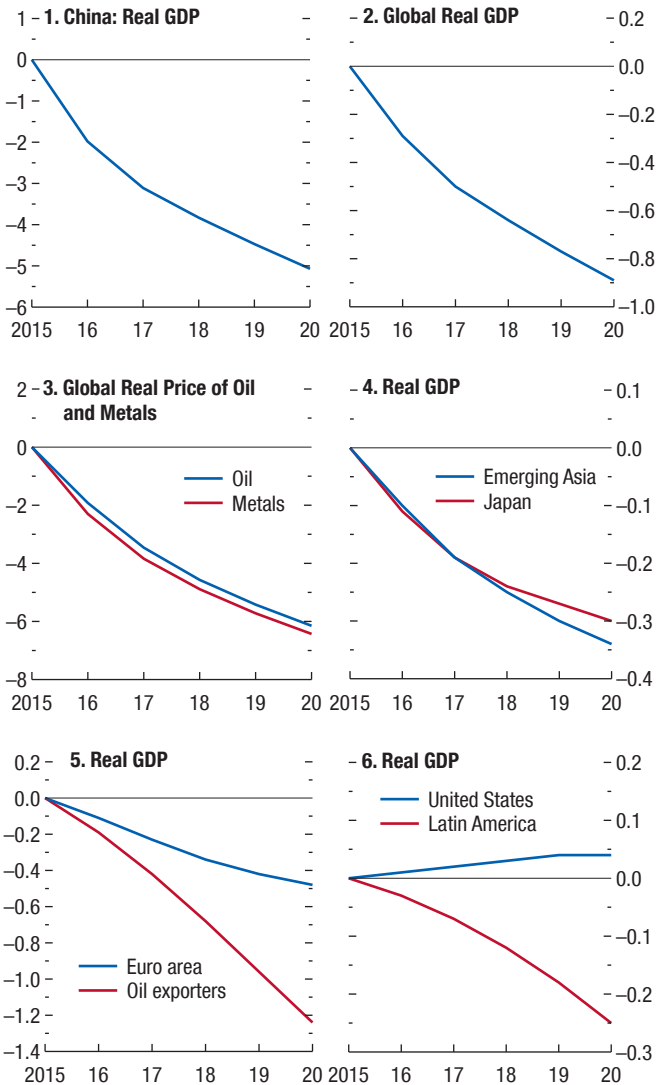
Source: Kolerus, N'Diaye, and Saborowski 2016.

Note: x-axis indicates the last year of a rolling 10-year period.

are increasingly affecting asset prices globally and likely amplifying the impact of real shocks. The relatively limited transmission of financial shocks so far is associated with China's integration into global markets—there are still significant capital-account restrictions, including limitations on inward foreign direct investment, quotas on portfolio flows, and caps on foreign borrowing by domestic residents. However, financial linkages are increasing, and the impact of events in China on financial markets over the past year suggests that they can amplify real shocks by affecting asset prices and hence financing costs, especially in emerging markets. Increasing financial vulnerabilities in China could also lead to a disorderly deleveraging that could trigger contagion in emerging market financial markets and exchange rates by affecting confidence.²³ A closer look at the comovement of China's and global asset prices and the repercus-

²³See IMF 2016g.

Figure 4.10. China: Slowdown Scenario
(Percent deviation from no-slowdown baseline)



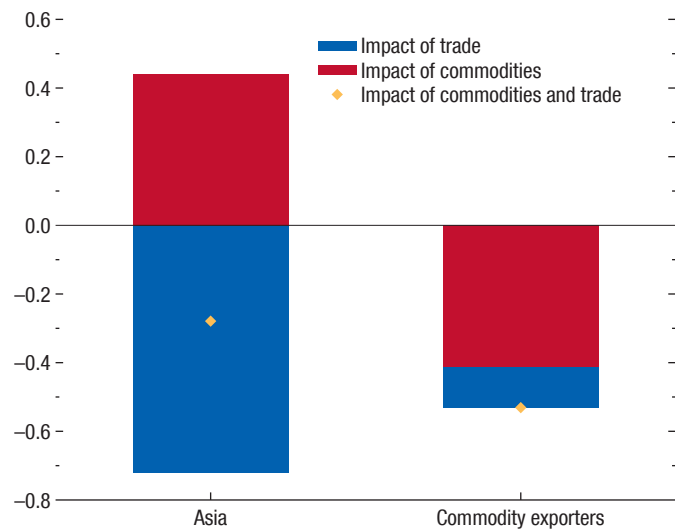
Source: Dizioli, Hunt, and Maliszewski (2016).
Note: This scenario considers a gradual slowdown in China's GDP growth over a five-year period. This slowdown is assumed to be driven by weaker productivity growth, and leaves the level of real GDP 5 percent lower than it would have been if no slowdown occurred.

sions of policy uncertainty in China on global financial markets can shed some light on these issues.

Comovement between asset prices in China and elsewhere has strengthened. Mwase and others (2016) assess this comovement using the connectedness indicator proposed by Diebold and Yilmaz (2011).²⁴

²⁴This indicator has also been applied, for example, to assess directional connectedness in IMF (2016d) and Guimaraes-Filho and Hong (2016).

Figure 4.11. Spillovers from China
(Percent of GDP)¹



Source: IMF staff calculations.
Note: Asia = HKG, IDN, JPN, KOR, PHL, SGP, THA; Commodity exporters = AUS, BRA, CAN, CHL, COL, ISL, NOR, RUS, ZAF. Data labels in the figure use International Organization for Standardization (ISO) country codes. "Impact of trade" denotes the impact on exports as a percent of GDP from a 1 percent shock to Chinese final demand. "Impact of commodities" denotes the impact on exports as a percent of GDP from a change in commodity prices due to a 1 percent shock to Chinese industrial production. "Impact of commodities and trade" denotes the aggregate spillovers from trade and commodity channels.
¹Nominal GDP; average 2011–13.

They show that comovement between stock market returns and exchange rates in China and elsewhere has increased since mid-2015 (Figure 4.12, panel 1), and that the latter is larger in economies with stronger trade links with China—notably in emerging Asia—and in commodity producing countries. The overall magnitude of comovement attributed to China has increased, although it remains relatively modest—it explains about 1 percent of the forecast error variance elsewhere, even during events over the past year.²⁵ This may in part be related to the inability of Diebold and Yilmaz's (2011) framework to identify structural shocks originating in China.

Developments in China—including policy uncertainty—have an impact on asset prices, particularly in emerging market economies and in countries with stronger trade links to China. Mwase and others (2016) also use a stronger identification strategy of China's shocks

²⁵To put this in context, financial market comovements attributed to China are about one-fifth the magnitude of those attributed to the United States but are similar to those attributed to Japan.

developed by Arslanalp and others (2016)—relying on information on asset prices, global developments, and China-specific news—to get further insights into China's role in driving events since early 2015. They find that adverse shocks in China reduce equity prices both in advanced and in emerging market economies, with stronger effects on countries with higher trade exposure to China (Figure 4.12, panel 2).²⁶ Exchange rates in emerging markets depreciate while those in advanced economies appreciate, in particular in safe haven economies. Arslanalp and others (2016) focus on Asian financial markets and also find that spillovers through financial channels are increasing and are larger for countries with greater trade exposure to China. These results, and the timing of the events, suggest that recent policy uncertainty—related to the exchange rate regime and renminbi depreciation and the policy response to a domestic-equity-market adjustment—affected asset prices elsewhere. The event study evidence is corroborated by structural vector autoregression analysis, which suggests that a decline in equity prices and weak industrial production lead to lower U.S. and emerging market economy stock valuations and weaker oil and metal prices. It also shows that adjustments in China's exchange rate have a large impact on commodity prices, equity prices, and exchange rates in emerging markets. Over the past year, market reactions to renminbi depreciations have been strong because, compared with other asset prices, adjustment in exchange rates have implications beyond financial market developments.

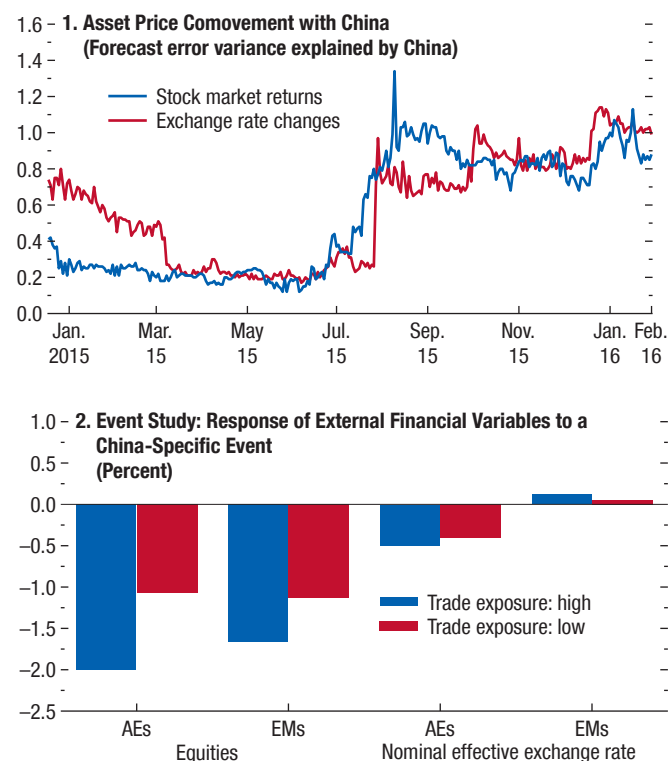
China's large foreign assets and liabilities imply that the financial channel will be more relevant in the future as the capital account opens up. China's international investment position is large, it is long on debt and short on equity, and its main assets are reserve holdings and foreign direct investment.²⁷ At \$3.3 trillion as of June 2016, China's foreign exchange reserves represent about 30 percent of global reserves. Changes in the latter could have a material impact on the price of China's holdings, most of which are U.S. Treasury bonds, although to date there has not been a strong correlation between China's reserve accumulation and U.S. Treasury bond yields.²⁸ China's foreign direct investment is especially important for low-income countries in particular because it

²⁶These findings echo those of IMF (2016d).

²⁷Mwase and others (2016).

²⁸The recent fall in reserves—\$750 billion between June 2014 and June 2016, of which about \$240 billion were U.S. Treasury bonds—was met with declining yields, as it took place amid risk-off global conditions.

Figure 4.12. Transmission of Spillovers through Financial Channels



Source: Mwase and others 2016.

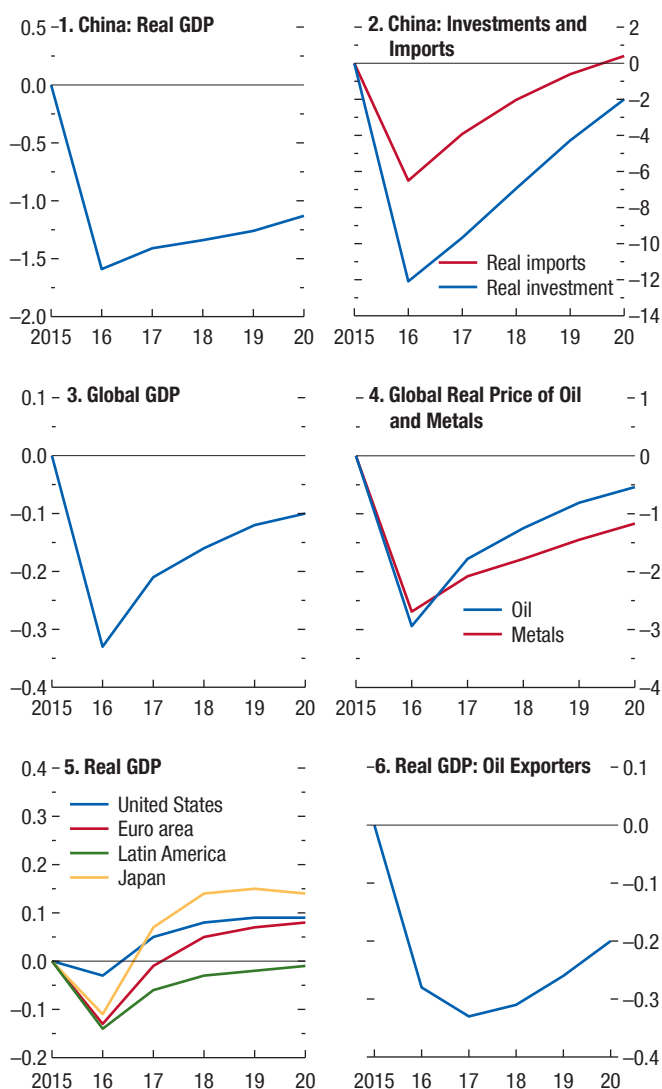
Note: AE = advanced economy, EM = emerging market economy.

holds large investments in small emerging Asian and sub-Saharan African economies (see Box 4.1). As for liabilities, cross-border banking linkages are comparable to some Group of Seven economies. Foreign banks' claims on Chinese entities stood at less than \$1 trillion as of the first quarter of 2016, declining by more than 25 percent compared with the end of 2014, and is concentrated within a few large systemically important financial institutions. Stress testing suggests that even a substantial shock from Chinese banks would not lower banking system capital below Basel III requirements in countries with exposure to China.

Policy: The Importance of Managing the Transition

China's slowdown has spillover implications, but a smooth transition will benefit the global economy over the long term. Just as rapid growth in China fostered global growth in the past, the ongoing slowdown and rebalancing entail significant spillovers through trade, and a large impact on commodity prices. Spillovers

Figure 4.13. China: Cyclical Slowdown Scenario
(Percent deviation from no-slowdown baseline)



Source: Dizioli, Hunt, and Maliszewski (2016).

through these channels have become larger over time, as has the impact of events in China on asset prices elsewhere, amplifying spillovers from the real economy. Even a smooth transition will require China's trading partners to adjust to slowing demand in the short term, developing new export markets and reallocating resources away from the most affected sectors. However, a well-managed transition will reduce the risk of a disorderly adjustment with larger spillovers and ensure more sustainable growth with potential gains for the global economy. Sustaining progress on reforms and tackling vulnerabilities will reduce downward risks, which can

boost sentiment and lift investment in trading partners. China's announced capacity reductions in coal and steel production, if implemented, could have a sizable effect on global markets. Moreover, some elements of China's rebalancing—such as its move up the value chain and the prospective boost to domestic consumption growth in the years ahead—will create opportunities for some economies, notably in emerging Asia, and the increase in services trade and China's investment abroad are likely to produce short-term benefits for some countries.²⁹

In contrast, a bumpy or incomplete transition may exacerbate spillovers. Policy uncertainty since mid-2015 highlights growing challenges to management of China's slowdown in a highly leveraged economy and may give rise to a disruptive transition. Dizioli, Hunt, and Maliszewski (2016) build a scenario in which a reassessment of risk in China illustrates the possible costs of such a transition (Figure 4.13).³⁰ A decline in asset prices by 10 percent and an increase in the corporate risk premium by 150 basis points during the first year would reduce investment and private consumption in China by about 10 percent and 2.5 percent, respectively, and real GDP by about 1.5 percent. Despite some offset from lower commodity prices, spillovers would be uniformly negative, and worse than those on the global economy under a smooth transition.

This highlights the benefits of a transition in which China strengthens transparency—especially in communicating policy objectives—and accepts lower growth. Clear communication of policy intentions, including further steps to move toward a floating exchange rate regime, is of the essence. Policy uncertainty and financial sector risk may trigger large adjustments in equity prices and exchange rates, which are destabilizing for global growth. Accepting lower growth entails keeping credit growth in check by tackling its root causes—notably, the pursuit of unsustainably high growth targets—and can produce higher and better-quality growth in the long term. A comprehensive plan to address vulnerabilities in the financial sector is needed, including restructuring or resolving weak firms, requiring banks to recognize and manage impaired assets and

²⁹For a discussion on short-term costs and long-term gains of China's transition, see IMF (2016f) and Hong and others (2016).

³⁰This exercise can be thought as one in which China does not rebalance, only to suffer a larger fall in activity later. The reassessment of risk in China would be related to a continued building of vulnerabilities in the financial sector due to rapid credit growth. An explicit risk scenario without reforms in the short term and a larger fall in activity over the medium term is shown in IMF (2015g).

boosting their buffers, hardening budget constraints by reducing access to credit of weak firms, creating a more market-based system to resolve distressed debt, reining in shadow bank and product risks, and dampening excessive housing price growth. On the fiscal front, the large deficit should be reduced over the medium-term to ensure debt sustainability. Temporary, targeted, on-budget, proconsumption fiscal stimulus can be used if growth threatens to fall excessively. Off-budget public investment should be scaled down.

As for recipient economies, efforts to boost trade and integrate them into value chains are called for, as are structural reforms to foster growth or change existing growth models. Policy responses will depend on countries' circumstances—and, in particular, their trade links with China and their export mix. More specifically,

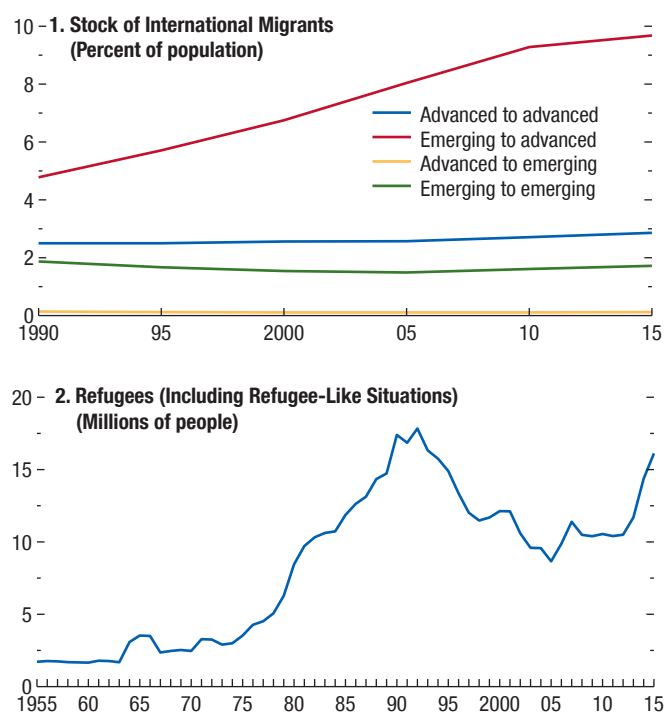
- In countries with significant trade links to China—while available policy space and exchange rate flexibility should be used to cushion the negative impact of weaker external demand—adjustment is needed to permanently lower demand from China. Achieving this goal may imply a reduction in domestic absorption with a possible depreciation of the real exchange rate unless alternative exports markets can be developed (see below).
- Global and regional agreements can bolster trade. These also provide opportunities to push the frontier on such issues as services and regulatory cooperation, and foreign direct investment policies, which can boost efficiency and productivity through greater investment, technology transfer, and integration into global value chains. But it is also important to move ahead with an ambitious agenda in the World Trade Organization, and to leverage its unique reach and well-developed legal and institutional structure to help ensure coherence across the global trading system. Flexible negotiation approaches should allow for different speeds and depths of liberalization among countries.
- Because commodity prices are likely to remain low as a result of weaker demand from China, commodity exporters should use buffers where available, but also plan for adjustment, including through reduced and more efficient public expenditures and stronger fiscal frameworks, and the mobilization of new revenue sources. Some countries may also need to pursue new growth models. Commodity importers stand to benefit from lower prices; the appropriate use of windfall savings in these countries would depend on their cyclical and fiscal positions.

- China's transition creates an opportunity for low-wage, labor-rich countries to increase their production of labor-intensive goods, as well as for producers of consumption goods. To support such an increase, sound structural policies are important, including improvements in infrastructure, governance, the business climate, and trade openness.

From a global perspective, protectionist policies must be avoided, as these would be detrimental to trade over the long term. Spillovers from China's transition may prompt countries to pursue trade restrictions to protect domestic producers against weaker external demand or perceptions that China is contributing to oversupply in some markets. Such protectionist measures—not necessarily in response to developments in China—have likely played some role in depressing global trade over recent years, and could deter it over the long term. In the past, legal commitments, Group of Twenty pledges, and the recognition of potential economic damage from trade restrictions have discouraged countries from imposing new restrictions, particularly during the global financial crisis. Global leadership and a collective effort should promote trade agreements that would counteract movement toward protectionism. Moreover, trade reforms can complement other reforms in goods and services markets as they boost productivity by enhancing efficiency, promoting competition, and encouraging innovation and adoption of existing technologies.

The Challenges and Opportunities of Migration

Geopolitical conflicts and economic disparity are contributing to large migration flows with far-reaching social and economic repercussions and, especially in the case of refugees, humanitarian issues. Migration may stir social tensions and provoke a political backlash in recipient economies, but past experience suggests it may also offer gains in terms of higher growth, productivity, and relief from population aging. Swift labor market integration is key to harnessing the gains in terms of growth, increasing the contribution of migrants to the fiscal accounts, and reducing tensions. In source countries, migration can take a toll on long-term growth prospects as the young and the educated population leave—usually known as “brain drain”—which can be mitigated by remittances. Depending on the underlying drivers of migration, source countries need policies to address brain drain and maximize the benefits from

Figure 4.14. International Migrants and Refugees

Sources: United Nations High Commissioner for Refugees; and IMF staff calculations.

remittances and diaspora networks. Global cooperation is needed to address humanitarian issues.

Trends, Drivers, and Challenges of Migration

Migration has risen steadily over recent decades. The stock of international migrants increased from 150 million in 1990 to 250 million in 2015.³¹ While the number of migrants between emerging market economies is the largest, it comprises a small and stable proportion of their population—about 2 percent. Migration from emerging to advanced economies has been larger in relative terms and more dynamic: the share of migrants in the population of host countries almost doubled from about 5 percent to 10 percent between 1990 and 2015 (Figure 4.14, panel 1), with significant country differences. In 2015, migrants represented about 5 percent of the population in Finland and about 30 percent in Australia. There are two types of migrants: economic (voluntary, in search of better prospects) and humanitarian (refugees, escaping conflict and strife).

³¹This number and the analysis in the chapter exclude illegal migration.

The stock of international migration is dominated by economic migrants, but the recent surge in refugees has raised their number close to record levels. Economic migrants constitute almost 95 percent of the total stock of migrants, and they appear to be on a stable and increasing rise, whereas refugees represent a relatively small share, but their numbers have been volatile. The recent civil war in Syria and unrest throughout the Middle East have raised the number of refugees to the highest level since the 1990s (Figure 4.14, panel 2). The flow of new refugees surged in 2014–15, reaching 4.5 million—about half of the flows of total migration over those years. Jordan, Lebanon, and Turkey were the main recipients, hosting about 2.2 million new refugees over the same period. The European Union also received an unparalleled number of refugees recently—about 1.25 million first-time asylum applications were submitted in 2015, and applications continued to increase in 2016, although at a decreasing rate.

Total international migration is dominated by people of working age but, among refugees, the number of children is much larger. More than 70 percent of the stock of migrants is in the 20–64 age group (Figure 4.15, panel 1). In fact, migrants represent a significant share of the labor force in many advanced economies. Their presence increases the working-age population and reduces dependency ratios; in some countries, they have contributed about half of the growth in the working-age population between 1990 and 2010 (Figure 4.15, panel 2). The stock of refugees has a stronger presence of children; in 2015, for instance, more than half of refugees were under the age of 18.

Increasingly, migrants to advanced economies have high- and medium-level skills, although the number of low-skill migrants is still higher compared with the latter.³² By 2010, high-skilled migrants constituted about 6 percent of the population across advanced economies—up from 2 percent in the 1990s—while medium- and low-skilled migrants represented about 4 percent and 5 percent, respectively (Figure 4.15, panel 3). This likely reflects in part the global rise in educational attainment over the past decades. Skill-based immigration policies, particularly in some Anglo-Saxon countries, which tend to have a larger proportion of high-skilled migrants, may have played a role as well.

³²The skill level refers to education level: higher than high school leaving certificate or equivalent (high-skilled); high school leaving certificate or equivalent (medium-skilled); primary or no schooling (low-skilled).

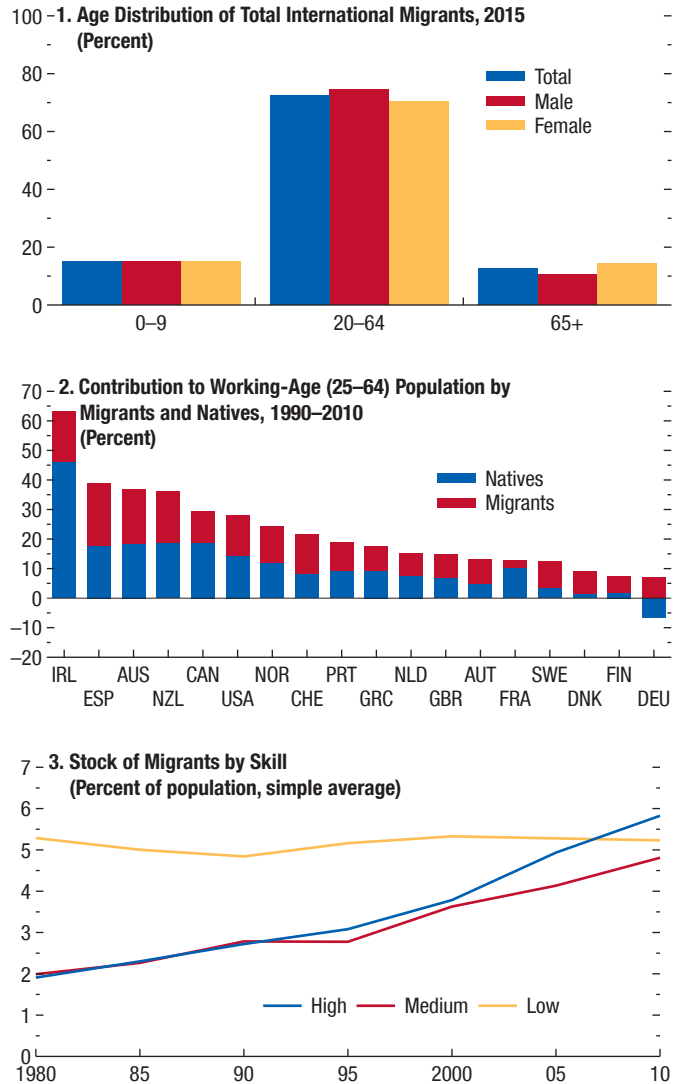
The share of migrants with low skills in continental Europe and medium skills in Nordic countries (Denmark, Finland, Norway, and Sweden) remains relatively high—although skill levels of migrants have been on the rise there as well.

Migration is shaped by a combination of social and economic conditions at home and abroad, raising difficult humanitarian issues and potential tensions in recipient countries. Refugee flows are driven by the need to flee violence and persecution, leaving people no choice but to leave their homes amid political instability and conflicts. As for economic migration, a number of factors are at play. Lack of opportunities and deteriorating economic conditions in source countries can push migrants to greener pastures abroad. Pull factors in recipient economies are more complex and determine not only the extent of migration but also its distribution among host countries (Jaumotte, Koloskova, and Saxena 2016). First, economic conditions in recipient economies are critical. There is a positive association between long-term real GDP per capita growth and the change in the share of migrants (Figure 4.16, panel 1). Second, some structural factors matter. For migrants, the choice to move entails important geographic and cultural factors, such as distance to destination countries, common language, contiguous borders, and common colonial links (Figure 4.16, panel 2). Third, immigration policies in host countries affect migration flows. Reforms that tighten entry laws reduce migration flows, while less restrictive laws—as a result of signing the Maastricht treaty, for example—have the opposite effect (see Ortega and Peri 2009). Despite the opportunities associated with migration, it also poses challenges for both sending and recipient countries, mainly the loss of human capital in the former and potential social tensions with political consequences in the latter.

Recipient Countries: Challenges and Long-Term Gains

International migration is both a boon and a challenge for host countries. Migrants can boost the labor force and have a positive impact on growth and public finances over the long term, especially in countries with aging populations. However, receiving migrants poses challenges. There are concerns about displacement of native workers and short-term fiscal costs, especially in the case of refugees. This can add to possible social tensions related to differences in culture and language—given the compositional effects that migration may have on the population—and security-

Figure 4.15. Migration by Age and Skill



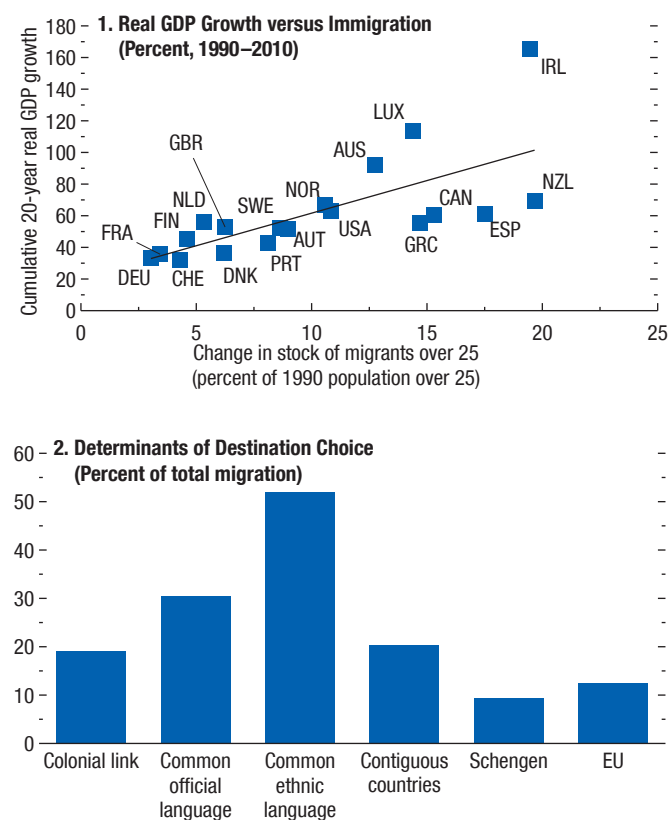
Sources: IAB; United Nations Department of Economic and Social Affairs, Population Division 2015 and *World Population Prospects 2015 Revision*; and IMF staff calculations. Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

related incidents in some countries.³³ These tensions may prompt a political backlash, as demonstrated by the referendum in the United Kingdom on European Union membership, in which migration played a role.

The speed of integration is key. Past experience suggests that swift integration into labor markets is critical to harness the economic gains from migration, both in

³³See Card, Dustmann, and Preston (2009), who show that people have stronger concerns about migration than trade.

Figure 4.16. Determinants of Migration



Sources: CEPII database; United Nations Global Migration database; and IMF staff calculations.

Note: The numbers are based on total stocks of migrants between all origin and 18 destination countries, that share the listed characteristics. The numbers are expressed as a percent of the total stock of migrants in 18 destination countries. Schengen = Schengen area countries that allow free movement of their citizens across their borders. Data labels in the figure use International Organization for Standardization (ISO) country codes.

the short and the long term. It can also speed up the positive impact on fiscal accounts, bolstering positive spillovers in recipient economies. Arguably, swift economic integration can accelerate and deepen social integration, with positive feedback effects between the two, although it may create tensions in the short term as well, especially when unemployment is high.

Labor Markets: The Central Role of Integration

The impact of migration on labor markets depends on complementarity between migrants and native workers. In principle, migrants with skills similar to those of natives would compete with them in the labor market and affect employment and wages, especially in the short term—before the capital stock adjusts to more labor. However, if migrants’ skills complement

those of native workers, the impact could be positive (Aiyar and others 2016). This may be relevant, for instance, in a number of countries where labor market participation of highly skilled native women tends to be greater when there are lower-skilled female labor migrants (Jaumotte, Koloskova, and Saxena 2016; see Figure 4.17). The availability of relatively low-cost workers in the services or health care sector may allow high-skilled women to enter the labor force or work longer hours, increasing productivity.

Past experience suggests that migration has little effect on employment rates and average wages of native workers, although it may have an impact in certain labor market segments. Most of the academic literature suggests that the impact of migration on average wages or employment of native workers is very limited.³⁴ Instead, the literature suggests that migrants can contribute to labor markets through the complementarities just mentioned, which allow for: (1) natives to move into different segments of labor markets, often performing more complex tasks that promote skill upgrading and hence foster efficient specialization; (2) an increase in female labor market participation; (3) more efficient market functioning, with migrants filling up occupations for which natives are in short supply; (4) contributions of high-skilled migrants to technological progress; and (5) an increase in demand, which is likely to boost consumption in the short term and investment over the medium term.³⁵ Some studies, though, find a negative impact on wages of low-skilled workers.³⁶

The labor market performance of migrants themselves suggests that labor market integration is complex. Aiyar and others (2016) find that migrants have lower participation, employment rates, and wages than natives in advanced economies (Figure 4.18, panel 1). The earnings and employment gaps are pronounced in the initial years and fall as migrants gain language proficiency and obtain more relevant job experience—migrants from

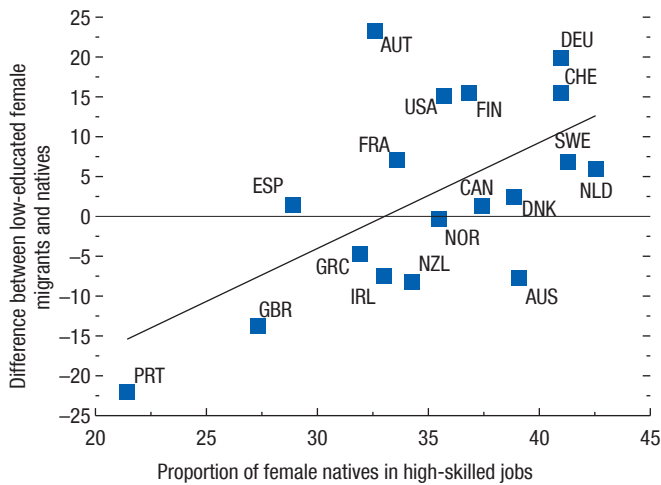
³⁴See Peri (2014a), (2014b) for a survey of studies on the impact of immigration on employment and wages of native workers. See also IMF (2015c) and Aiyar and others (2016), and references therein. Some case studies have also found no significant impact of migration on labor markets for natives, for example Card (1990) for the Mariel boatlift in early (1980); and Akgunduz, van den Berg, and Hassink (2015), for the impact of the recent flow of Syrian refugees into Turkey.

³⁵See, for example, Alesina, Harnoss, and Rapoport (2015); Cattaneo, Fiorio, and Peri (2015); D’Amuri and Peri (2014); Farré, González, and Ortega (2011); Hunt and Gauthier-Loiselle (2010); Ortega and Peri (2014); Peri, Shih, and Sparber (2015); and Peri and Sparber (2009).

³⁶Borjas (2003, 2006) and Aydemir and Borjas (2007, 2011) document a negative impact on low-skilled natives’ wages in the U.S. labor market.

Figure 4.17. Females: Low Education versus High Skilled, 2000

(Percent of total)



Sources: Organisation for Economic Co-operation and Development; and IMF staff calculations.
 Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

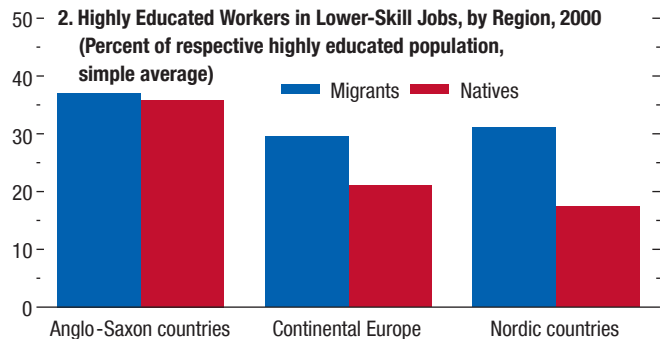
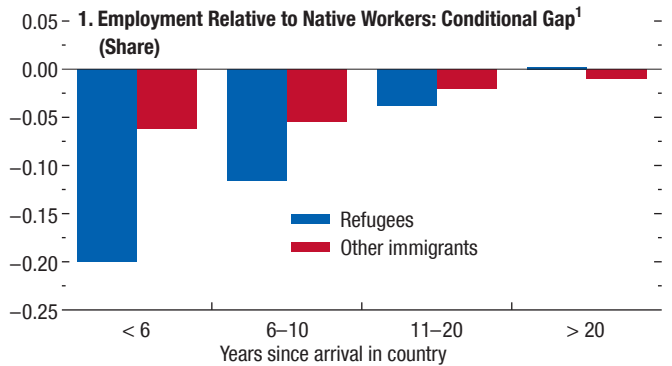
advanced economies or with better initial language skills often do better than other groups. Challenges for female migrants and refugees seem to be particularly acute; their labor market outcomes are worse, especially in the short term (Aldén and Hammarstedt 2014; Ott 2013).

The challenges at play include:

- *Skill recognition*—Migrants tend to be under-represented in high-skill jobs and over-represented in low-skill jobs.³⁷ This may be in part justified by differences in education—for instance, a degree in the country of origin may not be of the same quality as one in host countries—but it may also reflect policies, a lack of recognition of skills, or disadvantages linked to cultural differences. These translate into a missed opportunity for the host country. For example, benchmarking against natives, continental European and Nordic countries have a higher proportion of highly educated migrants employed in lower-skill occupations than other countries. In contrast, the opportunities for highly educated migrants and natives tend to be similar in Anglo-Saxon countries (Figure 4.18, panel 2).
- *Labor market regulations*—Excessive employment protection or high taxes and social security contri-

³⁷See, for example, Aleksynska and Tritah (2013) for occupation-educational mismatch of immigrants in Europe.

Figure 4.18. Labor Market Performance



Sources: European Social Survey, Rounds 1–6; Organisation for Economic Co-operation and Development; and IMF staff calculations.

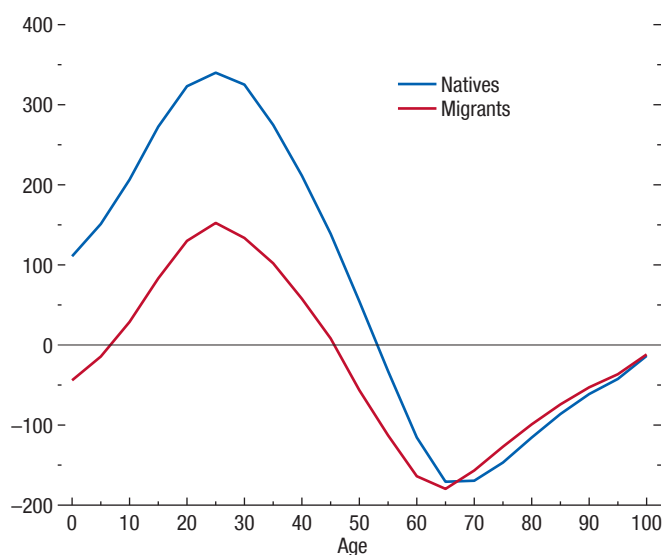
¹Conditional gap measures the difference in the relevant outcome between natives and immigrants; depending on age, sex, years of education, language skills, host country, and time period.

butions can take a toll on employment, in particular for workers whose productivity is a priori uncertain (see, for example, Blanchard, Jaumotte, and Loungani 2013). Employment rates for migrants are higher in countries with low entry-level wages and less employment protection (Ho and Shirono 2015).

- *Additional challenges for refugees*—Uncertainty about refugees' legal status—the acceptance of their application for asylum—can delay their labor market entry. While their applications are being considered, asylum seekers often face legal barriers to employment (Hatton 2013) and, in European countries, application processing may take from two months to a year. Finally, given that migration drivers for refugees are less determined by pull factors—such as high growth in the host country—arrival in an environment of high unemployment may lower their employment rates and wages for a prolonged period (Åslund and Rooth 2007),

Figure 4.19. Germany: Present Value of Expected Future Net Fiscal Contribution by Age Group

(Thousands of euros, based on generational account approach; base year = 2012)



Source: Bonin (2014).

highlighting the importance of the phase of the business cycle in the integration process.

Migration and Fiscal Challenges

Labor market integration also plays a critical role in the fiscal impact in recipient economies. Over time, given their impact on the working-age population and economic activity, migrants can generate additional tax revenues and social contributions. But integration takes time, especially in the case of refugees, which means there will be a delay before they begin making a fiscal contribution. In the short term, they may need recourse to welfare services and claim social benefits—notably, health care and social assistance. Migration may also affect natives' use of fiscal resources to the extent that the presence of migrants increases natives' unemployment rate or lowers their wages.³⁸ The impact of migration on fiscal accounts depends not only on migrants' income, but also on the generosity of the social security system in host economies.

³⁸As discussed, most of the literature suggests that such effects are small. These effects could also be mitigated if migration increases the income from capital accruing to natives (Borjas 1999). Conde Ruiz, Ramón García, and Navarro (2008) document such effects for Spain in the early 2000s.

Over their lifetime, migrants tend to contribute less than natives to the fiscal accounts, mainly because they pay less in taxes and social security payments. This points again to the importance of their integration into labor markets—their smaller contributions reflect less time in the labor force and lower-paying jobs.³⁹ Migrants depend more on some social transfers, but differences between them and natives do not seem to have large budgetary implications. Relative to unemployed native-borns, unemployed migrants are more likely to receive social assistance, but less likely to receive generally more generous unemployment benefits. The case of Germany illustrates that both natives and migrants have an increasing contribution as they approach working age, which diminishes during retirement (Figure 4.19)—the contribution of migrants, though, tends to become positive later, peak at a lower level, and turn negative at an earlier stage (see Aiyar and others 2016 and IMF 2015c).

Past experience suggests that the net fiscal impact of migrants is small for OECD countries. Estimates depend critically on a number of assumptions—notably the many elements that determine the employment prospects of migrants (as noted above), their age profile, and how the analytical approach takes into account the dynamic macroeconomic effects of migration. OECD (2013) presents a cross-country study based on a static accounting (cash flow) model that assesses the tax and social security contributions as well as the receipt of social security benefits and government services of the stock of migrants in 27 OECD countries between 2007 and 2009. The impact, either positive or negative, rarely exceeds 0.5 percent of GDP in a given year and is about zero on average. There is a positive fiscal impact in 19 countries—that is, 70 percent of the sample of countries.

Higher short-term costs of caring for refugees, however, could add fiscal pressure in recipient economies. On arrival, refugees receive housing, subsistence, and integration support. Moreover, as noted above, they are often not allowed to work until their legal status is cleared. This lowers their short-term fiscal contribution relative to that of other migrants and natives. Less developed countries have typically shouldered the largest burden associated with refugees—for instance,

³⁹This also explains the rationale of labor migration management systems. In the Australian system, for example, age has a strong weight—up to 38 percent of the pass mark—and there are maximum-age thresholds for admission.

in Jordan, Lebanon, and Turkey, spending on refugees is estimated at 2.4 percent, 3.2 percent, and 1.3 percent of GDP, respectively, during the recent surge.⁴⁰ But this is also relevant for many European countries, which have relatively generous welfare systems and a significant number of humanitarian migrants. IMF staff estimates for the euro area suggest that average budgetary expenditures on refugees could reach 0.2 percent of GDP in 2016, with Austria, Finland, Germany, and Sweden expected to shoulder the largest spending increases. For Sweden, expenditure on migration is expected to be 1 percent of GDP in 2016.

Over the longer term, migration has the potential to reduce fiscal pressure related to population aging in recipient countries (Figure 4.20). For example, continued migration in line with current trends could slow the expected increase in the old-age dependency ratio and associated health care and pension spending relative to GDP (Clements and others 2015; European Commission 2015). These effects will be larger, the larger the impact of migration on GDP growth. Migration cannot fully address challenges from population aging, but it can provide time to phase in entitlement and other reforms, which are still necessary in many countries.

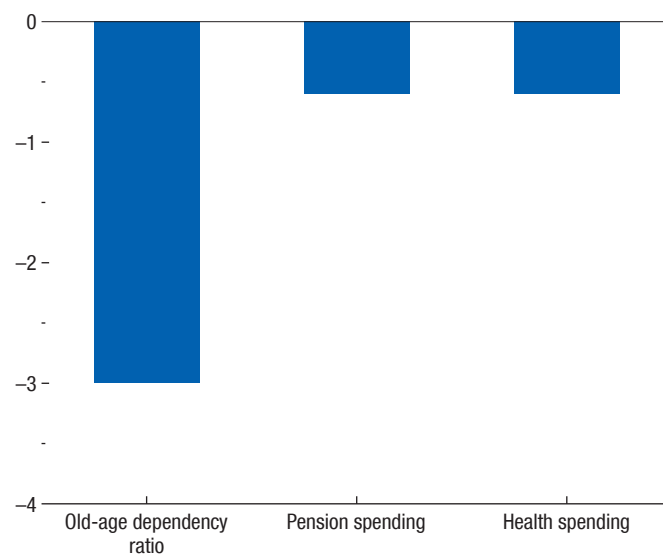
Positive Growth Effects over the Longer Term

Migration can boost aggregate income in recipient countries over the long term. It can do so through several channels. First, by expanding the labor force, migration can boost capital accumulation. Second, properly integrated into labor markets, migrants can increase the employment-to-population ratio. Finally, migrants can foster labor productivity through complementarities with native workers and by increasing diversity in productive skills. This section explores the impact of migration on output per capita over the long term.

Past experience suggests that migration could indeed have a positive impact on output per capita in host countries. While much of the literature on migration is microeconomic and focuses on employment, innovation, or productivity, some studies have analyzed the macro relevance of these channels. But such analysis is complicated by the fact that some of the pull factors driving migration can bias the findings—for example, if migrants settle in countries experiencing high GDP growth, it would be easy to conclude that migration is “causing” that growth. To circumvent this complication,

⁴⁰IMF (2015d, 2015e, 2016h).

Figure 4.20. Estimated Impact of Migration in More Developed Economies, 2100
(Percent of GDP)



Source: Clements and others (2015).

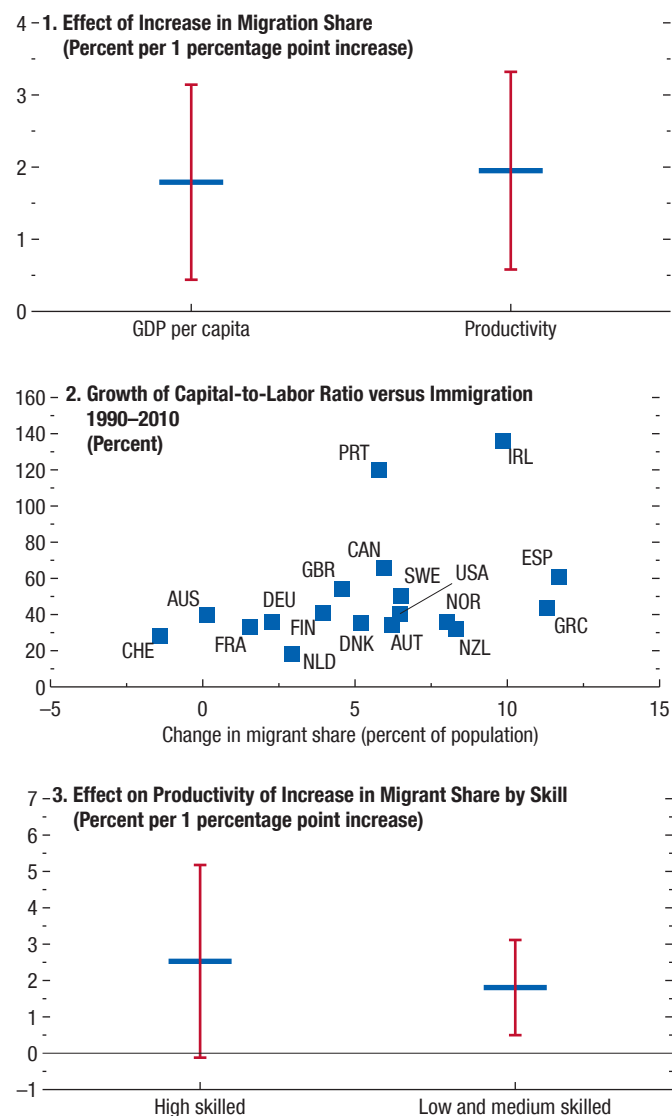
Note: The impact of migration is calculated as the difference between the baseline scenario, which assumes the continuation of current migration trends, and the zero migration scenario.

Alesina, Harnoss, and Rapoport (2015) and Ortega and Peri (2014) use a gravity model to disentangle the effects of migration driven by push factors. In a cross-sectional setting, they find a large positive impact of migrants on output per capita in recipient countries. They relate this to a positive impact on employment, capital accumulation, and labor productivity from high-skilled migrants, which not only increases productivity on its own, but also fosters diversity in the labor force.

Recent research suggests that migration improves GDP per capita in host countries by boosting investment and increasing labor productivity. Jaumotte, Koloskova, and Saxena (2016) estimate that a 1 percentage point increase in the share of migrants in the working-age population can raise GDP per capita over the long term by up to 2 percent (Figure 4.21, panel 1).⁴¹ While this impact is somewhat lower than previous estimates, it is economically significant. Decomposing these estimates into the effect on employment and on labor productivity, they find that migration has a positive and

⁴¹To address endogeneity issues, the study uses a pseudo-gravity model to estimate migration caused by push factors from source countries, such as socioeconomic and political conditions, and by bilateral costs of migration, factors that are largely independent of host countries' income levels.

Figure 4.21. Migration: Positive Longer-Term Growth Effects



Sources: Jaumotte, Koloskova, and Saxena (2016); Organisation for Economic Cooperation and Development; United Nations Global Migration database; and IMF staff calculations.

Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. Red lines indicate 95 percent confidence interval.

significant impact on labor productivity.⁴² In addition, they find no relationship between the long-term growth in the capital-to-labor ratio and the change in the stock

⁴²While these results apply to the panel estimation, labor markets issues and the skill composition of the migrant population vis-à-vis the natives can play a role. For instance, a sudden large increase in the employment of low-skilled immigrants in low productivity sectors—as, for example, during the precrisis boom in Spain—can have a negative impact on aggregate labor productivity (see Kangasniemi and others 2012).

of migrants, consistent with investment adjusting over time to a larger pool of potential workers (Figure 4.21, panel 2). Moreover, the impact is distributed evenly across income groups—that is, migration has a positive effect on the incomes of both the top earners and of those of the rest of the population, although the impact of high-skilled migrants is larger for top earners.

Both high- and low-skilled migrants increase productivity. High-skilled migrants are likely to have a larger impact on GDP per capita through their larger impact on productivity. However, lower-skilled migrants may also increase productivity if their skills are complementary to those of natives. Jaumotte, Koloskova, and Saxena (2016) find that both high- and low-skilled migrants have a positive impact on productivity of a similar magnitude (Figure 4.21, panel 3). They attribute this finding to the “over-qualification of migrants”—as noted above, some countries show a higher proportion of highly educated migrants employed in lower-skill occupations—and to the complementarities mentioned previously. Low-skilled workers allow higher-skilled natives to move into different labor market segments, encouraging them to take higher-skill jobs and obtain additional education. They also promote female labor force participation by taking housekeeping and childcare jobs. This interpretation is supported by evidence on the relationship between low-skilled migrants and female labor participation presented earlier in this chapter. Farré, González, and Ortega (2011) come to a similar conclusion in the case of Spain.

Source Countries: Costs and Mitigating Factors

Migration may impose significant costs in source countries, although there are some mitigating factors. Although push factors for migration can differ—from conflicts (for example, in the Middle East; see Box 4.2) to differences in the economic outlook, such as in eastern Europe during the past decade—the repercussions for source countries are similar. Migration can take a toll on population growth, which is especially costly when migrants are young and educated, damaging prospects for long-term growth. It may also affect the fiscal accounts and increase the challenges posed by population aging. These costs, though, could be mitigated by migrants’ remittances, which can increase household income and potentially foster investment. And migrants may facilitate knowledge transfer between host and source countries, which ultimately could promote trade, investment, and growth.

Costs of Brain Drain

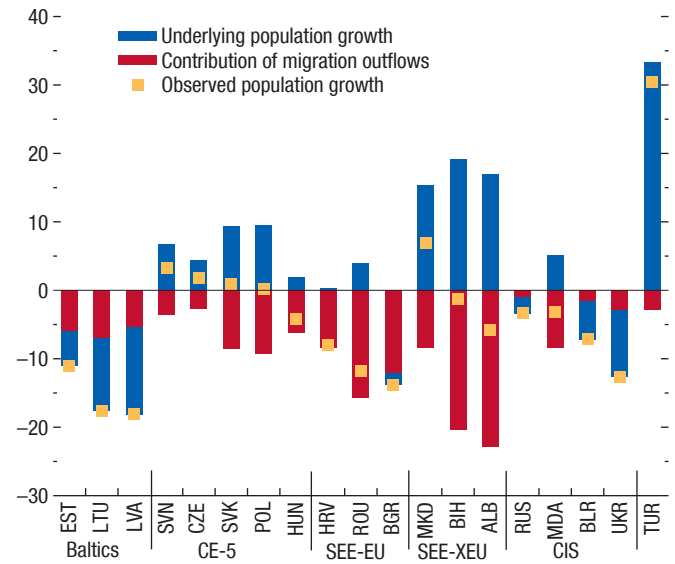
While a natural response to demographic trends in some countries, migration may dent population growth in others. Some examples can illustrate these differences:

- Rapid emigration from sub-Saharan Africa has been associated with an ongoing demographic transition involving strong growth in the working-age population. This migration—which is set to continue in coming years—represents a shift in the labor force from countries with young populations to those with aging ones, and should help smooth asynchronous demographic patterns across economies (see Box 4.3).
- However, migration has taken a toll on demographic trends in other regions. For example, Caribbean countries lost between 7 percent and 27 percent of their labor force to the United States in 1965–2000 (Mishra 2006). Since the collapse of the Soviet Union Georgia’s and Armenia’s populations have contracted by 15 and 27 percent, respectively. In central, eastern, and southeastern Europe, about 5.5 percent of the population left the region during the past 25 years—southeastern European countries have witnessed cumulative outward migration of more than 8 percentage points between 1990 and 2012. Local populations in most countries in the central, eastern, and southeastern Europe have been stagnant or shrinking; the Baltics and Commonwealth of Independent States countries show similar trends (Figure 4.22).

The migration of young and high-skilled people can result in significant losses of human capital. High-skilled people are more likely to migrate than others—they tend to have more resources to relocate and find more favorable conditions in recipient countries.⁴³ As a result, migration has had a substantial impact on the high-skilled labor force for some countries and regions (Figure 4.23, panel 1). For instance, Caribbean countries lost more than 50 percent of their high-skilled workers between 1965 and 2000 (see Mishra 2006). Atoyán and others (2016) find that, for central, eastern, and southeastern European countries, several decades of migration have exacerbated the shortage of skilled labor. They show that the share of migrants with tertiary education in such countries as the Czech Republic, Hungary, Latvia, and Poland was well above

⁴³For instance, Atoyán and others (2016) show that in 2010, about three-quarters of migrants in central, eastern, and southeastern European countries were of working age and younger and better educated than the population at large.

Figure 4.22. Contributions of Outward Migration to Population Growth
(Percent change from 1993 to 2012)

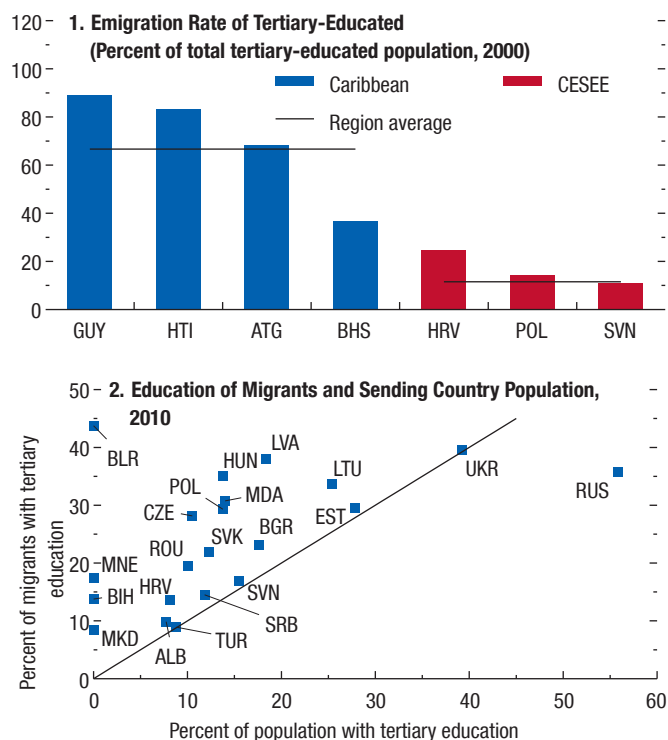


Sources: Organisation for Economic Co-operation and Development, International Migration database; World Bank, *World Development Indicators*; and IMF staff calculations.
Note: Baltics = EST, LTU, LVA; CE-5 = CZE, HUN, POL, SVK, SVN; SEE-EU = Southeast Europe EU members; SEE-XEU = Southeast Europe non-EU members; CIS = Commonwealth of Independent States.
Data labels in the figure use International Organization for Standardization (ISO) country codes.

the equivalent ratio in the general population (Figure 4.23, panel 2).

Brain drain can have profound effects on labor markets and growth prospects in sending countries. Migration dampens working-age population growth and can put upward pressure on wages, as documented in Mishra (2014) in a number of national case studies.⁴⁴ At the same time, it can have a negative impact on productivity. Low substitutability between skilled migrants and natives reduces labor productivity, which is compounded by the fact that more educated people usually transfer know-how to others. Atoyán and others (2016) conduct a counterfactual analysis suggesting that cumulative real labor productivity growth in central, eastern, and southeastern European countries between 1995 and 2012 might have been about 5 per-

⁴⁴Depending on the skill level of migrants, migration can also change relative wages—if migrants are more educated, a decrease in the supply of high-skilled labor can increase the wage gap between high- and low-skill workers. Mishra (2007) finds some evidence of this in the case of Mexico, where emigration has the greatest impact on wages of workers with 12–15 years of schooling.

Figure 4.23. Migration of Population with Tertiary Education

Sources: Organisation for Economic Co-operation and Development, Database on Immigrants in OECD Countries 2010; World Bank, *World Development Indicators*; and IMF staff calculations.

Note: CESEE = central and southeastern Europe. Data labels in the figure use International Organization for Standardization (ISO) country codes.

centage points higher in the absence of migration. As a consequence, these countries witnessed lower GDP growth not only on account of migration-induced loss of labor but also because of worsening skill composition. Arguably, this has lessened the prospects for income convergence in emerging Europe.

Finally, migration can also affect fiscal accounts. Atoyán and others (2016) argue that emigration has no significant impact on public debt but has led to higher fiscal pressure in central, eastern, and southeastern European countries. This is because labor outflows tend to dampen tax revenue more than they reduce spending. Because migrants are mostly young, health care and pension spending tend to be little affected, which forces governments to increase tax rates or find additional revenue sources.⁴⁵ Some case studies have documented that emigration has a negative impact on

⁴⁵See Gibson and McKenzie (2012) on revenue issues, and Clements and others (2015) on pension and health care spending.

fiscal accounts, to a great extent associated with lower revenue.⁴⁶

Remittances and Diasporas

Remittances provide a source of income for a number of small migration source countries, notably for poor households. Remittances to developing countries reached \$450 billion in 2015, more than half of foreign direct investment inflows (Figure 4.24, panel 1). For some small countries, remittances can reach over 25 percent of GDP (for example, Tajikistan, Nepal, and Moldova). Caribbean countries provide a clear example of the importance of remittances: after losing a significant portion of their labor force over the past decades, they are now the world's largest recipient of remittances as a percent of GDP as a region—about 7½ percent of the region's GDP in 2015. This can make a significant contribution to poor households' income. A cross-country study of 71 emerging market and developing economies by Adams and Page (2005) has found that a 10 percent increase in remittances per capita leads to a 3.5 percent decline in the share of people living in poverty. Remittances have been shown to increase education and health care spending relative to consumption as well (Ratha 2014).⁴⁷

Remittances may also have macroeconomic effects. As a source of financing, remittances can contribute to investment, financial development, and growth by increasing domestic savings and easing credit constraints. For eastern Europe, Atoyán and others (2016) find a positive impact on private investment, suggesting that remittances ease collateral constraints and lending costs for entrepreneurs. Goschin (2013) also finds a positive impact on growth in central and eastern Europe in 1995–2011. But remittances may have adverse effects on labor markets and exchange rates as well. Atoyán and others (2016) argue that remittances reduce incentives to work due to a relaxation of the budget constraint and an increase in the reservation wage.⁴⁸ Remittance flows can also lead to real appre-

⁴⁶See Campos-Vazquez and Sobarzo (2012) for the case of Mexico; Desai, Kapur, and Rogers (2009) for India; and Gibson and McKenzie (2012) for Ghana, Micronesia, New Zealand, Papua New Guinea, and Tonga.

⁴⁷In light of de-risking—the withdrawal of correspondent banking relationships and the closing of bank accounts of remittance service providers—the benefits of remittances are possibly lower in the current environment. See Alwazir and others (forthcoming) for small states in the Pacific.

⁴⁸An increase of 1 percentage point of GDP in remittances is associated with a 2–3 percent increase in the economy-wide inactivity rate in Balkan and central European countries.

ciations and a contraction of the tradable sector, as documented in Magud and Sosa (2013) and Atoyan and others (2016) for Eastern Europe.

Finally, diaspora networks of emigrants may convey knowledge and expertise back to the source country, potentially raising productivity (Figure 4.24, panel 2). Mitra and others (2016) suggest that, by contributing to the curriculum design, diaspora networks can raise the quality of education in their home countries. They can also provide rigorous professional development and leadership training programs. Combining their skills, contacts, and know-how with their insight into global opportunities and local customs, diaspora networks of emigrants may help strengthen the home-country business environment, raise efficiency, and expand into new markets.⁴⁹ In the same vein, they can also advise governments and help to improve the quality of public institutions.⁵⁰

Policy: The Importance of Integration

Migration has significant spillovers for recipient and source countries alike, and policy plays an important role in shaping their economic impact. In recipient countries, the degree to which migration increases labor supply and productivity, and contributes to the public finances over the long term, depends on the speed with which migrants integrate into labor markets. For source countries, the right policy response depends on the underlying drivers of migration—that is, whether it is driven by domestic or foreign developments.

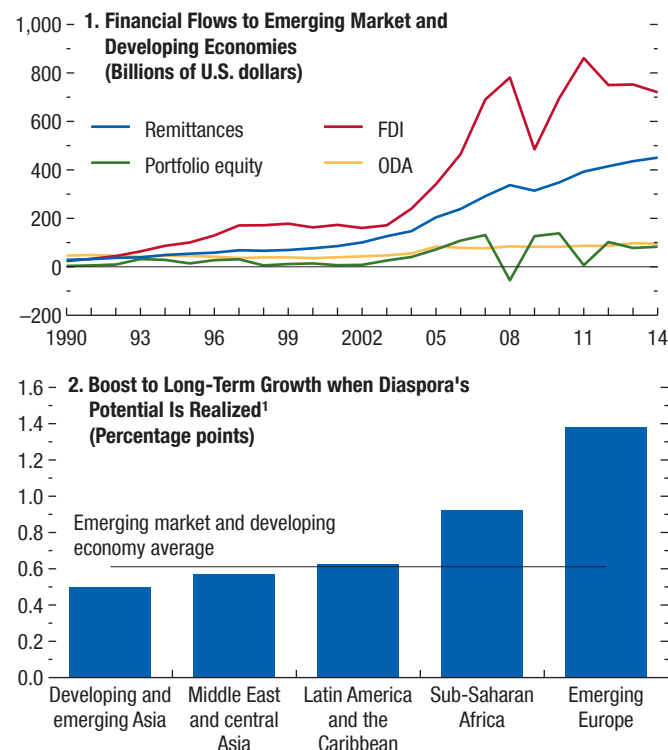
Fast integration of migrants is key for recipient economies. Well-designed integration policies are essential for harnessing the benefits of migration and should, in particular,

- *Improve labor market policies.* Simple, affordable, and transparent procedures for hiring foreign workers and recognition of foreign qualifications and work experience can help smooth labor market integration. Proactive job placement and other incentives can reduce entry costs. Any fiscal incentives, such as wage and employment subsidies, should be temporary and targeted.
- *Provide access to education and financing.* Access to education and language and job training can help

⁴⁹Migrants could also foster trade; see Cohen, Gurun, and Malloy (forthcoming) and Parsons and Vezina (2014); and foreign direct investment (see Burchardi, Chaney, and Hassan 2016).

⁵⁰For example, Indian-born executives working in U.S.-based technology companies played a critical role in giving the latter confidence to outsource work to India.

Figure 4.24. Remittances and Diasporas



Sources: Mitra and others (2015, 2016); World Bank, *World Development Indicators*; and IMF staff calculations.

¹Potential growth if diaspora rises to best performers' benchmark. For simulation details see Mitra and others (2016).

achieve a good skill-balance among migrants and minimize the potential for social tension. Ensuring access to financial services—for example, bank accounts and financial transactions—can broaden opportunities.

- *Support migrant entrepreneurs.* Encouraging migrant entrepreneurship could help foster competitiveness and innovation.

Refugees require special attention. A key issue is reducing the time asylum seekers must wait before they are allowed to work. Targeted support can reduce language and skill gaps, and such measures as temporary wage subsidies can create incentives for employers to hire. Improving geographic mobility, including through the availability of affordable housing, will help refugees move where labor demand is high.⁵¹ Where

⁵¹In the European Union, flexibility built into the Stability and Growth Pact should be allowed for a marginal loosening of fiscal targets to accommodate refugee-related short-term costs.

countries receive refugees from neighboring conflict zones, international support remains crucial—including from donors—to ensure that refugees are appropriately cared for, including through complementary central government assistance.

Source countries should strive to tilt the balance between positive and negative effects of emigration in their favor. If home-grown policy distortions are driving emigration, correcting them is a natural way to avoid brain drain. If emigration is driven by pull factors, the response should stress adjustment and policies to:

- *Retain and re-attract migrants.* Strong institutions and growth-enhancing reforms will foster income convergence and make emigration less attractive—for instance, improvements to the business environment, governance, and the quality of institutions would create greater incentives for people to stay or emigrants to return. Recognition of skills acquired abroad, targeted tax benefits, and portable social security benefits could also persuade migrants to return.
- *Leverage diaspora networks and make remittances count.* This could include, for example, the issuance of diaspora bonds (as, for example, in India, Israel, Nigeria, the Philippines) and outreach to diaspora communities. Reducing the cost of remittances and enhancing incentives for their financial intermediation can also make a difference.
- *Mitigate the effects of migration.* Policies that boost labor supply, including raising female labor force participation, can overcome the labor shrinking effects of migration. Improving the efficiency of social and health care spending can ease possible fiscal pressure, and if there is a need to raise tax

revenue, greater reliance on consumption instead of labor taxes will protect growth.

An effective policy response in postconflict source countries should protect economic institutions, prioritize budget allocations that serve basic needs of the population, and use monetary and exchange rate policies to shore up confidence. Once conflicts subside, successful rebuilding requires well-functioning institutions and robust yet flexible macroeconomic frameworks to absorb capital inflows and maintain debt sustainability. To prevent future violence, postconflict countries should accelerate inclusive growth reforms aimed at reducing inequality.

An enhanced multilateral framework is warranted to better govern international migration. Global efforts should focus on encouraging cooperation between source and recipient countries, including by facilitating remittance flows, protecting labor rights, and promoting a safe and secure working environment for migrants. Cooperation is also vital to address challenges from humanitarian migration, including through enhanced global development diplomacy—aimed at preventing, containing, and responding to humanitarian crises—and more flexible and innovative financing instruments to ensure effective assistance and resources for refugees wishing to return home. Given the increasing flows of refugees over the past years, and the impact that they have on neighboring countries that are shouldering a large share of the cost of receiving them, high-income donor countries (including international institutions, the Group of Seven, the Gulf Cooperation Council, and the European Union) need to coordinate their approach to provide more financial support to improve conditions for refugees.

Box 4.1. China's Ties with Low-Income and Developing Countries

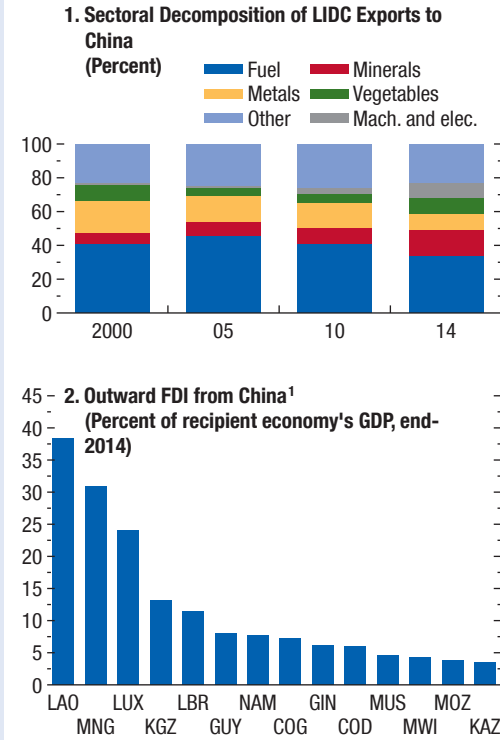
Trade linkages between China and low-income and developing countries have risen markedly in recent years. Exports to China as a share of these countries' total exports have more than doubled, from less than 5 percent before 2000. Although China's share of low-income and developing country exports appears modest, at 13 percent in 2015, it was among the three largest export destination markets for about half of these countries, which tend to trade across a large number of trading partners. As discussed in this chapter, countries with significant trade exposure to China have faced downward pressure on demand for their exports in recent years, and export volume growth in low-income and developing countries has slowed accordingly.

The sectoral composition of trade with China is dominated by fuel, minerals, and metals, which accounted for about 60 percent of total exports in 2014 (Figure 4.1.1, panel 1). The share of commodities, although still high, shows a slight decline relative to the early 2000s, when exports of raw materials represented about 70 percent of the total. Some of the share once occupied by these exports has recently given way to capital-goods exports, which now represent about 10 percent of total exports.

China is a major source of foreign direct investment inflows into low income and developing countries (Figure 4.1.1, panel 2). Although the two largest beneficiaries of Chinese direct investment (Lao P.D.R. and Mongolia) are geographically close to China, China is also a major source of foreign direct investment for several countries in sub-Saharan Africa. As China continues its transition and allows firms to seek new investment opportunities abroad, there may be positive spillovers for these countries. Lower demand for commodities may, however, get in the way somewhat, since foreign direct investment has usually been associated with commodity pro-

The author of this box is Nkunde Mwase.

Figure 4.1.1. China's Ties with Low-Income and Developing Countries



Sources: CEIC; and IMF staff calculations.
 Note: FDI = foreign direct investment; LIDC = low-income and developing country; Mach. and elec. = machinery and electrical equipment. Data labels in the figure use International Organization for Standardization (ISO) country codes.
 ¹Excludes Hong Kong SAR.

duction. In addition, as discussed in IMF 2016j, the recent “One Belt One Road” initiative will involve a further strengthening of foreign direct investment flows from China to the Caucasus and Central Asia, south Asia, and southeast Asia.

Box 4.2. Conflicts Driving Migration: Middle East and North Africa

The Middle East and North Africa is facing a new wave of conflict with significant economic costs and spillovers within the region. Since the end of World War II, countries in this region have suffered more conflicts than those in any other region in the world. Conflicts are more protracted and violent as well—between 1946 and 2014, 12 out of 53 episodes of conflict in the region lasted more than eight years, and a significant number of former conflict countries relapsed into violence within 10 years. The economic costs of conflict are massive for some countries and the spillovers large. GDP in Syria has fallen by half, and growth in Jordan and Lebanon has slowed significantly over recent years.

Based on Rother and others (2016).

The humanitarian and economic costs of conflict are massive. An estimated 10 million refugees from conflict countries have mostly stayed within countries in the region—for example, since 2010, refugees from Iraq and Syria have boosted the populations of Lebanon and Jordan by one-quarter and one-fifth, respectively. More than 1.7 million refugees have reached Europe since July 2014, and Turkey hosts about 3 million. Countries hosting refugees face difficult decisions about access to labor markets and social programs. This highlights the importance both of humanitarian aid aimed at addressing the immediate needs of refugees and those displaced within their own countries, and of scaled-up development assistance to the region as a whole.

Box 4.3. Migration in Sub-Saharan Africa

In the coming decades sub-Saharan African migration will be shaped by a profound demographic transition that has already begun. The working-age population is growing more rapidly than the population overall, which means migration outside the region is set to continue to expand.

Key Trends

Amid rapid population growth, sub-Saharan Africa migration has increased rapidly over the past 20 years. Although the migration rate—migration-to-total population—has remained stable at about 2 percent, the population has doubled over the past 25 years. Until the 1990s intraregional migration dominated and early in that decade represented 75 percent of the total. Over the past 15 years, though, migration outside the region—mainly to Organisation for Economic Co-operation and Development (OECD) countries—has picked up sharply, and represented one-third of the total stock of migrants by 2013 (Figure 4.3.1, panel 1).

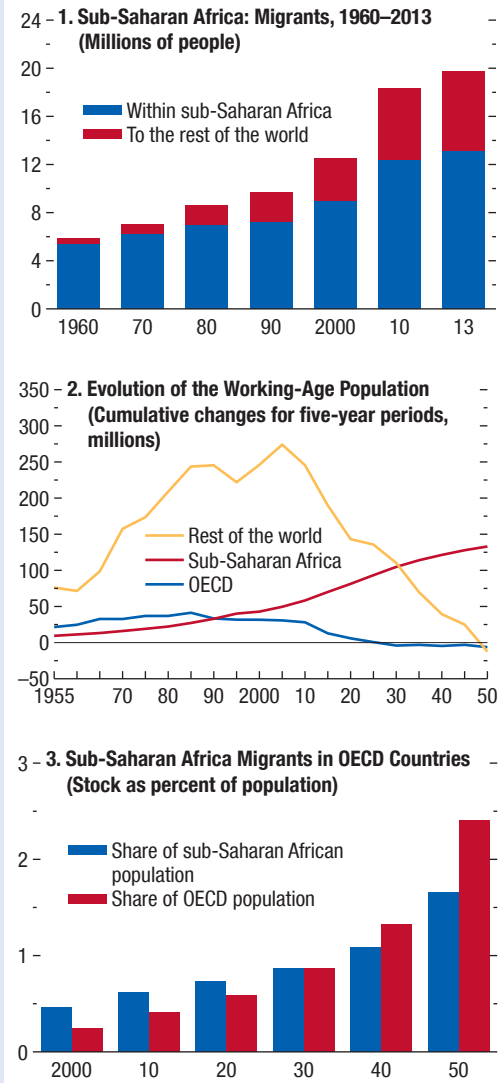
Migration from sub-Saharan Africa is set to continue to increase very rapidly. The region is undergoing a demographic transition as a result of strong population growth combined with reduced infant and maternal mortality. The latter implies that the working-age population—which typically feeds migration—is set to increase even more rapidly (Figure 4.3.1, panel 2). IMF staff projections using a gravity model of sub-Saharan African migration to OECD countries indicate that population growth will continue to shape migration. They suggest that the region's migrants in OECD countries could increase from about 7 million in 2013 to about 34 million by 2050. Given the relatively slow population growth expected for OECD countries, the ratio of sub-Saharan African migration as a share of OECD population could increase sixfold, from just 0.4 percent in 2010 to 2.4 percent by 2050 (Figure 4.3.1, panel 3).¹

Migration is increasingly driven by economic considerations. The flow of refugees—about half of sub-Saharan African migration within and outside the region in 1990—had decreased to only one-tenth of the total in 2013. By 2013 most migrants outside the region—about 85 percent—were in OECD countries.

Based on Gonzalez-Garcia and others (2016).

¹The determinants of migration to OECD countries are relative per capita income and working-age population, the existing diaspora in OECD countries, distance between countries, public health spending in OECD countries, and indicators of common language, previous colonial relationship, wars in sub-Saharan Africa, and landlocked countries.

Figure 4.3.1. Migration in Sub-Saharan Africa



Sources: United Nations *World Population Prospects*; World Bank, Migration and Remittances database; and IMF staff calculations. Note: OECD = Organisation for Economic Co-operation and Development.

France, the United Kingdom, and the United States host about half of the total diaspora outside the region. Although a few sub-Saharan African countries—for example, Ethiopia, Nigeria, and South Africa, with close to 0.7 million people each—have a large number of migrants, they represent only a small share of their population. With a relatively small number of migrants, these are proportionately more important for some

Box 4.3 (continued)

small economies—such as Cabo Verde (about one-third of its population) and Mauritius, São Tomé and Príncipe, and Seychelles (about 10 percent).

Economic Impact

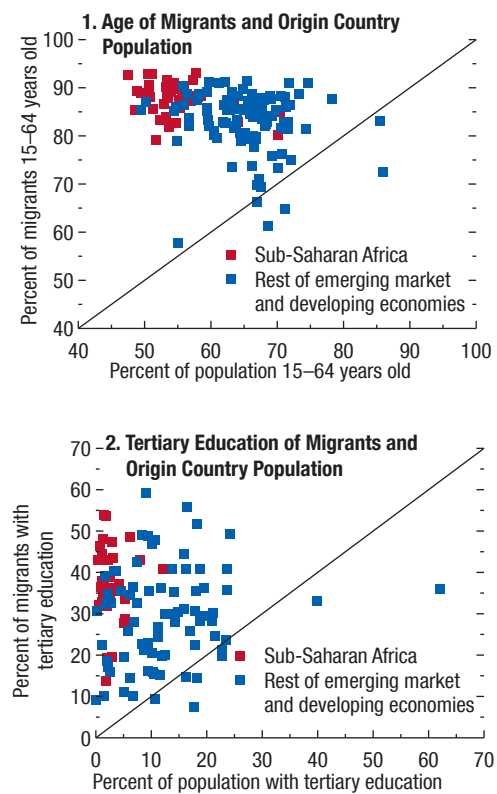
Brain drain is particularly acute in sub-Saharan Africa. The migration of young and educated workers takes a large toll on a region whose human capital is already scarce. The concentration of migrants among those who are educated is higher than in other developing economies (Figure 4.3.2). The migration of highly skilled workers entails a high social cost, as is evidenced by the departure of doctors and nurses from Malawi and Zimbabwe, which may mean welfare losses beyond those that are purely economic. Nevertheless, recent studies suggest some positive effects: returning migrants bring

back new skills, and prospects for migration motivate human capital accumulation, which may be supported by large remittances from current migrants and returning migrants bringing knowledge and experience.²

Remittance inflows represent an important source of foreign exchange and income in several countries in the region. After the global financial crisis, while foreign direct investment entered a clear downward trend, remittances became one of the largest sources of external inflows, currently at a level similar to foreign investment. Remittances represented 25 percent of Liberia’s GDP in 2013–15; about 20 percent in Comoros, the Gambia, and Lesotho; and roughly 10 percent in Cabo Verde, São Tomé and Príncipe, Senegal, and Togo (Figure 4.3.3). Remittances provide a relatively stable source of income that helps smooth consumption and support growth in sub-Saharan Africa. They also help alleviate poverty and promote access to financial services—many receiving families develop a relationship with a financial institution, usually a wire transfer company or bank, to receive their funds easily.

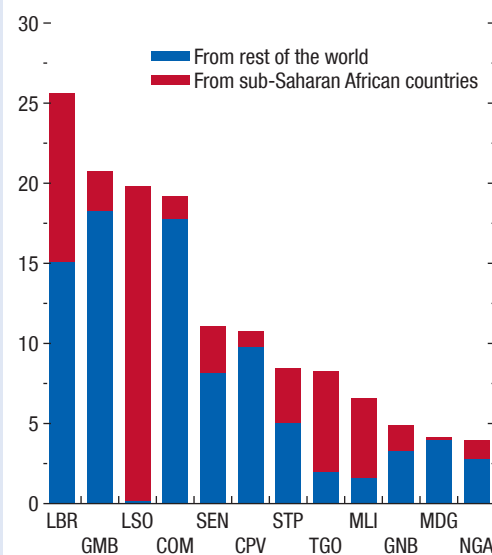
²For literature on brain gain in sub-Saharan Africa, see Nyarko (2011); Easterly and Nyarko (2008); and Batista, Lacuesta, and Vicente (2007).

Figure 4.3.2. Age and Education of Migrants and Origin Country Population
(Percent)



Sources: Organisation for Economic Co-operation and Development, International Migration Database; World Bank, *World Development Indicators*; and IMF staff calculations.

Figure 4.3.3. Top Receivers of Remittances in Sub-Saharan Africa, 2013–15
(Percent of GDP)



Source: World Bank, Migration and Remittances database. Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

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