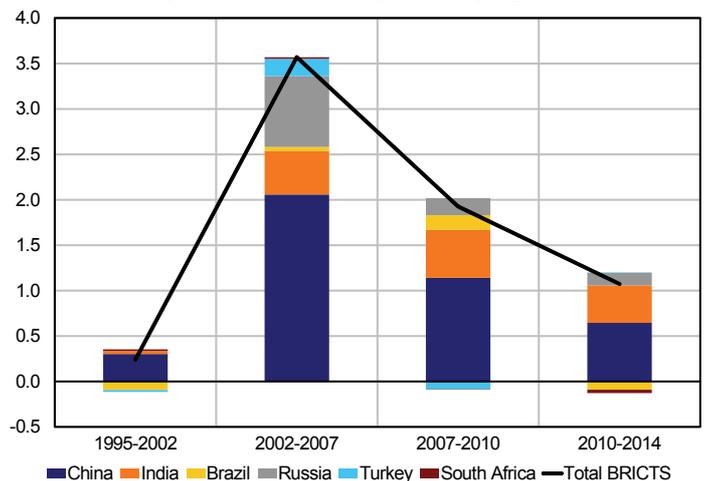


## Is the productivity slowdown in emerging countries here to stay?

- Growth in emerging countries has been on the decline since 2010, with average annual rates of 5.0% between 2011 and 2016, after 6.6% between 2000 and 2007. This slowdown, common to all emerging regions, is more marked in Latin America and Asia.
- A fall-off in total factor productivity (TFP) growth explains a large part of the decline in growth in these countries. This slowdown came after a rapid technological, commercial and educational catch-up in the 2000s. Since the 2008 crisis, a significant slowdown in TFP has been observed in most major emerging countries.
- The slowdown in productivity gains and growth in general is a global phenomenon, which is part of the broader debate on "secular stagnation" and possible diminishing returns from innovation. In emerging markets, the slowdown in TFP comes partly from sources common to emerging and advanced economies, such as the legacy of the crisis and the slowdown in world trade, which, due to less dynamic diffusion of technology and less competition, is slowing productivity gains.
- In addition to common factors, there are structural phenomena that are specific to emerging economies. Some countries such as China have seen a decline in internal migration (which supports productivity by promoting the reallocation of production factors), thus slowing the associated productivity gains. Moreover, reform momentum, particularly in China and India, appears to be weaker than in the 1980s and 1990s. Finally, poor allocation of production factors and an unfavourable institutional environment hamper productivity.
- Some economists believe there is a "middle-income trap", where countries too rich to benefit from low-cost labour but not rich enough to compete with advanced countries on high-end products, are stuck. The existence of such a trap is debatable, with a few countries, such as South Korea, having managed to converge towards advanced countries in recent decades.

**Total factor productivity in major emerging countries (in %)**



Source: Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table", *American Economic Review*; DG Trésor calculations.

Note: The chart was generated by weighting TFP growth rate in real terms by the share of PPP GDP in the total GDP of the sample.

# 1. Total factor productivity plays a key role in the slowdown in emerging countries

## 1.1 Growth in emerging countries<sup>1</sup> has fallen off since 2010

crisis. With a weighted average of 6.6% p.a. over the period 2000-2007, economic growth in emerging countries peaked in 2007 at 8.5%. The 2008-2009 crisis severely affected these economies, whose average growth was 2.8% in 2009, and then 5.0% p.a. between 2011 and 2016<sup>2</sup> (see Charts 1 and 2). Growth in emerging countries is mainly driven by Asian countries that, since 2011, have been responsible for almost two-thirds of growth (compared with about half between 2002 and 2007).

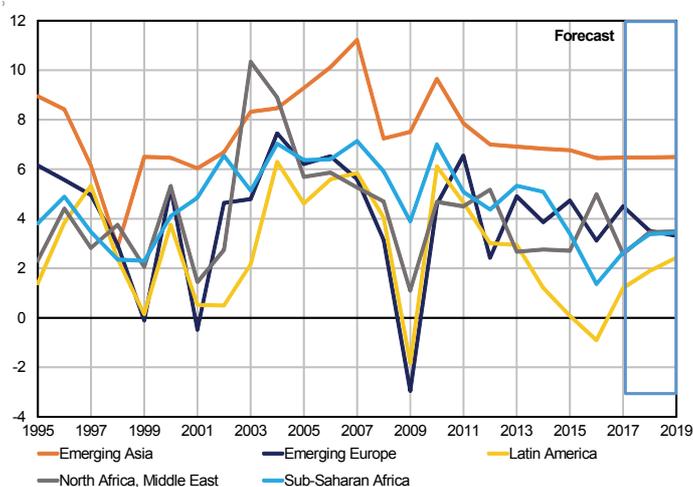
The slowdown in economic activity after the crisis is common to most emerging countries. While some regions, such as Asia, experienced a gradual decline in growth, others showed a much more marked fall-off, as is the case in Latin America, which was affected in particular by the severe recession in Brazil (see Chart 2).

## 1.2 Even more than in advanced countries, total factor productivity explains the decline in growth in emerging countries

In both advanced and emerging countries, the growth rate of per capita output is lower than it was before the crisis. This gap is primarily due to the slowdown in total factor productivity (TFP).<sup>3</sup> This is particularly true in emerging countries, as the pre- and post-crisis difference is almost exclusively due to TFP trends.<sup>4</sup> Investment in emerging countries remained buoyant after the crisis and compensated for the slowdown in employment.

Although lower productivity growth is a common trend in advanced and emerging economies, the timing of this slowdown differed (see Chart 3). Advanced economies saw their productivity slow before that of emerging economies, whose TFP suffered a sharp negative shock during the 2008-2009 economic crisis and the ensuing years. This slowdown came after a pre-crisis period of rapid catching-up in these countries, particularly in terms of technology. Net exporting countries also benefited in the early 2000s from rising commodity prices.

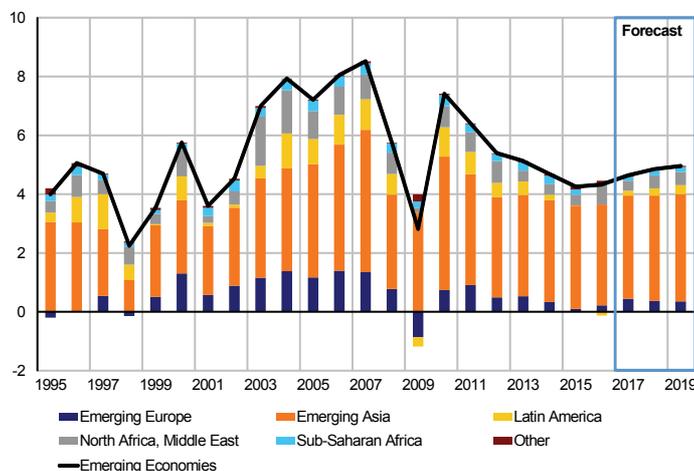
**Chart 1: Growth by region (in volume, in %)**



Sources: MIC, Labour Force Survey, DGTrésor calculations.

\* Emerging Europe includes the countries of the former USSR according to the IMF's nomenclature (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan).

**Chart 2: Emerging economies' growth by region (in volume, in %)**



- (1) The scope of this article is all emerging and developing countries listed in the IMF's World Economic Outlook classification. For simplicity's sake, we refer to them as "emerging countries".
- (2) Factoring in the IMF forecast for 2019, average growth for 2011-2019 remains unchanged (5.0% p.a.)
- (3) Total factor productivity refers to the concept of the "Solow residual", i.e. the change in output that is not explained by changes in the use of labour and capital. It should be noted that its measurement is subject to many uncertainties, and depends significantly, as a residual, on the measurement of other factors of production, labour and capital stock.
- (4) Cf. IMF (2017), "Gone with the headwinds: Global productivity", *IMF Staff Discussion Note SDN/17/04*.

**Chart 3: TFP growth since 1990 (average 5-year growth rate, in %)**



Source: IMF, "Gone with the Headwinds: Global Productivity", April 2017.  
 Note: The aggregates are weighted using PPP GDP.

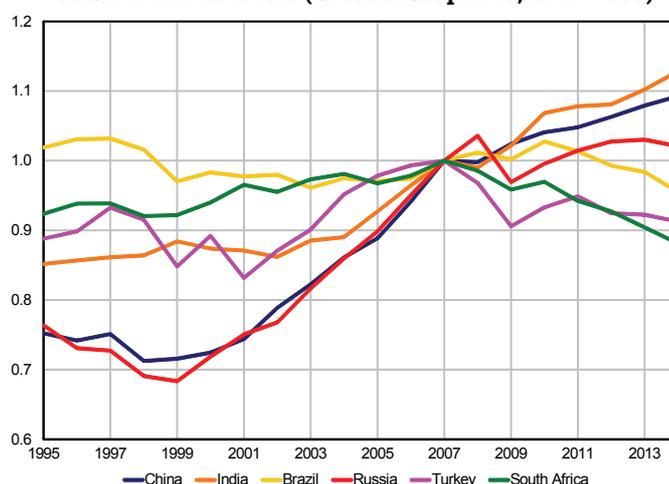
The major emerging countries have not all followed the same trajectory (see Chart 4). Although prior to 2007 productivity gains were generally nil in South Africa and Brazil, they were noteworthy in China and in Russia, a period characterised by strong momentum in world trade, which grew by an average of 7.7% in volume each year.

This forward thrust subsequently ran out of steam. After the 2008-2009 crisis, a marked slowdown in productivity gains was observed in all major emerging countries, with the exception of India and China. Some countries, such as Turkey and South Africa, even witnessed a decline in TFP, which has remained below pre-crisis levels in recent years. India had the highest post-crisis TFP growth among the countries in the sample.

Overall, average annual TFP growth for the main emerging economies fell off more than threefold between 2002-2007

and 2010-2014, sinking from 3.5% to just over 1.0% (see chart on first page).

**Chart 4: TFP in levels (at constant prices, 2007 = 100)**



Source: Robert C. Feenstra, Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table", *American Economic Review*. DG Trésor calculations.

## 2. Causes of the slowdown in total factor productivity

The slowdown in economic activity, a phenomenon shared by advanced and emerging economies, is discussed in the literature addressing the concept of "secular stagnation".<sup>5</sup> Some economists, such as Larry Summers, argue that the main cause of the decline in growth is a savings glut (or a structural weakness in demand) that weighs on real interest rates and ultimately on growth. Other economists attribute the slowdown to weaker labour force growth or a downward trend in productivity gains. R. Gordon thus suggests that the completion of the major phases of

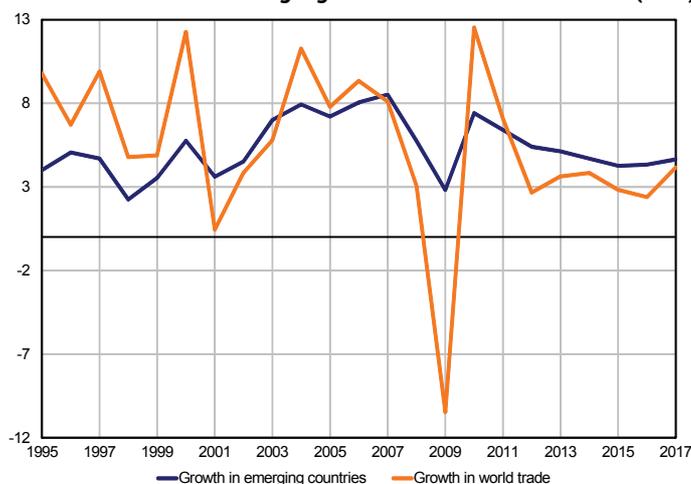
education limits future productivity gains, while other economists believe that this slowdown phase is transitory and linked to an adaptation period given the potential of new technologies (B. Eichengreen). The international propagation of "secular stagnation", for example through currency wars, remains a topic of academic debate. Beyond the legacy of the 2008-2009 crisis, the slowdown in TFP therefore has causes that are shared by emerging and advanced countries, as well as causes that are specific to each group.

(5) Cf. A. Jaubertie and L. Shimi (2016), "The debate on secular stagnation: a status report", *Trésor Economics* no. 182.

## 2.1 International openness has benefited productivity in both emerging and advanced economies

After the shock of the crisis, world trade slowed markedly. This can be partly explained by structural factors, such as the slowdown of the process of fragmentation and streamlining of value chains, the decline in industry's share of GDP and a hiatus in trade liberalisation. The slowdown in world trade was also caused by more cyclical factors, including a cyclical decline in investment and weak growth in the structurally trade-rich euro area.<sup>6</sup> In any event, the fall-off in international trade has been unfavourable to global growth and in particular to emerging economies (see Chart 5).

**Chart 5: Growth in emerging countries and world trade (in %)**



Source: IMF WEO; DG Trésor calculations.

The effects of international trade on TFP may manifest in the longer or shorter term. Although the forward momentum of international trade in the 1990s may have fuelled gains in TFP in the 2000s, the slowdown in trade after the crisis, on the contrary, could weigh on the medium-

term thrust of productivity in emerging countries. The influence of global trade on productivity can take several forms:

- Greater exposure to international competition leads to better use of economies of scale in sectors where they exist and of the comparative advantages of each country, where resources are reallocated to the most productive firms. The least productive firms are forced out of the market, increasing the average productivity of the sector.<sup>7</sup>
- Importing new products increases the diversity and quality of intermediate products used by national companies.<sup>8</sup>
- FDI enables a country to acquire technology and know-how through the professional network to which it has access.<sup>9</sup>
- Specialisation in certain sectors, such as China's specialisation in assembly activities, has given rise to highly internationalised and competitive industries, which have been the main channel for technology transfer.<sup>10</sup>

## 2.2 In emerging countries, the positive effects of internal migration and past structural reforms are fading

In some major regions, a portion of TFP growth is a reflection of sectoral reallocation of labour from the less-productive primary sector to the tertiary sector and the more productive secondary sector (see Chart 6). This shift has been significant in some countries, such as Turkey and China, and less marked, for example, in India and Indonesia (see Chart 7). We should expect to see population movements in some regions, but to a lesser extent than in the last two decades.

(6) Cf. L. François, J. Lecumberry and L. Shimi (2016), "Why is world trade so weak?" *Trésor-Economics* no. 166.

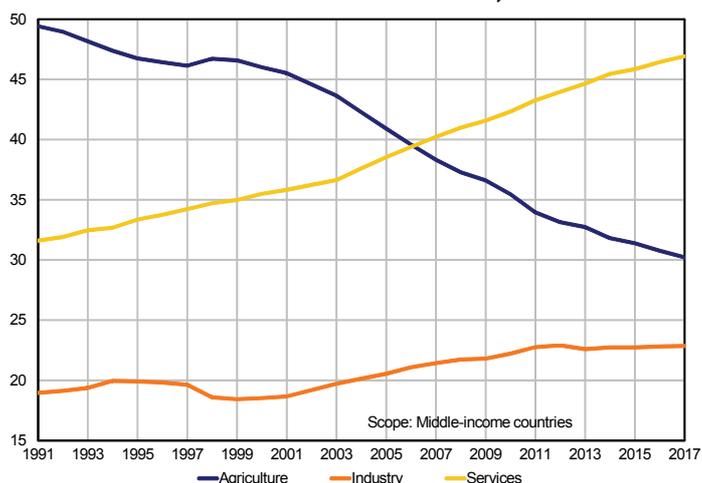
(7) M.J. Melitz (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica*, Vol. 71, No. 6.

(8) P. Romer (1994), "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions", *Journal of Development Economics*, vol. 43, issue 1, 5-38.

(9) B. Javorcick and S. Poelhekke (2017), "Former Foreign Affiliates: Cast Out and Outperformed?" *Journal of the European Economic Association*, vol. 15, issue 3, 501-539.

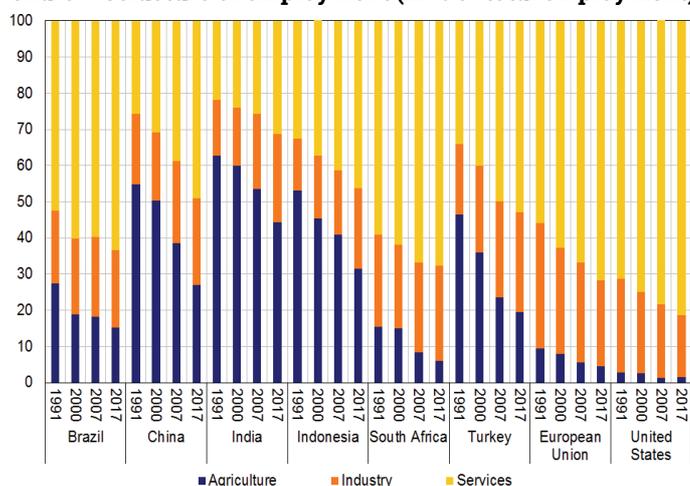
(10) F. Lemoine et al. (2002), "Chine: spécialisation internationale et rattrapage technologique", La Documentation française, *Économie internationale* no. 92, 11-40.

**Chart 6: Employment structure (% of total employment in middle-income countries)**



Source: World Bank and ILO.

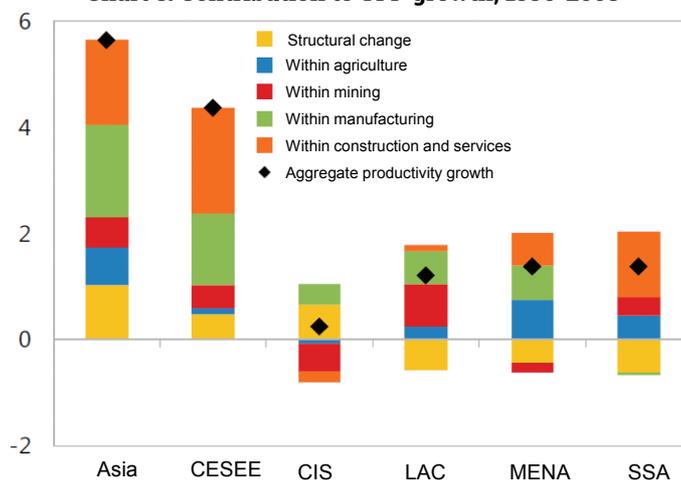
**Chart 7: Structure of employment (in % of total employment)**



Sources: World Bank and ILO.

Overall, the reallocation of production factors between sectors has led to significant productivity gains in some regions (Asia, CESEE<sup>11</sup>). The slowing of this phenomenon should curtail TFP momentum in the medium term. Conversely, in other regions (Latin America, MENA,<sup>12</sup> SSA<sup>13</sup>), reallocation weighed on TFP, suggesting that the labour factor was absorbed by less productive activities, particularly tertiary activities (see Chart 8). It should be noted that in sub-Saharan Africa, agricultural labour still predominates.

**Chart 8: Contribution to TFP growth, 1990-2008**



Source: IMF, "Anchoring Growth: The Importance of Productivity-Enhancing Reforms in Emerging Market and Developing Economies", December 2013.

Note: CESEE (Central, Eastern and Southeastern Europe), CIS (Commonwealth of Independent States), LAC (Latin America and the Caribbean), MENA (Middle East and North Africa), SSA (Sub-Saharan Africa).

Chart 8 shows TFP growth in the various emerging regions as well as its contributions via a sectoral approach. The yellow contribution reflects reallocation between sectors (cross-sectoral) while the others indicate the intra-sectoral contribution, displaying productivity gains within sectors.

Beyond reallocations of resources between sectors, productivity gains also increased within sectors over the period 1980-2008. Overall, the regions most integrated into global and regional value chains experienced significant productivity gains in their manufacturing industries. The contribution of services and construction to TFP growth was also significant. This is partly a reflection of a structural effect linked to the increase in its share in added value and total employment, as well as a quality effect linked to the development of higher added-value services (such as ICT).

In addition, in the 1980s and 1990s, some countries carried out major liberalisation reforms<sup>14</sup> that boosted productivity in subsequent years.

These reforms took place in various areas: (i) foreign trade, with the lowering of customs duties and the loosening of restrictions on financial exchanges, (ii) increased competition in telecoms and (iii) the financial sector, notably through the lifting of restrictions on the setting of interest rates, etc. Since the late 1990s, the reform

(11) Central, Eastern and Southeastern Europe.

(12) Middle East and North Africa.

(13) Sub-Saharan Africa.

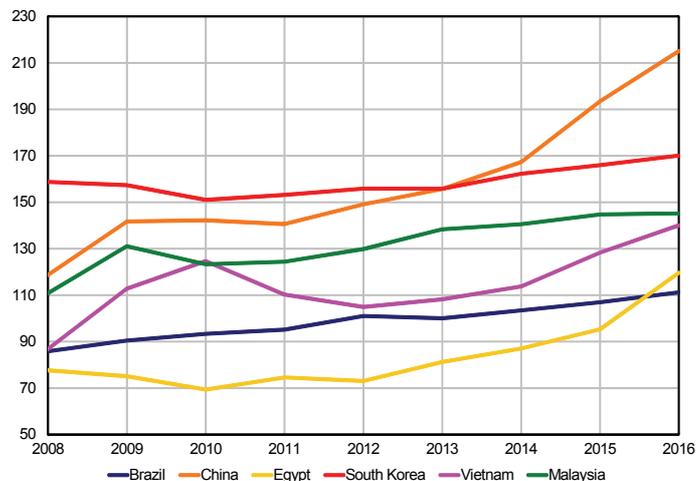
(14) IMF (2013), "Anchoring Growth: The Importance of Productivity-Enhancing Reforms in Emerging Market and Developing Economies", *IMF Staff Discussion Note*, SDN/13/08.

momentum in emerging economies seems to be waning, which may weigh on productivity in the medium term.

### 2.3 Misallocation of production factors since the crisis could explain part of the TFP slowdown in some emerging economies

Some authors have put forward the misallocation of factors of production as an explanation for the low productivity levels of emerging economies relative to advanced economies, and of the trending deficit in productivity gains and sharper slowdown in productivity gains in emerging countries.<sup>15</sup> Production factors may be poorly allocated between sectors or between firms within the same sector. This misallocation may be due to market inefficiencies (e.g. credit), which penalises potentially more productive sectors or firms. Very accommodative monetary policies in developed countries after the crisis caused a liquidity glut which spread to many emerging countries. Thus, the abundance of credit in certain countries (the credit-to-GDP ratio has risen sharply in many emerging countries since 2008, see Chart 9) has made it possible to maintain inefficient sectors or firms, particularly during episodes of rapid capital accumulation within a context of poor banking system efficiency, as is the case, for example, in Brazil.

**Chart 9: Credit (nominal, as a % of GDP)**



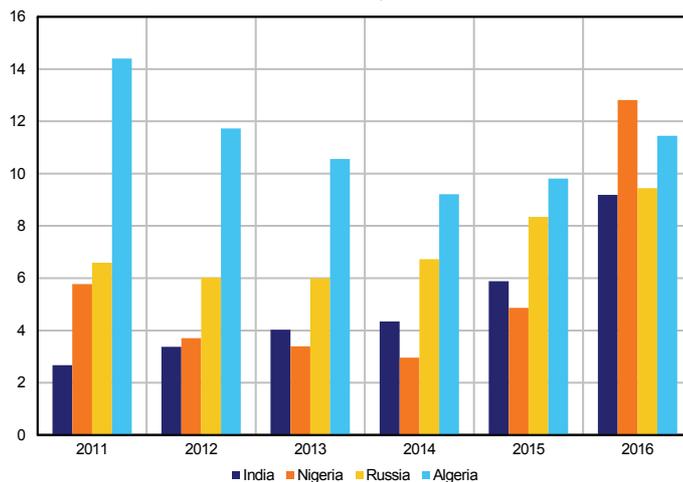
Source: World Bank.

Other distorting factors can contribute to misallocation, such as the crowding-out of the private sector by the public sector (in the case of China, for example, public enterprises, which are sometimes unproductive, enjoy privileged access

to credit to the detriment of private enterprises) or an unfavourable institutional environment that results in a deteriorated business climate (Russia, for example, is marked by a high level of perceived corruption) and inappropriate sectoral regulations.

Thus, in the 2000s, the reallocation of production factors to more productive firms boosted Chinese productivity growth by a third.<sup>16</sup> On the contrary, since 2010, the allocation of production factors in China has deteriorated due to the financing of certain inefficient enterprises.<sup>17</sup>

**Chart 10: Share of non-performing loans (as a % of total credit stock)**



Source: IMF.

The increase in the share of non-performing loans in some emerging countries is one example of the misallocation of credit and thus slowing productivity. This increase, more or less significant depending on the country (see Chart 10, which presents a sampling of countries where this is the case), tends to weigh on credit and ultimately on the financing of viable investment projects. However, it should be noted that, for certain countries, some of the increases are due to the integration of existing non-performing loans into statistics. Moreover, official data on non-performing assets in some countries poorly reflect the reality of banks' balance sheets (and are therefore not included in Chart 10). This is the case with China, whose share of non-performing loans is clearly higher than what is officially announced (nearly 13% of total loans according to some estimates, compared with the official figure of 1.7%).

(15) C.T. Hsieh and P.J. Klenow (2017), "Misallocation and Manufacturing TFP in China and India", *NBER Working Paper* No. 13290, and D. Marconi and C. Upper (2017), "Capital Misallocation and Financial Development: a Sector-Level Analysis", *BIS Working Papers*, No. 671.  
 (16) C.T. Hsieh and P.J. Klenow (2009), "Misallocation and Manufacturing TFP in China and India", *NBER Working Paper* No. 13290.  
 (17) C.-E. Bai et al. (2016), "The Long Shadow of a Fiscal Expansion", *NBER Working Papers* 22801, National Bureau of Economic Research.

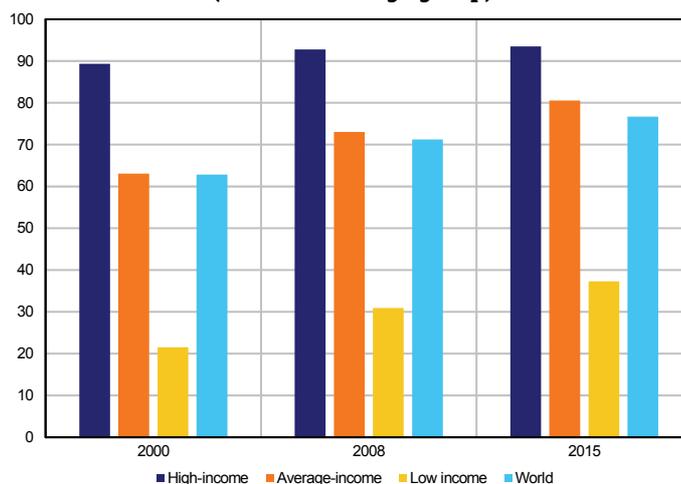
### 3. How fast will the productivity catch-up proceed in emerging economies?

The question arises as to the future gains in productivity in emerging countries and the pace of convergence with advanced countries. The debate around the "middle-income trap" refers to a situation in which, after a period of convergence, some countries cease catching up with high-income countries. The idea is that wage increases driven by productivity gains can cause middle-income countries to lose some of their cost competitiveness advantage, while the gap with countries closest to the technological frontier remains high. However, there is no consensus around the existence of this "trap". Some economists defend it in the light of economic history, since middle-income economies are largely unable to compete with the poorest, most cost-competitive countries, as well as the richest and most innovative ones.<sup>18</sup> Others argue that some countries are indeed failing to reach the level of wealth of high-income countries, but that the "trap" can be avoided by making TFP growth the central goal of development policies.<sup>19</sup> Finally, some authors refute the idea of a "trap", in absolute or relative terms, but believe that it is simply a slow convergence trend.<sup>20</sup>

In any event, given the slowdown in growth in emerging countries since the crisis, a re-acceleration must involve these economies moving upmarket, i.e. (i) adopting existing technologies, a portion of which remains unexploited, or (ii) internal development of activities with higher added value.

For this, education,<sup>21</sup> R&D and knowledge in general appear decisive in the long term (China places strong emphasis on R&D investment, in particular via its FDI). Unlike the least developed countries, middle-income countries no longer lag far behind in terms of population literacy or primary school enrolment. However, access to higher levels of education, albeit on the rise, is still much lower than in advanced countries (see Chart 11).

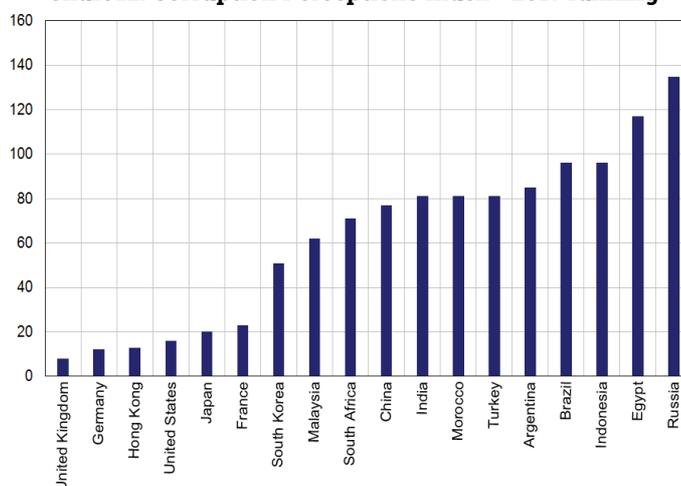
**Chart 11: Lower secondary school completion rate (% of relevant age group)**



Source: World Bank.

Moreover, improving institutional quality is necessary to raise overall potential growth.<sup>22</sup> In particular, a high level of corruption (see Chart 12) can limit productivity gains<sup>23</sup> by: (i) encouraging rent-seeking activities, (ii) favouring certain firms already established within a market because of high barriers to entry, or (iii) leading productive firms to leave the market because of high development costs.

**Chart 12: Corruption Perceptions Index - 2017 ranking**



Source: Transparency International.

**Amandine Aubry, Louis Boisset, Laetitia François, Morgane Salomé**

(18) H. Kharas and H. Kohli (2011), "What is the middle income trap, why do countries fall into it, and how can it be avoided?" *Global Journal of Emerging Market Economies*, vol. 3, 281-289.  
 (19) B. Eichengreen et al. (2017), "The landscape of economic growth: do middle-income countries differ?" Asian Development Bank *Economics Working Paper Series* No. 517.  
 (20) F.G. Im and D. Rosenblatt (2013), "Middle Income Traps: a Conceptual and Empirical Survey", World Bank Policy Research Working Paper No. 6594, and J. Felipe, U. Kumar and R. Galope (2014), "Middle-income transitions: trap or myth?" Asian Development Bank, *Economics Working Paper* No. 421.  
 (21) H.A. Patrinos (2016), "Estimating the return to schooling using the Mincer equation", *IZA World of Labor*, Institute for the Study of Labor, 278.  
 (22) Cf. M. Garcia and M. Nedjam (2018), "Institutions et développement: que dit l'enquête Profils institutionnels?" *Trésor-Economics* no. 221.  
 (23) IMF (2016), "Corruption: Costs and mitigation strategies", *IMF Staff Discussion Note*, SDN/16/05.

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