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Research Briefing | Emerging Markets
Sustained growth in EMs calls for thrift and innovation

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- **Emerging Markets (EMs) with sustained fast growth are distinguished by rapid capital accumulation – mainly domestically financed – and robust total factor productivity (TFP) growth. We find that sustained TFP growth requires a focus on innovation and R&D, especially in middle income countries (MICs). Our growth forecasts for 2019-28 show continued large variation across MICs in line with how they score on these essentials.**

- In previous research we concluded that a sizeable, export-oriented manufacturing sector is key for unlocking sustained growth, while, to convincingly avoid the middle income trap (MIT), EMs must master technology, as shown by R&D and innovation.

- In growth accounting terms, vast differences in real growth across EMs in 1992-2018 are largely determined by variation in labour productivity growth. This, in turn, is primarily down to major disparity in capital deepening and TFP growth. Capital deepening stems from investment, the bulk of which has to be financed by domestic saving, explaining the important link between (gross domestic) saving and growth.

- Empirical research by others confirms that (i) TFP growth has been central to the transition to high income level; (ii) the most important drivers of TFP growth are R&D and human capital; and (iii) innovation and R&D are key to overcoming the MIT. This helps explain why Argentina, Brazil, Chile, Mexico and South Africa, MICs that don't score high on innovation and R&D, saw poor (or negative) TFP growth in 2008-2017, in contrast to Japan, South Korea and Taiwan in earlier decades.

- To achieve sustained rapid growth in the coming decades, EMs will need solid saving. And to avoid the MIT, the upper MICs in particular need to make progress in terms of "mastering technology", raising the involvement of firms and/or people in innovation and R&D. Our 2019-28 growth forecasts reflect how MICs score on these essentials.

Exploring the lessons from the massive disparity in catch up among EMs, using the growth accounting perspective

EM growth experience

Catch up with US in GDP pc 1992-2018, PPP, ppts

Source: Oxford Economics, Haver Analytics
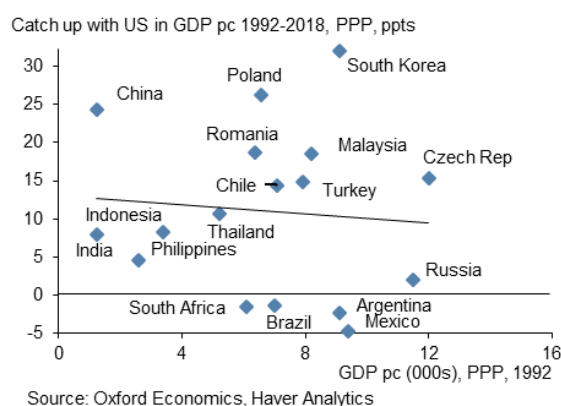
The degree to which EMs caught up towards US income levels in 1992-2018 varies greatly. Indeed, the variation in catch up among middle income countries with broadly similar income levels in 1992 is striking.

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Exploring the variation in trend growth among EMs from a growth accounting angle

In an earlier Research Briefing (RB) we explored **the large variation in trend growth in 1992-2016 among 21 large Emerging Market Economies (EMs).** Based on a survey of their experience, we identified the key factors in terms of the development strategy and structure of the economy needed to achieve sustained rapid growth and avoid the middle income trap (MIT). We concluded that **a sizeable, export-oriented manufacturing sector seems indispensable for unlocking sustained growth and catch up in EMs. Furthermore, to convincingly avoid the MIT, their firms and/or workforce must also master technology, as evidenced by R&D and innovation.**

In this RB we look at these issues from a growth accounting perspective, decomposing long-term growth into contributions from physical capital accumulation, human capital accumulation (education) and labour. We want to be able to say why, from a growth accounting perspective, some EMs grow so much faster than others, over the long run and why some upper MICs seem better placed to avoid the MIT than others. The answers help explain our long-term growth forecasts for EMs

The disparity in catch up with the US in 1992-2018 across the EM economies is massive (Chart 1, front page). There is some "convergence" taking place – poorer economies on average grow somewhat faster than less poor ones. But the differences in catch up among MICs at broadly similar income levels in 1992 are striking.

Large differences in GDP per capita growth are primarily explained by variation in labour productivity growth

An economy can catch up towards US levels of income (GDP per capita) through faster real per capita growth or real exchange rate (RER) appreciation (rising relative prices). We discussed long-term trends in RERs among Asian EMs in earlier research. Here we focus on catch up in terms of rapid real growth, which is the ultimate source.

The vast differences in real per capita growth between economies are largely determined by variation in labour productivity growth (Chart 2). That is because differences in the trend evolution of the labour force as a share of the total population tend to be modest. Exceptions include Malaysia and Turkey, where GDP per capita growth substantially outpaced labour productivity growth in 2008-17 because of favourable demographics, while in Argentina, the Czech Republic and Thailand the opposite happened. Labour productivity growth in our EMs averaged only 2.3% in 2008-17, after 3.3% in 1998-2007. But the range is massive, with average gains below or close to zero in Mexico, Hungary, Russia and South Africa compared to 5.5% in India and 8% in China.

Chart 2: Labour productivity growth is key

Trend growth driven by labour productivity
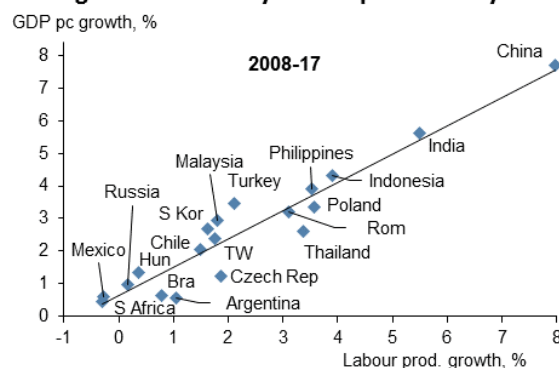
Source: Oxford Economics, Haver Analytics

The large differences in GDP per capita growth in EMs over longer periods are largely explained by variation in labour productivity growth.

Labour productivity growth can be broken down into contributions of capital deepening (higher capital stock per worker, via physical investment), higher human capital of workers

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(via education) and total factor productivity (TFP) growth. We use the Cobb Douglas production functions and associated data from the Oxford Economics (OE) Global Economic Model (GEM) for this purpose.[1] On average, capital deepening contributed 1.2 percentage points (ppt) to growth in 1998-2007 and 1.4 ppt in 2008-17. Average TFP growth dropped from 1.6% in 1998-2007 to 0.7% in 2008-17, while the contribution of education fell from 0.4 ppt in 1998-2007 to 0.2 ppt in 2008-17.

Differences in labour productivity growth largely driven by variation in capital accumulation and TFP growth

The vast differences in labour productivity growth across our group of EM economies are primarily down to major differences in capital deepening and TFP growth. Differences in the contribution of capital deepening and TFP growth directly explained 24% and 45%, respectively, of the variation in labour productivity growth in 1998-2017, with the interaction (covariance) between the two also significant. On the other hand, the contribution of differences in human capital accumulation was very low.

Chart 3 confirms that **capital deepening plays a strong role in driving labour productivity growth across EMs**. In particular, **there is a major gap between the relatively small contribution of capital deepening in a large group of EMs and some other – mostly Asian – EMs where the contribution is more significant.**

Chart 3: Capital deepening plays a major role in explaining labour productivity growth

Capital deepening key to labour prod. growth

Source: Oxford Economics, Haver Analytics
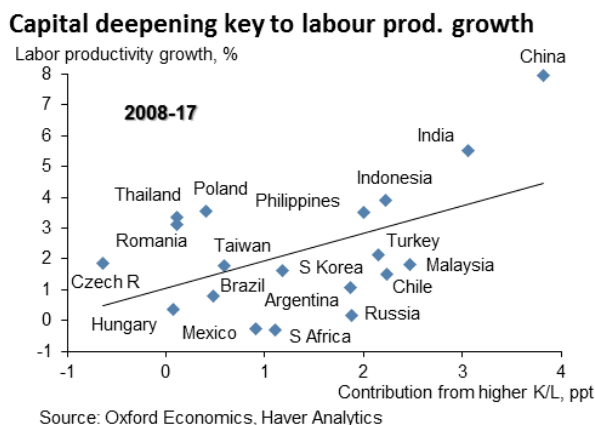
Capital deepening – via investment – is one of the two key factors driving labour productivity growth.

There is a particularly large gap between the low capital deepening in a large group of EMs and others where the contribution of capital deepening is more significant.

Capital deepening obviously stems from investment. But how to finance it? EMs can in principle rely on "imported" capital. However, in reality there are limits to this form of financing. These limits are visible when, as happened in 2018, at times of market pressure on EMs, the ones reliant on foreign financing – such as Turkey and, to a lesser degree, Indonesia and India – are forced to tighten their macro policies to avoid a currency slump.

Thus, realistically, **the bulk of investment will have to be financed by domestic saving**. Indeed, Chart 4 indicates that countries with higher gross domestic saving (as a share of GDP) tend to have higher trend growth. The Philippines seems to be a major outlier, but its domestic savings are supplemented heavily by remittances. Other countries with relatively rapid growth, compared to their domestic saving rate, include the current account deficit ones noted above. On the other hand, countries with high saving but major

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[1] The OE GEM uses standard Cobb-Douglas production functions: $Y=A*L^{\alpha}*K^{(1-\alpha)}*E^{\beta}$, where Y is potential output, A is total factor productivity, L is labour input in hours, K is the physical capital stock and E is education per member of the working population. The functions in the model use slightly different α coefficients across EMs. To facilitate international comparison, here we assume α is 0.6 for all EM economies, and β 0.28. Otherwise, the specification and data for individual countries is the same as on the OE GEM.

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capital exports such as Russia, South Korea and Taiwan, have seen relatively low growth compared to their saving level.

Chart 4: No magic bullet – major saving is required for sustained rapid growth

High saving indispensable for growth

Source: Oxford Economics, Haver Analytics
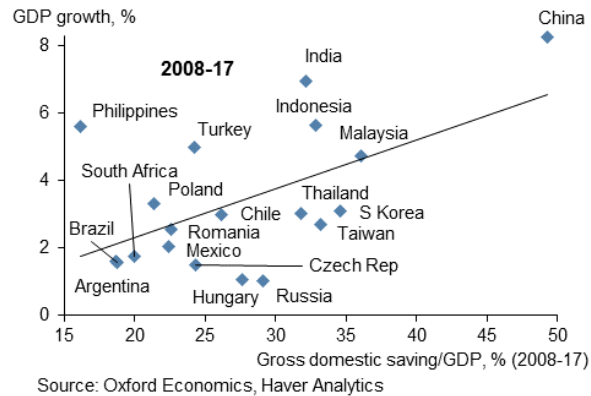
Countries with higher saving tend to be able to invest more, and thereby see faster capital deepening, thus aiding GDP growth.

Interesting outliers include the Philippines (because of remittances) and the current account deficit EMs (above the trend line) as well as countries with major capital exports such as Russia, Taiwan and South Korea (below the line).

TFP growth also key

Chart 5 underscores the critical role of TFP growth, the second of the two key drivers of labour productivity growth, and shows that, again, the variation is large, with TFP growth in 2008-17 ranging from less than zero in Brazil, Argentina, Chile, Mexico, Hungary, Russia and South Africa to more than 2% in India and the Philippines and 3% in China.

Chart 5: TFP growth is critical as well

TFP growth also critical to labour prod. growth

Source: Oxford Economics, Haver Analytics
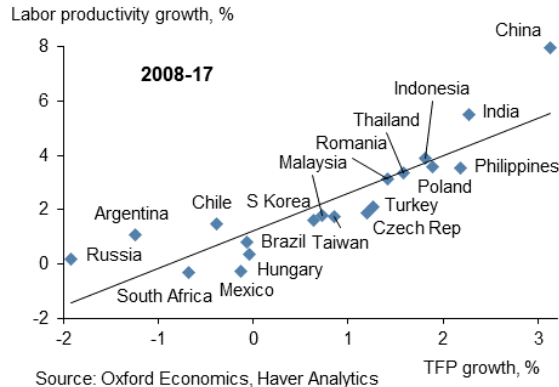
TFP growth is the second key driver of labour productivity growth – again, the variation across EMs is very large.

There does not seem to be a trade-off between development strategies focused on mobilization of resources including capital on the one hand and those emphasizing productivity gains. While such a trade-off is sometimes suggested, we don't find empirical evidence for it in our survey: as noted, the covariance between the two is actually positive. More comprehensive academic research has also typically refuted the idea of a trade-off. This makes sense to us – investment means change in production processes, and that change tends to be good for efficiency and productivity.

Taking stock, what has differentiated the fast-growing EMs from the others in recent decades is rapid capital deepening, largely financed by high national saving rates, and robust TFP growth.

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TFP growth driven by innovation and R&D, especially in middle income countries

What drives TFP growth? In their 2017 empirical study of the role of TFP growth in catch up by EMs and its drivers, **Kim and Park** found that (i) TFP growth contributed significantly to the upward transition from middle to high income level; and (ii) **the two most important "sources" of TFP growth are R&D and human capital**. Also, much in line with the conclusion of our 2017 RB, they found that, (iii) **while innovation and R&D (or "mastering technology" in the terminology of our 2017 RB) are not crucial in the first stages of development towards middle income level, these factors are "critically important in overcoming the challenges that MICs face in transiting to high income**."

Against that background, it is not surprising that upper middle income EMs such as Argentina, Brazil, Chile, Mexico and South Africa, which don't score high on indicators on "mastering technology" such as innovation and R&D (see annex tables in 2017 RB), achieved particularly low TFP growth in 2008-17. This is in contrast to Japan, South Korea and Taiwan, which scored high on these indicators and were therefore able to maintain relatively rapid TFP growth at (upper) middle income level (1960s and 1970s for Japan; 1970s and 1980s for South Korea and Taiwan, roughly speaking) and transition to high income level. Russia scores high on innovation and R&D, but it is not channelled to economy, as indicated by its really poor TFP growth performance. In the case of China, it is too early to say whether it will be able to avoid the MIT but its relatively high score on the innovation and R&D indicators would suggest it is reasonably well placed.

Sustained rapid growth in 2019-28 calls for solid saving and, to achieve robust TFP growth and avoid the MIT, upper MICs need to make progress on "mastering technology"

Looking ahead, in most individual EMs demographic factors will exert downward pressure on trend growth. Moreover, in rapidly growing MICs such as China and, later on, India, TFP growth is likely to moderate as catch up proceeds. For EMs to show sustained rapid growth in the coming decades, they will need solid levels of domestic saving to finance substantial capital deepening without relying overly on foreign capital. And, to achieve solid TFP growth and avoid the MIT, the upper MICs in particular need to make progress in terms of "mastering technology", raising the involvement of firms and/or people in innovation and R&D.

As shown in Chart 6, the OE forecast of GDP growth in 2019-28 in EMs confirms that we generally expect growth to be particularly robust in the EMs where (i) domestic saving is sufficient to finance investment on a sustainable basis and (ii) TFP can grow solidly. In the case of upper MICs, the latter is basically only possible if there is a substantial focus on innovation and R&D.

Chart 6: Our forecasts reflect how middle income countries score on saving as well as innovation and R&D

EM growth forecast
GDP pc growth 2019-2028, %
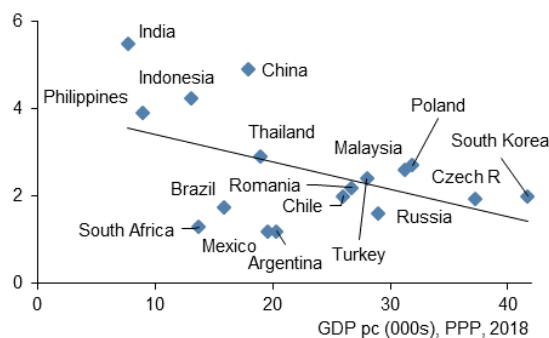
Source: Oxford Economics, Haver Analytics

Our growth forecasts are consistent with the conclusions of our survey as to the important role of saving as well as innovation and R&D.

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