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Towards the peak:

How the rise and fall of populations affects economic growth

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Contents

Key Takeaways	3
Emerging markets to drive global growth	4
Moving up, moving down	5
Africa and developing Asia to drive global population growth	6
Migration drives demographic differences in Europe	6
Demographics may not be destiny, but they will weigh on growth	7
Ageing populations may drag on productivity growth	9
Investment implications: growth	11
Investment implications: the composition of growth	12
Appendix 1: Decomposing the drivers of growth and creating projections	13

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Key takeaways

The global population is expected to peak at 10.4bn in the 2080s, but this upward trend conceals deep differences between countries. Aging societies pose challenges to growth, but they also create investment opportunities as spending shifts.



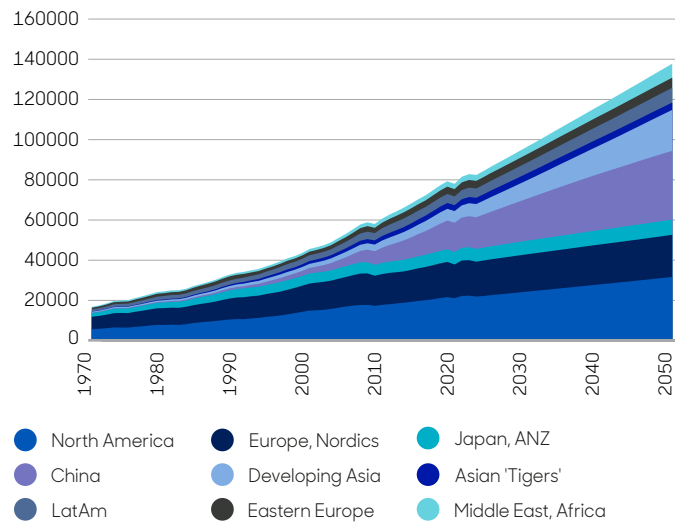
Key Takeaways

- The global population is set to rise by 1.7bn by 2050, hitting 9.7bn.
- There are deep differences not only between emerging and developed economies, but also within each group. The US' population is expected to rise by 37 million, while Germany's could fall by 4 million; EMs are typically still growing, but China's population started to decline in 2022.
- Emerging markets are likely to drive three quarters of global growth, with China and developing Asia alone accounting for 60% of it.
- India and Indonesia are expected to be among the top seven global economies by 2050, while Pakistan (#17), Bangladesh (#20) and Vietnam (#23) may break into the top 25.
- Low-income countries will spend a larger share of their salaries on housing, healthcare, transport and personal care as income levels rise, while aging will drive notable consumption changes in all countries.

This note brings together and updates our assessments of the long-run growth outlooks for major DM and EM economies, with a special focus on the role that demographics play in shaping growth and the risks around it.

Figure 1: Global GDP is increasingly driven by Asia

GDP (\$bn, 2015 constant prices)



Source: Haver, abrdn, February 2023.



Emerging markets to drive global growth

We expect global growth to slow from around 2.5% to 1.5% by 2050, reflecting a fading tailwind from population growth.

Emerging markets will drive 75% of global growth, up from 60% between 2017 and 2019. This is according to our latest estimates, which also see China and developing Asia alone accounting for 60% of that, up from 47% before the pandemic.

While slowing population growth is especially visible in developed markets, emerging countries face demographic challenges too. However, they should hold up better, growing at between 2 and 2.5 times the rate of developed economies.

As a result, we expect several major emerging markets to move up the ranks of the world's largest economies (see Figure 2).

Figure 2: Economic gravity is shifting notably over the next 25 years

Ranking the top 25 economies (Trillion, 2015 US\$)											
2000	2010		2019		2030		2040		2050		
US	13.8	US	16.4	US	19.9	US	22.5	China	28.1	China	34.2
Euro Area	10.0	Euro Area	11.2	China	14.3	China	20.9	US	25.8	US	29.2
Japan	4.0	China	7.6	Euro Area	12.6	Euro Area	13.2	Euro Area	13.8	Euro Area	14.2
China	2.8	Japan	4.2	Japan	4.6	Japan	4.7	India	7.2	India	10.7
UK	2.3	UK	2.7	UK	3.2	India	4.4	Japan	4.8	Japan	4.9
Brazil	1.2	Brazil	1.7	India	2.7	UK	3.4	UK	3.8	UK	4.2
Canada	1.2	India	1.5	Brazil	1.8	Brazil	2.1	Brazil	2.4	Indonesia	3.1
Mexico	0.9	Canada	1.4	Canada	1.7	Canada	1.9	Indonesia	2.2	Brazil	2.7
Australia	0.9	South Korea	1.3	South Korea	1.6	South Korea	1.9	Canada	2.2	Canada	2.5
India	0.8	Russia	1.3	Australia	1.5	Australia	1.8	Australia	2.1	Australia	2.4
South Korea	0.8	Australia	1.2	Russia	1.5	Indonesia	1.5	South Korea	2.0	Nigeria	2.1
Russia	0.8	Mexico	1.0	Mexico	1.3	Mexico	1.5	Mexico	1.8	Mexico	2.0
Switzerland	0.5	Indonesia	0.7	Indonesia	1.0	Russia	1.4	Turkey	1.5	South Korea	1.9
Turkey	0.4	Switzerland	0.6	Turkey	1.0	Turkey	1.2	Russia	1.4	Turkey	1.6
Argentina	0.4	Turkey	0.6	Switzerland	0.8	Saudi Arabia	0.9	Nigeria	1.3	Philippines	1.6
Indonesia	0.4	Argentina	0.6	Saudi Arabia	0.7	Switzerland	0.9	Saudi Arabia	1.1	Russia	1.3
Saudi Arabia	0.4	Saudi Arabia	0.5	Taiwan	0.6	Nigeria	0.8	Philippines	1.0	Pakistan	1.3
Sweden	0.4	Taiwan	0.5	Argentina	0.6	Poland	0.7	Switzerland	0.9	Saudi Arabia	1.3
Taiwan	0.3	Sweden	0.5	Poland	0.6	Taiwan	0.7	Egypt	0.9	Egypt	1.3
Norway	0.3	Poland	0.4	Sweden	0.5	Argentina	0.7	Poland	0.9	Bangladesh	1.0
Poland	0.3	Nigeria	0.4	Nigeria	0.5	Philippines	0.6	Pakistan	0.9	Poland	1.0
South Africa	0.2	Norway	0.4	Thailand	0.5	Sweden	0.6	Argentina	0.8	Switzerland	1.0
Thailand	0.2	Thailand	0.3	Norway	0.4	Egypt	0.6	Taiwan	0.8	Vietnam	1.0
United Arab Emirates	0.2	South Africa	0.3	Egypt	0.4	Thailand	0.6	Sweden	0.7	Argentina	1.0
Israel	0.2	Egypt	0.3	Philippines	0.4	Pakistan	0.5	Vietnam	0.7	Taiwan	0.9

Source: Haver, abrhd, February 2023.

Moving up, moving down

Moving up

China is set to remain the world's major growth engine even after it takes the top spot by surpassing the US economy before 2035.

Together with India and Indonesia, China will increasingly dominate the global economic landscape. Its economy could expand by a factor of 2.5, while India's could grow by a factor of 4 and Indonesia's by 3. By 2050 they will be part of the top seven largest economies, with China taking the lead, India in fourth place and Indonesia taking the seventh spot.

Nigeria (#11) and the Philippines (#15) are likely to also make significant progress up the ranks, while Pakistan (#17), Bangladesh (#20) and Vietnam (#23) may break into the top 25.

Moving down

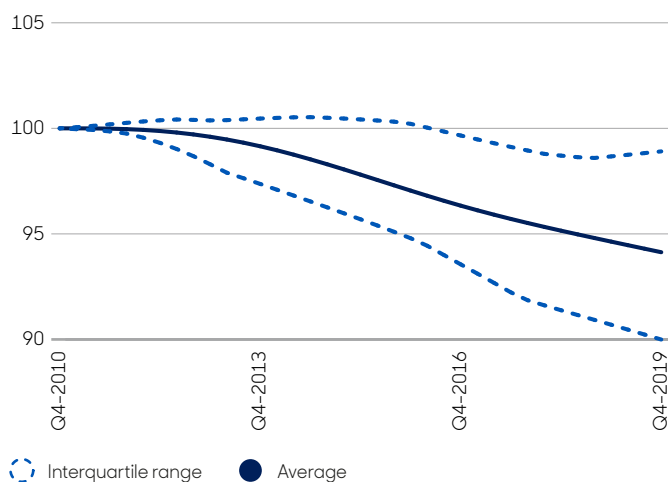
The countries falling down the ranks include major oil exporters such as Russia, Saudi Arabia and Norway.

All of them face additional downside risks from the global effort to reduce dependence on oil. And it is notable that most major commodity exporters have suffered sustained falls in total-factor productivity since the global financial crisis (see Figure 3).

In addition to this, Russia's diminishing economic presence is due to its invasion of Ukraine and Western sanctions. It is the only emerging market country for which our projections show GDP per worker moving further away from the US, rather than catching up.

Figure 3: Commodities: a blessing or a curse?

Total Factor Productivity commodity exporters (index: 2010 Q4=100)



Source: Haver, abrdn, February 2023.



Africa and developing Asia to drive global population growth

The world's population is still growing and is expected to do so for the next six decades.

After hitting the 8 bn-mark in 2022, according to the latest United Nations' (UN) World Population Prospects report, the number is expected to rise by 1.7bn by 2050, reaching 9.7bn. After that, the pace of growth will slow, and global population could peak at 10.4bn in the 2080s.

This upward trend however masks huge differences between and within emerging and developed markets.

By the middle of this century, Africa and developing Asia should account for most of the population growth in emerging markets. Nigeria alone is expected to see its population swell by 159mn (73%). Elsewhere, Egypt's population could rise by 49mn (44%). In developing Asia, Pakistan's population could have an additional 132mn (56%) people and India's a further 253mn (18%). In contrast, China's population could fall by 11.3mn (-8%).

In Europe, the number is expected to drop by 40mn (-5%), but this is largely offset by the rise in the US population, which could increase by 37mn (+11%).

Migration drives demographic differences in Europe

There are large demographic differences within Europe.

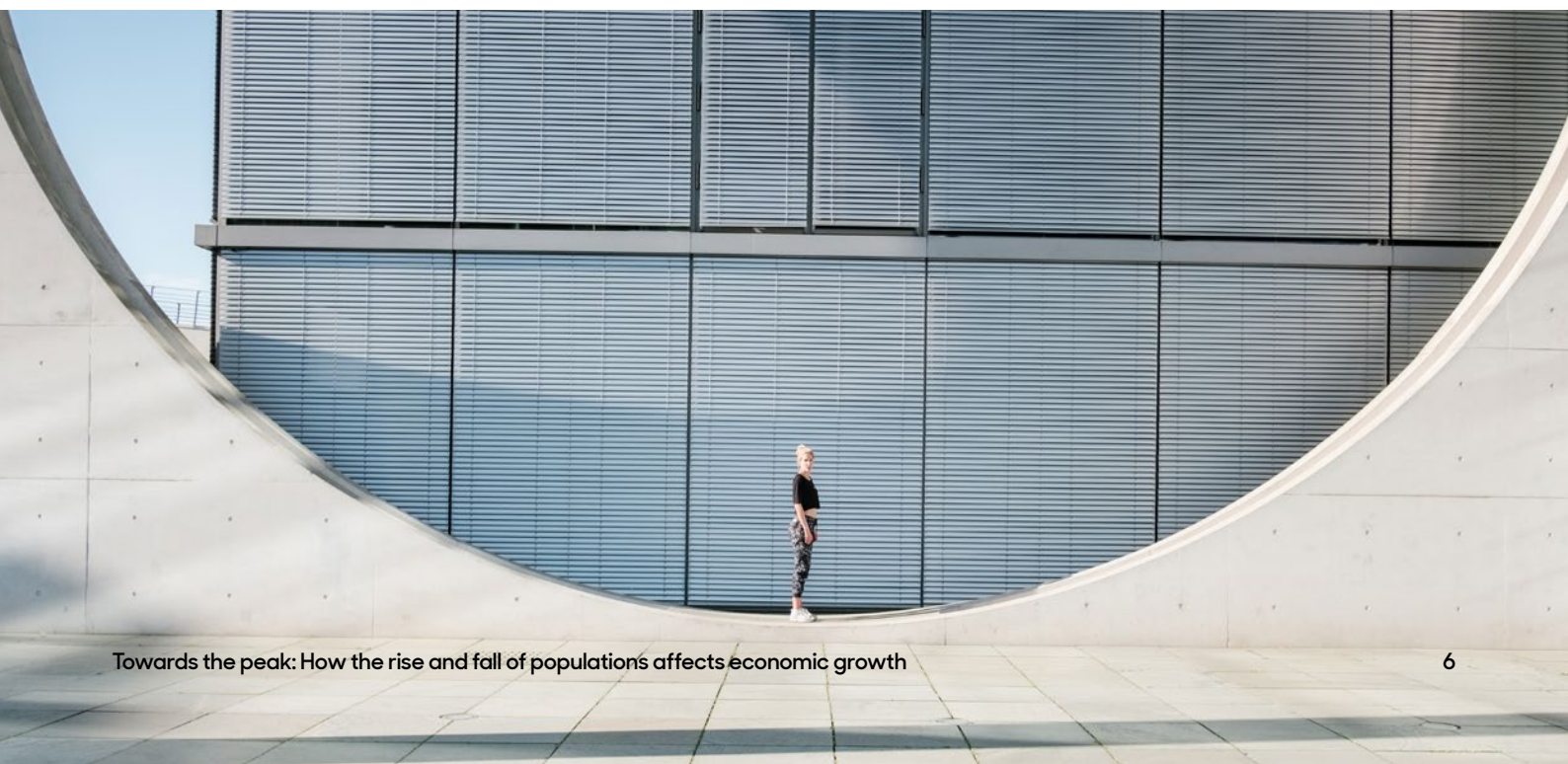
Portugal and Italy are expected to see their populations fall around 10%, but they are not the only ones.

Parts of developed Europe will be propped up by migration at the expense of emerging Europe, whose population is expected to fall on average by around 10% by 2050. Germany's population could fall modestly (-5%), while immigration could see France's population increase marginally (+2%). Sweden's could grow as much as 13% to 11.9mn.

Ukraine adds another layer of uncertainty. At the time of writing, it is estimated that nearly one-third of Ukrainians have been displaced, both within and outside their country.

Over 4mn refugees have registered for protection schemes within Europe since the war with Russia began. Over 1.5mn are now in Poland, Germany is hosting almost 900,000 while the Czech Republic records a bit under 500,000.

The refugee situation remains fluid - with large numbers of returners to Ukraine - making an assessment of the long-term effects very difficult. The UN population projections assume that the impact on working age populations will peak in 2024 and will then largely unwind over the following 3-4 years. But there is clearly a risk that a prolonged conflict leads to a more permanent exodus. The OECD estimates that 1.2mn Ukrainians will join the EU workforce in the long-run, primarily working in the service sector.



Demographics may not be destiny, but they will weigh on growth

The working age population, the 15–64 age group, is falling. While this has implications for dependency ratios, the potential impact on economic growth is often overstated.

You can read more about it in **EM demographics 'in focus'**, but the quick answer is: individuals start and end their working lives later.

In younger age groups, employment rates have fallen as higher education has become the norm, pushing down participation, and unemployment has increased reducing engagement. At the same time, rising life expectancy has made working lives longer, boosting employment in older age groups. Overall, this has made the distribution of workers older.

This means that dependency ratios – which are typically calculated as the ratio of those below 15 and above 64 versus those aged 15–64 – may overstate the demographic challenges faced. This trend however is moderated if one considers the ratio of workers to non-workers instead (see Figure 4). Put simply, what really matters is the number of workers not the number of 'working age' people.

Moreover, human capital still has room to grow, particularly in lower income emerging countries, and for many this is likely to offset the drag from having fewer

workers, or from the slowing growth rate in the workforce. Human capital can be boosted as years of formal education rise and while secondary education has made impressive progress, a gap remains between emerging and developed markets.

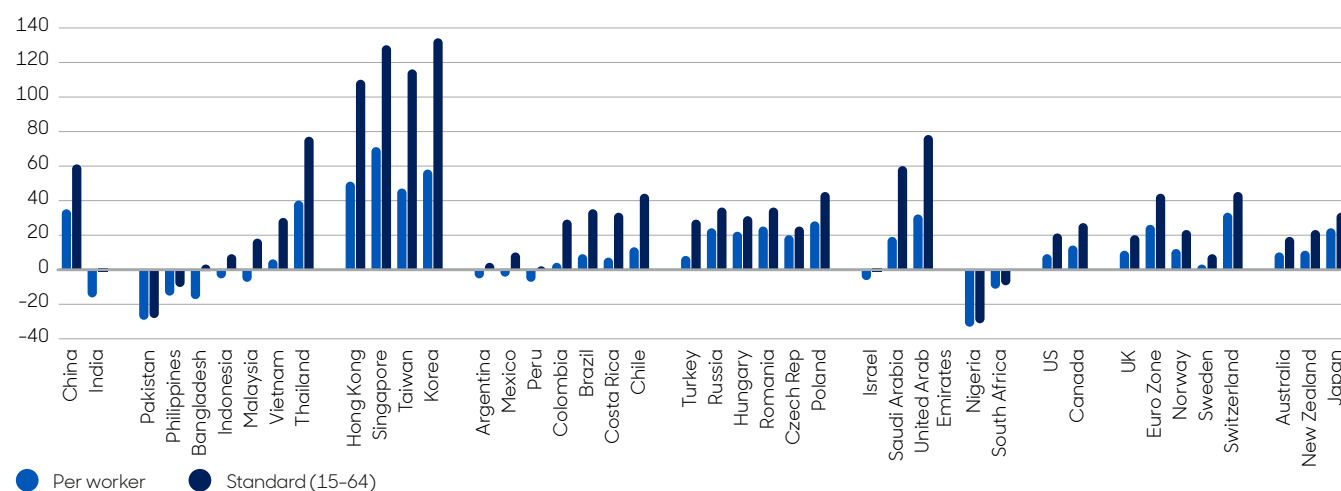
That said, the tailwinds from the rapid labour force growth between the global financial crisis and the onset of the Covid pandemic are fading fast. The next 30 years will see a falling contribution from labour to potential growth. Even if more machinery and equipment is available to each worker, slower labour force growth will still weigh on the growth of the capital stock and hence the potential growth of the whole economy.

Considering the economies we estimate will hold the top 10 spots in the global economy by 2050, one can see that the headwind from declining populations is enough to push overall GDP growth close to zero for the euro zone and Japan. Potential growth (Y*) could be a mere 0.3% and 0.1% respectively by 2050 (see Figure 5).

China will face a similar issue from fewer workers, as will Brazil, to a lesser extent, but it still has scope to improve the quality of its labour force, offsetting most of the drag. For more details on how we project potential growth please see Appendix 1.

Figure 4: Dependency ratios are set to rise, but the pressure is moderated when one considers how the number of workers is evolving rather than those of 'working age'

% change in dependency ratios (2020 to 2050)

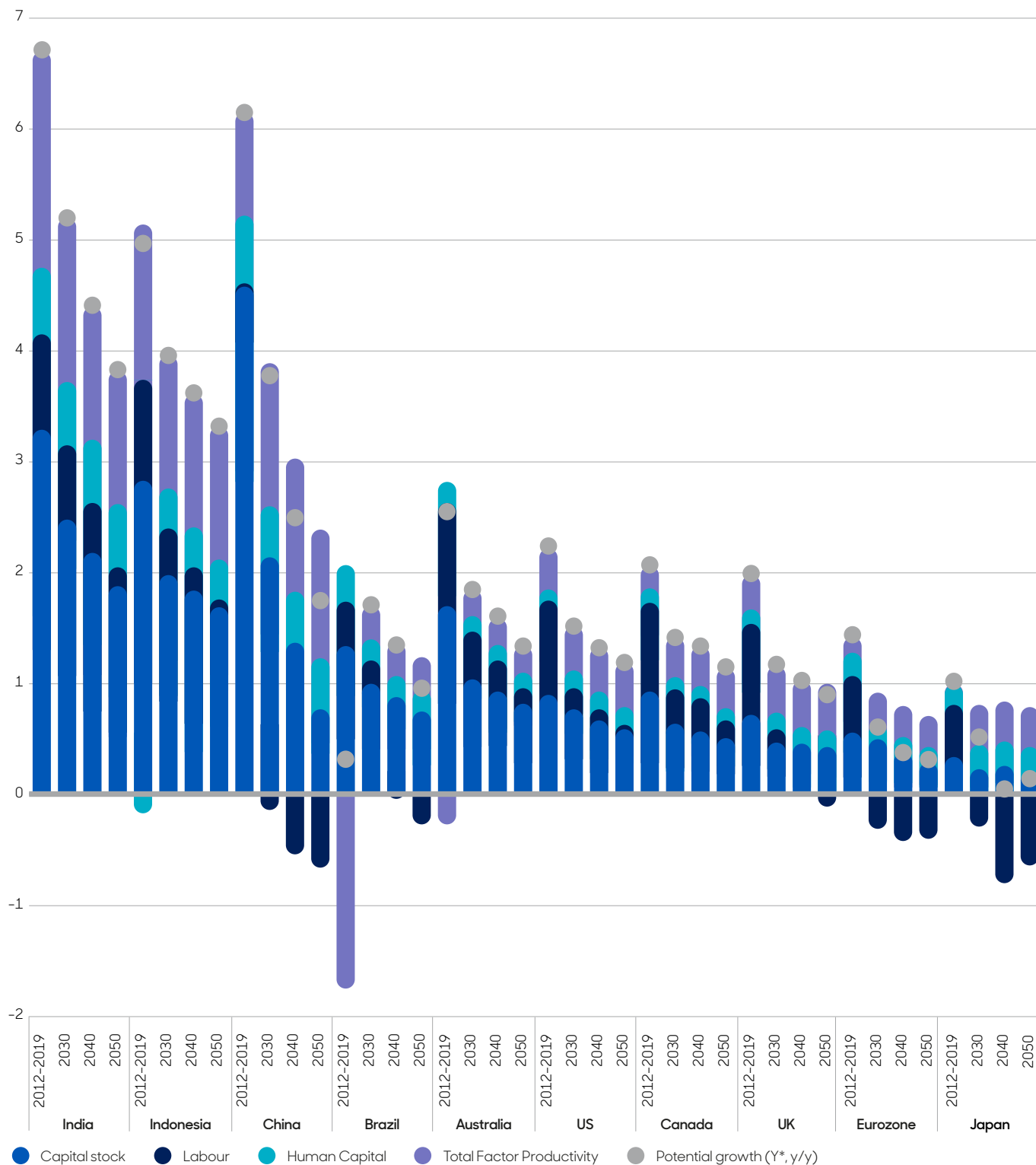


Source: Haver, abrdn, February 2023.

Demographics may not be destiny, but they will weigh on growth

Figure 5: Within the top 10 global economies by 2050, capital deepening and productivity growth are essential to stop GDP growth falling more sharply

Potential growth decomposition, % annual average



Source: Haver, abrdn, February 2023.

Ageing populations may drag on productivity growth

We expect some recovery in total factor productivity compared with the weakness seen in the post-global financial crisis period. But, even if it remains well short of rates achieved before 2009, projecting an improvement above rates achieved between the global financial crisis and pandemic may be too optimistic.

As noted above, some commodity extracting countries have actually witnessed a prolonged period of negative productivity growth, while institutional weakness and political crises pose major risks to emerging markets in particular. Hence, there is a risk that productivity not only fails to bounce back, but actually deteriorates.

The potential for demographics to create endogenous feedback loops which impact growth and productivity is one plausible source of downside risks. Aging populations can put strain on the sustainability of social welfare models

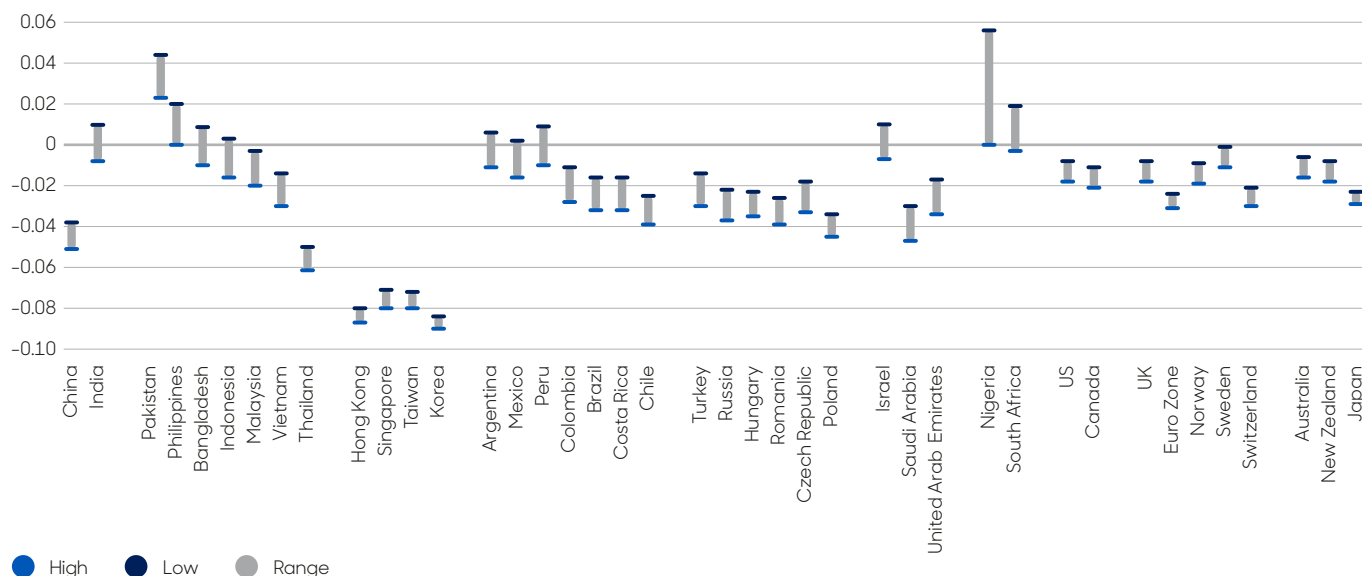
and public debt; a more austere backdrop for public services could spur emigration, further reducing the tax base, for example.

Modelling the potential impact of aging pressures on productivity growth implies that risks of secondary impacts are greatest in China, Thailand and developed Asia. Eastern Europe and much of LatAm are also at risk. While DMs typically face a moderate risk, Japan and the euro area are more likely to face these secondary impacts (see Figure 6).

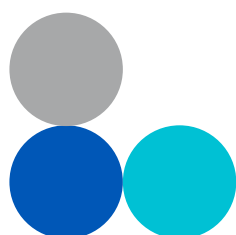
Only a few countries could benefit from the feedback loop from demographics to productivity: Pakistan, the Philippines, Israel, Nigeria and South Africa are all expected to have improving dependency ratios, reflecting their relatively youthful populations and falling birth rates.

Figure 6: Potential feedback loops from demographics to total factor productivity growth

Average impact on annual total factor productivity growth, percentage points



Source: Haver, abrdrn, February 2023.



Ageing populations may drag on productivity growth

That said, the feedback from demographics to productivity is only strong enough to rescue Pakistan and Nigeria should the world find itself in the UN's low fertility scenario.

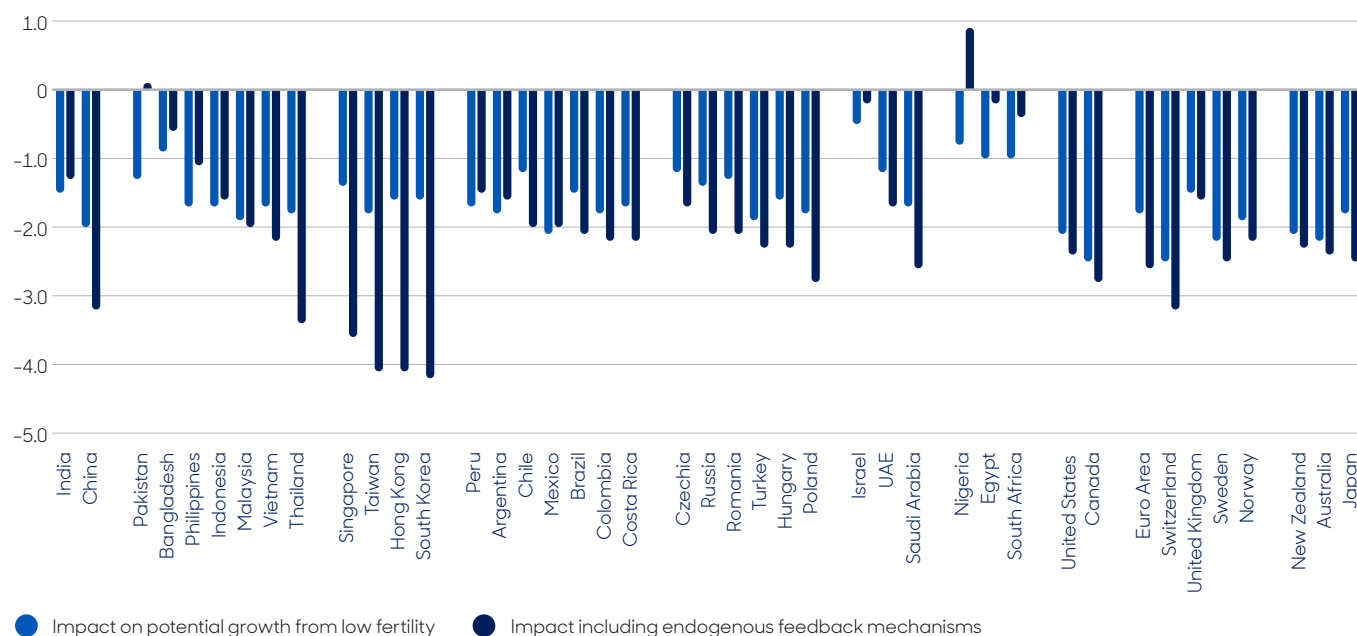
In these countries, falling fertility reduces the number of dependents (i.e. children), which more than offsets the long-term effects of having fewer workers.

In contrast, economies with already low fertility rates, specifically developed Asia, China and Thailand, will face much worse dependency ratios, with a hit to GDP of between -3% to -4%, double the impact from low fertility alone for developed Asia.

In most other countries, this amplifying effect is generally more modest. But it is still clear that economies will be smaller: most emerging markets would see potential growth depressed by 1%–2% in the low fertility scenario, while the hit to developed economies is larger at between -1.5% to -2.5% (see Figure 7).

Figure 7: A handful of EMs could see higher growth if low fertility combines with endogenous feedback loops

% chg from Central Case



Source: Haver, abrdn, February 2023.

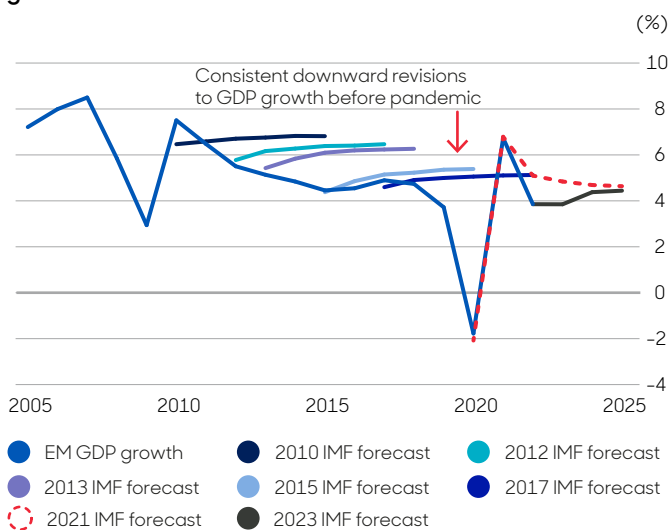
Investment implications: growth

If, as we expect, emerging markets will grow more than developed markets, equities could outperform. Research from Goldman Sachs shows that earnings growth for a given rate of GDP growth is typically lower in emerging markets than in developed ones, in part as foreign direct investment originating from the latter contributes to the growth of emerging markets, with the profits flowing to multi-national enterprises. But even accounting for this wedge, the EM-DM growth gap should (in theory at least) be sufficient to compensate for a slightly reduced earnings relative to GDP performance.

This however is far from guaranteed. After all, emerging economies were growing at a faster rate than developed ones after the global financial crisis, but they consistently fell short of expectations (see Figure 8).

It seems likely that risks of further substantial downgrades to EM growth expectations have moderated. Indeed, while there has still been some tendency for the International Monetary Fund (IMF) forecasts to be marked lower over time, the pace of downgrades has moderated notably.

Figure 8: EM growth consistently disappointed after the global financial crisis



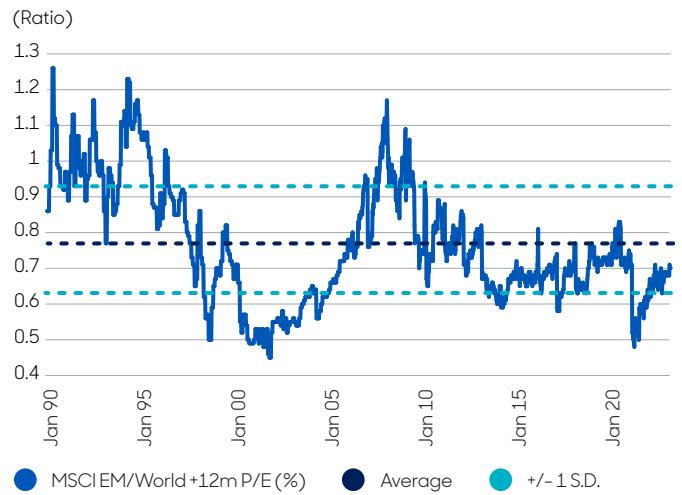
Source: Haver, abrdn, February 2023.

We now judge that near-term risks around growth are more balanced, even if the IMF and consensus expectations may not have fully adjusted to the damage brought about by the pandemic.

Whether emerging markets can deliver the expected growth outperformance to developed markets will depend on a multitude of factors, including institutional strength and the ability to navigate political pressures without building up vulnerabilities and economic imbalances.

Asset prices may now more adequately capture these risks. Emerging market equities have historically traded at a discount to developed market equities, reflecting higher risk and volatility. The emerging market discount is relatively large (see Figure 9), seemingly consistent with a greater degree of risk having been priced in.

Figure 9: EM asset prices relative to DM still trading below the long-term average



Source: Haver, abrdn, March 2023.



Investment implications: the composition of growth

As emerging markets develop and their middle classes expand, the share of GDP dedicated to consumption will rise, leading to notable changes in the relative size of consumer markets around the world (see Figure 10).

Using our long-term growth projections we can estimate the size of consumer markets in emerging economies relative to their developed markets counterparts. China's is already 50% the size of the US'. However, by 2050 it could be almost 10% larger. Much will depend on the extent to which as China pivots away from its investment-intensive model and to a more consumption-led growth model, but, even if the pivot away from investment is gradual, we still expect it to become the dominant global consumer market in the early 2040s.

India's consumer market will also develop considerably, becoming almost as large China's current one by 2050, growing fourfold over the 30-year period. Similarly, developing Asia and MENA are also primed for substantial growth.

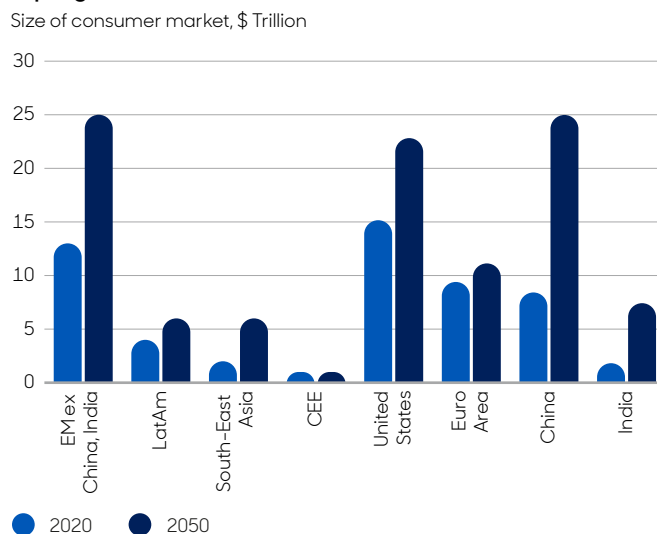
The outlook for Europe, CEE and developed Asia looks less promising, with slowing growth set to limit the scope for consumption to rise.

Consumer preferences will change globally. As salaries rise in low-income countries, spending patterns will increasingly resemble those seen in middle and high-income economies.

This means the share of expenditure on essentials such as food and clothing should fall, while housing, healthcare, transport and personal care should take a larger portion.

Ageing populations will increasingly skew consumption towards the 'silver economy' globally, amplifying these trends.

Figure 10: Emerging Market consumption primed for rapid growth



Note: Regional calculations an approx. estimate using the 32 largest emerging markets. Source: Haver, abrdn, February 2023.



Appendix 1:

Decomposing the drivers of growth and creating projections

The process of explaining the drivers of historic GDP growth and then projecting forward the path of growth for the 40 major economies can be divided into two distinct phases. The first involves breaking down GDP growth into the contribution from different factors of production (labour, capital and productivity) and the second involves projecting forward these factors to get estimates of how economies could evolve out to 2050.

1. Estimating the contribution to GDP from the factors of production

To assign contributions from the factors of production we first calculate Cobb–Douglas production functions:

$$Y_t = A_t * K_t^\alpha * (L_t * h_t)^{(1-\alpha)} \quad (1)$$

Here, Y_t is real GDP, A_t is total factor productivity (TFP), K_t is the capital stock, L_t is the labour force and h_t is human capital. α represents the capital share of output and correspondingly $(1-\alpha)$ is the labour share.

Variables are put into natural logarithms, such that equation (1) is transformed to:

$$\hat{Y}_t = \hat{A}_t + \alpha \hat{K}_t + (1-\alpha) * \hat{L}_t + (1-\alpha) * \hat{h}_t \quad (2)$$

In terms of the inputs, Real GDP and estimates of the labour force are readily available for most EMs, and where data is scarce, we utilise Oxford Economics' database to expand our time series.

To ensure we are accounting for both the quality and quantity of labour we use the human capital indices from the Penn World Tables (PWT).

α is also informed by the PWT, typically taking a value of between 0.5 to 0.6, where emerging markets typically having a lower labour share of income than developed markets.

Estimates of the capital stock are available from the PWT, but we choose to calculate these ourselves using the Perpetual Inventory Method (PIM). While we cross-check our figures against those in the PWT, and ensure that the capital stock to GDP ratio does not accelerate excessively (which would be implausible, and moreover could be a sign of impending crisis in the extreme), calculating the capital stock ourselves is necessary for the projections in the second stage.

The capital stock is calculated as the previous period's capital (K_{t-1}) adjusted for depreciation (δ) (reflecting wear and tear and the process of equipment becoming obsolete, for example) plus the current period's investment (I_t), in real terms:

$$(K_t) = (1 - \delta)(K_{t-1}) + (I_t) \quad (3)$$

Finally, since we are unable to observe TFP independently, but have all the other figures, A_t is calculated as the residual from the other inputs.

Now that we have a full suite of inputs, we can consider the likely trend variables (denoted by a *). The trend estimates of the capital stock and of human capital are assumed to equal their actual values, as is standard economic practice. Trend labour force growth and trend TFP are initially calculated as Hodrick–Prescott filtered estimates, but then refined such that the overall output gap profile conforms to our understanding of the individual country's economic history and adjusts for the pitfalls of deriving productivity as a residual (inputs can be understated in a boom and overstated in a crisis, for example).

Potential growth \tilde{Y}_t^* is therefore:

$$\tilde{Y}_t^* = \tilde{A}_t + \alpha \tilde{K}_t^* + (1-\alpha)\tilde{L}_t^* + (1-\alpha) * \tilde{h}_t \quad (4)$$

2. Creating long-run GDP projections

UN population data provides a fairly robust estimate of how population is likely to evolve. For smaller economies, such as some in Eastern Europe, there is a risk that migration flows result in larger-than-expected changes in overall population, while for larger economies migration flows have less potential to create a surprise.

We can utilise population projections by 5-year age cohorts ($N_{i,t}$) and combine them with estimates of labour force participation ($LFPR_{i,t}$) and unemployment ($U_{i,t}$) from the OECD (also in 5-year groups) to create a measure of trend labour force.¹



¹ Ideally, we would also consider trends in hours worked, but this is not feasible in EMs due to data limitations. OECD participation and unemployment data does not cover all major EMs, where not available we have used national sources or applied the rates of other countries of close geographical proximity.

Appendix 1:

Decomposing the drivers of growth and creating projections



This also allows us to consider how participation and engagement trends – such as rising participation of older cohorts, and the combination of falling participation and rising unemployment in younger age cohorts – may affect labour force growth across the UN's central, high- and low-fertility scenarios. For our central case projections, we assume a modest rise in participation rates for older age groups and a decline for younger groups for the next 10 years, beyond which, we hold participation rates fixed. Equation (5) sets out the calculation, with age cohorts typically spanning groups 15–19 to 65–69 (i to n):

$$L_t^* = \sum_i^n [N_{i,t} * LFPR_{i,t} * (1 - U_{i,t})] \quad (5)$$

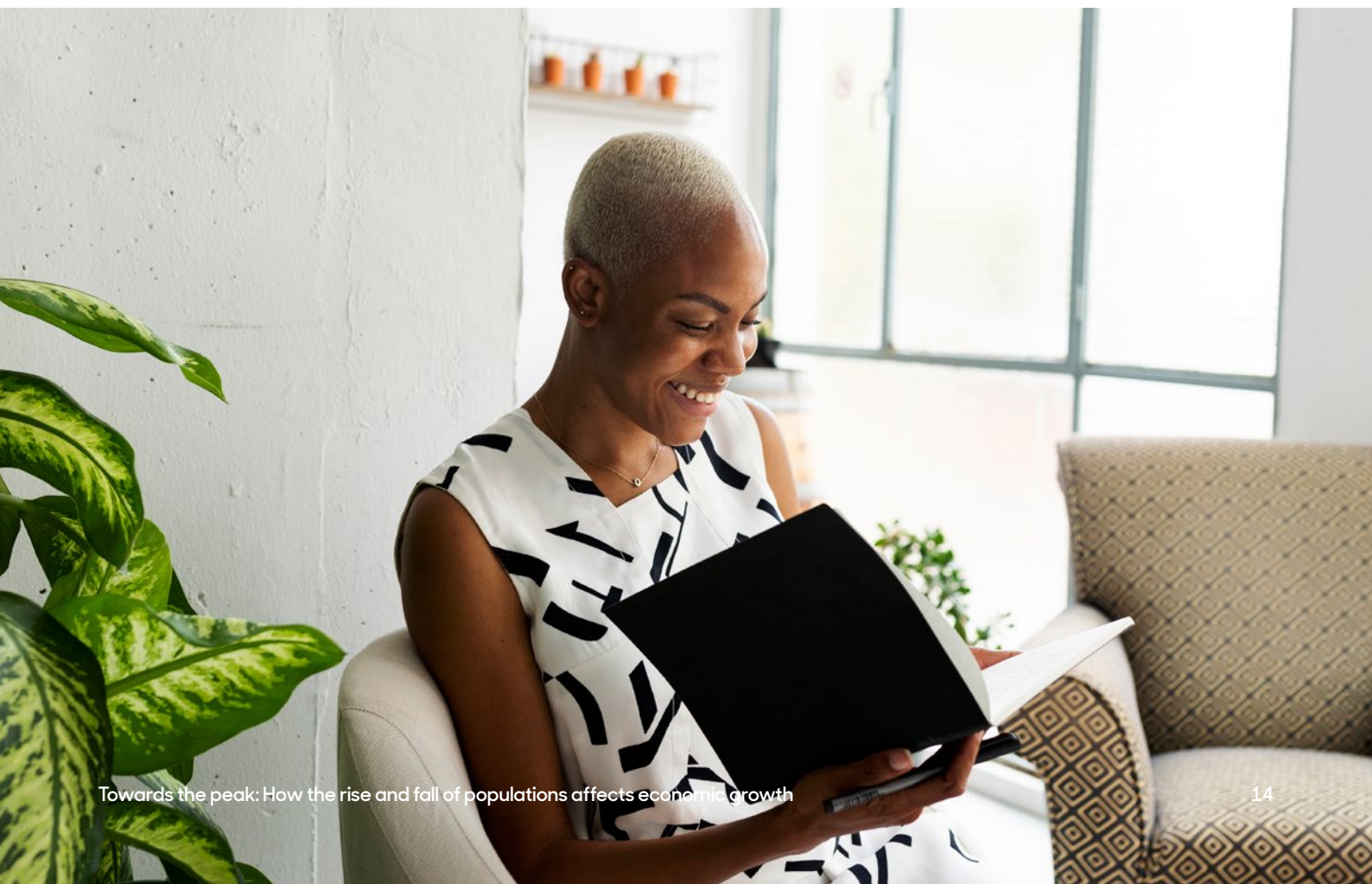
For human capital, we assume that progress towards developed-market levels follows a concave path: when EMs are less developed, we assume larger gains, while higher income EMs converge more slowly. We cross-check our human-capital projections against their implied stages of development. While this projection may seem simplistic, it does capture the long-term trends which have seen steady gains in human capital, even throughout multiple boom-and-bust economic cycles.

To project the capital stock, we make use of the investment-to-GDP ratio and (again) ensure consistency with the stage of development, and make sure that the capital-stock-to-GDP ratio only rises modestly and

that the output gap converges to zero within five years or so. For most EMs the growth path assumes that the investment to GDP ratio gradually falls, consistent with some rebalancing towards consumption as the primary engine of growth – again, the pace of this change is informed by the stage of development, but also considers country-specific factors, for example China's high savings rate. In the early stages, this is an iterative process to ensure consistency, and depends on the overall GDP projection, which must also include taking a view on trend TFP.

TFP is the hardest and potentially most controversial judgement; as a residual it is a "measure of our ignorance". It has also shown wild swings, rising rapidly before the GFC and falling notably post-GFC. Indeed, in some EMs – such as Brazil – TFP has recorded long periods of negative growth as the economy's productive capacity declined.

For most economies, we average through the boom and bust in TFP, assuming that productivity is unlikely to return to pre-GFC rates but is likely to be somewhat better than seen in the past 10 years. As noted in the main text, our EM projections are typically only consistent with modest convergence towards US per capita, with the pace of TFP growth also benchmarked against stage of development.



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