HM GOVERNMENT
HORIZON SCANNING PROGRAMME

EMERGING ECONOMIES: DEMOGRAPHIC CHANGE

A HORIZON SCANNING RESEARCH PAPER
BY THE
EMERGING ECONOMIES COMMUNITY OF INTEREST

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NOTE TO THE READER: THIS ANALYSIS WAS COMPLETED IN 2013 AND HAS NOT
BEEN UPDATED WITH MORE RECENT DATA BUT SENSITIVE INFORMATION, SUCH AS
POLICY IMPLICATIONS HAVE BEEN REMOVED

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BACKGROUND

1. This paper follows an action from the CSAG in June 2013 to produce "*a short paper by a Community of Interest on how government expects demographic change to impact on different emerging Economic Powers and the effects of this on their development trajectories*".

SCOPE

2. This paper will examine the impact of demographic change on Emerging Markets (EMs), rather than Emerging Powers (EPs). This is to focus the paper on economic issues, rather than on more complex and sensitive political dimensions. There is no agreed definition of what characterises an Emerging Market. This note considers the prospects of 21 EMs[1] , which are not drawn from any existing list, and are characterised as emerging based on their current and projected GDP and population, as well as GDP per Capita. The intention is to include more established EMs as well as economies which have the potential to be become more influential over the next 20 to 35 years[2].

IMPACTS OF DEMOGRAPHIC CHANGE

3. **GDP Growth.** Labour input is one of the factors of production, alongside land and capital, which contribute to economic growth. An increase in the size of an Economies' working age population[3] can be used as a proxy for the increase in the supply of labour, assuming that Economies are able to incorporate additions to the workforce. A commonly used economic modelling approach[4] assumes each percentage point increase in the size of the working age population translates into 2/3 of a percentage point in GDP growth. Chart 1 shows estimates for annual GDP growth between 2015 and 2030, as well as how changes in the working age population of EMs are estimated to contribute to annual GDP growth through changes to the labour supply. These GDP forecasts are estimates and should be treated as indicative future growth scenarios. The working age population estimates are provided by the UN; annex A explores the level of uncertainty inherent in the UN's population estimates.

4. **Most EMs will continue to derive some GDP growth (between 0.5 and 1 percentage points per year) from increasing their labour supply**, with some exceptions. Reductions in the labour supply will contribute negatively to GDP growth in Thailand, China and Russia between 2015 and 2030.

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[1] Bangladesh, Brazil, China, Colombia, Egypt, India, Indonesia, Iran, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Russia, Saudi Arabia, South Africa, Thailand, Turkey, Venezuela and Vietnam.
[2] GDP projections are available up to 2030. Population projections are shown up to 2050.
[3] Defined here as those aged 15-59.
[4] Using a Cobb-Douglas production function.
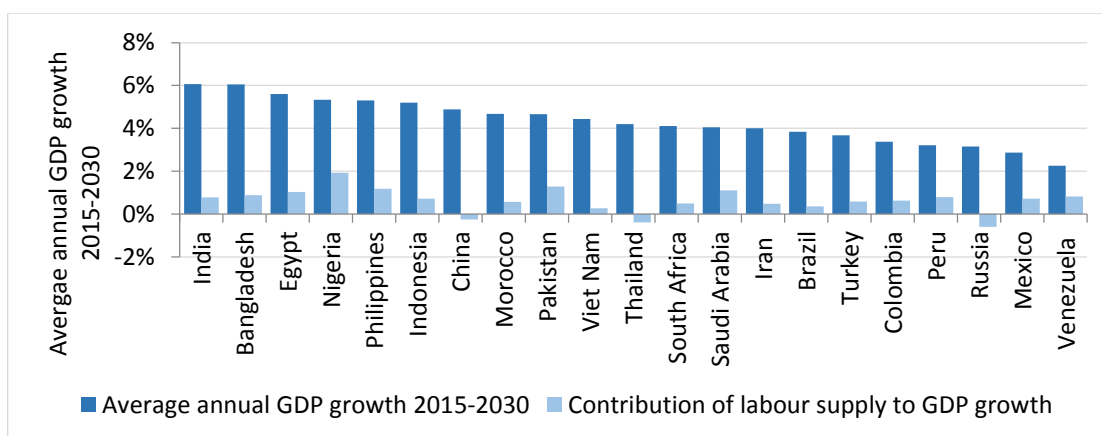
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Chart 1: Contribution of labour supply changes to average annual GDP growth, 2015-2030.
Sources: UN World Population Prospects: The 2012 Revision (http://esa.un.org/wpp/Excel-Data/population.htm), EIU GDP forecasts (© Reproduced by permission of The Economist Intelligence Unit.)

5. Working age population growth will be modest in most EMs, on average between 0 and 2% per year, up to 2030. This will contribute a limited amount to economic growth: most economic gains will continue to derive from capital investment and productivity improvements. Investment and productivity will together account for between 70-100% of GDP growth in most EMs. Labour supply will only contribute more than one third of GDP growth in Venezuela and Nigeria. There are differences in working age population projections after 2025,[5] but the range in projections is not expected to affect annual GDP growth by more than 0.2 percentage points.

6. **Dependency ratios.** The change in the size of the working age population also affects dependency ratios.[6] The change in dependency ratios between 2015 and 2050 are displayed in chart 2. The shrinking workforces in China and Thailand will need to support swelling numbers of older people: this is reflected by rapidly increasing dependency ratios in these countries. This rise in dependency ratios could make these EMs increasingly uncompetitive: welfare policies could become more expensive, increasing the tax burden; workers will become scarcer which could increase the wage rate and reduce the savings and investment rates. Falling dependency ratios in Nigeria, the Philippines and elsewhere are due to an increase in the size of the workforce

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[5] See Annex. The working age population projections before 2025 are more certain because this group have already been born.
[6] Ratio of population aged 0-14 and over 65 per 100 of the population aged 15-64.

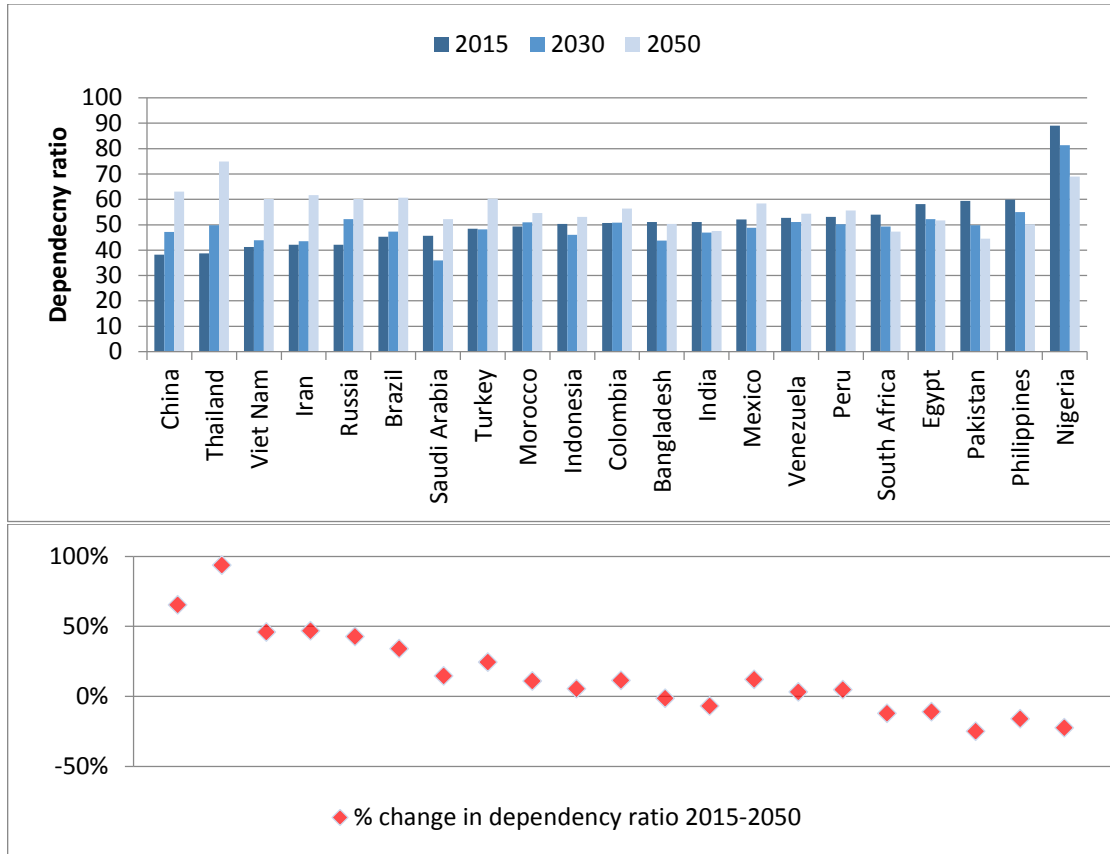THIS IS NOT A STATEMENT OF GOVERNMENT POLICY

Chart 2: Dependency ratios for EMs 2015-2050. Source: UN: World Population Prospects: The 2012 Revision (medium fertility scenario).

7. **Society.** Rapidly growing EMs face the challenge of educating and employing more young people while emerging middle class consumers across all EMs may demand more political and economic freedoms. India is about to reap the demographic dividend of having many young workers, and few older people for them to support. The risk is that productivity will not grow as expected as skill levels and infrastructures do not improve adequately. The modelling assumption is that enough jobs will be created to accommodate increases in the labour supply. This is a strong assumption: growth may stall as the quantity and quality of jobs does not keep up with demand. If governments fail to address the challenges of rising unemployment, particularly for younger age groups, and the risk that higher growth does not translate into poverty reduction, it could lead to civil unrest.

8. Over the next 20 years China will age dramatically and its old age dependency ratio is expected to double to 30 by 2035 (up from 13 in 2015)[7]. Europe's ratio will increase from 26 to 39 over the same period. This could reduce individual savings in China, albeit from a relatively high level, if state provision is inadequate[8]. This reduction could affect investment levels and subsequent growth potential. The relative scarcity of the labour force in relation to the population is likely to increase wages and make exports less competitive, at least in the short term.

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[7] UN World Population Prospects: the 2012 revision. This is the ratio of the population aged 65 and over per 100 of the population aged 15-64.
[8] China has not used tax revenues from its demographic dividend to invest in social services.

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9. **Poverty.** India had 400m of the world's 1.2 billion living below $1.25 per day in 2010,[9] which is comparable to the entire Sub-Saharan African region (414m). Although falling rapidly, China still had 156m extremely poor people in 2010. As India and China continue to develop economically there is a risk that the extreme poor are not given the international attention they deserve. Extreme inequality in these countries may also become increasingly destabilising.

DEMOGRAPHIC & ECONOMIC LANDSCAPE OF EMERGING ECONOMIES

10. Chart 3 illustrates how China and India's populations currently dominate the other EMs, combining to provide 57% of the population of all EMs in 2013,[10] India should overtake China to become the world's most populous country in 2028, and keep growing until the 2060s where its population should peak at around 1.6bn,[11] China's population is expected to peak in 2028 at 1.45bn and continue to fall up to 2100. These estimates are particularly sensitive to future policy changes which may affect the fertility rate in China. The population of the 21 EMs included in this analysis represent 63% of the world's total population in 2013; they will make up 59% in 2050.
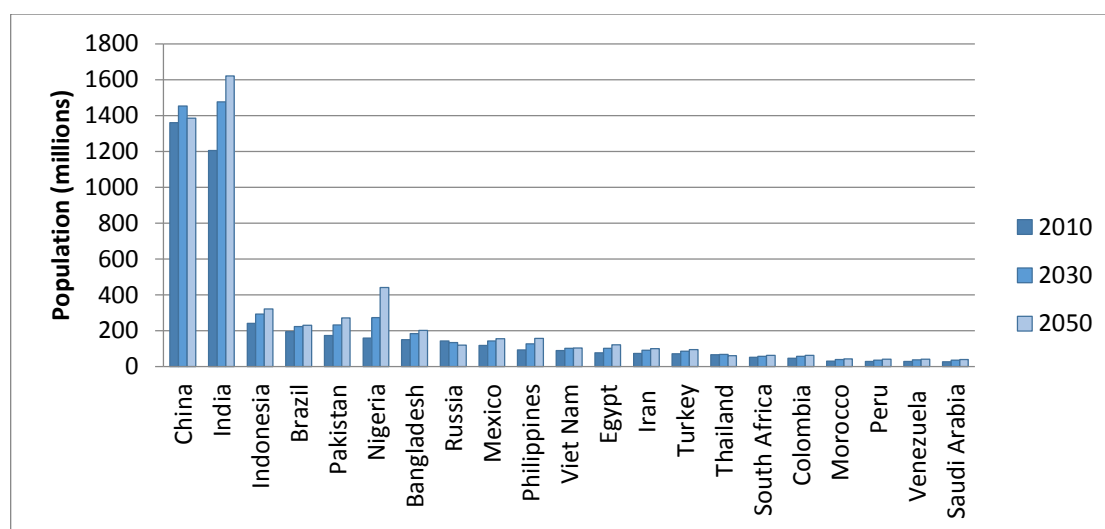

Chart 3: The total population of the EMs, 2010-2030. Source: UN: World Population Prospects: The 2012 Revision

11. Chart 4 shows the spread in the relationship between population growth and GDP growth: most EMs will have modest population growth but a wide range of GDP growth trajectories. This is because capital and productivity improvements contribute much more to GDP growth than population growth.

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[9] The State of the Poor: Where are the Poor and where are they Poorest? (World Bank, 2013).
[10] India and China's combined populations will comprise 55% and 52% of the total EM population in 2030 and 2050 respectively.
[11] The main section of this note uses the UN's medium fertility scenarios for population projections. Other scenarios are discussed in the annex.

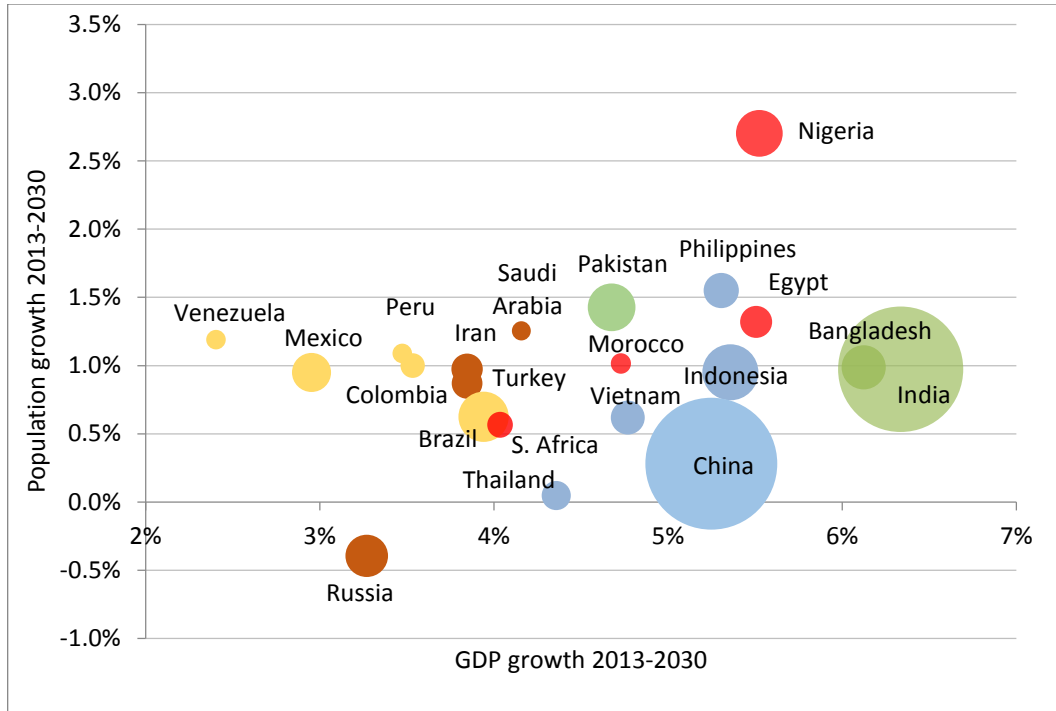THIS IS NOT A STATEMENT OF GOVERNMENT POLICY

Chart 4: Average annual population and GDP growth of EMs, 2013-2030. Bubbles indicate relative population size in 2013. Source: UN: World Population Prospects: The 2012 Revision; EIU GDP forecasts (© Reproduced by permission of The Economist Intelligence Unit)

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ANNEX A: DEMOGRAPHIC PROJECTIONS AND UNCERTAINY

1. The analysis in this paper has used standard demographic projections from the UN to show how the EMs' populations are expected to change over time. This annex considers the impact of other scenarios of demographic change. There is uncertainty in any population projections: laws can be enacted to reduce births, medical breakthroughs can reduce deaths and immigration policies can shut borders in unexpected ways. How much is this uncertainty reflected in official projections?

2. The UN produced population projections up to 2100 in 2012. Most analysis uses their central 'medium fertility' estimates but they also produce low and high fertility estimates[12] which can dramatically affect expected population sizes. The range[13] of total population projections for each region is shown in chart 6. The uncertainty in population levels in Asia is striking; the range in 2050 is bigger than the current population of China.
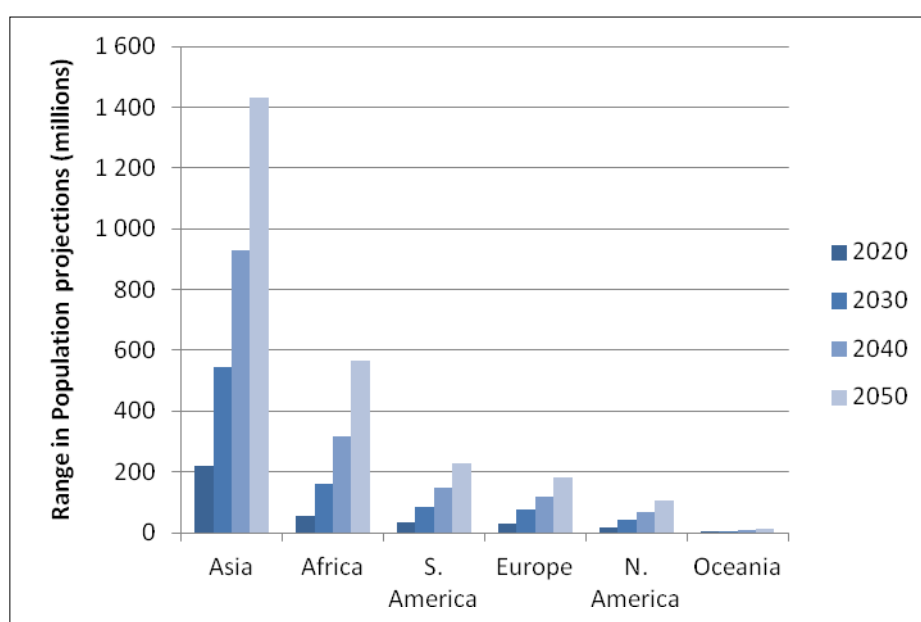

Chart 6: Range in total population projections, by region, 2020-2050. Source: UN: World Population Prospects: The 2012 Revision

3. Chart 7 presents population projections for India and China. Under the central scenario China is expected to have a population of 1.4bn in 2050, down from a peak of 1.45bn in 2030. Under a high fertility[14] scenario the 2050 figure could be just under 1.6bn and under a low scenario just over 1.2bn. This is a range of nearly 400m (27% of the medium fertility scenario population size), which is the total expected size of the USA in 2050. India has an even wider range by 2050: 1.4bn to nearly 1.9bn. This 500m range is 29% of the medium projection.

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[12] The UN keeps its assumptions about mortality rates and immigration constant in all fertility scenarios.
[13] The difference between the high and low fertility scenarios.
[14] The high fertility scenario assumes women will have 0.25 more children than the medium scenario between 2010 and 2015, 0.4 more children between 2015 and 2020 and 0.5 children more thereafter. The opposite is true for the low fertility scenario with women having 0.25, 0.4 and 0.5 fewer children during the same periods.
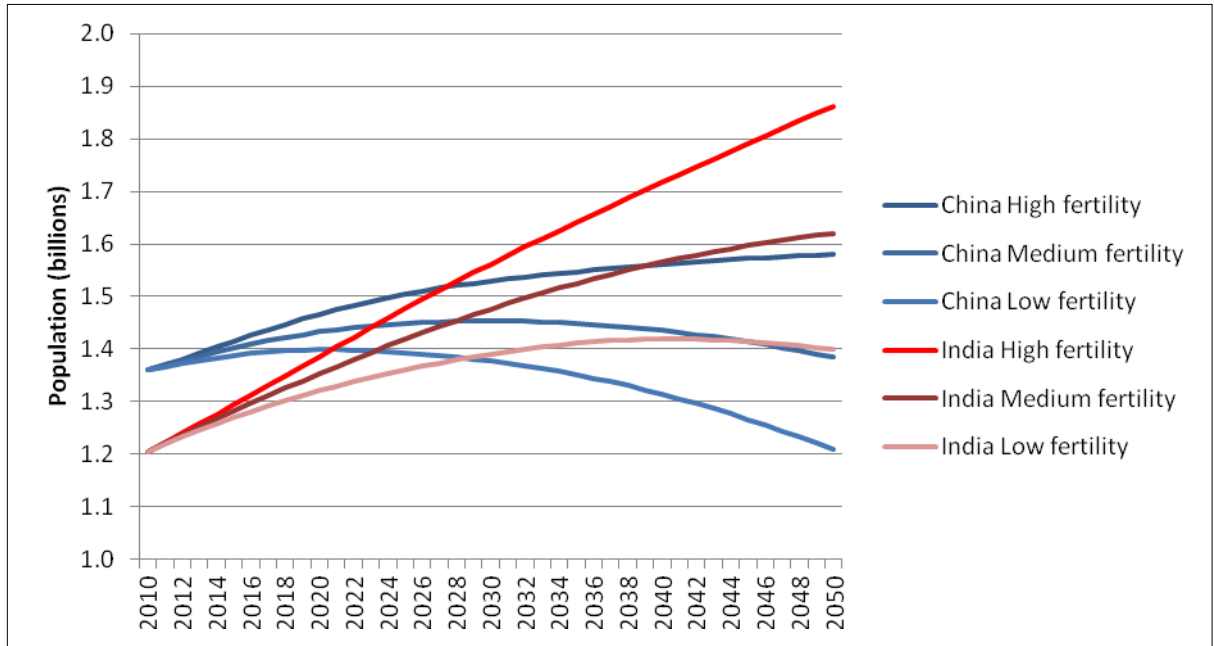
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Chart 7: Population projection ranges for India and China, 2010-2050. Source: UN: World Population Prospects: The 2012 Revision

4. The fertility assumptions behind the UN's projections are open to debate. In limiting their high and low fertility scenarios to being within 0.5 children per mother (after 2020) of the medium scenario they could be under or overestimating future population sizes significantly. This 0.5 range appears arbitrary and does not vary by country, meaning the range in population projections[15] is smaller for countries with a higher initial fertility rate. It might be expected that countries with a high initial fertility rate would have a *wider* range of projections as they have more scope for reducing fertility over time.

5. These are long term figures, but even in the short term (2020) there is a 68m and 65m difference between the high and medium population scenarios in China and India respectively. These ranges only take into account fertility rates; if mortality rates and immigration were to change as well the impact on the range of trajectories would be amplified. Any shocks which would contribute to mortality and immigration rates changing are difficult to predict, but the impact on population could be significant. Unanticipated disease epidemics, conflicts, economic crisis and resource competition would all affect the UN's medium population projections.

6. As with the UN's total population projections there is some uncertainty around the size of the working age population. This uncertainty only emerges after 2025 as the working age population before 2025 has already been born so the fertility rate makes no difference to population projections before 2025. The actual mortality and migration rates may differ from those projected by the UN, but these are kept the same in each of the UN's fertility scenarios. China and India have a range in their working age population of around 200m in their projections by 2050, about half the range for the total population projections shown in chart 7.

7. **Population uncertainty and growth.** The main section of this paper showed how labour supply is expected to contribute to GDP growth up to 2030 (chart 1).

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[15] As a % of the medium fertility population projections.

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This analysis used the medium fertility working age population projections. Chart 8 shows the range in contributions to GDP growth that are expected if the high and low fertility scenarios are used between 2025 and 2030[16]. **The range is fairly narrow for each EM, mostly only 0.2 percentage points above and below the medium scenario**. This shows that the range in population projections is not expected to affect GDP growth significantly in any of the EMs as most continue to grow at over 4% a year (chart 4).
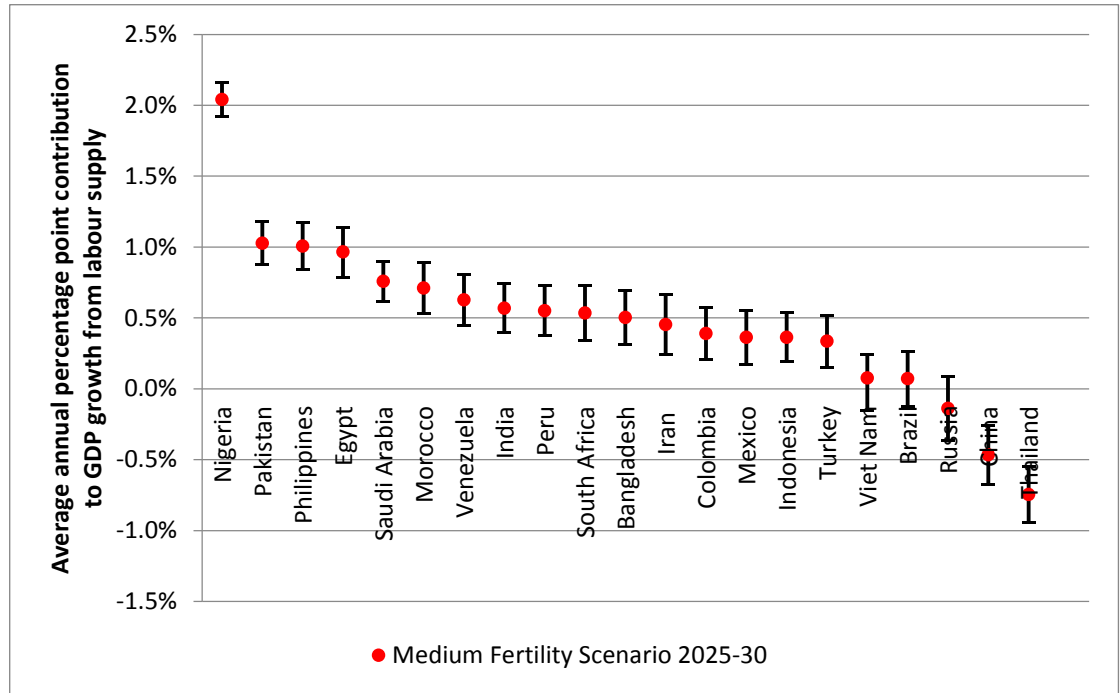

Chart 8: Range[17] in contribution of labour supply changes to average annual percentage point changes in GDP, 2025-2030.

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[16] These are identical before 2025.
[17] Upper value for each EM is GDP growth under high fertility scenario, red dot is medium scenario and lower value is low fertility scenario.

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