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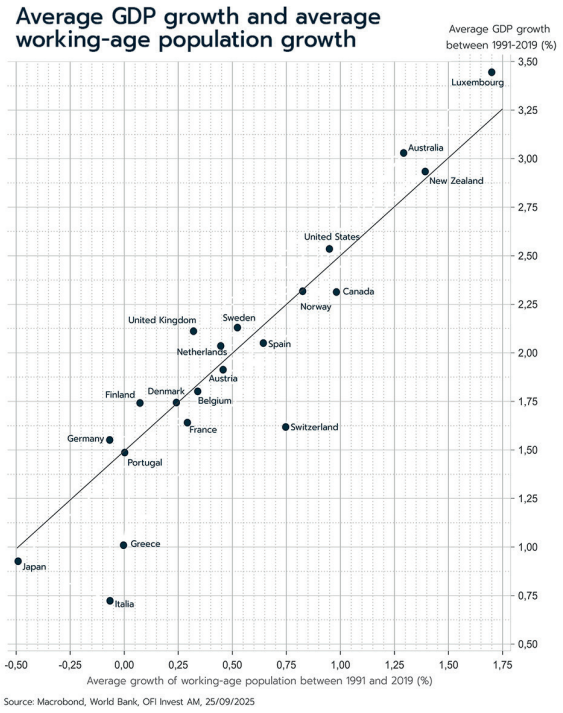
A WORD ON DEMOGRAPHICS, GROWTH, DIVIDEND YIELDS

DEMOGRAPHICS, GROWTH AND DIVIDEND YIELDS

Insight from Laurent Cyrus, economist and macro-strategist, and Charles Haddad, equity manager at Ofi Invest Asset Management, on the long-term link between demography and dividend yields.

Long-term economic growth = 1.5% + demographic shifts

In a recent study titled "The Wealth of Working Nations"[1], the authors highlight the importance of demographics in explaining changes in medium- to long-term average economic growth and divergences in per capita GDP. Given the abundant debate on which policy choices are the most pro-growth, this observation may seem surprising, as it implies that research, education and investment do not play as big a role as might have been assumed.



Based on a model, the study shows that the share of growth that may be driven by demographic shifts in the G7 countries + Spain is especially great on a long timeframe and that such shifts explain most discrepancies in growth between 1991 and 2019. The authors also show that Japan's economic stagnation during this same period may be due mainly to slow growth in its working-age population, rather than the 1991 financial crisis.

In extending the sample of countries used in the original study to all economies that did not undergo a significant technological catching-up phase during the period under review, we see that that the relation seems to hold up in this broader sample, with just three exceptions. The relation in the chart illustrates a simple rule of thumb[2] that will be used later to explain the link between demographics and equity market dividend yields:

Average real GDP growth = 1.5% + increase in the working-age population

1.5% was chosen so that the trend line would provide a relatively good explanation of growth in the various countries[3]. The 1.5% figure may be interpreted as the approximate average increase in productivity per working age-person in economies on the technology frontier[4], and the straight line depicting this simple rule of thumb shows how much growth could be expected if the sole explanation of discrepancies in growth was demographic change. Countries above or below the straight line are those that have experienced factors having only a temporary impact during the timeframe under review. Demographic shifts differ from these other factors in that they are the main explanatory factor for long-term growth discrepancies in advanced economies.

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[1] Fernández-Villaverde, Jesús & Ventura, Gustavo & Yao, Wen, 2025. "The wealth of working nations," European Economic Review, Elsevier, vol. 173(C).

[2] In economics a "simple rule of thumb" is an approximate or empirical method for making decisions or rapid estimates without the use of complex calculations.

[3] An estimate of "Average real GDP growth = α + β x increase in the working-age population" as long as β = 1, indicates that α = 1,45 for the full sample and α = 1,54 if outliers (Italy, Greece, and Switzerland) are excluded from the sample. In their study, the authors chose the slightly higher figure of 1.65 to approximate growth on the technological frontier, with a smaller sample.

[4] An economy on the technology frontier is an economy that has reached a point of technological development such that productivity in production factors (physical capital, labour, etc.) is at a maximum.

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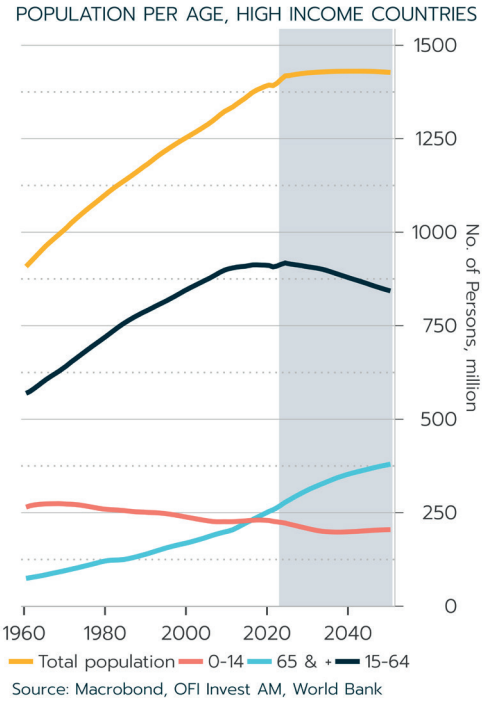
Proportionality between equity market dividend yields and economic growth

Demographics affects equity markets through various channels. The most important of these is growth, given that, over the long term, dividend yields reflect the economic health of countries within which companies generate their earnings. Assuming that the relation between economic growth and earnings growth is linear, the Gordon-Shapiro model suggests that the relation between economic growth and dividend yields is also linear. In combining the rule of thumb with the Gordon-Shapiro model, we obtain a linear relation between growth in the working-age population and dividend yields. Albeit in a simplistic way, this relation is useful in understanding how much demographic decline affects equity market dividend yields through the example of the Stoxx 600.

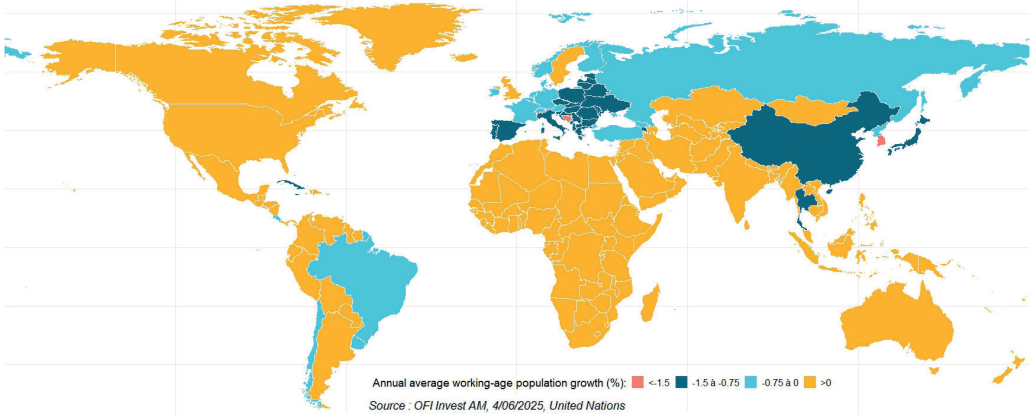
Demographic revolution

Demographics in high-income economies[5] are at a historic turning point. The number of individuals of working age is expected to begin receding, and this trend is unlikely to reverse itself. This shift is especially important as it implies that the impact of demographics on economic growth is expected to become negative and that, barring an acceleration of growth in labour productivity, economic growth is also likely to diminish.



The map below illustrates the impact of population decline between 2024 and 2050 on economic growth by depicting the average increase in the working-age population, based on the aforementioned rule of thumb. If the rate of increase in labour productivity of 1.5% p.a. constitutes a valid forecast of average growth in productivity from 2024 to 2050, we can classify countries into four categories:
i) countries whose working-age population will shrink faster than their labour productivity expands and are therefore at risk of negative average economic growth throughout the period. These two countries (Bosnia-Herzegovina and South Korea) are in red.
ii) countries impacted heavily by population decline and that are likely to see a rapid decrease in their working-age population (between 0.75 and 1.5% p.a.) and which are likely to see very weak, but positive, economic growth. These countries are in dark blue.
iii) economies in which demographics will make a negative contribution to economic growth but in which the impact will remain slight (between 0 and 0.75% p.a. in absolute terms). These economies are in light blue.
iv) economies in which the contribution of demographics to growth will remain positive. These are the emerging economies in Africa, Central America and Southeast Asia. Some developed economies are also in this category, mainly English-speaking countries whose liberal immigration policies could allow them to maintain favourable demographic dynamics. These countries are in yellow.

PROJECTIONS OVER 2024-2050 OF AVERAGE WORKING AGE POPULATION GROWTH



[5] *The definition used is that of the World Bank for 2025, i.e., that a high-income economy is one in which per capita GNI is greater than USD 14,005 as of 1 July 2024.*

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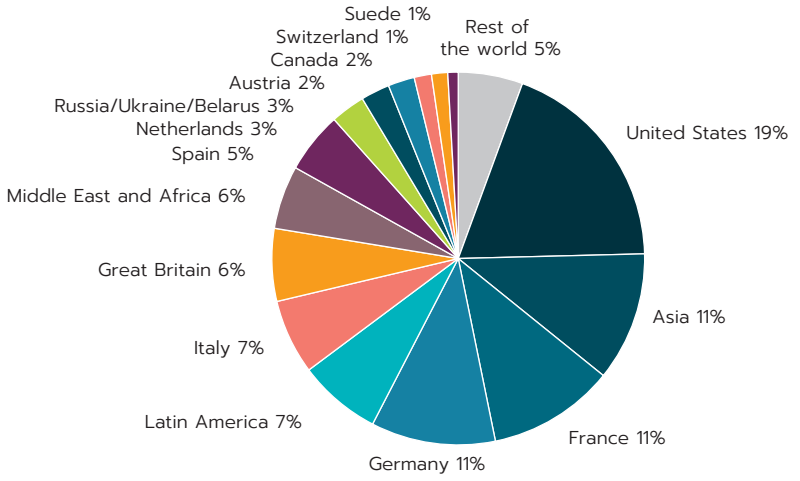
Impact of population decline on Stoxx 600 companies' dividend yields

As demographics vary widely from one country to another, it is important to account for the Stoxx 600's geographical exposure in evaluating economic growth of markets in which index companies generate their revenues. Assuming that the index's exposure remains constant, these values may be used to calculate the average population decline to which the Stoxx 600 is exposed through the activities of its member companies.

The chart below shows the breakdown of Stoxx 600 company revenues in 2024. Almost three quarters of Stoxx 600 company revenues are generated in advanced economies, led by Europe, which accounts for almost half of the index's total exposure, followed by North America with 21%, and Asia at 11%.

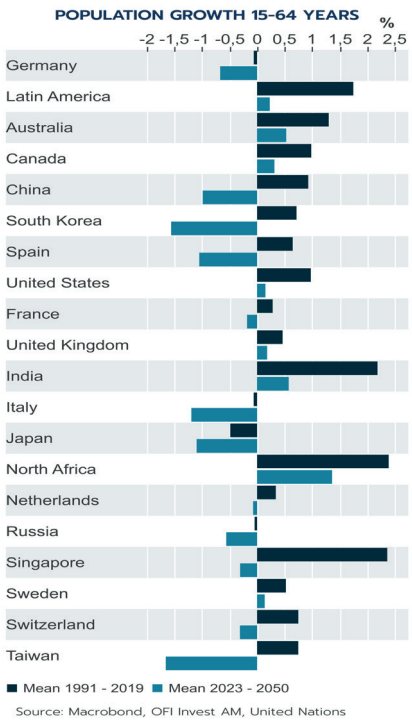
GEOGRAPHICAL DISTRIBUTION OF TURNOVER OF COMPANIES COMPRISING THE STOXX 600



GEOGRAPHICAL BREAKDOWN OF REVENUES OF STOXX 600 COMPANIES IN 2024

Data based on our analysts' estimates. Sources: FactSet, Ofi Invest AM as of end-2024.

This chart shows changes in the growth of the working-age population in each country in which Stoxx600 generate revenue.



Demographic decline is expected in all countries without exception. The pace of decline is expected to be less pronounced in some European countries, such as France, the United Kingdom and the Netherlands. It is expected to be most pronounced in Asian countries, with working-age population growth slowing from 1.6% in India to 2.6% in Singapore.

Based on the aforementioned weightings, as well as these values of growth in the working-age population, we obtain an average population decline of 0.9% in the geographical regions in which Stoxx 600 companies operate, which also implies a decrease in the annual yield that can be expected from Stoxx 600 companies in the long term.

Population decline affects all countries to various degrees and is therefore likely to impact expected dividend yields on various equity markets. While emerging-market countries often have younger populations, emigration is speeding up demographic decline in such countries, which could soon catch up with high-income economies. Demographic decline may therefore impact all equity markets, with migration flows being one of the main factors able to rapidly reverse long-term trends.

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How can investors work around the challenges of the demographic revolution?

To navigate this vast and uneven universe, we have structured our investment approach around three separate, but interconnected thematic pillars:

1 - Consumption and lifestyles: this pillar focuses on how seniors live, spend and organise their daily lives. It targets companies that allow seniors to live longer, more active, safer and more autonomous lives in both material and financial comfort, as well as leisure, mobility, etc.

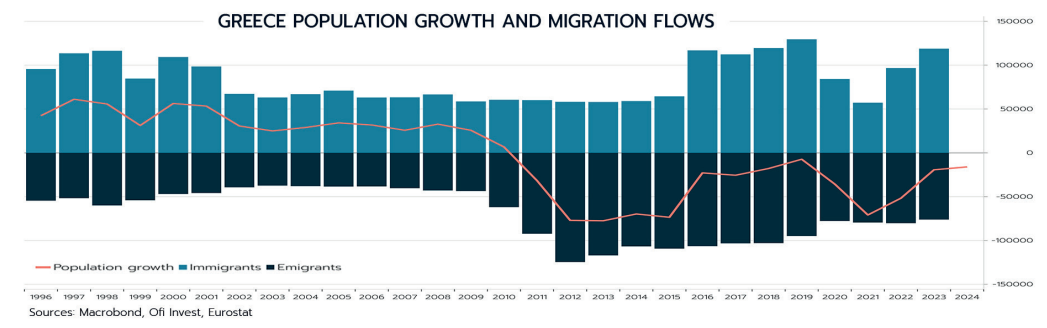
2 - Healthcare and well-being: this pillar covers the entire healthcare ecosystem, from managing chronic age-related diseases to cutting-edge innovations that aim to enhance the quality of life and push back the frontiers of longevity, including dentures, hearing aids and healthcare facilities such as dialysis centres.

3 - Productivity and automation: this pillar addresses the most direct consequence of ageing: labour shortages. It targets companies whose technologies help maintain and enhance productivity amidst a decline in the working population.

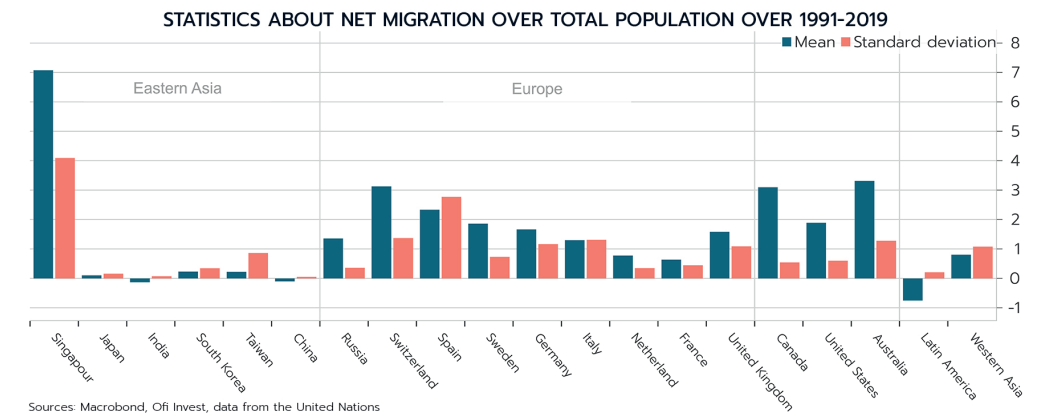
This thematic breakdown is a tool for weighting sectors or sub-thematics based on valuation opportunities and the general market landscape.

Uncertainties in demographic trends

Demographic trends change rather slowly, and demographic forecasts are therefore rather reliable. Migrations are the main factor of uncertainty, as they can shift rapidly and have a sustained impact on demographic trends. This is the case of Greece, for example, which should have been on track for a working-age population of 6.2 million in 2060, according to Eurostat projections from 2008. But according to the latest forecasts, from 2023, the working-age population will amount to just 4.4 million in 2060. This major revision results from the increase in emigration, mainly by young people, due to the worsening in economic prospects, as well as from the decrease in the number of births caused by their leaving.



Generally speaking, the uncertainty arising from migration flows can be characterised by country. European countries typically feature moderate and volatile net immigration. They stand out from English-speaking countries (Australia, Canada and the United States), which have far greater, and less volatile, immigration. English-speaking countries are more open to using immigration to meet their workforce needs and have heavy and stable immigration in support of their demographics. Southeast Asian countries, meanwhile, with the exception of Singapore, are exposed very little to episodes of heavy migration. Emerging-market countries in general are exposed to emigration caused by political or economic crises or natural disasters.



So, migration flows would appear to have a small impact on migration trends in East Asia, a moderate impact on English-speaking countries, and a heavy impact on Europe.

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APPENDIX

THEORETICAL INCENTIVE FOR THE RULE OF THUMB

In macroeconomics, the Cobb-Douglas function $Y = ptf \times L^{1-\alpha} \times K^{\alpha}$ is often used to describe the amount of goods and services produced Y, as a function of total productivity of factors of production ptf , the number of hours worked L, and the stock of productive capital K.

Alternatively, this equation may be written thus: $Y = Z \times L$ with $Z = ptf \times \left(\frac{K}{L}\right)^{\alpha}$ being labour productivity. The increase g_Y may then be broken down as the sum of the increase in work productivity, g_z and the increase in the number of hours worked annually, g_L: $g_Y = g_z + g_L$. The total number of hours worked annually can be broken down as follows:

$$L = hours\ worked\ by\ workers \times Share\ of\ workers\ in\ the\ working\ population \times Share\ of\ the\ working\ population\ in\ the\ total\ population \times Total\ population$$

This relation can thus be transformed into a rate of increase, and the increase of the total number of hours worked g_L is thus expressed as the sum of the increases of the number of worker hours g_h, of the increase in the labour force participation rate among the working-age population g_P, of the share of the working population in the total population, g_A, and of the number of hours worked annually per capita g_h: $g_L = g_h + g_P + g_A + g_{pop}$.

In combining these two relations, the rule of thumb accordingly implies for each country:

$$g_Y = \underbrace{g_z + g_P + g_h}_{=1.5+diff.vs.the\ straight\ line} + \underbrace{g_A + g_{pop}}_{Growth\ in\ population,15-64\ years}$$

Demographic trends may also affect $g_z + g_P + g_h$ indirectly, but the strong explanatory power of the linear relation suggests that the employment channel probably has the greatest impact. In the long term, the more workers there are, the more economic activity there is.

There are two reasons the sample was restricted to advanced economies: i) where technologies can be disseminated freely, the increase in total productivity of factors is unlikely to diverge in the long term in advanced economies alone, as developing economies could also potentially benefit from a catching-up phase; and ii) advanced economies have sufficiently mobile capital to head off, in the long term, a sustained divergence in the increase of the amount of capital per worker. Risk factors or a stark lack of public infrastructures may limit investments into developing economies.

THE GORDON-SHAPIRO MODEL

The model uses discounting methods and the properties of geometric series to determine the value of a share, P, based on a formula with three inputs: dividends per share D_1, the increase in dividends per share g, and the required rate of return r. The model's intuition may be expressed in the following relation:

$$r = \frac{D_1}{P} + g$$

Assuming that in the long term the rate of increase of dividends per share g tracks economic growth and that this pace is stable, we can predict equity market yields based on economic growth forecasts.

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