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Executive summary

- Demographics constitute a key structural factor that affects the economy. Through the impact on aggregate desired savings and investments, demographic changes affect interest rates. This in turn influences expected returns of bonds and equities on the longer term, which can affect the Strategic Asset Allocation (SAA).
- The broad consensus from the literature we reviewed was that the demographic transition is incomplete, largely pre-determined and, on current trends, can be expected to depress real interest rates in the developed world further.
- On the other hand, investors should in their efforts to increase portfolio resiliency be mindful that the majority of the literature on demographics relies upon similar assumptions and methodologies, which can therefore also lead to comparable outcomes. We think that the future of personal savings and consumption dynamics in an ageing society possesses lots of uncertainty. And of course, savings could fall if the current high inflation environment turns out to be persistent.
- The focus of recent studies, and of policy-makers' attention, has been the population dynamics in the developed world, which has been undergoing a shift in population age distribution for quite some time. However, it should be noted that many emerging markets have started their demographic transition, with various degrees of advancement.
- The sharp decline in fertility rates and the pressure from a changing age structure on investment rates possesses challenges for several emerging countries' economies. In turn, these dynamics could also lower expectations for bonds and equities in countries that will increasingly dominate the emerging markets landscape.

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Introduction

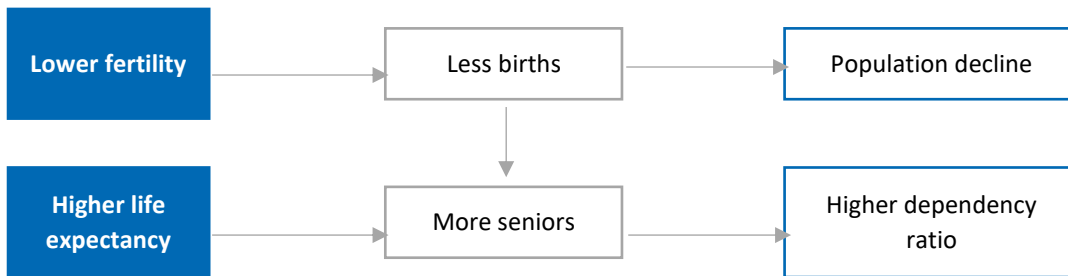
General demographics trends can be decomposed in four subcategories: population growth, population ageing, migration and urbanization. Changes in any of these segments can cause different types of impact on both economic and social developments depending on the geographical region these occurs. Demographic changes have the potential to affect several regions' populations and consequently their economic environments in the upcoming years. Indeed, population growth and changing age structures are likely to have implications on spending trends, labour markets and overall economic growth. How does the ageing of populations in developed countries, and around the globe in the long-term, impact macroeconomic variables such as interest rate, and how could investors' portfolios be adapted?

In this paper, we explore an alternative view to our baseline scenario as part of our series on [ESG Megatrends](#).

Getting old affects economic activity such as savings and investments

An ageing population is the result of two complementary causes: lower fertility rates and increase in life expectancy. The latter arises from progress in medicine and higher standards of living, which go together with development – this tends to be the first to appear in the demographic dynamics of a country. The former is a result of higher education and career priorities, as well as the prevalence of family planning.

While it is related to the level of development, the link is less direct and immediate and tends to happen later in the demographic process. Across the developed world, both dynamics have started to take root, with Japan leading the way. The effects start being visible in emerging economies such as China and the former Eastern bloc, with longevity catching up to high-income country standards.

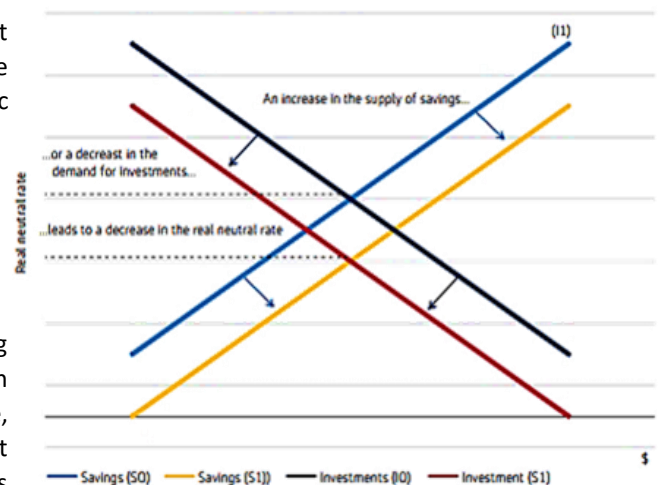


Source: Aegon Asset Management

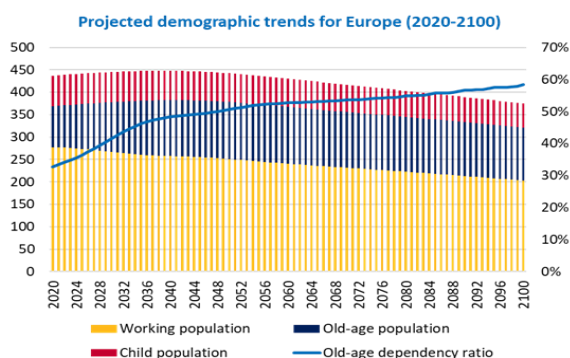
The mechanisms

Recent literature on secular stagnation – i.e. the idea that the world is now in a prolonged period of low growth due to structural, secular factors – has linked demographic patterns, in particular population ageing, to the long decrease in interest rates globally since the 1970s (see for instance Rachel & Smith, 2015, or Eggertson *et al.*, 2019). Demographic trends account for a 0.9 to 1.5 percentage point decrease in global interest rates since the 1970s, depending on the estimate. Demographics constitute a key structural factor that affects economic activity including income, savings, and investments. Through the impact on aggregate desired savings and investments for example, demographic changes affect financial markets and interest rates. This is based on the shifts in preferences for savings and investments (the S-I framework).

The S-I framework



Demographic changes in developed countries



Source: United Nations Projections, Aegon Asset Management, July 2022

A decrease in fertility rates translates into a shifting age pyramid, which increases the old-age dependency ratio (OADR, ratio of 65 and above to 20-65).

Be mindful before extrapolating the past

The projections lead to a consensus in the literature that the demographic transition is incomplete and largely pre-determined and, on current trends¹, could depress real interest rates in the developed up to 1% to 2030 onwards².

The majority of the literature we reviewed uses more or less the same underlying methodology and assumptions reaching similar outcomes. A key element is the consumption smoothing theory or life cycle saving hypothesis, as people throughout the population expect to live longer, they increase their savings rate.

Life-cycle hypothesis Private saving behaviour, according to the life cycle hypothesis, is age-dependent. Young households borrow against their future income, middle-age households save for relinquishing debts and retirement, and old-aged households dissave. Accordingly, aggregate savings is more likely to fall in countries with a relative young or old population (Modigliani, 1970).

Consumption smoothing hypothesis For retirees, this means spending less of their accumulated assets to smooth spending over time. For workers, since at every time period they consider a higher chance of survival, they will choose to put aside more of their income to save for old age, which dramatically increases their life savings. This increases overall aggregate savings. Other theories expand the life cycle theory to include that population aging is characterized not only by rising old-aged dependency but also by rising longevity. As people expect to live longer, they are induced to save more.

These assumptions increase expected overall aggregate savings, and in the absence of an equivalent expansion in investment, equilibrium in the S-I framework means that interest rates will decrease (Bielecki et al., 2018).

However, we think that Investors should be cautious extrapolating and factoring in historical effects too quickly into the future. We think that there are conflicting arguments around expected impact on desired savings and investment levels in developed markets.

Given the uncertainty surrounding the future of personal savings and consumption dynamics in an ageing society we present an alternative view in which the demographic headwind on rates in developed economies is less persistent than the consensus in the literature.

Savings

Some researchers have conjectured that the negative impact of ageing on the equilibrium real rate will be reversed once the largest age cohorts retire and begin dissaving. This could be induced by a shift of the population age distribution towards relatively more dis-savers (65+, 80+) along the transition dynamics as pointed out in the box below.

The 65+ population around the globe

In 2019, the share of population aged 65+ worldwide was 9%, with Europe hosting the largest share (18%) followed by Oceania (16%). Projections reveal that by 2050 this share is expected to grow and reach roughly 25% in Europe and in North America while the worldwide average ratio would be 16%. A considerable increase is also projected in Eastern and South-Eastern Asia with an increase from 11% to 24% by 2050.

The share of population aged over 80 is growing at even higher rates than the 65+ overall group. Indeed, between 1990 and 2019 the number of individuals aged over 80 nearly tripled and it is projected to triple again by 2050. In 2019, the 38% of over 80 individuals was concentrated in Europe and North America but this number is expected to decrease to 26% in 2050 and 17% in 2100 due to the increased older population growth in the rest of the world

¹ according to UN (2017) demographic projections.

² See for example: Demographics, monetary policy (2018), A Model of Secular Stagnation: Theory and Quantitative Evaluation (2019), Measuring the natural rate of interest: International trends and determinants (2017) Demographics and the Natural Real Interest Rate: Historical and Projected Paths for the Euro Area (2019); https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp191128_1~de8e7283e6.en.html

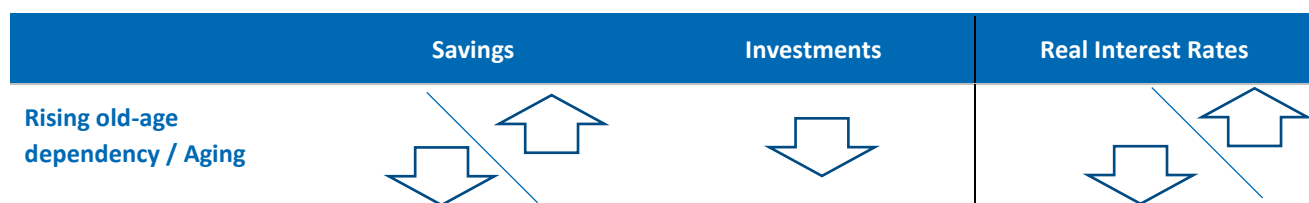
This implies a greater number of households that are not directly producing and contributing to the economy, but are running down savings and accumulated pensions to fund consumption. Age-related public spending (e.g. on healthcare and pension) could rise. An increase in public spending could lead to lower public saving. Especially if this is amplified by a smaller work force that lowers tax revenues.

Investments

The equilibrium in the S-I framework will also depend on shifts in investment and productivity growth. Scarcer labour supply depresses investment (capital) demand. Taken together, a lower level of desired investment, all else equal, implies a reduction in interest rate.

Ageing can lower productivity growth and thereby reduce investment opportunities. This materializes if the productivity of older age cohorts is lower than that of younger age cohorts. Increased participation in the labour force is likely to be needed by women, older individuals and immigrants. In this latter case deglobalization accompanied by a growth of anti-immigration sentiments possess a threat.

Besides, if labour and capital are complements, then slower population growth should reduce the marginal product of capital as firms have fewer workers to get the most out of their capital goods (ie. machines). As a result, slower population growth should mean the rate of return on capital falls, which leads to a lower pushing down real interest rates.



Changing demographics in emerging economies

The focus of recent studies – and of policy-makers’ attention – has been the population dynamics in the developed world, which is already undergoing a shift population age distribution for quite some time. However, it should be noted that many emerging markets are starting their demographic transition, with various degrees of advancement. Until recently, most emerging markets dynamic underpins the notion of a ‘demographic dividend’ whereby a more favourable population structure helps economies to grow as described in the box below.

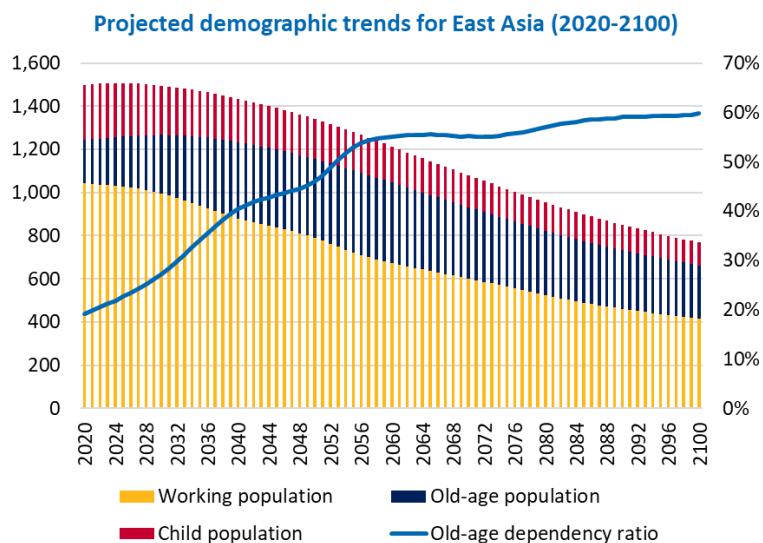
Demographic dividend

The demographic dividend model helps recognizing which countries are more or less prone to accommodate economic growth when their populations’ age structures are projected to transform. More specifically, this occurs when the working age share of a population is larger than the non-working one. This model accounted for the variation in past economic performance in many regions going through a demographic change related to age structure such as East Asia and Latin America. Factors interfering with the demographic dividend are the countries’ labour and capital markets dynamics, fiscal and trade policies and human capital accumulation. Example of policies that can facilitate this transition include investments in improving child survival, vaccines and overall access to healthcare.

For countries that will experience a significant demographic dividend, policies to support inclusive economic growth have to be put into place. These include, among the others, sufficient investments in healthcare and education towards the generations that will join the labour force. Furthermore, urbanization is going to increase alongside population growth, as most of the increase is projected to be concentrated in urban areas. Therefore, investments in urban development such that cities can be inclusive, safe and sustainable, should also be on the agenda.

Additionally, statistics show that one year of additional education can induce to an increase of 10% in personal income and thus, investments in education are also to be considered beneficial. Besides, education also helps with reduction of child labour and fertility rates. For instance, girls who received education in the Sub-Saharan Africa region resulted in having on average 50% fewer children and they were less likely to experience child marriage and domestic violence.

In particular, emerging Asia is undergoing a demographic transition marked by slowing population growth and rapid aging. A recent study (Vollset *et al.*, 2020) found that advancements in women’s health and education in countries like China and India could drive the global fertility rate below the replacement rate (i.e. the rate of births needed to maintain the population) by 2064, at which point the global population will stagnate and then decrease. In China, which accounts for about 20% of the world’s population, the peak could be reached as early as 2024. This means that the population ageing process, already underway in emerging economies in Asia and parts of Latin America, will accelerate and extend beyond the developed world. This is mainly reflected by declining fertility rates since the late 1960s and to a lesser extent rising life expectancy.



Source: United Nations Projections, Aegon Asset Management, July 2022

Lower level of desired savings

Looking at demographics a key difference between developed and emerging countries is the relatively recent reversal and rate of increase in the dependency ratio’s across emerging countries. The declining trend in dependency ratios in some major emerging countries has reversed and these will probably rise faster than in the developed world. As noted in the previous section we think that the impact of an rising old-age dependency ratio on savings is uncertain.

However, there is another aspect even more persistent in emerging markets: declining fertility rates. Among countries that are not perfectly open, the relative importance of different channels is based on the demographic profile of a country. The old-age dependency effect is more important for mature economies (mainly developed countries), while the youth dependency effect dominates for economies that are relatively young (mainly emerging countries).

Changing Fertility Rates

In the 60s the average woman was giving birth to about five kids and today that number has decreased to 2.5 kids per woman. Of course, this number varies across regions as for instance in Africa the fertility rate is the highest (4.3) while in Europe it’s the lowest with an average of 1.6 kids per woman.

Fertility rates declined in every country of the world between 1970 and 2020 and the decrease rate was higher in countries with a high initial fertility, showing how the demographic convergence effect is present in this aspect, too³. In regions where the fertility rate per woman is declining, the population growth will be mostly driven by a younger population age structure as it is the case for Central and Southern Asia, Latin America and the Caribbean. Meanwhile, in regions where fertility rates remain above the average, namely, Sub-Saharan Africa and Oceania, the population momentum will account for roughly half of the population growth in the upcoming 30 years.

One of the main drivers of the decreasing fertility rate is the empowerment of women, who increasingly participate in the labour market and receive higher quality education. Other factors include urbanization, reduced child mortality, and therefore reduced need to give birth to many children in the hope that they will survive, and improved access to healthcare.

Surveys show that, we could expect an increase in fertility rates in countries that are currently defined as low-fertility rate countries. On the other hand, in countries where the fertility rates are considered high, better access to healthcare resources and family planning could cause a decline in fertility

³ Source: United Nations, https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

The fall in fertility rates leads to lower youth dependency ratio's. In turn, this may lead to higher level of desired savings. The working cohort is able to save more, because expenditures on children decline. Furthermore, people in for instance China have already a high incentive to save. This was induced by the one-child policy, the transformation of the social safety net, quickly growing incomes and a transformation of the economy that threatens job security.

The challenge to maintain current equilibrium investment rates

Declining fertility eventually puts a constraint on labour force growth. Investment depends positively on the return on capital, which, in turn depends on capital's relative availability. As the working-age population shrinks, capital becomes relatively abundant. Furthermore, ageing and a stagnating population growth can lead to an increase in the capital to labour ratio. Other things equal, these developments could lead to falling returns on capital and lower investment rates. Therefore, a major challenge will be maintaining productivity growth with scarcer labour supply.

The projected decline in labour supply could potentially be much higher in countries that will increasingly dominate the emerging markets landscape compared to developed markets. This could move the savings-investment equilibrium further down leading to lower interest rates. This is further amplified by an increase in desired savings. In our alternative view rapid falling youth dependency ratios can put additional pressure on rates⁴ in emerging economies compared to developed markets.

	Savings	Investments	Real Interest Rates
Rising old-age dependency / Aging			
Falling youth dependency			

Second order effects can't be ignored

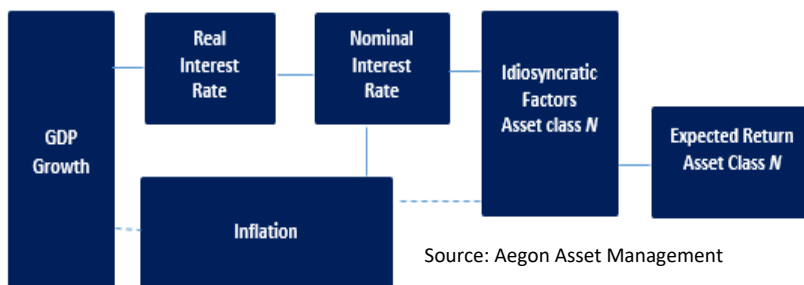
The impact on desired investments will also be largely driven by second order effects. The lesser availability of labour could also lead to increasingly (previously diminished) bargaining power of workers. This could mean that the private sector may have to invest more to keep control on costs. This is a second order effect that makes it even more challenging to look at potential economic impact of demographics in isolation. In our alternative views we are also combining our projections of changing demographics with the other [ESG megatrends](#) we identified. For instance, economic growth and the desired savings/investment equilibrium and hence rates are also affected by productivity gains linked to automation and technological breakthroughs. This in turn increases investment rates and potentially puts upward pressure on interest rates. Another open question relates to climate change and the carbon transition. On the one side, future productivity growth may be further depressed if climate change is allowed to continue unabated. On the other hand, the carbon transition could also spur investments and creates new opportunities for innovation and productivity growth.

⁴ See for example: IMF- Demographics and Interest Rates in Asia (2018), Abrdn- Emerging market demographics - implications for patterns of growth, interest rates and inflation (2022)

What could this entail for long term economic projections?

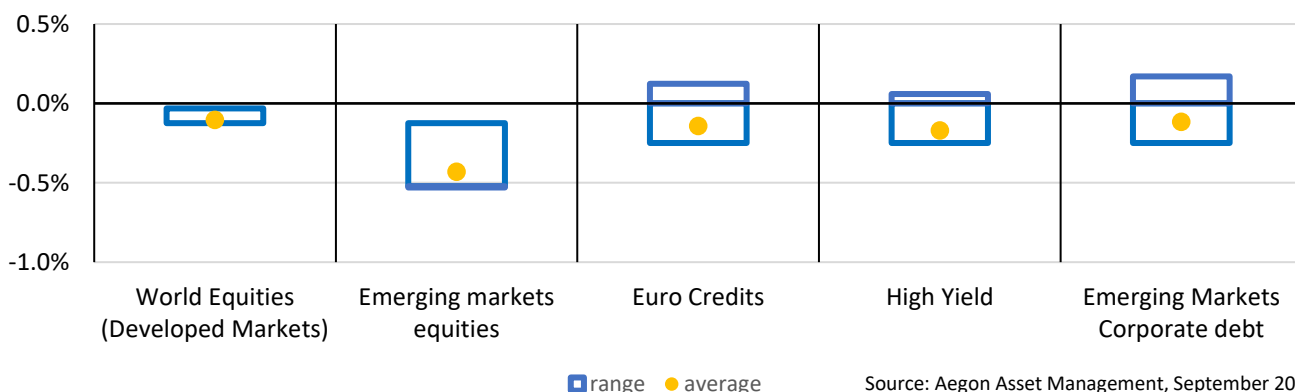
Real interest rates are driven by both cyclical and structural factors. Demographics are widely recognized as an unobservable slow-moving secular force and one of the key explanatory factors for the trend in (real) interest rates.

Interest rate projections can serve as the baseline for longer-term expected returns of riskier bonds and equities through the addition of various risk premia.



Actual risk premia can deviate from their long-term equilibrium level during a significant period of time. During periods when real interest rates fall unexpectedly, this will tend to provide an immediate boost to asset prices and hence returns, even though prospective returns will have been lowered in that case. Research suggests a positive relationship between current real interest rates and subsequent real returns for both equities and bonds⁵. However, the correlation between interest rates and the equity risk premium is not perfect. Equity risk premiums tend to be higher with lower interest rates. Combining this with our alternative view on demographics leads to the projected deviations from a market implied scenario shown in the graph below.

Projected change in annual return over a 20-year time horizon versus a scenario in which rates develop according to forwards



On an annual basis deviations seem relatively small, but on longer horizons the cumulative differences of the potential impact could be quite significant. This could lead to additional considerations in the SAA. Using these projections as inputs in scenario analysis can support in making portfolios more resilient to weather these trends and could increase the robustness.

⁵ See for example: [Credit Suisse Global Investment Returns Yearbook](#), Dimson E., Marsh, P. Staunton, M. 2021.

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