

Demographics and sovereign credit risk – focus on EU trends



Demographics are a crucial element of sovereign credit risk analysis, as they affect multiple drivers of government debt sustainability in the long term. As these changes materialise gradually over time, assessing their impact on sovereign creditworthiness cannot be clear-cut. In this study, we focus on the main channels through which demographic trends affecting European economies – shrinking working-age populations and ageing dynamics – will impact sovereign credit risk.

According to the United Nations population forecasts, Europe's working-age population will decline by 16%, or 80 million people, in the next thirty years. At the same time, the old-age dependency ratio, that is, the population aged over 65 as a percentage of the working age population, is set to increase by 20pp, from about 30% to 50%, implying that for every dependent person there will only be two instead of currently three working people. These developments will fundamentally impact European economies and societies, and thus sovereign credit risk.

Over the long-term, we expect the demographic shift to affect multiple risk pillars in our sovereign methodology (**Figure 1**), which may however, be mitigated, at least in part, by government policies if comprehensive reforms are implemented. To be forward looking in our analysis, we capture demographics in the "Social" section of the ESG risk pillar of our sovereign rating methodology, which has an overall 20% weight.

Figure 1: The decline in working-age populations and ageing dynamics will affect:

Economic growth	Public finances	Financial stability	Environment	Governance
Through the labour and productivity inputs.	Through government budgets, both revenue (tax take, social security contributions) and spending (pension and healthcare).	Through bank profitability, with possibly less demand for lending; monetary policy, with pressure on equilibrium rates; housing demand, and prices.	Through transition and resource risks, depending on how economic models will evolve.	Through policy-making priorities, with the "grey power" likely to favour spending on welfare for the elderly.

Key takeaways from our analysis are:

- Economies can continue to grow only if robust productivity growth more than compensates for the working-age population decline.
- Ageing will lead to rising outlays for pensions and health care, while shrinking working-age populations will reduce government revenues. Current official projections on the long-term impact of these trends on public finances appear overly optimistic in our view.
- If interest rates remain low due to continued ageing and higher longevity boosting savings, this could pose challenges for central banks in a low-inflation environment. At the same time, structurally lower interest rates would mitigate debt sustainability concerns – but only up to a point. In addition, shrinking younger generations are likely to result in lower housing demand, potentially affecting property prices over the long-term.
- The demographic transition may curtail political forces that push for substantial reforms, limiting governments' abilities to address fundamental challenges arising from the demographic shift.

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The demographic transition will affect sovereign credit risk via five channels in the long-term

Shrinking working age-populations and rapidly ageing societies are set to fundamentally affect European sovereign ratings through multiple channels - including economic, fiscal, financial stability, environmental and political risks. At the same time, such changes are set to take place gradually over long-term horizons, which complicates credit risk assessments.

The following analysis¹ presents a detailed overview of the impact of demographic changes on the various pillars of sovereign credit risk. We conclude with a brief discussion on how we incorporate some of these considerations into our sovereign rating analysis.

#1 Economic growth: labour input, productivity growth

Shrinking working-age populations and ageing dynamics could cause a decline in aggregate economic output. In addition, the increasing share of the elderly in populations is likely to negatively impact the growth rate of GDP per-capita.

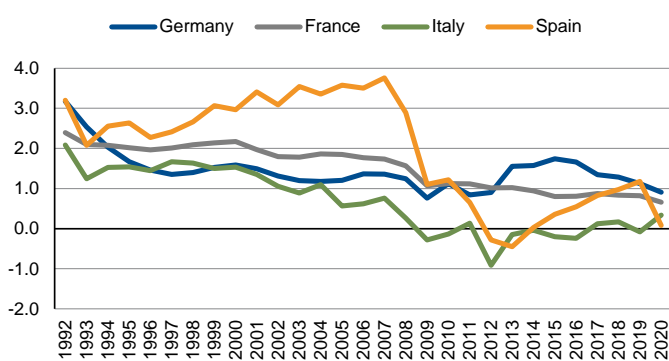
Aggregate output can be defined as the product of the number of workers available in the economy times the output produced by each one of them, namely labour productivity. The number of available workers depends on the size of the working-age population and the employment rate, here defined as the share of working-age population in work.

Demographic dynamics are likely to impact negatively all these three components: (i) we expect shrinking working-age populations; (ii) ageing dynamics are likely to lower employment rates, as the elderly tend to participate less in the labour force; and (iii) ageing may also have negative effects on productivity, if the accumulation of experience among older workers fails to compensate for the loss in the physical, mental and entrepreneurial skills associated with younger generations.

The size of the decline depends on how economic agents react to the changing demographic landscape. The prospect of a declining labour force could also induce firms to invest in productivity-enhancing technologies. To maintain equal living standards, labour productivity would need to rise by a sufficient magnitude to offset the labour-force decline.

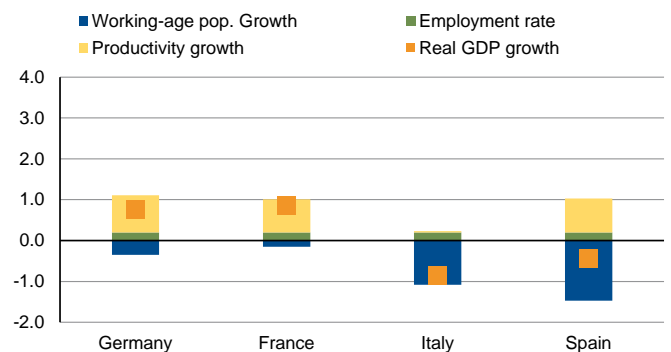
Negative pressures on labour supply and productivity growth

Figure 2. Growth potential, %



Source: AMECO, Scope Ratings GmbH

Figure 3. Growth potential approximation, 2050



Source: EC, Scope Ratings GmbH

In **Figure 3** we plot a long-term approximation of GDP growth for the four main European economies based on a scenario including: i) working-age population reduction as forecasted by the UN²; ii) productivity growth equal to the average in 2010-19³; and iii) a contained 0.2pp increase in employment rate gains, assuming countries will have achieved

¹ The following three sections are underpinned in particular by the IMF report "Macroeconomics of Aging and Policy Implications" (2019).

² Calculated as annual average growth in working-age population between 2040 and 2050 from UN data.

³ Real labour productivity per person employed according to AMECO data.

Policies supporting innovation, more active workforce can support growth

high employment rates by 2050, which limits further increases. Although just a simplified exercise, the message is clear: economies can continue to grow only if robust productivity growth more than compensates for the working-age population decline.

Mitigating factors on these long-term trends include governments' intervention with reforms strengthening labour force participation and productivity growth. Labour market reforms to increase participation of older workers and women can mitigate the decline in the workforce. Policies to increase competition and innovation together with public investment in physical and digital infrastructure can also help raise productivity. In addition, government programmes for families and targeted migration may also help increase a country's workforce, although results are not always clear cut.

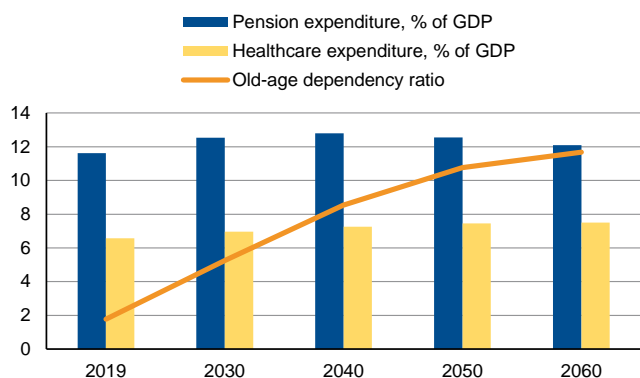
#2 Public finances: government revenue, ageing-related expenditure

From a credit risk perspective, lower economic growth reduces the source of revenue for governments to repay their debt. Moreover, pressures on per capita GDP and living standards may lead to social fatigue in accepting fiscal consolidation measures on the budget side. Debt dynamics, which ultimately depend on the interest-rate-growth differential, are likely to be adversely affected with permanently lower growth rates, challenging debt sustainability. This could however in part be mitigated if also interest rates remain structurally lower, given higher savings (see section on Financial Stability).

Direct budgetary impact through pension and healthcare spending

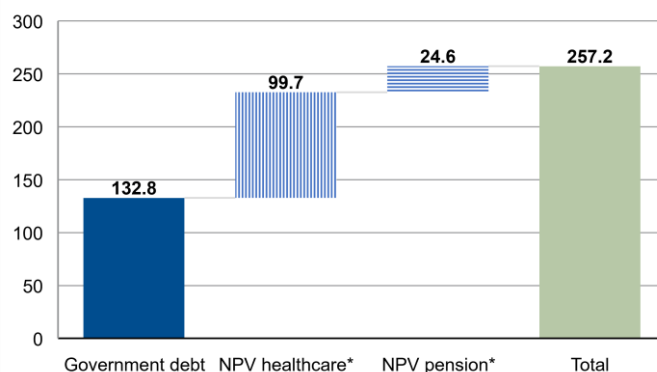
Population ageing will lead to rising outlays for pensions and healthcare. **Figure 4** shows the European Commission (EC) forecasts on ageing-related expenditure as a share of GDP for the EU until 2060. While the EC expects a minor increase, their estimate of about 20% of GDP in 2060 from 18% in 2019, appears optimistic when compared with a de facto doubling of the old-age dependency ratio, and the above-mentioned risks to GDP growth.

Figure 4. EU ageing-related expenditure



Source: EC, UN, Scope Ratings GmbH

Figure 5. Explicit & implicit government debt, G20 economies, % of GDP



Net present value of healthcare and pension spending changes between 2020–50
Source: IMF Fiscal Monitor, Scope Ratings GmbH

According to the IMF, absent policy changes and reforms, outlays for pension and health care could increase by around 6-7pp of GDP in the advanced G-20 countries between 2020 and 2050⁴. An increase in government expenditure of this magnitude with revenues under pressure, could lead to rapidly rising debt levels. In **Figure 5**, we display the advanced G-20 economies' government debt-to-GDP ratio, augmented by the net present value of the expected changes in healthcare and pension spending over the next thirty years, according to IMF data. By taking these into account, the total explicit and implicit government debt ratio would be twice the current -already elevated- headline ratio.

⁴ Ibidem 1 (IMF)

Policy trade-off between debt reduction and supporting growth

Worsening fiscal conditions are likely to push public debt to higher levels and increase vulnerabilities, particularly for countries where debt levels are already elevated. This, especially in the context of lower economic growth, would further squeeze fiscal space, leaving countries less equipped to deal with future adverse macroeconomic shocks. Reforms to pension and healthcare systems and measures to reduce elevated public debt levels today are thus critical to create fiscal space for these future challenges. Shifting public spending from less productive towards pro-growth policies on education and R&D could help support economic growth without aggravating countries' fiscal positions.

#3 Financial stability: interest rates dynamics, real estate markets

From a sovereign credit risk perspective, the health of the banking sector and of private sector balance sheets is relevant for assessing government debt sustainability. The key channels are economic growth and the risk of contingent liabilities possibly materialising on the government's balance sheet to support adversely affected sectors. We note three specific examples on how the ongoing demographic transition could affect such aspects.

Demand for traditional banking services may decline

Financial services

The demand and supply of financial services is likely to change with ageing. In general, younger households finance their education and housing through loans from banks, which they repay as they get older. As populations age, banks may be used more for payment purposes and less for lending. Decline in traditional lending activities may pressure profitability of banks' if business models are not adapted.

Equilibrium rates to be affected via savings and investment shifts

Interest rate dynamics

In past decades, ageing has contributed to lower real interest rates⁵. A decline in fertility increases savings by the working-age population as childcare spending is reduced, and workers put aside part of their increased resources for future consumption. This increase in savings lowers interest rates.

However, there is less certainty about the future impact of ageing on real interest rates. While increases in life expectancy may induce higher savings (and thus lower rates), a rising share of retirees relative to savers is likely to depress private savings at some point (and thus increase rates).

Looking at investments, higher investment in automation to cope with a shrinking labour force may increase interest rates while, on the other hand, public investment is unlikely to increase given higher spending pressures on government finances, which would speak to lower rates over the medium- to -long term. If interest rates remain low due to demographic changes as a result of continued high savings, this could pose challenges to central banks' capacities to stimulate the economy, particularly when the short-term nominal interest rate is near zero.

Shrinking housing demand could weigh on property prices

Real estate

Over the long-run, shrinking younger generations are likely to result in lower housing demand in certain segments of the market, thereby potentially affecting property prices and inducing asset prices corrections. Still, over shorter-term horizons, the impact could be mitigated, if not reversed, by other fundamental factors such as urbanisation trends or different housing needs (i.e. smaller apartments vis-à-vis large family houses). Financial market conditions, including lower interest rates, are also likely to support housing prices.

Governments could address at least part of these risks, for example, by incorporating long-term risks related to the demographic shift into macroprudential policies to reduce risks around the building up of excessive imbalances and misallocation of resources.

⁵ Ibidem 1 (IMF)

#4 Environment: resource consumption, carbon footprint

Population growth and composition drive the need for housing, infrastructure and energy, putting pressure on environmental resources such as water and air quality, land use and space for waste disposal. However, no simple relationship exists, as the environmental implications of population dynamics are determined by complex interactions among many forces, including economic development, technology, institutional and cultural contexts⁶.

In general terms, the environmental impact depends not only on population size, but also on consumption patterns and the technology involved in consumption activities. Ultimately, the demographic shift can bring mixed effects on environmental transition and resource risks, depending on how the economic model of countries evolves during the transition.

According to the UN, future population growth will be concentrated in low-income countries that currently have a lower carbon footprint per capita. Yet, as poorer countries develop, they are likely to increase their per capita carbon footprints and resource needs, while being less likely to have the financial means, scientific expertise, institutions and infrastructure to adapt their economies towards sustainability.

Conversely, populations are set to decline in most of the wealthiest countries with a higher environmental footprint per-capita. Other things being equal, such decline may be beneficial in terms of global resource consumption and carbon emissions. Still, a decline in wealth levels in advanced economies could also hamper the necessary investment to facilitate the transition towards a carbon neutral and climate resilient economy.

Other relevant factors include urbanization and aging. The world's population will become older, more urban and live in smaller households. While urban areas usually have higher incomes and consumption per capita – implying a greater use of resources – they also exhibit greater efficiency in the use of resources per unit of income generated and thus a better potential for energy efficiency gains⁷.

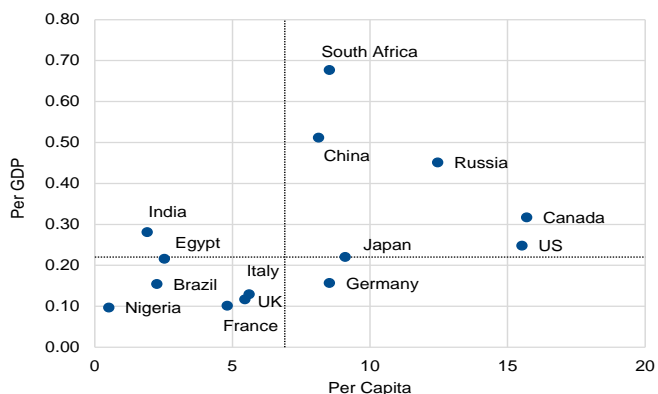
Given these interlinkages, an assessment of the likely environmental impact of population dynamics is complex without a clear-cut direction. Government efforts on facilitating the shift towards sustainability have increased in recent years. In Europe, major legislative steps and substantial resources (Next Generation EU) focus on climate change, which may help mitigate some of the environmental risks driven by the ongoing demographic shift.

The environmental impact of population dynamics depends on economic models

Population growth in countries with lower footprint per capita, but less resources to implement sustainable solutions

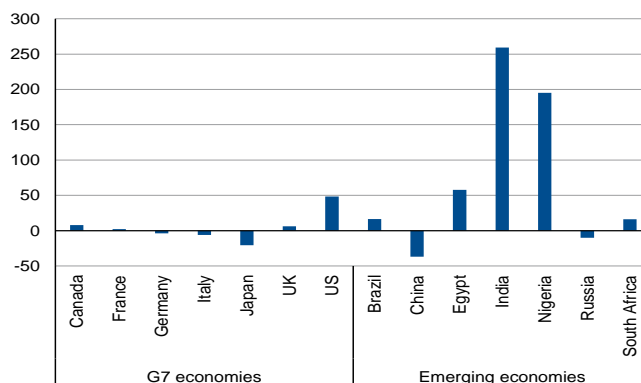
Shift to sustainable economic model is now an EU priority

Figure 6: Emissions, Fossil Carbon Dioxide, Metric Tons of CO2 Equivalent, 2019



NB: Axes positioned on sample medians
Source: EC (DG EDGAR), Scope Ratings GmbH

Figure 7: Cumulative population change, 2020-50, millions



Source: UN, Scope Ratings GmbH

⁶ "The Environmental Implications of Population Dynamics", Lori M. Hunter, RAND, 2000
⁷ "Global Environment Outlook GEO-6", United Nations Environment Programme, 2019

#5 Governance: shift in political power, policy preferences

In terms of political party preferences, older generations tend to prefer status quo policies and display a lower likelihood to change party⁸. This may curtail political forces that push for substantial reforms, thereby limiting governments' abilities to address fundamental challenges arising from the demographic shift.

In terms of policy preferences, there is evidence that the elderly tend to favour spending on pensions and social care, at the expense of investments in education and human capital⁹. This political and voter preference would thus aggravate the effects of the demographic shifts on the economic and public finance side. Obstacle to reform and growing influence of older generations may in part explain intergenerational inequality in pension system reforms after the global financial crisis, which tended to reduce pension entitlements for younger generations, while sparing those in or close to retirement¹⁰.

The growing influence of older generations on politics and policies, the so called "grey power", is not only driven by their increasing share in total population, but also by the fact that older people are comparatively more likely to vote, further increasing their influence on policy and legislation than younger generations. This also because factors such as location and mobility are more likely to affect voter turnout and registration for young generation. Party competition for increasingly influential older voters and trade unions defending acquired pension rights create further barriers to reform.

How we capture long-term demographic trends in our approach

Drawing from this analysis, we expect the ongoing demographic shift to affect multiple risk pillars in our [methodology for sovereign credit risk](#) over the long term. We also believe that government policies may mitigate the consequences of population dynamics.

Thus, to be forward looking in our analysis, we include a key demographic indicator, the old-age-dependency ratio, including forecasts¹¹, in the "Social" section of the ESG quantitative risk pillar. This pillar has an overall weight of 20%. In addition, we complement this quantitative assessment with a qualitative evaluation of relevant policies, including those related to pension reforms, but also the ability to increase the labour force participation. These assessments can be overall positive, neutral or negative, and thus inform our final rating decision.

Figure 8: How demographics and their implications enter in our approach

Core Variable Scorecard (Quantitative)			Qualitative Scorecard
Sovereign Risk Category	Sub-Category	Variable	
ESG	Environment	Transition risks: CO2/ GDP	1. Environmental risks
		Natural disaster risks	
	Social	Resource risks	2. Social risks
		Old-age-dependency ratio	
Income inequality			
Governance	Labour force participation	3. Recent events and (geo) political risks	
	WB Governance Indicators		

Source: Scope Ratings GmbH

⁸ Vlandas, McArthur & Ganslmeier (2021), "Ageing and the economy: a literature review of political and policy mechanisms", Political Research Exchange

⁹ Ibidem 10

¹⁰ Fouejieu, Kangur, Martinez, Soto (2021), "Rethinking pension systems in Europe for a post-Covid-19 world", Vox EU

¹¹ The old-age dependency ratio is calculated as the share of the population over 65 divided by the working-age population; we include in our quantitative model weighted average figures including historical data and forecast until 2035 (United Nations).



Demographics and sovereign credit risk

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