PROMETEIA
DISCUSSION
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ASSOCIAZIONE

ASSESSING THE LONG-RUN IMPACT OF MIGRATION IN EUROPE

Main points

- In most of the main European countries, migration flows from both EU and non-EU countries have increased in recent years, particularly in Germany.
- According to UN population projections, immigration will compensate only partially for the ageing European population and resulting reduction in labour force numbers.
- Non-EU immigrants have a lower level of human capital, on average, than that in the destination countries, so it is unlikely they will contribute to raising productivity (GDP per capita).
- However, their relatively lower average age allows them to make a positive contribution to the sustainability of welfare systems and pension systems, in particular.
- A greater impact on growth and pension system sustainability could be achieved, especially in Italy, by increased fertility rates and reduced "brain-drain" losses; both would increase the share of young and educated workers.
- Improvements in this direction are however difficult to achieve without comprehensive policies to support fertility and higher employment opportunities for the most skilled Italian workers.

I. Introduction

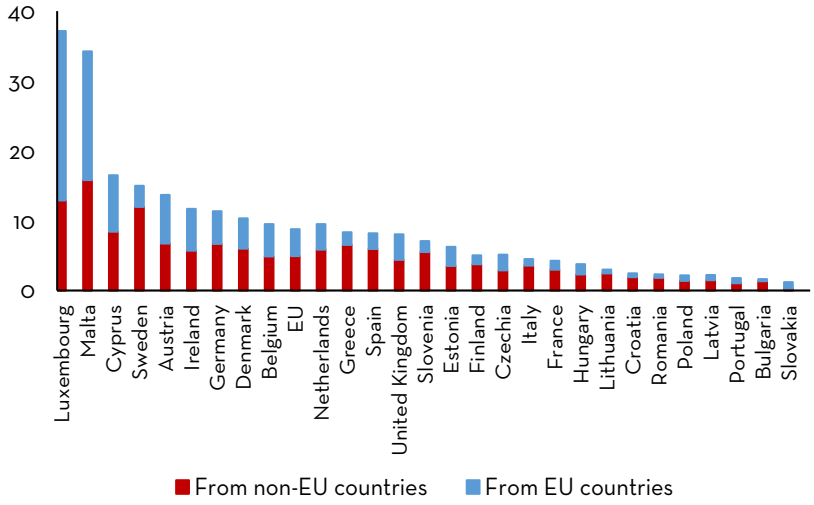
The economic effects of international migration have become one of the most critical themes in political debate in many advanced economies, and especially in the aftermath of the global financial crisis. The phenomenon, in recent decades, of immigration has been characterized by diversity in its origins, although most migrants come from low-income and civil war torn regions.

The economic consequences of immigration are relevant and can be analysed from both a short- and long-term perspective. Increased migrant flows and the heterogeneity among migrants pose major short-term socio-economic and fiscal problems for host countries. However, they can also offer short- and long-term economic opportunities by compensating for labour market shortages in certain economic sectors, and supporting social security contributions, especially in countries with ageing populations.

This note describes current immigration trends in the European countries and assesses their long-run economic effects according to different scenarios. We examine recent immigration inflows to European countries (Section II) and the characteristics of immigrants in terms of origin, age and education level (Section III). We provide a brief summary of the economic implications of migration (Section IV) and estimate the long-term prospects related to the main European countries, under different immigration scenarios (Section V). Section VI concludes.

II. Migration inflows in Europe

In recent years, flows of immigrants defined as foreign-born, have been concentrated mainly in the countries of Northern Europe. It is not surprising that richer countries are more attractive to migrants - including migrants from other European countries. Luxembourg, Austria, Germany and the Nordic countries recorded the highest inflows in 2016 (Figure 1). Luxembourg recorded the highest immigration rates with 37 immigrants per 1,000 persons in the period (including EU and non-EU migrants), and the highest share of foreign-born population in 2017 (mostly from the EU - Figure 2). In 2017, the foreign population in Italy was about 6 million (10% of the total population), 70% of whom were from non-EU countries. In Germany in 2017, the share of non-EU foreigners was 8% of the total population, close to the levels in Spain and France.

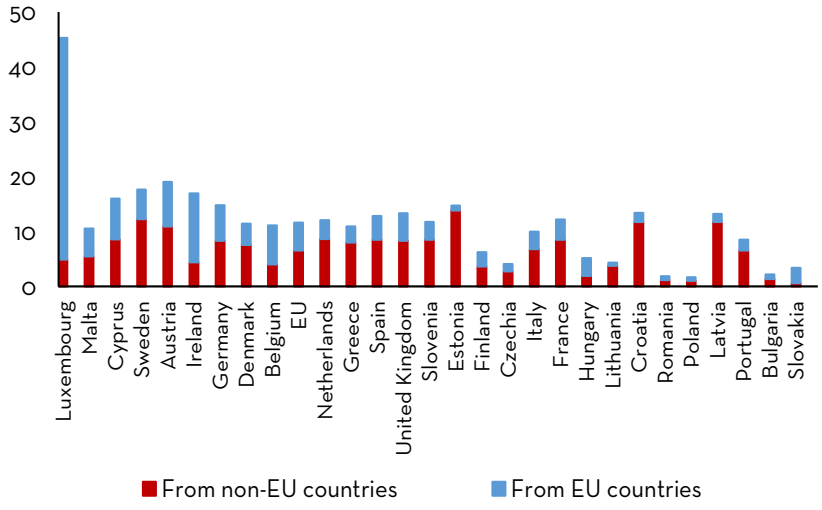


Source: Prometeia calculations based on Eurostat data.

Figure 1

Number of immigrants per 1000 inhabitants

gross inflows, 2016



Source: Prometeia calculations based on UN data.

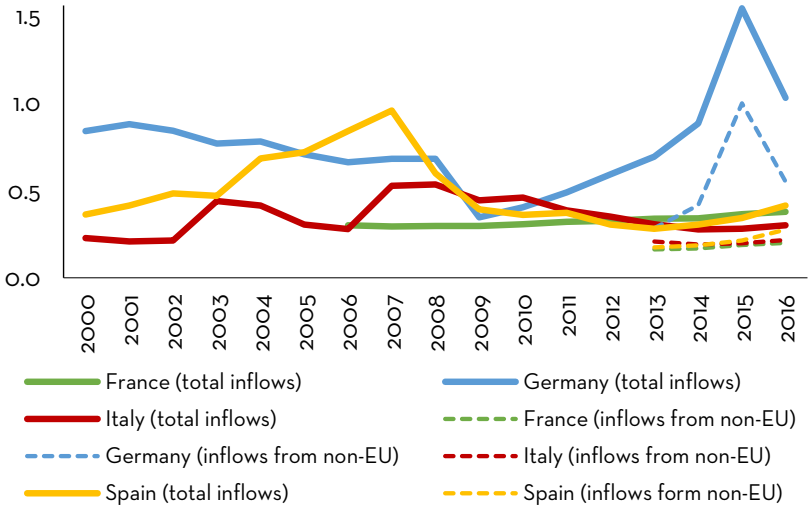
Figure 2

Immigrants in EU

stocks, % of total population, 2017

In all of the main European countries except Germany, migration flows decreased or remained stable after the 2008 global crisis, and increased slightly again in Spain and Italy in 2014-16 (Figure 3).[1] While Germany, historically, has been described as an 'immigration country', the

1 *In addition to the prevalence of economic migrants from African countries, data on inflows (see Figure 3) include two other types*



Source: Eurostat.

Figure 3

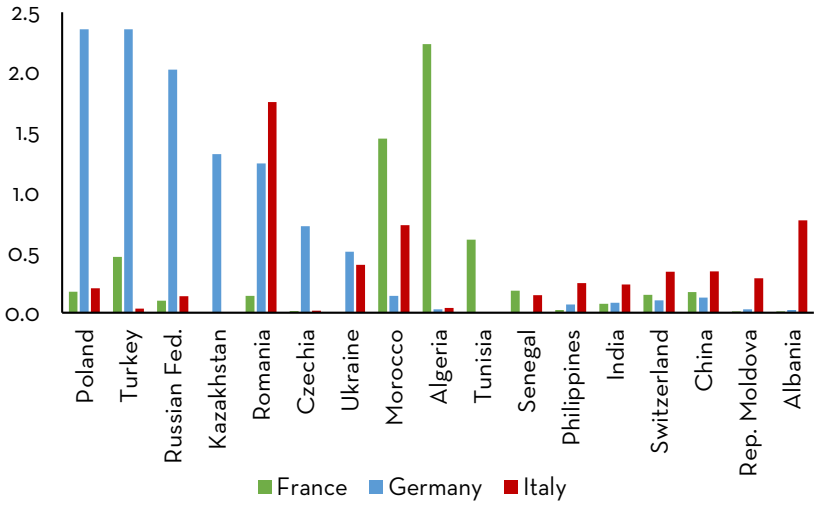
Total gross inflows (from both EU and non-EU countries), 1990-2016

million

importance of Italy and Spain as migrant destination countries increased in the early 2000s. In contrast, France has recorded a stable inflow of foreign population over time, much of which is associated to former colonial ties.

III. Migrant characteristics

Analysis of the economic impact of migration flows requires an assessment of the most relevant migrant characteristics, including origin country, age distribution and level of education, which latter plays an important role in determining their economic contribution to the destination country. We focus on the three main European countries, France, Germany and Italy, for which we provide long-run simulations in Section V. Figure 4 depicts the share of foreign-born people by



(*) The UN defines international migrants as persons born in a country other than their current country of residence.
Source: Prometeia calculations based on UN data.

Figure 4

Total migrant stock at mid-year by origin*, 2017

% of total population

of immigration that have become relevant. These are migration flows linked to EU enlargement (Eastern European countries plus Cyprus and Malta in 2004; Bulgaria and Romania in 2007) and to the recent waves of asylum seekers; 1.8 million refugees have arrived in Europe since 2014 - more than 1 million in 2015 alone - and half of this number are from Syria (Source: UNHCR).

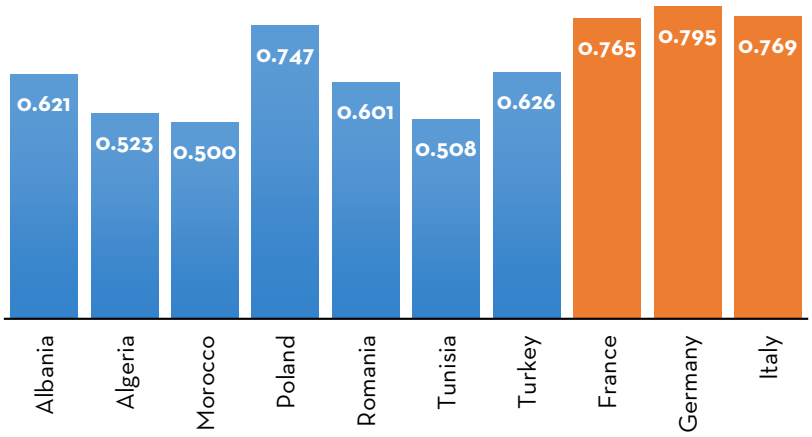
country or area of origin, in 2017. The data show a prevalence of migrants from North Africa for France, Eastern Europe for Germany and the Balkans and Africa for Italy.

Migrants are generally of working age: about 50% of total immigrants are in the 25 to 50 age group, which provides an essential contribution to offsetting the ageing population of advanced countries, which is expected to increase in the coming decades.

The available data indicate substantial heterogeneity in the educational levels of immigrants. Migrants' level of education depends, mainly, on type of migration (economic, refugee) and country of origin. The Human Capital Index (Figure 5), which refers to countries of origin not to the specific human capital of immigrants, shows that immigrants born in Africa are, on average, less highly educated than both the native population and EU immigrants.

Figure 5

Human capital index (HCI*) of the main countries of birth and destination, 2017



(*) The HCI calculates the contributions of health and education to worker productivity. The final index score ranges from zero to 1 and measures the expected productivity when reaching working age of a child born in a given country relative to the benchmark of full health and complete education.

Source: World Bank.

IV. The economic impact of migration

A key issue in the context of immigration is the host country benefits and costs - in terms, especially, of growth and public finances. The inflow of migrants is expected to have a modest effect on short-term growth, but could have a significant influence in the long term, due to the strong population ageing in the host countries.[2] In the medium and long terms, the potential benefits could be significant, also, for productivity and innovation.[3] Short-term fiscal costs are associated to support for migrants (e.g., social benefits, language training to promote integration, professional education and schooling for children, care and housing costs and benefits for inactive refugees),while long-term benefits are likely to be associated to improved sustainability of the welfare system.

In the context of the labour market, there is widespread concern about the negative consequences of immigration for the local population.[4] The extent to which migration

2 *IMF (2016). "The Refugee Surge in Europe; Economic Challenges," IMF Staff Discussion Notes 16/2, International Monetary Fund.*

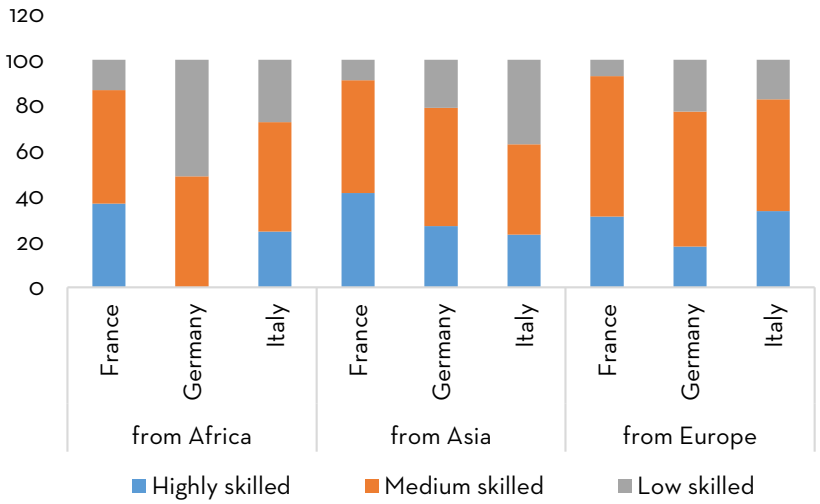
3 *See, e.g., Alesina A., J. Harnoss and H. Rapoport (2016). Birthplace Diversity & Economic Prosperity. Journal of Economic Growth, vol. 21, no. 2, pp. 101-38, and Ortega, F. and G. Peri (2014) "Openness and income: The role of trade and migration", Journal of International Economics, 92(2): 231-51.*

4 *Developed countries often have strongly biased views about immigrants (perceived as poorer, more reliant on the host coun-*

Figure 6

Foreign born by occupation* 2017

% of total occupation



(*) Highly skilled occupation: "Legislators, senior officials, managers", "Professionals" and "Technicians and associate professionals"; Medium skilled: "Clerks", "Service workers and shop and market sales workers", "Skilled agricultural and fishery workers", "Craft and related trades workers", "Plant and machine operators", "Armed forces"; Low skilled: "Elementary occupations". For Germany, data on immigrants from Africa are only available for "Craft and related trades workers" and "Elementary occupations".

Source: Prometeia calculations based on OECD data.

affects labour market outcomes in the host country depends essentially on the skills structure of immigrants compared to the skills structure of natives. Employment and wage responses to immigration will be more pronounced for those categories of workers where competition from immigrants is stronger such as among low-skilled workers.[5]

Migrants increase the labour force, although they tend to be employed in medium- and low-productivity sectors, especially in countries where low-skilled native labour is in short supply (Figure 6). This can have two effects: a direct one, which consists of addressing labour market shortages in the host country, and an indirect one, which consists of increasing the incentives to invest in human capital among natives.[6] Thus, both skilled and unskilled migrants can become more productive through specialization.[7] In Italy and Germany, employment rates of low-education immigrants are respectively higher than and equal to those of natives (Table 1).

Table 1 Employment rates by educational attainment (25-64), 2015

(percentage)

	Total		Low Education		Medium Education		High Education	
	Immigrants	Native	Immigrants	Native	Immigrants	Native	Immigrants	Native
France	59	74	48	54	61	74	72	86
Germany	71	81	59	59	76	81	78	90
Italy	64	64	59	49	67	71	69	80

Source: OECD.

try's welfare state, more unemployed, and less educated than they actually are), which increase aversion to redistribution. See Alesina A. A. Miano and S. Stantcheva (2018) "Immigration and redistribution", NBER Working Paper 24733.

5 Borjas, G. J. (2003) "The labor demand curve is downward sloping: Reexamining the impact of immigration on the labor market", Quarterly Journal of Economics, 118(4): 1335-74. Card, D. (2001) "Immigrant inflows, native outflows, and the local market impacts of higher immigration", Journal of Labor Economics, 19(1): 22-64.

6 Hunt, J. (2017). The impact of immigration on the educational attainment of natives, Journal of Human Resources, 52(4): 1060-1118.

7 Borjas G. J., J. Grogger and G. H. Hanson (2011), "Substitution Between Immigrants, Natives, and Skill Groups", NBER Working Papers 17461.

Measuring the net fiscal impact of migration flows is challenging, but it is generally believed that migrants contribute positively to public finances. The impact of migrants on the tax and welfare systems can be measured from a static or dynamic point of view, depending on whether the net fiscal position is computed on a specific year or over the entire lifetime of migrants. The OECD (2013) carried out a comprehensive, static, cross-national investigation, looking at the direct net fiscal contributions of migrants in 2007-2009. It shows that, in most EU countries, the net fiscal contribution of migrants was positive, but generally lower than that of the similar native households (the gap is largest in Germany and the Nordic countries).[8]

The net fiscal impact of immigrants depends on whether the analysis includes the pension system (Figure 7). OECD (2013) shows that, on average in 2007-2009, in those countries that had significant young working age inflows (including Italy, Portugal, Spain, Ireland and Greece), immigrant households made a net positive contribution to public finances.[9] In contrast, the immigrant populations in Germany and several Central and Eastern European countries, are relatively old and, hence, are overrepresented among the pension recipients. In addition to considering direct monetary transfer from and to households, OECD (2013) evaluates that the overall fiscal impact of immigrants falls in the +/-0.5% of GDP range but it is positive, although rather small, for most OECD countries.

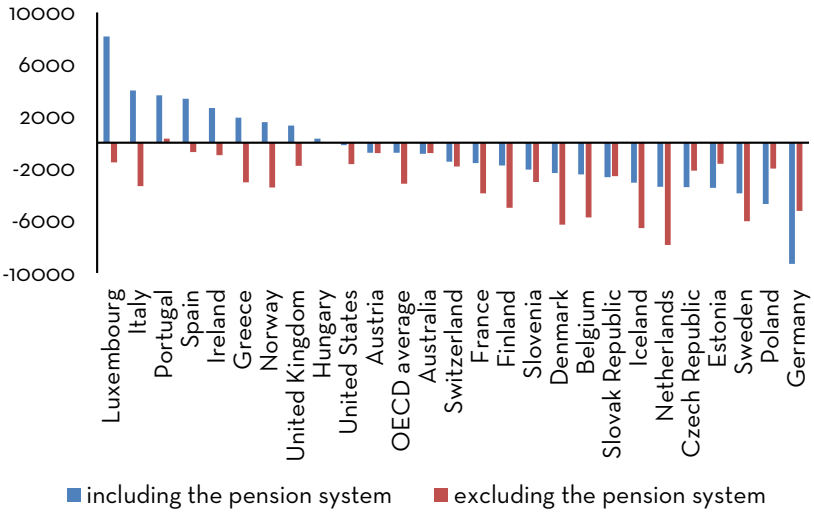


Figure 7

Differences in the average net direct fiscal contributions* between immigrant and native-born households

Euros (PPP adjusted)
2007-2009 average

(*) Direct taxes and social security contributions minus social transfers.
Source: OECD (2013).

V. The long-run impact of migration in Europe: our assessment

We next assess the long-run economic impact of migrants in Germany, Italy and France using the Prometeia Overlapping Generation (OLG) model.[10] The OLG provides long-term projections for the most relevant macroeconomic variables, for Italy, Germany, France, the USA, China, India and some African countries.

8 *OECD (2013), The fiscal impact of immigration in OECD countries, International Migration Outlook, 2013.*

9 *This is especially true when the time-lag between contributions and benefits payments is long, as in pay-as-you-go systems. Moreover, in the absence of bilateral arrangements allowing pensions to be transferred to the home country, migrants accumulate pension and then lose this if they return home.*

10 *See Catalano M. and E. Pezzolla (2016), "The effects of education and aging in an OLG model: long-run growth in France, Germany and Italy", Empirica, 43(4).*

We consider three different population growth scenarios. The first (baseline) incorporates the migration predicted by the UN medium-variant scenario for all countries except Italy where we use ISTAT baseline projections.[11] This baseline scenario includes average net immigration rates to France, Germany and Italy in the period 2000-2015, respectively to 1.5, 2.2 and 3.3 per 1,000 inhabitants. In the long-run (after 2050) these rates are assumed to reduce to 0.5, 1.4 and 1, respectively.[12] In the second (zero-migration) scenario, we use the UN zero-migration variant, which assumes that net migration declines to zero immediately (from 2015-20) in all countries. In the third (high-fertility) scenario, we consider the UN high variant hypothesis, which includes a higher fertility rate (0.5 children per woman above the fertility rate in the medium variant) for all countries, compared to the baseline. The baseline and the high-fertility scenarios share the same immigration hypothesis. Under the zero-migration scenario, fertility is assumed to be equal to the baseline.

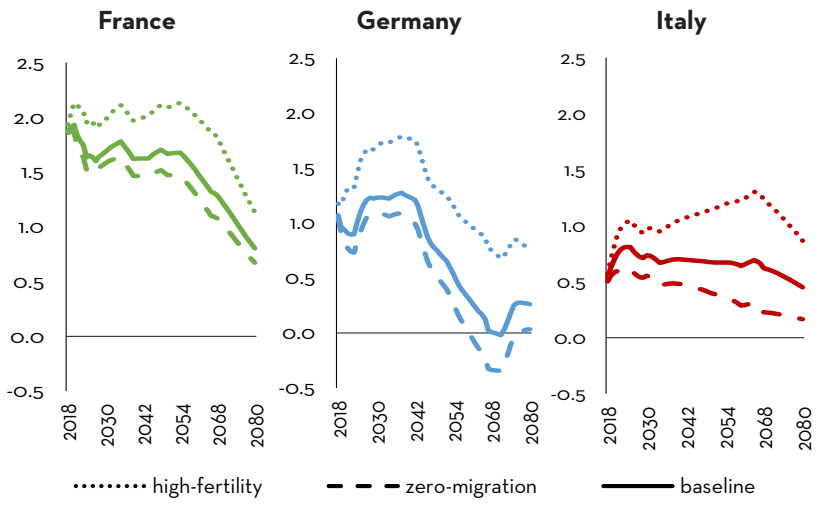
Overall, our simulations suggest that the currently envisaged migration flows will not mitigate all the negative effects of the ageing process on growth. Figure 8 presents GDP growth rates for France, Germany and Italy in the baseline (solid line), zero-migration (dashed line) and high fertility (dotted line) scenarios. It predicts a downward trend in long-term real GDP for all countries, due mainly to the significant ageing process. Indeed, the old-age dependency ratio (the ratio of people older than 64 to the working-age population 15-64) in the baseline scenario is expected to rise in the next 40 years, from more than 30% to around 60% in Italy and Germany, and to around 50% in France. With net migration equal to zero (dashed line), ageing will be even faster and will lead to a greater decrease in the GDP growth rate of about 0.1%-0.2% for France, 0.15%-0.4% for Germany, and 0.2%-0.4% for Italy, during the period 2018-2080.

In addition, immigration is unlikely to increase GDP per capita. In the baseline scenario, per-capita GDP is expected to drift upward in all three countries as long as population numbers decrease (solid line in Figure 9). In the zero-immigration scenario, per-capita GDP is expected to be higher than in the baseline scenario and, especially, in Germany (since it entails a bigger

Figure 8

Real GDP growth rates

%



Source: Prometeia calculations.

11 For Italy, we consider the most updated ISTAT projections (May 2018) which include the latest revisions of migration flows. The growth rate of the ISTAT population in the median scenario is slightly higher than that of the UN until the mid-2050s (by 0.09% on average), and slightly lower afterwards (by 0.03% from 2055).

12 United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision.

reduction in net migration rates compared to France and Italy). This implies that, based on our simulations, the lower human capital of immigrants will reduce per-capita productivity (although this effect is marginal for France).

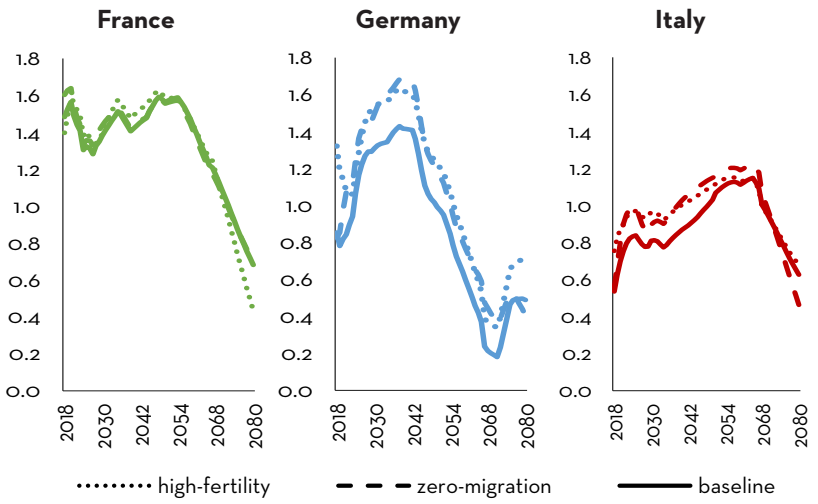


Figure 9

Real GDP per capita growth rates

%

Source: Prometeia calculations.

Higher fertility rates would go a long way to solving the demographic challenges, but are hard to achieve. Higher fertility rates would provide higher GDP growth in all three countries, including in per-capita terms (Figures 8 and 9). This is because the population would become younger and more highly educated; and the labour supply, net savings and capital accumulation would all increase. Germany would benefit relatively more (0.3pp higher per-capita growth on average over the period 2018-2080) compared to France and Italy (0.04pp and 0.07pp, respectively).[13] However, an increase of +0.5 children per woman will be difficult to achieve: the high-fertility scenario assumes that fertility is 2.47, 1.97, 1.99 in 2018-20 and reaches 2.44, 2.23 and 2.29 respectively in France, Germany and Italy over the long-run.[14] Since 2000, the fertility rate in Germany has been rising slowly from 1.3 to 1.6, while in France it is about 2. Italy is lagging, with a rate of 1.3 children per woman (OECD, 2016).

Although immigration might reduce per capita-GDP slightly, it would help to contain pension expenditure as a share of GDP (Figure 10).[15] Indeed, given the aging process, under the assumption that pension expenditure to GDP will follow the EPC-AWG baseline, the pension system will likely run significant deficits in all three countries in the future, putting upward pressure on the public debt to GDP ratio. In the zero-migration scenario, the lower contributions of migrants would entail an even higher pension expenditure and debt to GDP profile (Figure 11), and a higher crowding-out effect of public debt on real investment (exacerbated by a reduction in savings due to the more pronounced ageing compared to the baseline).

13 *In the high-fertility scenario it is assumed that the increase in number of children per woman is voluntary and therefore with no support from the public budget. Moreover, this scenario is calibrated so that in 2050 the increase in fertility fully offsets the negative effect on GDP obtained in the zero-migration scenario. From 2050 onwards, the GDP gain in the high-fertility scenario outweighs the loss of the zero-migration scenario.*

14 *The UN provides stochastic simulations around the baseline scenario. Based on this distribution, fertility rates in the high fertility scenario are higher than those predicted in the 95th percentile of the UN's stochastic projections.*

15 *The pension benefit in the baseline is calibrated to match the EPC-WGA baseline pension expenditure to GDP.*

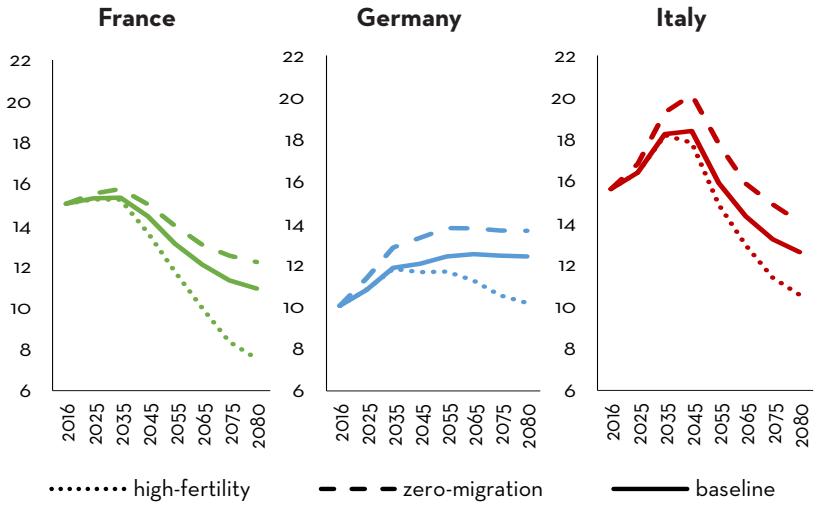


Figure 10

Pension Expenditure

% of GDP

Source: Prometeia calculations.

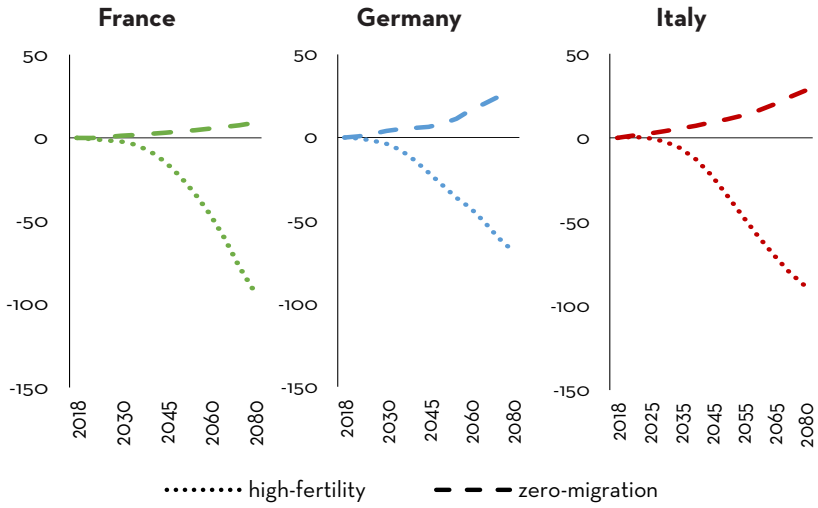


Figure 11

Debt-to-GDP ratio

%

Source: Prometeia calculations.

In the case of Italy, reducing the "brain drain" should be considered. Italy's emigration flow rate (gross outflows as a share of the total resident population) has been increasing since 2008-2009, starting from the 0.1% pre-crisis and reaching 0.26% in 2016. These outflows correspond to about 156,000 individuals per year, which includes high skilled young workers (hence the description "brain drain").[16] If Italy were able to eliminate the brain-drain phenomenon (about 30,000 high-skilled emigrants per year), the growth increase compared to the baseline would be of 0.10-0.40pp over the long-term, or roughly equivalent to the growth difference under the UN baseline and zero-immigration scenarios. It should be noted that such a reduction in the brain drain would be possible only if the domestic labour market improved sufficiently to absorb the additional flow of high skilled workers.

16 *Eurostat Database on Immigrants in OECD and non-OECD Countries (DIOC-E).*

VI. Summing up

Most European countries have recorded recent increases in inflows of migrants. The stock of (EU and non-EU) foreigners in 2017 was about 10% and 15% of the total populations in Italy and Germany respectively. Among non-EU foreigners, origins vary considerably across the major European countries, with the majority from Eastern Europe in the case of Germany, North Africa in the case of France and the Balkans and Africa in the case of Italy.

Migrants tend to make a positive economic contribution, especially to the pension system, in countries with an ageing population. However, their contribution depends to a large extent on education levels. Immigrants born in Africa are, on average, less well educated than either the native population or EU immigrants. Thus, based on our estimates, immigrants are expected to make a slight negative contribution to per-capita GDP and productivity. However, since their average age is relatively young, they can make a positive contribution to the sustainability of welfare systems and pension systems, in particular.

In Italy, an increase in fertility rates or a decrease in the brain-drain could counter population ageing, but these objectives will be difficult to achieve. In practice, achieving these objectives is unlikely, at least in the short-to-medium term. Italy, with a rate of 1.3 children per woman, has a lower fertility rate than the other main European countries and it is unlikely to achieve or exceed the fertility rate necessary to ensure a stable population. Also, the brain drain is particularly acute in Italy. Reducing it could contribute greatly to increasing growth prospects, but would require a significantly improved labour market.

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