Replacement fertility with immigration in Europe

Nick Parr | July 24, 2023

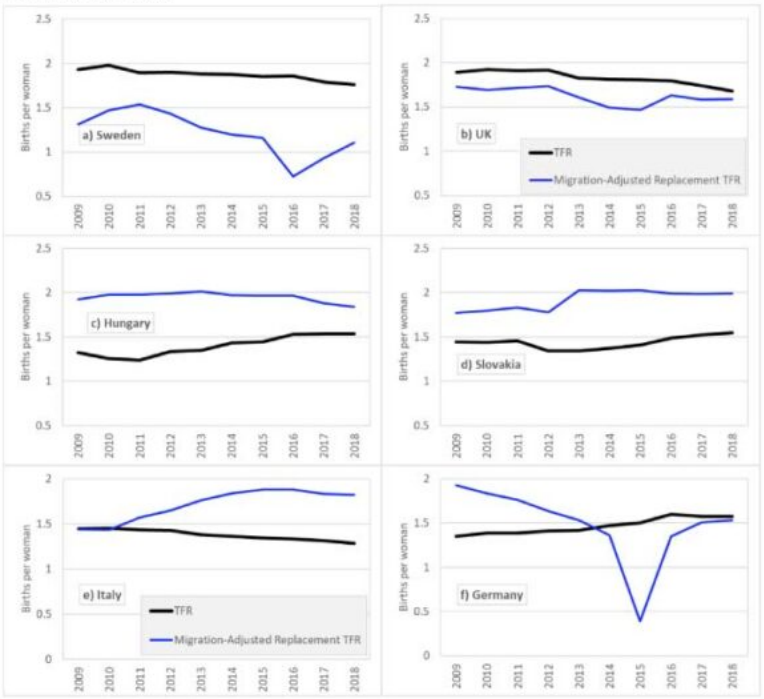
Recent decreases in fertility rates in European countries have fueled gloom and doom about the prospect of shrinking populations. As Nick Parr shows, the levels of fertility that would sustain population size differ widely across European countries with differing levels of net migration. For some of these countries the birth rate needed is far below the replacement level of 2.1 births per woman.

The total fertility rate (TFR) is below the 2.1 "replacement level" in every European country, after a sustained fall in two-thirds of them between 2009 and 2018 (Eurostat 2021), and it is common to see commentary on population trends along the lines of "to sustain population levels the (national) fertility rate needs to be about 2.1 births per woman" (e.g. BBC 2020, Economist 2023). Such views, however, are misconceived.

With or without you (immigrant)

It is true that *without migration*, if birth rates were to remain below "about 2.1" beyond some point in the future (precisely when depends on the age distribution of the population), the population would start to decrease. However, over the period 2009–2018, net migration was positive (arrivals outnumbered departures) in most European countries (Eurostat 2021). In a recent paper, I calculated the levels of fertility that would suffice to prevent long-run population decrease for 24 European countries, taking account of each country's migration levels (over the years 2009–2018) and life expectancies (Parr 2023a). Such knowledge should enhance the understanding of national population dynamics and prospects for European (and other) countries with low birth rates and positive net immigration (Figure 1).

Figure 1 – Observed and migration-adjusted replacement fertility in selected European countries, 2009-2018



Note: Note the change of range in panels (e) and (f)
Source: Parr (2023a)

In panels (a) and (b), the TFR is above the "migration-adjusted replacement TFR" (defined in Parr 2021, 2023a) for every year considered. This means that, even though the TFR consistently remains below 2.1, constant fertility, mortality and net migration will lead ultimately towards a larger-than-current population size. Some commentators have made sweeping generalisations that birth rates below 1.5 children per woman will lead to population decrease. However, the values of the migration-adjusted replacement TFR for Sweden show that in most of these years the level of net migration was so high that it would propel long run population growth even if the TFR fell below 1.5 births per woman. For Luxembourg (not shown here), the rates of net migration over 2011–2018 were so high that its population would grow larger even if (hypothetically) in the future it sustained a birth rate of zero!

In contrast, panels (c) and (d) show that in Slovakia and Hungary, despite positive net migration, constant fertility, mortality and net migration would result in long-run population decrease. That said, for both countries the birth rates that would prevent population decrease are below 2.1. For example, the "migration-adjusted replacement TFR" shows that to prevent long-run depopulation, Hungary would need to sustain a TFR of 1.84 if its migration and life expectancy remained unchanged at 2018 levels.

For Italy, recent low birth rates have prompted alarm that it faces a "demographic winter" (Financial Times 2023). The TFRs shown in panel (e) are far below migration-adjusted replacement levels, indicating that constant fertility, mortality and migration at the levels observed from 2011 to 2018 would lead to considerable population shrinkage. However, panel (e) also shows that in combination with constant migration at much higher levels, such as those of 2009 and 2010, a TFR of 1.44 would generate long-run zero population growth. In both years, the actual TFR in Italy marginally exceeded this level.

Germany provides an example of a country where net migration was extremely volatile over the 2009–2018 period. Panel (f) show that the very low TFRs and relatively low net migration

over 2009–2013 would produce population decrease, whilst the somewhat higher TFR and significantly higher net migration over 2016–2018 would generate a slightly increased population size. In 2015 there was a large spike in net migration, driven primarily by very large inflows of refugees. The migration-adjusted replacement TFR for this year shows that if (hypothetically) net migration remained as per 2015, a TFR of just 0.4 would suffice for sustaining population size. For Germany (and other countries with very volatile net migration such as Austria, Spain and Ireland), there is no simple "yes" or "no" answer to the question of whether constant birth rates, death rates and net migration would result in a larger or smaller future population. For these countries, the birth rate consistent with zero population growth fluctuates widely up and down with the variations in net migration.

Best birth rate? It's horses for courses

Sweeping generalisations about the implications of any one particular low birth rate are unwarranted. National population prospects vary widely across countries with very different patterns of migration, even when their birth rates are similar. For example, a TFR in the 1.7–1.8 range would lead to a large population decline if combined with constant migration (and life expectancies) at the 2018 levels of Slovakia or Denmark and to small percentage reductions if combined with those for Hungary, Finland, France or Italy (Parr 2023a). Yet the same fertility rate would generate considerable growth, with the population ultimately increasing to several times its current size, if combined with constant migration (and life expectancies) at the 2018 levels for Sweden, Spain, Ireland or Luxembourg, and to smaller percentage increases in population if combined with those for Germany, Norway, Switzerland or the UK.

Such widely differing population growth patterns will bring very different population-related challenges. In view of this, a "one size fits all" view on the "optimum" range for fertility would appear illogical. Rather a "horses for courses" country-specific and migration-context-specific view of the preferred national fertility level is warranted. Even for some of the European countries where birth rates are very low, preventing population decrease by net migration appears to be technically feasible, although not necessarily politically popular (Parr 2023b).

National-level population growth is the product of fertility, mortality and migration. The application of the concept of replacement to national populations should consider all three processes.

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