

SF2.1. Fertility rates

Definitions and methodology

This indicator presents information on levels and trends in fertility rates and the distribution of births by birth order. Fertility rates are captured through two measures:

- **The Total Fertility Rate (TFR)**, or the average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years. TFRs are computed as the sum of age-specific fertility rates defined over five-year intervals. Data on the TFR come mostly from national statistical offices and other international organisations (e.g. Eurostat and the World Bank). Assuming no migration and unchanging mortality rates, a TFR of 2.1 children per woman is generally sufficient to generate a stable size of the population within a given country. A TFR above or below this ‘population replacement rate’ is likely to lead to population growth or population decline, respectively.
- **Completed Cohort Fertility (CCF)**, or the average number of children born to women belonging to certain cohort over the whole of their reproductive lives. Data on completed cohort fertility come from the Human Fertility Database (HFD), which calculates completed cohort fertility for a given cohort if data are available for that cohort at age 44 or above and by using data for the highest available age up to age 50.
- **The tempo adjusted fertility rate** is computed as the sum of TFRs at different birth orders divided by a factor that controls for any changes in the mean age of mothers at birth at the respective birth order compared to the previous year. This calculation aims to control for birth postponement and can help provide a more nuanced understanding of fertility trends, particularly in societies where the timing of childbearing is changing.

The distribution of births by birth order is measured through the distribution of births by the rank of the birth from the perspective of the biological mother. Three rank groups are used here – first births, second births, and third or higher births.

Key findings

In all OECD countries bar one, current fertility rates are well below those needed for population replacement (Chart SF2.1.A). In most OECD countries, the total fertility rate sits at somewhere between 1.2 and 1.9 children per woman, but in 2023 the TFR was as low as 0.72 in Korea. In 2023, at 2.89 children per woman, Israel had the highest TFR in the OECD.

Over the past decades, fertility declined markedly across OECD countries, falling on average from 2.84 children per woman of childbearing age in 1970 to 1.43 in 2023. The decline was particularly pronounced – by at least three children per woman on average – in Chile, Colombia, Costa Rica, Korea, Mexico and Türkiye. Catching up with birth postponement in prior years, there was a moderate recovery in TFRs between 2000 and 2008, but this “rebound” stalled in many OECD countries in 2009. Nevertheless, in Czechia, Germany, Latvia and Slovenia the 2023 TFR was above the 1995 rate.

This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

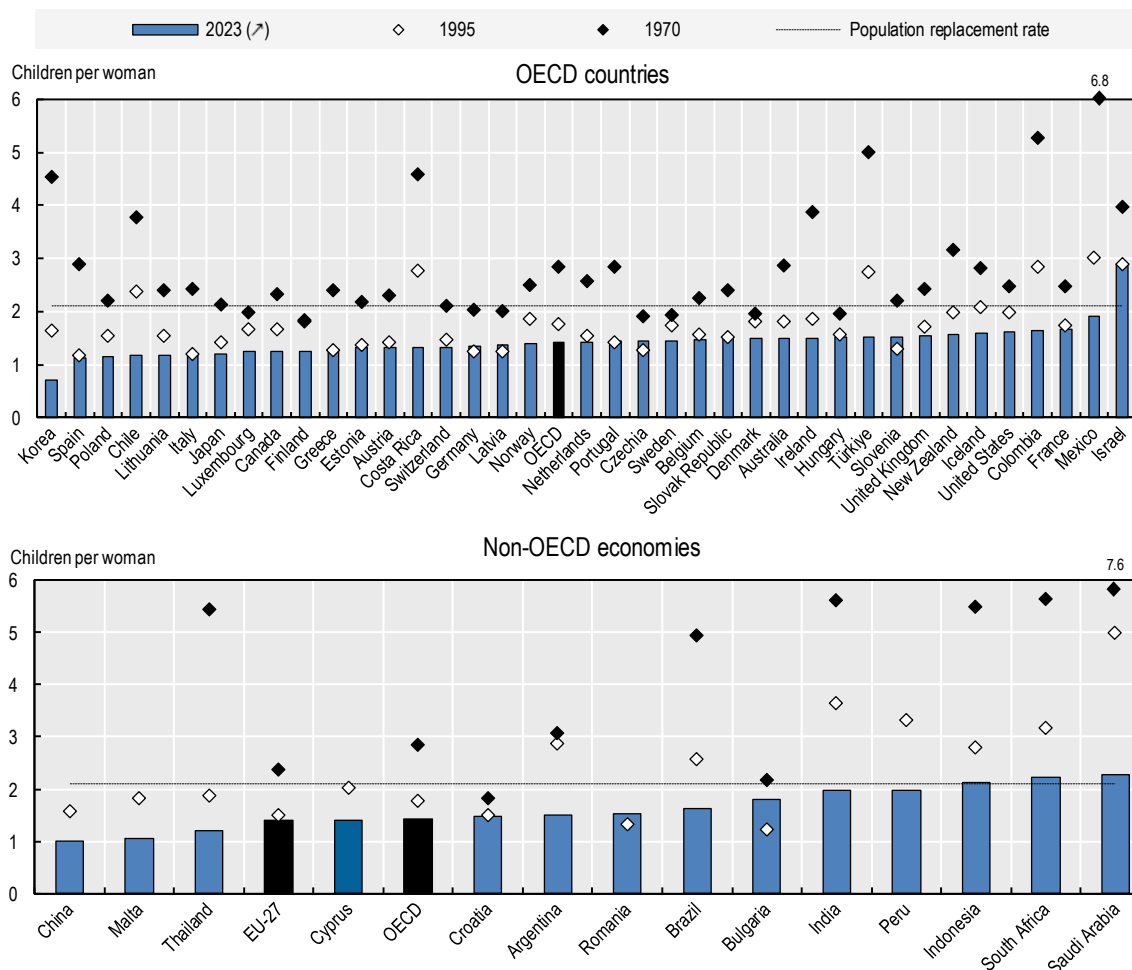
Note by Türkiye: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Other relevant indicators: Family size and composition (SF1.1); Age of mothers at childbirth (SF2.3); Share of births outside marriage (SF2.4); Childlessness (SF2.5); and, Marriage and divorce rates (SF3.1).

Chart SF2.1.A. Total fertility rate, 1970, 1995 and 2023

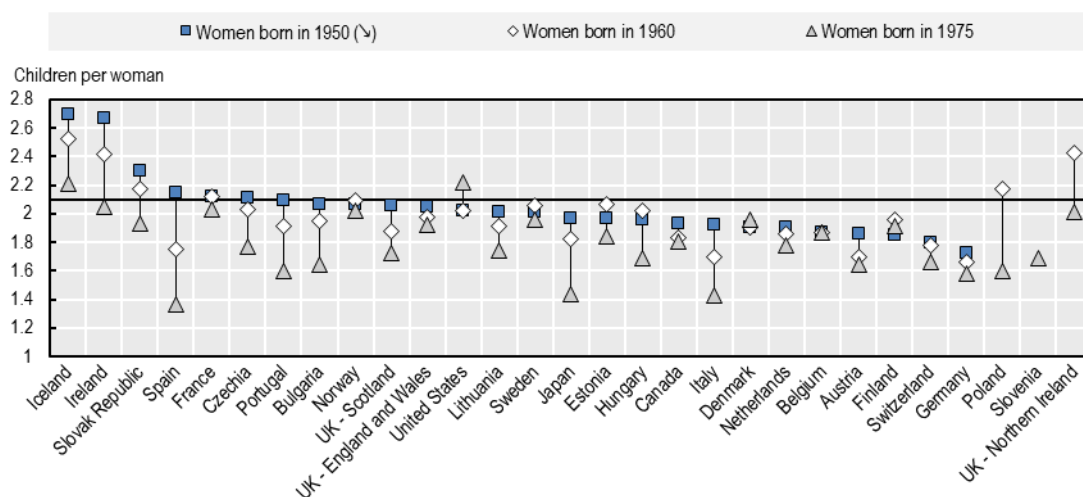
Average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years



Notes: 1) The latest available data refer to 2022 instead of 2023 for Israel; and 2021 for the United Kingdom. Source: Eurostat Database, <https://ec.europa.eu/eurostat/data/database>; World Bank World Development Indicators, <https://databank.worldbank.org/>; and national statistical offices. See the accompanying data file ([here](#)) for detailed sources.

Data on *completed* fertility paint a largely similar picture. Chart SF2.1.B. shows CCF for women born in 1950, in 1960, and in 1975. For all three birth cohorts, completed fertility is in most countries well below the 2.1 children per woman needed for population replacement. For the 1950 cohort, only Czechia, France, Iceland, Ireland, the Slovak Republic and Spain have CCF levels above 2.1. For the 1975 cohort, this only concerns Iceland and the United States. Indeed, most OECD countries recorded a decline in CCF for the 1950 and 1975 cohorts of women: – only in Denmark, Finland and the United States was CCF higher for the 1975 cohort than for the 1950 cohort. The decreases in CCF in Ireland (0.6 children per woman) and Spain (0.8 children per woman) were particularly large.

Chart SF2.1.B. Completed cohort fertility for women born in 1950, 1960 and 1975 or latest available



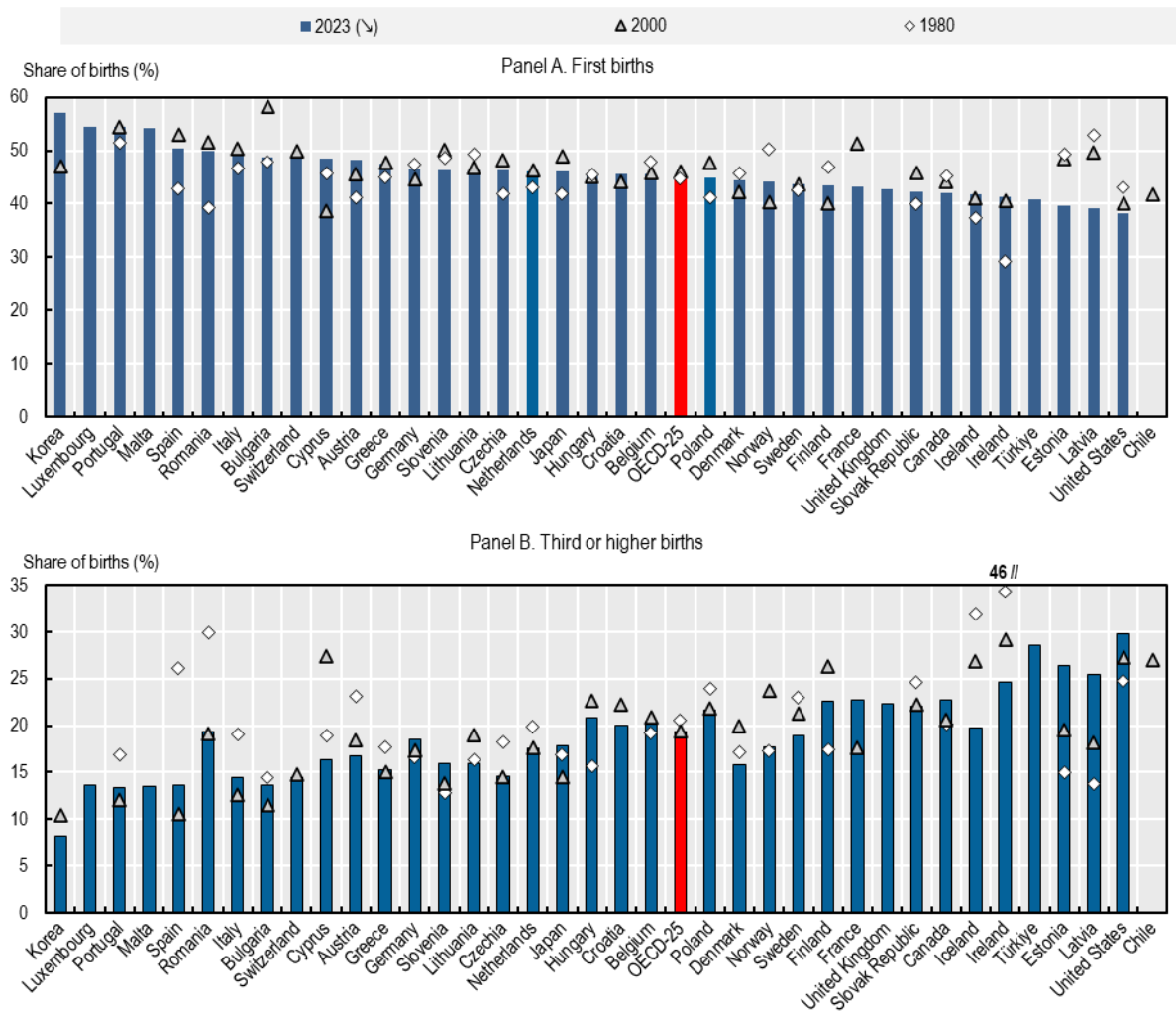
Notes: Completed cohort fertility (CCF) is defined as the average number of children born to women belonging to certain cohort over the whole of their reproductive lives. The Human Fertility Database calculates completed cohort fertility for a given cohort if data are available for that cohort at age 44 or above, and by using data for the highest available age up to age 50. See the Human Fertility Database webpage (www.humanfertility.org) for more detail. Data for 1950 refers to 1952 for Estonia and Norway, and 1955 for Ireland. Data for 1975 refers to 1973 for Germany, and 1970 for the Slovak Republic.

Source: Human Fertility Database, <http://www.humanfertility.org>

Fertility declines are reflected in a fall in the proportion of births that are third or higher births and an increase in the share of births that are first births. Chart CF2.1.C shows the share of births that are the mother's first birth (panel A) and third or higher birth (panel B) in 1980, 2000, and 2023. In most of the covered countries, the proportion of births that are the mother's first birth has increased since 1980, while the share of births that are a third or higher birth has fallen. There are some exceptions – in Estonia and Latvia, for example, the proportion of births that are first births has fallen by ten and fourteen percentage points since 1980, while the third or higher share has increased by eleven and twelve percentage points, respectively. For most countries though, third or higher order births are less common today than in 1980, pointing towards a decrease in the frequency of large families.

Chart SF2.1.C. Distribution of births by birth order, 1980, 2000 and 2023

Birth order in selected years, 1980, 2000, and 2023



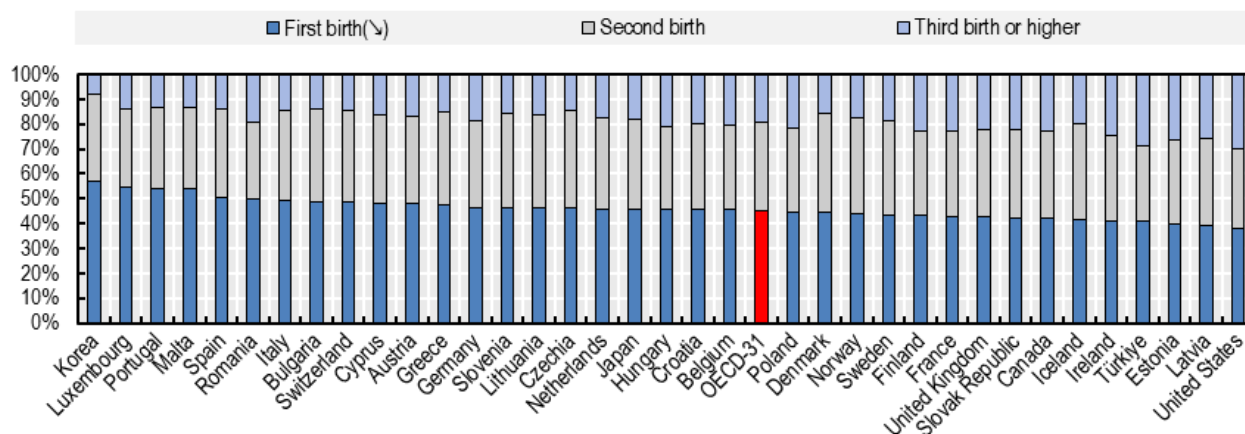
Notes: 1. Data for 2023 corresponds to 2018 for the United Kingdom; 2019 for Canada; 2020 for Korea; and 2021 for Japan and the United States. 2. Data for 2000 corresponds to 1999 for France; 1997 for Italy; 2005 for Malta; and 2006 for Switzerland. 3. Data for 1980 corresponds to 1992 for Croatia; and 1990 for Germany, Portugal, and Sweden. 4. OECD-25 is the average for the OECD countries for which data is available for all three years: Austria, Belgium, Canada, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, and the United States.

Source: Eurostat and the Human Fertility Database

Still, in most countries, first births continue to represent a minority of births (Chart CF2.1.D.). First births account for half or more of all of births in only four OECD countries (Korea, Luxembourg, Portugal, and Spain). In all others, the proportion of births that are first births is less than 50%, with the share falling to as low as 38% in the United States. Most remaining births are second births, with third or higher births countries making up less than one-in-five births in over half of OECD countries for which data are available.

Chart SF2.1.D. Distribution of births by birth order, 2023

Proportion (%) of births by the rank of the birth



Notes: 1) Data for 2023 corresponds to 2018 for the United Kingdom; 2019 for Canada; 2020 for Korea; and 2021 for Japan and the United States.

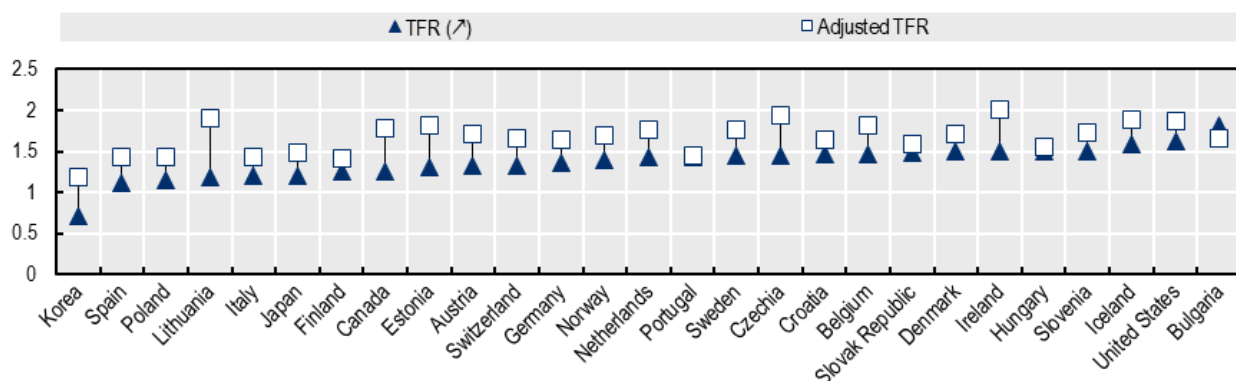
Source: Eurostat and the Human Fertility Database

While completed fertility rates cannot accurately capture the most recent birth trends, it is also likely that the TFR underestimates the actual fertility rate. This happens per definition when there is a general delay in the decision to have children. To account for this, the tempo adjusted fertility rate attempts to adjust for such tempo effects in birth rates by using a model that accounts for the timing and parity of births, giving a more accurate indicator of current birth rates (Human Fertility Database, 2024).

Across countries for which data on the tempo-adjusted TFR is available, it is higher than the TFR itself (Chart SF2.1.E). Especially in Austria, Canada, Czechia, Estonia, Ireland, Korea and Lithuania, there is a large difference between both measures (0.4 points or more), which suggests that recent declines in TFRs might be attributable to delayed childbirth which may lead to a potential future rebound in TFRs as these postponed births eventually occur. In Bulgaria, Hungary and Portugal, the difference between the adjusted TFR and the regular TFR is lesser than or equal to 0.1, which suggests that birth postponement might not significantly influence TFRs in these nations.

The tempo-adjusted fertility declined over the years in most countries, which indicates that fertility is declining faster than what simple birth postponement would explain (Chart SF2.1.F). Indeed, in all countries - except Czechia, Hungary, Lithuania and Slovenia – the adjusted TFR in 2022 is below what it was in 2010. The biggest declines were recorded in Finland, Iceland and Norway (0.5 points or more). This suggests that the changes in the TFR in these countries reflect actual changes in the number of children born to each mother, rather than continued postponement of births to older ages. In Austria, Belgium, Croatia, Finland, Spain and Sweden, the adjusted TFR increased substantially between 2000 and 2010 (by 0.2 points or more), suggesting an actual increase in the number of children born to each woman.

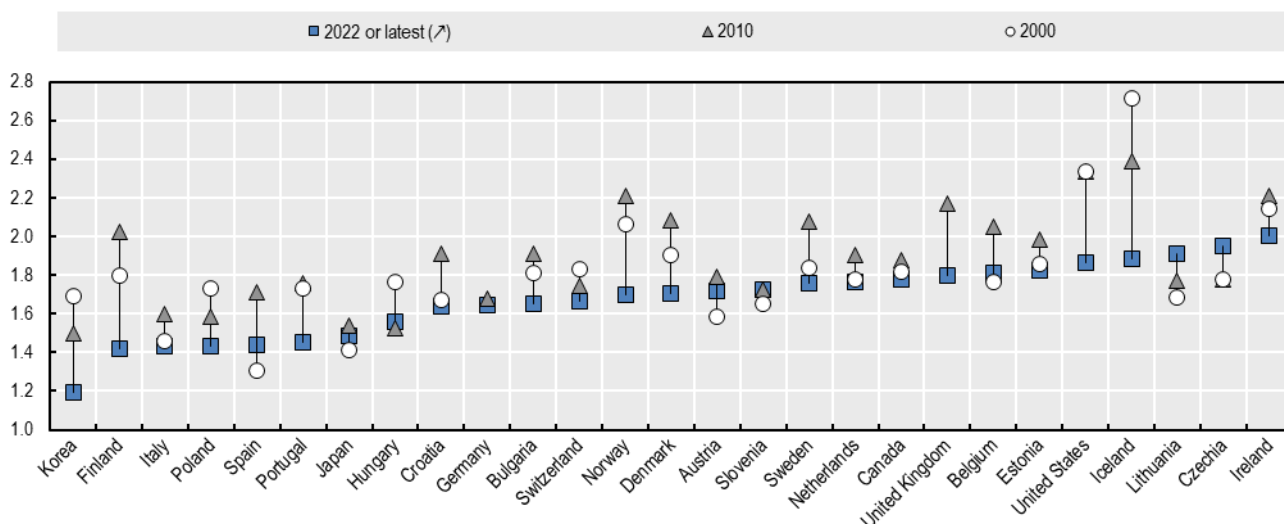
Chart SF2.1.E. Total and tempo-adjusted fertility rates, 2023 or latest year available



Note: 1) The latest available data for Total Fertility Rates refer to 2021 instead of 2023 for the United Kingdom. 2) Data for tempo-adjusted fertility rates refer to 2022 or the latest available and not 2023. Instead of 2022, data refer to 2021 for Belgium, Iceland, Japan, Lithuania, Norway, Portugal and Switzerland; 2020 for Bulgaria, Czechia, Italy, Spain, and the United States; 2019 for Croatia, Ireland, Korea, Hungary, the Netherlands, and the United Kingdom; 2018 for Austria, Canada, Estonia, and Slovenia; and 2016 for Germany and Poland.

Source: [Human Fertility Database](https://www.demography.univie.ac.at/human-fertility-database/) for tempo-adjusted fertility rates; see Chart SF2.1.A. for total fertility rates.

Chart SF2.1.F. Tempo-adjusted total fertility rates, 2000, 2010 and 2022 or latest available



Note: Instead of 2022 for tempo-adjusted fertility rates, data refers to 2021 for Belgium, Iceland, Japan, Lithuania, Norway, Portugal and Switzerland; 2020 for Bulgaria, Czechia, Italy, Spain, and the United States; 2019 for Croatia, Ireland, Korea, Hungary, the Netherlands, and the United Kingdom; 2018 for Austria, Canada, Estonia, and Slovenia; and 2016 for Germany and Poland. Instead of 2010, data for the United Kingdom refers to 2014. Lastly, 2000 data refers to 2001 for Korea, 2002 for Croatia, and 2005 for Italy.

Source: [Human Fertility Database](https://www.demography.univie.ac.at/human-fertility-database/).

Comparability and data issues

There are drawbacks to using the TFR to compare trends in fertility as changes in the aggregate can relate to either a change in family size and/or a change in the timing of births. Completed cohort fertility data can be used to measure the final number of children per women but only when women have reached the end their reproductive life. Changes in the distribution of births by rank of children also illustrate the changes in fertility patterns, since a reduction of family size is associated with a decrease in the share of higher order births.

The distribution of births is, however, also sensitive to timing effects. A closer look at the timing of births is needed to obtain a more comprehensive view of fertility behaviour and changes over time (SF2.3). The method of adjusting the TFR for tempo-effects as presented in Chart SF2.1.E and Chart SF2.1.F is a useful but incomplete approach as it doesn't account for the potential that delayed childbearing could lead to lower lifetime fertility while also assuming that the postponement of childbearing is a temporary phenomenon, which may be reversed in future.

Sources and further reading:

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