

# Policy Brief: Fertility and territorial well-being in Italy

How is fertility related to social, economic and environmental quality?

## Executive summary

We analyzed the association between fertility rates and well-being measured at regional level. The very low level of fertility in all European countries represents a challenge for national and local policies. The period average number of children per woman (TFR) is far below the replacement level of the generations (equal to 2.1) and is below the number of children desired on average by individuals. How does the gap between intended and realized fertility relate with other well-being indicators measured at aggregate level in terms of social, economic, environmental conditions? We try to answer this question with reference to Italy in the period 2010-2017 through the analysis of the association between the regional fertility rates and a rich system of regional indicators measuring various aspects of the social, economic and environmental quality (Equitable and Sustainable Well-being or Benessere Equo e Sostenibile - BES, in Italian). The results show that in regions best performing in terms of economic conditions and of the functioning of public services as well as in terms of the quality of educational system and of the environment, fertility is higher than the national average. This happens in the North-Eastern areas of the country, while in the South and in the Islands the overall citizens life quality is at the lowest level and fertility continues to decline. This suggests that there is a need for active policies both at national and local level with the aim of reducing economic disparities between citizens and of improving the quality of the public services, especially those oriented towards the family and children.

In contemporary low fertility societies, whether having a child or not and when are decisions strongly dependent on individual and couple characteristics, resources and value system. However, notable differences in fertility at population level are currently registered between countries, regions, municipalities and neighbourhoods. The quality of the residential context helps explaining fertility diversity (Kulu and Washbrook, 2014). Many different features of the area where individuals live may encourage or discourage their childbearing. For instance, the availability and affordability of housing, family-oriented services and infrastructure, or economic opportunities and constraints which affect the direct and indirect costs of children. Also, cultural factors such as the value system, gender roles or other social norms, as well as the extension and power of the social networks, differ among territories even within the same country and this can account for differences in fertility (Fiori et al., 2013).

Italy is an interesting example in this respect, since it has always been characterized by huge socio-economic and demographic differences among its internal geographic divisions, namely between the Northern and the Southern regions, being more prolific in Southern compared to Northern regions, at least until a few years ago. As fertility progressed towards ever lower levels, the differences between regions declined and, unexpectedly, reversed. In 2017, the Italian total fertility rate was 1.32, with the lowest level being registered in Sardinia island (TFR=1.06) and the highest one in the Bolzano province in the upper North of the country (TFR= 1.74). These same territories are found in very distant positions in the ranking of the regions by well-being, with the Northern regions decidedly better off than the Southern ones (ISTAT 2018).

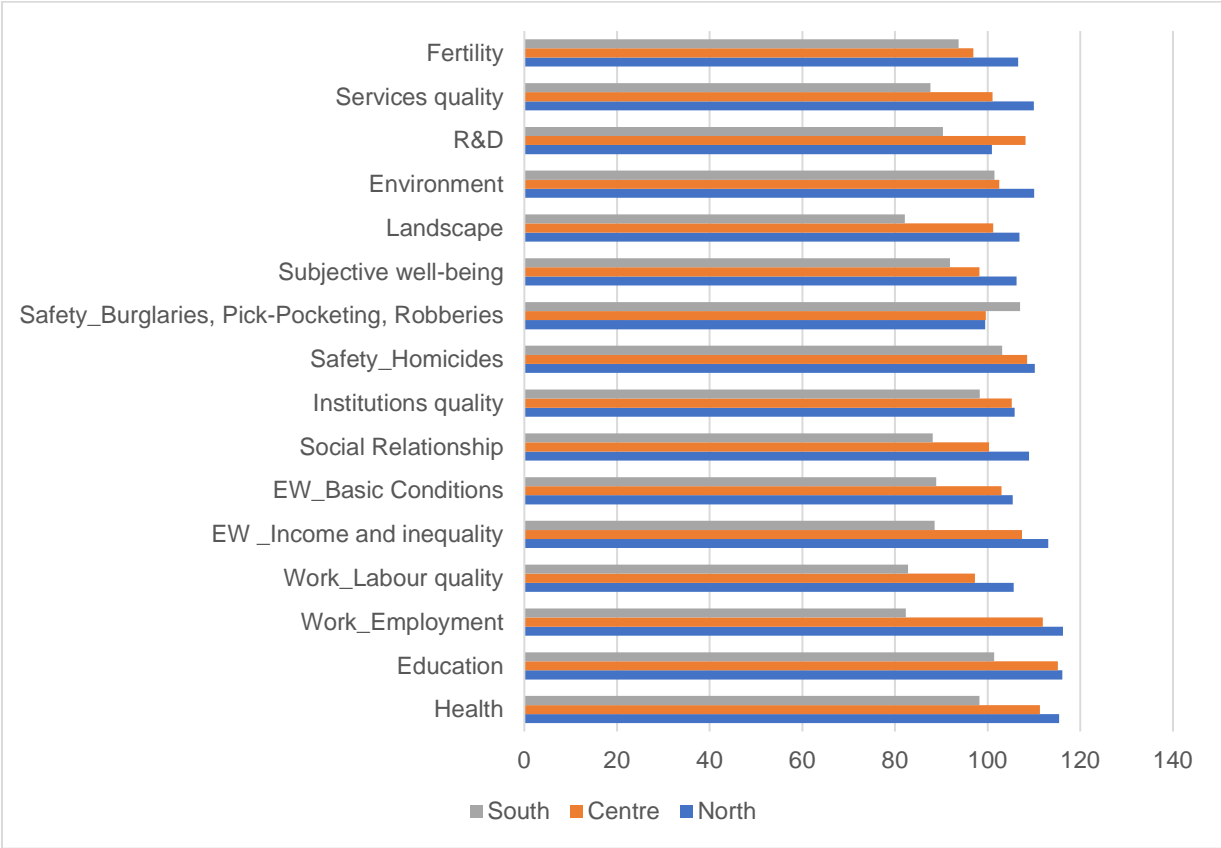
The well-being of a territory is a complex and multidimensional concept that involves many social and environmental dimensions. It is linked to the available resources, the quality of life, subjective well-being, equity and sustainability. For over 20 years, OCSE, European Commission, United Nations, World Bank and other international organizations have been promoting initiatives to sensitize governments to go beyond the economic production dimension. The rationale is to measure well-being by a multidimensional approach that includes, in addition to the objective socio-economic conditions, also measures of the quality of people's life with subjective evaluations and perceptions, as well as indicators of environmental sustainability.

Italy is ahead in defining and estimating well-being indicators. Already in 2011 ISTAT- the Italian Institute of Statistics has developed a system of indicators of the quality of life, measuring Equitable and Sustainable Well-being (Benessere Equo e Sostenibile - BES in Italian). It is based on 130 indicators collected at regional and provincial level and organized in 12 thematic domains. The domains pertain to health, education, work life balance and employment, economic well-being, subjective well-being, social relationships, safety, politics and institutions, landscapes and cultural heritage, environment, quality of services, innovations research and creativity. Since 2013, ISTAT annually publishes the BES Report; in 2018 the sixth edition has been released (ISTAT cit.). Starting from 2016, selected BES indicators have been also used for an evaluation of the impact of the economic measures included in the National Budget Law.

For each domain a composite indicator, that is a synthesis of elementary indicators, has been provided by ISTAT (2018). All the indicators are positively oriented with respect to well-being. For example, the two safety indicators – one for Homicide and one for Burglaries, Pick-pocketing, Robberies - are constructed on the basis of the annual incidence of crimes - violent or predatory - in such a way that a lower frequency is indicative of a higher level of well-being. Similarly, the lower the presence of disadvantaged economic conditions - represented by the proportion of people in severe material deprivation, by that of those living in poor quality houses, who claim to have great economic and work difficulties - the higher the level of well-being. Conversely, disposable income per capita and employment rates (20-64 years of age) are directly related to well-being. For details how the indicators in the different wellbeing categories are constructed, see <https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/indicators>

Figure 1 shows the average level of fertility (year 2017) and of the composite indicators in the period 2010-2016. Data are expressed as index numbers with base Italy 2010=100. The three main Italian geographical areas perform differently both in terms of BES specific indicators and in terms of fertility: the Northern regions show the highest fertility levels compared to the Italian average and the highest level of well-being, for most of the socio-economic and environmental dimensions considered; the Southern regions are at the bottom of the ranking for fertility level and all the BES indicators except for the feeling of safety as far as robberies, pick-pocketing and burglaries are concerned.

**Figure 1 – Well-being indicators (BES) and TFR\* by geographical areas - Italy (2010=100)**



Source: De Rose et al. 2019; \*TFR data referred to the year 2017. For details how the indicators in the different wellbeing categories are constructed, see <https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/indicators>

Table 1 shows the results of a correlation analyses between fertility and each well-being composite indicator with regions as units of analysis. Both TFR and BES indicators show significant variations through time. Moreover, the time series of BES data (2010-2016) cover the period of the Great Economic Recession until the time of the first signs of recovery. For these reasons, we allowed the association between fertility and each of the well-being indicators to vary over time, by applying the statistical analysis twice: considering a minimum time lag between socio-economic conditions and fertility behaviour, we focused on the fertility levels in 2017 and on that registered five years before in 2012 and put them in relation with the average BES composite indicators of the two years before, 2015-2016 and 2010-2011, respectively. In both periods, the correlations between almost all the BES composite indicators and fertility at regional level are positive and statistically significant which means that the average number of children is higher in those territories better performing in terms of well-being than the others. Not every indicator plays the same role in the two periods: the fertility in 2012 was mainly associated with the economic and employment situation of the two years before, when Italy was heavily suffering from the economic downturn; differently, fertility in 2017 has been mainly associated with aspects related to the private sphere, such as subjective well-being and social relationship. The coefficients relative to other dimensions, namely that of the quality of the institutions and of the public services, do not change much between the two periods, but their relative importance increases in the second period, once Italy has overcome the hardest steps of the economic crisis.

**Table 1 – Measures of associations between TFR and well-being indicators (BES) – Italy, 2010-2017**

Correlation coefficient between TFR and:	TFR 2012 vs BES 2010-11	TFR 2017 vs BES 2015-16
Health	0.57**	0.55**
Education and training	0.30	0.41
Work and life balance - Employment	0.67***	0.49*
Work and life balance - Quality of work	0.57**	0.43*
Economic well-being - Income and Inequalities	0.70***	0.52*
Economic wellbeing - Basic conditions	0.54*	0.34
Social relationships	0.63**	0.63**
Politics and institutions	0.62**	0.59*
Safety - Homicides	0.64**	0.14
Safety - Burglaries, Pick-Pocketing, Robberies	-0.24	-0.15
Subjective well-being	0.59**	0.74***
Landscape and cultural heritage	0.62**	0.58**
Environment	0.47*	0.54*
Innovation, research and creativity	0.40	0.19
Quality of services	0.63**	0.51*

Source: Own elaboration on ISTAT data. For details how the indicators in the different wellbeing categories are constructed, see <https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/indicators>

Significance levels: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

## Conclusion

Our analysis clearly identifies a positive relationship between the well-being of the territory and the reproductive behaviour of the population. Many of the differences observed between the Italian regions in terms of quality of life can be traced back to the inequalities of economic and above all employment conditions, with a clear gradient from the North to the South of the country. The impact of these two dimensions on the relationship between well-being and fertility is very strong especially in the initial period of the recession. However, economic differences do not explain everything: the different efficiency of public institutions - for example justice - or that of health and school services, which are regulated by national laws, affect the quality of life of citizens. Likewise, attention to the environment, to the protection of the landscape, for example with the contrast to illegal construction, are aspects that characterize the regions of the North more than those of the Center and especially of the South. All these aspects, separately, have an impact on the level of satisfaction of individuals and can influence their behaviours including fertility. Finally, the areas that are at the top for all the well-being domains, such as the province of Bolzano in the North-east of the country, are also those that offer the best services for families and children and this directly facilitates the couple in choosing to have a child.

Overall, to create an environment conducive to realizing one's wishes in terms of family size must be an objective of national governments and of the local policies. Collectively, any initiative aimed at the recovery of fertility would have a positive effect on population balance and structure.

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## References

- De Rose, A., Racioppi F., & Sebastiani, M.R. (2019). Exploring the relationship between fertility and well-being: What is smart? In G. Arbia, S. Peluso, A. Pini & G. Rivellini (Eds). Smart Statistics for Smart Applications (p.805-810). Book of Short Papers SIS2019. Milano: Pearson.
- Fiori, F., Graham, E., & Feng Z. (2013). Geographical variations in fertility and transition to second and third birth in Britain. *Advanced in Life Course Research*, 21: 149-167.
- ISTAT (2018). Rapporto BES 2018 – Il benessere equo e sostenibile in Italia. Roma: ISTAT. <https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/indicators>
- Kulu, H., & Washbrook, E. (2014). Residential context, migration and fertility in a modern urban society. *Advances in Life Course Research*, 21: 168-18.

## Acknowledgement

This project has received funding from the Austrian Federal Ministry of Science, Research and Economy (BMWFW), the French Agence nationale de la recherche (Award no. ANR-16-MYBL-0001-02), and the Italian Ministry of Education, Universities and Research in the framework of the Joint Programming Initiative (JPI) "More Years, Better Lives – The Challenges and Opportunities of Demographic Change".