

The impact of economic recession on fertility in Europe: a subnational view

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What was the impact of the recent economic recession on fertility in Europe? Anna Matysiak, Tomáš Sobotka and Daniele Vignoli analyse the link between economic and labour market dynamics and fertility in 259 sub-national regions in the European Union and Iceland. Their models show that among the five indicators analysed rising unemployment was most closely related to fertility declines.

In the early 2000s Europe experienced the first continent-wide increase in period fertility rates since the post-war baby boom. It came to an end soon after the onset of the recent economic recession. Fertility rates in most countries peaked in 2008-10 and declined or remained stable during the next five years. Fertility fell most among women below age 25 who took the brunt of unstable labour market conditions and, at the same time, could postpone motherhood without risking infertility. These fertility reversals were not entirely unexpected. Past research showed that fertility usually falls during economic downturns as women and men often postpone childbearing in uncertain times. Young adults facing unstable income and poor employment prospects often stay longer in parental home and delay the decision to start a family (Cherlin et al 2013).

There has been very little research on how the recent economic downturn affected fertility in European countries and regions. Most of the research on the effects of the Great Recession on European fertility has been either descriptive (Lanzieri 2013) or confined to single countries (e.g. Pailhé and Régnier-Loilier 2015; Kreyenfeld 2015). Only a few studies adopted a wider comparative perspective examining the scope and the

impact of the economic recession across countries. Among them, Testa and Basten (2014) showed that the uncertainty about realising fertility intentions increased in Europe between 2006 and 2011. In a multi-country study, Goldstein et al (2013) demonstrated a decline in fertility in response to increasing unemployment during the early stage of the recession. Many questions remain unanswered. How did fertility respond to worsening economic conditions in different countries and regions? Which economic and labour market factors were most influential in stimulating fertility downturns? Were fertility reactions

KEY FINDINGS

- » Worsening economic and labour market conditions are closely linked to fertility decline across 259 regions in Europe
- » Unemployment has the strongest negative impact on fertility
- » In regions most affected by the economic downturn (Southern Europe, Central and Eastern Europe) the fertility decline was mainly driven by rising unemployment
- » In Southern Europe, the rising share of younger people not in employment, education or training also contributed to falling fertility.

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DATA & METHODS

Our study is based on 259 NUTS-2 regions, nested within 29 countries (28 EU member states as of 2017 and Iceland) observed in 2001-2014. We estimated a three-level growth curve model (GCM) with countries at the highest level, regions at the medium level and periods at the lowest level. GCMs are ideal for modelling temporal changes in the hierarchically structured phenomena. Using GCM, we modelled changes in the regional total and cumulated age-specific fertility rates (TFR and ASFRs) as piecewise linear spline functions of a series of annual indicators of economic and employment dynamics measured at NUTS-2 level: the unemployment rate, proportion in long-term unemployment, proportion in self-employment, proportion not in employment, education or training (NEET) and the rate of annual GDP change. The economic indicators were lagged by one year to account for the time between the conception and childbirth. They were also decomposed and introduced into the model as a sum of three terms:

- (1) Within-region term, i.e. a deviation of the variable observed in a given year from the regional average;
- (2) Between-region within-country term, i.e. a deviation of the regional average from the country average;
- (3) Between-country term, i.e. the country average.

This decomposition allowed us to investigate how a temporal change in economic conditions within the region affected the fertility rate taking into account the between-region within-country and between-country differences in economic conditions. In other words, we could analyse the effect of changing unemployment in a given region, such as Galicia in Spain, controlling for the fact that unemployment rate in Galicia differed from the average unemployment across Spanish regions and that unemployment in Spain differed from that in the other analysed countries across Europe. In addition, we interacted the within-region term with (a) a recession dummy (assuming value 1 in 2009-2014) and (b) with a country group. Countries were classified into six groups with respect to the strength of the economic recession and their social policies and welfare support: (1) Nordic countries (Denmark, Finland, Iceland and Sweden), (2) France and Benelux, (3) United Kingdom and Ireland, (4) Austria and Germany, (5) Southern Europe (Cyprus, Greece, Italy, Malta, Portugal and Spain), (6) Central and Eastern Europe (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, Poland and Slovakia).

to changing economic conditions strongly differentiated by age? We address these questions in our forthcoming study by using regional level data (NUTS-2) for 28 EU member states and Iceland.

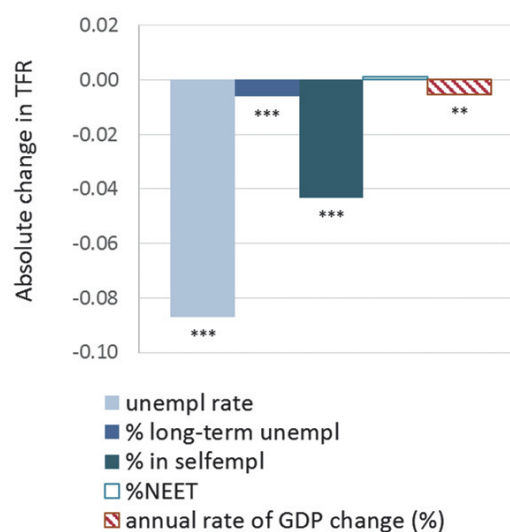
Unemployment has the strongest effect on fertility in all country groups

To illustrate the impact of worsening economic conditions on fertility, we first discuss how a change in one of the economic indicators by 10-percentage-points (pp.) would affect the total fertility rate (TFR) if all other indicators we considered remained unchanged. Except for the changes in the share of NEET, our results show that worsening economic and labour market conditions exerted a negative effect on fertility. The effect of unemployment was most pronounced and was present at all ages. Overall, a 10pp. rise in unemployment would lead to a decline in the TFR by 0.09 children per woman (Figure 1).

The second most important factor affecting fertility is the dynamics of self-employment. Contrary to unemployment, self-employment does not necessarily indicate a precarious situation on the labour market. Self-employment may, however, become precarious for many people during the recession if employers outsource work to the so called “dependent self-employed” who set up their own business in order to provide on-demand services for one company. Indeed, we found that rising self-employment depresses fertility at all ages.

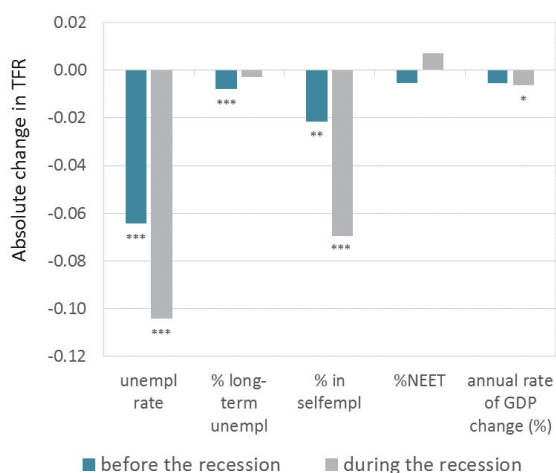
The rise in long-term unemployment and economic decline also reduce fertility, but their negative effects are far weaker than the effects of unemployment and self-employment.

Figure 1 Absolute change in Total Fertility Rate in 2001-2014 resulting from a worsening of economic conditions by 10 pp. in NUTS-2 regions in the European Union and Iceland



Note: The figure shows the effects of a change in one of the economic indicators net of the remaining ones. The stars denote the significance of the effect (significance levels: ***0.01, ** 0.05, * 0.10).

Figure 2 Absolute change in Total Fertility Rate resulting from a worsening of economic conditions by 10 pp. before (2001-7) and during (2008-14) the recession in NUTS-2 regions in the European Union and Iceland



Note: The figure shows the effects of a change in one of the economic indicators net of the remaining ones. The stars denote the significance of the effect before and during the recession; the difference between the two periods is not significant only in case of the annual rate of GDP change (significance levels: ***0.01, ** 0.05, * 0.10).

The impact of economic conditions on fertility strengthened during the recession period

During the economic recession, an increase in unemployment and self-employment exerted considerably stronger negative effects on total and age-specific fertility than in the preceding period. Our models predict that an increase in unemployment by 10 pp. would lead to a decline in total fertility by 0.06 if it took place in the years 2001-2007 and by 0.10 in 2008-14 (Figure 2). The negative effect of rising unemploy-

ment would thus be 60% stronger during the recession period. The strengthening of the negative effect of rising self-employment is even more pronounced: an increase in self-employment by 10 pp. would lead to a decline in TFR by 0.02 if it happened before 2008 and by 0.07 during the recession period.

The effects of changing economic conditions on fertility vary by country group

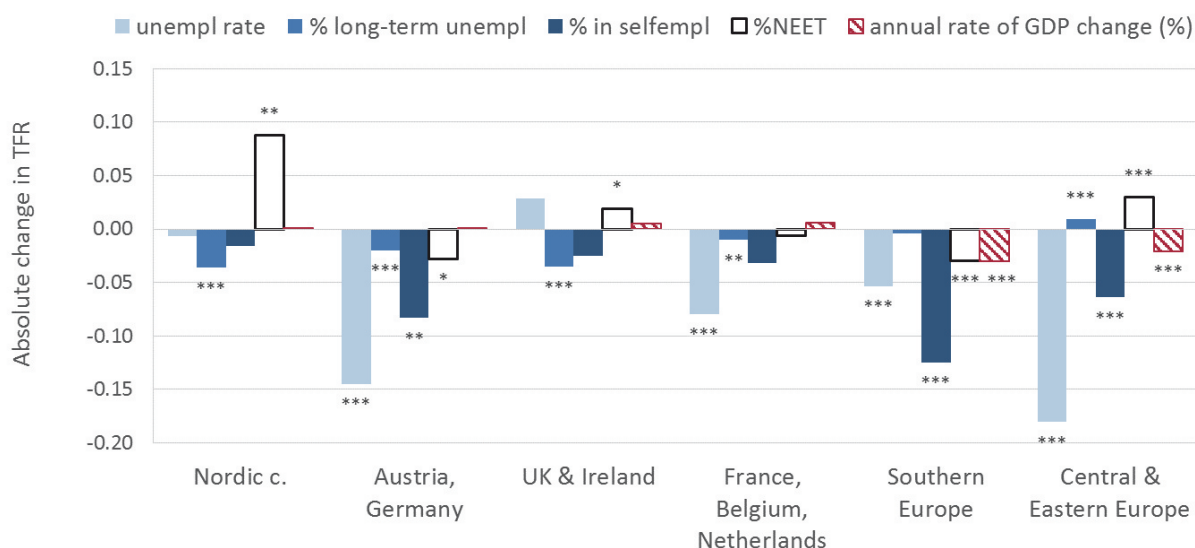
The effects of changing economic and employment conditions on fertility were most pronounced in country clusters that were strongly hit by the economic recession—Southern Europe and Central and Eastern Europe—but also in Austria and Germany which were little affected by the economic downturn. The fertility effects were the weakest in the Nordic countries, in Ireland and in the United Kingdom (Figure 2).

Unemployment exerted the strongest influence on total fertility in Central and Eastern Europe (CEE), Austria and Germany and France together with Benelux. In an extreme case of CEE, our models predict that a rise in unemployment by 10pp. would result in a fall in the TFR by 0.18. In Southern Europe rising unemployment depressed fertility, too, but self-employment turned out to affect fertility even more strongly. Indeed, the phenomenon of dependent self-employment was described in the literature mainly with respect to Mediterranean countries (Adsera 2005). We also found that a 10 pp. increase in self-employment would substantially lower fertility in the cluster composed of Austria and Germany and the countries of Central and Eastern Europe.

Rising unemployment was almost fully responsible for fertility decline in Southern Europe and Central and Eastern Europe

The dynamics of economic conditions during the recession period in each country differed widely from

Figure 3 Absolute change in the Total Fertility Rate resulting from a worsening of economic conditions by 10 pp. within NUTS-2 regions by country group, European Union and Iceland 2001-2014



Note: The figure shows the effects of a change in one of the economic indicators net of the remaining ones. Significant effects are denoted as follows: *** 0.01, ** 0.05, * 0.10.

Table 1 Effects of the observed changes in economic and labour market conditions on the TFR, 2008-14

Country group	Year	Observed TFR	Predicted TFR (S6)	TFR under 'no recession' scenario (S1)	Effect of unemployment: (S2-S1)	Effect of self-employment (S3-S2)	Effect of long-term unemployment (S4-S3)	Effect of GDP change (S5-S4)	Effect of NEET (S6-S5)
Southern Europe	2008	1.45	1.43	1.43	0.00	0.00	0.00	0.00	0.00
	2010	1.43	1.40	1.45	-0.02	0.00	0.00	-0.02	-0.01
	2012	1.36	1.36	1.45	-0.04	0.00	0.00	-0.02	-0.02
	2014	1.33	1.31	1.44	-0.07	-0.01	0.00	-0.02	-0.03
Central and Eastern Europe	2008	1.43	1.42	1.42	0.00	0.00	0.00	0.00	0.00
	2010	1.41	1.40	1.46	-0.02	0.00	-0.02	-0.03	0.00
Eastern Europe	2012	1.38	1.40	1.46	-0.04	0.00	-0.01	-0.01	0.01
	2014	1.44	1.40	1.46	-0.05	0.00	0.00	-0.02	0.01

Note: The effects of the actual change in economic conditions after 2007 on total fertility are computed as differences between the TFRs stemming from the following scenarios:

S1 - 'no recession scenario' - all five indicators of economic conditions remained constant at the 2007 level,

S2 - 'recession: only unemployment' - all indicators are fixed at the pre-recession level except for unemployment

S3 - 'recession: unemployment & self-employment' - all indicators are fixed at the pre-recession level except for unemployment and self-employment

S4 - 'recession: unemployment, self-employment & long-term unemployment'

S5 - 'recession: unemployment, self-employment, long-term unemployment and GDP change'

S6 - 'full recession: unemployment, self-employment, long-term unemployment, GDP change and the NEET'

the hypothetical change in each indicator by 10pp, analysed above. To assess the actual impact of each of the analysed factors, we investigated how the actual change in economic conditions affected total fertility. Here we present findings for two country groups which were affected most by the economic recession: Southern Europe and Central and Eastern Europe. Using our model, we predicted the total fertility rate during the economic recession in 2008-14 assuming several scenarios and sequentially adding each of the analysed indicators. The baseline 'no recession scenario' (S1) assumes that economic conditions have not changed since 2007. The scenario S2 allows for a change in unemployment, the scenario S3 analyses in addition the effect of changes in self-employment, etc. The last scenario, S6, allows all economic indicators to change consistently with their actual values. Next, we compared all the adjacent scenarios with each other to analyse the extent to which the change in each economic indicator contributed to the change in total fertility during the *Great Recession*.

Our findings, presented in Table 1, show that total fertility rate would remain flat in Southern Europe and it would slightly increase in Central and Eastern Europe if the economic conditions remained stable after 2007. However, as economic conditions worsened both countries experienced declines in fertility. The key factor was a rise in unemployment, which depressed the period TFR by 0.07 in Southern Europe and by 0.05 in Central and Eastern Europe (calculated as an average across all NUTS-2 regions in each country group). Additionally, in Southern Europe the negative economic growth and the rising share in the NEET also contributed to fertility decline (by 0.05). Surprisingly, neither in Central and Eastern Europe nor in Southern Europe did other analysed indicators affect the TFR during the economic downturn. Self-employment rates did not contribute to the observed fertility decline

even though it was shown to be a potential factor which may depress fertility. The main reason for this finding is the general stability of self-employment during the recession period: in contrast with the other analysed indicators, the share of self-employed has hardly changed in most analysed regions.

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