# Fertility Change in the Context of Economic Recession in Italy and Spain: Population Composition and Sub-National Geographies

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***Abstract***

This paper investigates macro-level fertility trends over the past decade in two Southern European countries, Italy and Spain, in which economic recession has been accompanied by marked declines in period total fertility rates. It addresses a gap in the literature by examining the contribution of changes in population composition to fertility trends before and after the economic downturn of 2008, and in particular, the contribution of migration to compositional change. National and sub-national (NUTS-2) data drawn from vital statistics, population estimates and censuses are used to investigate recent macro-level fertility trends by decomposing national fertility rates by age group, population group (citizenship/migration status) and geography. The results reveal that there are marked differences in the contributions of different age and population groups to national-level fertility trends, and that these contributions also vary geographically between and within Italy and Spain. In both countries, women at older ages within the fertile age range have contributed significantly less than women at younger ages to post-2008 declines in fertility. Furthermore, whereas in Italy women who are non-nationals have contributed more to the decline in total fertility rate than women who are nationals, the opposite is found in Spain. Finally, we demonstrate that structural change in the composition of the population plays a role in fertility declines both nationally and regionally in Spain, but not in Italy. Since the majority of past empirical studies on the decomposition of fertility trends have been conducted at the national scale, these findings are important not only because they reveal differences between age and population groups but also between and within-country variations in fertility after the economic crisis of 2008. The paper concludes that macro-level analysis is valuable for identifying the contribution of those whose response to economic uncertainty is to migrate and who are therefore 'lost to view'.

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## Background

This paper investigates macro-level fertility trends over the past decade in two Southern European countries, Italy and Spain, in which economic recession has been accompanied by marked declines in period fertility rates. A recent challenge to 'put population back into population studies' has noted the tendency of demographic research to focus on micro-level analyses (Coleman et al. 2015), thus diverting attention from 'explanation at higher levels' (Ní Bhrolchaín and Dyson, 2007). The limited research on fertility responses to economic recession in Europe illustrates this tendency in its privileging of agency-based explanations associated with changes in partnership, fertility intentions and fertility behaviour (Hanappi et al. 2012; Sobotka et al. 2011; Testa and Basten, 2014). An important aim of the paper is, therefore, to redress the balance by examining the contribution of changes in population composition to fertility trends before and after the economic downturn of 2008, and in particular, the contribution of migration to compositional change. Our study also addresses a gap in the literature, as the role of migration across borders, as distinct from migrant fertility *per se*, has been neglected in previous studies of contemporary fertility change.

### *Italy and Spain*

Italy and Spain are well known as having experienced some of the lowest levels of fertility in Europe in the late 1990s. National fertility levels appeared to be recuperating in the 2000s, with period TFR rising steadily to 1.46 in Spain and 1.42 in Italy by 2008. Since the global economic crisis, new declines in fertility have emerged in both countries but these are especially striking in Spain where TFR fell to 1.27 in 2013. Despite being seen as very similar countries because of their "familistic systems", Italy and Spain have exhibited different fertility trends since 2008, which suggest different demographic responses to the recent economic recession.

In relation to migration, the two countries also share some common features as both have experienced some of the largest increases in immigration relative to their population size in Europe. Immigration has been seen as "replacement migration" in both countries, particularly in Spain[1] (Billari and Dalla Zuanna, 2011; del Rey Poveda and Cebrán-Villar, 2010), and has contributed to population growth while being a major driver of population redistribution regionally. In the last half of the 1990s, the share of foreigners was similar in both countries, gradually increasing to around 2.5 percent of the national population by the year 2000. In the subsequent decade, the share of foreigners in the two countries diverged, with Spain experiencing the most dramatic rise to nearly 12 percent of the total population by 2008, while Italy saw a steep increase to nearly 7 percent. The contribution of the immigrant population to national fertility levels has also been important in both countries. However, the economic recession has not only resulted in net emigration (Impicciatore and Strozza, 2015; Domingo and Sabater, 2012), but also in a national picture that hides substantial heterogeneity over time and space. Recent studies suggest that contemporary fertility in Italy and Spain reflects the sum of divergent forces sub-nationally (Vitali and Billari, 2015; Sabater and Graham, 2015), albeit with strong indications of emerging clusters of higher fertility in regions of immigrant settlement (e.g. Lombardia and Piemonte in Italy, and Catalonia and Madrid in Spain).

[1] No other country in Europe has seen a similar level of immigration during the first decade of the millennium, with 5.2 million people added to Spain's population of 40 million (Sabater and Domingo, 2012).

This raises important questions about the contribution of changes in population composition - associated with immigration and emigration - to fertility change in recessionary times.

The present study examines recent macro-level fertility trends in Italy and Spain by decomposing national fertility rates by age group, population group (citizenship/migration status) and geography. We compare the contributions of population composition to fertility rates before and after the economic downturn in 2008. First, we examine the detailed trajectories of fertility at the national scale, distinguishing the contributions of different population and age groups. Of particular interest is the extent to which declines in fertility are the result of changes in the structure of the national population following recent outmigration of certain population groups. Secondly, since national trends can hide important heterogeneity in fertility levels within countries, attention is focussed on fertility change at the regional scale (NUTS-2). Again, of particular interest is the extent to which regional changes in fertility are the consequence of changes in population composition, as well as changes in the fertility behaviour of specific age groups. The majority of past empirical studies on the decomposition of fertility trends have been conducted at the national scale, including those referring to Italy and Spain (Gabrielli et al. 2007). The present study thus extends previous work by examining not only temporal trends but also within-country variations in fertility before and after the economic crisis of 2008. Further, we use the results of the study to comment on the relationship between macro-level and micro-level analysis in population studies.

## Methods and Data

The study uses national and sub-national (NUTS-2 level[2]) data drawn from vital statistics, inter-censal estimates of population and the census in Italy and Spain. Period Total Fertility Rates (TFRs) are computed for each year between 2003 and 2013 to illustrate first national, then regional, fertility trend in both countries. These are then decomposed by (i) 5-year age bands for the fertile range (7 age groups) and (ii) citizenship/migration status (2 population groups) to identify which age and population group appears to have adjusted their fertility most since 2008. A test is then applied to determine the extent to which fertility changes over time result from changes in the composition of the population, and whether changes in population composition have become more important influences on fertility change after the economic crisis of 2008.

The methodological approach is the same for both countries (Italy and Spain) and geographical scales of analysis (national and sub-national) to ensure consistency and comparability. Total fertility rates or the sum of the age-specific fertility rates for 5-year age groups for women between 15 and 49 are used in conjunction with their relative proportions for each population group and country/region. The relative contributions of changes in fertility and changes in population structure to the overall change in national (or regional) fertility are then computed using a stepwise replacement general algorithm developed by Andreev et al. (2002). The algorithm estimates the effects of replacement for each elementary cell of one matrix by the respective cell of another matrix, and runs from young to older ages by performing all the possible sequences of replacements. The procedure assumes that the aggregate measures (age-specific fertility rates and proportions of female populations for natives and foreign-born/non-citizen by age) are obtained from similar matrices of discrete demographic data for the two populations under comparison. Our analyses thus address the general decomposition problem which is to estimate the additive contributions of the differences between the values of the factors to the overall difference between the values of the aggregate measure. In other words, the aggregate measure of interest (the sum of age-specific fertility rates by migration status) is considered as a dependent function of the factors (the proportion of females by age and migration status). This enables a numerical decomposition of

[2] NUTS-2 in Italy and Spain comprise 20 and 17 regions respectively.

change in total fertility rates over time resulting from changes in actual fertility and changes in the relative proportions of population groups (citizenship/migration status), thus capturing both the effect of direct change in fertility and the effect of compositional change over time.

## Findings

The findings show that there are marked differences in the contributions of different age and population groups to national-level fertility trends, and that these contributions also vary geographically between and within Italy and Spain. In both countries, women at older ages within the fertile age range have contributed significantly less than women at younger ages to post-2008 declines in fertility. Furthermore, in Italy, women who are non-nationals have contributed more to the recent fertility decline than women who are nationals. In the context of economic recession, this suggests that it is women how are non-nationals who have adjusted their fertility behaviour most, possibly in response to greater economic vulnerability relative to nationals. However, in contrast to this pattern, in Spain, women who are Spanish-born have contributed more to the decline in the total fertility rate than women who are foreign-born. These results for Spain would agree with research on immigrant and ethnic minority fertility, which tends to emphasise the importance of cultural factors over employment-related factors, particularly in the initial stages of settlement and if immigrants have grown up in a 'high-fertility' context (Fernández and Fogli 2006). Most importantly, we demonstrate that while national fertility decline in Italy is *not* explained by changes in the composition (age and citizenship/migration status) of the population, fertility decline in Spain is explained by changes in the composition of the national population, and actual fertility from native and foreign-born populations.

In addition, we find that the contributions of different groups in the population to sub-national fertility varies across regions within each country, and that in some areas structural changes in the composition of the population have played an important role in fertility declines. For instance, in the Italian regions of Lombardy and Lazio the decrease in actual fertility from non-nationals populations between 2009 and 2013 has been particularly significant, contributing 79% and 82% respectively to the decline in regional TFRs. In contrast, the decline in TFR in the Italian region of Campania is predominantly explained by the decrease of actual fertility from nationals during the same period, with a contribution of 91% to the change in TFR. Although the latter pattern is also found in the Spanish regions of Madrid, Catalonia and Andalusia, with greater decreases in actual fertility among Spanish-born, changes in the composition of the population in some regions (Madrid and Catalonia) also contribute to the fertility decline between 2009 and 2013. For example, changes in population composition account for 12% of the fertility decline in the Spanish region of Catalonia during this period, and this increases to 18.7% for the age group 20-29. In contrast, changes in population composition contribute little to fertility decline in Andalusia, even for the age group 20-29, and despite the contribution of compositional change to fertility increases prior to the economic crisis (2004-2008). While changes in population composition do not appear to contribute to fertility decline in Italy, the differences between the two countries allow us to speculate on the impact of migration on fertility in the context of economic recession and to suggest hypotheses for future research.

## Concluding remarks

The results of the analyses demonstrate the variable contributions of changes in population composition to fertility declines at the regional scale in two low fertility European countries. As migration is the main determinant of short-term changes in population composition within a geographical area, this indicates that moving to another region or another country must be

considered as a possible individual-level response to economic recession, along with the responses of postponing partnership and/or births, or revising fertility intentions downwards, that are currently recognised in the population studies literature. Moreover, out-migrants from regions or countries are 'lost to view' and likely to be missed by micro-level investigations of fertility change. Thus explanations of fertility change may be "rooted in models of the action and interaction of individuals, couples, and families" (Billari, 2015) but macro-level analysis can point to the contribution of those no longer observed, those whose response to economic uncertainty is to migrate. The paper concludes that the multiple contributions of migration, as well as of different sub-national population groups, to national and sub-national fertility trends needs to be better understood before causal investigations into the impact of the economic downturn on European fertility can be advanced.

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