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Systematic Change of Signs in Macro Patterns of Fertility: Understanding the Low Fertility Path of some OECD-Countries

International comparison of fertility determinants by macro data has a long tradition in the social sciences. Especially in order to understand the influence of macro-based factors such as family policy, legal institutions, labour markets, economic crises and cultural heritage on fertility studies covering several industrialised countries is essential. This leads to medium-N-studies covering 20 or 30 countries. For such country comparison the comparability can only be achieved by macro data research which allows for a generalisation of experience of many countries. This is a reason why macro data research has a strong influence on theory building, although the fertility decision can only be understood using micro-based research (Neyer/Anderson 2008).

Many researchers have analysed causes and correlations with different research designs: for different country groups, different times and a specific set of variables. Some of the few researchers, who have covered a long period of three or four decades, have found a change of signs occurring in the 1980ies for the correlation coefficients between indicators such as female labour force participation and TFR (Ahn/Mira 2002) or other modernisation indicators and the TFR (Castles 2003). This statistical phenome-

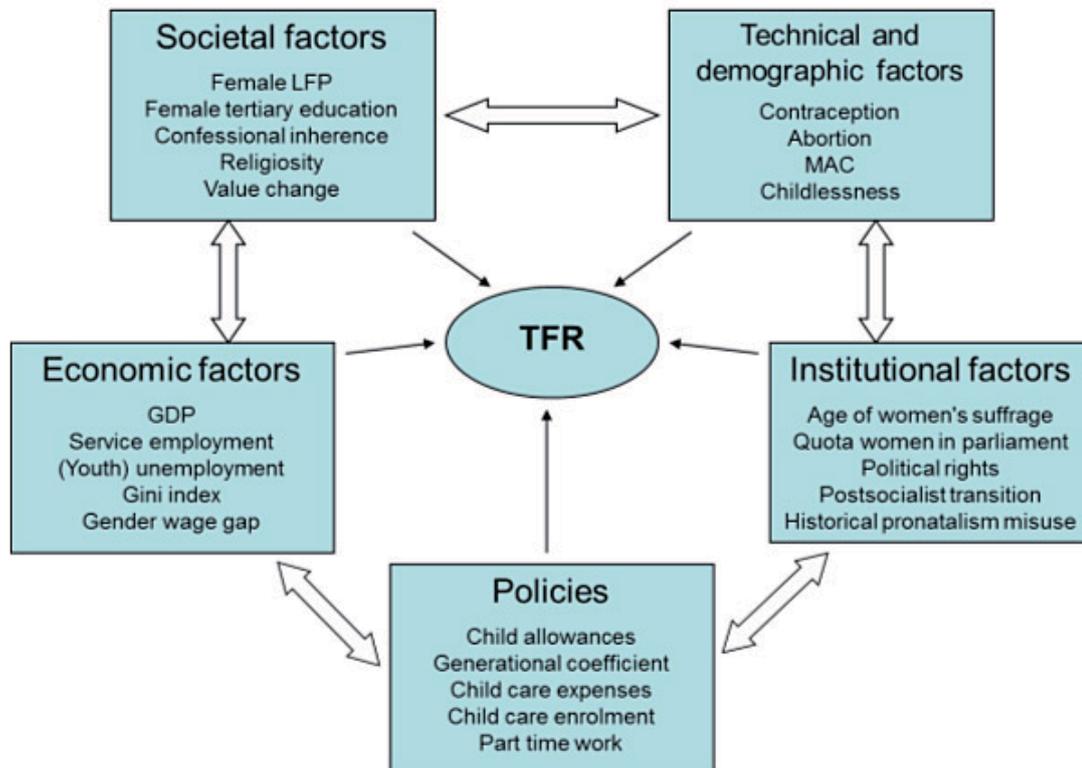
non is ignored by most studies which focus on a shorter time period. However, the understanding of this systematical change of association between fertility and some of its main determinants is crucial for macro data research of today's variation of fertility in OECD-countries. In order to understand the low fertility patterns in some countries we need to illuminate the pathway towards low fertility and compare it to the path of other OECD countries which have a TFR between 1.6 and 2.2.

There are several different approaches which have the potential to explain the occurrence of low fertility in OECD-countries: Recent extensions of the Second Demographic Transition theory (Lesthaeghe 1995, 2010) stress a specific combination of cultural and structural factors. The economic theory explains fertility decisions by changing costs and utility of children, which allows the incorporation of education, labour market and policy effects into the fertility decision (Becker 1981, Cigno 1991). A demographic explanation of low fertility rates in some countries measured by period total fertility rates focuses on the recuperation effects which bias the fertility quantum (Sobotka 2004). Additionally, approaches highlighting gender-related institutions (McDonald 2002), labour markets (Adsera 2004), or family policies (Luci/Thevenon 2011; Bujard 2012) can offer potential explanations.

While there are several sophisticated theories of today's fertility variation in OECD countries, explanations regarding the changing relationships in the 1980ies are limited. How can we explain these complex and seemingly contradictory macro patterns? Some have stressed changing preferences (Castles 2003, see also Hakim 2000), or the modernisation level (Myrskylä/Billari/Kohler 2009). This paper follows the two phase theory which explains the systematic change of macro determinants of fertility over time by the combined effects of diffusion and adaptation. Its core theses is that the second birth decline (which is the fertility part of SDT) is shaped by structural factors, which can be separated into two dimensions: Some factors amplify the diffusion of new fertility behaviour, others affect the adaptation. Both effects occur simultaneously, but in different epochs different effects shape the international variation of fertility. According to this, the effects of initiation and diffusion of modern fertility behaviour predominate in the diffusion phase occurring 1965-1985; while in the adaptation phase since 1986 the effects of political, societal and economic adaptation predominate. The explanation for each of the two phases is based on existing theories of fertility, and thereby offers an integrative approach.

The research design follows a Most Similar Cases Design (Przeworski/Teune 1971) with a preferably broad approach in both dimensions of time and space including a long time period from 1970-2010 and 28 OECD countries (which are all countries being affected by the Second Demographic Transition for most of the period). The dependent variables are the TFR and the TFR changing rate, which is lagged by 1 year compared to the independent variables. Independent variables are 50 societal, economic, technical, institutional and political determinants of fertility. Here again the paper follows a broad research design, because the Omitted Variable Bias can be misleading, especially when using a single institutional macro data collection. However, there are data limitations for instance regarding the family policy which can result

in such a bias (Gauthier 2007). Besides the commonly analysed economic, family policy and socio-demographic factors, institutional factors and cultural determinants are also covered. Figure 1 gives an overview over the variables and also first hints regarding the presumed interactions.



The data sources include the OECD Family Database, OECD Social Expenditure Database, World Value Survey, Freedom House, Inter-Parliamentary Union, Luxemburg Income Study, Barrett et al. (1982; 2001), Schmidt (2009), and United Nations.

The paper follows a multi-stage research design including correlation patterns over time; cross-sectional regressions; changing rate regressions; residual diagnostics and jack-knife analyses. The aim of a systematic combination of several regression models for different years and periods is to illuminate the interaction of cultural, economic, historic-institutional and policy determinants of fertility in long-term perspective.

The empirical part refers to the year 1986 as the peak of changing signs and demonstrates the robustness of respective effects of specific country groups. The correlation (and beta) coefficient signs change remarkably quickly for many of the fertility determinants. A key to understanding this phenomenon is the relation of female labour market participation and fertility. The family policy can be identified as the hidden hand behind these changing relations. A second cause is the economic development, which is on the one hand a variable for modernisation and on the other hand an indicator for a labour market with a low unemployment rate and a high service sector, both being associated with higher fertility rates. The latter argument goes in line with the thesis of Myrskylä, Billari, and Kohler (2009). The reason for the rapid change of

signs in the 1980ies – with significant correlations before and after – is the synchronic combination of both forces. The main determinants of fertility are the generation coefficient, child care enrolment rate, service sector, specific ethnic minorities, protestant inheritance, part time work, child allowances p.c., and historical pronatalism experiences.

The empirical results shed light on several interactions between cultural, socio-demographic, economic and political macro factors. The empirical evidence allows for a better understanding of long-term fertility developments which can serve as a basis for macro studies of shorter periods – which can rely on a broader range of new indicators. The findings of the 2 phases and the peak in 1986 are also relevant for such studies using econometric methods of pooled time series. Finally, the findings allow for an integrated theory of fertility variation in OECD countries combining elements of previously mentioned existing theories.

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