

# Family policy, fertility and labour force participation

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## Short abstract

The paper analyses the relationship between fertility and female labour force participation using register data from Norway. The approach is different from most previous studies on this topic, in that we provide an exact model of the Norwegian benefit system starting in 1987. Thus, an important contribution over most other studies, is that we are able to assess the impact of the overall benefit package as it unfolded over 25 years. We estimate hazard regressions for entering and exiting the labour force, and fertility, where regressions are done separately by parity. For every individual and for every year, we calculate the benefit, which is then included as a time varying covariate. In addition, we include individuals' predicted wage, again entering the hazard regressions as time varying covariates. Once the model is estimate, we will undertake a series of simulations to assess the importance of the policy package available with respect to the two outcomes of interest – namely fertility progression and labour force participation.

## Introduction

The relationship between fertility and labour force participation among women has received enormous interest over the last forty years. Starting from the early studies centered around the idea of Gary Becker, where it is assumed a clear division of labour or specialization among couples, the key result is that fertility will decrease as women are entering the labour market. Since then, this view has been challenged, not least because Europe has been moving away from the traditional male breadwinner paradigm, to a model of egalitarianism, where the dual earner couple is becoming the norm. As this transformation is taking place, the macro level relationship between female labour force participation and fertility has shifted from negative to instead become positive. In other words, looking across Europe today, we see that countries where female labour force participation is high, also tend to have high rates of fertility. There are several explanations on offer for these patterns. One is that trends are driven by changes in policy that enables couples, and women in particular, to combine a working career together with childbearing. Still, the exact role and importance of so called family friendly policies, is debated, and the empirical evidence is mixed. There are two (at least) reasons why this debate is still ongoing. One issue concerns the causality of policy reforms on both fertility and labour force participation. In economics there is strong emphasis on identification of the net effect, or in other terms - the unbiased effect of policy reforms on the outcome, be it fertility or labour force participation. Establishing the unbiased estimates is challenging, and typically one has to limit the analysis to very specific reforms, for which one make use of difference-in-difference estimation or instrumental variable approaches, often limiting the analysis to small sub-sample. An important drawback of this approach is that one only captures the effect of a reform which may otherwise be part of a long series of reforms taking place over time. As is often reported, the effects of any policy reforms, if significant, tend to be very small, which has lead some scholars to suggest that the effects of policies tend to be rather limited. Another approach is to compare countries, which obviously will differ in policy regime but also in terms of trends in fertility and female labour force participation. With this kind of research design, the suggestion is that indeed policy matters because there are rather large differences across countries. Again, there are drawbacks. Countries

differ not only in terms of policy - they also differ in many other respects. There are differences in social norms and other features, which may not remain constant over time, that will necessarily affect both fertility and labour supply.

### **What we do**

Our study is based on Norwegian data (see below), and is therefore focused on one particular society where we analyze the relationship between fertility and female labour force participation, but the research design is different from previous studies. What is special here is that we construct an exact model of the policy regime for which individuals have been exposed to since the late eighties. In the language of Economics, this means that we have an exact measure of couples' budget constraint. For every year and for every individual, we calculate the benefits they get from the policy regime. Since the late eighties, the benefit system has improved dramatically both in terms of time availability (for example extensions of maternity leave) and the benefits in terms of financial support. Yet, our data consists of individuals and couples of different ages, and who consequently differ widely in their life course. Using this variation, we are able to assess, not only the impact of single policy reforms, but rather the impact of the *policy package*, on fertility and labour force participation (and the combination of the two), as it was expanded over the last 25 years. The key benefit of this approach is that we are able to assess the impact of the complete benefit package on the outcomes.

### **Data**

The analysis is based on longitudinal register data on fertility, union status (marriage and cohabitation), female employment status, education and income from 1987 onwards. We cannot go back further than 1987 because there is no information on cohabitation before then. By linking information from various registers (using a unique identification key), we obtain a complete event history of births and entries into and exits out of employment together with time-varying information on important covariates (union status, education, income) of all females aged 19 to (max) 49 years. Moreover, we construct a time series of predicted wages based on estimates from a wage equation (see Methods below). The wage rate is calculated by dividing annual earnings by (annual) actual hours of work. Information of actual working hours are collected from the Norwegian Labour Force Survey, since the register data on employment only record working hours in broad intervals. Explanatory variables in the wage equation are education (measured in years), experience (defined as age minus schooling minus age at school start) and experience squared. The wage equation is estimated separately for each year during the period 1987-2010, and we consider selection effects in the estimation procedure. Using predicted wages in the hazard function, and not the female's actual wage income, reflects that the opportunity cost of having a child is positive and not zero even for females not participating in paid work. Finally we compute the value of the total family policy package each year and incorporate this as time-dependent covariate in the analysis.

### **Methods**

The method is based on hazard regression techniques. More specifically, we estimate hazard models of fertility events and labour market transitions, which will be estimated simultaneously as a means to control for systematic (but unobserved) traits of the respondents which may drive both processes. Wages will necessarily be endogenous with respect to both fertility and labour supply. Consequently, we use predicted wages estimated from the wage (rate) equation, which are included as time varying variables in the hazard regressions. In addition, the benefits derived from the benefit system are included as explanatory variables. Once estimated, we will use simulation as a means for doing sensitivity analysis. That is, with the model in

place we can first assess to what extent the model predicts actual behaviour. But more than this, we can also predict fertility and labour supply trends under different policy scenarios. One can for instance, simulate out the outcomes of interest (in a certain sense the dependent variables) if none of the policies were actually implemented. Or, one can make assessments of how outcomes would differ if certain aspects of the policies were not implemented.