

# Fertility, Female Labor Force Participation and the Multiplier Effect

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## Abstract

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In this paper we examine the effect of fertility on female labor supply. Using data from the Demographic and Health Surveys, we estimate the effect of fertility on female labor market participation at various levels of aggregation: household, cluster, regional and country level. At the aggregate level the rising employment of some women may change social norms regarding female employment and encourage other women to work, creating a social multiplier effect in labor supply. By estimating at the household, regional and national levels, we can identify both the household level direct effect on female labor supply and this social multiplier effect. To identify the causal effect of reproductive health and behavior on female labor supply we use variation in abortion and contraceptive laws across countries and time as an instrument for fertility.

## Extended Abstract

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In this paper we examine the effect of fertility on female labor supply. Using data from the Demographic and Health Surveys, we estimate the effect of fertility on female labor market participation at various levels of aggregation: household, cluster, regional and country level. The effect of fertility on female labor force participation may be larger at the aggregate level than at the household level as social multiplier may take effect. At the household level lower fertility may reduce the time needed for child care and encourage women to enter paid employment. We expect to see effects both in the short run due to the reduced time taken to care for infants, and in the long run as the increase of labor force experience raises the woman's attractiveness to employers. At the aggregate level the rising employment of some women may change social norms regarding female employment and encourage other women to work, creating a social multiplier effect in labor supply (Alesina, Glaeser et al. (2005), Maurin and Moschion (2006)). By estimating at the household, regional and national levels, we can identify both the household level direct effect on female labor supply and this social multiplier effect. The aggregate relationship at the country level is very similar to our earlier work using macroeconomic data (Bloom, Canning et al. (2007)). One advantage of constructing the group averages from individual data, as we propose here, is that we are not limited to one measure of current fertility. We can define groups as cohorts and look at the effects of laws over the fertile life and the timing of these effects on labor supply.

We expect a positive multiplier making the effect at the aggregate level larger than the individual effect. This may be an expectation effect; lower expected fertility

may make labor supply more attractive for young women by raising their expected long term employment levels and the returns to early work experience. Furthermore, hiring young women becomes more attractive due to lower expected turnover costs. There is also the possibility that changes in female labor supply change social norms in employment, or lower the social benefits of staying at home with children when one has fewer friends in a similar position.

We construct a theoretical model of labor supply and fertility emphasizing the joint nature of the decisions. By using laws on abortion and contraception as instruments, we will be able to identify causal effect of fertility on labor supply.

Our data on fertility choice come from Demographic and Health Surveys (DHS); we use 206 surveys from 65 countries, with multiple surveys from each country in different years between 1988 and 2005. We focus on how each woman's education, her husband's education, the household's socioeconomic status, and child mortality experience affect her completed fertility. We consider only women aged 45-49 years. These women have usually completed their fertility, so we do not have to consider timing and tempo effects. In total we have 118,629 such women in our sample.

We estimate the effect of fertility on female labor market participation using a probit model. Individuals in the same survey group will have spent varying portions of their fertile years under different legal arrangements which will yield various fertility effects. We exploit differences in the timing of legal changes across countries to identify the fertility effect. Time and country dummies will be used to control for unobserved cultural variables that may be correlated with abortion and contraception laws. We experiment with the use of country specific time trends to capture long term trends that may also be correlated with legal changes.

To identify the causal effect of reproductive health and behavior on other variables of interest, good instruments or natural experiments are needed. In our recent paper on fertility and female labor force participation behavior (Bloom et al., 2007), we use variation in abortion laws across countries and time as exogenous shocks to identify our main equation of interest. We compiled this abortion law database using classifications from the United Nations (United Nations Population Division, 2002); in a given year in a given country, abortion may or may not be available for reasons of physical health of the mother, mental health of the mother, life threatening, rape, fetal impairment, economic hardship, or request. At the country level, we find that more liberal abortion laws were associated with lower fertility. Using the country level abortion laws, the effect on household fertility can be tested.

In addition, we construct a dataset detailing variation in contraceptive laws around the world and utilize this as an instrument for fertility in the female labor supply equation. Farley and Samuel (1981) compiled a large database regarding the sale or distribution, advertisement, importation, manufacture, and transportation, of the pill, IUD, and condoms was constructed. We will update this database by following the current

legislative citation in each country using the Annual Review of Population Law as a base and the Laws Regulating Contraceptive Supply, Demand and Procurement (Lee, 1972).

Using the precise timing of legal changes, we can trace out the effect of the availability of contraception and abortion on fertility. We can then estimate the effect of these fertility changes on economic behavior. The argument that we can use legal changes as an instrument to identify causality depends on the legal changes being infrequent discrete jumps and their being large fertility responses to legal changes immediately after their introduction. We have evidence that this is exactly what occurs. If we assume that the social forces that influence legal reforms move continuously, the exact timing of the discrete jumps in legislation can be regarded as random. If the social forces underlying fertility changes also evolve continuously, jumps in fertility behavior immediately following legal changes can be thought of as exogenous variation in fertility due to precise timing of legal changes. This is essentially the argument behind a regression discontinuity approach to estimating causal effects. While it is possible that long term trends in legislation and fertility behavior might move together due to common changes in social norms, without being causally related, it is more difficult to argue that large jumps in fertility behavior just after changes legislation are due to some hidden cause.

## References

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