Linkages between Fertility and Employment of Women in Turkey: Event History Analyses using TDHS-2008

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1. INTRODUCTION

The relationship between fertility behaviors and labor force participation of females is usually presumed to be negative in the literature, especially for developed countries. However, the evidence from developing countries indicated a less clear picture, since fertility declines in developing countries have rather been slow and fertility transition in these countries is still underway (Hossain & Tisdell, 2005).

In Turkey, few studies provided useful insights on the relationship between fertility rate and female labor force participation. Farooq and Tuncer (1974) mainly focused on the relationship between fertility and socio-economic development, where the association between fertility and employment was questioned implicitly. Stycos and Weller (1967)'s study focused only on agricultural female labor force participation. In spite of the fact that Isvan (1991) investigated the *compatibility* between mothering and working, her methodology was a descriptive one. In Turkey, more advanced studies in this field appeared in 2000s: Şengül and Kıral (2006) used instrumental variables estimation method, measuring only the impact of number of children on probability of entering labor force, and not vice versa. Sevinç (2011) analyzed the effect of fertility on female labor supply using sex composition of children and twins at second birth, separately as instruments. Sevinç's study improved the approach of Şengül and Kıral (2006) and data used in these two studies differed from each other. Finally Abbasoglu (2009) used top-down macro approach to analyze causality between fertility and female labor force participation in Turkey.

As Matysiak (2011) mentions, although the main research question refers to the macro level, studies at the macro-level have largely descriptive character and do not explain the complex mechanisms underlying childbearing and women's employment. Hence micro-level analyses are needed to complete the puzzle.

The main aim of this study is to understand the complex interdependencies between childbearing and women's employment career in Turkey by using micro-level approach. Hence the objectives of this study can be stated as (i) to measure the effect of employment on fertility, (ii) to measure the effect of fertility on employment, and (iii) to investigate what differences exist as regards the linkages between fertility and employment of women belonging to different sub-groups, mainly groups according to regions and urban/rural type of residence in Turkey.

2. CONCEPTUAL FRAMEWORK

The relationship between fertility and female labor force participation (LFP) has, explicitly or implicitly, been of interest in the literature of economic demography. Studies on this linkage are based on a thorough and old-rooted theoretical background. The linkage between female LFP and fertility has become of interest initially when the reasons and/or determinants of fertility decline were the main concern, and working of mothers was held responsible for being associated with fertility decline among other factors. Theoretically the correlation between labor participation of women and their childbearing was expected to be negative observing the past increasing rates of labor force participation of women and declining fertility in industrialized countries in 1980s (Matysiak, 2011; Matysiak & Vignoli, 2006). Becker mentioned increasing opportunity costs of having children as a result of women's increasing education and attachment to the labor market as responsible for the decline of fertility (*ibid*).

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A review of the literature based on cross-sectional data suggests that although the inverse relationship between female labor force status and fertility was pronounced in economically developed countries in the 1980s, it tended to be weak or absent in the developing or less developed areas (Concepcion, 1974). The empirical evidence indicates that the negative relationship between fertility and employment has weakened since mid-1980s in developed countries. Changes in the institutional context weakening the incompatibility between worker and mother roles have been considered to be the reason for the change in the sign of this relationship. In their cross-sectional analysis, Ahn and Mira (2002) showed that the correlation between fertility and employment of women across developed countries was negative and strongly significant during the 1970's and up to the early 1980's. However, by the late 1980's the correlation had become positive and equally significant. The relationship becoming positive since 1990s has been supported by a study of Del Boca et al (2003) as well for Western European countries. However according to Kögel (2004) the negative association between fertility and female employment did not demonstrate a change in sign but weakened after about 1985. De la Rica and Ferrero (2003) have also confirmed this negative relationship for Spain for the period 1994-1998. Clark and Withers (2009) also note that in the US, many women choose to stay in the labor force during childbearing and are absent for only a month or two indicating a weakening negative relationship.

Another important and popular debate about the association between fertility and women's employment has been on the causality relationship between the two. In 1977, Weller (1977) had listed four possibilities regarding the way of causality in this relationship: (i) Family size affects labor force participation; (ii) labor force participation affects family size; (iii) both family size and labor force participation affect each other; and (iv) the observed negative relationship is spurious and is caused by common antecedents of both variables. The role incompatibility hypothesis, on the other hand, does not suggest causality in one direction rather than the other (Lehrer & Nerlove, 1986), but only the negative association. In 1963, Mincer wrote in support of the hypothesis of common antecedents suggested by the fourth classification of Weller (*ibid*). This approach has been approved recently by Engelhardt et al (2004) and Apps and Rees (2004) at the macro level. However specifying non-spuriousness and the way of causality are also important in explaining the relationship according to Budig (2003) as she argues in her study on the US.

In Turkey, the literature on the relationship between fertility and labor force participation of women is not large: First, Farooq and Tuncer (1974) analyzed the relationship between fertility, and economic and social development, where the relationship between fertility and female LFP was analyzed implicitly using data from Censuses. They found that the effect of female non-agricultural employment on fertility was low based on their time series analysis for the 1935-1965 period. Changing attitudes and tastes was shown to be the explanation for this weak association rather than the association between education and opportunity cost of female employment. Behar (1995) also mentioned the importance of increasing women's status in declining fertility in Turkey. First study focusing mainly on the relationship between worker and mother roles in Turkey was Stycos and Weller (1967)'s. They had interviews of 2,700 married couples in 240 villages in Turkey. They found no significant relationship between fertility and female employment in Turkey and explained this finding by high ratio of participation of women in non-traditional activities. It should be noted that this study was on rural areas and excluded urban areas. Following Stycos and Weller, Isvan (1991) analyzed why the inverse relationship between fertility and employment was not observed in Turkey descriptively using data from 1968 Survey on Family Structure and Population Problems in Turkey. According to Isvan, the reason was the power structure of the household. This study emphasized the effect of norms on this relationship. In the last decade, three studies appear on directly the relationship between fertility and childbearing in Turkey. First is Şengül and Kıral (2006)'s study on analyzing the effect of decisions of fertility (measured as total number of children and number of children younger than 7 years old) on female labor force participation using sex of first child as the instrument. They used data from Household Labor Force Survey from the first quarter of 2003. They found that children, especially presence of young children decrease the probability of working of women in Turkey. Second study is authored by Sevinç (2011), which analyzed the effect of fertility on female labor supply using sex composition of children and twins at second birth, separately as instruments. Sevinç improved the approach studied by Şengül and Kıral (2006)'s study and uses different data. Sevinç (2011) analyzed effects of sex of first, second and third children (female avoidance or male preference), and twin birth as proportion of twin births in

total births (due to sample size restrictions) on fertility and hence labor force participation of women. Data used in this study come from TDHS surveys carried out by HUIPS of 1993, 1998 and 2003. Data were pooled due to high sample size needed to have sufficient number of twin birth observations. Ever-married women aged 20-44, and who live in urban areas constituted the sample of data used for analyses. Sevinç (2012) found that female avoidance instrument gave mixed results (no causal relationship), but twin-birth instrument implied negative and strong(er than OLS estimates suggest) causal effect of fertility on labor supply of women. He explained these contradictory findings by "heterogeneity of the effects across the subpopulations". Since twin per birth instrument is equally likely to affect all women, the 2SLS estimates using this instrumental variable could be used to interpret the causal linkage overall: On average, labor supply of women was affected negatively by more children in Turkey. Finally Abbasoglu (2009) used macro-level data to investigate the "causal" link between female LFP and fertility in Turkey covering the period 1968 to 2006 using Johansen-Juselius approach. She investigated the existence of long-run relationship as well as the causal link between female LFP and fertility in Turkey. She found that there was an inverse long-run and a negative feedback relationship between fertility and women's employment in a multivariate setting composed of fertility, female labor force participation, infant mortality, and female illiteracy.

3. DATA AND METHODOLOGY

Data

This study makes of data from 2008 Turkey Demographic and Health Survey (TDHS-2008), which is the most recent survey among DHS series in Turkey. Histories of specific events have been collected in these series of surveys traditionally on birth, marriage and migration of women. Differently from previous TDHSs, in 2008 employment histories of women were collected. This study will mostly make use of this rich retrospective information on ever-married women. TDHS-2008 is a household survey with weighted, multistage, stratified cluster designs. TDHS-2008 covered 10,525 completed household interviews with a response rate of 88.4 percent, and 7,405 completed individual interviews with ever-married women who were 15-49 years old with a response rate of 92.5 percent.

Method

Using event history analyses, this study will investigate determinants of entering employment given non-employment, determinants of exiting employment given employment, and determinants of becoming pregnant given non-pregnancy, separately to analyze the linkages between women's employment and fertility decisions using event history analysis taking into account timing of events.

The methodology is mainly hazard modeling where piece-wise constant exponential models are applied.

The model is:

$$h(t|x_j) = h_0(t)\exp(x_j\beta_x)$$

where $h_0(t)$ is the baseline hazard function, x_j *is the vector of control variables and* β_x is the corresponding vector of the regression parameters that shows the effects of the variables. Three models will be estimated where determinants of exiting employment, entering employment and conception are analyzed. The conception models involve separate models depending on the conception order.

The fertility models analyze the first conception risk since start of first marriage, second conception risk since first birth, third conception risk since second birth, and finally higher order conception risks after third birth. Date of pregnancy is measured as 7 months before the date of (live) birth. The baseline is the duration since first marriage/first birth/second birth or third birth depending on the model. Time-fixed variables are age at start of the risk of conception, calendar year at the onset of the risk, mother tongue, parental education and employment status before marriage. Time-varying covariates are education, urban/rural place of residence, region, marital status and employment status. Expanded models where

employment category is expanded are also estimated based on job characteristics such as sector, public/private, wage/non-wage status and social security. The final model includes conception order as a covariate as well.

Employment models include cumulative measures such as number of years of work experience and number of living children (by their age). The models will mainly include the covariates stated above.

4. PRELIMINARY FINDINGS

This study primarily tests for the hypothesis of role incompatibility between working and mothering roles of women in Turkey. In urban and Western regions, where non-agricultural sectors are dominant, we expect to find a more pronounced conflict/incompatibility between fertility and employment. However in rural areas and Eastern part of Turkey we expect to find a weak relationship between childbearing and employment of women.

Our preliminary findings based on fertility models indicate that conception risks are related to employment status of women. We find higher risks of conception for non-employed women compared to the employed supporting the role incompatibility hypothesis. Working in agriculture and/or working without social security is associated with higher risks of conceptions according to the results of multivariate analyses. Regarding the employment models, as descriptive findings Kaplan-Meier survival estimates indicate that marriage and kids motivate employed women to continue their employment, but discourage unemployed women to enter the labor market. Carrying out multivariate analyses in the employment event history analyses are further steps of our analyses.

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