

## ECONOMIC INSECURITY AND FERTILITY INTENTIONS: THE CASE OF ITALY

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We aim to provide an explanation for the combination of the relatively low female participation rates and lowest-low fertility levels in Italy. Starting from the assumption that childbearing decisions also depend on uncertainty about future employment, income, and wealth, we empirically assess how fertility intentions are affected by job instability, which may severely compromise the employment stability of workers, and economic disadvantages in terms of household income and wealth, which may imply insufficient means to deal with potential adverse future events, thereby generating in the household feelings of anxiety and economic insecurity. We show that the instability of women's work status (i.e., the holding of occasional and precarious jobs) significantly discourages the decision to attempt having a first child. Low levels of household wealth significantly and positively influence the decision to postpone attempting a first child. The chances of further childbirth are significantly and negatively influenced by household income insecurity.

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### 1. INTRODUCTION

It is a widely held view that the longer a woman delays childbearing, the lower her completed fertility (Bumpass and Mburugu, 1977; Bumpass *et al.*, 1978; Marini and Hodsdon, 1981; Billari and Kohler, 2002). This phenomenon, referred to as a postponement effect, has been attributed to the improvement in women's levels of education and employment, to a delay in family formation (Kohler *et al.*,

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2002; D’Addio and Mira D’Ercole, 2005), and to a major change in the values shared by younger women about their role within the family and the labor market (McDonald, 2000a; Hakim, 2003; Kertzer *et al.*, 2009).

As an explanation for the Italian fertility puzzle, i.e. the coexistence of low female participation rates with lowest–low fertility levels, previous empirical literature has focused on the role of social and cultural factors in childbearing decisions (Micheli, 2000; Kertzer *et al.*, 2009; Fent *et al.*, 2011), and on institutional and policy differences in comparison with Nordic countries—where more generous protection systems have been implemented to reconcile motherhood with work, and childcare services and part-time jobs have become increasingly available (Engelhardt and Prskawetz, 2004; Del Boca and Sauer, 2009). Additionally, the age of leaving the parental home is strongly related to fertility: a postponement in household formation leads to a decrease in the number of children (Kohler *et al.*, 2002; Becker *et al.*, 2010).

More importantly, some scholars have highlighted the fact that in the 1970s there was a significant and positive correlation between female participation in the labor force and the postponement of childbearing across OECD countries, which in turn led to a fall in fertility rates (Ahn and Mira, 2002; Adsera, 2004), mainly due to the increase in women’s levels of education and employment. The recent literature has highlighted the role of “flexible” employment on the postponement of childbearing (McDonald, 2000a; Adsera, 2004; Blossfeld *et al.*, 2005; de la Rica and Iza, 2005; Kreyenfeld, 2005; Scherer, 2009; Hondroyannis, 2010; Barbieri, 2011; Kreyenfeld *et al.*, 2012). Economic uncertainty and insecurity are also identified as a key factor behind the fertility delay (Kreyenfeld, 2010), leading to a drop in fertility rates (Kohler *et al.*, 2002). The link between insecurity and fertility may depend on two factors: “the irreversibility associated with the fertility decision, and the option to postpone childbearing decision for a later time. In the presence of irreversibilities, the ability to postpone a decision till the resolution of uncertainty is valuable. It allows the agent to avoid making irreversible expenditure in bad states of the world” (Ranjan, 1999, p. 28).

“Economic insecurity arises from the exposure of individuals, communities, and countries to adverse events, and from their inability to cope with and recover from the costly consequences of those events” (UNDESA, 2008). Economic insecurity is based on the anxiety produced by a lack of economic safety, i.e. the inability to obtain protection against potential economic losses (Osberg, 1998), and could potentially affect all citizens (Osberg, 2010); it is one of the dimensions that shape people’s well-being and makes it harder for families to invest in education and housing (Stiglitz *et al.*, 2009). Insecurity is shaped by many factors, requiring the use of a variety of approaches to its measurement. Some authors do not distinguish between different types of misfortunes and model the individual’s feeling of insecurity as a function of current wealth and of variations in wealth experienced in the past (Bossert and D’Ambrosio, 2013). The human-rights perspective, in comparison, identifies four key objective economic risks: unemployment, sickness, widowhood, and old age (Berloffia and Modena, 2011, 2012; Osberg and Sharpe, 2011). Three major sources of risks (income loss, large out-of-pocket medical spending, and insufficiency of liquid financial wealth) are identified by the U.S. Economic Security Index (ESI).

More research is necessary to gain better understanding of the relationship between economic insecurity and fertility, with special attention paid to the consequences of job instability on family formation (Barbieri and Scherer, 2009; Vignoli *et al.*, 2012). This study contributes to the literature in three substantive ways. First, it assesses the role that economic disadvantages—lack of stable employment and low levels of household income and wealth—may play on couples' fertility intentions in Italy. We argue that disadvantaged couples may postpone or decide not to have a first child due to their anxiety about the future. Second, we focus on childbearing *intentions*, instead of accounting solely for actual fertility, to evaluate the determinants of the *decision* to have (more) children. Finally, starting from the assumption that childbearing decisions are in most cases taken at the couple level, we analyze the role of a number of socio-economic traits of *both* components of Italian couples, instead of focusing solely on women.

The instability of women's work status, which in turn may be considered a major cause of economic uncertainty, has been neglected in the literature. Job and employment insecurity or, more generally, workers' "precariousness,"<sup>1</sup> are commonly considered as more an obvious and somewhat desirable side effect of flexibility than a potentially crucial determinant of workers' well-being. This view can hardly be generalized to Italy, where precarious workers are characterized by low income levels, inadequate social protection, and discontinuous careers (Barbieri and Scherer, 2005; Sabatini, 2008).

We build the following measures of insecurity: (1) the lack of a high quality job, as indicated by the fact of being precariously employed; (2) a condition of economic disadvantage in terms of a low level of household income; and (3) a low level of household wealth. These circumstances may imply insufficient means to deal with potential adverse future events, thereby generating feelings of anxiety and economic insecurity in the household.

Based on a pooled cross-section of Italian households, sampled between 2002 and 2008 in the Survey on Household Income and Wealth (SHIW), we find that the instability of women's work status significantly discourages childbearing intentions. Household wealth is found to be significantly and positively correlated with the decision to plan the birth of a first child. The chances of further childbirth intentions are significantly reduced by low levels of household income. We find that having a temporary labor contract matters only for females whose household incomes are medium/high, while it has no effect for low-income couples.

We also test the endogeneity of female labor precariousness and household income insecurity; the results do not support the endogeneity of economic insecurity dimensions.

The paper is organized as follows. The association between labor market outcomes and fertility intentions is reviewed in Section 2; Section 3 discusses job instability and employment insecurity in the Italian labor market. Sections 4 and

<sup>1</sup>In its "Classification of Status in Employment," the International Labour Organization (ILO) defines "precarious" workers as: (a) workers whose contract of employment leads to the classification of the incumbent as belonging to the groups of "casual workers"; (b) "short-term workers" or "seasonal workers"; or (c) workers whose contract of employment will allow the employing enterprise or person to terminate the contract at short notice.

5 describe our data and methodology. The main results and implications are presented in Section 6. Section 7 concludes.

## 2. LABOR MARKET OUTCOMES AND FERTILITY

Early theoretical studies on the determinants of fertility suggested that highly educated (potential) mothers tend to substitute the number of children with “child quality” (Becker and Lewis, 1973).<sup>2</sup> According to this approach, since both “production” and bringing up children are time intensive, an increase in wage rates may induce a negative substitution effect, reducing the demand for children (see, for instance, Mincer, 1963; Becker, 1965; Willis, 1973; Becker, 1981; Hotz *et al.*, 1997). In this framework, higher earnings discourage childbearing by raising the opportunity cost of the time distracted from work to rear children. For men, the income effect tends to dominate since they spend less time on bringing up children, though the magnitude of these effects will vary across countries and birth parity (Willis, 1973; Butz and Ward, 1979). These theoretical predictions have found support in early empirical studies claiming that the increasing returns to schooling (especially for women) act as a factor in encouraging women’s education relative to men’s and driving the rise in women’s labor market attachment (Schultz, 2001). The effect of women’s labor market participation on fertility decisions may also depend on the availability of external childcare services (Ermisch, 1989): women with high earnings may have more children, because they are better able to pay these expenses; those with low income are less likely to be able to afford childcare services, but may still have higher fertility due to the lower opportunity cost of childbearing.

Over the past two decades, research has shifted toward investigating the timing of births rather than completed fertility (Heckman and Walker, 1990). Empirical studies have shown that highly educated women with better positions in the labor market have births at older ages (Gustafsson and Wetzels, 2000; Prioux, 2004; Amuedo-Dorantes and Kimmel, 2005; Modena and Sabatini, 2012). A mother’s age at the birth of the first child can be seen as the result of a trade-off between investment in human capital and career planning, on the one hand, and motherhood on the other (Gustafsson, 2001). The effect of income on the timing and the number of births may follow different paths: Gustafsson (2005) suggests that for young Swedes, any additional year of education affects fertility through a delay in the formation of a stable couple, rather than by delaying parenthood once the couple is formed. Amuedo-Dorantes and Kimmel (2005) argue that college-educated mothers can profit from postponing motherhood because they are in a position to negotiate a family-friendly work environment with flexible work schedules.

In the past two decades, labor market institutions have been revised in some countries to make it easier for women to combine career and family, causing a change in the relationship between labor market outcomes and fertility at the

<sup>2</sup>The concept of “child quality” has been used to synthesize different factors of children’s well-being, such as, for example, the time, effort, and money that parents devote to their care and development, their likelihood of not dropping out of school, and the level of parents’ subjective well-being—which in turn has relevant effects on children’s psychological development. Willis (1973), for example, defines child quality as a function of the resources parents devote to each child.

macro level. The correlation between female participation in the labor force and fertility, which was negative since the 1970s, turned positive at the end of the 1980s across OECD countries (Ahn and Mira, 2002; Morgan, 2003; Billari and Kohler, 2004; Engelhardt and Prskawetz, 2004). The shift has been explained as resulting from the increasing availability of childcare services and part-time jobs, especially in Nordic countries (Del Boca and Locatelli, 2006; Del Boca *et al.*, 2007). This evidence is confirmed by recent findings for a panel of Latin American countries (Aguero and Marks, 2008). Northern Italian regions are experiencing the same trend, even if they still lag behind the European average (Rondinelli and Zizza, 2011).

In Italy, the probability of a first child has remained almost stable (Dalla Zuanna, 2004), so the emergence of lowest–low fertility is related to a decrease in the progression to the second, third, and subsequent children. Nevertheless, the personal ideal family size for around 60 percent of Italian women aged 20–34 is two children; one quarter has a preference for a large family (Goldstein *et al.*, 2003). The mean ideal family size has decreased in Italy from 2.11 in 2001 to 1.9 in 2011 for women aged 25–39 (Testa, 2007, 2012); the difference between ideal and actual family size is larger among men than among women (Testa, 2012).

### 3. JOB INSTABILITY AND EMPLOYMENT INSECURITY IN ITALY

Job instability does not necessarily imply employment insecurity. The former refers to the probability of breaking the contractual relationship between the worker and the employer, while the latter is related to the possibility of remaining jobless for an extended period (Stiglitz *et al.*, 2009). Similarly, the recent literature differentiates between flexibility—related to the type of contract, either permanent or temporary—and insecurity with respect to employment and income (Origo and Pagani, 2009): flexible employment is not necessarily in conflict with employment security (Madsen, 2004; Wilthagen and Tros, 2004).

In Nordic countries, where appropriate labor market institutions are in place, workers are more likely to continuously have employment opportunities, when labor markets are booming and unemployment is very low. In this context, at least in business cycle upswings, temporary workers may feel “employment secure” even if they have little security in any given job (since replacement jobs are relatively easily available). A recent strand of the literature has investigated the trade-off between flexibility and security at the micro level. For example, Origo and Pagani (2009) point out that temporary workers do not necessarily feel insecure if they perceive that the risk of unemployment is low, and if, in case of unemployment, they can count on generous unemployment benefits and they are likely to find a new job rapidly. However, in times of crisis, when unemployment is high, generous labor market policies cannot compensate for the lack of a secure job in workers’ feelings about their insecurity. Drawing on data from the 2008/09 wave of the European Social Survey in 22 countries, Chung and van Oorschot (2011) show that, although some institutional variables such as labor market policies do seem to explain workers’ employment insecurity to some extent, when other context

variables are taken into account, they lose their significance. “It is rather the economic and labor market situations of the country that explain why an individual feels insecure” (p. 297).

In countries characterized by a tight employment protection legislation for permanent workers, flexibilization “at the margin,” and dual labor markets, flexible and atypical contracts generally entail insecurity. This is the case in Mediterranean countries, where job insecurity in many cases leads to employment insecurity irrespective of the business cycle and unemployment levels. In Italy, the 1990s labor market reforms introduced flexibility only for marginal groups of workers, increasing the dualism between younger and older labor market entry cohorts. While the insiders are largely unaffected by labor market adjustments, young people are more likely to be employed with new forms of flexible and atypical contracts.<sup>3</sup> In 2011, only 3 new contracts out of 10 were permanent (33.6 percent in 2010; Bank of Italy, 2012); the proportion of employees on temporary contracts was 50 percent among those aged 15–24 years (46.7 percent in 2010), and 12.7 percent among those aged 25–49 (12 percent in 2010; Eurostat, Labor Force Survey data).

Atypical contracts are characterized by low income levels, low social protection, and discontinuous careers (Cipollone, 2001; Barbieri, 2011). Precarious workers are not supported by the social protection system, because of the lack of wage subsidies for the low-paid and very limited (or non-existent) unemployment benefits (Bettio and Villa, 1998; Brandolini *et al.*, 2007). This situation increases the probability of being poor for households with members employed in unstable jobs: in 2006 the incidence of poverty for households with only atypical workers was about 47 percent (Bank of Italy, 2009).<sup>4</sup>

Temporary contracts may represent entrapment in instability and social exclusion. Owing to a lack of training and greater flexibility (in terms of both time and mobility), workers may find it very difficult to upgrade their skills and develop new contacts (Guadalupe, 2003; Routledge and von Amsberg, 2003; Menendez *et al.*, 2007; Kim *et al.*, 2008; Amuedo-Dorantes and Serrano-Padial, 2010). Moreover, there may be a stigma associated with precarious or second rate jobs: “not having been selected for the primary labour market is interpreted as a negative signal by potential future employers” (Barbieri and Scherer, 2009, p. 678). After a certain period of instability, individuals in precarious jobs face the risk of definitive exclusion from “standard” employment (Booth *et al.*, 2002; Dolado *et al.*, 2002; D’Addio and Rosholm, 2005). Young people and women are more exposed to this risk (Barbieri and Scherer, 2005; Brandolini *et al.*, 2007). Furthermore, better educated workers and those with higher occupational qualifications are less likely to be trapped in the secondary, sub-protected labor market (Barbieri, 2009). This scenario is further exacerbated by Italy’s recession, with the total unemployment

<sup>3</sup>Contracts used for the so called *parasubordinati* and *interinali*. Most *parasubordinati* workers are similar to fixed-term employees except that they are paid less and receive lower social security contributions, and do not benefit from employment protection legislation (Brandolini *et al.*, 2007). *Interinali* are individuals who work through a temporary employment agency.

<sup>4</sup>Amuedo-Dorantes and Serrano-Padial (2010) find a similar result for Spain and suggest that fixed-term contracts are linked to a greater poverty exposure among women and older men relative to open-ended contracts.

rate at 11.7 percent in January 2013 (2.1 percentage points higher compared to January 2012) and the youth unemployment rate (15–24) at 38.7 percent (6.4 percentage points higher with respect to 12 months previously; Istat, 2013).

Italy also constitutes an interesting case from a gender perspective: “flexible type” reforms have exacerbated the labor market gender inequality. The occupational gender gap, although diminishing, is still relatively wide: in 2011, the female employment rate was 46.5 percent, compared with 67.5 percent for men. The percentage of temporary employees was 53.2 percent (47.6 percent) for women (men) aged 15–24 years, and 14.5 percent (11.3 percent) for those aged 25–49 (Eurostat, Labor Force Survey data). Women are more likely to be trapped in job precariousness, and they are exposed to the risk of unemployment in the case of childbearing. In 2012, almost one working mother every four was no longer having a job two years after childbirth (22.7 percent; 18.4 percent in 2005; Bratti *et al.*, 2005; Istat, 2012). Among those who had stopped working, around half declared that they had lost their jobs: in particular, 23.8 percent of the labor-market exits were due to dismissal and 19.6 percent to job loss (expiry of temporary contracts, closure of the firm, etc.; Istat, 2012). In Italy, the institutional support for working women is modest, in particular for temporary employees: childcare welfare systems and parental benefits are designed to meet the needs of permanent workers, leaving women with precarious positions unprotected in the case of childbirth (Ferrera and Gualmini, 2004; Ferrera, 2005; Vignoli *et al.*, 2012). Therefore, the risk associated with “flexible” employment is not equally distributed between men and women, nor between women with different labor contracts.

We argue that, in Italy, job instability is likely to lead to employment instability and may thus generate feelings of anxiety and economic insecurity in workers. Furthermore, on average, job instability should not be considered the result of a spontaneous choice—due, for example, to the workers’ high risk propensity or to a preference for frequent changes in one’s professional life. Precarious employment is such an unfavorable condition that very few women would deliberately choose it. It seems much more reasonable to consider precariousness as a situation of disadvantage to which workers have to adapt only if there are no alternatives.

To summarize, the type of contract may have an effect on fertility intentions *per se*, since temporary contracts are associated in Italy with low job quality, low income levels, and low protection for pregnancies. Given the stigma associated with low prestige jobs, and the risks of deterioration of workers’ human and relational capital, precariousness may be a trap in instability entailing high levels of employment and income insecurity, which may have further negative implications for childbearing.

#### 4. DATA DESCRIPTION

To analyze the effect of economic insecurity on family decisions, we used the SHIW conducted every two years by the Bank of Italy—waves 2002–08. The sample includes about 8,000 households per year, and it is representative of the entire Italian population (Bank of Italy, 2010). Couples in which the woman is under 46 years of age were asked if they were planning to have (more) children in

the future. In the 2002 survey, possible answers were “yes,” “no,” “don’t know.” In the subsequent waves the set of possible answers was extended to include: “yes,” “not now,” “we will think about it later,” “no we do not want any more children,” “we are happy with the number of children that we have,” and “no, but we would have liked to have (more) children.” In 2008 a further choice was added: “No, I do not want children.”<sup>5</sup>

Couples were selected as our unit of analysis. The sample consisted of 5,063 couples.<sup>6</sup> Our choice to focus on couples is related to the fact that, in most cases, childbearing is conceived in the context of a steady relationship. In Italy, single women and men desiring children may encounter severe difficulties in fulfilling their aspiration for parenthood and are in some cases even thwarted by law. Our dependent variable is the intention to have (more) children: 17 percent of couples reported that they wanted to have children, with a higher percentage in the North than in the rest of the country. The proportion increased with female education and for childless women; the percentage of couples planning to have (more) children was lower for women aged 39 or more (see Table A1 in the Appendix). A high proportion of older women answered “No, we don’t want any (more) children,” and about 15 percent chose the response “No, but we would have liked to have (more) children” (Table A2). This suggests that fertility intentions are likely to have already been achieved for older women, and therefore we considered only couples in which the female was 38 years old or younger. This narrowed the sample to 2551 couples.

In 2004 and 2008, all women that reported that they would have liked to have (more) children answered a question about the reasons for not having (further) children. In 2008, possible answers included: insufficient income, incompatibility with work, an unsuitable home, lack of regular help from relatives, no nursery schools nearby or schools that were too expensive, the need to care for other relatives, the absence of a partner to have children with, a lack of agreement with the partner about the number of children, and biological/physiological reasons. Biological factors and insufficient income were the most cited reasons in 2008 (about 44 and 41 percent, respectively); in 2004 insufficient income was cited by 50 percent of couples; about 38 percent in 2008 and 30 percent in 2004 chose incompatibility with work as a reason hampering the possibility of (additional) children.

Since we focused on couples’ intentions, preferences about the number of children may have differed within the household. About 1 percent of the sampled couples cited the lack of agreement with the partner as a reason for not having (further) children. Additionally, the ideal family size in the sample was larger than the actual one, in line with the 2011 Eurobarometer Survey on Fertility and Social Climate (Testa, 2012).

The main explanatory variable was the indicator of job insecurity for women, as defined by the type of contract: a dummy for precarious employment, i.e. for employees with a fixed-term contract and for “atypical” workers (atypical workers include casual, short-term, seasonal workers, or workers whose contract

<sup>5</sup>In 2002 the question on childbearing intentions was asked to all women under 50 years of age. In 2008 the question was put to all women aged 18 to 45 years, instead of couples.

<sup>6</sup>581 in 2008, 1696 in 2006, 1742 in 2004, 1044 in 2002.



TABLE 1  
MULTINOMIAL LOGIT FOR THE FEMALE OCCUPATIONAL CONDITION

	Inactive	Unemployed	Insecure Employed	Self-Employed
High school (diploma)	-1.372*** (0.172)	-0.821*** (0.291)	-0.743*** (0.285)	-0.664** (0.263)
Bachelor's degree and beyond*type of degree1	-2.524*** (0.617)	-1.964*** (0.716)	-1.413* (0.781)	0.896* (0.529)
Bachelor's degree and beyond*type of degree2	-2.451*** (0.389)	-0.526 (0.560)	0.028 (0.451)	0.098 (0.541)
Father's high occupation	0.410 (0.267)	0.680 (0.428)	0.652* (0.363)	1.010*** (0.330)
Mother's med/high education	0.121 (0.251)	-0.608 (0.484)	0.027 (0.378)	-0.705** (0.332)
North	-0.995** (0.433)	-2.414*** (0.594)	-0.716 (0.575)	-0.515 (0.837)
Center	-0.650* (0.389)	-1.649*** (0.558)	-0.628 (0.523)	-0.195 (0.724)
Regional rate of precariousness	7.226** (3.582)	18.520*** (5.137)	23.230*** (5.232)	11.090** (5.303)
Regional female unemployment rate	0.079** (0.032)	-0.023 (0.046)	0.009 (0.046)	0.040 (0.063)
End of education: 1981–85	-0.086 (0.227)	-0.264 (0.402)	0.854** (0.374)	-0.003 (0.349)
End of education: 1986–90	-0.097 (0.210)	-0.748** (0.370)	0.191 (0.330)	-0.761** (0.347)
End of education: 1995–2008	0.430* (0.247)	0.913*** (0.339)	0.804** (0.345)	-0.603 (0.409)
Constant	-0.952 (0.948)	-3.469** (1.360)	-6.100*** (1.344)	-3.351** (1.406)
Observations			2142	
Wald chi <sup>2</sup> (48)			403.31	
Prob > chi <sup>2</sup>			0.000	
Pseudo R <sup>2</sup>			0.1496	

*Notes:* Base category: secure employment. Type of degree 1 includes: medicine, engineering, economics. Type of degree 2 includes all the other degrees. Marginal effects reported. Robust standard errors in parentheses. Sample weights included. Family background variables and type of degree have missing values and this reduces the sample to 2,142 couples.

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

*Source:* Our calculations on SHIW, 2002–04–06–08 data.

of employment allows the employer to terminate the contract at short notice). About 7 percent of women aged 38 or less had fixed-term or atypical contracts (Table A3), with a remarkable increase over time: from 5 percent in 2002 to 11 percent in 2008. The share of precarious workers was higher among school teachers (all schools) and blue-collar workers (or similar): 35 and 19 percent, respectively, were employed with temporary contracts.

To grasp the main determinants of female job precariousness better, we ran a multinomial logit for the occupational status of women controlling for a set of individual, family, and regional characteristics (Table 1). The dependent variable had five categories: “secure employed” (employees with open ended contracts), unemployed, “insecure employed” (employees with a fixed-term contract or atypical workers), self-employed, and inactive. Having an upper secondary school diploma or a university degree in medicine, engineering, or economics decreased

the probability of holding an insecure job position. Women living in regions with a high rate of precariousness were more likely to be temporary workers. Having left education in the first half of the 1980s, or after 1995 increased the probability of being insecure.<sup>7</sup> This result can be interpreted as a consequence of the labor market reforms carried out in the past two decades (for a comprehensive review of recent Italian labor market reform, see Berton *et al.*, 2009; Berloffia and Villa, 2010).

We also attempted to analyze the effects of economic insecurity that may be associated with low levels of household income and wealth, which may imply insufficient means to deal with potential adverse future events.<sup>8</sup> In our view, it seems reasonable to assume that insecurity is inversely related to current household economic conditions. We constructed the index of wealth (income) insecurity taking into account the percentile of the weighted distribution in which the household falls. The index was constructed as the complement of this percentile.<sup>9</sup>

## 5. EMPIRICAL METHODOLOGY

### 5.1. *Probit Model*

We used the pooled cross-section of the SHIW waves 2002–08 to analyze the effect of economic insecurity on fertility intentions. First, we modeled childbearing decisions as a binary choice.<sup>10</sup> The dependent variable  $y$  indicated whether the couple was planning to have (more) children in the future. The decision can be derived from an underlying latent variable model:

$$(1) \quad y^* = X\beta + e, \quad y = 1[y^* > 0]$$

where  $X$  is the set of independent variables aimed at explaining fertility choices, and  $y^*$  is the latent variable for fertility intentions. The error term is assumed to be drawn from a standard normal distribution:

$$(2) \quad \text{prob}(y = 1|X) = F(X\beta)$$

where  $F(\cdot)$  is the cumulative density function of a normal distribution with zero mean and unitary variance. Estimates from model (2) are not biased under the

<sup>7</sup>Education cohorts, i.e. the year in which individuals finished their educational career, allowed us to compare individuals at similar “labor-market cycle” stages: given the reforms of the Italian labor market, labor market institutions and employment conditions vary significantly depending on the year in which individuals entered the labor market (Berloffia *et al.*, 2011).

<sup>8</sup>Bossert and D’Ambrosio (2013) model economic insecurity as a function of the current wealth level and its variations experienced in the past. The wealthier an individual is, the bigger the buffer stock he can rely on in case of an adverse future event. Past gains and losses determine the confidence an individual has today on his ability to overcome a loss in the future.

<sup>9</sup>Household income and wealth are divided by the OECD modified equivalence scale (which assigns a value of 1 to the household head, of 0.5 to each additional adult member, and of 0.3 to each child) (Boeri and Brandolini, 2005).

<sup>10</sup>The strategy of modeling childbearing intentions as a binary choice has the advantage of allowing us to use the whole pooled cross-section, including all of the four available waves of the Survey on Household Income and Wealth.

hypothesis of exogeneity of explanatory variables. We address this issue in Section 6.2.

The main independent variables were the measures of job insecurity and household economic conditions, which have been discussed in the previous section. We controlled for women's age, male and female level of education, the geographical area of residence, marital status, and the number of children in the family. The variables used and the main descriptive statistics are reported in Table A3. The average number of children is approximately 1. Men and women in the sample were on average aged 37 and 33, respectively. Fifty percent (43 percent) of males (females) reported low education (no formal education or primary school), 40 percent (44 percent) had completed high school, and 10 percent (12 percent) had a degree or more. The large majority of men (71 percent) had stable jobs (open-ended contracts), while this proportion was remarkably lower for women (40 percent). A large number of women (39 percent) were out of the labor force (mainly housewives), with a sharp North–South divide: 24 percent in the North, and 61 percent in the South and Islands. The percentage of precarious workers (employees with fixed-term contracts or atypical workers) was 6 percent for males and 7 percent for females; 6 percent of sampled women were unemployed, and the share was three times higher in the South than in the North.

## 5.2. Multinomial Logit Model

In order to gain better understanding of the effect of job insecurity on fertility intentions, we also ran a multinomial logit drawing on the surveys 2004, 2006, and 2008 (Section 6.1).<sup>11</sup> This reduced the sample to 2085 couples, but allowed us to differentiate between different types of responses. Let  $y$  denote a random variable taking on the values  $\{0, 1, \dots, J\}$  for  $J$  a positive integer, and let  $X$  denote a set of conditioning variables. We were interested in response probabilities  $\text{prob}(y = j|X)$ ,  $j = 0, 1, \dots, J$ , which must sum to unity. The multinomial logit model has response probabilities

$$(3) \quad \text{prob}(y = j|X) = \frac{\exp(X\beta_j)}{1 + \sum_{h=1}^J \exp(X\beta_h)}, \quad j = 1, \dots, J$$

$$\text{prob}(y = 0|X) = \frac{1}{1 + \sum_{h=1}^J \exp(X\beta_h)}.$$

In our data, the dependent variable  $y$  is the question about fertility intentions which can take different possible outcomes ( $J$  is the total number of multiple answers). Conditioning variables  $X$  are those used in the probit model and listed in Section 5.1.

As a final robustness check we also allowed our model to include an endogeneity test (see Section 6.2).

<sup>11</sup>As previously noted, in 2002 possible answers were yes, no, do not know.

## 6. ASSESSING THE EFFECT OF ECONOMIC INSECURITY ON FERTILITY INTENTIONS

The effect of job insecurity (associated with the type of contract, whether permanent or temporary) on childbearing intentions is presented in Table 2 (column 1). We also report the effects of economic insecurity related to household income and wealth (columns 2 and 3, respectively), and we consider the three dimensions together in column 4.

TABLE 2  
THE EFFECT OF ECONOMIC INSECURITY ON FERTILITY INTENTIONS

	(1)	(2)	(3)	(4)
No children	0.307*** (0.034)	0.308*** (0.054)	0.221*** (0.051)	0.275*** (0.058)
Female: inactive	-0.049 (0.031)			-0.008 (0.035)
Female: unemployed	-0.101** (0.043)			-0.065 (0.052)
Female: precarious*no children	-0.149*** (0.042)			-0.129*** (0.047)
Female: precarious*children	-0.099** (0.049)			-0.075 (0.054)
Female: self-employed	0.002 (0.045)			-0.004 (0.044)
Male: unemployed	-0.119** (0.049)			-0.093* (0.056)
Male: precarious	-0.023 (0.043)			-0.007 (0.046)
Male: self-employed	0.067** (0.034)			0.035 (0.035)
Wealth insecurity*no children		-0.212*** (0.071)		-0.190** (0.082)
Wealth insecurity*children		-0.182*** (0.061)		-0.070 (0.072)
Income insecurity*no children			-0.170** (0.084)	-0.013 (0.104)
Income insecurity*children			-0.268*** (0.067)	-0.186** (0.085)
Married	0.115*** (0.039)	0.096** (0.042)	0.105*** (0.041)	0.095** (0.042)
Male: none, elementary, and middle school education	-0.192*** (0.049)	-0.179*** (0.051)	-0.171*** (0.050)	-0.167*** (0.051)
Male: high school (diploma)	-0.125*** (0.043)	-0.119*** (0.044)	-0.119*** (0.043)	-0.112** (0.044)
Male inactive	Yes	Yes	Yes	Yes
Female's education	Yes	Yes	Yes	Yes
Female's age	Yes	Yes	Yes	Yes
Female's age square	Yes	Yes	Yes	Yes
Geographical dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations			2551	
Pseudo R <sup>2</sup>	0.17	0.17	0.17	0.18

Notes: Marginal effects reported. Robust standard errors clustered at the household level in parentheses. Sample weights included. Column (1) is job insecurity, columns (2) and (3) are income and wealth insecurity respectively, column (4) is (1) + (2) + (3).

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

Source: Our calculations on SHIW, 2002–04–06–08 data.

As far as job insecurity is concerned, precariously employed women, i.e. women holding fixed-term or atypical contracts, have a significantly lower probability of intending to have (more) children (Table 2, column 1) compared with permanently employed ones. Precariousness reduces the estimated propensity to childbearing by about 15 (10) percentage points for women without (with) children (the difference between these two groups is not statistically significant), from 25 percent. This result may be explained as a combination of the anxiety about not being able to afford the expenses related to childbearing with the woman's fear of losing her job, which would cause a further worsening in the family's financial conditions. It is worth noting that, due to Italian legislation, temporary female workers with atypical contracts can rarely enjoy any form of sick leave or parental benefits. Moreover, the job displacement caused by pregnancy may destroy all the worker's specific human capital, thereby worsening the future employability of women (Del Bono *et al.*, 2012). Bratti *et al.* (2005) show that in Italy about one out of four mothers who are employed during pregnancy leave the labor market after childbirth: the probability of returning to work is higher for those working in the public sector—where open-ended employment contracts are more frequent—and for those living in a context with a more generous childcare system.<sup>12</sup> The prospect of losing one's job implies that income may fall to a level that is difficult to live on—a prospect that can be expected to discourage motherhood, and one which may explain a decision to postpone childbearing.

The effect of being unemployed is similar to that of job precariousness (coefficients and marginal effects are not statistically different). Being inactive, i.e. out of the labor force, and self-employed do not affect the probability of planning a pregnancy.

As for the role of wealth, our results show that the higher the index of wealth insecurity, the lower the fertility intentions (column 2, Table 2): a 1 percentage point increase in the index lowers planned fertility by 18 percentage points for mothers and by 21 percentage points for childless women (from 25 percent). This result suggests that household wealth supports childbearing intentions.

As expected, low levels of household income also negatively affect the intention to have (more) children for both mothers and non-mothers (column 3, Table 2). Our data suggest that household income insecurity is strongly (and positively) dependent mainly on men's earnings. This result may be consistent with the claims of the literature analyzing the effect of wages on childbearing decisions, finding a positive effect of income on men and a negative effect on females (Willis, 1973; Butz and Ward, 1979). In Italy, the main contribution to household income is still generally made by men, while women are primarily responsible for non-market services for children and older individuals. In other words, the so-called "male-breadwinner/female care-giver family model" seems to be still prevalent in Italy (Karamessini, 2008). According to the *Time Use Survey* carried out by the Italian National Institute of Statistics (Istat, 2010), on average, women devoted about 19.9 percent of their time to domestic work in 2009, this proportion being 20.52 percent in 2002 and 24.30 percent in 1989. Considering both paid and unpaid

<sup>12</sup>There are marked differences in public welfare systems across Italian regions. See, for example, Ferrera (2005), Calamai (2009), Masseria and Giannoni (2010), and Fiorillo and Sabatini (2011).

work, Italian women work on average 75 minutes per day more than men (Burda *et al.*, 2007). The time devoted to domestic activity is, however, higher than the European average.

To check which of the three dimensions plays a major role in fertility decisions, in column 4 of Table 2 we report the results of a model which jointly accounts for our measures of job uncertainty, and household income and wealth insecurity. When these variables are included in a unique regression, some differences between childless women and mothers come into play. First, the negative role of women's job instability is confirmed for women without children, but not for mothers. Second, wealth insecurity affects childbearing decisions solely for women with no children, lowering the likelihood of planning a first child by 19 percentage points. In other words, the more a childless woman suffers from wealth insecurity, the higher the likelihood of postponing or even deciding not to have a first child. This result confirms the importance of the buffering effect of real and financial wealth. Third, and more importantly, the income effect acts only for mothers, reducing childbearing intentions by about 19 percentage points.

Household wealth can be considered a cumulated variable resulting from real and financial savings decisions that a family has planned over the life cycle, so that a low level of wealth makes the major change entailed by the transition to a first child less likely. On the other hand, household income can reflect temporary shocks that impact on the transition to higher birth order, but do not necessarily affect the decision to become a mother for the first time.

In all the specifications employed in Table 2, women with no children are more willing to plan a first child. Consistently with the findings of Dalla Zuanna (2004), our results show that Italy's lowest-low fertility levels may be attributed to a low progression to the subsequent children rather than a decision to have the first one. As expected, marital status is positively related to childbearing, as the majority of Italian couples conceive a baby solely after marriage. Couples in which the man has a bachelor's degree (and above) are more likely to want (more) children. In addition to the better economic conditions probably related to higher levels of education, this finding may be explained as a consequence of the division of domestic labor, which is likely to be more equal in couples where men are better educated. The share of domestic work performed by formally employed women is a critical part of current cross-national explanations for low fertility (Miller Torr and Shorr, 2004).

As regards male occupational status, couples in which the man is unemployed show a lower probability of planning to have a child with respect to those where men are employed with open-ended contracts. Fertility intentions are significantly and positively correlated with men being self-employed. Male job instability seems not to affect the intention to have children. This finding may be viewed as a result of the institutional features of the Italian labor market and of the low levels of gender equity in the family. Precarious men are probably aware that childbearing will not change their career prospects: for example, unlike their partners, they will not face any change in the risk of being laid off or not having their contracts renewed; nor will they have to fear the extra burden connected to childcare and domestic work, which will be borne mostly by women (possibly with the support of the extended family).

### 6.1. *The Effect of Job Instability on Postponement of Maternity*

As described in Section 4, the 2004, 2006, and 2008 surveys allowed multiple answers to the question about fertility intentions: “yes,” “not now, we’ll think about it later,” “no, we do not want any (more) children,” and “no, but we would have liked to have (more) children.”<sup>13</sup> In the previous analysis we grouped all “no” answers in one category (and we estimated a probit model). We now draw on a multinomial logit model to look at the effects of job insecurity, income and wealth uncertainty on different responses, since they have different meanings: while “not now” implies a postponement of maternity, the other two negative answers represent a definitive choice and reflect previously formed preferences/choices.

Given the low number of couples answering “No, but we would have liked to have (more) children,” we grouped this answer with “No, we do not want any (more) children.” Results are reported in Table 3. The base category is “yes, we are planning to have children.”

As expected, female occupational status leads to a postponement of maternity intentions but has no effect on other negative choices. In particular, having a temporary labor contract increases the probability of delaying childbearing plans by 16 percentage points (from 34 percent),<sup>14</sup> and the effect is similar for unemployed women. Being a housewife increases the likelihood of a postponement by about 10 percentage points. Couples in which the male is unemployed are more likely to answer “not now,” but less likely to choose “no, we do not want children” or “no, but we would have liked to.” Wealth insecurity affects the postponement of attempting a first child (by 32 percentage points), and leads to a decision not to have other children (by 23 percentage points from 38 percent). Childless women with high income insecurity are more likely to decide not to have a first child, but less likely to postpone the decision to have one. The choice not to attempt having additional children (neither now, nor in the future) is significantly and positively influenced by household income insecurity.

We tested whether the effect of job precariousness varies across households according to the level of economic insecurity. Table 4 reports the results for the interaction between female job instability and income insecurity: having a temporary labor contract matters only for females whose household incomes are medium/high, while it has no effect for low-income couples. In particular, it increases the probability of delaying childbearing by about 20 percentage points (from 34 percent) for households with low/medium levels of economic insecurity.

This result suggests that whether or not job instability discourages couples from having children depends on expectations regarding women’s future employment careers. More than 80 percent of women with an unstable employment situation that live in poor households have low levels of education: this group of women have restricted options in the labor market, and their opportunity costs of

<sup>13</sup>The response “No, we do not want children” in 2008 was recoded as “No, we do not want any (more) children.”

<sup>14</sup>The effect of precariousness is the same for mothers and women without children; consequently, we do not include the interaction term.

TABLE 3  
MULTINOMIAL LOGIT FOR FERTILITY INTENTIONS

	Not Now, We'll Think About It Later	No (We Do Not Want or We Would Have Liked To)
No children	0.069 (0.068)	-0.313*** (0.073)
Female: inactive	0.096** (0.046)	-0.063 (0.048)
Female: unemployed	0.166** (0.069)	-0.089 (0.062)
Female: precarious	0.160** (0.062)	-0.033 (0.066)
Female: self-employed	0.004 (0.062)	-0.014 (0.075)
Male: unemployed	0.299*** (0.085)	-0.204*** (0.055)
Male: precarious	-0.003 (0.062)	-0.033 (0.069)
Male: self-employed	0.012 (0.042)	-0.016 (0.045)
Wealth insecurity*no children	0.320*** (0.121)	-0.202 (0.142)
Wealth insecurity*children	-0.049 (0.100)	0.229** (0.095)
Income insecurity*no children	-0.400*** (0.139)	0.438*** (0.170)
Income insecurity*children	-0.116 (0.113)	0.356*** (0.115)
Marital status	Yes	Yes
Male's education	Yes	Yes
Female's education	Yes	Yes
Female's age	Yes	Yes
Female's age square	Yes	Yes
Geographical dummies	Yes	Yes
Year dummies	Yes	Yes
Observations		2085
Wald chi <sup>2</sup> (46)		309
Prob > chi <sup>2</sup>		0.000
Pseudo R <sup>2</sup>		0.20

Notes: Base category: yes. Responses “No, we do not want any (more) children” and “No, but we would have liked to have (more) children” are grouped in one category. Marginal effects reported. Robust standard errors clustered at the household level in parentheses. Sample weights included.

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

Source: Our calculations on SHIW, 2004–06–08 data.

having children are low. They may respond to unfavorable employment prospects by choosing the alternative career of mothers (Friedman *et al.*, 1994; McDonald, 2000b). On the other hand, career-minded women will postpone their fertility decisions during times of job instability. “These women might not be willing to accept the role of dependent housewife and will only decide to have children if they are convinced that they can be employed and rear children without detriment to either” (Kreyenfeld, 2010, p. 354). We conducted a further robustness check for our results by interacting female job precariousness and female education: no negative impact on maternity intentions was found for women with low levels of education.



TABLE 4  
JOB PRECARIOUSNESS AND INCOME INSECURITY

	Not Now, We'll Think About It Later	No (We Do Not Want or We Would Have Liked To)
Female job precariousness*low/medium income insecurity	0.196*** (0.067)	-0.042 (0.071)
Female job precariousness*high income insecurity	-0.120 (0.118)	-0.069 (0.127)
Observations		2085
Wald chi <sup>2</sup> (44)		304
Prob > chi <sup>2</sup>		0.000
Pseudo R <sup>2</sup>		0.20

*Notes:* Base category: yes. Responses “No, we do not want any (more) children” and “No, but we would have liked to have (more) children” are grouped in one category. Marginal effects reported. Whole set of regressors from Table 3 are included in the model. Robust standard errors clustered at the household level in parentheses. Sample weights included. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

*Source:* Our calculations on SHIW, 2004–06–08 data.

## 6.2. Assessing the Endogeneity of Economic Insecurity

The analysis of the association between female occupational status, and in particular the status of being precarious, and fertility may be driven by unobserved factors. Women with precarious jobs are not a random sample of the population, and compared with other women they may have dissimilar observed and unobserved characteristics, such as preferences for family size and differences in fecundity. Moreover, there may be a problem of reverse causality: women who are more family oriented may choose stable, but less motivating jobs. If we neglect to control for these factors, the estimates may be biased. In order to assess the relevance of endogeneity issues, we performed a regression-based test to check whether women’s employment instability is endogenous.

We used education cohorts as an instrument for female job insecurity (see Section 4 for a discussion of the role of the “labor-market cycle” stage on female job precariousness). In particular, we constructed a dummy indicating whether the woman left education in the periods 1981–85, and 1995–2008. Since an instrumental variables estimator for probit models with endogenous regressors is not consistent (Dagenais, 1999; Lucchetti, 2002; Wilde, 2008), we preferred to estimate instrumental variables in the Linear Probability Model. Results are reported in Table 5. The test failed to reject absence of endogeneity (the  $t$  test on the predicted residuals from the first stage is  $t = 0.17$ ,  $P > |t| = 0.869$ ), hence we used the probit model (2) and the multinomial logit (3) to estimate the effect of female employment instability on childbearing intentions.

Another issue to be addressed is the endogeneity of household income (and hence income insecurity). We used the occupational status of the father of the male as an instrument for household income (the share of the male’s income on household income is on average higher than the female’s). Family background has been identified by the literature on intergenerational mobility as a key determinant of the economic success of individuals (Cingano and Cipollone, 2007). The elasticity of the income of male offspring with respect to their parents’ income is generally

TABLE 5  
TESTING FOR ENDOGENEITY

Suspected Explanatory Variable	Female Job Insecurity	Household Income Insecurity
<i>First stage</i>		
Education cohorts (1981–85; 1995–2008)	0.038** (0.014)	
Male's father's high occupation		-0.082*** (0.024)
<i>Second stage (fertility intentions as dep.var.)</i>		
Predicted residuals	0.102 (0.619)	-0.042 (0.543)
F-test (multiple endogenous variables)		
F(2,1724)		0.01
Prob>F		0.994
Observations	2,551	2,170

*Notes:* Linear Probability Model. All exogenous variables listed in Table 3 and sample weights included. The first stage is the reduced form equation with the suspected endogenous variable as dependent variable. In the second stage, fertility intention is the dependent variable and predicted residuals, suspected endogenous variables and all exogenous variables are included as regressors. Robust standard errors clustered at the household level in parentheses. F-test is the test for joint significance of the predicted residuals in the structural equation. Family background variables have missing values and this reduces the sample to 2,170 couples in the equation for household income insecurity.

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

*Source:* Our calculations on SHIW, 2002–04–06–08 data.

positive. The probability of male offspring achieving decent economic conditions has been shown to be strongly affected by the parents' level of income and wealth (for a survey, see Corak, 2006; for Europe and Italy, see, for example, Giuliano, 2008; Brunetti and Fiaschi, 2010; Franzini and Raitano, 2010).

We performed a regression based test to check the endogeneity of household income insecurity (see Table 5). The occupational status of the father of the male (whether he was a manager, a member of a profession, or an employer) was found to be strongly and negatively correlated with household income insecurity ( $t = -3.33$ ). Since the coefficient on the first stage predicted residuals was not statistically different from zero, the test supported the assumption that income insecurity is not endogenous.

We finally tested for the joint endogeneity of female job insecurity and household income. For each suspected endogenous variable, we obtained the reduced form residuals and we then tested for the joint significance of these residuals in the structural equation (Wooldridge, 2003). The F test indicated that both possibly endogenous explanatory variables are in fact exogenous ( $F(2,1724) = 0.01$ ,  $\text{Prob} > F = 0.994$ ).

## 7. CONCLUSIONS

Over the past two decades, increasing numbers of Italian women have entered the labor force, as a consequence of their greater participation in education. At the same time, the average number of children per woman has

progressively increased (1.2 in the early 1990s, 1.4 in 2011). This paper offers an explanation for the drop in fertility mainly related to the fact that the labor market reforms implemented in the mid-1990s introduced new forms of temporary labor contracts. The concept of flexibility was at the basis of these contracts, reserved for young individuals and females. They were also characterized by low levels of maternal and sick leave protection, clearly penalizing women and discouraging them from having children.

In this paper we have constructed three indicators of economic insecurity: having a precarious job, having low levels of household income, and having low levels of household wealth. We have shown that instability of women's work status negatively affects the probability of intending to have (more) children and leads to a postponement of childbirth, which has been identified by the literature as one of the main factors responsible for the decrease in fertility rates. In particular, we have argued that whether a woman with an unstable job will postpone attempting childbirth varies according to her future employment prospects: women with limited options in the labor market (those with low education and low income) are not affected by job insecurity; career-minded women will postpone their childbearing decisions during times of job instability. Since women's fertility declines with age (Dunson *et al.*, 2002, 2004), a decision to delay attempting to become pregnant may turn out to be an irrevocable decision to be permanently childless.

The effect of male employment insecurity on fertility choices is not statistically significant, suggesting the persistence of the breadwinner model in Italy, with males being primarily responsible for the household budget. Wealth insecurity undermines the transition from zero to one child: wealth, in fact, is a variable resulting from investments planned and fulfilled over the life cycle. Low levels of wealth discourage the decision to have a first child, which is likely to have a major impact on a family's economic conditions. On the other hand, uncertainty about income, which is affected by temporary shocks, is shown to matter solely for mothers. It does not discourage the decision to have a first child, but it seems to significantly and negatively affect successive pregnancies.

Our results suggest that policies aimed at increasing fertility levels should account for—and seek to reduce—insecurity about women's future employment and the household's income and wealth. More specifically, public actions aimed at raising fertility should take into account appropriate labor market policies to tackle the rising incidence of precariousness among women workers. Moreover, closer attention should be paid to family policies aimed at reconciling motherhood and paid work, and maternal protection should be extended to women with unstable employment situations. The importance of family policies in determining the insecurity–fertility nexus arises from comparison with other European countries such as Germany and France: these face the same kind of labor market deregulation “at the margins” as Italy, but they are endowed with different family policies, and no negative impact on maternity has been found (Barbieri, 2011). “In such countries precarious employment is much less of a trap, and welfare is much more family-friendly, so that atypical employment does not constitute neither an end-way nor an impediment to conclude the process of family formation” (Barbieri, 2011, p. 31).

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## SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Table A1:** Answers to the Question: "Do You Plan To Have (More) Children In The Future?"

**Table A2:** Answers to the Question: "Do You Plan To Have (More) Children In The Future?"

**Table A3:** Descriptive Statistics