LABOUR MARKET CIRCUMSTANCES AND FERTILITY IN ITALY: A FIRST GLANCE THROUGH ADSILC DATA[1]

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1. Introduction

Since the 1980s, the labour market of countries with industrialized economies has experienced a strong process of deregulation/segmentation, leading to a substantial change in its overall functioning. The deregulation process and other aspects of the globalization wave (such as privatization and liberalization) have generated an unprecedented level of economic uncertainty in contemporary societies (Mills & Blossfeld, 2005, 2013). In the realm of fertility research, various studies showed that youth unemployment, term-limited working contracts, and unstable economic and employment scenarios cause a postponement in childbearing (Adsera, 2004; Adsera et al., 2011; Barbieri et al., 2011; Barbieri et al., 2015; Kreyenfeld and Andersson, 2014; Pailhé and Solaz, 2012; Vignoli et al., 2012). This is especially true among the childless, who put off their plans for family formation (Neels, Theunynck, and Wood, 2013).

On this backdrop, Southern Europe is known for having high employment protection and (consequently) high unemployment and high temporary employment among the young (Adsera, 2011; Barbieri et al., 2015; Barbieri et al., 2016). For example, in Italy the process of labour-market deregulation began with the introduction of the so-called work-and-training contracts (1983–1984), followed by a weakening of the strict rules for fixed term contracts (L.56/1987), which were subsequently made increasingly more attractive for firms (L.451/1994; L.608/1996). The major step in labour-market deregulation was taken in 1997 ('Treu Law', L.196/1997), which introduced temporary contracts and extended the applicability of fixed-term contracts. In 2003, the 'Biagi Law' (L.30/2003) gave further impulse to the spread of 'flexible' forms of employment, which lead to jobs that were far less 'protective' than before, when open-ended jobs were typically the rule (Barbieri and

Scherer, 2009). There are only a few studies that explored the association between adverse economic circumstances and fertility in the era of economic uncertainty in Italy (e.g., Barbieri et al., 2015; Busetta et al., 2019; Caltabiano, Comolli, Rosina, 2017; Fiori, Graham, Rinesi, 2018; Vignoli et al., 2012).

This paper adds to these prior studies by utilizing a unique and innovative dataset for fertility research in Italy, which allows to link a wealth of labour-market related information and fertility at the micro-level. It is named Administrative SILC, henceforth ADSILC, obtained by matching longitudinal information from administrative archives gathered by INPS (National Institute of Social Security) with survey micro-data (IT)SILC, the Italian database of the European Union Survey on Income and Living Conditions (EUSILC), collected by ISTAT (National Institute of Statistics), which has been developed as a flexible yet comparable instrument for the follow-up and monitoring of poverty and social exclusion at the EU and national levels. Cross-sectional data of (IT)SILC includes nine waves, that is data collected in (IT)SILC in the 2004-2012 period.

2. Data and methods

2.1. ADSILC dataset

The sample design of (IT)SILC is based on a two-stage procedure. For each region, municipalities are clustered into auto-representative (with larger population size) and not auto-representative (smaller size) ones. For the first group, households are systematically drawn from the register office records. For the latter group, instead, households are randomly selected on a sample of municipalities.

The scheme of (IT)SILC envisages two components: a cross-sectional one and a longitudinal one. In particular, a rotational panel is set, in which a new sample of households and persons is introduced each year to replace a quarter of the existing sample.

Therefore, the cross-sectional sample is composed by the union of four samples, each belonging to its specific wave, where a quarter of the households participate to the survey for only one wave, a second quarter participate in two waves, an additional quarter for three waves and a latter quarter has been interview four times. Each quarter of households is therefore followed for a maximum of four consecutive years.

The fiscal code represents the key to identify the individuals in INPS and (IT)SILC. All individuals sampled in the nine waves of (IT)SILC are drawn out in INPS database. Then, to the information recorded by (IT)SILC, that ensure the representativeness to the target population, was added the variables recorded by

administrative archives for all individuals that had been registered by INPS in their lifetimes.

As a result, this procedure has created a very long retrospective and forward-looking panel ADSILC about individuals' work history patterns recorded from the entry in the labour market up until the end of 2013, and longitudinal data about individuals' and households' socio-economic characteristics collected in (IT)SILC.

2.2. Statistical methods

Time to event have been analyzed applying a survival analysis to our data-set. For each individual we have measured the random variable T that represents the time from the age of 15 and the transition to first birth. In case the event occurs after the follow up, or in any case after 45 years old, the information is considered censored.

We have then k distinct event times $t_1 \leq t_2 \leq \cdots \leq t_k$ and at each event time t_j there are n_j women are at risk to have the first child, meaning that they have not experienced the event nor have they been censored before time t_j. Let d_j be the number of women who have the first child at time t_j, the Kaplan-Meier estimator is defined as:

$$\hat{S}(t) = \prod_{j:t_j \leq t} \left[1 - \frac{d_j}{n_j} \right] \qquad for \ t_1 \leq t \leq t_k$$

This means that each event time can be interpreted as the conditional probability of having the transition to parenthood to time t_{j+1}, given that it is not occurred at time t_j.

In order to measure the differences in groups, different survivor functions have been analyzed. The approach followed is to test the null hypothesis that the survivor functions are the same across the groups, using the log-rank test (Mantel-Haenzel test) and the Wilcoxon test (see, among others, Collett, 2003).

3. Main results

The analysis has been based on ADSILC data and (IT)SILC cross section related to 2004-2012 period.

The descriptive statistics are summarized in Table 1. The sample comprises of 32,000 women between 15 and 45 years of age, and nearly half of the sample belongs to the older generation (born before 1970). They live in the North of Italy in the 45%

of the cases, 31% in the South, 24% in the Centre of Italy. One year before childbearing, or one year before the end of the follow up for censored data[2], 43% had a permanent contract, 27% was with a fixed term contract and 30% was unemployed or out the labour market. The distribution of employment changes dramatically looking at the area of residence. One out of five women is unemployed in the North, vis-à-vis in the South, where the percentage rises to almost 50%. The situation is the opposite considering the open-ended contract.

Table 1 – *Sample distribution of women aged 15-45 by cohort, employment status one year before the childbearing and area of residence (row percentages)*

Generation	Frequency	Percent
before 1970	15,754	48.92
1970-1974	6,471	20.09
1975-1979	5,342	16.59
1980-1984	4,637	14.40
Total	32,204	100.00

Area	Work History Pattern 1 year before childbearing			
	open ended contract	temporary	unemployed	Total
North	54.6	26.4	19.0	45.0
Centre	42.1	29.3	28.6	23.9
South & Islands	26.3	25.2	48.5	31.1
Total	42.8	26.7	30.5	100.0

Elaboration on ADSILC dataset.

In figure 1 a survival function has been plotted. The curve estimates the proportion of the event. The steeper the curve, the higher the proportion of individuals moving into early motherhood. After an initial flatness, the curve begins to decrease. The median waiting time (after 15 years old) is about 16 years (with confidence interval from 15.87 to 16.12). This result is in line with Eurostat data, providing a direct validation of the use of ADSILC in fertility research. At the end of the follow up about 1/3 of our sample is still observed without a transition to motherhood.

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[2] In the case of labour market outcome we are considering the subsample of women with a first baby after 1999 in order to be able to distinguish open ended contract from temporary contract one year before the childbearing (a first form of temporary contract in Italy has been introduced with labour market reform in 1998 with the so called "Pacchetto Treu", Law n. 196, year1997).

**Figure 1 –** *Time for the first child for women*
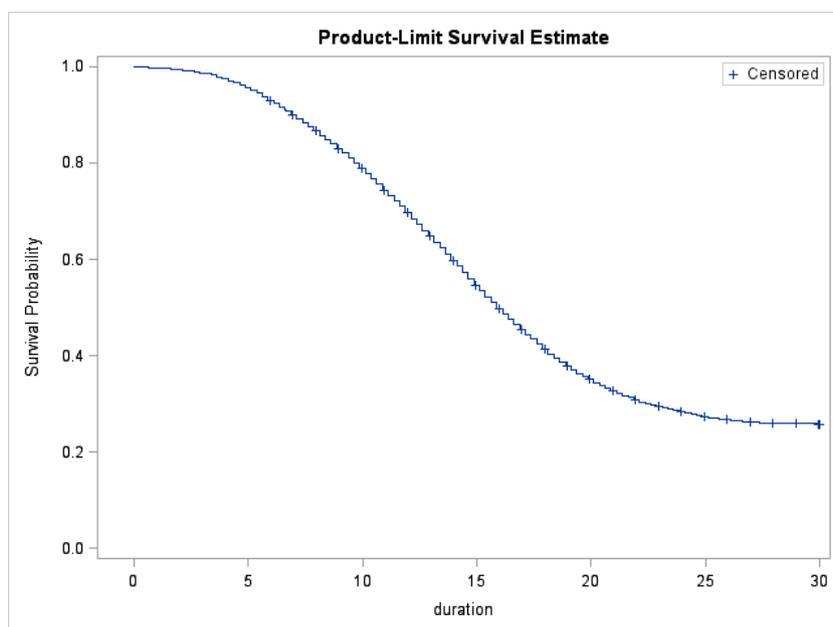
Elaboration on ADSILC dataset.

We have then considered the changing pattern over time of the timing of the first transition to motherhood, comparing different cohorts of women. As expected, women belonging to the older generation (before 1970) get the first child significantly before than the cohort of younger women (Figure 2a). The test of equality over strata, (Log-Rank and Wilcoxon), confirm that the cohort before 1970 is significantly different from the other cohorts. Comparing with the following cohort, 1970-1974, the median waiting time for the childbearing is about two years shorter than the one observed in the follow cohort. The gap is abated at the end of the follow up, meaning that, over the time, there is a shift of the intention to motherhood. Looking at the differences within the country, it is in the South of Italy that we observe the early transition to motherhood with respect to the rest of the country (Figure 2b). Only after about 20 years the differences within the country are indistinguishable.
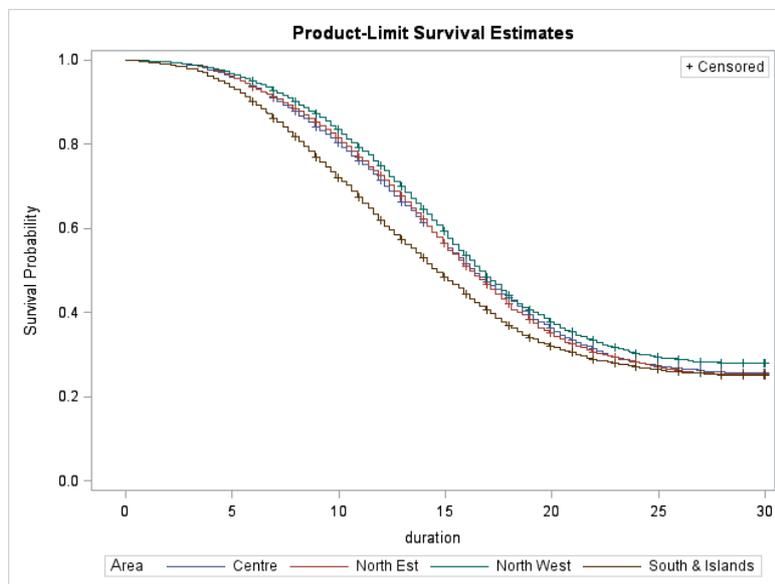
The focus of this study is in taking into account the effect of the employment status and characteristics on the probability to have a child. In order to focus on the differences between permanent and temporary contract, we focus on women who conceived their child after 1998.

Figure 2 – *Timing of entry into motherhood, by cohort (a) and area of residence (b)*

(a)
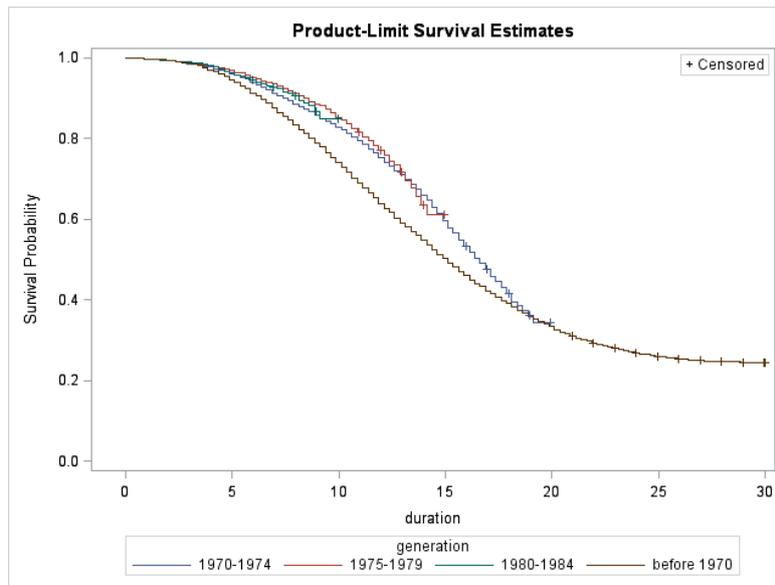
(b)

Elaboration on ADSILC dataset.

In this way we can look backward one year before the conception and we can isolate the in/security of work history patterns depending on the type of contract in that time-span. A further category is made up of women who do not work in the year before conception. Our findings show that the three categories have different dynamics over time (Figure 3a). Unemployed women have a quick time to event but at the end of the follow up a lower number of them experiment the event if compared with the ones with the stable contract. The most penalized women are the ones with a temporary contract. In this case the survivor function is above the others two and, at the end of the follow up, the curve is undistinguishable from the one of the unemployment women. The best scenario, looking at women that experiment the event is that of women with a permanent contract. Despite an initial flatness, at the end of the period maternity is experienced by about 5% more than the others.

Finally, we segmented the overall pattern by area of residence. The main results discussed above are confirmed in the North of Italy (Figure 3b) and become even stronger in the Centre (Figure 3c), while became not significant in the South (Figure 3d), where the high levels of female unemployment determine differences, with respect to the rest of the country, in the timing of the first child.

4. Conclusions (so far) and future plans

In this study we utilized a new and original data-set for fertility research in Italy: ADSILC. Detailed analyses provide a validation of fertility histories stemming from ADSILC. Also differences by cohort and area of residence accord with prior research (Matysiak and Vignoli 2013), and confirm the appropriateness of employing Italian ADSILC data in fertility analyses.

Most importantly, the use of this data opens up new perspectives in fertility research for Italy, as they offer the possibility to follow couples over time, considering the combination of partners' employment status and characteristics. In addition, the large sample size provides us with the opportunity to investigate differences by employment sector, work history, and employment security – all aspects that have been proved to be crucial for fertility choices (Vignoli et al 2012, 2018; Busetta et al 2019), but that have never been considered simultaneously because of a lack of large-enough samples.

Figure 3 – *Time for the first child by employment status one year before the childbearing, overall pattern and by area of residence.*
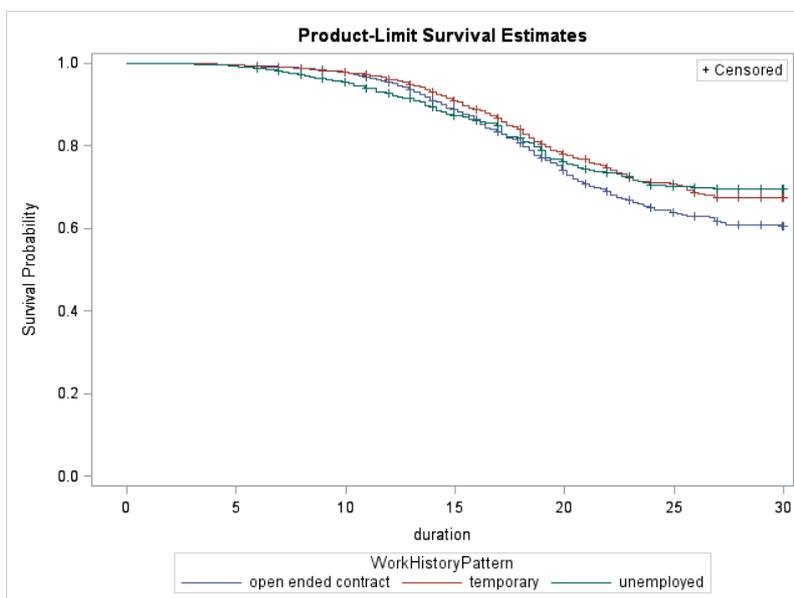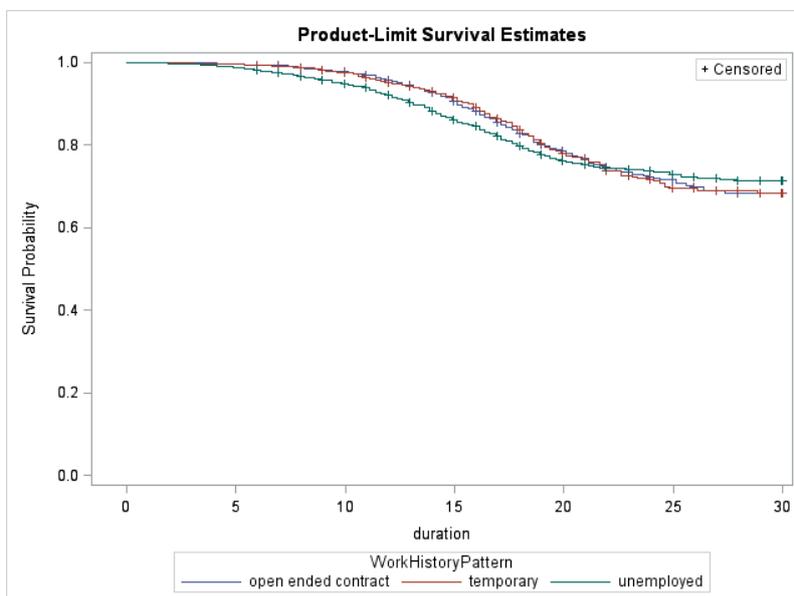
(a)
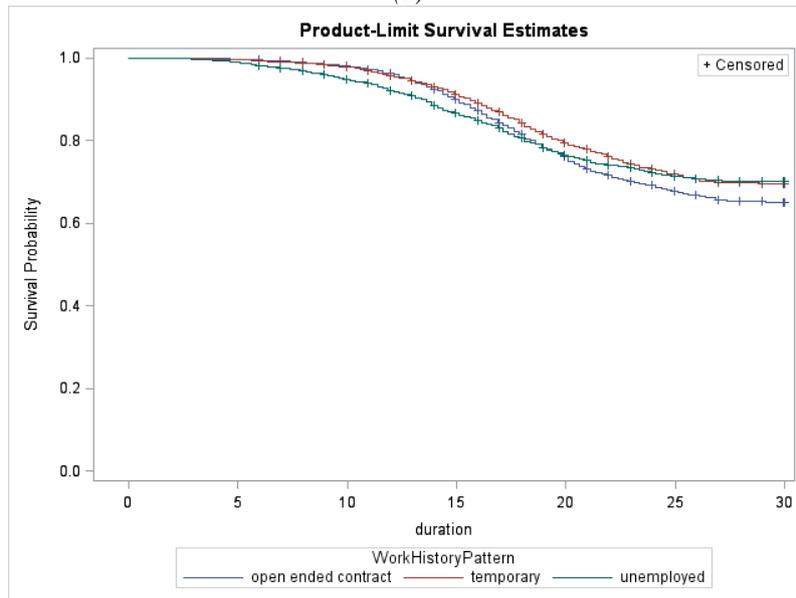
(b)
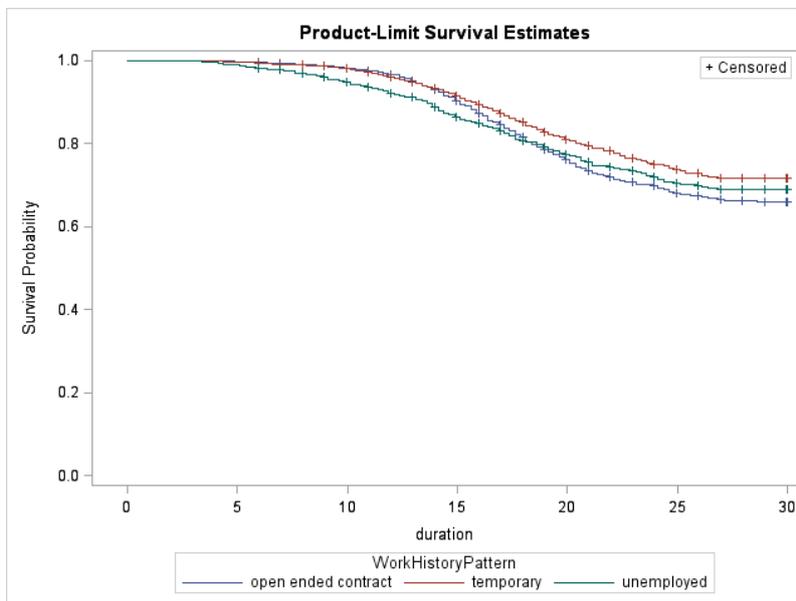
(c)

(d)

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SUMMARY

Labour Market Circumstances and Fertility in Italy:
a First Glance Through ADSILC Data

A number of studies have shown that economic uncertainty could have significant impacts on fertility: youth unemployment, term-limited working contracts, and unstable employment conditions may lead to a postponement in childbearing. Following this line of research and focusing on ADSILC data (a dataset that merge individuals' work history patterns with their socio-economic characteristics), the aim of this paper is to evaluate the effects of the employment status and characteristics on the probability to have a child. As we might expect, data show significant differences both at the cohort level and at the territorial level; we also find that women in different statuses (i.e., unemployed, permanent contract, temporary contract) experience different dynamics over time in terms of probability to have a child and in the timing of the first transition to motherhood. Even if the path to thorough knowledge of these phenomena is still long, we are aware that the use of ADSILC data open up new perspectives in fertility research for Italy, as they offer the possibility to follow couples over time, considering the combination of partners' employment status and characteristics.

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