

**Does job insecurity
cause missing births
in a high fertility
European country?**

Evidence for France

Ariane Pailhé & Anne Solaz

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Abstract

This paper investigates whether unemployment and insecure employment periods merely delay fertility or also impact on completed fertility in France. It analyses both the timing of first and second childbearing and the fertility reached at age 40. Different indicators of declining job security are used, i.e. current individual employment characteristics, the accumulation of unstable jobs, and aggregate-level indicators of job uncertainty. The timing of first childbearing depends negatively on male unemployment, while facing insecure employment periods delays fertility for women. Completed fertility is impacted by unemployment spells only for men who have faced long-term unemployment.

Keywords: fertility, unemployment, short-term employment, labour market, event history analysis, birth parity, gender

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Introduction

The relationship between economic fluctuations and fertility was one of the first topics studied in the sixteenth century by demographers and economists. These issues gained momentum in the late eighteenth and nineteenth century with the work of classical economists like Adam Smith, David Ricardo, John Stuart Mill and Thomas R. Malthus, for whom the standard of living has a positive effect on the population growth rate. But this theory has been challenged by the facts: fertility is lower in rich countries than in poor countries and the economic development of Western European countries over the past 150 years has been accompanied by a decline in fertility. The theory of fertility that has become a dominant paradigm over the last 50 years has tried to solve this paradox by using micro-economic models and hypotheses regarding household behaviour (Becker, 1981). To explain the level of fertility, Gary Becker has stressed the importance of the trade-off between quantity and “quality” of children, i.e. increasing the quality of children leads to a decrease in their quantity. One way to increase the quality of children is to be more demanding in terms of fertility conditions, and to wait for particular requirements to be satisfied before deciding to become parents. Having a stable job becomes one such requirement.

Since the mid seventies, fertility has declined rapidly throughout Europe. Profound social changes, such as changes of norms and values and female emancipation, in combination with the diffusion of modern contraception, have influenced childbearing behaviour (Lesthaeghe, 1983). Concomitantly, there has been a rise in uncertainty on the Western European labour markets. Unemployment and job instability have sharply increased and entering the labour market has become particularly difficult for young people. Employment uncertainty has been identified as one of the main explanations for postponement of fertility in Europe (Blossfeld et al., 2005; Mc Donnald, 2006). In a context of declining job security and increasing unemployment, the cost of having children may be perceived as higher and young people may wait until they hold a permanent job before entering into parenthood (Kohler, Billari, Ortega, 2006; Adsera 2004).

The empirical literature based on individual data usually finds that unemployment delays the formation of a family. The longitudinal analysis conducted by Adsera (2005a) on a sample of 13 Western European countries has shown that childbearing postponement is significant in countries with high and persistent unemployment. Up to now, research on the impact of work uncertainty on fertility has mainly focused on female work uncertainty. Some contrasting results have been found on the link between fertility and female unemployment, depending on the country covered. Unemployment accelerates entry into motherhood in Northern countries (Kravdal, 1994, 2002; Hoem, 2000; Andersson, 2000), Germany and the United Kingdom (Schmitt, 2008), while it postpones it in continental countries such as Belgian Flanders (Impens, 1989) or France (Meron and Widmer, 2002). These contrasting results may be explained by country-specific effects, particularly differences in social welfare and unemployment protection. They may also stem from the role of men’s employment situation, which has rarely been analysed. Few studies have investigated the impact of male unemployment, but all have highlighted that men’s unemployment has a more pronounced negative effect than that of women (Kravdal, 2002 for Norway; Lundström, 2009 for Sweden; Tölke and Diewald, 2003 for Germany; Mills et al., 2005 for 14 industrialised countries). Beyond unemployment, the question of the impact of occupational instability and atypical employment has been raised only recently. Studies have mainly covered Southern European countries, where these types of employment are particularly developed. They have confirmed the hypothesis that fertility is postponed when employment is unstable (de la Rica and Iza, 2005; Ahn and Mira 2001).

Most of the papers addressing the effect of declining job security on fertility focus on the timing of childbearing. Indeed, the rising age at childbearing is considered as one of the main

explanations for the decrease in fertility (Morgan, 2003; Bongaarts, 2001; Bongaarts and Feeney, 1998; Cadwell and Schindlmayr, 2003). In other words, “timing and numbers are interrelated” (Morgan and Taylor, 2006). However, the demographic trends in France do not follow the suggested pattern, i.e. that delayed entry into parenthood results in lower fertility (Toulemon et al., 2008). As elsewhere in Western Europe, entry into parenthood has been delayed in France, but the total fertility rate has remained practically stable and close to the replacement level. Thus, among continental European countries, France has a particular position since it combines high fertility, increasing age at first birth and high youth unemployment and job uncertainty. This raises the question of the specific impact of employment uncertainty in France compared to the other European countries. Do unemployment and job uncertainty affect fertility in France less than elsewhere in Europe?

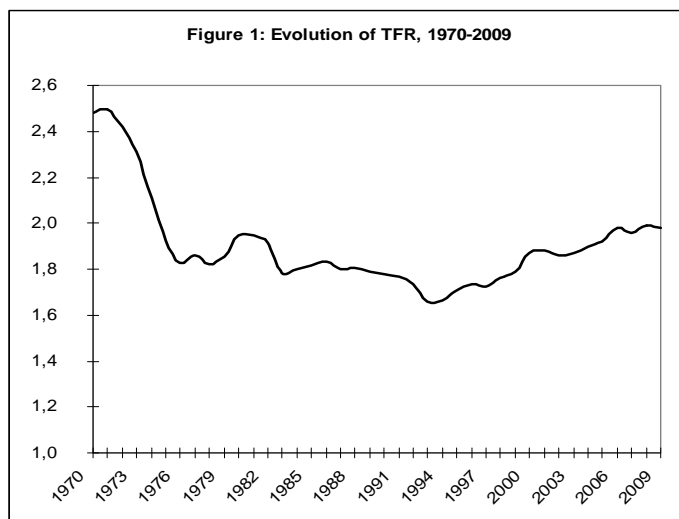
This paper analyses the effect of employment insecurity on fertility behaviour in France. It investigates whether unemployment and insecure employment merely delay fertility or also impact on completed fertility. Thus it analyses both the timing of first and second childbearing and the fertility reached at age 40, using a French representative survey, the *Enquête Familiales et employeurs* (Families and Employers survey, EFE hereafter). The impact of both male and female employment situations will receive attention, since both may influence fertility. Different indicators of declining job security are used to address this question, i.e. the current individual employment characteristics, the accumulation of unstable jobs over the life course, and aggregate-level indicators of job uncertainty.

The article is organised as follows. First, the French context of fertility and employment is outlined. The second section describes the theoretical background, and the data and methods are presented in the third section. The last section details the results on both timing of fertility and completed fertility.

1. The French context

1.1. Trends in fertility

France is one of Europe’s most fertile countries. In 2008, with 1.99 children per woman on average, France ranked second in Europe behind Ireland (2.10). From the beginning of the 1960s, fertility in France followed a similar trend to that observed in other European countries. The total fertility rate (TFR) decreased from 2.5 children per woman in 1970 to below 2 in 1975 (figure 1). It stabilized in the 1980s and reached its lowest level in 1994 (1.66). But since the end of the 1990s, France has broken away from its neighbours: fertility began to increase clearly from 1996, and the total fertility rate has remained stable above 1.9 since 2000.



Source : Insee, register data

As elsewhere in Europe, entry into parenthood has been delayed and the timing of fertility is changing rapidly. The fertility schedule is moving continuously to higher ages and the mean age at childbirth is continuing to rise (table

1). The mean age at first childbirth has increased since the mid-1970s, rising from 23.9 years in 1975 to 27.8 years in 2006. This increase results both from a decrease in fertility at young ages (before 25) and an increase at ages 28 and over. As the interval between births is stable¹, this postponement of first childbirth affects the average age at birth for all parities. The mean age at childbirth is today 29.8 years, compared with 29.1 ten years ago and 27.7 twenty years ago. In 2006, in metropolitan France, 52.8% of newborns had a mother who was at least thirty years old, versus 45.8% in 1996 (Insee, bilan démographique).

Table 1: Changes in mean age at maternity

Year	Mean age at maternity (total)	Mean age at first birth
1970	27,2	23,9
1980	26,8	24,5
1990	28,3	26,0
2000	29,4	27,4
2003	29,5	27,6
2006	29,8	27,8

Source: *Recent demographic developments in France. Population, 3, 2008 and Bilan démographique, Insee.*

However, unlike the other European countries, this postponement seems to have little impact on completed fertility. The cohort total fertility is also among the highest in Europe: in metropolitan France, women who have ended their fertile life have had more than two children on average, and the women born in 1957, who turned 50 in 2007, have had 2.14 children on average (Toulemon *et al.*, 2008). According to Prioux (2005), cohort completed fertility could stabilize at 2.0 children per woman.

The proportion of childless women has remained very low: only 11% of women born in 1970 will remain childless and “the probability of a progression to a second, a third and a fourth child has not changed since 1975” (Toulemon *et al.*, 2008). All in all, a higher proportion of women give birth to a first child in France than in other European countries, and likewise for second and third births (Prioux, 2005). Finally, the two-child family is the norm (Regnier-Loilier, 2006); 41% of women born in 1960 have two children.

A noticeable characteristic of French fertility is its homogeneity by education level and social class. The most educated women have fewer children than the least educated ones (1.85 children and 2.42 children, respectively, on average among the female cohorts born in 1955-59), but the differences are small compared with other European countries where there is much more polarization by education level (Ekert-Jaffé *et al.*, 2002.). Another significant feature is the small numbers of births outside a partnership: only 7% of mothers are living alone at the time of the birth (Vilain *et al.*, 2003).

1.2. Trends in unemployment

Since the mid-1970s, France has experienced a dramatic increase in unemployment due to a slowdown in economic growth: the unemployment rate (according to the ILO definition) increased from 3.5% in 1975 to 7.8% in 2008, after reaching record levels (10.8%) in 1994 and then again in 1997 (figure 2). The unemployment rate is fairly high in France compared to other European countries. In 2008, it was the fourth highest in Europe (behind Spain, Slovakia and Hungary), above the EU-27 average (7.0%). Moreover, the youth unemployment rate (under age 25) is also one of the highest in Europe: it increased from 7.1% in 1975 to 19.0% in 2008. The youth unemployment rate fluctuates widely with economic growth; it exceeded 20% during periods of economic slowdown in the mid-80s, 90s and 2000s. Young people with lower levels of educational attainment are particularly hard-hit (Fondeur and Minni, 2005).

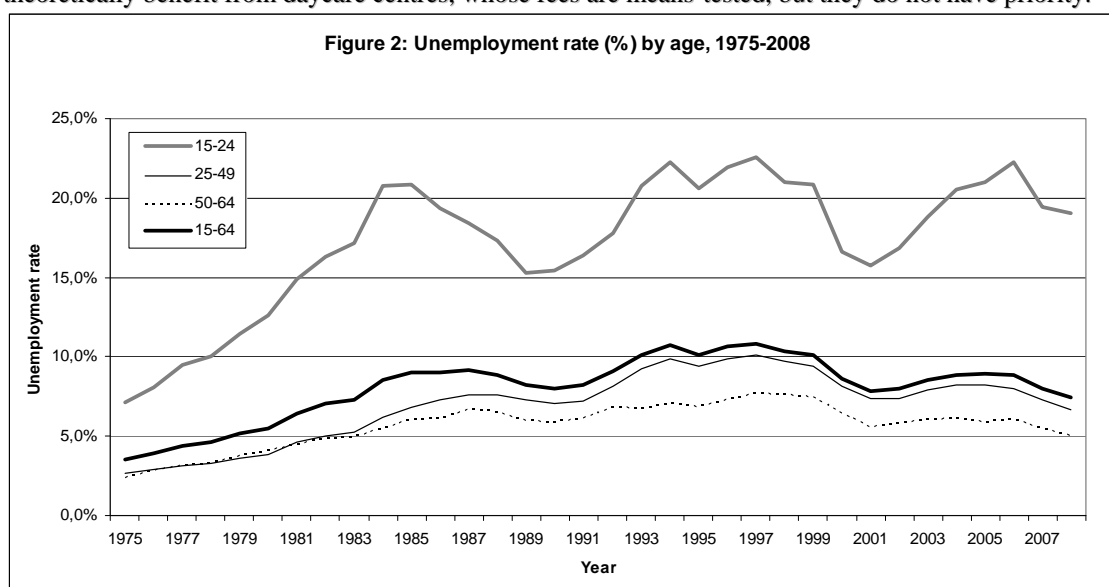
Another specific feature of unemployment in France is its long duration. The average length is more than one year (14 months in 2006): 40% of unemployed people have been out of work for at least one year, 21% for at least 2 years. Flows from unemployment to employment are rather low: according to LFS data, the likelihood of finding employment in 2007 if unemployed in 2006 was 34%. Long-term unemployment mainly concerns persons aged 50

¹ About 2 and a half years between the first and the second child, about 2 years between the second and the third, 1.5 years between the third and the fourth and 1 year between the fourth and the fifth.

and over. However, a significant share of young people are at risk of long-term joblessness, with 25.8% of youth unemployed remaining out of work for a year or more in 2006 (26.8% of men, 24.6% of women).

Unemployed people are covered for loss of income, on condition that they have been in previous employment. Thus, school-leavers are not eligible for unemployment benefits unless they have worked at least four months. If they are under 25, they are not entitled to the minimum welfare benefit either. People who have involuntarily lost their jobs are covered by the unemployment insurance scheme, on condition they have worked at least 4 months in the last 22 months, are registered as a job-seeker and are in the process of genuinely and actively seeking employment. The amount of benefit is calculated on the basis of previous earnings². Unemployment benefits can be claimed for a period equal to the duration of former employment, with a maximum of 24 months. A person with social protection prior to unemployment continues to benefit from health insurance (covering illness, maternity and death) as long as he/she is entitled to unemployment benefit.

Like working people, unemployed people are also entitled to universal and mean-tested family benefits. With at least one child under 3, they can get a basic allowance (a one-off payment per birth of 890€ and 178 € per month for 3 years). Universal family benefits are also available, but only from the second child (124 € per month for 2 children, 283 € for 3 children). Unemployed people with at least 2 years of previous employment are also entitled to the parental leave allowance (374 € per month until the child's third birthday, from the second child since 1994). Since entitlement to childcare services is linked to employment status, unemployed parents can theoretically benefit from daycare centres, whose fees are means-tested, but they do not have priority.



Source: Insee, Labour force surveys, 1975-2008

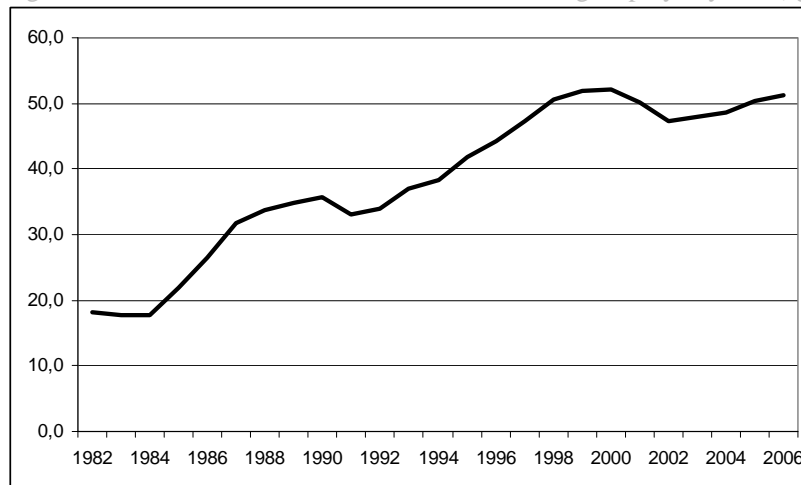
1.3. Trends in insecure employment

Insecure jobs have grown despite strict regulations on temporary forms of employment. Since the late 1970s, a succession of formal regulations on fixed-term contracts has been introduced to restrict fixed-term contracts to contracts of short-term duration, to limit the allowable grounds for their use and to establish a degree of equality of treatment between employees hired under such contracts and other employees. These contracts must be restricted to "objective" situations (replacement, seasonal work, temporary increases in company activity, training purposes, public works programmes). Moreover, the number of successive fixed-term contracts within the same company is limited. Such contracts also have a fixed duration of 3 to 18 months, and can be renewed only twice within the same company. The maximum cumulated duration of successive contracts is 18 months (in some restricted cases it may be 24 months, in the public sector it may be 6 years for highly qualified people). Despite this protective regulation, use of this type of contract has regularly increased. This rise concerns primarily, but not exclusively, young people entering the labour market (figure 3).

Like employees on an open-ended contract, employees on fixed-term contracts are eligible for unemployment benefit, as well as parental leave and parental leave benefit, on condition that they have paid social security contributions over a long enough period. Such employment protection for people on temporary contracts is quite generous in France compared to other European countries (Venn, 2009).

² In 2010, the amount of benefit equals 57.4% of gross daily earnings if monthly gross earnings were between 1,791.18 € and 9,728 €, 40.4 % of gross daily earnings + 10.15 € per day if monthly gross earnings were between 1,791.18 € and 9,728 €, and 1,791.18 € 24.76 € per day if monthly gross earnings were between 990.40 € and 1,084.90 €. If monthly gross earnings were under 990.40 €, the benefit equals 75 % of gross monthly wage.

Figure 3: Share of non-standard work contracts among employed youth (aged 15-24), %



Source: Insee, Labour force surveys, 1982-2006

This short overview of employment trends in France shows that unemployment and insecure employment are fairly high in France compared to other European countries. The evolution of the economy, combined with globalization and deindustrialization, technological and institutional changes have led to this development of unemployment and precarious employment. Flexible forms of employment and employment instability are particularly pronounced at labour market entry, and primarily affect young people. Since conditions of access to employment up to age 30 strongly influence the later career, working lives are less continuous. Labour mobility has increased, but also transitions in and out unemployment (Germe et al., 2003). This rise in unstable employment concerns all categories of employees, but especially the unskilled, leading to a growing contrast between employees with a stable position in their firm and individuals engaged in frequent transitions in and out of employment. Moreover, the gap between cohorts has widened: cohorts born after 1955 have faced rising unemployment, while those born after 1965 have also experienced the deregulation of the labour market and the rise in non-standard employment.

These profound changes on the labour market have progressively led to an increased feeling of uncertainty. Even though unemployed people benefit from welfare protection, they face a drop in income. Moreover, the perceived job insecurities are large for persons with an instable status, such as a fixed-term contract, or who are unemployed. The high level of long-term unemployment contributes to maintaining this uncertainty. In addition to this economic uncertainty, there may be a stigma from unemployment or flexible employment since this status is not the social norm. These developments in employment instability can be expected to have a spill-over effect with regard to individual decisions in private life, and particularly on family formation. This article analyses the impact of employment instability on the birth of children for men and women in partnership, since births outside a partnership are very low in France and often unplanned³; it does not analyse the effect of job uncertainty on the propensity and timing of partnership formation⁴. We assume in this research that the risk of childbirth occurs once people are in partnership and we focus specifically on them.

2. Theoretical framework and hypotheses

Economists have developed models to explain how fertility might respond to variations of income. The dominant economic approach to fertility was developed by Gary Becker (1981), who explained the negative relationship between income growth and fertility by introducing the concept of child "quality", i.e. considering that parents have a demand for quality as well as quantity of children. The higher the income, the higher the demand for child quality and the lower the quantity. This argument of the effect of a variation of income can be adapted to

³ The proportion of non desired births is estimated at around 5% after age 20, but is significantly higher at very young ages (13% before 20) or when women are out of partnership (Regnier-Loilier and Solaz, 2010).

⁴ Employment instability may cause a postponement of other decisions that are irreversible and involve the long term. In particular, the crisis may encourage young people to stay in school and to delay their marriage. This postponement of completion of education may also affect the number of births in the longer term, the most educated people having fewer children. A social crisis may indirectly play on births by deregulating the "marriage market", because men with low income or an unstable job are less "attractive" (Oppenheimer, 1994). These phenomena are beyond the scope of our paper, but have to be kept in mind when interpreting our results.

employment instability, i.e. unemployment or unstable employment, since job insecurity involves a decrease in income and/or an uncertain future income.

The starting point of the analysis is that the parents' fertility decision depends on trade-offs between costs and benefits of children. These costs can be monetary but can also take the form of investment in time. An increase in income (or expected income) has two opposite effects: on the one hand, the increase in household income raises the demand for children (income effect); on the other hand, it represents an increase in the price of time spent with children – the income or career opportunities that a parent must give up to care for the child –, thus reducing the demand for children (price effect). The relative importance of these two effects could vary; thus theoretically, one cannot determine which of the two effects dominates. However, for Gary Becker, as income rises, the demand for quality rises more rapidly than the demand for quantity; in other words, households have fewer children and invest more in each child.

Both income and price effects play symmetrically in time of crisis. A recession may lead to a decline in household income, for example if one member is unemployed, compressing the demand for quantity of children. Postponing childbearing may be a way to save resources otherwise spent on the child, providing a means to offset the financial losses arising from unemployment. This postponement may also reflect unemployed women's anticipation of greater difficulties in finding a new job after becoming mothers. Conversely, the opportunity cost (or price effect) of children is lower when unemployed. Moreover, childcare costs may be saved by having a child while unemployed. In other words, it may be relatively less expensive to have a child when being unemployed than when working. Again, like in the case of income growth, one cannot predict *ex ante* which effect prevails. Such reasoning may apply not only to current unemployment, but also to persons who anticipate unemployment, particularly those in unstable employment. Their fertility decisions may depend on their expected income.

The sociological approaches also highlight the adverse effects that the crisis may have on fertility decisions. Being in employment or attaining a status considered appropriate in individual careers may be preconditions for family formation or the birth of an additional child, to ensure social status and secure current and future economic resources. But conversely, Débra Friedman et al. (1994) argue that people facing a number of different types of economic uncertainty might actually decide to have children. For those with little control over their economic situation, having children can be a strategy to reduce uncertainty, the private sphere thereby seeming less uncertain than the public sphere. Thus, when the work situation or the economic environment is uncertain, becoming a parent can be a way to make the future safer. This explanation is particularly true in contexts where fertility is valued or when the time demands of work are in conflict with family formation, particularly because of a shortage of public childcare.

The theoretical aspects discussed above suggest the following hypothesis:

H1: Employment instability may have opposite effects on fertility.

When the demand for child quality is constant, i.e. does not vary with changes of employment status, one can expect a negative impact of unemployment and unstable jobs on demand for children.

The effect of unemployment (or unstable jobs) may be different depending on which spouse is unemployed. Indeed, the variations of the price of children with income are usually higher for women since they are still the main childcare provider (Galor and Weil, 1996). Since a decrease in women's individual income diminishes both the household income and the price of children, the income effect may be offset by the price effect. For men, the income effect should be higher than the price effect, which reduces the demand for children, since men are generally the main provider of household financial resources. Thus, male unemployment should have a higher impact on fertility than female unemployment (Kravdal, 2002).

H2: This impact is expected to be larger when men are unemployed than when women are.

A fertility decision may be seen as a sequential process, each birth causing a re-evaluation of fertility plans. Thus price and income effects may differ by birth order (Rozenzweig, 1976). Separate analyses at different parities indicate that the effects of income on fertility vary over successive parities. The impact of unemployment is expected to be higher for first births since the control over postponement is greater, whereas the risk of infecundity may prevent parents from postponing subsequent births.

H3: This impact is expected to be higher for first births.

The long-term implications of such employment instability are not obvious (Bhaumik and Nugent, 2005); they depend on the duration of employment uncertainty and on the re-evaluation of household preferences and prospects. If employment instability is temporary, individuals may have the desired number of children over the rest of their lifetime. But uncertainty might affect completed fertility if employment instability were to persist over a long period of time, such that childbirth is postponed a number of times. However, in case of permanent uncertainty, households may re-evaluate their preferences, such as their material aspirations and child quality requirements, and review the decision whether to have a child or to postpone childbirth even further. Thus, the impact of employment uncertainty on completed fertility is theoretically undetermined; it is important to measure the influence of the duration of periods of unemployment over the life course to assess this effect.

H4: The long-term implications of such employment instability depend on the duration of job insecurity.

Beyond the individual situation, the macro economic condition may also affect fertility desires and decisions, via the couple's confidence in the future. A higher unemployment rate may impact those who remain in work via a more pessimistic perception of their own future employment prospects. For instance, De Witte (1999) has emphasized that anticipating redundancy is at least as distressing for individuals as the experience of unemployment itself. Several studies have shown that above individual employment characteristics, aggregate-level factors influence the timing of childbearing (Santow and Bracher, 2001; Kravdal, 2002). General economic insecurity may imply a waiting period during which long-term decisions such as fertility decisions are postponed.

H5: The worse the macro economic situation, the longer people wait before having a child.

3.Data and method

3.1. Data

The data set used here comes from the *Familles et employeurs survey* conducted by the French National Institute of Demographic Studies (INED) on a representative sample of the French population from November 2004 to March 2005. The sample comprises 9,547 individuals (5,107 women and 4,440 men) aged 20-49. Two persons per household in the age range were interviewed.

The data contains standard socio-demographic information (education, household type, number of children, region of residence, health status, immigrant status, etc.) and for those employed at the time of interview, detailed information on current job characteristics. This survey also includes retrospective individual biographical data concerning family, residential and employment history from the age of 18: Individual employment history was recorded via a computerized grid on a yearly basis. Six employment statuses were proposed: employment - distinguishing between part-time and full-time work -, unemployment, education or training, military service, inactivity. Respondents were asked to indicate the years of occurrence of each employment status lasting at least 6 months. An additional "status" was proposed to take into account short spells, i.e. less than 6 months, of employment or non employment. More than one situation can be identified for a given year: firstly, some situations are not exclusive (for example, education and unemployment); secondly, a 6 month period can start on year t and end on year $t+1$ (the interviewers were instructed to tick the two years). Moreover, for each family event reported (couple formation, childbearing), the individual was asked about a precise definition of his/her employment situation (wage-earner/self-employed, public/ private employment, type of contract). This information is also available for former and current partners. In that respect, this survey is unique as a source of information to analyse the interaction between the woman's and the man's employment status and the couple's fertility decisions.

3.2. Sample selection

Since we assume that the risk of childbirth occurs once people are in partnership, we study the impact of employment instability for men and women in partnership (married or not) or who have had a partnership. Different sub-samples relevant to the subject studied are used, each one divided for men and women.

First, all females and males who have already formed a couple are selected to study the timing of first birth. People having given birth before their first partnership are not taken into account since we concentrate on the timing of fertility after partnership⁵. This first sample contains 7,991 observations (3,533 men and 4,358 women). Those who already have one child are then selected to study the timing of second births and constitute the second sample of (at least) one-child parents (2,421 men and 3,260 women).

Second, to study completed fertility, the sample is restricted to individuals who have already formed a couple and are at least 40 years old at the date of the survey. This age limit is defined in order to focus on people who are assumed to have completed their fertility. Indeed in France, female fertility is low after age 40⁶. Male fertility may not be completed, but the same age limit is chosen to ensure consistency and to get a large number of observations. This sample of completed fertility contains 3,316 observations (1,534 men and 1,782 women).

3.3. Several indicators of job uncertainty

Insecure jobs and unemployment may affect the timing of childbearing in different ways. First, their effect depends on the moment such events occur over the life course. One can expect the impact to differ if they occur at the beginning of the union or later. It has been shown that employment status at the beginning of the union may

⁵ Only 125 individuals are excluded.

⁶ In 2004, the age-specific fertility rate, i.e. the number of births that 100 women would have over a given age range, was 6.4 per 100 women aged 40 and over, against 64.3 per 100 women aged 25-29, and 60.4 per hundred women aged 30-34 [Insee, Bilan démographique]. In our sample, fewer than 7% of men and 2% of women have had children after age 40.

influence female timing of childbearing. For instance, Meron and Widmer (2002) showed that French women in a short-term employment in the year they started their union postpone the birth of their first child. Therefore, we analyse the impact of employment status at the time of union formation on the timing of fertility (specification 1). We also analyse the effect of the employment status of both partners (specification 1’).

The information regarding employment status at the beginning of union is available from the answer to the question “*At the beginning of this partnership, in year, ...*

1 You were working?

2 You were in national service?

3 You were unemployed?

4 You were in school, higher education, unpaid training?

5 You were a homemaker or in another inactive situation?

This information is also available for the current partner, either directly from the partner when he/she was interviewed or from the answer to the question “*At the beginning of your life together, what was the situation of spouse/partner’s name?*” if the partner was out of scope (not in the age range or not selected if more than 2 persons in the age range). The same information is available for a former partner from a previous dissolved union. Since the employment status at the beginning of the union is a quite objective and simple item of information, we should be able to avoid bias whatever the respondent (ego or partner). In the specification 1 where both partners’ employment status is included, the sample size is slightly smaller because of non-response of some partners in the survey scope⁷.

Table 2 displays the employment status of respondents at the beginning of union: the large majority of respondent, 81% of men and 62% of women, are in work⁸. They are rarely unemployed, and men are less often unemployed than women (resp. 3.4% and 6.3%) since they may wait to find a job before forming a couple (Ekert-Jaffé and Solaz, 2001). A quite significant proportion of respondents (10.2 % of men and 19% of women) are students at the time of couple formation. Rather few persons start their union during their compulsory national service, so they are grouped with students in the analysis.

⁷ Due to non-response of the partner in the scope of the survey, such information is not available in 7% of cases for men, and 16% for women.

⁸ Unfortunately, the EFE survey does not distinguish between permanent or non-permanent jobs at this stage, but makes the distinction afterwards.

Table 2: Employment status at the beginning of union (%)

	Men	Women
Working	81.2	62.3
In national service	3.6	0.1
Unemployed	3.4	6.3
Student	10.2	19.1
Homemaker or in another inactive situation	1.6	12.2
<i>Total</i>	100.0	100.0

Source: EFE, INED, 2004-2005

Relative to the economic uncertainty at the beginning of the union which is known by both partners who decide and are ready to form a couple anyway, economic uncertainty that occurs later may be more destabilising for fertility decisions. These unanticipated changes in economic circumstances may affect the birth of children. Indeed, like the so-called “surprise effect” defined by Weiss and Willis (1997) in the case of divorce⁹, an unanticipated unemployment spell may affect the couple’s childbearing behaviour, all the more if one partner is more risk-adverse to such a situation than the other. In order to analyse the impact of the current uncertain employment status on the timing of fertility, a second indicator is built. The current statuses of unemployment and short-term employment are computed for each calendar year¹⁰. These two time-dependent variables are lagged by one year to take into account the time to conceive and the duration of pregnancy (specification 2).

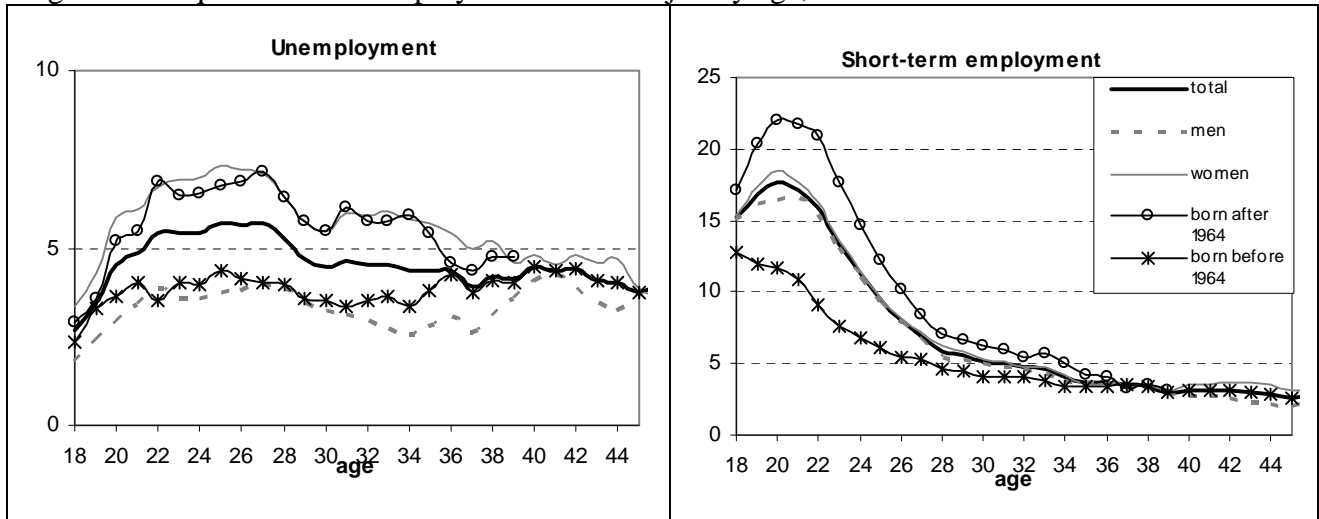
The graphs in Figure 4 represent the frequencies of being unemployed or in short-term employment in our sample by age¹¹. These curves first show that a large share of respondents have been unemployed over the life course (about 4-5 % of the sample at each age). Second, they show that unemployment risk decreases with age but remains significant after age 30, even if the effect is weaker than in the general population because of the selection of young people who have already formed a partnership. Third, the gender discrepancy is high: women are much more likely to face unemployment. There is also a cohort effect, the birth cohort born after 1964 experienced higher unemployment than the previous cohorts. The percentage of men and women in short-term employment is much higher than that of being unemployed, especially under age 26. With regard to short-term employment, the gender gap is almost invisible except at the beginning of the life course. On the other hand, the cohort gap is even larger than for unemployment. This figure confirms that the rise of precarious contracts has massively affected the cohorts born from 1964.

⁹ They analyse the effect of these “surprises” (difference between predicted and observed value of earnings) on the probability of divorce.

¹⁰ Unfortunately, unemployment and employment lasting less than 6 months can not be separated in the employment calendar. Like Meron and Widmer (2002), these insecure periods are considered as short-term jobs.

¹¹ The curves of unemployment frequencies do not describe the unemployment rate since the denominator includes the entire sample (people aged 20-49 in 2004 having formed at least one union) and not the working population.

Figure 4: Frequencies of unemployment/ insecure job by age, sex and birth cohort



Source: EFE, INED, 2004-2005

A third indicator aims to measure the influence of the accumulation of employment uncertainty over the life course on the childbearing process. Thus, a time-varying variable for the ratio of the number of years with unemployment spells to the number of years since union formation is computed¹². A ratio is computed, instead of a simple duration in unemployment, since the longer the duration since partnership formation, the higher the likelihood of having experienced unemployment. The same types of longitudinal indicators are built for spells of short-term employment and inactivity (specification 3)¹³.

In order to assess whether the timing of childbearing is responsive to both individual and societal circumstances, models that incorporate both individual-level and aggregate-level data are constructed. These aggregate-level indicators, such as the local unemployment level or the country unemployment rate, may reflect the perceived risk of unemployment. Thus, the national unemployment rate of men (resp. women) aged 15-64 is introduced in the male (resp. female) specification (specification 4).

For completed fertility at age 40, the same kind of ratios of insecure job and unemployment spells are introduced (specification 1). They describe, in this case, the proportion of time spent in precarious employment over the period starting from first union formation and finishing at the fortieth birthday. In an alternative specification, this ratio is categorized according to three dummy variables contrasting those with a ratio equal to 0, under 10% or over 10% (specification 2). The average proportion of years with a long unemployment spell (longer than 6 months) is around 3% for men and 5% for women. 10% of men and 17% of women were unemployed for more than one year out of ten over this period. On average, people spent as much time in unemployment as in insecure employment from first union formation. The proportion of time spent in short-term employment being around 4% for men and 5% for women. 11% of men and 14% of women have spent more than one year out of ten in such unstable employment.

3.4 Empirical strategy

The effect of economic uncertainty on the timing of first and second childbearing is estimated through Cox proportional hazards models (Cox, 1972). These models are estimated for childless men and women separately and for one-child fathers and mothers separately. The dependent variables are respectively the transition to first and second birth. Childless people are followed from the start of the union and right-censored at the date of interview or at the union dissolution date. Parents are followed from the birth of their first child. The mean duration between couple formation and the first birth¹⁴ is three years and two months. Most first births occur in the first five years following union formation (63% of couples already have their first child after five years of partnership). After ten years of union, only 12% of couples are still childless and the risk of childbearing is very low.

In order to analyse the effect of unemployment and short-term employment on the level of fertility, an ordered polytomous model is estimated. The dependent variable is the number of children individuals have had near the end of their reproductive life, i.e. at age 40. Above 4 children, the modalities are grouped together.

¹² We also tried another specification of the ratios, which includes the insecure employment or unemployment spells occurring before partnership formation: since the completion of education.

¹³ When several situations were identified the same year, we divided the year by the number of situations identified and imputed to each situation a duration equal to the corresponding fraction of year.

¹⁴ Pregnant women are not included since the outcome of pregnancy is not sure and a couple may split up during pregnancy.

In all these models, the same set of control covariates is used. The level of education is introduced with four dummy variables: no education, low education (primary), medium level (secondary) and high education (university). Three birth cohorts are distinguished: born in 1955-1964, in 1965-1974 and in 1975-1986. The age at first couple formation is added since it is usually a good indicator of the quality of the partnership match. Couples formed very young usually have a higher risk of dissolution and hence a lower risk of having children. Marital status is also included, since the formalization of the union may be a pre-condition for having children. Some background variables are also introduced since individuals may adhere to behaviour, values, and norms that dominated during their childhood. Characteristics of the family of origin include whether the respondent had at least two siblings and an indicator of immigrant background, separating French natives from second generation and immigrants¹⁵. Having grown up in a large family is usually a good determinant and positively correlated to the family size reached since it may indicate that the respondent was raised in a family with strong family orientation (Michaël and Tuma, 1985). Immigrant status is included since immigrant fertility is higher than that of native French people. Moreover, fertility varies by immigrant generation, with significant declines between the first and subsequent generations. An additional indicator of the cultural context is introduced through the individual's religiosity, i.e. if the respondent reported that religion is important in his/her daily life. Two additional variables which summarize marital life, i.e. number of years in partnership and the number of partnerships are added in the regressions for completed fertility at age 40.

4. Results

4.1. The timing of childbearing

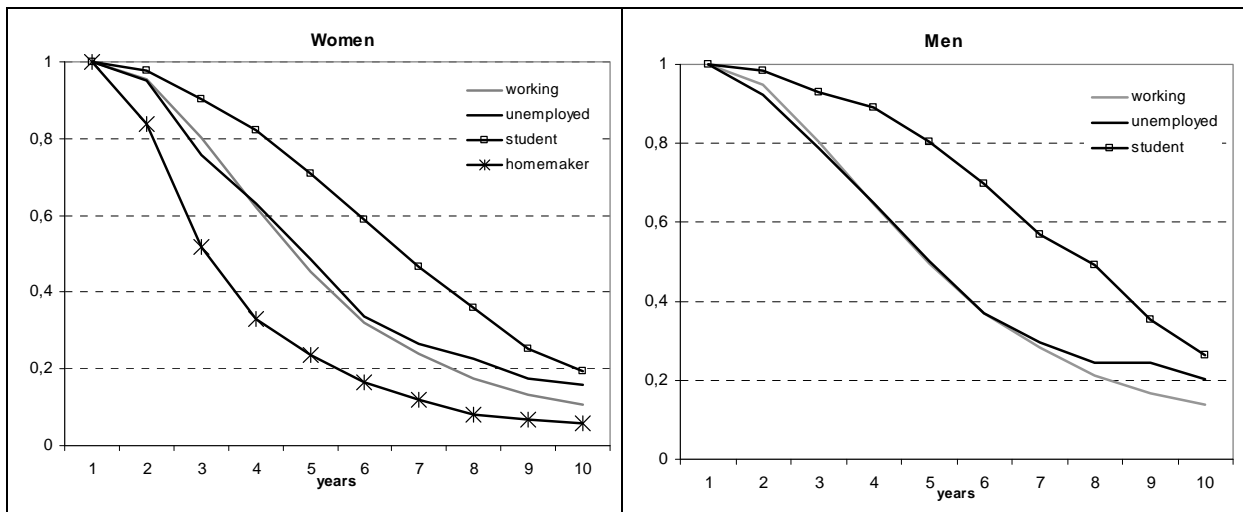
We first present the results regarding control variables. Appendix 1 gives complete results from the Cox regression for specification 2. Characteristics of the partnership matter: transition to childbearing is faster when individuals are married. In France, being married is not a pre-condition for having children –half of all births occur outside marriage–, but people who marry are selected: they are more family oriented and are more likely to have children quickly. Contrary to men, the age at partnership is not significant for women. However, it does not have a linear effect: Having formed the first partnership very young, before age 20, delays the transition to first child for men, while it is fastest when men start their first partnership between 20 and 25. Background variables are also significant, especially for men. As expected, having been raised in a large family accelerates the transition to the first child for both men and women. Being a first or second generation immigrant increases the probability of having the first child quickly, but only for men. Religiosity also matters, but again only for men. The stronger the religiosity, the higher the likelihood of having a first child quickly. The non-significance of background variables for women may be due to the introduction of the homemaker status for women which indirectly captures a part of the more traditional behaviours.

Regarding individual characteristics, as expected, the interval between union formation and first birth is longer for younger cohorts than for earlier birth cohorts. Birth timing varies significantly by level of education. Having no qualifications or a basic education accelerates the timing of a first child for both men and women, while having a secondary level of education or a university level postpones fertility. This postponing effect of high education is particularly strong for women. This result is quite standard: in France, like elsewhere, the more educated people remain childless for longer. The reasons are multiple: the opportunity cost of having children is higher for the highly educated, especially for women. They thus may wait to get sufficient returns from their educational investment before becoming a parent.

Work instability has an impact on the timing of childbearing, though this does not hold for all our indicators of job uncertainty. Before presenting the results of the multivariate analyses, stratified survival curves solely by employment status at the beginning of the partnership, for men and women respectively, are shown (Figure 5). The timing of parenthood is similar for people working at the time of their first partnership and for unemployed people: there is no difference in their speed of entry into parenthood, observed for both men and women. By contrast, a huge difference can be observed between students and employed people: students, and men particularly, are the slowest to become parents. 80% of male students are still childless five years after the start of first partnership, 50% after seven years. By contrast, female homemakers are the fastest to have children: 40% have a first child within the first two years of first partnership, and 70% during the first four years.

Figure 5: Probability of first child by female and male employment status at the start of the partnership (survival function)

¹⁵ Variables such as parents' level of education are not available.



Source: EFE, INED, 2004-2005

Multivariate regression confirms these first results (table 3 shows the effect of employment status variables, and the appendix describes the complete regression). After controlling for cohort, education, religiosity, age at union formation, and number of siblings, unemployment at the beginning of partnership matters very little for the timing of childbearing (models 1a). People having already faced unemployment at the time of union formation may feel more cautious and sensitive to the unemployment risk later. But, it seems that there is no such memory effect on the fertility decision since being unemployed at union formation does not affect future fertility timing. Inactive women still bring forward births, while being in education delays the start of a family, both for men and women. This last result, which is expected, confirms that men and women wait to finish their investment in human capital before starting a family.

One of the advantages of the survey was to recover symmetrical information on both partners at the couple formation even if the union was subsequently dissolved. The introduction of both partner's employment status gives interesting results (model 1b). Hence, the effect of male employment status proves to be insignificant when both partners' employment characteristics are introduced¹⁶, while there is only a slight change in the magnitude of the coefficients for women. After controlling for their partner's characteristics, the male employment status on the labour market at partnership formation does not affect the transition rate to fatherhood. On the other hand, his partner's employment status matters: transition to fatherhood is faster when the woman is out of the labour force, but it is slower when she is still in education. This result is consistent with that observed for women. Indeed, being a homemaker, whatever the partner's employment status, increases the transition to motherhood, while being a student is associated with significantly lower transition rates to motherhood. This shows that it is the women's employment status at partnership formation that most strongly affects the timing of childbearing, particularly when they still are in education. One reason may be that pregnancy is more detrimental for women's education than for men, and both sexes seem to integrate this constraint.

Whereas unemployment at the beginning of partnership has no effect on the timing of childbearing, being unemployed or holding an insecure job one year earlier delays the first child for men (models 2). For women, unemployment has no such effect, it neither accelerates nor delays pregnancy. In other words, women do not take advantage of unemployment to have children, and neither do they wait to be employed. On the other hand, holding an insecure job postpones transition to motherhood. Thus, once they get a job, women wait for a stable job situation before founding a family. One can argue that unemployment is not significant for women because they form a heterogeneous group (Hakim, 1998), all women do not have the same career prospects. Those giving priority to their career may intend to get a stable job before becoming mothers, unlike those who have less control over their economic situation and who give priority to family, and who may take the opportunity of being unemployed to accelerate childbearing. This heterogeneity of behaviours may be related to the level of education. We therefore added interactions terms between the indicator of economic uncertainty and the woman's level of education, but this explanation turns out to be false. As table 4 shows, highly educated women, supposed to be more career-oriented, do not behave differently from low educated women. They do not postpone childbearing when they are unemployed. But, highly educated women tend to delay transition to motherhood when they hold an insecure job.

¹⁶ The sample is smaller when the partners' characteristics are introduced since some current partners were unable or did not want to be interviewed, but the effects are also found if we compare results of regressions 1a and 1b on this reduced sample.

Table 3: Semi-parametric duration model (Cox) on the timing between partnership formation and first child

Employment status	MEN					WOMEN						
	Aged 20-49			Aged 40 +		Aged 20-49			Aged 40 +			
	At the beginning of partnership		Last year (TV)	Ratios (TV)	Unemployment rate (TV)	Last year (TV)	At the beginning of partnership		Last year (TV)	Ratios (TV)	Unemployment rate (TV)	Last year (TV)
Model	1a	1b	2	3	4	5	1a	1b	2	3	4	5
Respondent's employment status												
Working	<i>ref</i>	<i>ref</i>	<i>ref</i>		<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>	<i>ref</i>		<i>ref</i>	<i>ref</i>
Unemployed	-0.043	-0.023	-0.267**		-0.257**	-0.418**	-0.112	-0.094	0.026		0.043	0.053
Short-term employment			-0.161*		-0.145*	0.017			-0.206***		-0.199***	-0.106
In education	-0.223***	-0.089	-		-0.486***	-0.252**	-0.253***	-0.254***	-0.630***		-0.607***	-0.419***
Homemaker			0.484***				0.398***	0.346***	0.284***		0.312***	0.207**
Partner's employment status												
Working		<i>ref</i>						<i>ref</i>				
Unemployed		-0.098						-0.011				
In education		-0.346***						-0.124*				
Homemaker		0.469***										
Ratios												
Unemployment			-0.268							0.093		
Short-term employment			-0.269***							-0.328***		
Unemployment rate												
By sex (15-64 years old)					-0.047***							-0.070***
N	3533	3299	3533	3533	3533	1534	4358	3667	4358	4358	4358	1782
Events	2421	2250	2421	2421	2421	1226	3260	2630	3260	3260	3260	1525

TV= Time-varying; ***, **, * significant at 1%, 5%, 10%

Controlled for type of union (time varying), education, belonging to a large family (number of siblings=2+), religiosity, age at first partnership, immigration status and birth cohort.

However, for men, the unemployment effect differs according to education: being unemployed delays the first birth only for low educated men. With regard to short-term employment, highly educated men seem to be more cautious and wait longer before having a first child.

Table 4: Interaction between uncertainty (t-1) and education

	Men	Women
Unemployed*high educated	-0.177	-0.124
Unemployed*low educated	-0,308**	0.026
Short-term*high educated	-0,382***	-0,373***
Short-term*low educated	-0.066	-0.059
Student	-0.494***	-0.945***
Homemaker		0.763***

Source: EFE, INED, 2004-2005

Beyond current employment status, the accumulation of unemployment spells and non-permanent jobs decreases the likelihood of entry into parenthood for men (models 3). Thus, men who face either persistent or recurrent unemployment experience slower transition to first birth. For women, confirming the previous result, only the accumulation of non-permanent jobs has a negative effect.

In addition to individual employment characteristics, the unfavourable general situation of the French labour market, measured by the national unemployment rate (15-64) by sex, is an additional reason for postponing the first child (model 4). Men's and women's aggregate unemployment respectively reduces transition to fatherhood and motherhood¹⁷. This aggregate effect is even larger for women. Thus, it appears clearly that the timing of fertility is sensitive to general economic circumstances. Once the aggregate unemployment rate is introduced the effect of individual employment status remains. Thus, both micro and macro situations affect fertility decisions. However, the impact of job uncertainty varies by birth order. For the second child, we find no effect for any of the employment status variables for men, whatever the specification (table 5). For women, neither short-term employment nor unemployment affect the timing of the second birth, but as usual, being in education delays the birth of a second child and being a homemaker, which is likely to be endogenous, however, accelerates it. Thus, for women, there is a negative effect of holding an unstable job before the first birth and no effect after. To go deeper into this result, we introduced in specification 2b a dummy indicating if the woman has been unemployed or had been in a short-term employment for at least one time during the period between couple formation and the first birth. The results show that women with a history of insecure employment before the first child -which postpones the first birth-, bring forward the second birth. Women who have postponed childbearing until being well-established on the labour market seem to make up for this delay by having a faster transition to the second child.

¹⁷ An alternative specification uses the unemployment rate by 5-year age groups and sex, and the results have the same significance but the parameter effect is weaker.

Table 5: Semi-parametric duration model (Cox) on the timing between first and second child

Employment status	MEN						WOMEN							
	at first child birth		last year (TV)		ratios (TV)	unemployment rate (TV)	at first child birth		last year (TV)		ratios (TV)	unemployment rate (TV)		
	1a	1b	2	2b	3	last year (TV)	4	1a	1b	2	2b	3	last year (TV)	4
Respondent's employment status														
working	<i>ref</i>	<i>ref</i>	<i>ref</i>			<i>ref</i>		<i>ref</i>	<i>ref</i>	<i>ref</i>			<i>ref</i>	
unemployed	-0.158	-0.199	-0.121	-0.068		-0.168		0.080	0.105	-0.028	-0.007		-0.020	
short-term employment			-0.044	0.002		-0.022				-0.046	-0.128		-0.029	
student	0.107	0.183	0.157	0.158		0.157		-0.075	0.025	-0.369***	-0.368***		-0.337***	
homemaker								0.250***	0.279***	0.306***	0.307***		0.317***	
Partner's employment status														
working														
unemployed		-0.135							0.013					
student		-0.047							0.378					
homemaker		0.191												
Before first child														
having been unemployed				-0.144							-0.060			
having held short-term employment				-0.059							0.172***			
Ratios														
unemployment						-0.054							-0.063	
short-term employment						-0.217							-0.076	
Unemployment rate														
overall by sex (15-64 years old)							-0.023							-0.015
N	2421	2346	2421	2421	2421	2421		3260	3076	3260	3260	3260	3260	3260
events	1695	1643	1695	1695	1695	1695		2323	2183	2323	2323	2323	2323	2323

Source: EFE, Ined, 2004-2005

TV= Time-varying; ***, **, * significant at 1%, 5%, 10%

Controlled for type of union (time varying), education, belonging to a large family (number of siblings=2+), religiosity, age at first child, immigration status and birth cohort.

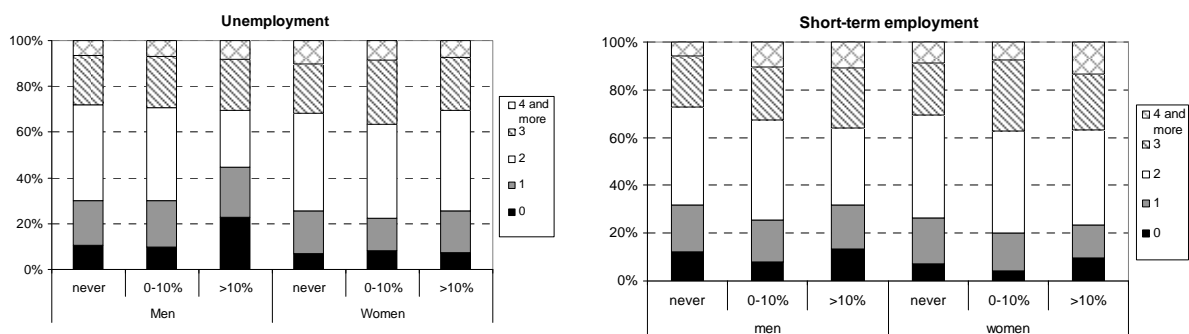
4.2. Completed fertility: Does unemployment cause missing births?

Figure 6 presents the total number of children by age 40 according to individual job history, for men and women respectively. The distribution of men and women by their number of children is displayed for those who had never been unemployed since the start of their first partnership, for those who were unemployed between 1 year and 10% of years, and for those who were unemployed more than 10% of years. This figure suggests that for women the distribution by number of children is very similar, whatever their unemployment history. Hence, for women unemployment neither prevents nor encourages childbearing.

For men, on the other hand, the number of children varies a great deal with unemployment history. Men who have experienced several unemployment spells and have been jobless for more than one year out of ten are more than twice as likely to remain childless and less likely to have two children or more. Thus, with respect to these descriptive statistics, it seems that unemployment spells decrease the probability of having children for men.

There are less marked differences in the total number of children at age 40 according to the experience of short-term employment. For women, those who have experienced insecure employment slightly more often have large families (3 children and more). But those who have faced recurrent spells of unsecure employment (10% and more) are also slightly more often childless. Men with long periods in insecure jobs also more often have 3 children and more.

Figure 6: Number of children by frequency of unemployment /short-term employment



Source: EFE, INED, 2004-2005

The multivariate analysis shows that, for men, these observed differences in the final number of children by degree of exposure to unemployment or short-term employment are not simply linked to structural characteristics, such as family background or the level of education, which could be connected with the experience of job instability (table 5). Indeed, the ratio of unemployment is significantly negative for men: the longer they have been unemployed, the fewer children they have at age 40. Specification 2 shows that completed fertility is affected only for men who face lasting unemployment over the life course (over 10% of time since partnership formation up to age 40). On the other hand, the ratio related to insecure jobs is significantly positive, especially for those who experience multiple spells of short-term employment (specification 2). Controlling for education, religiosity, immigrant status and other family background, the longer the relative time in insecure jobs, the higher the number of children. This result is a little bit puzzling since having experienced insecure jobs is not significant on the timing of the first (see model 5 in table 2) and second births¹⁸ for this cohort. Moreover, precarious jobs were quite rare for the cohort born before 1964. Thus, those who have experienced recurrent periods of unstable jobs in this cohort are clearly highly selected. Descriptive statistics show that they are less educated, more likely to be manual workers, immigrants and they often entered their first union before age 20. To check

¹⁸ Duration models were also performed for second births for people aged 40 and more (not displayed here). The parameter of current insecure job is not significant.

whether this result is linked with a more general precariousness or poverty, we perform a third estimation including the social group as additional covariate. The social group was not significant, – a quite standard result in France where there is little social segregation of fertility – and the coefficient for insecure employment remains significant. Unfortunately, the dataset contains very little retrospective economic information to check further this explanation.

For women, neither the ratio of unemployment, nor the ratio of short-term employment is significant for the number of children reached at 40. Thus, having experienced unemployment and/or short-term employment does not impact their completed fertility. This result holds for the cohorts born before 1964, for which unstable jobs were quite rare.

Table 6: Ordered polytomic model on the number of children at age 40

	Men			Women		
	1	2	3	1	2	3
<i>Ratio unemployment</i>	-1.017*** (0.314)		-1.046*** (0.315)	-0.061 (0.234)		-0.005 (0.237)
<i>Ratio short-term employment</i>	0.510** (0.226)		0.497** (0.226)	0.160 (0.206)		0.124 (0.207)
<i>Ratio unemployment (ref = 0%)</i>						
Between 0 and 10%		-0.003 (0.107)			-0.055 (0.078)	
>10%		-0.213** (0.100)			-0.025 (0.072)	
<i>Ratio short-term employment (ref = 0%)</i>						
Between 0 and 10%		0.093 (0.102)			0.022 (0.081)	
>10%		0.217** (0.095)			0.095 (0.077)	
<i>Large family</i>	0.220***	0.211***	0.237***	0.249***	0.251***	0.262***
<i>Religiosity (ref=Religion moderately important)</i>						
Religion Important	(0.064)	(0.064)	(0.065)	(0.059)	(0.059)	(0.059)
Religion unimportant	0.270*** (0.066)	0.268*** (0.066)	0.264*** (0.066)	0.226*** (0.056)	0.223*** (0.056)	0.219*** (0.056)
	-0.190 (0.124)	-0.191 (0.124)	-0.196 (0.125)	-0.040 (0.118)	-0.036 (0.118)	-0.029 (0.119)
<i>Immigration status (ref=native)</i>						
Second generation	0.068 (0.095)	0.071 (0.094)	0.048 (0.095)	-0.150 (0.095)	-0.148 (0.095)	-0.156 (0.096)
Immigrant	0.228** (0.099)	0.180* (0.097)	0.207** (0.099)	0.360*** (0.089)	0.361*** (0.089)	0.309*** (0.091)
<i>Ratio marital life</i>	0.086*** (0.006)	0.092*** (0.006)	0.088*** (0.006)	0.081*** (0.006)	0.081*** (0.006)	0.080*** (0.006)
<i>At least 2 partnerships (ref=one unique)</i>	-0.036 (0.069)	-0.035 (0.069)	-0.029 (0.069)	0.073 (0.064)	0.077 (0.064)	0.084 (0.065)
<i>Married</i>	0.312*** (0.067)	0.319*** (0.067)	0.312*** (0.068)	0.516*** (0.080)	0.525*** (0.080)	0.515*** (0.081)

<i>Education (ref=low)</i>							
	High	0.214*** (0.069)	0.216*** (0.069)	0.271*** (0.086)	0.100 (0.067)	0.095 (0.067)	0.118 (0.085)
	Medium	0.081 (0.092)	0.071 (0.092)	0.127 (0.096)	0.103 (0.073)	0.098 (0.073)	0.117 (0.077)
	No qualifications	0.291*** (0.087)	0.286*** (0.086)	0.279*** (0.089)	0.335*** (0.074)	0.332*** (0.074)	0.298*** (0.077)
<i>Socio-occupational category (ref= clerical/sales worker)</i>							
	Farmer/ self-employed			-0.007 (0.114)			0.019 (0.120)
	Higher-level occupations			-0.077 (0.119)			-0.029 (0.107)
	Intermediate occupations			-0.153 (0.103)			0.002 (0.076)
	Manual worker			-0.015 (0.098)			0.013 (0.087)
	Always inactive						0.540*** (0.157)
Cut 1		0.439	0.546	0.418	0.511	0.529	0.52
Cut 2		1.281	1.376	0.976	1.443	1.207	1.192
Cut 3		2.46	2.553	2.147	2.721	2.472	2.459
Cut 4		3.477	3.573	3.154	3.686	3.704	3.412
Pseudo R2		0.07	0.08	0.07	0.08	0.08	0.09
Observations		1534	1534	1525	1782	1782	1760

Source: EFE, INED, 2004-2005

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

5. Discussion and conclusion

The examination of fertility timing and completed fertility in France demonstrates that employment uncertainty matters in different ways for men and women. The sharp increase in unemployment in France over the last decades has had negative effects on male fertility. Facing unemployment significantly affects the timing of first childbearing: men who were unemployed one year previously postpone the arrival of the first child (H1). Moreover, men who face persistent unemployment or an accumulation of periods of unemployment delay the transition to the first child (H4). For men, the income effect of unemployment is thus higher than the reduction of the opportunity cost of children, at least regarding unemployment. These results reflect the fact that, for men, it is important to get a job before becoming fathers. However, being unemployed at partnership formation does not affect the timing of the first child. It thus seems that when partners are prepared for an unstable employment situation, childbearing timing is not affected, while unanticipated changes in economic circumstances influence the birth of children. Couples where

the male partner is unemployed at the time of couple formation may be particular since job uncertainty is likely to postpone couple formation, which in turn postpones fertility.

Once the first child is born, unemployment no longer has an effect on the timing of subsequent births (H3). Several explanations may be advanced. First, the main transition remains the family formation with the arrival of the first child, which affects the couple's organisation and family budget constraints. In France, there is a strong social norm around the two-child family. The strong wish to give a brother or a sister to the first child may then counter-balance the negative effect of job uncertainty on fertility. Moreover, public transfers may serve as a guarantee since cash transfers to families increase from the second child in France. People who are unemployed or in an insecure job may also feel more confident about the future. They are also likely to be better integrated in social networks when they are parents. For employers, being a father is also a positive signal of a job applicant's commitment to work, which increases their chances of finding a job. Lastly, the control over postponement is lower for higher order births, due to the risk of infecundity. However, even though the timing of the second birth is not affected by unemployment, fertility at age 40 is influenced by it for men who have encountered several periods of unemployment or persistent unemployment. Thus, postponing the first birth has an impact on male completed fertility for those who have had chaotic careers. Our fourth hypothesis is validated for men, i.e. there is an impact of unemployment on completed fertility for people with a long duration of unemployment.

By contrast, women's unemployment has no effect on their fertility. Neither being unemployed at partnership formation, nor current unemployment during partnership, nor the accumulation of unemployment spells, have an effect, either on the timing of fertility or on completed fertility at age 40. The income effect of losing one's job seems to be counterbalanced by the price effect, like in the US (Rindfuss *et al.*, 1988). They neither take the opportunity of unemployment to accelerate the arrival of their first child like in Northern countries, Germany and the United Kingdom (Kravdal, 1994, 2002; Hoem, 1998; Andersson, 2000), nor do they postpone childbearing compared to women in employment like in Belgian Flanders (Impens, 1989). Moreover the result of Kravdal (2002) and Adsera (2004, 2005b), who show that unemployment accelerates first births for women, while it postpones following births is not found in France. This insignificant effect of unemployment for women holds true whatever their level of education. Contrary to what has been observed in Germany (Kreyenfeld, 2005) or in Sweden (Hoem, 2000), there is no heterogeneity of women, at least by education level, regarding the impact of unemployment on fertility, which confirms previous results (Ekert *et al.*, 2002). In French studies, the question of the impact of unemployment on fertility has not been addressed so far, except by Meron and Widmer (2002). Our result that women's unemployment has no effect on their fertility contrasts with the findings of this previous research, based on a comparative French survey performed some years before ours (in 1997), which showed that women who face unemployment postpone fertility. This difference is explained by divergence in methodology: our study uses time varying variables regarding employment status, unlike the former research that used static dummy variables indicating that unemployment has been experienced either before or after the couple formation. When we use such indicators, comparable results are found, i.e. women having experienced unemployment after partnership significantly postpone childbearing. But as the authors themselves pointed out, such types of indicators are of limited value since the longer the duration since couple formation, the higher the likelihood of encountering unemployment.

The impact of individual unemployment is higher for men (H2). This is not a French specificity, and has been observed, for instance, in Europe (Adsera, 2005b), and in Norway (Kravdal, 2002) or the US (Rindfuss *et al.*, 1988). This result illustrates how the social roles of men and women continue to differ in France: men are still expected to be the main breadwinner; they have to secure economic resources before having children.

Precarious employment is clearly a different type of job uncertainty to unemployment. It concerns either people entering the labour market or people with an unstable employment history. Occupying such types of jobs has a low impact on the timing of male fertility, except when individuals accumulate such jobs, which signals huge difficulties in entering the stable segment of the labour market. Insecure jobs have more influence on women's fertility: holding a short-term

employment twelve months earlier leads to the postponement of the first birth for women, as does the accumulation of such contracts. Women holding such insecure jobs seem to give priority to getting a stable job before having their first child. Holding a stable job before pregnancy guarantees that they can return to work after the birth of the child. It also allows them to accumulate enough work experience to claim parental leave benefits.

Although individual unemployment does not affect individual female fertility, women seem to be highly sensitive to the general economic situation since women's aggregate unemployment reduces transition to motherhood. This result also holds true for men (H5), even though macro-levels effects are more important for women. Thus, women seem to be more sensitive to a pessimistic perception of future job prospects that may affect one or both partners, than to their current individual bad situation. Thus, all women, and not only those who face unemployment, postpone fertility in bad times. We find a pattern of pro-cyclical fertility.

Finally, the impact of unemployment on completed fertility is rather low: unemployment matters in this respect only for the rare men who accumulate numerous periods of unemployment. Thus, the exclusion of some workers from the labour market has implications in the private sphere. Long-term or persistently unemployed people are also less protected by social welfare. All these results probably mean that in countries with strong social employment protection and strong family policy such as France, fertility is less affected by employment insecurity than in countries with lower family support and lower job protection. Up to now, the current economic crisis has not impacted French fertility (Pailhé, 2010); in the light of our research findings, it is possible to predict that it will have a weaker effect on family lives and fertility than elsewhere.

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Appendix 1

Completed results of semi-parametric duration model (Cox) on the timing between first partnership and first child (specification 2)

	Men	Women
<i>Situation t-1 (ref=stable job)</i>		
unemployment	-0.266 ***	0.026
short-term employment	-0.161 ***	-0.206 ***
student	-0.484 ***	-0.630 ***
homemaker		0.284 ***
<i>Married (ref=no)</i>	0.189 ***	0.209 ***
<i>Large family (ref=no)</i>	0.149 ***	0.100 **
<i>Religiosity (ref=Religion moderately important)</i>		
Religion important	0.163 ***	0.072 *
Religion unimportant	-0.072 ***	-0.045
<i>Immigration status (ref=native)</i>		
second generation	0.126 ***	0.033
immigrant	0.140 ***	0.066
<i>Age at first union (ref=after 25)</i>		
<20	-0.133 ***	-0.020
20-25	0.036 ***	0.023
<i>Birth cohort (ref= before 1964)</i>		
after 1973	-0.306 ***	-0.205 ***
1964-1973	-0.045 ***	-0.062
<i>Education (ref=low)</i>		
high	-0.128 ***	-0.211 ***
medium	-0.046 ***	-0.088 *
no qualifications	0.109 ***	0.115 **
N	3533	4358

Source: EFE, INED, 2004-2005

* significant at 10%; ** significant at 5%; *** significant at 1%

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