From Employment to Engagement? Stable Jobs, Temporary Jobs, and Cohabiting Relationships

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Abstract

Family formation has been substantially delayed in recent decades, and birth rates have fallen below the replacement rates in many OECD countries. Research suggests that these trends are tightly linked to recent changes in the labor market; however, little is know about the role played by increases in job insecurity. In this paper, we investigate to what extent the decline in the share of permanent jobs among young workers explains observed delays in age at first cohabitation and age at first child. Using French data on the work and family history of large samples of young adults, we provide evidence that access to permanent jobs has a much stronger effect than access to temporary jobs on the probability of entering a first cohabiting relationship as well as on the probability of having a first child. We find that about half of the increases in age at first cohabitation and at first child can be explained by the rise in unemployment and in the share of temporary jobs among young workers.
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1 Introduction

Over the last half century family formation and family structures have changed substantially: median age at first marriage or cohabitation has increased; more and more individuals are living alone; first births are postponed; and birth rates have fallen below the replacement rate in many OECD countries.[1] While several papers have provided evidence that these sweeping changes have technological, social and legal roots with the introduction of the birth control pill or changes in abortion laws for example (e.g., see Goldin and Katz, 2002 or Myers, 2017), there is also evidence that these changes in family structures and family formation are tightly linked to changes in the labor market. Most of this research has focused on the role of increases in women labor force participation and decreases in the pool of "marriageable men".[2] Much less is known about the consequences of job insecurity for family formation, despite the fact that there has been a large increase in job insecurity in recent decades[3]. This paper aims at filling this gap by studying to what extent the rise in the share of temporary jobs among young workers explains observed delays in family formation.

Theoretically, it is not obvious whether stronger employment protection favors family formation. Temporary contracts stop automatically without any cost after a prespecified period whereas it is very costly to terminate open-ended contracts. As a consequence, for a given wage permanent contracts reduce earnings uncertainty compared with temporary contracts. This may impact individuals' probability of cohabitation and childbearing positively or negatively. On the negative side, as temporary jobs provide lower financial security, banks may be less willing to lend money to workers in temporary jobs compared with workers in permanent jobs. This may restrict temporary workers' ability to access independent housing. Similarly, landlords may be more reluctant to rent houses or apartments to temporary workers, which limits their possibility of cohabiting. More generally, uncertainty about future earnings may deter individuals from undertaking actions expected to have high future costs, such as childbearing. From a matching perspective however, the relationship between employment protection and family formation is more ambiguous. If high earnings are a desirable trait, temporary workers with high wages may be a less desirable match compared with permanent workers because their future earnings are more likely to decline. On the contrary, temporary workers with low wages may be a more desirable match compared with permanent workers with similarly low wages because the future earnings of temporary workers are more likely to increase. In this context, stronger employment protection would either have a positive or negative impact on family formation depending

[1] E.g., see Lundberg and Pollak, 2007 or Stevenson and Wolfers, 2007 on the evolutions of American families, and OECD, 2011 for changes in family structure and formation in OECD countries.

[2] E.g., see Blau and Winkler, 2011 for a review of this literature.

[3] The share of temporary employment in total employment has increased by 65% between 1990 and 2017 for men and women aged 15 to 24 years old in Europe (See OECD, temporary employment indicators).

on workers' wages. Finally, the relationship between weaker employment protection and family formation may be positive. If individuals decide to engage in cohabiting relationships to insure themselves against income shocks, then we should expect a positive relationship between employment instability and the propensity to start cohabiting.

A long-standing strand of research has explored the empirical relationship between economic uncertainty and family formation. Several papers have highlighted a strong and negative correlation between job insecurity and marriage or cohabitation on the one hand (e.g., see Ekert-Jaffé and Solaz, 2001, 2002; Kalmijn, 2011; Rica and Iza, 2005), and between job insecurity and fertility decisions on the other hand (e.g., see Adsera, 2004, 2005, 2011; Auer and Danzer, 2016; Pailhé and Solaz, 2012). However, causal evidence on these topics is scarce. Only two papers have provided causal evidence for the negative effect of job insecurity on women's fertility decisions (Prifti and Vuri, 2013 and Lopes, 2018). To the best of our knowledge, there is no causal evidence regarding whether permanent and temporary employment have similar implications for the decision to start cohabiting. This paper aims to fill this gap. Using detailed information on the work and family history of large representative samples of young French adults, we study whether access to permanent jobs has a stronger effect on the probability of entering a cohabiting relationship than access to temporary jobs. In addition, we analyze whether the causal relationship between access to stable employment and the decision to start cohabiting may explain the negative effect of job insecurity on fertility decisions. Marriage no longer seems to be a prerequisite for childbirth.[4] However, most couples wait until they live together to have a first child. In 2015, e.g., about 90% of children from 0 to 2 years old in France were living with both parents.[5] Therefore, understanding whether and how employment status impacts cohabitation is key to understanding its implications for fertility decisions.

This paper also contributes to the empirical literature on youth unemployment and family formation. This literature has focused mainly on the effect of employment relative to unemployment or inactivity on the decision to start a family and does not distinguish between permanent or temporary job positions. In particular, Lillard and Waite (2000), Aassve et al. (2006), and Niedergesäss (2013) study the relationship between employment, cohabitation or marriage, and fertility using a methodological framework very similar to ours. These three papers use Lillard's simultaneous hazard model (Lillard, 1993) and find a positive effect of employment on marriage or cohabitation for men, and a negative effect for women (the exception is Aassve, Burgess, Propper and Dickson (2006) who find a positive

[4]The share of births outside of marriage has increased from 7.2% to 39.7% over the last 40 years in OECD countries (OECD Family Database).

[5]Source: INSEE, Population census.

effect for both genders). In addition, they find no evidence of a positive or negative effect of marriage (or cohabitation) on employment for men, but they find a negative effect for women. Relative to this literature, the main contribution of our paper is to focus on the differential effect of stable and temporary jobs. The idea that employment protection hinders job creation and thereby explains high unemployment rates has gained momentum in recent decades. Consequently, several European countries have implemented public policies favoring temporary contracts or weakening the job security associated with open-ended contracts.[6] The empirical literature studying the consequences of such policies has focused mainly on their direct impact on individuals' earnings and employment trajectories.[7] However, it is important to understand whether temporary jobs have similar implications as stable jobs for cohabitation and fertility decisions to grasp the full consequences of public policies favoring more flexible labor markets.

It is empirically challenging to assess whether the timing of employment explains the timing of family formation and to estimate the differential impact of stable and temporary jobs. Individuals who find a stable or temporary job sooner are likely to have unobserved characteristics that may also influence the timing of their cohabiting relationship (selection) and the three transitions may impact each other (reverse causality). To overcome these issues and identify causal effects, we use the duration model of Abbring and van den Berg (2003). Under the no-anticipation assumption – i.e., if individuals cannot predict in advance the exact date of occurrence of the events under consideration or if they do not act upon this information before the events happen – Abbring and van den Berg (2003) show that this empirical model enables us to assess the causal relationships between different events even when their timings are affected by correlated time-constant unobserved characteristics. To disentangle causality from selection, Abbring and van den Berg's duration model includes potentially correlated unobservable characteristics impacting the timing of the different events of interest, and we estimate their joint distribution simultaneously with the parameters of interest. Intuitively, the idea is to estimate whether one event systematically happens shortly after another event no matter when the first event happens, as selection per se would imply a strong correlation between both timings but not a quick succession of events (see Abbring and van den Berg, 2004).

Our findings provide evidence that job stability has a causal impact on the probability of starting a cohabiting relationship and having a first child. First stable jobs multiply men's and women's instantaneous probability of entering a first cohabiting relationship by 3.8 and 3.4 times, respectively.

[6] See Boeri (2011).

[7] See Boeri, Cahuc and Zylberberg (2015) for a review of the impact of employment protection legislation on labor market outcomes.

By contrast, first temporary jobs multiply women's instantaneous probability of entering a first cohabiting relationship by 1.1 times only with no significant impact for men. Access to stable employment also affects the probability of having a first child positively, both indirectly (through its effect on cohabitation) and directly, while access to temporary employment has no direct impact on fertility decisions and a much lower indirect impact. Overall, our results highlight that the decrease in the share of permanent employment among young workers explains a significant part of observed delays in family formation in recent decades. Using point estimates obtained with Abbring and van den Berg's (2003) methodology, we find that the rise in youth unemployment and in the share of temporary jobs among young workers explains about half of the delays in age at first cohabiting relationship and at first child. Previous studies have shown that job insecurity decreases overall fertility ((Prifti and Vuri, 2013) and (Lopes, 2018)). Our results complement these findings by providing a likely mechanism.[8]

The paper is organized as follows. Section 2 describes the survey and the main variables of interest. Section 3 develops a graphical analysis based on an event study to describe how the probability of cohabitation evolves around the timings of the first stable or temporary job. Section 4 develops the main analysis using Abbring and van den Berg's timing-of-events methodology. Section 5 discusses the policy implications of the estimation results, and Section 6 concludes.

2 Data

To investigate whether stable and temporary jobs have similar implications for family formation, this paper uses the French survey *Families and Employers—FE* hereafter—conducted jointly in 2004–2005 by the French National Institute for Demographic Studies (INED) and the French National Institute for Statistical and Economic Studies (INSEE). This survey provides detailed retrospective information on the work and family history of 9,547 representative individuals of the French population born between 1954 and 1985.

The *FE* survey provides detailed employment calendars in which individuals indicate their employment status for each year starting from age 18. These calendars distinguish year-periods during which individuals had positions that lasted less than 6 months (hereafter temporary job positions) and year-periods during which they had at least one job that lasted more than 6 months (hereafter, stable job positions). We use this retrospective information to construct the following two variables: t_{sj} and t_{tj}. The variable t_{sj} records when individuals started their first stable job, i.e., t_{sj} corresponds to the first

[8]Our results show that delayed access to permanent job positions delays cohabitation and thereby also delays childbearing. This could explain previous findings regarding the negative effect of job insecurity on completed fertility. However, we do not provide evidence regarding the reasons why access to permanent job positions impacts family formation.

year when individuals indicate that they were employed for more than 6 months and t_{tj} records when individuals started their first temporary position, i.e., t_{tj} corresponds to the first year when individuals indicate that they were employed or unemployed for less than 6 months.[9]

With respect to family formation, individuals were asked to indicate the year when they started their first cohabiting relationship as well as the months and years of birth of all their children. We use these details to construct the three following variables: t_r, t_{ch} and t_{co}. The variable t_r indicates the year when individuals started their first cohabiting relationship, t_{ch} records the year when they had their first child, and t_{co} is a proxy for the year of conception of individuals' first child.[10]

Noticeably, t_{sj} and t_{tj} are left censored at age 18 and t_{sj}, t_{tj}, t_r, t_{ch} and t_{co} are right censored at the time of the survey. These five variables are also interval censored: i.e., the survey records during which years the events of interest happened, but the exact timings are unknown. Our empirical analyses consider these features.

Regarding the control variables, the *FE* survey provides information about whether and when individuals finished their initial schooling, individuals' highest diploma, their religious beliefs, and age at residential independence. Additionally, we use publicly available information from INSEE to control for yearly unemployment rates at the national level by gender and age groups.

Regarding sample selection, this paper focuses separately on men and women who have completed their initial schooling and have complete information regarding their retrospective calendars (schooling, employment, and family). These two samples represent about 93% of the initial sample and Table A1 in the Appendix provides descriptive statistics of these samples. Additionally, the graphical analysis in the next section is restricted to subsamples of individuals who experienced the event of interest by the time of the survey and after age 18. The main analysis using Abbring and van den Berg's timing-of-events method includes individuals with right-censored information but the no-anticipation assumption requires us to drop individuals who experienced the events of interest during the same year. Furthermore, to avoid left censoring, the main analysis focuses on individuals who experienced every event of interest after age 18, and the analysis starts at age 18 and ends at the time of the survey or at age 35.[11] Tables A2 and A3 in the Appendix provide descriptive statistics of the subsamples used for the

[9]Unfortunately the *FE* survey does not provide similar retrospective information on the type of contracts or on earnings. Furthermore, this survey does not distinguish between periods when individuals were unemployed for less than 6 months in-between two long-term statuses (employment, education, inactivity, or education/training) from years when individuals were employed for less than 6 months in-between long- or short-term employment or unemployment spells. Similarly to Pailhé and Solaz (2012), we consider these unstable positions as temporary jobs.

[10]$t_{co} = t_{ch} - 1$ for children born between January 1st and September 30th and $t_{co} = t_{ch}$ for children born between October 1st and December 31st.

[11]In the initial sample, for each event, more than 95% of individuals who had experienced the event before the survey had

timing-of-events analysis. Tables A4 and A5 in the Appendix show the characteristics of individuals excluded from the timing-of-events analysis, i.e., individuals who experienced at least two events during the same year.

The different samples described in Tables A1 to A3 underline that most individuals had held a stable job by the time of the survey (89% to 92% of women depending on the specification, and 94% to 96% of men). A sizable proportion of individuals had also held a temporary job by the time of the survey (42% to 50% depending on the specification). Half of the men had entered a first stable job by age 20, half of the women by age 21, and half of the men and women had entered a first temporary job by age 20. Most individuals had also lived in a cohabiting relationship (84% to 90% of women and 76% to 83% of men) and had a child (67% to 77% of women and 55% to 66% of men). More women than men had lived in a cohabiting relationship and had a child because they entered cohabiting relationships and parenthood younger (about 2 years before men).

3 Graphical Analysis

This section documents sharp changes in individuals' probability of having entered a cohabiting relationship around the year when they entered their first job, and in particular, their first stable job as opposed to their first temporary job.

3.1 Methodology

Using the subsamples described in Table A1 in the Appendix, we construct a panel where each individual i is observed every year s between her year of birth and the year of the survey minus one (data from the year of the survey are are not observed from January to December contrary to other years). With this panel, we define three variables, t^{e_x} with $e_x = \{sj, tj, r\}$, indicating time-distance to event e_x such that $t^{e_x} = 0$ for the year during which event e_x happens (event e_x being either individuals' first stable job, first temporary job, or first cohabiting relationship). For each event $e_y = \{sj, tj, r\}$, we also define $Y_{i,s,t}^{e_y}$, which equals one for years after event e_y happened or equals zero otherwise (including during the year when event e_y happened). We estimate the following two sets of equations separately on subsamples of

experienced it by age 35. An alternative initial event before age 18 would be the end of initial schooling. However, this specification would require us to drop about 25% of the working sample to avoid left censoring (individuals who finished initial schooling before age 18). For this reason, the main analysis uses age 18 as the initial date.

men and women for which event e_x happened between age 18 and the year of the survey minus one:

$$
\begin{aligned}
Y^{r}_{i,s,t^{sj}} &= \sum_{\substack{j=-5 \\ j\neq 0}}^{10} \alpha_j^{sj,r} \mathbb{1}[j = t^{sj}] + \sum_k \beta_k^{sj,r} \mathbb{1}[k = age_{i,s}] + \sum_l \gamma_l^{sj,r} \mathbb{1}[l = s] + \nu_{i,s,t}^{sj,r} \\
Y^{r}_{i,s,t^{tj}} &= \sum_{\substack{j=-5 \\ j\neq 0}}^{10} \alpha_j^{tj,r} \mathbb{1}[j = t^{tj}] + \sum_k \beta_k^{tj,r} \mathbb{1}[k = age_{i,s}] + \sum_l \gamma_l^{tj,r} \mathbb{1}[l = s] + \nu_{i,s,t}^{tj,r}
\end{aligned}
\tag{1}
$$

$$
\begin{aligned}
Y^{s}j_{i,s,t^{r}} &= \sum_{\substack{j=-5 \\ j\neq 0}}^{10} \alpha_j^{r,sj} \mathbb{1}[j = t^{r}] + \sum_k \beta_k^{r,sj} \mathbb{1}[k = age_{i,s}] + \sum_l \gamma_l^{r,sj} \mathbb{1}[l = s] + \nu_{i,s,t}^{r,sj} \\
Y^{t}j_{i,s,t^{r}} &= \sum_{\substack{j=-5 \\ j\neq 0}}^{10} \alpha_j^{r,tj} \mathbb{1}[j = t^{r}] + \sum_k \beta_k^{r,tj} \mathbb{1}[k = age_{i,s}] + \sum_l \gamma_l^{r,tj} \mathbb{1}[l = s] + \nu_{i,s,t}^{r,tj}
\end{aligned}
\tag{2}
$$

Each regression includes a full set of event-year, age, and year dummies to control nonparametrically for life-cycle and time trends, and the event time-distance $t^{e_x} = 0$ is the reference. Figures 1a to 1d show the parameters of interest $\alpha_j^{e_x,e_y}$ for each specification estimated separately for men and women. For event $e_y = r$, the main specifications consider a nonbalanced panel of individuals observed between 5 years before their first stable or temporary job and either 2003–2004 or 10 years later to include as many observations as possible. Similarly, for events $e_y = \{sj, tj\}$, the main specifications consider a nonbalanced panel of individuals observed either between 5 years before their first cohabiting relationship or age 18 and either 2003–2004 or 10 years later.[12] Figures A1a to A1d in the Appendix show the results for balanced panels of individuals observed every year between 5 years before event e_x and 10 years later.

In this setting, identification relies on the assumption that the timing of e_x is not determined by the outcome, i.e., the event e_y. Under this assumption, conditional on age and year, there should be no discontinuity in $\nu_{i,s,t}^{e_x,e_y}$ around the year when event e_x happens and the short-term impact of event e_x on $Y^{e_y}_{i,s,t^{e_x}}$ is obtained by comparing $Y^{e_y}_{i,s,t^{e_x}=0}$ to $Y^{e_y}_{i,s,t^{e_x}=1}$. At this stage, two points are worth noting. Firstly, identification of equations (1) requires that first stable and temporary jobs are not determined by first cohabiting relationships, and identification of equations (2) requires that first cohabiting relationships are not determined by first stable and temporary jobs. This means that either first jobs and first cohabiting relationships are mutually independent or that only one set of equations is identified. Figures 1a to 1d lend support to the idea that first jobs and first cohabiting relationships are not mutually independent and that only equations (1) are identified. Secondly, identification requires that either unobserved characteristics

[12] $Y^{sj}_{i,s,t^{e_x}}$, $Y^{tj}_{i,s,t^{e_x}}$ and $Y^{r}_{i,s,t^{e_x}}$ are right censored, and $Y^{sj}_{i,s,t^{e_x}}$ and $Y^{tj}_{i,s,t^{e_x}}$ are left censored.

are constant over time or that they are uncorrelated with the timing of e_x. If there was another event e_{x2} whose timing was correlated with e_x it would bias the results. In particular, if the timing of individuals' first stable job was correlated with the timing of their first temporary job, then this event study could incorrectly find a significant impact of first temporary jobs on first cohabiting relationships that would be driven by individuals' first stable job. The main analysis considers those two issues using Abbring and van den Berg's methodology.

3.2 Results

Figures 1a and 1b show the estimated parameters of interest for equations (1) ($\alpha^{sj,r}_{j=-5,...,10}$ and $\alpha^{tj,r}_{j=-5,...,10}$) and the corresponding 95% confidence intervals estimated separately for men and women.[13] These figures first show that men's and women's probability to have entered a cohabiting relationship do not vary significantly with respect to the time-distance to first stable or temporary jobs before these events have happened. This gives credit to the assumption that first stable and temporary jobs are not determined by first cohabiting relationships. Second, Figures 1a and 1b show that men's and women's probability to have entered a cohabiting relationship increases significantly just after their first stable or temporary job. These figures also show that stable jobs have significantly larger impacts on cohabiting relationships than temporary jobs. For men and women, the probability of having entered a cohabiting relationship is 6.2 and 8.6 percentage points higher respectively once they have started their first stable job, compared with an increase of 1.2 and 3.0 percentage points respectively for temporary jobs.

Figures 1c and 1d show the estimated parameters of interest for equations (2) ($\alpha^{r,sj}_{j=-5,...,10}$ and $\alpha^{r,tj}_{j=-5,...,10}$). Consistent with Figures 1a and 1b, Figures 1c and 1d show that men's and women's probability of having started a stable job increases significantly with respect to the time-distance to first cohabiting relationships before this event happened. Because individuals are more likely to start a cohabiting relationship after their first stable job, the closer they get to their first cohabiting relationship, the more likely they are to have already started their stable job. As a result, it is problematic to interpret $Y^{e_{sj}}_{i,s,t^{e_r}=1} - Y^{sj}_{i,s,t^{e_r}=0}$ as the impact of cohabitation on stable employment chances. Regarding temporary employment, Figures 1c and 1d do not show much variation in individuals' probability to have entered a temporary job around the time of first cohabiting relationship. This could either reflect independence between both events, or a smaller impact of temporary jobs on cohabitation chances.

Overall, Figures 1a to 1d provide evidence for the existence of a causal link running from stable employment to cohabiting relationships. Figures A1a to A1d in the Appendix show that the results are

[13] Standard errors are clustered at the individual level.

robust to using a balanced panel for each regression.

The next section builds on Abbring and van den Berg's empirical model to estimate the impact of cohabitation on employment even when the timing of cohabitation is endogenous to the timing of employment. This methodology also enables us to consider the potential correlation between the timings of first stable and temporary jobs.

4 Timing-of-Events Analysis

4.1 Methodology

To study the links among stable jobs, temporary jobs, and cohabiting relationships, this section develops a timing-of-events approach (Abbring and van den Berg, 2003) that considers the potential correlation between the three different timings. This analysis focuses on the subsamples of men and women defined in Section 2 and described in Table A2 in the Appendix. With respect to the graphical results, this analysis includes individuals with right-censored information, but excludes individuals with simultaneous transitions. Furthermore, to avoid left-censoring-related issues, this analysis focuses on individuals who did not enter a cohabiting relationship before age 18, and the panel starts at age 18 instead of birth.[14]

We define $\theta_{i,r}$ as individuals' instantaneous probability of entering a first cohabiting relationship, $\theta_{i,sj}$ as individuals' instantaneous probability of starting a first stable job, and $\theta_{i,tj}$ as individuals' instantaneous probability of starting a first temporary job.[15] The three hazard rates depend on the duration t elapsed since age 18 (the initial date), time-constant observed characteristics ($x_{i,r}$, $x_{i,sj}$, $x_{i,tj}$), time-variant observed characteristics ($x_{i,r,t}$, $x_{i,sj,t}$, $x_{i,tj,t}$), time-constant unobserved characteristics ($\nu_{i,r}$, $\nu_{i,sj}$, $\nu_{i,tj}$), and the timings of individuals' first stable job ($t_{i,sj}$), first temporary job ($t_{i,tj}$), and first cohabiting relationship ($t_{i,r}$). Hazard rates are assumed to have a standard mixed proportional hazard specification:

$$\begin{aligned}
\theta_{i,r}(t|x_{i,r},\nu_{i,r},t_{i,sj},t_{i,tj}) &= \lambda_r(t)\,\mathrm{e}^{\left(\beta_r x_{i,r}+\gamma_r x_{i,r,t}+\delta^{\mathbf{r}}_{\mathbf{sj}}\mathbb{1}(t>t_{i,sj})+\delta^{\mathbf{r}}_{\mathbf{tj}}\mathbb{1}(t>t_{i,tj})+\nu_{i,r}\right)}\\
\theta_{i,sj}(t|x_{i,sj},\nu_{i,sj},t_{i,r},t_{i,tj}) &= \lambda_{sj}(t)\,\mathrm{e}^{\left(\beta_{sj} x_{i,sj}+\gamma_{sj} x_{i,sj,t}+\delta^{\mathbf{sj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{sj}_{tj}\mathbb{1}(t>t_{i,tj})+\nu_{i,sj}\right)} \qquad (3)\\
\theta_{i,tj}(t|x_{i,tj},\mu_{i,tj},t_{i,r},t_{i,sj}) &= \lambda_{tj}(t)\,\mathrm{e}^{\left(\beta_{tj} x_{i,tj}+\gamma_{tj} x_{i,tj,t}+\delta^{\mathbf{tj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{tj}_{sj}\mathbb{1}(t>t_{i,sj})+\nu_{i,tj}\right)}
\end{aligned}$$

[14]For the ending date, we use the minimum of year at age 35 and year of the survey minus one. As mentioned in Section 2, in the initial sample, for each event more than 95% of individuals who had experienced the event before the survey had experienced it by age 35.

[15]This paper focuses on first jobs and first cohabiting relationships to avoid making assumptions regarding the independence among the timings of individuals' several stable jobs, several temporary jobs, and several cohabiting relationships.

The main parameters of interest are δ^r_{sj}, δ^r_{tj}, δ^{sj}_r, and δ^{tj}_r.

The analysis includes schooling, residential independence, and yearly unemployment rates as time-variant control variables. As time-constant control variables, each specification uses whether individuals graduated from higher education or whether they graduated from high school only (as opposed to lower diploma), as well as a dummy variable indicating strong religious beliefs. For the baseline hazard rates ($\lambda_r(t)$, $\lambda_{sj}(t)$, and $\lambda_{tj}(t)$), we use piecewise constant functions. Regarding the joint distribution for the unobserved characteristics, we assume that they follow a discrete distribution with two points of support and unrestricted mass point locations.

Abbring and van den Berg (2003) show that the no-anticipation assumption model (3) enables us to separate causality from selection. Intuitively, the idea is to estimate whether individuals who find their first stable or temporary jobs later enter their cohabiting relationship as fast afterward as those who had found a first stable or temporary job earlier (and similarly for the impact of first cohabiting relationships on first stable and temporary jobs). As Abbring and van den Berg (2004) underline, whether one transition happens systematically just after another provides evidence that there is a causal link running from the first transition in time to the second because selection per se would imply a strong correlation between both timings, but not a quick succession of events.

Abbring and van den Berg's empirical model is identified under the no-anticipation assumption, i.e., under the assumption that individuals either do not know the exact year when their first stable job, temporary job, or cohabiting relationship will happen or do not act upon this information more than a few months before the event happens. In our context, where the analysis is at the year level and excludes individuals with simultaneous transitions, the effect of event e_x on event e_y would not be identified if e_x was impacting e_y 1 year or more before its occurrence (in anticipation). Essentially, the no-anticipation assumption holds if disclosing whether event e_x will happen during year t did not change individuals' instantaneous probability of experiencing event e_y in year $t-1$. Alternatively, if event e_x was postponed from year t to year $t+1$, it should have no impact on individuals' instantaneous probability of experiencing event e_y during $t-1$. Reassuringly, the graphical analysis reveals that the probability of having entered a cohabiting relationship is not statistically different 2 years before the first stable or temporary job compared with 1 year before. Similarly, Figures 1c and 1d show no jump in the probability of having found a first stable or temporary job 1 year before the first cohabiting relationship.

As a robustness test, we check that the main results hold when we also exclude individuals who experienced two events during consecutive years to consider transitions happening during different years, but with only a few months in-between.

Lastly, Table A4 provides descriptive statistics on individuals with simultaneous transitions. By definition, individuals who experienced simultaneous transitions are more likely to have found a first stable or temporary job and a first cohabiting relationship. Coherently, they are also more educated, less religious, and they entered their first cohabiting relationship and had a first child younger.[16]

Among individuals with simultaneous transitions, 42% declared that they held a stable job when they first started a cohabiting relationship, and 29% declared that they held an unstable job. These proportions are respectively 27% and 12% in our working sample.[17] This suggests that our estimates of the impact of stable and unstable positions for cohabitation would be both downward biased and our main result on the differential impact of stable and temporary positions would not be impacted substantially by sample selection.

Identification also requires that observed and unobserved characteristics are independent. This is a common assumption in duration models. The main interest of Abbring and van den Berg's methodology compared with standard Cox duration models with frailty is that this model allows for correlation among the timings of the different events. This feature is also helpful compared with the graphical analysis: i.e., Abbring and van den Berg's methodology enables us to estimate the impact of cohabitation on employment even when the timing of cohabitation is not exogenous to employment.

Lastly, identification requires that the unobserved characteristics impacting each transition are constant over time. In other words, the model is identified provided there is no unobserved event that jointly determines the transitions of interest. This is the main reason why we estimate the links between stable jobs, temporary jobs, and cohabiting relationships jointly rather than estimating separately the links between stable jobs and cohabiting relationships on the one hand and the links between temporary jobs and cohabiting relationships on the other.

Time is continuous in model (3) while the *FE* survey provides interval-censored information. Using Monte Carlo simulations, Gaure, Røed and Zhang (2007) show that it is feasible to recover the parameters of model (3) in this context provided that the likelihood function considers the discrete nature of the available data. Therefore, we compute the sample likelihood using the discrete-time version of model

[16] It is problematic to estimate model (3) for these individuals as we do not know which transition happened first when they happened during the same year.

[17] Additionally to the retrospective calendar, the *FE* survey asks individuals detailed questions about their employment status when they started their first cohabiting relationship.

(3):

$$\theta^D_{i,r}(t_k|x_{i,r},\nu_{i,r},t_{i,sj},t_{i,tj}) = 1 - \mathrm{e}^{-\mathrm{e}^{\left(\beta_r x_{i,r}+\gamma_r x_{i,r,t}+\delta^{\mathbf{r}}_{\mathbf{sj}}\mathbb{1}(t>t_{i,sj})+\delta^{\mathbf{r}}_{\mathbf{tj}}\mathbb{1}(t>t_{i,tj})+\nu_{i,r}+\phi^r_k\right)}}$$

$$\theta^D_{i,sj}(t_k|x_{i,sj},\nu_{i,sj},t_{i,r},t_{i,tj}) = 1 - \mathrm{e}^{-\mathrm{e}^{\left(\beta_{sj} x_{i,sj}+\gamma_{sj} x_{i,sj,t}+\delta^{\mathbf{sj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{sj}_{tj}\mathbb{1}(t>t_{i,tj})+\nu_{i,sj}+\phi^s j_k\right)}}$$

$$\theta^D_{i,tj}(t_k|x_{i,tj},\mu_{i,tj},t_{i,r},t_{i,sj}) = 1 - \mathrm{e}^{-\mathrm{e}^{\left(\beta_{tj} x_{i,tj}+\gamma_{tj} x_{i,tj,t}+\delta^{\mathbf{tj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{tj}_{sj}\mathbb{1}(t>t_{i,sj})+\nu_{i,tj}+\phi^t j_k\right)}}$$

where $\theta^D_{i,j}$ is the instantaneous probability that event j happens during the interval $[t_{k-1}, t_k)$. Furthermore, $\phi^c_k = ln\left(\int_{t_{k-1}}^{k} \lambda_c(t)\,\mathrm{d}t\right)$, $\phi^s j_k = ln\left(\int_{t_{k-1}}^{k} \lambda_{sj}(t)\,\mathrm{d}t\right)$, and $\phi^t j_k = ln\left(\int_{t_{k-1}}^{k} \lambda_{tj}(t)\,\mathrm{d}t\right)$.

We estimate the parameters of interest jointly using the maximum likelihood.

4.2 Results

Table 1 presents the estimated parameters of interest when estimating model (3) separately in men's and women's subsamples.

The upper part of this table shows that first stable jobs have a significant positive impact on the hazard rate of first cohabiting relationships for both men and women. The estimated effects are strong and similar across gender. A first stable job increases women's and men's instantaneous probability of entering a first cohabiting relationship by 3.4 and 3.8 times, respectively. By contrast, first temporary jobs have a smaller impact on women's instantaneous probability of entering a first cohabiting relationship (three times lower) and no significant impact for men.

The second and third parts of Table 1 show that first cohabiting relationships have a positive impact on men's and women's instantaneous probability of entering a first stable job (they have a multiplicative impact of 1.4 and 1.5, respectively), but with no significant impact on temporary jobs. These findings are consistent with Figures 1a and 1b, which show an increase in men's and women's probability of having entered a stable job after cohabitation and no variation for temporary jobs, respectively.

Lastly, this table shows that temporary jobs have a significantly positive impact on entry into stable jobs, while stable jobs decrease individuals' instantaneous probability of entering a temporary job. This is consistent with the idea that temporary jobs may provide a first step toward stable employment and that individuals with stable employment usually do not switch back to unstable positions.

Table A6 in the Appendix shows the detailed results for model (3). Unsurprisingly, this table shows that individuals are more likely to enter a first stable or temporary job once they are no longer students. Schooling also decreases women's probability of starting a cohabiting relationship but not men's, and nonresidential independence decreases men's probability of cohabitation but not women's.

Additionally, Table A7 shows the estimated distributions for unobserved characteristics impacting first cohabiting relationships, first stable jobs, and first temporary jobs (N_r, N_{sj}, and N_{tj}, respectively). This table shows that the timings of these three events are indeed correlated. This explains why estimations that do not consider these correlations find biased estimates (see Table A8).

Regarding the no-anticipation assumption, Table A9 in the Appendix shows the results for subsamples of men and women who did not experience their first stable job, temporary job, or cohabiting relationship during consecutive years. This table also confirms that stable employment has a stronger positive impact on cohabitation than temporary employment.

4.3 Stable Jobs, Temporary Jobs, Cohabiting Relationships, and Fertility

The graphical analysis and timing-of-events results suggest that stable employment has important implications for cohabiting relationships. As cohabiting relationships are often a first step before childbirth, stable employment is likely to also have implications for fertility decisions. However, it is an open question as to whether employment impacts fertility only through cohabiting relationships or also directly. This subsection develops a timing-of-events analysis to investigate the links among stable jobs, temporary jobs, cohabiting relationships, and childbirths.[18]

To study the links among stable jobs, temporary jobs, cohabiting relationships, and childbirths, we estimate jointly a discrete version of the following model on the samples described in Table A3:

$$
\begin{aligned}
\theta_{i,r}(t|x_{i,r},\nu_{i,r},t_{i,sj},t_{i,tj},t_{co}) &= \lambda_r(t)\,\mathrm{e}^{\left(\beta_r x_{i,r}+\gamma_r x_{i,r,t}+\delta^{\mathbf{r}}_{\mathbf{sj}}\mathbb{1}(t>t_{i,sj})+\delta^{\mathbf{r}}_{\mathbf{tj}}\mathbb{1}(t>t_{i,tj})+\delta^{\mathbf{r}}_{\mathbf{co}}\mathbb{1}(t>t_{i,co})+\nu_{i,r}\right)}\\
\theta_{i,co}(t|x_{i,co},\nu_{i,co},t_{i,sj},t_{i,tj},t_r) &= \lambda_{co}(t)\,\mathrm{e}^{\left(\beta_{co} x_{i,co}+\gamma_{co} x_{i,co,t}+\delta^{\mathbf{co}}_{\mathbf{sj}}\mathbb{1}(t>t_{i,sj})+\delta^{\mathbf{co}}_{\mathbf{tj}}\mathbb{1}(t>t_{i,tj})+\delta^{\mathbf{co}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\nu_{i,co}\right)}\\
\theta_{i,sj}(t|x_{i,sj},\nu_{i,sj},t_{i,r},t_{i,tj},t_{co}) &= \lambda_{sj}(t)\,\mathrm{e}^{\left(\beta_{sj} x_{i,sj}+\gamma_{sj} x_{i,sj,t}+\delta^{\mathbf{sj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{sj}_{tj}\mathbb{1}(t>t_{i,tj})+\delta^{\mathbf{sj}}_{\mathbf{co}}\mathbb{1}(t>t_{i,co})+\nu_{i,sj}\right)}\\
\theta_{i,tj}(t|x_{i,tj},\mu_{i,tj},t_{i,r},t_{i,sj},t_{co}) &= \lambda_{tj}(t)\,\mathrm{e}^{\left(\beta_{tj} x_{i,tj}+\gamma_{tj} x_{i,tj,t}+\delta^{\mathbf{tj}}_{\mathbf{r}}\mathbb{1}(t>t_{i,r})+\delta^{tj}_{sj}\mathbb{1}(t>t_{i,sj})+\delta^{\mathbf{tj}}_{\mathbf{co}}\mathbb{1}(t>t_{i,co})+\nu_{i,tj}\right)}
\end{aligned}
\tag{4}
$$

where t_{co} is a proxy for the year of conception of individuals' first child.[19] Here, we use year of conception instead of year of birth for the first child because it is likely that individuals know rather precisely when they will become parents more than a few months in advance and act upon this information.

[18] Figures A2a to A2b in the Appendix suggest that neither the timing of the first stable job is exogenous to the first child nor the timing of the first child is exogenous to the first job for women. In this context, it would be difficult to interpret the results of an event study

[19] $t_{co} = t_{ch} - 1$ for children born between January 1$^{\text{st}}$ and September 30$^{\text{th}}$ and $t_{co} = t_{ch}$ for children born between October 1$^{\text{st}}$ and December 31$^{\text{st}}$.

Table 2 shows the estimated parameters of interest for model (4) estimated separately for men and women.

This table shows that first stable jobs have an indirect impact on men's and women's probability of having a first child because they impact cohabiting relationships positively and cohabiting relationships impact fertility decisions positively. This table also shows that stable jobs have a direct positive impact on men's and women's instantaneous probability of having a first child (they have a multiplicative impact of 1.2 for women and 2.0 for men). By contrast, for women, first temporary jobs have a smaller indirect impact on fertility decisions (about three times smaller) and they do not have any direct positive impact. For men, first temporary jobs have no direct or indirect impact on fertility decisions.

Noticeably, Table 2 highlights a significant difference between genders regarding the impact of childbirth on employment. While first children have no impact on men's employment chances, they decrease women's instantaneous probability of starting a first stable job. This is consistent with the literature on gender and child penalty (see, e.g., Kleven, Landais and Søgaard, 2018).

Tables A10 and A11 in the Appendix provide the detailed results for model (4). Additionally, Table A12 presents the results for model (4) using subsamples of men and women who did not enter their first stable job, first temporary job, first cohabiting relationship, or had a first child during consecutive years. This table also shows that stable employment has both a direct and an indirect impact on fertility decisions. In both cases and for both genders, stable employment has a stronger impact than temporary employment.

5 Discussion

This section discusses whether increases in youth unemployment and in the share of temporary contracts among young workers explain observed delays in family formation. For this discussion, we use our working samples from the *FE* survey and compare cohorts born in the mid-1950s with cohorts born in the early 1970s.

Men and women born in the early 1970s entered their first cohabiting relationship and had their first child at older ages than cohorts born in the mid-1950s. In our samples, women and men entered their first cohabiting relationship 0.93 years and 0.66 years later on average than women and men born in the mid-1950s, and they had their first child 1.50 and 1.15 years later, respectively. One commonly advanced explanation for these delays is the changes in social norms that culminated in May 1968 and

had major legal consequences with, e.g., the legalization of the birth-control pill in 1967 and of abortion in 1975. Consequently, men's and women's demand for education also increased, resulting in delays in school-leaving age. In our working samples, women and men born in the early 1970s finished their initial schooling about 1.6 years later than women and men born in the mid-1950s. Additionally, the proportion of men and women holding a higher education degree increased by about nine percentage points between cohorts born in the mid-1950s and cohorts born in the early 1970s.

In this section, we study to what extent the increasing difficulty of entering stable employment also explains delays in family formation. In our working samples, for cohorts born in the early 1970s compared with cohorts born in the mid-1950s, the mean duration between school-leaving age and age at first stable job has increased by 0.56 years on average for women and men holding a high school degree. For women and men with lower education attainments, this increase is 0.66 years. By contrast, individuals with a higher education degree only spend about 0.07 years longer searching for a first stable job. This delayed entry into stable employment is likely driven by increases in unemployment rates (+9 percentage points on average) and by the rise of temporary contracts among young workers. In our working samples, about 25% of men and women born in the mid-1950s had held a temporary position by age 30 compared with 50% for men and women born in the early 1970s.

We use the point estimates in Tables A6 and A10 to document the consequences of labor market entry conditions for family formation. First, we compute the expected average age at first cohabitation and at first child for men and women born in the mid-1950s. Second, we compute the expected age at first cohabitation and at first child for similar men and women in terms of schooling length and achievements, residential independence, or religious beliefs, but different in terms of labor market entry conditions. For each gender and education group, we replace the average duration between school-leaving age and age at first stable or temporary job by averages obtained for cohorts born in the early 1970s. These computations yield an increase in age at first cohabitation of about 0.31 years for women and 0.43 years for men, and an increase in age at first child of about 0.69 years for women and 0.55 years for men.

Compared with the actual increases, this analysis suggests that the increases in unemployment and in temporary labor contracts explain about 33% of the increase in average age at first cohabiting relationship for women and about 65% for men. Similarly, we estimate that the increases in unemployment rates and in temporary labor contracts explain about 46% of the increase in age at first child for women, and about 48% for men.

Regarding the policy implications, an important question is whether these delays in family formation

result in lower overall fertility. In this respect, findings from Prifti and Vuri (2013) and Lopes (2018) show that job insecurity decreases overall fertility. Therefore, our study provides a likely mechanism behind these results: i.e., postponement in stable employment delays cohabitation, which in turns delays childbirth and thereby may decrease overall fertility. However, the methodology and the available data do not enable us to examine the reasons why temporary jobs do not have similar effects on cohabitation as stable jobs.

6 Conclusion

This paper conducts a timing-of-events analysis to investigate the links among stable employment, temporary employment, cohabiting relationships, and fertility decisions.

We provide evidence that the effect of employment on cohabiting relationships depends on whether the job position under consideration is stable or not. First, stable jobs increase men's and women's instantaneous probability of entering a first cohabiting relationship by 3.8 and 3.4 times, respectively. By comparison, the impact of temporary jobs is much smaller (they have a multiplicative impact of 1.1 for women and no significant impact for men). Second, this paper shows that stable jobs impact fertility decisions indirectly through cohabiting relationships but also have a direct impact. The direct multiplicative impact on men's and women's instantaneous probability to have a first child of a stable job is 2.0 and 1.2, respectively. By contrast, temporary jobs have smaller indirect impacts and no direct impact on fertility decisions. This analysis also reveals that childbirth has different implications by gender for entry into stable employment: a first child decreases women's stable employment chances but not that for men.

Overall, the results reported in this paper suggest that the increasing difficulty of entering the labor market with a permanent contract plays an important role in explaining the delays in family formation observed in recent decades. We estimate that the rise in youth unemployment and in the share of temporary contracts among young workers explains about half of the increases in average age at first cohabiting relationship and at first child.

As temporary jobs do not have similar implications as stable jobs for cohabiting relationships and fertility decisions, this paper suggests that policies favoring temporary jobs at the expense of stable jobs may incidentally delay individuals' cohabiting relationships and fertility decisions. Such delays in family formation may further impact overall fertility as the results in Prifti and Vuri (2013) and Lopes (2018) suggest. More research is needed to properly assess why stable employment impacts family formation differently than temporary employment and the potential role of the housing market for our results.

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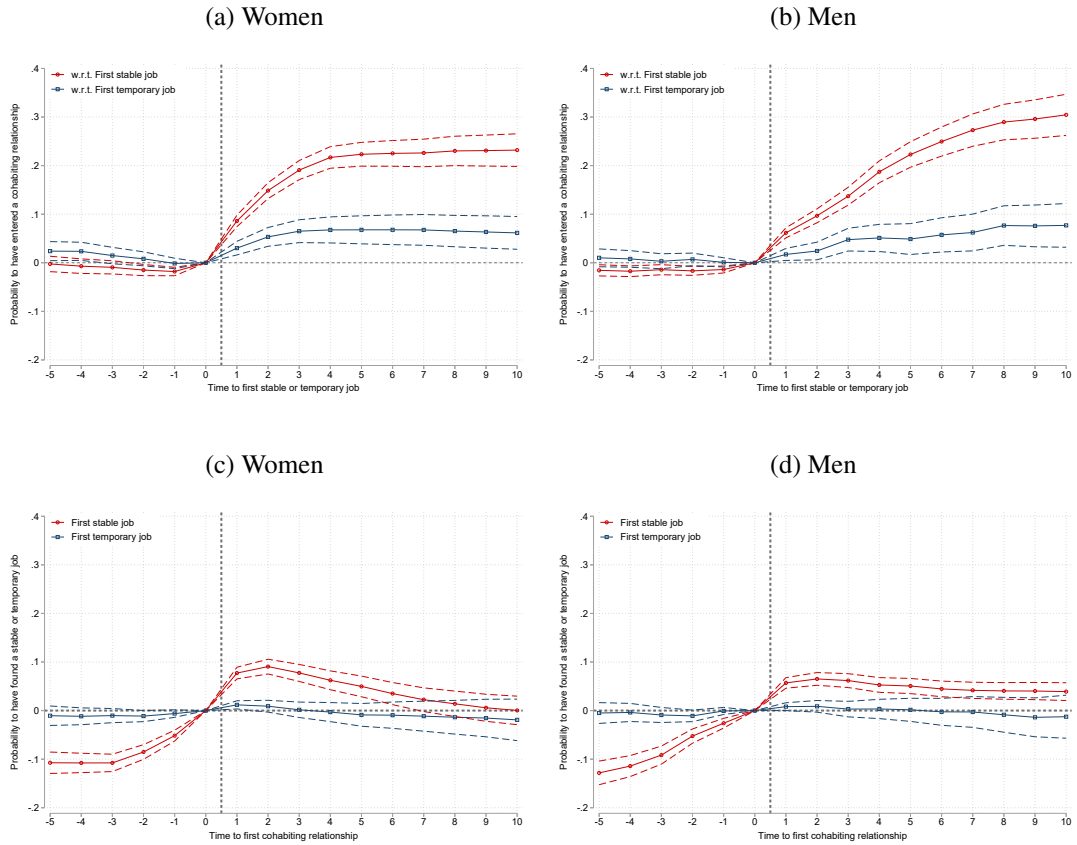

Figure 1 – First stable job, first temporary job and first cohabiting relationship

Note: The figures refer to the samples of men and women from the *FE* survey who completed initial schooling before the survey and experienced the event on the horizontal axis between age 18 and 2003 or 2004. Figures 1a and 1b show the event time coefficients estimated for equations (1), and Figures 1c and 1d show the event time coefficients estimated for equations (2). The dotted lines represent 95% confidence intervals computed with robust standard errors clustered at the individual level.

Table 1 – Timing-of-events analysis — Model (3)

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	1.222***	1.325***
	(0.075)	(0.084)
First temporary job	0.133***	0.030
	(0.047)	(0.045)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first stable job		
First cohabiting relationship	0.414***	0.302***
	(0.094)	(0.090)
First temporary job	0.385***	0.171***
	(0.064)	(0.063)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first temporary job		
First cohabiting relationship	0.091	0.083
	(0.107)	(0.116)
First stable job	-0.772***	-0.772***
	(0.089)	(0.101)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
N	3551	3495
Sample log-likelihood	-21274.4	-19850.8

Note: The table refers to the samples of men and women from the *FE* survey who finished initial schooling before the survey, did not start their first stable job, their first temporary job, or their first cohabiting relationship during the same year, and experienced each event either between age 18 and the minimum of year at age 35 and 2003–2004 or never experienced it. The first column refers to the subsample of women and the second column to the subsample of men. Each column corresponds to a specific regression where the impact of a first stable job and temporary job on the hazard rate of a first cohabiting relationship and the impact of a first cohabiting relationship on the hazard rate of a first stable job and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and age groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table 2 – Timing-of-events analysis — Model (4)

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	1.213***	1.381***
	(0.090)	(0.090)
First temporary job	0.125**	0.040
	(0.051)	(0.049)
First child	0.321***	1.240***
	(0.099)	(0.107)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first child		
First stable job	0.198**	0.692***
	(0.087)	(0.139)
First temporary job	-0.069	-0.093
	(0.079)	(0.075)
First cohabiting relationship	2.783***	3.264***
	(0.095)	(0.117)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first stable job		
First cohabiting relationship	0.401***	0.313***
	(0.101)	(0.098)
First child	-1.026***	-0.204
	(0.120)	(0.184)
First temporary job	0.505***	0.152**
	(0.087)	(0.064)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first temporary job		
First cohabiting relationship	0.039	0.033
	(0.122)	(0.128)
First child	-0.203	-0.060
	(0.125)	(0.153)
First stable job	-0.804***	-0.765***
	(0.109)	(0.102)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
N	3018	3148
Sample log-likelihood	-23395.6	-22763.7

Note: The table refers to the samples of men and women from the *FE* survey who finished initial schooling before the survey, did not start their first stable job, their first temporary job, their first cohabiting relationship, or conceive their first child during the same year, and experienced each event either between age 18 and the minimum of year at age 35 and 2003–2004 or never experienced it. The first column refers to the subsample of women and the second column to the subsample of men. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship or a first fertility event and the impact of a first cohabiting relationship or a first fertility event on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and age groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Appendix

Table A1 – Descriptive Statistics

	Women (1)	Men (2)
Stable employment	0.92	0.96
	[0.28]	[0.21]
Med. age at first stable job	21	20
	[3.62]	[2.99]
Temporary employment	0.50	0.49
	[0.50]	[0.50]
Med. age at first temp. job	20	20
	[5.31]	[4.72]
Cohabiting relationship	0.90	0.83
	[0.30]	[0.38]
Med. age at first cohabiting relationship	22	24
	[3.78]	[3.97]
Children	0.77	0.66
	[0.42]	[0.48]
Med. age at first child	24	27
	[4.42]	[4.51]
Residential independence	0.96	0.90
	[0.21]	[0.30]
Med. age at residential independence	21	23
	[3.34]	[3.82]
Med. school-leaving age	19	19
	[3.15]	[3.32]
Higher education	0.33	0.28
	[0.47]	[0.45]
Secondary education	0.18	0.16
	[0.39]	[0.36]
Strong religious beliefs	0.30	0.21
	[0.46]	[0.41]
N	4707	4156

Note: The table refers to the samples of men and women from the *FE* survey who finished initial schooling before the survey. The first column refers to the subsample of women and the second column to the subsample of men. Each row corresponds to a specific variable. Rows 1 and 3 show the employment rate over the life-course for stable jobs and temporary jobs respectively. Row 2 shows the median age at first stable job, and row 4 shows the same figure for temporary jobs. Row 5 corresponds to the proportion of individuals who lived in a cohabiting relationship before the survey, and row 8 to the proportion of individuals who had a child. Rows 6 and 7 show median age at first cohabiting relationship and at first child respectively. Row 9 indicates the proportion of individuals who no longer lived with their parents at the time of the survey, and row 10 indicates the median age at residential independence. Row 11 gives the median school-leaving age. Row 12 shows the proportion of men and women who graduated from higher education and row 13 from high school. Row 14 shows the proportion of individuals who indicated strong religious beliefs. For each variable and each sample, the table reports the mean or the median of the left-hand side variable among the corresponding sample. Standard deviations are in brackets.

Table A2 – Descriptive Statistics — Timing-of-events analysis —- Model (3)

	Women (1)	Men (2)
Stable employment	0.89	0.95
	[0.31]	[0.22]
Med. age at first stable job	21	20
	[3.25]	[2.96]
Temporary employment	0.43	0.42
	[0.49]	[0.49]
Med. age at first temp. job	20	20
	[4.26]	[3.75]
Cohabiting relationship	0.86	0.79
	[0.35]	[0.41]
Med. age at first cohabiting relationship	22	24
	[3.43]	[3.44]
Children	0.72	0.60
	[0.45]	[0.49]
Med. age at first child	25	27
	[3.95]	[3.62]
Residential independence	0.94	0.89
	[0.23]	[0.31]
Med. age at residential independence	21	23
	[3.44]	[3.92]
Med. school-leaving age	19	19
	[3.19]	[3.37]
Higher education	0.33	0.26
	[0.47]	[0.44]
Secondary education	0.18	0.15
	[0.38]	[0.36]
Strong religious beliefs	0.31	0.22
	[0.46]	[0.41]
N	3551	3495

Note: The table refers to the same samples as Table 1. Each row corresponds to a specific variable. Rows 1 and 3 show the employment rate over the life-course for stable jobs and temporary jobs respectively. Row 2 shows the median age at first stable job, and row 4 shows the same figure for temporary jobs. Row 5 corresponds to the proportion of individuals who lived in a cohabiting relationship before the survey, and row 8 to the proportion of individuals who had a child. Rows 6 and 7 show median age at first cohabiting relationship and at first child respectively. Row 9 indicates the proportion of individuals who no longer lived with their parents at the time of the survey, and row 10 indicates the median age at residential independence. Row 11 gives the median school-leaving age. Row 12 shows the proportion of men and women who graduated from higher education and row 13 from high school. Row 14 shows the proportion of individuals who indicated strong religious beliefs. For each variable and each sample, the table reports the mean or the median of the left-hand side variable among the corresponding sample. Standard deviations are in brackets.

Table A3 – Descriptive Statistics — Timing-of-events analysis —- Model (4)

	Women (1)	Men (2)
Stable employment	0.90	0.94
	[0.30]	[0.23]
Med. age at first stable job	21	20
	[3.17]	[2.94]
Temporary employment	0.43	0.43
	[0.49]	[0.50]
Med. age at first temp. job	20	20
	[4.10]	[3.66]
Cohabiting relationship	0.84	0.76
	[0.37]	[0.43]
Med. age at first cohabiting relationship	22	24
	[3.39]	[3.42]
Children	0.67	0.55
	[0.47]	[0.50]
Med. age at first child	25	27
	[3.66]	[3.34]
Residential independence	0.94	0.88
	[0.24]	[0.32]
Med. age at residential independence	22	23
	[3.46]	[3.97]
Med. school-leaving age	20	19
	[3.17]	[3.34]
Higher education	0.36	0.27
	[0.48]	[0.45]
Secondary education	0.19	0.16
	[0.39]	[0.36]
Strong religious beliefs	0.29	0.21
	[0.46]	[0.41]
N	3018	3148

Note: The table refers to the same samples as Table 2. Each row corresponds to a specific variable. Rows 1 and 3 show the employment rate over the life-course for stable jobs and temporary jobs, respectively. Rows 2 and 4 show the median age at first stable and temporary job, respectively. Row 5 corresponds to the proportion of individuals who lived in a cohabiting relationship before the survey, and row 8 to the proportion of individuals who had a child. Rows 6 and 7 show median age at first cohabiting relationship and at first child, respectively. Row 9 indicates the proportion of individuals who no longer lived with their parents at the time of the survey, and row 10 indicates the median age at residential independence. Row 11 gives the median school-leaving age. Row 12 shows the proportion of men and women who graduated from higher education and row 13 from high school. Row 14 shows the proportion of individuals who indicated strong religious beliefs. For each variable and each sample, the table reports the mean or the median of the left-hand side variable among the corresponding sample. Standard deviations are in brackets.

Table A4 – Descriptive Statistics — Timing-of-events analysis —- Individuals with simultaneous transitions — Model (3)

	Women (1)	Men (2)
Stable employment	0.98	0.99
	[0.13]	[0.09]
Med. age at first stable job	21	21
	[2.58]	[2.69]
Temporary employment	0.66	0.73
	[0.47]	[0.44]
Med. age at first temp. job	20	20
	[3.31]	[3.12]
Cohabiting relationship	0.98	0.94
	[0.15]	[0.23]
Med. age at first cohabiting relationship	21	22
	[2.50]	[2.92]
Children	0.80	0.69
	[0.40]	[0.46]
Med. age at first child	24	25
	[3.68]	[3.68]
Residential independence	0.99	0.96
	[0.10]	[0.20]
Med. age at residential independence	20	22
	[2.44]	[2.95]
Med. school-leaving age	20	20
	[2.81]	[3.00]
Higher education	0.36	0.36
	[0.48]	[0.48]
Secondary education	0.22	0.17
	[0.41]	[0.38]
Strong religious beliefs	0.27	0.19
	[0.44]	[0.39]
N	997	645

Note: The table refers to similar samples as Table 1 restricted to individuals who experienced at least two events during the same year. Each row corresponds to a specific variable. Rows 1 and 3 show the employment rate over the life-course for stable jobs and temporary jobs respectively. Rows 2 and 4 show the median age at first stable and temporary job, respectively. Row 5 corresponds to the proportion of individuals who lived in a cohabiting relationship before the survey, and row 8 to the proportion of individuals who had a child. Rows 6 and 7 show median age at first cohabiting relationship and at first child, respectively. Row 9 indicates the proportion of individuals who no longer lived with their parents at the time of the survey and row 10 indicates the median age at residential independence. Row 11 gives the median school-leaving age. Row 12 shows the proportion of men and women who graduated from higher education and row 13 from high school. Row 14 shows the proportion of individuals who indicated strong religious beliefs. For each variable and each sample, the table reports the mean or the median of the left-hand side variable among the corresponding sample. Standard deviations are in brackets.

Table A5 – Descriptive Statistics — Timing-of-events analysis —- Individuals with simultaneous transitions —- Model (4)

	Women (1)	Men (2)
Stable employment	0.94	0.99
	[0.24]	[0.09]
Med. age at first stable job	21	21
	[2.94]	[2.86]
Temporary employment	0.59	0.61
	[0.49]	[0.49]
Med. age at first temp. job	20	20
	[3.79]	[3.51]
Cohabiting relationship	0.98	0.96
	[0.14]	[0.19]
Med. age at first cohabiting relationship	21	22
	[2.93]	[3.29]
Children	0.86	0.79
	[0.35]	[0.40]
Med. age at first child	23	25
	[3.72]	[3.65]
Residential independence	0.99	0.97
	[0.10]	[0.17]
Med. age at residential independence	21	22
	[2.74]	[3.16]
Med. school-leaving age	19	19
	[2.96]	[3.26]
Higher education	0.30	0.30
	[0.46]	[0.46]
Secondary education	0.19	0.16
	[0.39]	[0.36]
Strong religious beliefs	0.30	0.22
	[0.46]	[0.42]
N	1496	980

Note: The table refers to similar samples as Table 2 restricted to individuals who experienced at least two events during the same year. Each row corresponds to a specific variable. Rows 1 and 3 show the employment rate over the life-course for stable jobs and temporary jobs respectively. Rows 2 and 4 show the median age at first stable and temporary job, respectively. Row 5 corresponds to the proportion of individuals who lived in a cohabiting relationship before the survey and row 8 to the proportion of individuals who had a child. Rows 6 and 7 show median age at first cohabiting relationship and at first child, respectively. Row 9 indicates the proportion of individuals who no longer lived with their parents at the time of the survey and row 10 indicates the median age at residential independence. Row 11 gives the median school-leaving age. Row 12 shows the proportion of men and women who graduated from higher education and row 13 from high school. Row 14 shows the proportion of individuals who indicated strong religious beliefs. For each variable and each sample, the table reports the mean or the median of the left-hand side variable among the corresponding sample. Standard deviations are in brackets.

Table A6 – Timing-of-events analysis — Model (3) — Detailed results

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	1.222***	1.325***
	(0.075)	(0.084)
First temporary job	0.133***	0.030
	(0.047)	(0.045)
Schooling	-0.209***	-0.052
	(0.065)	(0.079)
Nonresidential independence	-0.001	-0.241***
	(0.047)	(0.044)
Higher education	0.105**	0.155***
	(0.052)	(0.053)
Secondary education	0.021	-0.053
	(0.055)	(0.060)
Strong religious beliefs	-0.050	-0.167***
	(0.042)	(0.048)
Unemployment rate	-0.005	0.002
	(0.005)	(0.006)
Hazard rate of a first stable job		
First cohabiting relationship	0.414***	0.302***
	(0.094)	(0.090)
First temporary job	0.385***	0.171***
	(0.064)	(0.063)
Schooling	-1.613***	-1.310***
	(0.054)	(0.045)
Nonresidential independence	0.067	-0.139**
	(0.078)	(0.068)
Higher education	-1.022***	-1.202***
	(0.082)	(0.071)
Secondary education	-0.179**	-0.552***
	(0.080)	(0.070)
Strong religious beliefs	-0.080	-0.167***
	(0.053)	(0.051)
Unemployment rate	-0.051***	-0.037***
	(0.005)	(0.004)
Hazard rate of a first temporary job		
First cohabiting relationship	0.091	0.083
	(0.107)	(0.116)
First stable job	-0.772***	-0.772***
	(0.089)	(0.101)
Schooling	-0.099	-0.268***
	(0.085)	(0.079)
Nonresidential independence	0.192*	0.108
	(0.105)	(0.103)
Higher education	0.424***	0.175**
	(0.076)	(0.077)
Secondary education	0.371***	0.237***
	(0.082)	(0.081)
Strong religious beliefs	-0.093	-0.130*
	(0.061)	(0.067)
Unemployment rate	0.030***	0.060***
	(0.006)	(0.007)
N	3551	3495
Sample log-likelihood	-21274.4	-19850.8
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2

Note: The table refers to the same samples as Table 1. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship and the impact of a first cohabiting relationship on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and age groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A7 – Unobserved heterogeneity distribution — Model (3)

	Women	Men
p_{111}	0.790	0.913
p_{112}	0.000	0.000
p_{121}	0.035	0.013
p_{122}	0.033	0.048
p_{211}	0.000	0.000
p_{212}	0.000	0.000
p_{221}	0.128	0.001
p_{222}	0.015	0.025
$v^1_{i,r}$	-2.939***	-3.877***
	(0.138)	(0.134)
$v^2_{i,r}$	-1.318***	-1.812***
	(0.154)	(0.290)
$v^1_{i,js}$	1.443***	0.925***
	(0.143)	(0.093)
$v^2_{i,js}$	-2.314***	-2.042***
	(0.171)	(0.153)
$v^1_{i,tj}$	-2.989***	-2.862***
	(0.195)	(0.158)
$v^2_{i,tj}$	-0.780***	-1.411***
	(0.283)	(0.231)
$corr(N_r, N_{sj})$	-0.791	-0.535
$corr(N_r, N_{tj})$	0.111	0.554
$corr(N_{sj}, N_{tj})$	-0.436	-0.908

Note: The table refers to the same samples as Table 1. The two columns show the estimated parameters for the distribution of unobserved characteristics impacting transitions into stable employment, temporary employment, and cohabiting relationships. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A8 – Timing-of-events analysis — Model (3) without unobserved heterogeneity

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	0.274***	1.282***
	(0.063)	(0.089)
First temporary job	-0.181***	-0.093*
	(0.059)	(0.055)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	No	No
Number of mass points	1	1
Hazard rate of a first stable job		
First cohabiting relationship	-0.933***	-0.373***
	(0.087)	(0.093)
First temporary job	-0.081	-0.692***
	(0.059)	(0.058)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	No	No
Number of mass points	1	1
Hazard rate of a first temporary job		
First cohabiting relationship	-0.284**	0.001
	(0.141)	(0.145)
First stable job	-0.772***	-1.015***
	(0.113)	(0.115)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	No	No
Number of mass points	1	1
N	3551	3495
Sample log-likelihood	-14275.2	-14717.6

Note: The table refers to the same samples as Table 1. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship and the impact of a first cohabiting relationship on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed characteristics, yearly unemployment rates by gender, and age groups and duration variables, but no unobserved heterogeneity. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A9 – Timing-of-events analysis — Model (3) — Robustness checks

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	0.534***	1.425***
	(0.072)	(0.103)
First temporary job	-0.137**	-0.124**
	(0.062)	(0.057)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first stable job		
First cohabiting relationship	-0.518***	-0.234**
	(0.116)	(0.104)
First temporary job	0.237**	-0.302***
	(0.098)	(0.076)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first temporary job		
First cohabiting relationship	-0.164	-0.014
	(0.147)	(0.150)
First stable job	-0.560***	-0.724***
	(0.139)	(0.136)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
N	2409	2705
Sample log-likelihood	-13792.1	-14453.3

Note: The table refers to the same samples as Table 1 restricted to individuals who did not experience different events during two consecutive years. The first column refers to the subsample of women and the second column to the subsample of men. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship and the impact of a first cohabiting relationship on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and education groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A10 – Timing-of-events analysis — Model (4) — Detailed results

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	1.213***	1.381***
	(0.090)	(0.090)
First temporary job	0.125**	0.040
	(0.051)	(0.049)
First child	0.321***	1.240***
	(0.099)	(0.107)
Schooling	-0.192***	-0.049
	(0.073)	(0.085)
Nonresidential independence	-0.014	-0.248***
	(0.051)	(0.047)
Higher education	0.167***	0.238***
	(0.058)	(0.056)
Secondary education	0.079	-0.033
	(0. 060)	(0.064)
Strong religious beliefs	-0.017	-0.179***
	(0.046)	(0.052)
Unemployment rate	0.000	0.004
	(0.005)	(0.007)
Hazard rate of a first child		
First stable job	0.198**	0.692***
	(0.087)	(0.139)
First temporary job	-0.069	-0.093
	(0.079)	(0.075)
First cohabiting relationship	2.783***	3.264***
	(0.095)	(0.117)
Schooling	-0.933***	-0.445***
	(0.125)	(0.160)
Nonresidential independence	-0.405***	-0.380***
	(0.091)	(0.107)
Higher education	-0.633***	-0.348***
	(0.075)	(0.073)
Secondary education	-0.279***	-0.259***
	(0.079)	(0.085)
Strong religious beliefs	0.252***	0.249***
	(0.061)	(0.070)
Unemployment rate	-0.033***	-0.034***
	(0.008)	(0.011)
Hazard rate of a first stable job		
First cohabiting relationship	0.401***	0.313***
	(0.101)	(0.098)
First child	-1.026***	-0.204
	(0.120)	(0.184)
First temporary job	0.505***	0.152**
	(0.087)	(0.064)
Schooling	-1.719***	-1.322***
	(0.064)	(0.048)
Nonresidential independence	-0.108	-0.144**
	(0.086)	(0.070)
Higher education	-1.208***	-1.195***
	(0.096)	(0.075)
Secondary education	-0.340***	-0.543***
	(0.089)	(0.072)
Strong religious beliefs	-0.169***	-0.131**
	(0.061)	(0.055)
Unemployment rate	-0.040***	-0.038***
	(0.005)	(0.004)
Hazard rate of a first temporary job		
First cohabiting relationship	0.039	0.033
	(0.122)	(0.128)
First child	-0.203	-0.060
	(0.125)	(0.153)
First stable job	-0.804***	-0.765***
	(0.109)	(0.102)
Schooling	-0.108	-0.222***
	(0.097)	(0.082)
Nonresidential independence	0.203*	0.094
	(0.115)	(0.107)
Higher education	0.507***	0.152*
	(0.093)	(0.081)
Secondary education	0.421***	0.251***
	(0.095)	(0.084)
Strong religious beliefs	-0.057	-0.156**
	(0.071)	(0.072)
Unemployment rate	0.024***	0.055***
	(0.007)	(0.006)
N	3018	3148
Sample log-likelihood	-23395.6	-22763.7
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2

Note: The table refers to the same samples as Table 2. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship or a first fertility event and the impact of a first cohabiting relationship or a first fertility event on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and education groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A11 – Unobserved heterogeneity distribution — Model (4)

	Women	Men
p_{1111}	0.013	0.095
p_{1112}	0.155	0.004
p_{1121}	0.014	0.005
p_{1122}	0.022	0.000
p_{1211}	0.000	0.809
p_{1212}	0.616	0.000
p_{1221}	0.055	0.007
p_{1222}	0.026	0.049
p_{2111}	0.000	0.000
p_{2112}	0.000	0.004
p_{2121}	0.006	0.000
p_{2122}	0.001	0.004
p_{2211}	0.000	0.000
p_{2212}	0.000	0.000
p_{2221}	0.006	0.000
p_{2222}	0.087	0.024
$\nu^1_{i,r}$	-3.177***	-4.057***
	(0.160)	(0.149)
$\nu^2_{i,r}$	-1.563***	-1.953***
	(0.229)	(0.294)
$\nu^1_{i,co}$	-4.864***	-8.154***
	(0.316)	(1.770)
$\nu^2_{i,co}$	-3.064***	-4.944***
	(0.232)	(0.247)
$\nu^1_{i,sj}$	1.614***	0.932***
	(0.156)	(0.097)
$\nu^2_{i,sj}$	-1.746***	-2.031***
	(0.186)	(0.169)
$\nu^1_{i,tj}$	-0.962***	-2.789***
	(0.268)	(0.163)
$\nu^2_{i,tj}$	-3.092***	-1.364***
	(0.231)	(0.208)
$corr(N_r, N_{sj})$	-0.634	-0.497
$corr(N_r, N_{tj})$	0.037	0.592
$corr(N_r, N_{co})$	0.113	-0.076
$corr(N_{co}, N_{sj})$	-0.108	-0.017
$corr(N_{co}, N_{tj})$	0.109	-0.024
$corr(N_{sj}, N_{tj})$	-0.505	-0.877

Note: The table refers to the same samples as Table 2. The two columns show the estimated parameters for the distribution of unobserved characteristics impacting transitions into stable employment, temporary employment, cohabiting relationships, and fertility. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

Table A12 – Timing-of-events analysis — Model (4) — Robustness checks

	Women	Men
Hazard rate of a first cohabiting relationship		
First stable job	0.902***	1.458***
	(0.110)	(0.114)
First temporary job	-0.098	-0.128*
	(0.078)	(0.076)
First child	-0.678***	0.002
	(0.200)	(0.270)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first child		
First stable job	0.631***	0.442*
	(0.204)	(0.236)
First temporary job	-0.276***	-0.158
	(0.099)	(0.120)
First cohabiting relationship	2.319***	3.481***
	(0.138)	(0.219)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first stable job		
First cohabiting relationship	-0.325**	-0.171
	(0.131)	(0.127)
First child	-0.720***	-0.351
	(0.188)	(0.312)
First temporary job	-0.021	-0.313***
	(0.142)	(0.085)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
Hazard rate of a first temporary job		
First cohabiting relationship	-0.686***	-0.335*
	(0.260)	(0.183)
First child	0.229	0.001
	(0.257)	(0.241)
First stable job	-0.656**	-0.720***
	(0.311)	(0.148)
Control variables	✓	✓
Piecewise constant duration	✓	✓
Unobserved characteristics	✓	✓
Number of mass points	2	2
N	1561	2044
Sample log-likelihood	-11179.1	-13419.6

Note: The table refers to the same samples as Table 2 restricted to individuals who did not experience different events during two consecutive years. The first column refers to the subsample of women and the second column to the subsample of men. Each column corresponds to a specific regression where the impact of a first stable and temporary job on the hazard rate of a first cohabiting relationship or a first fertility event and the impact of a first cohabiting relationship or a first fertility event on the hazard rate of a first stable and temporary job are estimated jointly. All regressions include controls for individuals' observed and unobserved characteristics, yearly unemployment rates by gender, and education groups and duration variables. Standard errors are in parentheses.
* significant at 10%. ** significant at 5%. *** significant at 1%.

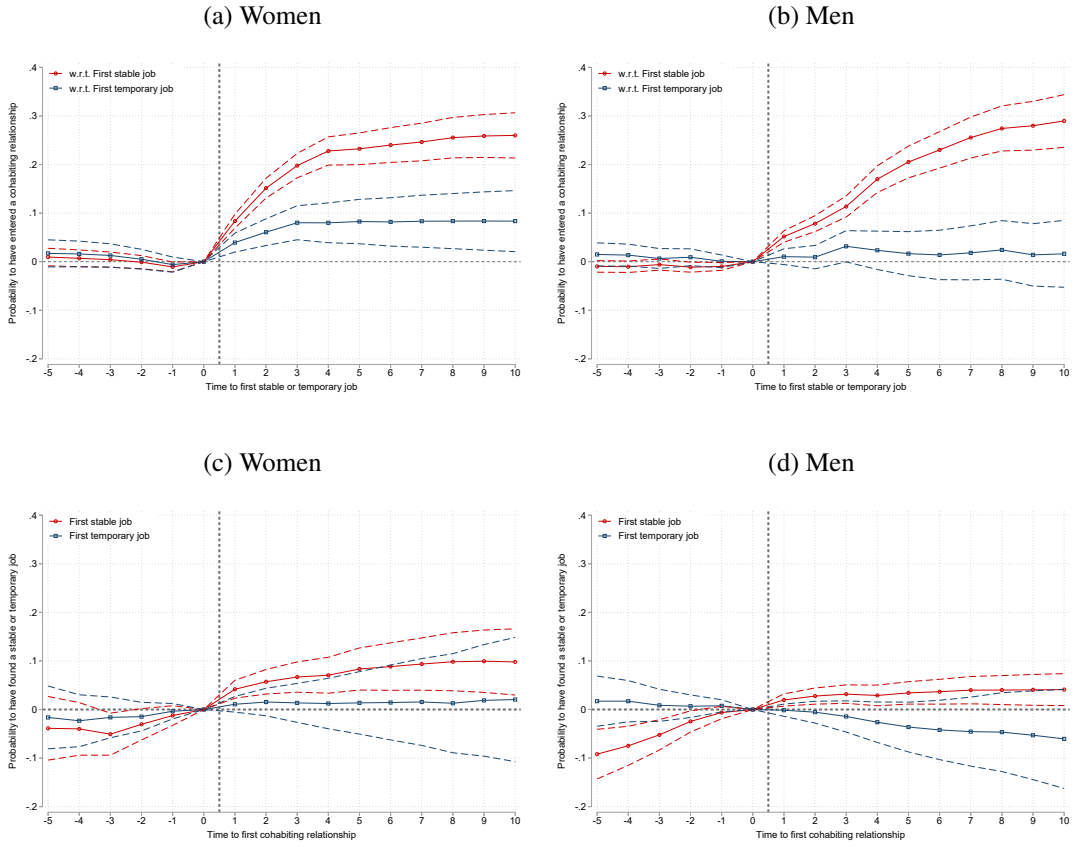

Figure A1 – First stable job, first temporary job, and first cohabiting relationship

Note: The figures refer to the samples of men and women from the *FE* survey who completed initial schooling before the survey. Additionally, Figures A1a and A1b focus on men and women who started their first stable or temporary job between age 18 and 1993 or 1994. Figures A1c and A1d focus on men and women who started their first cohabiting relationship between age 23 and 1993 or 1994. Figures A1a and A1b show the event time coefficients estimated for equations (1), and Figures A1c and A1d show the event time coefficients estimated for equations (2). Dotted lines represent 95% confidence intervals computed with robust standard errors clustered at the individual level.

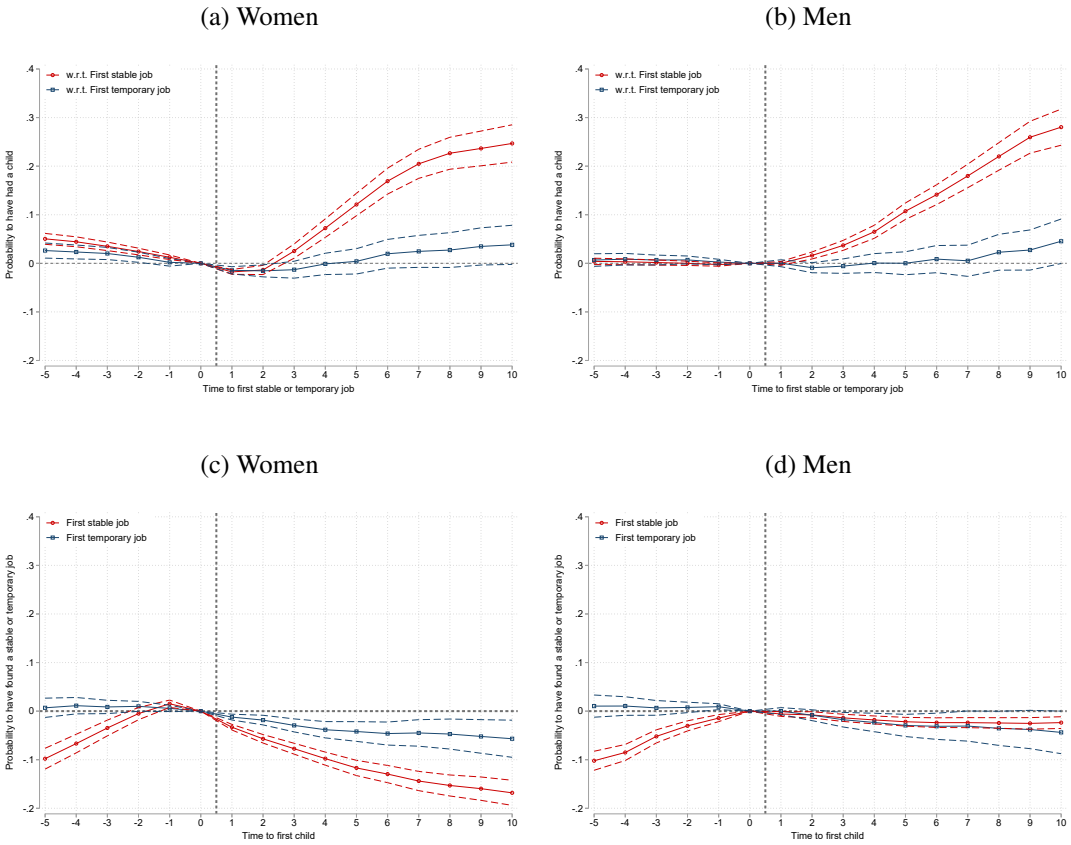

Figure A2 – First stable job, first temporary job, and first child

Note: The figures refer to the samples of men and women from the *FE* survey who completed initial schooling before survey and experienced the event used for the horizontal axis between age 18 and 2003 or 2004. Figures A2a and A2b show the event time coefficients estimated for equations (1), and Figures A2c and A2d show the event time coefficients estimated for equations (2) where the event "first cohabiting relationship" is replaced by "first child". Dotted lines represent 95% confidence intervals computed with robust standard errors clustered at the individual level.

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