

# The duration of maternity leave in France and the transitions back to the labour market: results from a competing risks model

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## Abstract

Previous papers have shown that childrearing has a different impact on a mother's professional career depending on the duration of the maternity leave and on the mother's education level. In this paper, we use a competing risks model to determine which variables may explain the duration of maternity leave, as well as the exit state of the maternity leave. Mothers can decide to go back to the same employer, change employer, change labour supply or drop out of the labour market. Our results show that it is mostly age, wages, tenure, firm size and macroeconomic variables that play a large role in the way young mothers enter the labour market again. We compare our results with those obtained for Germany, and find similar results.

**Keywords:** Maternity Leave, Labour Supply, Competing Risks

**JEL classification:** C14, D10, J13

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# 1 Introduction

According to official figures for 2011 by the INSEE (reported in Guedj [2013]), employment rate of women was around 59% in full time equivalents, which was 15 points lower than for men. The same study shows that women without education had an employment rate of 30% against 80% for women with at least some university education. Fertility also plays an important role in employment rate of women. Numbers for 2015, from Eurostat, show that the employment rate of women between 20 and 49 years old without child is 76,4% and decreases to 70,9% for women with only one child (under 6 years old). The proportion of part time workers among women between 20 and 49 years old without children is 20.4% and 24.9% for women with one child (under 6 years old). However, employment rate can have different meanings. For lower educated women, it often means having to work part time, either because these women want (or have to) take care of their children, or because they cannot find any full time work. From Guedj [2013] we learn that 23% of childless women without any education are imposed to work part time. This figure decreases to 5% when women have two years of higher education. However with one child at home, 34% of women without education are imposed part time jobs against 17% for women with two years of higher education. Often, educated mothers choose to work part time, unlike their uneducated counterparts. Employment rate also depends on age; for both women and men, the relationship between part time and age has an inverted U shape. Thus the employment of women seem sensitive to education, number of children and age.

In Rodrigues and Vergnat [2016], we have shown that women decrease their supplied yearly worked hours 2, 4 and 6 years after giving birth and that the magnitude of this reduction depends on the duration of maternity/parental leave. However it would also be interesting to know more about which characteristics of women influence their decision to participate, if at all, to the labour market again. Which types of women are more likely to come back to full time work? Is having a higher education correlated with a higher probability of coming back to full time work, and with shorter maternity leaves? Does tenure in a firm play a role? Are past wages an important factor when deciding between going back to the previous employer, or switch bosses? In other words, when and how are mothers coming back to the labour market after giving birth? This paper attempts to answer these questions in the case of France, by estimating a competing risks model as in Arntz et al. [2014].

## 2 Related literature

The links between the duration of maternity leave and the employment of women have already been addressed in the literature. For example, in Leibowitz et al. [1992], the authors study how the availability of child care impacts the employment of mothers two years after giving birth to their first child. Leibowitz et al. [1992] estimate a probit model and take the duration of maternity leave into account by running the regression twice; once when the children are 3 months old and again when the children are 2 years old. Less educated women are less likely to return to work, but women with a high school degree do not differ much from university educated women. Family income is negatively correlated with the probability to return to work; i.e. the higher the family income, the less likely the woman will start working again. Higher predicted wages also increased the probability of entering the labour market again. Having their own mothers living with them, young mothers were more likely to go back to work in the three months after giving birth.

Another, more recent paper focusing on child care availability is Geyer et al. [2015], which shows that introducing universal child care increases female labour supply by an average of 7 percentage points. Asai [2015] investigates the effect of an increase in cash benefits which is not accompanied by an increase in maternity leave duration for Japan. The author finds no evidence that an increase in cash benefits increase the likelihood of mothers returning to work. The author argues that this might be caused by the lack of child care facilities in Japan and by the specificity of the Japanese labour market, which requires a very high commitment to the workplace, with very long and inflexible working hours, and thus women prefer (or are socially pressured) to stay at home to take care of their children. Lalive and Zweimüller [2009] study the impact of two maternity leave reforms in Austria on future fertility decisions and the career of women. The first reform, which took place in 1990 was an extension from the job protection period, which, before the reform ended with the first birthday of the first child, and after the reform with the first birthday of the second child. The second reform, in 1996, was a six months reduction of the job protection period. The first reform increased fertility and return to work was delayed even after the job protection period had ended. The second reform shortened the pacing between the first and the second birth, but without major impacts on total fertility.

In a subsequent article, Lalive et al. [2014] study the impact of a third reform which was implemented in the year 2000. This reform increased the maximum duration of cash benefits the parents were entitled to for having

a first child. This reform increased the time mothers spent at home before returning to work. All the above articles study similar questions to ours, but use different methods. The authors of these articles estimate probit models to estimate the probability of the mothers going back to work. In this paper, we estimate a competing risks model, because we want to study not only how long it takes for mothers to go back to work, but also how. Competing risks models have been used extensively in economics to study the duration of unemployment. Edin [1989], Narendranathan and Stewart [1993], McCall [1996], Mussida [2007], Portugal and Addison [2008] are some examples. Güell and Petrongolo [2007] discuss the timing of conversion from temporary work contracts to permanent work contracts or other states (such as unemployment) for Spain.

The papers from which we draw the most inspiration are Fitzenberger et al. [2016] and Arntz et al. [2014]. Fitzenberger et al. [2016] use a dataset from a large German company to study the return to job of women after giving birth to a first child. Their data, covering the years from 2000 to 2008, show that return-to-job after a first birth is a source of high uncertainty for firms. Indeed, an important part of first mothers do not return to work after the parental leave. This is less the case for women who are more involved in their careers. This paper, while offering a very interesting and detailed analysis, in studying only one firm, and is thus not representative of German female workers. Results from Fitzenberger et al. [2016] must be taken with reservations. Arntz et al. [2014] use German data from 1985-2005, and focus on the link between labour market conditions, legislation, the length of maternity duration and the return to work. The authors show that there have been important changes in the behaviour of women during the last three decades. Women are more likely to give birth to a second child or to work again for the same employer, but in part time, than getting back to work full time or dropping completely out of the labour market. It seems that the maternity leave legislation plays a role in this pattern. The authors show that the longer the job protection period, the longer the maternity leaves taken by the mothers. This fact leads to important costs for the employer and for the economy as a whole.

These findings are not necessarily generalizable to France. Fertility and labour supply decisions of French women are quite different from their German counterparts. For example, total fertility rate is 1.47 in Germany while it is 2.01 for France in 2014. The percentage of part time working women aged 25 to 54 is 47.6% for Germany, against 28.7% for France in 2015 (data from Eurostat). This is way we will, after estimating the model, compare our results to Arntz et al. [2014]. In the next section we present the institutional setting of France to give more context to the interested reader.

### 3 France's institutional setting

In France, since 1980, the maternity leave is decomposed into two components: the prenatal leave (6 weeks for the first child) and the postnatal leave (10 weeks for the first child). During this leave, mothers receive a compensation if they have contributed to a social security scheme some time before the leave and take a minimum of 8 weeks of maternity leave. The compensation is equal to the average income of the last three months before maternity leave with a daily ceiling of 83.58€ (in 2016).

During maternity leave, a woman can not get fired from her job. After the maternity leave, the employer has to give the mother her previous job or a similar job with at least the same wage. The maternity leave is considered as a period of effective service, thus the mother enjoys the same wage increase as employees of the firm with the same occupation.

After the maternity leave, a mother (or father) can reduce her working hours to take care of her child until the child's third birthday.<sup>1</sup>

In this paragraph we present parental leave provisions available, since 1990, for parents of one child:

- Before 2004, only parents of at least two children were eligible for the parental leave provision.
- Since 2004, a new benefit was created, called *Complément de Libre Choix d'Activité* (CLCA). It allows one parent of a child under three, who has paid contributions for pension during at least 8 quarters in the last 2 years, to decrease their professional activity during six months. The amount of the benefits, on January 2017, is 390.92€ if the parent stops working, 252.71€ for half-time work or less, and 145.78€ if the parent works for 50% to 80% of full time work. Before April 2014, depending on the household income, these amounts could have been increased by about 185€.
- Since 2016, yet another benefit was introduced. The *Prestation partagée d'éducation de l'enfant* (PreParE) which, like the German *Elterngeld*, introduces an incentive for fathers to take a parental leave. The amounts and conditions are the same as for CLCA but now, a second parent can also take the benefits for six months.

Once the parents want to get back to work, many opportunities for child-care exist in France. In France there is a fairly large supply of collective structures for young children and parents can also employ childminders. According

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<sup>1</sup>This is the so-called *congé parental d'éducation* in French.

to the DREES <sup>2</sup>, there are on average in each department of metropolitan France, 68 places in preschool childcare facilities per 100 children in 2013. The French family allowance funds supports some of the expenses related to child care expenses (for parents who are working or searching for a job). Two major cases occur:

1. If the child goes to institutions hosting young children, such as nurseries:
  - The price of childcare is calculated based on the household's resources (this calculation is possible thanks to subsidies granted by the French family allowance funds to these institutions).
  - Parents get a tax credit for their expenses for childcare.
2. If the child is cared for by a childminder or by a nanny at the parent's home:
  - In the case of the employment of a childminder, parents are exempt of all social security contributions, and in the case of employment of a nanny, of 50% of all social security contributions.
  - Benefits to help parents finance the childminder (*Allocation Garde d'Enfant à Domicile* (AGED) and *Aide à l'emploi d'une assistante maternelle agréée* (AFEAMA) before 2004 and *Complément de libre choix du Mode de Garde*(CMG) afterwards).
  - Tax credit for childcare expenses (after taking into account the potential benefits for childcare).

These different policies allow parents, especially mothers, to reconcile family life and working life. Mothers are able to choose either to come back to their previous employer, or change employers, work full time or part time, or decide to have a long career break and take care of their child. These possibilities are of course also available to fathers, but for reasons that are not discussed in this paper, it is mostly mothers that are confronted to this choice. Using a rich administrative dataset, we will study the young mothers' decisions; how long mothers decide to stay out of the labour force, and how do mothers come back. Different mothers, with different education levels, careers, etc will make different choices as to how long their break will be, and how they will come back to the labour market.

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## 4 Data and summary statistics

### 4.1 The data used

For the purposes of this paper, we use the same dataset as in Rodrigues and Vergnat [2016]. We repeat some of the points from Rodrigues and Vergnat [2016] here.<sup>3</sup>

The data used in this paper resulted from the merger of the DADS panel and the EDP dataset and is called "DADS-EDP".<sup>4</sup> The "DADS-EDP" panel covers the period from 1976 to 2010. These data are provided by the INSEE<sup>5</sup> and give information on a sample of the French population. The sample is composed of persons born between the 1st and the 4th of October (only those born during an even year for the years 1967 to 2002 are included in the DADS-EDP panel). People born abroad, who never worked, who are self-employed or who work as civil servants of national public services are excluded of the data. Between 1967 and 2010, the sample evolved. Thus, since 1991 and 1992, civil servants working in public institutions of an industrial and commercial nature are included in the panel as well as publicly-employed hospital staff (since 1984) and civil servants of territorial communities (since 1988). Since the early 2000s, unemployment benefits recipients were also included in the panel (2002) as well as agricultural workers (2003) and people living in French overseas territories (2004). The merged "DADS-EDP" data provides information on socio-demographic variables such as date of birth, date of wedding, place of residence, level of education, number and date of birth of children. . . Data on wages earned, hours worked, type of employment contract, the starting and closing dates of the period of paid work are available for each individual and for each year of the panel. We also know the size, the employment sector and the location of the firm the person is working in.

The preparation of the data is the same as for Rodrigues and Vergnat [2016] except for the points below. Our variable of interest, duration of post-birth maternity leave in days, is not provided in the data. We construct this variable by 3 methods :

1. We observe the start date and the end date of paid work in the data. We can therefore deduce the time that elapsed between the date of the birth of the child and the date of return to work.

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<sup>3</sup>For more details, the interested reader can read sections 2.1 and 2.2 from Rodrigues and Vergnat [2016].

<sup>4</sup>*Déclaration Annuelle des Données Sociales* or Annual Declaration of Social Data, *Échantillon Démographique Permanent* or Permanent Demographic Sample

<sup>5</sup>National Institute of Statistics and Economic Studies. The French national statistical institute.

2. For some women, no exit from work is indicated at the time of the birth of the child (women still considered in the company’s payroll software but already on maternity leave, for example). For these women, we deduce the exit time (i.e. the duration of maternity leave) by the reduction in hours worked between period  $t-1$  and the job period around the birth. To control the results or in case of missing informations we divide the wage earned in the period around the birth by the hourly wage in  $t-1$  to deduce the reduction of the working time during this period. Thus, we get the reduction of working time around the birth that we translate into days and we subtracted 42 days (the legal duration of the pre-natal leave).
3. Finally, there are some women for whom there are no exits from the labor market at the date of birth of the child but for which an exit takes place before the end of the statutory post-natal leave. For these women we calculated maternity leave using the method described in point 2 (for the period surrounding the birth) to which we add the days between the date of exit before the end of the statutory maternity leave and the date of return to work.

We also added the national GDP growth rate<sup>6</sup> and the unemployment rate at the French department level<sup>7</sup> to control for the labour market conditions for each year of the panel. Unlike Arntz et al. [2014], we do not have information on the availability of child care facilities. But as explained in subsection 3, child care facilities are very common in France, and a large number of benefits exist to help parents of any social class to cover the costs.

## 4.2 Descriptive statistics

Our sample is restricted to women who gave a first birth between 1994 and 2010 and who worked full time for at least 18 months during the two years before giving birth. This totals to 8161 women. Even though our dataset starts at the year 1976, we chose 1994 as the starting year because we only have information on worked hours starting with 1993.

Table 1 presents the age of mothers at the birth of their first child. The average age of childbearing is 30. The distribution is very narrow, as the first quartile equals 27 and the third quartile 32. In France, for 2010, the average age of mothers giving birth to their first child was 28 years old.<sup>8</sup>

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<sup>6</sup>Source: World Bank.

<sup>7</sup>Source: INSEE

<sup>8</sup>Ined data, <https://www.ined.fr/fr/tout-savoir-population/chiffres/france/naissance-fecondite/age-moyen-maternite/>



Table 1: Age at which women have their first child (n=8161)

	Min	1st quartile	Median	Mean	3rd quartile	Max
Age	20.0	27.0	29.0	30.0	32.0	47.0

Figure 1: Distribution of the duration of maternity leave

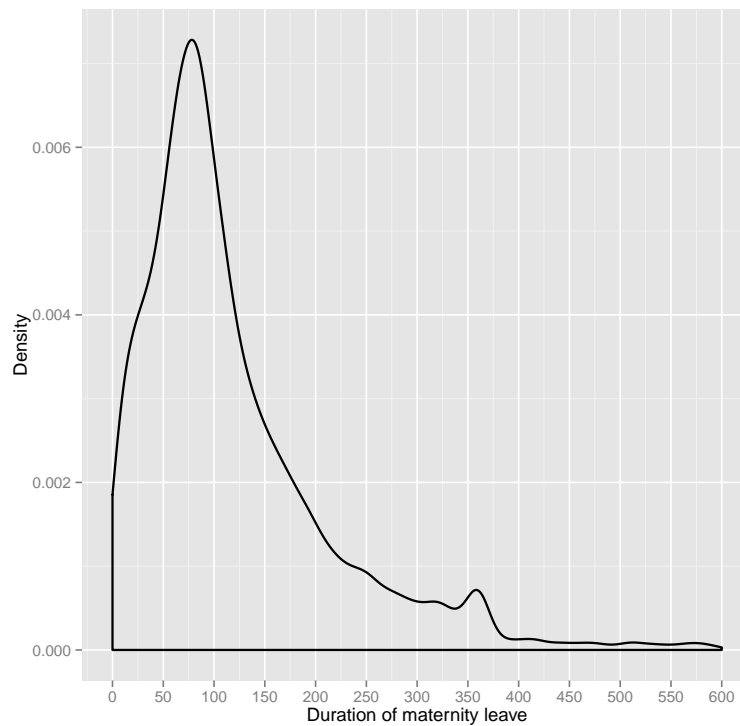


Figure 1 shows the distribution of the duration of maternity leave in the sample, ie the number of days between the birth of the child on the return to work. Our definition of maternity leave included therefore also possible parental leave. The distribution's mode appears to be around 75 days, which is slightly longer than the statutory duration of maternity leave in France.

Table 2: Transitions characteristics

Transition	Duration of mat. leave (days)	Age	Tenure (days)	Experience (days)	Live in the capital region (%)	Child's birth $\geq 2004$ (%)
Censored	551 (946.23)	30.6 (4.27)	1273 (793.33)	2453 (1113.18)	23	89.5
FT: same employer	105 (94.30)	29.9 (4.05)	1286 (857.37)	2257 (1199.65)	22.5	58.3
FT: another employer	158 (215.27)	29.5 (3.91)	990 (750.99)	2150 (1148.44)	31.9	53.3
PT: same employer	126 (123.17)	30.7 (4.25)	1376 (949.49)	2370 (1277.46)	21.8	60.6
PT: another employer	223 (305.06)	29.6 (4.13)	1018 (817.24)	2144 (1222.68)	26.6	49.5

Notes: *duration of maternity leave*, *tenure* and *experience* are measured at their means.

Figure 2: Distribution of the duration of maternity leave by transition

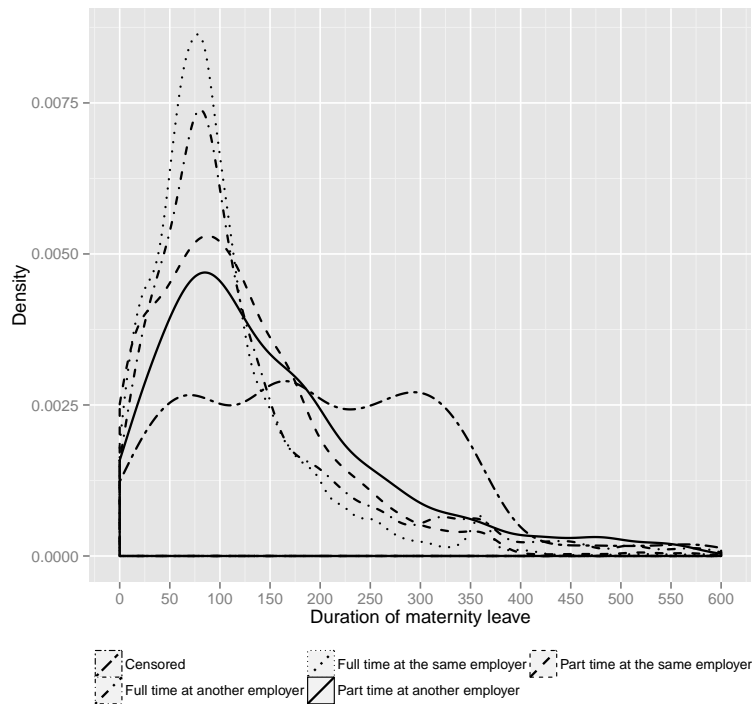


Table 2 shows some characteristics of the different transitions on which our study will focus. What is striking is that maternity leave duration, tenure and experience have very large standard deviations, which suggest very wide distributions for these variables, as shown in Figure 2. However, it appears that the duration of maternity leave is lower when women decide to return

to the same employer. It is also these women who have more important professional experiences and tenures. These women seem, thus, to be better rooted in their firm. Age of the mothers is, for all risks, around 30.

The share of women living in the capital region <sup>9</sup> is higher among women who change employers before and after birth, certainly reflecting a greater easiness to change jobs in this region. The last column of table 2 shows that 89.5% of the censored mothers had their child in or after 2004 against 50 to 60% for the other transitions.<sup>10</sup>

Table 3: Mother's characteristics before each transition

	Censored	Full time at the same employer	Full time at another employer	Part time at the same employer	Part time at another employer
<b>Women who transitioned to...</b>					
(%)	10.3	51.2	19.4	13.0	6.1
<b>Education</b>					
No education (%)	6.2	48.4	18.6	16.8	9.9
High school education (%)	9.9	52.1	17.6	13.6	6.8
2-3 years of higher education (%)	10.1	52.4	19.9	12.6	4.9
4-8 years of higher education (%)	12.7	47.6	22.7	11.4	5.6
<b>Occupation</b>					
Executive (%)	11.3	47.7	24.1	10.6	6.2
Intermediate occupation (%)	8.9	51.0	21.5	13.3	5.3
Clerk (%)	11.3	51.4	17.4	13.3	6.5
Blue-collar worker (%)	9.1	56.2	14.5	13.4	6.7
<b>Firm size</b>					
< 20 employees (%)	12.0	46.6	22.8	10.7	8.0
≥ 20 and < 500 (%)	9.1	54.2	18.3	13.2	5.2
≥ 500 (%)	10.3	52.7	14.6	18.0	4.4

Table 3 shows pre-birth characteristics of the mothers. The top row shows the proportion of mothers who transitioned to the different states. For instance, 51.2% of the women in the sample came back to full time work to their previous employer, while around 20% changed employers. Almost 20% returned to part time work, two thirds of them back to their same employer. Among the mothers without any education, 48.4% came back to their previous employer, full time, and more than 25% came back in a part

<sup>9</sup> *Île de France*

<sup>10</sup> 2004 is a year were the CLCA was introduced, as explain in section 3.

time job (16.8% to their previous employer and 9.9% to another employer). The proportion of women who return to work part time decreases with the level of education. Highly educated mothers seem to change more often their employers when going back full time. This is also reflected in the occupation; occupations that require more education seem to offer more flexibility to women, for example, female executives tended to switch employers at a higher rate than blue-collar workers.<sup>11</sup>

Finally, firm size might also play a role. For instance, it seems that bigger firms ( $\geq 500$  employees) offer more possibilities to mothers that wished to return to work part time (18%). Very small firms ( $< 20$  employees) are the ones where mothers returned the less working part time (10.7%), and are also those where mothers decided to switch employers (22.8% in full time and 8% in part time).

## 5 Econometric analysis

In a medical context, a patient that receives treatment for, say, cancer, is exposed to different risks. This patient could completely heal, or have a remission that lasts a certain amount of time, or die from another cause. Of course, the study could end before any outcome is observed and thus that patient would be censored. Given these problems, duration models are often used in medicine. However, these models are also very useful in labor economics. Indeed, a woman enters maternity leave for one reason only, but could then exit maternity leave in different ways, or never return to the labour market at all. The *risks* young mothers are exposed to in our paper are as follows:

- Never return to the labour market.
- Return back to work at the same employer, full time.
- Return back to work at the same employer, part time.
- Return back to work at another employer, full time.

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<sup>11</sup>The following are the French PCS2003 codes used:

- Executives: 31, 32, 36
- Intermediates occupations: 41, 46, 47, 48
- Clerks: 51, 54, 55, 56
- Blue-collar workers: 61, 66, 69

Complete list available at: <http://www.insee.fr/fr/information/2400059>

- Return back to work at another employer, part time.

Young mothers are exposed to these risks during maternity leave, so we are interested in the duration of the maternity leave after the birth of their first child and on which variables influence the different risks. Because of data limitations, we do not know if a woman that never came back to work has moved out of the country, stayed out of the labour force until after 2010 (the last year of observation) or died. It is also not possible to know if these mothers decided to have a second child during their first maternity leave. These observations are thus considered censored. From table 3, only 10.3% of observations are censored.

To model the maternity duration as well as the risks the mothers are exposed to, we estimate in this article a model proposed by Fine and Gray [1999]: the proportional subdistribution hazard model. This model takes the competing risks into account by focusing on the cumulative incidence function instead of the survivor function (defined below). Because the distribution of the baseline hazard is not specified, this is a semiparametric model. We refer the reader to Fine and Gray [1999] for a detailed presentation of the model as well as Arntz et al. [2014] for a shorter exposition.

To estimate the competing risks model, we use the R package `cmprsk` developed by [Gray, 2014], as Arntz et al. [2014] did. We also use [Zhou and Latouche, 2013] to estimate the model by clustering the observations by French departments. This accounts for the situation in which failure times may be correlated within a cluster. For instance, one could imagine that failure times in the Bas-Rhin, a French department culturally close to Germany, and with its own social security scheme are quite different from the failure times of a region in southern France.<sup>12</sup>

Before estimating both these models, we present some graphs of the survival function as well as the cumulative incidence function.<sup>13</sup> Figures 3 show the Kaplan-Meier [Kaplan and Meier, 1958] estimates for our risks. These graphs show the share of “survivors” after a certain time has passed, but one has to remember that the competing risks are not taken into account and are simply considered as censored. The share of women who leave maternity to return to the same employer full time decreases very rapidly unlike for

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<sup>12</sup>The departments constituting Alsace, the *Bas Rhin* and *Haut Rhin*, as well as the department of the *Moselle* have been conquered and reconquered numerous times by either France or Germany. As a result of this endless back and forth, these three departments retained some old German laws and French laws that are only applicable in these three departments.

<sup>13</sup>Hazard functions are presented in appendix. “The hazard function is the instantaneous probability of leaving a state conditional on survival to time  $t$ ” (p.576) Cameron and Trivedi [2005]

the other transitions which happen much more slowly. There is also a much lower proportion of women who leave maternity leave for part time work.

Figure 3: Kaplan-meier estimate of the survival function for each risk

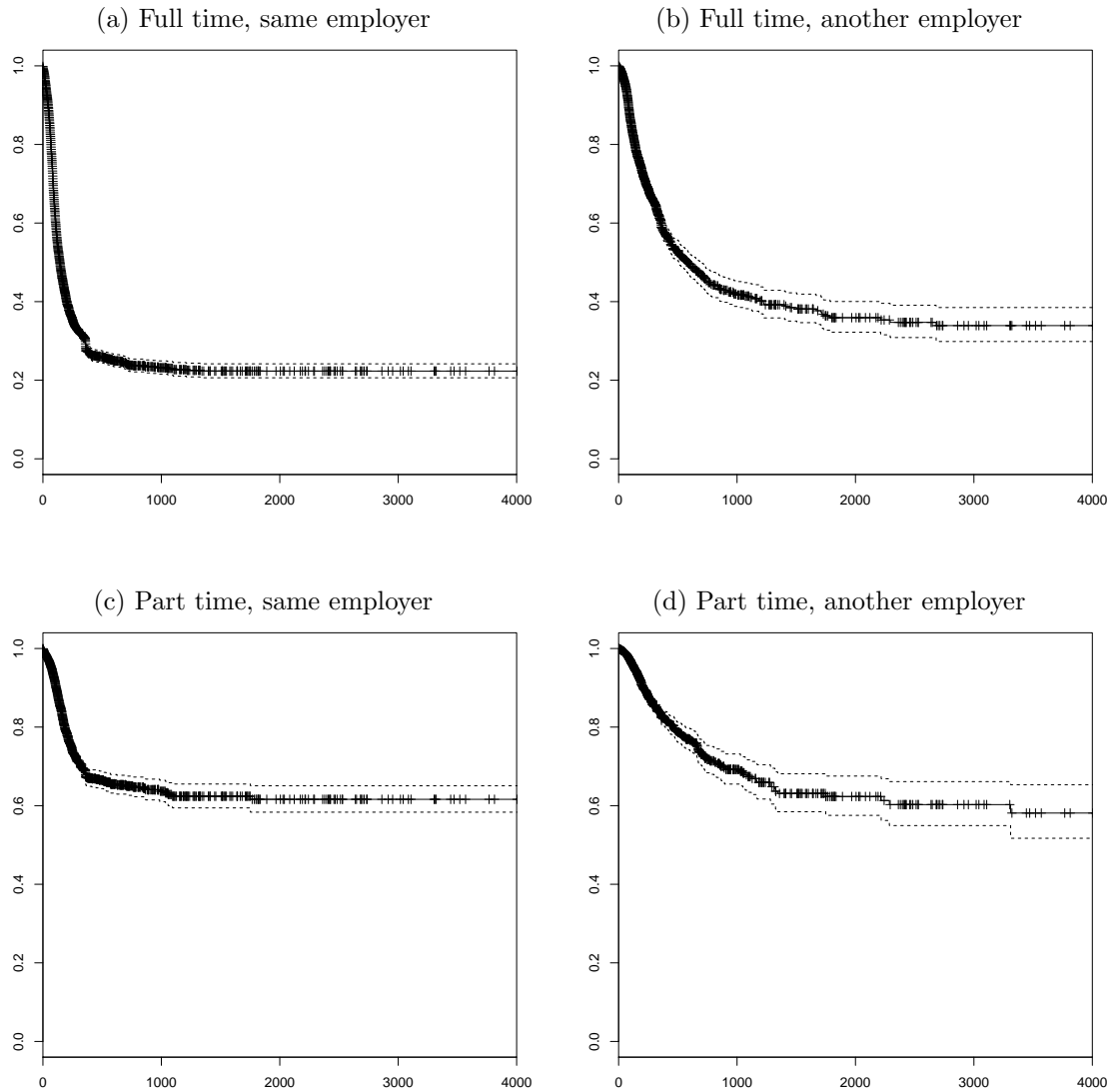
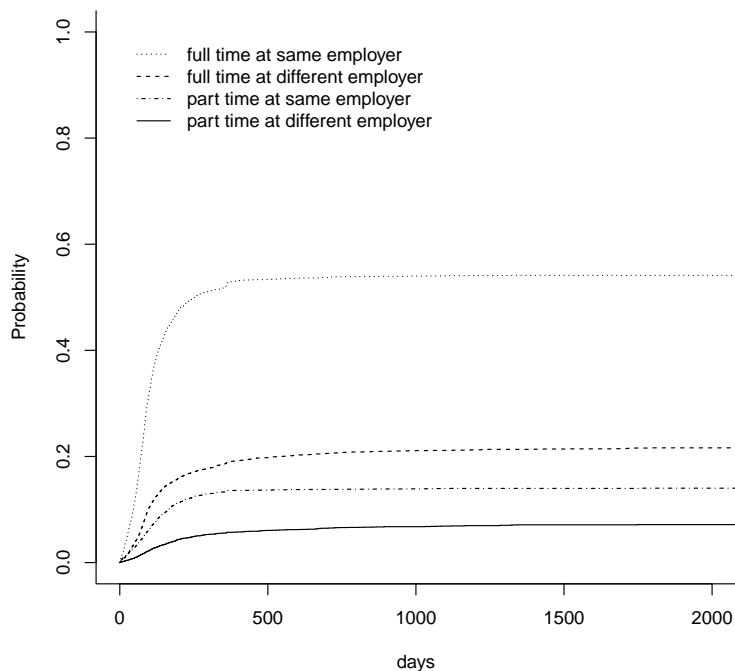


Figure 4 represents cumulative incidence functions. In other words, it represents the probability to fail in one risk on or before time  $t$  while taking into account the competing risks. The competing risks affect the probability of occurrence of an event. If we compare Figure 4 with figures 3, we observe that the Kaplan-meier estimates overestimated the probability of occurrence

of each risk, which explains why it is important to take the presence of the other risks into account and why Fine and Gray [1999] use cumulative incidence functions in their model. We observe in figure 4 that the cumulative probability of occurrence of the risk "full time at same employer" is much more important than the 3 others risks. Each risk occurs relatively soon after birth except the risk "part time in a different employer" for which the cumulative incidence function grows much more slowly.

Figure 4: Cumulative incidence functions



## 6 Results

### 6.1 Regression results

Table 4 shows the result of the competing risks regression. The reported coefficients are exponentiated, which eases interpretation. Tenure and experience have been converted to years in order to have a similar scale between the variables. We divided mean wage (mean wage between  $t - 1$  and wage in  $t - 2$ ) in three categories, each holding around one third of the individuals. To make the text easier to read, we will name the subdistribution hazard (probability of occurrence of an event at  $t$ , given that no other competing

events have occurred) by hazard in the rest of the text.

Age plays an important role; one year of added age decreases the hazard of both full time risks by around 2% over the baseline hazard, while increasing the hazard by 5% to return to the same employer part time. Tenure increases the hazard to return to the same employer by around 5%, but decreases the hazard of changing employers by 12% to 14%. Overall job market experience only plays a minor role, and one year of additional experience increases the hazard of changing employers and work full time by 2%. This result is only significant at the 10% level, however.

Compared to the reference category of earning less than 15000€ per year on average,<sup>14</sup> being in the second category increases the hazard of returning full time to the previous employer by 28% and decreases the hazard of returning part time to another employer by 34%. A similar conclusion can be drawn for women that were around a yearly wage above 20000€.

Surprisingly, education only seems to play a marginal role. In most cases, education does not seem to significantly impact any hazards. Only for women that do not have any education, the hazard of returning to their previous employer full time decreases by around 15% compared to women with high school education. At the 10% significance level, the hazard of returning part time to another employer increases by 41%.

Establishment size is another important variable. Bigger firms tend to have their employees return, either in full time or part time. The hazard of returning full time to the previous employer is around 20% for both categories when compared to the baseline, while the hazard of changing employer decreases by 22% for middle-sized firms (42% for big firms), and for part time, the hazard of changing employers decreases by around 33% (or slightly more for big firms).

We also included a decade dummy. The reference is 0 for the years 1994 to 2003 and 1 for 2004 until 2010. Women who gave birth to their child after 2004<sup>15</sup> were more likely to go back to their previous employer full time as well as part time (7% and 15% respectively). The hazard of changing employers decreases by 6% and 9% respectively.

Macroeconomic variables, such as GDP growth and the unemployment rate (at the departmental level) were also included. GDP growth increases the hazards of the all the risks by around 20%. Increasing unemployment rate by 1 percentage point decreases the hazard of returning to the same employer full time. Living in the capital region decreases the hazard of returning full

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<sup>14</sup>A friendly reminder to the reader: all the women in the sample were working full time for at least 18 months before giving birth.

<sup>15</sup>2004 was the introduction of the CLCA reform.



time to the previous employer by 18% but increases the hazard of changing employer by around 38%. This might indicate the greater amount of job opportunities in the capital region compared with the other French regions. The hazard of returning part time to the same employer also decreases by around 17%.

Finally, occupations, similarly to education, seem to play a minor role. Being a clerk decreases the hazard of changing employers and working full time by 24% compared to executives and for blue collar workers the hazard decreases by 30%. At the 10% level, the hazard of returning part time to the same employer increases by 27% to 28% for intermediate occupations and clerks.

Table 5 show the results of the competing risks regression with clustered observations by French departments. Significance of the results did not change, but only the size effect changed. For instance, mothers belonging to the highest wage class have an increased hazard of 10% when compared to the reference class to return to their previous employer full time, which was almost 30% without clustering.

## 6.2 Discussion

In this subsection, we are now discussing our results and comparing them to the literature. We will mostly focus on comparing the results with Arntz et al. [2014], for two reasons. First of all, our paper is quite close to Arntz et al. [2014], in both type of data and econometric approach. Second, comparing France and Germany makes a lot of sense. Both these countries are very similar in economic, geographic and cultural terms, yet we see large differences in fertility. Therefore it is interesting to compare the decisions of young mothers when they re-enter the labour market after maternity leave. However, the results are not fully comparable, because of data limitations.

As seen in table 6.1, age plays an important role. Younger mothers tend to return more often to full time work, maybe because they want to limit the losses in their wages due to human capital depreciation. Mothers that have been working in the same firm for a long time also tend to return to their previous employer, a way for these mothers to signal their attachment to their previous employer (or to avoid having to prove their worth again in a new firm), which is a result that is also found in Arntz et al. [2014]. Maybe surprisingly, overall job market experience does not play an important role. This may be because we included age, tenure and education as further controls. Women that earned higher wages also tend to return to their previous employer, and especially in full time work. There is potentially a gift exchange game going on here; employers pay high wages to their

Table 4: Competing risks regression results

	Full time at at the same employer	Full time at another employer	Part time at the same employer	Part time at another employer
Age	0.983***	0.975***	1.049***	1.012
Tenure	1.056***	0.860***	1.053***	0.882***
Experience	0.990	1.020*	0.984	0.994
<b>Mean yearly wage</b>				
Yearly wage < 15K	ref	ref	ref	ref
Yearly wage ∈ [15K, 20K]	1.284***	0.981	0.872*	0.660***
Yearly wage > 20K	1.288***	1.132	0.880	0.775*
<b>Education</b>				
No education	0.849**	1.049	1.170	1.406*
High school education	ref	ref	ref	ref
2-3 years of higher education	1.012	1.094	0.930	0.818*
4-8 years of higher education	0.989	1.120	0.898	0.840
<b>Establishment size</b>				
<20	ref	ref	ref	ref
≥20 and <500	1.209***	0.778***	1.281***	0.671***
≥500	1.223***	0.583***	1.867***	0.621***
Decade	1.111***	0.901*	1.316***	0.847
GDP growth	1.171***	1.185***	1.204***	1.209***
Unemployment rate	0.973***	0.996	0.998	1.028
Ile de France	0.823***	1.377***	0.829***	1.145
<b>Occupation</b>				
Executives	ref	ref	ref	ref
Intermediate occupation	0.957	0.921	1.267*	0.793
Clerk	1.035	0.763***	1.284*	0.836
Blue collar worker	1.062	0.692**	1.141	0.857

Significance levels : \*\*\* 1%, \*\* 5%, \* 10%

Table 5: Clustered competing risks regression results

	Full time at at the same employer	Full time at another employer	Part time at the same employer	Part time at another employer
Age	0.931***	0.902**	1.216***	1.050
Tenure	1.137***	0.699***	1.131***	0.743***
Experience	0.966	1.066*	0.947	0.981
<b>Mean yearly wage</b>				
Yearly wage < 15K	ref	ref	ref	ref
Yearly wage ∈ [15K, 20K]	1.128***	0.991	0.936*	0.818***
Yearly wage > 20K	1.127***	1.060	0.942	0.887**
<b>Education</b>				
No education	0.969**	1.009	1.031	1.069**
High school education	ref	ref	ref	ref
2-3 years of higher education	1.006	1.043	0.967	0.910**
4-8 years of higher education	0.996	1.045	0.959	0.935
<b>Establishment size</b>				
<20	ref	ref	ref	ref
≥20 and <500	1.100***	0.882***	1.132***	0.819***
≥500	1.075***	0.823***	1.253***	0.842***
Decade	1.053***	0.950*	1.144***	0.922
GDP growth	1.307***	1.333***	1.370***	1.379***
Unemployment rate	0.946***	0.991	0.997	1.057
Ile de France	0.920***	1.148***	0.923**	1.060
<b>Occupation</b>				
Executives	ref	ref	ref	ref
Intermediate occupation	0.979	0.962	1.118*	0.896
Clerk	1.017	0.874**	1.133	0.915
Blue collar worker	1.016	0.907**	1.036	0.960

Significance levels : \*\*\* 1%, \*\* 5%, \* 10%

female employees and thus these young mothers feel more comfortable in returning to work for them. Of course one would need to investigate this closely, by asking young mothers what is the primary reason they decided to go back to their employers, which is outside the scope of this current study. Similar results have been found in Arntz et al. [2014]. Education is another variable that does not seem to play an important role, a result that may be surprising at first, but which was, in part at least, also found in Leibowitz et al. [1992]. The size of the establishment the mother was working in before pregnancy plays a role and we confirm the result found in Arntz et al. [2014]. Unlike Arntz et al. [2014], we found that high unemployment rates decrease the hazard of returning full time to the previous employer, but we arrive at the same conclusion as Arntz et al. [2014] concerning GDP; higher GDP levels are associated with returns to part time work rather than full time work. Arntz et al. [2014] also find different significant results for different German states, which we also find for the “living in the capital region dummy”.

## 7 Conclusion

Women who end their maternity leave (including parental leave) can make different transitions in the labor market: returning to the same employer or changing employer and working on a part time or on a full time basis. We have shown that it is not the same women who perform each of these transitions. For instance, our results show that women employed in large firms, or who have been working for a long time with the same employer, tend to return full time to their previous employer. Women who were paid high wages also tended to return to their previous employer more often. These women are usually those who exit the labor market for a shorter period. As for personal characteristics, our results indicate that only age seems to matter. Indeed, overall labour market experience, education and even occupation do not seem to be important determinants of neither maternity leave duration, nor of the risk. Macroeconomic variables however, which proxy for the state of the economy at large, are significant.

We arrived at these conclusions by estimating a competing risks model. Competing risks means that young mothers can end their maternity leave in different, exclusive ways. This model allowed us to understand the variables that influence the transition to any of these risks.

The literature on maternity leave duration analyzed through the lens of a competing risks model is fairly scarce at the moment. The paper from which ours is closest is Arntz et al. [2014], who use German data. In both France and Germany, the post-birth transitions in the labour market seem to

be influenced, in part, by the same variables. This does not mean, however, that the duration of maternity leave and the proportion of consecutive births or mothers that work in part time are the same in both countries.

Implications of our results are clear; even though women have to stop working at some point due to their pregnancies, they can return very quickly to the labour market and work full time if the correct incentives are provided. Working for the same firm for a long time helps women return to the labour market sooner, especially if it is a large firm and if the pre-birth wages were high. Employers that wish to retain qualified and motivated women should take this into account and offer regular wage increases to their work force as well as permanent contracts.<sup>16</sup>

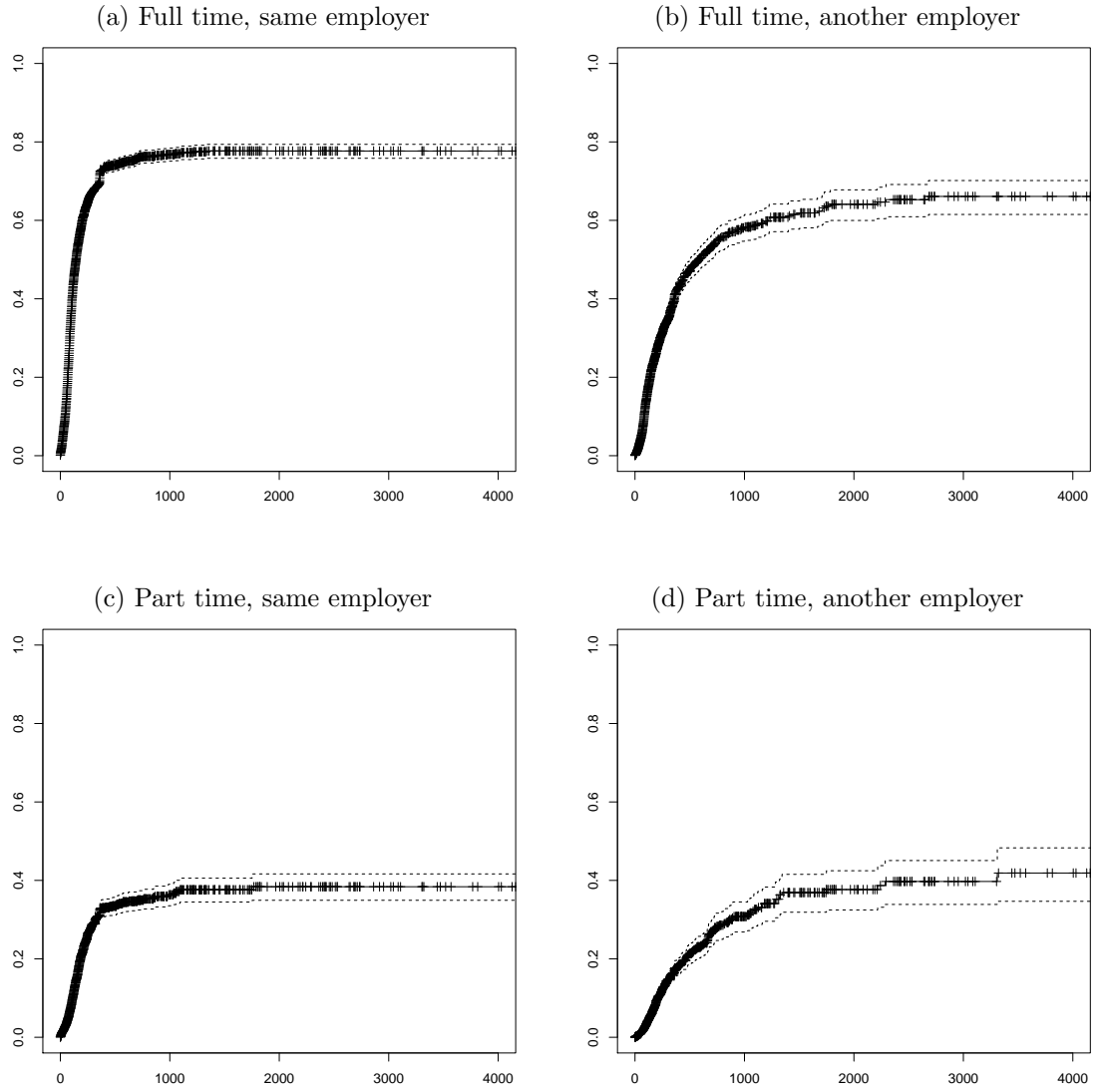
## 8 Appendix

Figures 5 show the hazard functions of the different risks:

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<sup>16</sup>In France, in 2014, 84.2% of newly hired workers were offered a temporary contract. Source: <http://dares.travail-emploi.gouv.fr/dares-etudes-et-statistiques/etudes-et-syntheses/dares-analyses-dares-indicateurs-dares-resultats/article/hausse-soutenue-du-taux-d-entree-en-cdd-dans-les-mouvements-de-main-d-oeuvre-au>

Figure 5: Hazard function for each risk



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