EVALUATING THE IMPACT OF THE FRENCH TAX CREDIT PROGRAMME, "LA PRIME POUR L'EMPLOI" : A DIFFERENCE IN DIFFERENCE MODEL♣

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Abstract

This paper seeks to estimate the impact of the French tax credit,"la Prime Pour l'Emploi", on the employment probability of women that are either head of the household or spouses of the head. A difference in difference approach is adopted. The data for the analysis are drawn from the French labour force surveys, "les enquêtes emploi". The rotating structure of this survey enables us to apply panel data methods to the estimation of the model. We find that the programme has a significantly negative impact on the labour supply of married women. The effect is positive, though not always significant, for single women.

Theme : labour market policies evaluation
Keywords : labour supply; difference-in-difference.
Classification JEL : C34, I38, J21

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Introduction

The French tax credit programme, "la Prime Pour l'Emploi", was launched by the Jospin government in spring 2001. This programme aims at increasing income from work for the low-paid, with the twins objectives of redistributing income to the less-skilled and increasing the incentives to work for those with low potential earnings. The purpose being to reduce unemployment traps, due to potential earnings being low relative to unemployment income. Similar programmes exist in many other OECD countries, such as, for example, in the United States, where the Earned Income Tax Credit is targeted at low income families with children or in the United Kingdom, where the Working Family Tax Credit has similar objectives.

The French tax credit measure differentiates itself from most anglo-saxon programmes in a number of ways. First of all, it is paid to the individual rather than to the household, in spite of being means-tested on total household income (see Cahuc, 2001, and Perivier, 2003, for a comparison). On the other hand, the amount of the tax credit is very low relative to similar anglo-saxon programmes (see, for example, Dupont and Sterdyniak, 2001, for a careful description). Child additions are very low and the redistributive scope of the measure is rather limited (see Stancanelli and Sterdyniak, 2004, for a discussion of the literature on this and other issues).

Given the novelty of the measure, only few simulation studies of its impact on the distribution of income and on the incentives to work are available to date, all based on survey data collected prior to the introduction of the tax credit. The papers by Legendre et al. (2001) and Bargain (2004) use data drawn from the survey of tax declarations ("enquête revenus fiscaux") of 1997, matched to data drawn from the labour force surveys. Salanié and Laroque (2002) use data from the 1999 French labour force survey. The authors of these studies conclude for limited employment effects of the policy measure. In particular, there is some evidence that there are negative employment effects for married women. Laroque and Salanié (2002) conclude for small positive employment effects on French women's labour supply, which would amount to about 3000 new jobs. Bargain (2004) focuses on the employment incentives of the tax credit for women married or living together. To evaluate them the paper compares the tax credit to other alternative measures imposing stricter means-testing conditions. It concludes that the disincentive effects of the tax credit are inferior to those that might come about from alternative programmes. Choné (2002), looking at couples labour market supply, concludes that the programme would increase female employment by roughly 0.4%.

Our paper is the first one to use post-programme data to evaluate the employment effects of the French tax credit programme. It is also the only one that applies non-experimental evaluation methods. An additional novelty of our paper relative to the earlier French studies is that it exploits the longitudinal structure of the data by estimating panel data regressions of a difference in difference model, on matched years of the French labour force surveys.

We focus on the employment effects of the measure on a sample of women head of the household or spouses of the head. The tax credit is expected to increase the incentives to work for non-employed persons. However, it may decrease incentives to work for (married) individuals with a working partner entitled to the tax credit, because of the means-testing on total household resources. It may also reduce working hours for those recipients with earnings between 1 and 1,4 the minimum wage, who would receive higher tax credit payments if they were earning less.

The announcement of the policy measure may in itself have an impact on individual behaviour in spite of the relative small amounts of money paid by the programme. On the other hand, it has been argued that the delay with which the tax credit is paid may make it less effective on individual work incentives. Moreover, the possibility of stimulating labour supply depends largely on whether non-employment is voluntary or non-voluntary. There may however be indirect employment effects, due to employers increasing the supply of jobs addressed to potential recipients of the measure, by reducing the wages offered.

The vast anglo-saxon literature points to the negative effects of tax credit programmes on the labour supply of women married to a beneficiary of the measure, because of means-testing on total family income (see, for example, Eissa and Williamson Hoynes, 1999).

We evaluate the employment effects of the programme on women's employment probability and estimate the model separately for women with different marital statuses. We use data from three consecutive years of the French labour force surveys, years 2000 to 2002, to estimate the model. The year 2000 serves as the reference year, as the policy measure was not announced then. Year 2002 is the treatment year, when the measure was implemented. The treatment and the control groups are defined using information on programme entitlement. As an alternative, to test for the impact of means-testing on labour supply, we define "married" women as the treatment group and women "unmarried but living together" as the control group.

The structure of the paper is the following. The next section describes the tax credit programme. The following one, the estimation model. In Section 3, the data and the selection

of the sample for analysis are described. The construction of the treatment and control groups are explained in Section 4. Predicting wages for non-employed women is discussed next. The results of estimation of the difference-in-difference models are presented in Section 6. The last section concludes the paper.

1. The French "Prime Pour l'Emploi"

The French tax credit programme, "Prime Pour l'Emploi", was introduced by the Jospin government in Spring 2001. A number of features distinguish this measure from other well-known tax credits policies like the Earned Income Tax Credit, in the United States or the Working Family Tax Credit, in the United Kingdom.

1. In France, individuals rather than households are eligible for the programme. This implies that both partners may claim the tax credit.
2. The programme is targeted at full-time workers and long-hours part-time workers. Small hours part-time workers are not eligible : individuals earning a (full-time equivalent[1]) salary of less than approximately 0,3 times the minimum wage are excluded from the policy measure.
3. The amount of the tax credit is very low. It varies, as a summary indication, between 25 and few hundred euros per year[2].
4. Children and dependent spouse additions are very small. They amount to a lump-sum of 31 euros per annum per dependent person[3].
5. Means-testing on total household income applies only to formally married people, as the tax credit is administered by the taxation offices. In France, individuals living together cannot file joint tax forms and therefore do not benefit from any tax reduction due to asymmetric participation and earnings.

As in other countries, the amount of the tax credit varies with the level of earnings and household income. It is equal to 4,4% of the earnings for salaries between 0,3 times the minimum wage and the minimum wage. It decreases for earnings between the minimum wage and approximately 1,4 times the minimum wage.

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[1] This is computed by annualizing working hours and comparing them to 1820 (equal to 35 hours a week times 52 weeks a year).

[2] Payments cannot be inferior to 25 euros per year.

[3] This can be increased to 62 euros for the first child under certains conditions. There is a lump-sum addition of 78 euros when both partners are entitled to the tax credit.

The maximum earnings threshold for eligibility is increased for married individuals when one of the partners is out of work or earns less than the lowest earnings threshold (equal to approximately 0,3 times the minimum wage).

An income ceiling prevents workers with total family income above a certain threshold to benefit from the measure. The income ceiling increases with each dependent child and for married couples (see Table 1).

The programme was reformed in 2003 to diminish the bias in favour of full-time workers, by increasing the amount of the tax credit paid to workers with (full-time equivalent) earnings between 0,3 times the minimum wage and the minimum wage.

2. The evaluation model

We apply a difference in difference approach to estimate the employment effects of the French tax credit programme. This methodology is particularly adapted to evaluate the effects of programme participation using non experimental data. The effect of the programme is measured by the difference between the employment probabilities of individuals belonging respectively to the "treatment" and the "control" group, before and after the policy change.

There is a vast literature that applies this counterfactual method to the evaluation of labour market programmes. Eissa and Williamson Hoynes (1999), for example, use a difference in difference model to evaluate the impact of the American Earned Income Tax Credit (EITC) on labour market participation rates of married men and women. Households with children are defined as the treatment group, while childless households are the control group for the policy evaluation exercize. A similar approach is followed by Stewart (2002) who evaluates the impact of the introduction of the minimum wage in the United Kingdom on the employment probability, by estimating a difference in difference model where the control group are individuals paid just below or at the minimum wage before the policy was implemented and the control group are those just above in the wage distribution. Piketty (1998) applies a difference in difference model to evaluate, among other things, the impact of the French parental leave programme ("Allocation parental d'Education) on women's employment probability.

The validity of this non-experimental evaluation method rests on a number of hypotheses. The first being that the employment probability of the control group is not affected by the policy change. In our case, we assume that individuals with earnings and income above the programme eligibility thresholds do not or cannot modify their labour market behaviour to

participate in the programme.

The second important assumption is that the difference between the employment probabilities of the two groups is time invariant, i.e; that the employment probabilities of the two groups are not affected differently by the business cycle or other institutional changes that may have taken place during the same period. In this respect, in France at about the same time when the tax credit was introduced, some other policies changes were made to increase the rewards from work for the low-skilled. These included the possibility of continuining to receive housing benefits as well as social security benefits while taking up work for the previously unemployed . Also, the switch to a "35 hours" working week for some small and medium size entreprises and some employers'contributions reductions for hiring low-skilled people were implemented in the 2000s. However, none of these programmes are administered by the tax administration. They treat married and cohabiting women alike. Eligibility to the "Prime Pour l'Emploi" tax credit programme is conditional for formally married women on husband's earnings and income, while the same condition does not apply to cohabiting women. Moreover, the earnings and income conditions determining eligibility for the tax credit programme are very specific to this programme and they apply to all workers and not just to the segment of the labour market which were previously unemployed and receiving welfare (social security assistance) benefits. Also the "35 hours" working week and the employers' contributions reductions were timed somewhat differently than the tax credit measure. Therefore, our approach should enable us to disentangle the impact of the introduction of the tax credit from that of other policy changes.

Finally, for the difference-in-difference approach to be meaningful, the assigned control group should be as close as possible to the treatment group, without however being eligible for the programme. The procedure adopted here for the construction of the comparison group aims at ensuring that this condition is satisfied.

Our estimating model is a dichotomous probability model of the employment probability.

$$1)\ \Pr(E_{it}=1\,|\,x_{it}) = G(z_{it}'\beta + \alpha PPE_{it} + \delta y2001_{it} + \psi y2002_{it} + \gamma PPE_{it} y2002_{it})$$
$$t = 1,...,T$$

and the corresponding log-likelihood is:

$$l_i(\vartheta) = E_i \log\left[G(\cdot)\right] + (1-E_i)\log\left[1-G(\cdot)\right]$$

where E is a binary variable taking value one if individuals are employed, and zero if they are not. G(·) is equal to a standard cumulative normal distribution under a probit specification:

$$G(x) = \Phi(x) = \int_{-\infty}^{x} \phi(v)dv, \qquad \phi(x) = (2\pi)^{-1/2} \exp(-x^2/2),$$

and to a standard cumulative logit distribution, under a logit specification:

$$G(x) = \Lambda(x) = \exp(x)/[1+\exp(x)]$$

The z are individual characteristics, *PPE* is a dichotomus variable taking value one for individuals eligible to the policy programme, *y2001* and *y2002* are, respectively, year dummies for year 2001 and year 2002, the interaction variable *PPE* times year 2002 measures the policy impact, and ϑ summarizes the vector of parameters to be estimated. The additional repressors included in the vector z control for individual characteristics, family composition, and local labour market conditions (see the data section for more details). For the purposes of our difference-in-difference model, the year 2000 is used as the base year, as at that time the tax credit policy was not announced yet. The year 2001 serves also a reference year as the survey is carried out in March and the policy measure was voted in May 2001. The year 2002 is the treatment year. We estimate cross-section probit and logit models of the employment probability on pooled data, as well as population averaged panel logit models. The panel data models are specified as follows:

$$2)\ \Pr(E_{it}=1 \mid x_i, c_i) = \Pr(E_{it}=1 \mid x_{it}, c_i) = G(z_{it}'\beta + \alpha PPE_{it} + \delta y2001_{it} + \psi y2002_{it} + \gamma PPE_{it} y2002_{it}, c_i)$$
$$t = 1,...,T$$

where the c_i are the unobserved effects. Under a fixed effects logit model, the c_i do not need to be estimated, which, however, has the disadvantage that we cannot compute partial effects, but we can still look at odds ratios.

Under a population averaged model with a logit specification, the c_i are unobserved cluster effects, to allow for correlation of the observations over time and :

$$3)\ \Pr(E_{ig}=1 \mid x_i, c_i) = \Lambda(z_{ig}'\beta + \alpha PPE_{ig} + \delta y2001_{ig} + \psi y2002_{ig} + \gamma PPE_{ig} y2002_{ig}, c_i)$$
$$g = 1,...,G \quad .$$

Models (1) and (3) are estimated by using robust standard errors, to account for the possibility of serial dependence.

To define the treatment *PPE* we apply the programme earnings and income thresholds as defined by the PPE programme announced in year 2001 (see Table 1), to our estimation

sample. In order to do so, we have to predict earnings and hours of work for non-employed women. As employment may not be independent from the policy measure, we estimate predicted earnings and hours of work using year 2000 as the reference year[4]. To this end, we estimate a regression of hourly wage, w_i, conditional on participation, p_i, using an Heckman selection model, where:

$$\ln w_i = x_i\beta + u_{1i}$$
$$p_i = m_i\delta + u_{2i}$$
$$u_1 \sim N(0,\sigma), u_2 \sim N(0,1), corr(u_1, u_2) = \rho$$

Under this set up, the log-likelihood for observation i is:

$$l_i = \begin{cases} \ln\Phi\left(\frac{m_i\delta + \ln w_i - x_i\beta)\rho/\sigma}{\sqrt{1-\rho^2}}\right) - \frac{1}{2}\left(\frac{\ln w_i - x_i\beta}{\sigma}\right)^2 - \ln(\sqrt{2\pi\sigma}) & w_i observed \\ \ln\Phi(-m_i\delta) & w_i notobserved \end{cases}$$

and $\lambda=\rho\sigma$.

Hours of work are next predicted using a multinomial logit model of participation ($k=0$), part-time work ($k=1$), and full-time work ($k=2$), specified as follows:

$P(y=k\mid q) = \exp(q\chi_k)/\left[1+\sum_{h=1}^{K}\exp(q\chi_h)\right], k=1,...K$, with

$P(y=0\mid q) = 1/\left[1+\sum_{h=1}^{K}\exp(q\chi_h)\right]$, and the log-likelihood is:

$$l_i(\chi) = \sum_{k=0}^{K} 1[y_i = k]\log[p_k(q_i,\chi)],$$

where full-time work is defined as working for 35 or more hours a week, q is the vector of explanatory variables, which include individual characteristics, family composition, and local labour market conditions. When hours are not observed, we assume that (predicted) full-time workers work 39 hours a week and part-time workers, 15 hours per week. The sensitivity of our estimation results to these hours assumptions can be tested for.

The employment status (and earnings) of the partner, if any, are assumed to be unaffected by the policy measure.

[4] For women for whom earnings and hours of work are not observed in year 2001 and 2002, we apply the parameters from the model estimated for year 2000 to the values of the explanatory variables as measured in year 2001 and 2002, respectively. This should ensure that predicted earnings and hours of work are independent from the policy change.

Here we have chosen to look at the "unconditional" employment probability. Alternatively, one could have focused on the participation probability like Eissa and Williamson Hoynes (1999) do.

Some authors have highlighted the importance of accounting for possible serial correlation in the context of difference-in-difference models (see, for example, Beblo et al., 2001). Serial correlation may seriously bias the standard errors of the model, though it appears to be more of a problem in the case of long-time series data (see also Kezdi, 2002). In our model, serial correlation may arise due to correlation of the explanatory variables through time. This may especially be the case for the binary treatment variable determining eligibility to the programme. Serial correlation may also come about from highly positively correlated values of the dependent variable over time. To control for possible serial correlation, robust standard errors are estimated using the Huber/White/sandwich estimator.

3. The data and the sample selection

The sample for analysis is drawn from the French Labor Force Surveys of years 2000, 2001 and 2002. This survey has a rotating sample structure which enables one to construct a longitudinal sample. Around 60,000 households are interviewed each year in March, with a quarter of the sample being replaced each year[5].

For our analysis, we select from each survey year the sample of women that are either household heads ("personne de reference du ménage") or spouse of the head. Additionally, we select only observations that were aged between 17 and 52 in year 2000 (53 in year 2001 and 54 in year 2002). Until age 16, school is compulsory in France. Special labour market programmes apply to individuals aged 55 and over, who are, for example, exempted from searching for a job while receiving unemployment benefits, and protected from dismissal, if in-work (by the so called "Delalande" law which obliges employers to pay extra-compensation money for the dismissal of older workers). Women that were self-employed were also dropped from the sample as their yearly earnings and hours of work are more difficult to evaluate for the purposes of determining eligibility to the tax credit. Moreover, self-employed income is typically more likely to be affected by reporting errors than dependent income. Finally, all observations relating to full-time students and trainees or to retired persons were discarded from the sample.

Other comparable French studies (Laroque and Salanié, 2002, Bargain, 2004) eliminate from the sample for analysis also women that are public employees ("fonctionnaires", in French), as they have a special social security status - for example, they have special pension and retirement arrangements- and their employment contract is permanent, so that they enjoy a lower probability of leaving or loosing their job than other otherwise comparable individuals. Here, we keep these women in the sample for a number of reasons. First of all, we cannot exclude that some transitions from non-participation, unemployment or other employment statuses to the status of public employee will take place. For this reason, we also want to include public workers in our sample and account for their wages in the wage regression to predict earnings for non-employed people. Secondly, reducing working hours (one of the possible induced effects of the tax credit programme) may actually be easier for public workers than for private sectors employees, which could compensate for the possibly lower quittal rates of this category of workers. Thirdly, women tend to be over-represented among public sector employees and them being the focus of our analysis, throwing public employees away we may end up with a non-representative selected sample of women.

Having selected according to the criteria above a sample of women that are either household heads or spouses of the head, we end up with a sample of roughly 35,000 observations for each year. We then match these women to their partners, if any, and we match these observations over the three years period considered, from year 2000 to year 2002.

Descriptive statistics of the employment probability[6] for different groups of women distinguished accordingly to their marital status are shown in Table 2. The following groupings were made:

- married women
- unmarried women, which can be further distinguished in:
    1. women living together but not formally married (cohabiting)
    2. single women

It is shown that the employment probabilities of women belonging to these different categories are fairly stable over time, at least for the period of time considered here. Married women have a lower employment probability than single women, as one might expect. Unmarried women living together with their partner have a higher employment probability than married women but a lower one than single women.

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[5] The structure of the survey was radically changed in 2003, with interviews taking place every quarter and the survey questionnaire being heavily revised.

Descriptive statistics of these sample for the three years considered are given in Table 3. The wage information available in the survey relates to usual monthly wages, net of (after) employee payroll taxes but gross of (before) employee income taxes. Information on wage bonuses is collected in a separate question. We add wage bonuses to women's monthly wages to compute the total monthly wage. Information on usual weekly working hours is used to compute the hourly wage.

Some women in the sample report hourly earnings below the minimum wage. Cross-checking observations with unusually low earnings against an indicator of unreliable survey responses provided in the survey, we could not find any correlation between the two. Other cross-checkings, for example with the self-employed status or the education and training statuses, did not give any additional information either. Basically, we could not find any evidence that women reporting less than the hourly minimum wage were misreporting their wages. Moreover, in France, in jobs like babysitting workers may happen to earn less than the hourly minimum wage. The standard contract for these household employees distinguishes between "active" and "passive" hours of work, where "active" hours of work amount to 2/3 of the actual working time and they are the only ones actually paid for by the employers. For these reasons, we have resolved to keep these observations in our estimation sample, but to replace actual earnings with predicted ones for observations with earnings of less than half the hourly minimum wage.

Total income is constructed as the sum of the earnings of the two partners. To determine eligibility to the tax credit, total income is computed setting women's earnings equal either to observed or to predicted earnings, depending on whether earnings are observed and if they are above half the hourly minimum wage. Other sources of income are not taken into consideration here, as they are not available in the survey. No information is available on non-wage income except for unemployment or social security benefits. We assume that income from property or interests on savings are on average negligible. This does not seem as a too strong an assumption given that we restrict attention to low-income workers.

Education level dummies are increasing in educational level, the basis being the highest education level, equivalent to a university degree. A dummy variable was constructed for women without any formal education. This variable happens to be highly correlated with non-French nationality, which is therefore not included among the explanatory variables of the model. Experience is computed by subtracting age at the end of formal schooling from

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[6] The employment probability is set equal to one for individuals in work and to zero for non-employed persons.

current age. The experience variable is further corrected for career breaks due to children by subtracting one year for each child. Maternity leave in France is equal to sixteen weeks, but parental leave of up to three years is also available to parents of small children. This is paid as a flat rate and can also be taken on a part-time basis. There is no information in the survey on whether women with young children do take any parental leave or not, but other studies show that the majority of parental leave takers are low-paid women, who are the focus of our study.

To account for local labour market conditions, we have constructed a series of dummies for the region of residence, with base "Ile-de-France", the region of Paris. The other regional areas are as defined by the survey: Bourgogne ; Champagne Ardenne ; Haute Normandie ; Basse Normandie ; Picardie ; Centre ; Calais ; Lorraine ; Alsace ; Franche Comte ; Loire ; Bretagne ; Poitou Charentes ; Aquitanie ; Midi-Pyrenées ; Limousin ; Rhones Alpes ; Auvergnes ; Languedoc Roussillon ; Provence, Cote d'Azur et Corse.

The area of residence dummies account additionally for the size of the agglomeration where individual reside:

b) small cities include rural neighbourhoods or urban neighbourhoods with less than 20,000 inhabitants;
c) large cities are those with more than 200,000 inhabitants;
d) Paris stands on its own as the largest urban agglomeration in France;
e) the base for these dummies are medium size cities with a population of 20,0000 to 200,000 inhabitants.

4. The construction of the treatment and control groups

To define the treatment and the control group, we apply first of all the earnings and income thresholds as established by the law that implemented the programme in Spring 2001 (see Table 1). These vary with:

a) the presence and the number of dependent children;
b) the employment status and the earnings and other income of the partner, for married women.

For these purposes, taxable earnings and income variables are constructed using information on actual earnings, when available, and predicted earnings otherwise. Equivalent full-time earnings are constructed for women reporting less than full-time hours[7]. The number

[7] This is done by multiplying annualized earnings by the ratio of annualized weekly working hours to

of dependent children is taken into account to determine the level of the income threshold which applies in each case. We use information on husband's observed employment status and earnings at the various points in time to determine eligibility to the programme for married women. The assumption is made that husbands' labour market participation is not affected by the policy measure. This is a standard though conservative assumption.

The treatment group is made up of women that satisfy the earnings and income eligibility conditions. The control group includes women that earn at most half the minimum wage more than those eligible for the tax credit and married women that fail to meet the income conditions for eligibility because of their husbands' earnings level.

About 51% of the women in our 2000 sample would be entitled to the programme in year 2000, 50% of the 2001 sample and 47% of the 2002 sample. The control group makes up for about 28% of the 2000 and 2001 samples and 27% of the 2002 sample. According to preliminary data on actual number of programme recipients, drawn from fiscal data for the year 2002, which have become available only very recently (DARES, unpublished 2004), a fairly substantial proportion of working women is indeed entitled to the tax credit.

Concerning variation in eligibility over time, we find that 83% of those that would be eligible for the programme in 2000, according to our estimates, would also eligible for the programme in 2001. The figure is the same for the following year: 83% of the women potentially eligible for the tax credit in 2001 are also eligible to the measure in 2002. Going from 2000, to 2002, 77% of the eligible sample are the same individuals. It appears, therefore, that there is a considerable overlapping of the samples eligible to the tax credit over time. However, as we keep into the sample for analysis also new observations in each year (we have an unbalanced panel), only 46% of the eligible sample is the same going from 2000 or 2001 to 2002 and 19% from 2000 to 2002.

Descriptive statistics of the treatment and control groups are shown in Table 4 for the year 2000. It appears that the two groups are fairly comparable in terms of age, experience, and marital status[8]. However, women in the control group tend to be more educated, to have less children and to be more likely to live in Paris and less likely to be foreigners. Their husbands are more often employed than those of women in the treatment group and they have on average higher earnings.

1820 hours (35 weekly hours times 52 weeks).

[8] In year 2000, the percentage of cohabiting women is higher in the control group than in the treatment group, but this difference disappears in year 2001, for example (see Table 4a in the Appendix).

For information, about 17% (808 observations) of women non-employed in 2001, and belonging to either the treatment or the control group, transit from non-employment in 2001 to employment in 2002. The corresponding figure is 23% (496 observations) for transitions from non-employment in 2000 to employment in 2002. We do not look directly at transitions, though estimating fixed effects panel model only those observations that change labour market status are kept into the estimation sample.

Additionally, to test for the impact of the means-testing condition on total family income for married women, we define the treatment group as including married women, irrespective of earnings and income eligibility conditions. The control group is then made up of cohabiting women, that live together with their partner but are not married. As discussed earlier on, the income and earnings of the partner are not taken into account to determine eligibility to the programme of women that are not married, as the tax credit is administered by the taxation authorities. This means that all things equal, an unmarried woman with a "high earner" partner would be entitled to the tax credit, but a married woman in the same situation would not. We follow here an approach similar to that of Eissa and Hoynes Williamson (1999), that defined individuals with children as the treatment group and those without as the control group, in order to evaluate the impact of the American Earnings Income Tax Credit programme on labour market participation.

Further to this, we interact these treatment and control groups with those defined on the basis of the earnings and income conditions for eligibility. The resulting treatment group includes then married women eligible for the policy measure, while the control group contains married or cohabiting women not eligible to the policy measure. These two groups are used to test for the impact of the tax credit on the employment probability of married women. Descriptive statistics of these treatment and control groups for year 2000 are given in Table 5. These two groups compare now fairly well.

5. Results of estimation of earnings and hours of work

A Heckman selection model is estimated for earnings. The dependent variable in the wage equation is the logarithm of the hourly wage. All variables are measured in year 2000. Observations that reported hourly salaries of less than half the minimum wage are not included in the estimation sample. Women that reported working on more than one job are also excluded from the wage model, as well as those with missing working hours. The

regressors of the wage equation include a quadratic in age[9], a quadratic in experience[10], education level dummies, a dummy for no formal education and a dummy for residing in Paris, as Parisian salaries may be higher. The explanatory variables of the employment participation equation are the same as those included in the wage equation plus variables relating to family composition and area and region of residence dummies. The family composition variables include controls for the presence of young children aged less than three years; the number of children; whether the person is married or she is living together. The area and region of residence dummies are meant to proxy the impact of local labour market conditions on the employment probability.

The results of estimation, reported in Table C, in the Appendix to the paper, indicate that hourly earnings increase with higher education levels. The absence of any formal schooling is found to affect negatively earnings. Hourly earnings increase significantly with experience but at a decreasing rate and they are non-linear in age. Parisian salaries appear to be significantly higher on average than salaries in other livelihoods. The estimated lambda is statistically significant and positive suggesting that selection is an issue here.

Hours of work and earnings are predicted for those observations for whom they are not observed, to determine (potential) eligibility to the tax credit. A multinomial logit model of participation, part-time work and full-time work was estimated, taking participation as the reference state. The explanatory variables considered include a quadratic in age, a quadratic in experience, education level dummies, a dummy for no formal education, family composition variables and area and region of residence dummies. The family composition variables include controls for the presence of young children aged less than three years; the number of children; whether the person is married or she is living together. The area and region of residence dummies are meant to proxy the impact of local labour market conditions on the hours of work. This model is estimated for year 2000.

Results of estimation are shown in Table D, in the Appendix to the paper. Marital status is found to have a positive impact on the probability of working part-time but a negative one on that of working full-time. This model predicts correctly about 75¨% of the full-time work observations, but it fails to predict part-time work. One of the reasons behind this failure is

[9] We also experimented with using a polynomial in age. The age cube coefficient turns out statistically significant and negative, though it is very small in size. To make our results comparable to other French studies on the same data, we do restrain our specification to a quadratic in age. The estimation results are not much affected from this exclusion.

[10] Age and experience are not much correlated as experience varies with schooling completion age and with the number of children (see the data section for more details).

that the availability of part-time work is strongly influenced by demand side conditions. According to other official sources, a large number of women working part-time report to be "involuntarily" doing so. To account for this we have included proxies for local labour market conditions into our estimation model. But the results are still not helpful to make predictions of the part-time work status. It is likely that the boundaries between part-time work and non-participation are in some cases very thin.

Therefore, we predict full-time work using the results of estimation of this model and attribute part-time work hours to the remaining observations for whom hours are not observed. To do so, we set full-time work equal to 39 hours per week and part-time work equal to 15 hours. Sensitivity of the estimation results to these assumption is tested for.

To check the robustness of our estimates, descriptive statistics of observed and predicted hourly wages for women for whom wages are observed are shown in Table 6, as well as descriptive of actual and predicted monthly salary. These last incorporate the assumptions made concerning the prediction of hours of work: 39 hours working weeks are attributed to observations that are predicted to work full-time, 15 hours to the remaining observations. It is shown that the distributions of predicted and observed hours are quite close. On the average predicted hourly earnings underestimate observed wages by 3 francs, with a standard deviation of 28 francs. The difference between predicted and observed monthly earnings is somewhat larger due to the difficulties of predicting hours of work. Predicted monthly earnings tend to underestimate observed earnings by about 300 francs, with a standard deviation though of 3000 francs.

To determine (potential) eligibility to the tax credit in each survey year, earnings of women in the sample are set equal to their reported earnings, if hours and earnings are observed. For observations reporting hourly earnings below half the minimum wage, we replace reported earnings with the predicted ones. For women for whom earnings (or hours) in year 2000 are not observed, potential earnings are set equal to predicted earnings. For women without earnings in years 2001 or 2002, the estimated parameters from the models for year 2000 are applied to the values of the explanatory variables as measured in year 2001 and 2002, respectively, to predict potential earnings. This is to ensure that predicted earnings and hours are not affected by the announcement of the policy measure. Ideally, one might have wanted to replace all earnings and hours by predicted ones. We do however restrain from doing so given the low power of the predicting model. Moreover, it seems unlikely that the tax credit

programme might have affected the choice of working hours. Firstly, it appears that individuals have little control over their working hours and, secondly, the amounts paid by the programme are very low.

For information, we show in Table 7 the simulated amounts of the tax credit to which women in the sample would be eligible for, on the basis of our hypotheses concerning earnings (and programme eligibility). The average tax credit amounts to about 200 euros per year. According to our estimates married women would be, on average, eligible for lower tax credits than unmarried women, suggesting therefore that means-testing on total household resources is binding for them. The table shows also what is the relative size of the simulated tax credit, computed as a proportion of individual monthly earnings. It appears that the tax credit that women would be eligible for is, on average, rather small relative to potential or actual earnings. It would vary according to our estimates between 1.5 and 2 percentage points of potential or actual earnings.

6. Results of estimation of the difference in difference model

The raw estimates of the difference in difference probabilities, describing the impact of programme eligibility on employment are given in Table 8. The employment probability in year 2002, the year the policy measure was implemented, is compared to the employment probabilities in the years prior to the measure, 2000 and 2001, respectively, for those individuals in principle eligible to the programme (the treatment group) and those non-eligible (the control group). The raw difference-in-difference probabilities are computed as *the difference of : the difference* between the employment probabilities of the treatment group in year 2002 and year 2000 (2001) and *the difference* between the employment probabilities of the control group in year 2002 and year 2000 (2001). These probabilities are computed for all women and for different categories of women according to their marital status. The estimates suggest that the tax credit might have a positive impact on the employment rate of single women but a negative one for married women. These do not, however, control for any variation in individual characteristics.

Results of estimation of probit and logit difference in difference models of the employment probability estimated on pooled data for the three years, without controlling for panel data effects, are shown in Table 9. Table 10 gives the results for the panel data models. Results of estimation of the model for married women are shown in Table 11. Results of estimation of the same panel models, showing all estimated coefficients, are given in Table A and B in the

Appendix to the paper.

Overall, we can conclude in favour of significantly negative effects of the programme on the employment probability of married women and positive, though not always significant, ones for unmarried women. These findings are confirmed by estimation of the model only for married women, as shown in Table 11. The negative impact of the tax credit programme on the employment probability of married women can be quantified as varying roughly between 2 and 5 per cent, according to the models that include all covariates (see bold estimates in Tables 9, 10 and 11). These estimates should, however, be taken with a pinch of salt, as given the large size of the sample eligible for the tax credit, our model may actually capture the impact of other more or less contemporaneous policy changes. Moreover, partly for the same reasons, our control group does not always match well the treatment group, as it includes women whose education level is on average higher.

A number of further checks of the robustness of our findings were carried out. These included:

a) running the model (as in Tables 9, 10 and 11), adding a control for the interaction between the treatment and year 2001 (PPE*2001);
b) running the model adding controls for whether the partner, if present, were employed and, of so, for his earnings from work;
c) running the model dropping all observations with a partner other than a salaried worker. This is meant to account for the fact that we cannot control in the analysis for non-labour income of the spouse.

Our major findings concerning the impact of the tax credit on the employment probability of married or unmarried women were not substantially affected.

Conclusions

This paper provides a tentative estimate of the impact of the French tax credit, “la Prime Pour l’Emploi”, on the employment rate of low-earnings workers. It represents the first evaluation study based on data posterior to the programme implementation.

This programme is expected to increase the incentives to work for non-employed persons. However, it may decrease incentives to work for (married) individuals with a working partner entitled to the tax credit, because of the means-testing on total household resources. It may also reduce working hours for those recipients with earnings between 1 and 1,4 the minimum wage, who would receive higher tax credit payments if they were earning less. The

announcement of the policy measure may in itself have an impact on individual behaviour in spite of the relative small amounts of money paid by the programme. On the other hand, it has been argued that the delay with which the tax credit is paid may make it less effective on individual work incentives. Moreover, the possibility of stimulating labour supply depends largely on whether non-employment is voluntary or non-voluntary. There may however be indirect employment effects, due to employers increasing the supply of jobs addressed to potential recipients of the measure, by reducing the wages offered.

We test in this paper for the employment effects of the policy, by applying a non-experimental evaluation method, a "difference-in-difference" approach. We focus on the employment effects for women, distinguishing them by their marital status. The survey data used for the empirical analysis are drawn from the French labour force surveys of years 2000 to 2002. The rotating structure of the survey enables us to apply panel data methods to estimate the employment impact of the policy.

A critical assumption made in the paper concerns the estimation of potential earnings from work for non-employed women in the sample. Another weakness of this study comes from the large number of workers that are eligible to the policy. This may render it difficult to single out the effect of the programme from that of other policy measures implemented at about the same time, like the extension of the 35 hours to small firms or the reform of the social assistance benefits (the French "Revenu Minimum d'Insertion").

In line with our theoretical a priori, we conclude that the policy has a negative impact on the employment probability of married women but a positive one, though not always strongly significant, for single women. We also find evidence of a negative employment effect of the means-testing condition for married women, by defining married women as the treatment group and cohabiting women as the control group.

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Table 1. The earnings and income thresholds for eligibility to the tax credit (euros)

	Earnings thresholds		*Income threshold*
	Lower	Upper	
Single women	3187	14872	11772
Married women	3187	14872	23544

These thresholds relate to annual taxable earnings and income. The income threshold is increased by 3253 euros for each dependent child. The upper earnings threshold is equal to 22654 euros for married women whose husband is out of work or earns less than the lower earnings threshold.

Table 2. Employment probabilities of women according to their marital status

	Year 2000	**Year 2001**	**Year 2002**
Total sample:	0.706	0.715	0.719
observations number	*35004*	*35031*	*35648*
Married women	0.676	0.688	0.691
observations number	*21509*	*21589*	*21689*
Unmarried women:	0.753	0.757	0.762
observations number	*13495*	*13442*	*13959*
Cohabiting women	0.732	0.740	0.755
observations number	*6470*	*6415*	*6778*
Single women	0.772	0.773	0.768
observations number	*7025*	*7025*	*7181*

Note: These are weighted probabilities, computed using the individual sample weights available for, respectively, year 2000, 2001 and 2002.

Table 3 ***Descriptive statistics of the samples for analysis***

	Year 2000		Year 2001		Year 2002	
Variable name	mean	SD	mean	SD	mean	SD
Age	38.28	8.41	38.76	8.67	39.22	8.98
age at the end of schooling	18.27	4.22	18.40	4.16	18.48	4.21
Experience	18.34	9.69	18.76	10.03	19.16	10.37
no formal education	0.01	0.10	0.01	0.10	0.01	0.10
education CEP	0.27	0.44	0.26	0.44	0.25	0.43
education BEPC	0.08	0.28	0.08	0.28	0.08	0.28
education BEP-CAP	0.26	0.44	0.26	0.44	0.25	0.44
education BAC	0.15	0.36	0.15	0.36	0.16	0.36
education BAC + 2	0.13	0.34	0.14	0.35	0.14	0.35
Married	0.61	0.49	0.62	0.49	0.61	0.49
Cohabitant	0.18	0.39	0.18	0.39	0.19	0.39
any child of age <3 years	0.13	0.33	0.13	0.34	0.13	0.34
child number	1.39	1.21	1.35	1.20	1.32	1.19
more than one job	0.03	0.17	0.03	0.17	0.03	0.17
house owner outright	0.19	0.40	0.21	0.41	0.23	0.42
h. owner with a mortgage	0.30	0.46	0.30	0.46	0.29	0.45
Paris	0.15	0.35	0.15	0.36	0.14	0.35
small city	0.44	0.50	0.44	0.50	0.46	0.50
large city	0.20	0.40	0.20	0.40	0.20	0.40
France	0.90	0.29	0.90	0.30	0.90	0.30
Ile de France	0.17	0.37	0.17	0.37	0.17	0.37
husband's employed*	0.88	0.32	0.88	0.32	0.87	0.34
husband's salary*, FF	10087.17	9955.97	10319.52	6340.46	10897.21	8558.66
Observations no.	*34976*		*35011*		*35641*	

(*) The mean of partner's employment status is computed only for married and cohabiting women. The salary of the husband is averaged over positive values only and computed on a monthly basis.

Table 4 ***Descriptives of the treatment and control samples***

	Treatment group		**Control group**	
Variable name	mean	SD	mean	SD
Age	37.87	8.54	39.19	8.06
age at the end of schooling	16.87	3.94	18.83	3.49
Experience	19.04	9.90	18.93	9.51
no formal education	0.02	0.14	0.0004	0.02
education CEP	0.44	0.50	0.10	0.30
education BEPC	0.10	0.30	0.09	0.29
education BEP-CAP	0.28	0.45	0.35	0.48
education BAC	0.12	0.32	0.20	0.40
education BAC + 2	0.05	0.21	0.17	0.38
Married	0.72	0.45	0.70	0.46
Cohabitant	0.11	0.32	0.17	0.37
any child of age <3 years	0.15	0.36	0.10	0.30
child number	1.60	1.28	1.26	1.12
more than one job	0.03	0.18	0.02	0.15
house owner outright	0.18	0.39	0.23	0.42
h. owner with a mortgage	0.27	0.44	0.36	0.48
Paris	0.09	0.29	0.15	0.36
small city	0.50	0.50	0.45	0.50
large city	0.19	0.39	0.20	0.40
France	0.87	0.34	0.94	0.24
Ile de France	0.11	0.31	0.18	0.39
husband's employed*	0.82	0.38	0.97	0.17
husband's salary*, FF	7993.04	2604.95	10619.87	14125.58
Observations no.	*18018*		*9944*	

Note: These statistics relate to year 2000.

(*) The mean of partner's employment status is computed only for married and cohabiting women. The salary of the husband is averaged over positive values only and computed on a monthly basis.

Table 5 ***Descriptive of the treatment and control samples, women married or cohabiting***

	Treatment group		Control group	
Variable name	mean	SD	mean	SD
Age	39.45	7.89	39.42	7.86
age at the end of schooling	16.84	3.83	18.79	3.17
Experience	20.53	9.45	19.11	9.32
no formal education	0.02	0.16	0.0001	0.01
education CEP	0.43	0.49	0.10	0.30
education BEPC	0.10	0.30	0.10	0.29
education BEP-CAP	0.28	0.45	0.37	0.48
education BAC	0.12	0.32	0.20	0.40
education BAC + 2	0.05	0.22	0.16	0.37
Married	1,00	0,00	0.81	0.39
Cohabitant	0,00	0,00	0.19	0.39
any child of age <3 years	0.14	0.35	0.12	0.32
child number	1.77	1.27	1.42	1.10
more than one job	0.03	0.18	0.02	0.15
house owner outright	0.23	0.42	0.25	0.43
h. owner with a mortgage	0.34	0.47	0.39	0.49
Paris	0.10	0.30	0.14	0.35
small city	0.53	0.50	0.48	0.50
large city	0.18	0.38	0.19	0.39
France	0.85	0.36	0.93	0.25
Ile de France	0.12	0.32	0.17	0.38
husband's employed*	0.83	0.38	0.97	0.17
husband's salary*, FF	8270.36	2632.58	10619.87	14125.58
Observations no.	*12902*		*8631*	

Note: These statistics relate to year 2000. The treatment group includes married women entitled to the tax credit; the control group married and cohabiting women in the control group, as defined for our main model. *(*)* The mean of partner's employment status is computed only for married and cohabiting women. The salary of the husband is averaged over positive values only and computed on a monthly basis.

Table 6 ***Distributions of predicted and observed earnings, FF***

	Predicted Hourly Wages (a)	Reported Hourly Wages (b)	Predicted Monthly Wages ©	Reported Monthly Wages (d)	Difference between a and b	Difference between c and d
Quantiles						
5%	34.12	29.59	2785.75	2696,00	-30.19	-4451.29
10%	36.23	31.95	3593.14	3200,00	-19.30	-2974.96
25%	39.57	36.06	5536.63	5300,00	-8.06	-1258.76
50%	45.16	44.78	6885.91	6970,00	0.21	10.28
75%	54.07	58.35	8382.76	9100,00	6.88	956.73
90%	66.40	76.92	10593.53	12000,00	13.61	2050.20
95%	74.54	90.99	12235,00	13500,00	18.72	3064.06
Mean	48.53	51.17	7117.57	7442.57	-2.77	-325.11
St. Dev.	12.79	31.39	2864.90	4099.01	27.77	3078.98

The sample is made up of individuals that reported positive wages and hours of work in year 2000. Observations with more than one job or with hourly earnings of less than half the minimum wage are dropped from the sample. The final sample for comparison is made of 19164 observations. Predicted monthly wages are the result of combining predicted hourly earnings with predicted hours.

Table 7. Amounts of tax credit one would be eligible for

	Raw amounts, euro per year			As a proportion of taxable earnings		
	Year 2000	**Year 2001**	**Year 2002**	**Year 2000**	**Year 2001**	**Year 2002**
Total sample						
Mean	216.7	209.9	202.3	1.8	1.7	1.6
St. Deviation	118.3	114.9	112.5	1.2	1.1	1.1
Observations	*18030*	*17453*	*16900*	*18030*	*17453*	*16900*
Married w.						
Mean	195.7	190.4	183.0	1.6	1.5	1.4
St. Deviation	116.2	114.4	110.9	1.1	1.1	1.1
Observations	*12912*	*12461*	*11972*	*12912*	*12461*	*11972*
Unmarried w.						
Mean	269.8	258.4	249.2	2.3	2.2	2.1
St. Deviation	106.3	100.9	102.0	1.1	1.0	1.1
Observations	*5118*	*4992*	*4928*	*5118*	*4992*	*4928*

Note: These figures are computed on the basis of observed or predicted earnings.

Table 8 ***Raw difference in difference estimators***

	Employment probability		
General model			***Difference in Difference***
All observations	***Treatment group***	***Control group***	
2000	0,605	0,756	***-0,019***
2001	0,606	0,767	***-0,020***
2002	0,596	0,767	
Married Women			
2000	0,613	0,722	***-0,034***
2001	0,613	0,741	***-0,015***
2002	0,602	0,745	
Unmarried Women (Cohabiting or Single)			
2000	0,582	0,837	***0,006***
2001	0,587	0,841	***0,005***
2002	0,583	0,832	
Cohabiting women			
2000	0,476	0,832	***0,028***
2001	0,507	0,828	***-0,007***
2002	0,527	0,855	
Single women			
2000	0,659	0,843	***0,003***
2001	0,647	0,852	***0,024***
2002	0,632	0,813	

Note: These are unweighted probabilities.

Table 9 ***Results of estimation of logit and probit models***

	Estimates of the impact of the tax credit				
	full sample	***married w.***	***unmarried w.***	***single w.***	***cohabiting w.***
logit/probit no covariates					
coefficient logit	-0.091	-0.172	0.035	0.153	-0.042
standard error logit	0.038	0.045	0.075	0.102	0.112
marginal effect logit	-0.073	-0.05	-0.113	-0.095	-0,133
coefficient probit	-0.055	-0.104	0.019	0.080	-0.013
standard error probit	0.022	0.027	0.043	0.058	0.063
marginal effect probit	-0.020	-0.039	0.007	0.027	-0.005
logit/probit all covariates					
coefficient logit	-0.110	-0.211	0.174	0.023	0.193
standard error logit	0.042	0.049	0.085	0.117	0.125
marginal effect logit	-0.066	**-0.056**	-0.113	-0.095	-0.133
coefficient probit	-0.066	-0.124	0.081	0.006	0.101
standard error probit	0.024	0.028	0.047	0.064	0.069
marginal effect probit	-0.024	**-0.046**	0.027	0.002	0.037

Note: All models are estimated specifying robust standard errors.

Marginal effects are computed as the difference between the predicted probability of employment with the interaction dummy for the programme and year 2002 set equal to zero and the predicted probability where the same is set equal to one.

Table 10 ***Results of estimation of the panel data models***

Estimates of the impact of the tax credit

	full sample	***married w.***	***unmarried w.***	***single w.***	***cohabiting w.***
Pop. Av. logit (1)					
Coefficient	-0.032	-0.077	0.063	0.170	-0.049
standard error	0.024	0.027	0.052	0.065	0.088
marginal effect	-0.003	0.019	0.084	0.005	0.117
FE logit (1)					
Coefficient	0.028	-0.079	0.352	1.015	-0.241
standard error	0.131	0.154	0.264	0.410	0.393
marginal effect					
Pop. Av. logit (2)					
Coefficient	-0.055	-0.110	0.136	0.081	0.139
standard error	0.028	0.031	0.064	0.081	0.103
marginal effect	-0.058	**-0.039**	-0.104	-0.083	-0.126
FE logit (2)					
Coefficient	-0.053	-0,181	0.393	1.064	-0.013
standard error	0.136	0.161	0.275	0.428	0.422
marginal effect					

Note: Models 1) do not control for other covariates; models 2 control for covariates, which include a quadratic in age, education level dummies, dummies for the presence of young children aged less than 3 years, number of children, area and region of residen

Marginal effects are computed as the difference between the predicted probability of employment with the interaction dummy for the programme and year 2002 set equal to zero and the predicted probability where the same is set equal to one.

Table 11 ***Results of estimation of the married women models***

	Estimates of the impact of the tax credit	
	Model (1)	**Model (2)**
logit/probit no covariates		
coefficient logit	-0.065	0.034
standard error logit	0.039	0.035
marginal effect logit	0.000	0.000
coefficient probit	-0.038	0.023
standard error probit	0.023	0.021
marginal effect probit	-0.013	0.008
logit/probit all covariates		
coefficient logit	-0.091	-0.077
standard error logit	0.041	0.038
marginal effect logit	**-0.006**	**-0.050**
coefficient probit	-0.053	-0.049
standard error probit	0.024	0.023
marginal effect probit	**-0.013**	**-0.018**
Pop. Av. logit, all covariates		
coefficient logit	-0.077	-0.055
standard error logit	0.032	0.028
marginal effect logit	**-0.004**	**-0.039**

Note: In model (1) married women are the treatment group and cohabiting ones, the control group. In model (2) married women eligible to the tax credit are the treatment group and married and cohabiting women not eligible constitute the control group. In Model (2) the treatment group is obtained interacting the married dummy with the treatment group of the general model and the control group includes married and cohabiting women that were part of the control group in the general model, i.e. whose earnings exceed eligibility by half the minimum wage, etc.

Table A ***Results of estimation of the full panel data model of Table 10***
The model is a population averaged panel logit (see equation 3)

	Married Women		**Unmarried women**	
Variable name	coefficient	SE	coefficient	SE
PPE	0.108	0.027	0.092	0.053
PPE*2002	**-0.110**	**0.03**	**0.136**	**0.064**
2001	0.035	0.015	0.003	0.03
2002	0.128	0.029	-0.125	0.059
age	0.342	0.015	0.179	0.017
age squared	-0.004	0.000	-0.002	0.000
no formal education	-1.165	0.111	-0.684	0.195
education CEP	-1.893	0.079	-2.863	0.141
education BEPC	-1.389	0.084	-2.109	0.147
education BEP-CAP	-1.172	0.078	-1.736	0.140
education BAC	-0.948	0.081	-1.103	0.145
education BAC + 2	-0.395	0.086	-0.440	0.156
any child of age <3 years	-0.718	0.031	-0.914	0.047
child number	-0.348	0.011	-0.379	0.019
small city	0.236	0.030	0.167	0.044
large city	0.068	0.039	-0.021	0.055
Bourgogne	-0.281	0.071	-0.466	0.111
Champagne Ardenne	-0.367	0.069	-0.739	0.107
Haute Normandie	-0.260	0.070	-0.410	0.106
Basse Normandie	-0.074	0.078	-0.360	0.121
Picardie	-0.375	0.068	-0.755	0.106
Centre	-0.064	0.072	-0.162	0.111
Calais	-0.712	0.057	-1.028	0.092
Lorraine	-0.478	0.067	-0.639	0.106
Alsace	-0.159	0.071	-0.295	0.118
Franche Comte	-0.198	0.067	-0.540	0.105
Loire	-0.016	0.067	-0.419	0.101
Bretagne	-0.023	0.067	-0.487	0.109
Poitou Charentes	-0.144	0.076	-0.506	0.109
Aquitanie	-0.382	0.069	-0.536	0.106
Limousin	0.032	0.082	-0.323	0.120
Rhones Alpes	-0.223	0.057	-0.142	0.094
Auvergne	-0.257	0.076	-0.526	0.121
Languedoc Roussillon	-0.833	0.067	-1.054	0.104
Provence Cote d'Azur Corse	-0.717	0.061	-0.791	0.094
Midi-Pyrenées	-0.281	0.076	-0.622	0.114
Constant	-4.00	0.300	0.037	0.333
Observations no.	*52898*		*22974*	
Clusters no.	*33912*		*17052*	
Wald Test (chi squared(36))	*4302.37*		*3337.41*	

Table B ***Results of estimation of the full panel data model (2) of Table 11***
The model is a population averaged panel logit (see equation 3)

Variable name	coefficient	SE
Married	-0.042	0.029
Married*PPE*2002	**-0.055**	**0.028**
PPE	0.030	0.025
2001	0.031	0.014
2002	0.083	0.024
age	0.295	0.013
age squared	-0.004	0.000
no formal education	-1.113	0.108
education CEP	-2.032	0.073
education BEPC	-1.497	0.077
education BEP-CAP	-1.258	0.072
education BAC	-0.965	0.075
education BAC + 2	-0.467	0.079
any child of age <3 years	-0.746	0.027
child number	-0.366	0.010
small city	0.219	0.027
large city	-0.058	0.036
Bourgogne	-0.320	0.065
Champagne Ardenne	-0.450	0.063
Haute Normandie	-0.278	0.063
Basse Normandie	-0.126	0.071
Picardie	-0.445	0.061
Centre	-0.085	0.065
Calais	-0.769	0.065
Lorraine	-0.504	0.061
Alsace	-0.193	0.066
Franche Comte	-0.259	0.061
Loire	-0.052	0.061
Bretagne	-0.108	0.062
Poitou Charentes	-0.244	0.068
Aquitanie	-0.396	0.062
Limousin	-0.063	0.073
Rhones Alpes	-0.225	0.052
Auvergne	-0.294	0.069
Languedoc Roussillon	-0.851	0.062
Provence Cote d'Azur Corse	-0.725	0.057
Midi-Pyrenées	-0.348	0.069
Constant	-2.77	0.236
Observations no.	63383	
Clusters no.	41446	
Wald Test (chi squared(37))	5830.06	

Table C ***Results of estimation of the hourly wage model***
The dependent variable is the logarithm of the hourly wage.

The dependent variable of the selection equation is the prob. of participation.

	Wage equation		**Probit of participation**	
Variable name	coefficient	SE	coefficient	SE
age	0.007	0.004	0.040	0.050
age squared	0.0003	0.0000	-0.0007	0.0007
experience	0.007	0.002	0.0156	0.020
experience squared	-0.0005	0.0000	0.0002	0.0005
no formal education	-0.108	0.045	4.974	2.790
education CEP	-0.592	0.011	-0.901	0.163
education BEPC	-0.499	0.011	-0.798	0.161
education BEP-CAP	-0.473	0.009	-0.687	0.141
education BAC	-0.355	0.009	-0.517	0.136
education BAC + 2	-0.188	0.008	-0.340	0.125
Paris	0.118	0.006	0.599	0.165
Constant	3.612	0.066	1.516	0.827
married			0.196	0.066
any child of age <3 years			-0.411	0.092
child number			0.066	0.036
small city			0.025	0.077
large city			0.003	0.095
Bourgogne			0.820	0.287
Champagne Ardenne			0.436	0.240
Haute Normandie			0.434	0.204
Basse Normandie			0.164	0.202
Picardie			0.300	0.193
Centre			0.467	0.221
Calais			0.171	0.171
Lorraine			0.358	0.209
Alsace			0.386	0.209
Franche Comte			0.692	0.262
Loire			0.458	0.187
Bretagne			0.722	0.231
Poitou Charentes			0.488	0.205
Aquitanie			0.483	0.192
Limousin			0.368	0.203
Rhones Alpes			0.498	0.184
Auvergne			0.485	0.208
Languedoc Roussillon			0.640	0.238
Provence Cote d'Azur Corse			0.361	0.179
Midi-Pyrenées			0.692	0.243
Lambda	0.222	0.010		
Observations no.	18115			

Table D ***Results of estimation of the hourly wage model***
The dependent variable is the logarithm of the hourly wage.

The dependent variable of the selection equation is the prob. of participation.

	Wage equation		**Probit of participation**	
Variable name	coefficient	SE	coefficient	SE
age	0.007	0.004	0.040	0.050
age squared	0.0003	0.0000	-0.0007	0.0007
experience	0.007	0.002	0.0156	0.020
experience squared	-0.0005	0.0000	0.0002	0.0005
no formal education	-0.108	0.045	4.974	2.790
education CEP	-0.592	0.011	-0.901	0.163
education BEPC	-0.499	0.011	-0.798	0.161
education BEP-CAP	-0.473	0.009	-0.687	0.141
education BAC	-0.355	0.009	-0.517	0.136
education BAC + 2	-0.188	0.008	-0.340	0.125
Paris	0.118	0.006	0.599	0.165
Constant	3.612	0.066	1.516	0.827
married			0.196	0.066
any child of age <3 years			-0.411	0.092
child number			0.066	0.036
small city			0.025	0.077
large city			0.003	0.095
Bourgogne			0.820	0.287
Champagne Ardenne			0.436	0.240
Haute Normandie			0.434	0.204
Basse Normandie			0.164	0.202
Picardie			0.300	0.193
Centre			0.467	0.221
Calais			0.171	0.171
Lorraine			0.358	0.209
Alsace			0.386	0.209
Franche Comte			0.692	0.262
Loire			0.458	0.187
Bretagne			0.722	0.231
Poitou Charentes			0.488	0.205
Aquitanie			0.483	0.192
Limousin			0.368	0.203
Rhones Alpes			0.498	0.184
Auvergne			0.485	0.208
Languedoc Roussillon			0.640	0.238
Provence Cote d'Azur Corse			0.361	0.179
Midi-Pyrenées			0.692	0.243
Lambda	0.222	0.010		
Observations no.	18115			