

Evaluating the Impact of the French tax credit on the employment rate of women

Elena Stancanelli

► **To cite this version:**

Elena Stancanelli. Evaluating the Impact of the French tax credit on the employment rate of women. 2007. hal-01066110

HAL Id: hal-01066110

<https://hal-sciencespo.archives-ouvertes.fr/hal-01066110>

Preprint submitted on 19 Sep 2014

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Document de travail

“Evaluating the Impact of the French tax credit on the employment rate of women”

N° 2007-33

December 2007

Elena Stancanelli (OFCE)

Observatoire Français des Conjonctures Économiques

69, Quai d'Orsay 75340 Paris Cedex 07

Tel : 01 44 18 54 00 Fax : 01 45 56 06 15

E-mail: ofce@ofce.sciences-po.fr Web: <http://www.ofce.sciences-po.fr>

**EVALUATING THE IMPACT OF THE FRENCH TAX CREDIT
ON THE EMPLOYMENT RATE OF WOMEN***

ELENA G. F. STANCANELLI♥

CNRS GREDEG, Université de Nice and OFCE, Sciences-Po, Paris

2007-33

December 2007

Abstract

This paper investigates the employment impact of a new tax-credit programme that was put in place in France in 2001. We study the introduction of both this measure and a later reform in 2004 that made the tax credit cashable in advance upon returning to work. We adopt a non-experimental evaluation method. The data for the analysis are drawn from the French Labour Force Surveys over the period 1999 to 2005. Due to the break in the French LFS series in 2003, we analyze separately the two periods 1999-2002 and 2003-05, as well as pooling the data over 1999-2005, under particular assumptions. We find evidence of a significantly negative employment effect for married women, with a reduction of about 3.2-3.4 percentage points in their employment rate after the introduction of the policy. The impact is positive and weakly significant for cohabiting women, while positive but statistically insignificant for lone mothers. We do not find any evidence of an additional effect of the tax credit due to the cashable advance credit reform of 2004.

Keywords: policy evaluation; difference-in-differences estimator; labour supply.

JEL Codes: C34, I38, J21

* Earlier versions of this paper were presented at the “Association Française de Sciences Economiques” in September 2004, at the IZA Transatlantic Meeting of Labour Economists in June 2005, and at invited lectures given in 2004-05 at LEO (University of Orléans), TEAM (University of Paris 1), PSE (Paris), and the Econometrics Department of the University of Tilburg. I thank the seminar and conference participants for useful comments. In particular, I am grateful to Hans Bloemen, Gael Dupont, Bertrand Lhommeau, Bruce Meyer and Thomas Piketty for helpful remarks, and last but not least to Dominique Goux and Sylvie Lagarde, directors of the INSEE department running the LFS, who provided me with useful advice on the new LFS data. Finally, I owe many thanks to two anonymous referees and a journal editor for providing me with constructive remarks. All errors are mine.

♥GREDEG, CNRS, University of Nice, and OFCE, Sciences-Po, Paris. Address for correspondence: OFCE, 69 Quay d’Orsay, 75007, Paris, France. Tel: 0033-1-44-18-54-35. Cellular telephone: 0033-6-73-85-47-89. Fax: 0033-1-44-18-54-64. E-mail: elena.stancanelli@sciences-po.fr.

1. Introduction

The French tax credit, called the “Prime Pour l’Emploi”, that is the “work premium”, was launched by the Socialist government of Prime Minister Lionel Jospin in the Spring of 2001. It was later amended by ensuing Conservative governments. The amounts payable were slightly increased on a number of occasions, and from 2004 individuals have been allowed to cash an advance payment of the tax credit upon returning to work after a spell of unemployment.

Tax credits belong to the family of “in-work benefits” and as such have two main policy objectives. The first is to fight poverty amongst low-skilled workers by redistributing income towards the “working poor”. The second is to reduce “unemployment traps”, and thereby increase incentives to work, by increasing the income from work relative to unemployment. In most countries, in-work benefits have been targeted at workers from households with dependent children, as the risk of poverty is greater and unemployment traps are more severe for this group. When in-work benefits are administered by Tax Offices rather than by the Social Security Administration, they are called “tax credits”. The American Earned Income Tax Credit, the most studied of the in-work benefit systems, was created in 1975, while the British tax credit dates back to at least 1988. A number of OECD countries (for example, the Netherlands) have at some stage considered using tax credits (see Nelissen et al., 2005, and Nelissen and Van Soest, 2003, for a simulation of the impact of in-work benefits on employment in the Dutch labour market).

The French tax credit was designed to compensate the lower-end of the distribution of tax payers for tax reductions granted to wealthier households. Within the “family” of OECD in-work benefits, it stands out as a “hybrid” measure attempting to achieve a number of different objectives, such as, for example, discouraging low-hours part-time jobs and rewarding full-time “minimum wage” workers. Individuals earning only little over the year or working only a few hours in low-paid jobs were not eligible for the tax credit. The tapering-off of payments is such that the credit is the largest for individuals having worked continuously over the year in a full-time job at a salary corresponding to the minimum wage.

According to fiscal administrative records (see for example, Barnau and Bescon, 2006), 8.7 million households received some tax credit in 2001, representing approximately 25% of French households. Total government expenditure on the tax credit amounted to 2.5 Billion Euros and the average tax credit per household was 290 Euros per year, varying between a

minimum of 30 Euros and a maximum of over 500 Euros. In 2005, the number of beneficiaries increased to 9.2 million, representing about 26% of the population, and the average payment was 295 Euros. In Anglo-Saxon countries, tax credits cover a smaller proportion of the population but the payments involved are much larger. In the UK over the period we consider, about one million households were beneficiaries of the Working Family Tax Credit, with an average yearly expenditure of over 2500 Euros per household. In the USA, there were nearly 20 million recipients of the EITC, with an average expenditure of almost 700 Euros per household. The larger number of tax-credit beneficiaries in France partly results from poor targeting – although some households only receive payments of 30 Euros per year – and partly from the fact that the distribution of earnings in France is very compressed around the minimum wage.

Here, we investigate the employment effects of this measure for women, who have previously been found to be more responsive than men to policy incentives in the French taxation literature (see, for example, Piketty, 1998; Bourguignon and Magnac, 1990). We focus on employment outcomes rather than participation, as the state of employment can be picked up more neatly with the subjective data to hand. Non-participants include women who defined themselves as “housewives”, possibly due to discouragement and few opportunities in the labour market. This is more likely to apply to married and cohabiting women than to single women, and might, therefore, bias the measurement of “participation” (see also Jones and Riddell, 2006, for a more general discussion of the definition of unemployment and non-employment). Given the time lag between deciding to work and finding a job, we are very likely to underestimate participation responses by focusing on employment.

We do not consider changes in hours of work. A number of articles have shown that hours are very rigid in the French labour market (see, for example, Bourguignon and Magnac, 1990, and Donni and Moreau, 2007). Answers to survey questions on whether part-time work was “voluntarily” chosen, indicate that the vast majority of female part-time workers in France did not choose their hours of work but are rather “involuntary” part-timers.

The Earned Income Tax Credit (EITC) has been shown to increase work incentives for lone parents in the United States (see, for example, Meyer and Rosenbaum, 2001), but to significantly reduce married women’s participation rates and hours of work (Dickert et al., 1995, Ellwood, 2000, Eissa and Hoynes, 2004a and 2004b). Heim (2005) appeals to a structural model of married couples’ labour supply to conclude that while participation effects are small, there are negative effects of the EITC on the hours of work of both husbands

and wives.

To our knowledge, this is the first evaluation of the employment effects of the French tax credit using non-experimental methods. Previous micro-simulation studies, prior to the introduction of the policy, predicted a small positive employment effect for French women, amounting to at most a few thousand new jobs for women in the age range 25-49 according to the most reliable estimations (see Stancanelli and Sterdyniak, 2004, for a review of this literature). We analyse the impact of both the initial policy and the subsequent reforms, of which latter the majority took place in Spring 2004, allowing beneficiaries to cash an advance payment of the tax credit upon returning to work following a period of unemployment.

We may *a priori* not expect to find particularly large effects of the French tax credit on employment, given the relatively small amounts of money at stake. However, “announcement” effects might magnify the economic effects of the policy (see for example, Blundell *et. al.*, 2004). Moreover, overall wage growth was small in the 2000s in France - partly due to working-time reductions which were negotiated against wage moderation starting in 1999, partly because of slow economic growth. This could potentially make small increases in income from work more valuable to workers (see Blundell and Hoynes, 2003, for a discussion of the effects of tax credits in different economic contexts).

We define “treatment” as (potential) eligibility for the policy measure, as is standard in the evaluation literature. We do not consider take-up issues, as the tax credit is automatically paid by the fiscal authorities to all eligible households and is not conditional on a prior claim; this is, however, not true for the cashable advance, which only followed from an explicit claim. Our treatment group is composed of women who are potentially eligible for the policy, on the basis of their estimated earnings and income. The control group includes women whose earnings are just above the threshold level for eligibility, and women who fail to meet eligibility conditions as a result of their husband’s income.

We also consider an alternative approach, where we define all married women as the treatment group and all cohabiting women as the control group. This “experiment” focuses on the (disincentive) impact of means-testing on total household resources for married women, whose behaviour is contrasted to that of unmarried women (the control group) who are not allowed to file joint tax declarations.¹ Finally, to evaluate the impact of the policy on

¹ The “pacs” (“*pacte civil de solidarité*”) has only existed in France since 1999. This is an official cohabitation contract. Couples who are “pacsed” can opt to fill out joint tax forms, once three years have passed since their “pacs” was signed. According to official sources, 72631 “pacs” were signed in France in 1999, the majority of which probably concerned homosexual couples. Now assuming, for example, that half of the pacs were signed

lone parents, we compare their employment outcomes, before and after the policy, to those of single childless women. Participation incentives may be more important for lone parents, as small additional rewards from work due to the tax credit may help in breaking the unemployment and poverty traps that are typically larger in this group. In addition, lone parents benefit from easier access to the tax credit as earnings and income conditions are less strict for them. Reflecting this, almost all single mothers in our sample were potentially eligible for the tax credit, while this was only true for a much smaller proportion of single childless women.

In the analysis we will use data drawn from the French Labour Force Surveys (LFS) for the years 1999 to 2005, accounting for the 2003 break in the series by running separate analyses for the 1999-2002 and 2003-05 periods. We also present estimation results on pooled data for the entire period 1999-2005, taking particular care to draw comparable samples, and assuming that the break affected the treatment and control groups identically.

Our estimation results suggest a negative employment effect for married women, which holds true in both 2002 and later years. In particular, it seems to be the conditioning on total household resources that discourages married women's labour market participation. The marginal effect of the policy is between 3.2 and 3.4 percentage points, suggesting the destruction of roughly 120 thousand jobs since the introduction of the tax credit. This is much larger than the estimates of, for example, Eissa and Williamson Hoynes (2004a), who found a decrease in the labour market participation of American married women of a little over two percentage points. This suggests larger negative effects of the tax credit for French than for American women, consistent with Piketty's (1998) findings of especially large labour supply responses of married women in France.

We also find evidence of a positive employment effect, weakly significant (at the ten per cent level), for cohabiting women and a positive but insignificant effect for single mothers. We do not find any evidence of additional employment effects from the cashable advance credit reform of 2004.

The structure of the paper is as follows. The next section describes the French tax credit, and the evaluation model is presented in Section 3. The data and the selection of the samples for analysis are described in Section 4. The results of estimation are presented in Section 5, and Section 6 concludes.

by heterosexual couples, and that half of these opted to make joint tax declarations, and assuming further that our survey is representative of these couples, only a tiny percentage (1%) of the cohabiting couples in our sample would have made a joint tax declaration as from 2002.

2. The workings of the French tax credit

To be eligible for the tax credit, individuals must be in work and satisfy both an earnings condition and a total household income condition. These eligibility conditions can be summarised as follows:

- Beneficiaries must be in work; those who are out of work are not eligible.
- Individual yearly earnings must exceed a minimum level (3200 Euros in 2001 and 3500 Euros in 2005).
- Hours of work and earnings over the year must be such that full-time equivalent earnings are underneath a maximum earnings threshold (approximately 15,000 Euros in 2001; 23,000 Euros for the married with workless spouses or spouses earning less than 3200 Euros)
- Total “taxable” household income, equal to total household income minus standard tax deductions, must be smaller than a certain amount, set at 12,000 Euros for the single and 24,000 Euros for married couples in 2001. These limits rise by about 3000 Euros with each dependent child.

The rationale for setting a minimum earnings requirement for eligibility was to discourage low-hours part-time jobs. About three per cent of working-age women in the LFS sample are ineligible due to “small” earnings, according to our estimates. Tax credits are payable to individuals rather than households, in spite of their being means-tested on total household income. This implies that in some households both husband and wife could receive the credit, if they both satisfy the eligibility conditions.

The amount of tax credit payable as a function of full-time equivalent yearly earnings is shown in Figure 1. During the phase-in, where payments increase with earnings, the applicable rate was 4.4% of earnings in 2001, and 4.6% in 2005. The payments reach their maximum at about the yearly earnings level of someone working all year, full-time, at the minimum wage. Payments then decline, in the phase-out of the measure, at 11% (11.5% in 2005) of the difference between 15,000 Euros (16500 in 2005) and actual full-time equivalent yearly earnings. The premium per child is very small: 31 Euros (34 Euros in 2005) per dependent child per year, and 62 Euros (70 Euros in 2005) for the first child of single parents. Married individuals with a dependent spouse receive an additional 78 Euros (81 Euros in 2005).

Since the introduction of the tax credit in 2001, a number of relatively small changes have

been made to the program. These consisted of slightly higher payments to part-time workers, a gradual rise in the amount payable to anyone in the phase-in, from 4% of full-time equivalent yearly earnings in 2001 to 4.6% in 2005, and adjusting the earnings and income conditions for inflation. A major reform took place during the time span considered here, in Spring 2004, allowing beneficiaries to cash an advance payment of the tax credit upon returning to work after a spell of unemployment.

The eligibility constraints on married individuals from the conditioning on total household resources are illustrated in Figure 2, where we show the tax credit amounts payable to a married person with two children, as a function of their work earnings in two distinct situations. In the first case, the spouse works full-time at the minimum wage; in the second case, s/he earns twice the minimum wage. It can be seen that own tax credit receipts fall as spouse's income increases. We have also seen that the income and earnings conditions are looser for married individuals with a dependent spouse. If one spouse is eligible for the tax credit, the other spouse's labour market participation may be discouraged due to income effects (see Eissa and Williamson Hoynes, 2004a, and 2004b). Given the rigidity of hours in the French labour market, individuals may well trade off between working or not working, rather than by reducing hours. As the husband is the main earner in most married couples (see Stancanelli, 2007, for a discussion of the typology of couples' labour market statuses), these potential work disincentives will likely affect married women more than married men.

3. The evaluation model

We appeal to a difference-in-difference approach to estimate the employment effects of the new tax credit measure. Using non-experimental data, the impact of the programme is measured by the difference between the employment probabilities of women who are potentially eligible for the policy (the treatment group) and women who are not eligible (the control group), measured before and after the policy change. There is now an extensive literature that applies this counterfactual method to evaluate labour market programmes.

We define E as a binary variable taking the value one if individuals are employed and zero if they are not. The model we specify is a conventional difference-in-difference model (see for example, Stewart, 2004a and 2004b for an application to the employment effects of minimum wage laws). The latent expression for employment can be specified as:

$$1) E_{it}^* = \alpha_g + \eta_t + \gamma d_{it} + X'_{it} \beta + \varepsilon_{it} \quad E_{it} = \mathbb{1}[E_{it}^* > 0]$$

where α_g is the group effect, which is fixed over time, with $g=1$ if individuals belong to the

treatment group and $g=0$ if they are in the control group; η_t is the time effect which is common across both groups; and an interaction term d_{it} which equals 1 if individuals belong to the treatment group ($g=1$) and $t \geq t^*$, where t^* is the policy year, with $d_{it} = 0$ otherwise. The X are individual and labour market characteristics which allow us to control for differences in observables between the control and treatment groups. The policy effect is measured by γ .

Assuming that the error term follows a closed-form logistic distribution, the evaluation model is a logit model of employment, E , as given by equation 1. To account for any serial correlation that may bias the standard errors of the model (see, for example, Bertrand et al., 2001, and Kezdi, 2002) we use robust standard errors. In this model, serial correlation may arise from the correlation of the explanatory variables over time. This may especially be the case for the binary treatment variable which determines programme eligibility; serial correlation may also result from highly positively-correlated values of the dependent variable over time.

For the older LFS series, we also estimate a random-effects logit, which allows for individual unobserved heterogeneity, exploiting the rotating-sample structure of the surveys (one-third of the sample is replaced each year). The random-effects logit model of employment, E , is given by equation 2 below:

$$2) E_{it}^* = \alpha_g + \eta_t + \gamma d_{it} + X'_{it} \beta + c_i + u_{it} \quad E_{it} = 1[E_{it}^* > 0]$$

Here c_i refers to the individual unobserved effects and u_{it} to the idiosyncratic errors. The relative importance of the unobserved individual effects is given by $\rho = \sigma_c^2 / (\sigma_c^2 + 1)$.

The treatment group is composed of women affected by the policy, for whom $g=1$. The control group includes women who are not covered by the policy, but who are similar to those who are affected. Three different sorts of “treatments” are considered.

1. Treatment based on potential eligibility for the tax credit. This is conditional on: predicted earnings; total household income; marital status; and presence and number of children. The control group consists of women who are not eligible either because of their husbands’ income or because their earnings are above the eligibility threshold. We include in the control group women earning up to half the minimum wage more (in terms of full-time equivalent earnings) than the earnings threshold for eligibility.
2. Treatment based on marital status, by defining married women as the treated and cohabiting women, who are not subject to means-testing on total household

income, as the control group. In this case we do not estimate the full effects of the policy but only the potential disincentives arising from conditioning on total household resources. Here we restrict the sample to women who are aged forty at most (although the results are not affected if we retain women of all ages).

3. Treatment based on lone parenthood, defining lone parents as the treated and childless single women as the control group. This approach relies on the less restrictive earnings and income eligibility bounds for lone parents. In practice, almost all lone parents in our sample are potentially eligible for the tax credit, as opposed to a much lower proportion of single childless women. Here we restrict the sample to women aged twenty-five or more.

For the first of these approaches, we replace observed earnings by predicted earnings for all women in the sample, as earnings are likely to be endogenous in a model of employment probability.² We thus estimate a Heckman selection model of hourly wages. To calculate eligibility, predicted hourly earnings must be transformed into full-time equivalent yearly earnings.³ In addition to passing the earnings test, total taxable income must be lower than the total income bound for eligibility, and this last varies with both the number of children, and the employment status and earnings of the husband, if married. We assume that the employment status (and earnings) of the husband are not affected by the policy, which is justified, at least to a certain extent, by the observation that over 90% of married men in the sample are the household's main earner. Total income is calculated as the woman's predicted earnings from work plus their husband's income. The control group is made up "ad hoc" including: a) women whose earnings are between the upper earnings threshold for eligibility and about half the minimum wage more than this threshold (expressed in terms of full-time equivalent earnings); and b) married women who fail eligibility because of their husband's income.

² This is the same approach taken by, for example, Eissa and Williamson Hoynes (2004a).

³ Yearly earnings (W) equal hourly earnings (w) multiplied by "annualized" working hours ($52 \cdot h$) scaled by the "equivalent full-time earnings factor", which is equal to 1820 ($35 \cdot 52$) over annualized hours. This produces the following expression:

$$W_i = w_i \cdot (h \cdot 52) \cdot 1820 / (h \cdot 52) = w_i \cdot 1820 = w_i \cdot 35 \cdot 52 .$$

It follows that for part-time workers actual hours of work cancel out and, if we assume that full-time workers work a 35-hour week (which is not an unreasonable assumption given that, first, many firms have introduced a 35-hour week and, second, that hours of work do not matter that much for full-timers, as they are not really paid by the hour), then hours do not enter our evaluation model. We can therefore reason in terms of (predicted) hourly earnings to determine eligibility for the tax credit. There is just one caveat for the lower earnings threshold, which is fixed independently of hours of work. In the LFS, about 3% of women in the sample have actual earnings below this minimum earnings level. When we replace actual hourly earnings with their predicted level, we find no observations in this situation.

In the second approach, groups are drawn only using information on marital status, for women in couple-households, and on the presence of children, for single women. We exploit the fact that unmarried women cannot file joint tax declarations to test for possible work disincentives due to conditioning on total household income. Regarding single mothers, the approach hinges on the fact that the earnings and income eligibility conditions are considerably looser for lone parents, so that they are more likely to receive the tax credit than are single individuals. Almost all of the single mothers in our sample are potentially eligible for the tax credit, whereas this is true only for a smaller proportion of single childless women.

For the first policy measure considered, the introduction of the tax credit, the years 1999 to 2001 are the controls and 2002 is the policy year. The tax credit was first announced in February-April 2001, but participants in the 2001 LFS survey, collected in February-March, are unlikely to have changed their behaviour in response to the policy announcement. Participants in the 2002 LFS survey not only knew that the tax credit had been created (the announcement effect) but could have already collected it in September 2001, on the basis of their tax declarations made in March 2001, and relative to their earnings and income in 2000, seeing as the policy came into force with retroactive effect. The “cashable advance” tax credit reform of 2004 was announced in Spring 2004, and became effective shortly afterwards. It follows that individuals in the 2004 LFS sample, drawn in the first six months of the year, were unlikely to be affected by this measure, while participants in the 2005 sample not only knew about it but might already have cashed a tax credit advance. When all of the LFS years are pooled together, conditional on drawing comparable samples and on the assumption that the break did not differently affect the treatment and control groups, the years 2002-05 are policy years with 1999-2001 being control years.

The validity of the non-experimental policy-evaluation approach adopted here rests on a number of hypotheses. The first is that the employment probability of the control group is unaffected by the policy change. In the first modelling scenario above, this corresponds to assuming that women with earnings and income just above the programme eligibility thresholds do not modify their labour market behaviour so as to be able to participate in the programme. Some higher-earning women may have reduced their working hours to become eligible for the tax credit. Hours rigidity potentially limits this kind of behaviour, which would otherwise seriously bias the estimates of the measure’s impact. In cases 2 and 3, the treatment and control groups are drawn on the basis of marital status, for women in couple-households, and regarding the presence of children, for single women. Recent literature has

shown that the EITC has affected marriage rates. To our knowledge, there is no research testing whether marriage rates responded to the introduction of the tax credit in France. Work on the sensitivity of married women's labour supply to work disincentives due to joint taxation is also thin on the ground for France.

The second important assumption is that the difference between the employment probabilities of the two groups is time invariant. In this respect, at about the same time that the tax credit was introduced in France, other policy changes might have occurred that affected the employment of the low-skilled. These included the possibility of the previously unemployed continuing to receive housing benefits and social security benefits when taking up work. In addition, some small- and medium-size enterprises entered into "35-hour" working-week agreements over this period, as the introduction of the 35-hour week was staggered over time. New measures to further reduce employers' social security contributions rates for the low-skilled (which started in 1995-96) were also implemented around the 2000s, and reinforced in 2003. However, none of these programmes were administered by the tax administration, and they all treated married and cohabiting women alike, unlike the tax credit. The "35-hour" working-week applied to roughly one in every two French workers in 2002, but the new liberal government played down its importance, weakening the obligations for firms to join in the reform. Were any of these programmes to have affected the employment probabilities of the treatment and control groups differently across the period considered, our policy evaluation estimates would be biased.

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. Given that ineligible women have higher earnings than eligible women, it is difficult to draw a control group that is very similar to the treatment group. Even when treatment is based on marital status and presence of children, the resulting treatment and control groups do not match perfectly. The use of controls for observables in the evaluation model will to an extent help to account for differences between the control and treatment groups.

4. The data

The sample for analysis is drawn from the French Labour Force Surveys from 1999 to 2005. The LFS series was broken in 2003 to comply with the harmonization requirements of Eurostat regarding the collection of European LFS surveys. We therefore separately analyze

the 1999-2002 and 2003-05 periods. The break and the non-comparability of the two LFS series have been thoroughly documented by the French National Statistical Institute (see, for example, INSEE, 2003). The main differences between the two series are the following:

- The LFS up to 2002 was carried out once a year, in February-March, via personal interviews at the respondent's home. One third of the sample was replaced each year.
- The new LFS surveys from 2003 on are carried out on a continuous time basis. Households are interviewed for maximum of six consecutive quarters and then replaced. Interviews take place partly at the respondent's home and partly by telephone.
- The LFS questionnaire from 2003 is not the same as that for the earlier LFS surveys; in particular, the questions concerning labour market activity were changed.

There seems to be a break in employment rates across the two series (see Figure 3). This probably partly reflects the business cycle trough of 2003. To try to ensure the comparability of the two LFS series, we selected households from the 2003-05 LFS by using the following criteria:

- We only considered households that participated in the first and the sixth interviews, these being the two interviews that were carried out at the respondent's home, as in the earlier LFS series. The other four interviews were carried out by telephone, and according to INSEE the quality of the telephone interviews was poor.
- We only selected households that were interviewed in the first two quarters of the year.⁴ Households interviewed over the summer are according to INSEE more affected by employment cyclicity. For the purpose of our analysis, the taxation rules that apply in the later quarters of the year would be less clear-cut, as the fiscal policy changes considered here were announced in the first part of the year.

The remaining sample selection criteria are applied equally to both the old and the new LFS series. We select from each survey year a sample of women satisfying the following conditions:

⁴We do not restrict the analysis to households only interviewed in the first quarter, as the resulting sample would then be too small for our purposes.

- They were either household heads (“personne de référence du ménage”) or the spouse of the head.⁵
- They were aged over 16 and under 52. School is compulsory in France up to age 16. Special labour market programmes apply to older workers, who are, for example, exempted from searching for a job while claiming unemployment benefits, and protected from dismissal, if in work (by the so called “Delalande” law which obliges employers to pay extra compensation for the dismissal of older workers).
- Self-employed women were dropped from the sample as their earnings were not collected by the LFS of 1999-2002.
- Only the employed, the unemployed and housewives⁶ were retained in the sample. Full-time students and trainees as well as retired women were dropped.
- Women holding more than one job were also dropped, as only earnings in the main job were recorded.

Women were next matched to their partner, if any, and observations were pooled over the years under consideration. Women with self-employed or retired husbands, or an employed husband who did not report earnings from work were also dropped from the sample, in order to check whether the total household income conditions for eligibility were met.⁷ The resulting sample consists of roughly 24-25,000 women per year over 1999-2002, and over 10,000 observations per year for the 2003-05 period.

The earnings information in the survey concerns usual gross monthly wages, net of (after) employee payroll taxes but gross of (before) employee income taxes. Information on 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 did not reveal any correlation.

⁵ This implies that we in particular drop young women who are still living at home with their parents.

⁶ All questions in the survey are subjective. Individuals can classify themselves as unemployed, according to the ILO definition, as well as other unemployed, employed, housewives, in full-time education, or retired.

⁷ The LFS 1999-2002 only collected the earnings of salaried workers and unemployment benefit for the unemployed. Pensions and other income sources were not recorded. Roughly nine per cent of married women in our (final) sample were dropped because of missing information on their husbands’ earnings from work. An alternative would have been to predict earnings for employed (salaried) husbands, but this adds to the noise around the boundaries between the treatment and the control groups.

Moreover, in France workers may earn less than the hourly minimum wage, in jobs like babysitting. 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 actual working time and only these are actually paid by the employer. For these reasons, we dropped observations earning less than half the hourly minimum wage from the sample, as women misreporting their wages might not respond correctly to other questions either.

To determine eligibility for the tax credit, total income is computed by setting women’s earnings equal to their predicted level, and adding their husband’s income. Husbands’ income includes earnings from work or unemployment benefits when available. Other sources of income are not taken into consideration here, as they were not collected by the survey. No information is available on non-wage income except for unemployment benefits.⁸ We assume that income from property or interest from savings are on average negligible. Taxable income is computed by applying a standard approximation.⁹

The education dummies are increasing in the educational level, with the omitted category being the highest education level, equivalent to a university degree. Experience is computed by subtracting age at the end of formal schooling from current age.

To account for local labour market conditions, we construct a series of dummies for the region of residence, with the omitted category being “Ile-de-France”, the region including Paris. An additional set of dummies accounts for the type of agglomeration in which individuals live: small cities include rural neighbourhoods or urban neighbourhoods with less than 20,000 inhabitants; large cities are those with more than 200,000 inhabitants; and Paris stands on its own as the largest urban agglomeration in France. The omitted category refers to medium-sized cities with populations of 20,000 to 200,000 inhabitants. Given that “Paris” accounts for a large share of the population of “Ile-de-France”, we only enter “Ile-de-France” in our regressions.

The descriptive statistics from the two LFS sample are shown in Table 1. The two samples are fairly similar in terms of education, but women in the new LFS series are more likely to be married, their husband’s employment rates are lower, they have fewer children,

⁸ Information on unemployment income from the LFS is not generally considered to be very good. However, only a small number (between 4 and 6 per cent) of the husbands in our sample are unemployed in each of the years considered. Moreover, for our purpose, earnings conditions matter more than total household income, as over half of French households filing tax forms pass the total income test for eligibility for the tax credit, but only one in every three workers actually receives it based on their own earnings.

⁹ This consists in multiplying pre-tax income by a factor of 0.72, which takes into account various standard deductions.

live more often in large provincial cities rather than small neighbourhoods, and are slightly older and have more work experience. The average employment rate of women in the two samples is very close to 70%, but there are more striking differences if we look at employment rates by marital status across the two surveys (see Figure 3). According to our estimates, marriage rates increase in the new LFS surveys in contrast to their secular decline over time documented by other sources. Pooling the data for the two periods can be justified, at least to a certain extent, by the steps we have taken to ensure comparability between the two series. We also assume that the treatment and control groups are affected similarly by the break in the series.

5. Estimation Results

The descriptive statistics relating to the three types of treatment and control groups are shown, respectively, in Tables 2-4 for the period 1999-2002. The analogous statistics for the period 2003-05 are shown in the Appendix.

The treatment and control groups defined using a conventional approach based on predicting eligibility are not particularly close in terms of observed characteristics (see Table 2). Women in the control group tend to be older, more educated and have less work experience. They are more likely to be married, but have fewer children. They are more likely to live in Paris and the Ile-de-France, and are more likely to be French. Their employment rates are much higher than those of women in the treatment group and so are their hourly wages. Their husbands earn more on average and are more likely to be employed. The same patterns emerge for the same treatment and control groups in the period 2003-05 (see Table A in the Appendix).

In addition to estimating the evaluation model for all women belonging to either the treatment or the control group, we also distinguish between married, cohabiting and single women. The treatment was therefore defined by crossing marital status with potential eligibility. For example, we compare married women who are potentially eligible for the tax credit (the treatment group) with married women who are not eligible because they earned a little too much money or because their husband's income stopped them from being eligible (the control group).

The treatment and control groups defined only on the basis of marital status for women aged forty at most are much more similar in terms of education, earnings, husbands' employment rates and area of residence (see Table 3), but they are still different with respect to age, experience, number of children and nationality. In particular, the employment rates

of cohabiting women are higher than those of married women. Similar patterns are observed for the same two groups in 2003-05 (see Table B in the Appendix). In this framework, we do not rely directly on eligibility rules for the construction of the treatment and control groups.

Finally, we compare single mothers to childless single women in Table 4. Here again treatment is not a function of earnings and income, but depends on the presence of children for single women. The employment rates of single childless women are much higher than those of single mothers. Single childless women tend to be younger, have less work experience and more education than lone mothers. They are more likely to live in inner Paris and to be French than are lone mothers. The same patterns are observed for the two groups over the period 2003-05 (see Table C in the Appendix). We restrict the two samples to women aged twenty-five or more, as these differences and, in particular, those with respect to education, were more marked for younger age groups.

To estimate the impact of the tax credit on employment outcomes, we control for observed characteristics in the evaluation regression. This is especially important given the differences in observed characteristics between the treatment and control groups.

The estimation results for the model specified in Equation 1 of Section 3 are given in Table 5, for the different control and treatment groups. The marginal estimates of “ γ ” are shown, which quantifies the impact of the policy. The models are estimated for the periods 1999-2002, 2003-05 and, finally, 1999-2005. Pooling the old and the new LFS series is valid only conditional on the assumptions discussed in Sections 3 and 4; we therefore also show separate results for the old and new LFS series.

For the first model, where treatment depends on potential eligibility, we find a negative but insignificant impact of the policy on employment for all women considered together and for the chronological sub-samples. However, we do find evidence of a significant negative impact for married women in 2002, when the policy was first created. This effect is negative but insignificant for 2005, when 2003 and 2004 are used as control groups. This might indicate that the policy change in 2005 relative to 2003 and 2004, namely the possibility of cashing an advance payment of the tax credit upon returning to work, did not have a substantial enough impact to make the employment effect in 2005 different from that in earlier years. Pooling the two LFS series together, and considering the years 2002 to 2005 as policy years, the estimate for married women is negative, statistically significant and very close in size to the 2002 effect. The reduction in the employment rate of married women following the introduction of the tax credit is of 3.2-3.4 percentage points. The strongest

participation disincentive effects estimated by Eissa and Williamson Hoynes (2004a) for married women corresponded to a fall in participation of over two percentage points. This would suggest larger negative effects of the tax credit measure for French women than for American women, which is consistent with Piketty's (1998) finding of particularly large labour supply responses of French married women.

We find a positive but only weakly significant impact of the policy for cohabiting women, in the model where treatment is defined on the basis of eligibility rules. This holds both for 2002, after the policy was implemented, and for the policy years 2002 to 2005. This impact is estimated to be about twice the size, in absolute terms, of the negative effect for married women, but it is less significant. When 2005 is defined as the policy year and years 2003 and 2004 as control years, the effect remains positive, but it is no longer significant. This confirms the finding that the 2005 reform did not affect employment more than the earlier policy changes. Under the specification pooling the two LFS series, where 2002 to 2005 are considered as the policy years, the employment effect for cohabiting women is positive, weakly significant and identical in size to the 2002 estimate. According to these estimates, the employment rate of cohabiting women increased by six percentage points following the introduction of the tax credit. This effect is statistically significant only at the 10% confidence level.

Defining treatment on the basis of eligibility and splitting women into groups according to marital status, we find a negative and insignificant effect of the tax credit on the employment rate of single women. This is true for all time periods considered. We cannot separate the impact of the policy for lone parents from that for single childless women, as on the basis of eligibility rules, almost 100 per cent of lone parents in the sample are eligible for the policy.

We next define treatment on the basis of marital status (model 2) and presence of children for single women (model 3), making no direct reference to eligibility conditions based on own earnings and total household income. In model 2, we define treatment as marital status and take cohabiting women as the reference group. Here, we focus on the possible disincentives to work arising from the conditioning of the credit on total household resources, as cohabiting women are also eligible for the tax credit but they are not subject to conditioning on their husband's income. We find a significantly negative impact of conditioning on total household resources for married women in 2002. Following the introduction of the policy, the employment rate of married women is estimated to have fallen by three percentage points.

This estimate is very close to that obtained in model 1 for married women, where the treatment group included married women eligible on the basis of their own earnings and total household income, and the control group was married women who were not eligible, either because of their own earnings or because of their husband's income. However, model 2 leads to insignificant and positive policy effects for year 2005 relative to 2003 and 2004, and to negative but insignificant policy effects for policy years 2002 to 2005 taken all together. This is potentially explained by the break in the series affecting married and cohabiting women in different ways (see Figure 3), as marriage rates increase in the new LFS series (see the discussion in Section 4). The estimates of the employment effect for married women in Model 1 are less affected by the break as the model is run only for married women, separating eligible (the treated) from ineligible married women, with the time dummies capturing the break in the series that affected all married women alike.

Finally, consider model 3, where lone parents, for whom eligibility rules are looser, are taken as the treatment group and single childless women are used as the control group, independent of the eligibility criteria explicitly based on earnings and income. Here, we conclude that the policy had no significant effect in any of the time periods considered. However, both in 2005, relative to 2003 and 2004, and in the specification pooling the two LFS series (with policy years 2002 to 2005) there is a positive effect of the tax credit on the employment rate of single mothers. This estimate corresponds to a 1.4 percentage point increase in the employment rate of single mothers following the introduction of the tax credit. The insignificant findings might partly be due to the poor specification of the control group. We showed in Table 4 that the two groups are quite different. In addition, single childless women are also eligible for the tax credit, although with a much lower rate than lone mothers. Given that all lone mothers are eligible for the credit, it is difficult to find a control group that compares well to them.

Overall, we do not find any evidence in favour of an additional effect of the tax credit due to the cashable advance credit reform of 2004. This may also reflect low take-up rates, as individuals had to claim the advance in order to receive it. To date there is no information on the take-up rates of the advance payments.

Finally, in Table 6 we present estimates of the marginal impact of the tax credit on employment controlling for unobserved individual heterogeneity via a random effects logit specification (see Equation 2 of Section 3). This model is estimated for the period 1999-2002, in which we can exploit the rotating sample structure of the old LFS surveys to

construct a longitudinal sample. Under this specification, and using eligibility rules to specify the treatment and control groups, the negative impact of tax credit for married women becomes statistically insignificant. However, it remains close in size to the estimate obtained from the logit model in Table 5. The finding of a positive and weakly significant effect for cohabiting women is confirmed in these estimates. The size of the marginal impact is larger than in the logit specification, suggesting an increase of seven percentage points in the employment rate of cohabiting women after the introduction of the tax credit.

Using marital status to define treatment, the marginal impact of the conditioning on total household resources for tax credit eligibility, is negative, statistically significant and slightly larger than the corresponding estimate under the logit specification in Table 5. The effect for lone mothers becomes positive but is still statistically insignificant.

6. Conclusions

This paper provides a number of estimates of the impact of the French tax credit, “la Prime Pour l’Emploi”, on the employment rate of low-earnings women. This is to our knowledge the first evaluation study based on data posterior to programme implementation. It is also the first to apply non-experimental evaluation methods.

Like similar in-work benefits programmes, the French tax credit was expected to increase work incentives for non-employed individuals. However, it may decrease incentives to work for (married) secondary-earners, as found in the American EITC literature.

We estimate the impact on employment of two policy experiments: the introduction of the policy in 2001 and a later reform in 2004 that made the tax credit cashable in advance upon returning to work. We test for employment effects of the policy on women by applying a standard non-experimental evaluation method, a “difference-in-difference” approach. Various treatment and control groups were defined. The first specification adopted relies on the policy eligibility rules for the construction of the control and the treatment groups. The others hinge, respectively, on marital status, for women in couple-households, and on the presence of children, for single women.

The data used for the empirical analysis are drawn from the French Labour Force Surveys of 1999 to 2005. Given the structural break in the LFS series in 2003, the series 1999-2002 is used to estimate the employment effects of the introduction of the tax credit, while the later series 2003-05 serves to evaluate the employment effect of the later reform of 2004. We also estimated the overall policy effects of the credit, by pooling the two LFS series, after having

drawn relatively comparable samples, and under the assumption that the break in the series did not affect the control and the treatment groups differently.

On the basis of the estimation results, we conclude in favour of a negative employment effect of the programme for married women, amounting to a reduction of 3.2-3.4 percentage points in married women's employment following the introduction of the tax credit. The employment rate of cohabiting women, not subject to the means-testing on total household resources, instead increased by six to seven percentage points. Positive and smaller employment effects of the tax credit are also found for single mothers, except in the first years of the policy, but they are not statistically significant. This could partly reflect the poor specification of the control group, which is difficult to define as almost all lone parents turned out to be eligible for the tax credit. Last, we do not find any evidence in favour of an additional effect of the tax credit due to the cashable advance credit reform of 2004.

References

- Barnau, L. and Bescon, G. (2006), "Analyse de l'évolution des beneficiaries de la PPE", *Economie et Prévision*, no. 173, 2006-02, 163-169.
- Bertrand, M., Duflo, E. and Mullainathan S. (2004), "How much should we trust difference-in-differences estimates?", *Quarterly Journal of Economics*, 119 (1), 249-275.
- Blundell, R. (2005), "Earned Income Tax Credits: the impact and optimality of the WFTC reform for lone parents", mimeo.
- Blundell, R., Costa Dias, M., Meghir, C., and Van Reenen, J. (2004), "Evaluating the employment impact of a mandatory job search assistance program", *Journal of the European Economic Association*, 2 (4), 569-606.
- Blundell, R. and Hoynes, H. (2003), "Has 'In-Work' benefit reform helped the labour market?", mimeo.
- Bourguignon, F. and Magnac, T. (1990), "Labour Supply and Taxation in France", *Journal of Human Resources*, 25 (3), 358-389.
- Dickert, S., Houser, S., and Scholz, J. K. (1995), "The earned income tax credit and transfer programmes: A study of labor market and programme participation", in: Poterba, J. (Ed.), "Tax Policy and the Economy", vol. 9, MIT Press Cambridge, pp. 1-50.
- Donni, O. and Moreau, N. (2007), "Collective labor supply: a single equation model and some evidence from French data", *Journal of Human Resources*, 42, 214-246.
- Eissa, N. and Williamson Hoynes, H. (2004a), "Taxes and the labour market participation of married couples: the earned income tax credit", *Journal of Public Economics*, 88, 1931-1958.

Eissa, N. and Hoynes, H. (2004b), “The hours of work responses of married couples: taxes and the earned income tax credit”, mimeo.

Ellwood, D. (2000), “The impact of the earned income tax credit and social policy reform on work, marriage and living arrangements”, *National Tax Journal*, 53 (4), 1063-1105.

Heim, B. T. (2005), “The impact of the Earned Income Tax Credit on the Labour Supply of Married Couples: Structural estimation and business cycle interactions”, Duke University, mimeo.

Kezdi, G. (2002), Robust standard error estimation in fixed effects models, University of Michigan, mimeo.

Jones, S. R. G. and Riddell, W. C. (2006), “Unemployment and Nonemployment: Heterogeneities in Labor Market states”, *Review of Economics and Statistics*, 88 (2), 314-323.

INSEE (2003), “La nouvelle enquête emploi, l’activité et le chômage », *Economie et Statistique* », No. 362, juillet.

Meyer, B, and Rosebaum, D. (2001), “ Welfare, The Earned Income Tax Credit and the Labour Supply of Single Mothers”, *Quarterly Journal of Economics*, 116 (3), 1063-1114.

Nelissen, J. H.M, Fontein, P.F, and Van Soest, A. H. O. (2005), “The impact of various policy measures on employment in the Netherlands”, mimeo, Tilburg, CentER Applied Research.

Nelissen, J. H.M, and Van Soest, A. H. O. (2003), “Rapportage minimum loon, armoedeval and productiviteitsval”, mimeo, Tilburg, CentER Applied Research.

Piketty, T., (1998), “L’impact des institutions financiers au travail sur les comportements individuels: une estimation pour le cas français”, *Economie et Prévision*, 132-33, 1-35.

Stancanelli, E. (2007), “Marriage and work: An analysis for French couples in the last decade”, OFCE, working paper No. 2007-10.

Stancanelli, E. G. F. and Sterdyniak, H. (2004), « Un bilan des études sur la Prime Pour l’Emploi », *Revue de l’OFCE*, No . 88, janvier.

Stewart, M. B. (2004a), “The employment effects of the National Minimum Wage”, *Economic Journal*, 114 (494), C110-116.

Stewart, M. B. (2004b), “The impact of the introduction of the UK minimum wage on the employment probabilities of low-wage workers”, *Journal of the European Economic Association*, 2 (1), 67-97.

Figure 1. Tax credits payable by household type

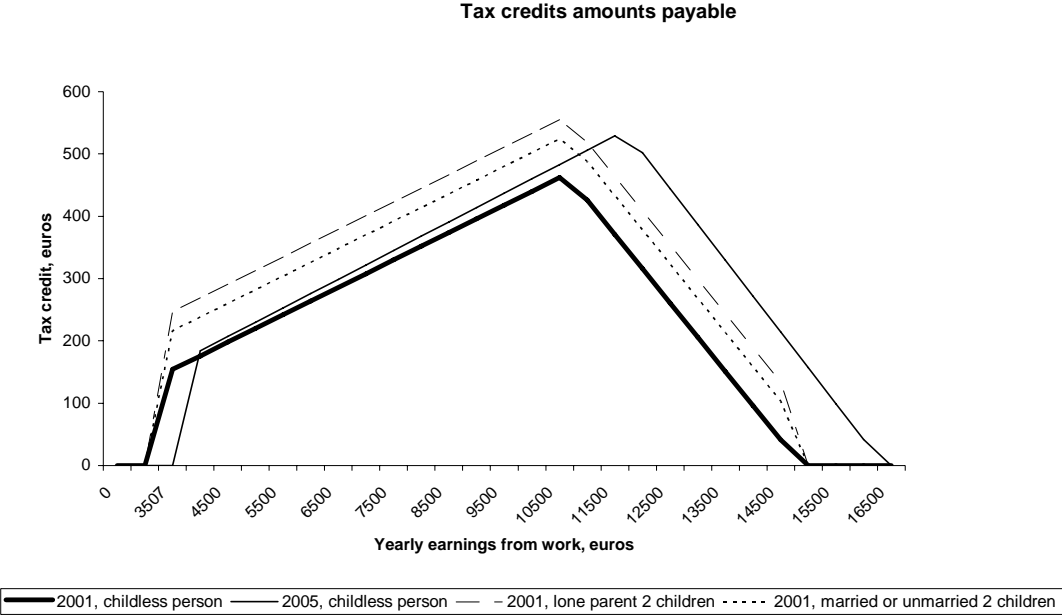


Figure 2. Tax credits payable to a married person as a function of own and spouse's income

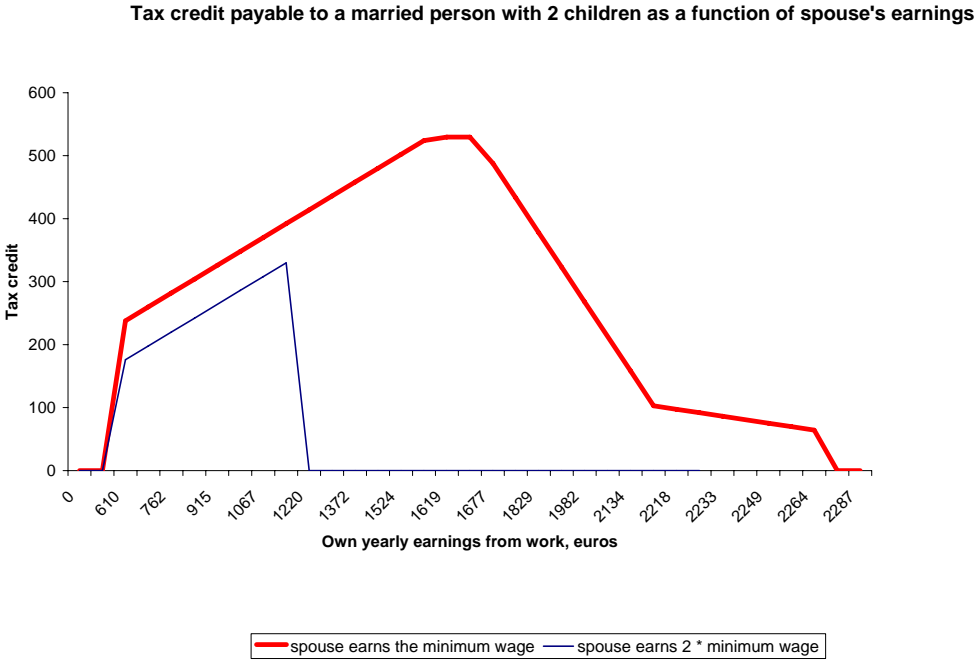
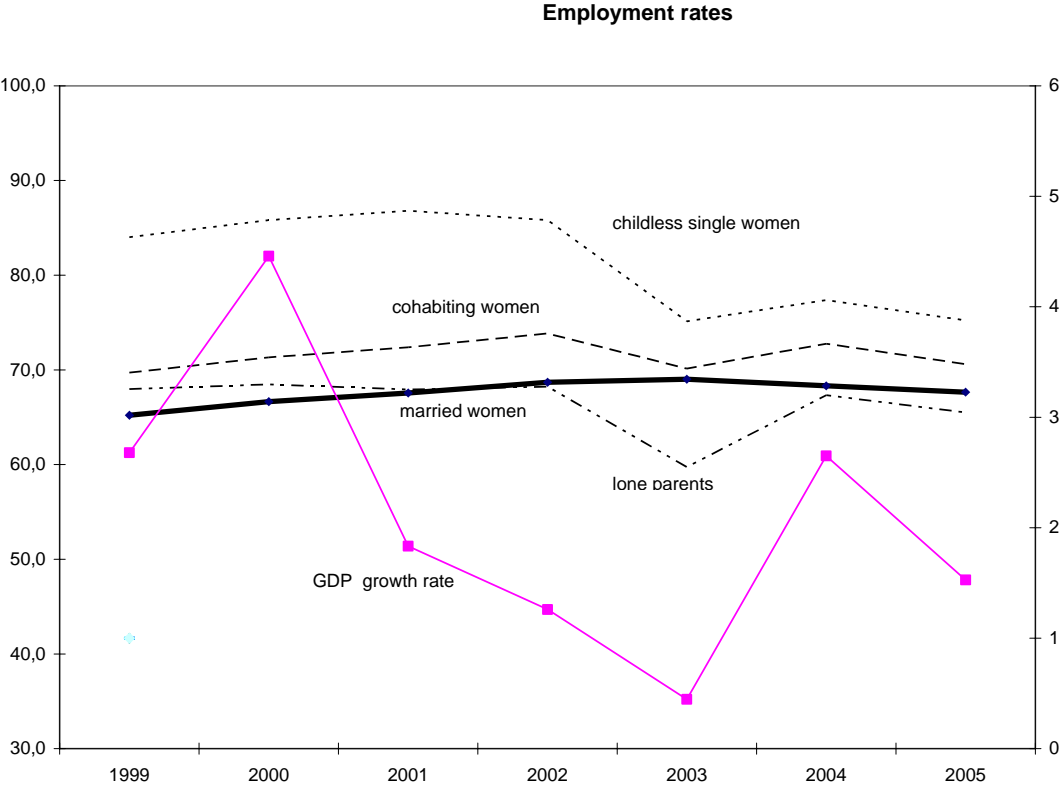


Figure 3. The break in employment rates across the two LFS series



Variable name	2003-05		1999-2002	
	Mean	SD	Mean	SD
Age	38.10	8.64	36.71	8.19
Experience	19.15	9.63	17.79	9.47
Education 1, CEP	0.23	0.42	0.24	0.43
Education 2, BEPC	0.08	0.27	0.08	0.27
Education 3, BEP-CAP	0.24	0.43	0.26	0.44
Education 4, BAC	0.18	0.38	0.16	0.37
Education 5, BAC + 2	0.14	0.35	0.15	0.35
Married	0.55	0.50	0.50	0.50
Cohabitant	0.22	0.42	0.25	0.43
Single	0.22	0.42	0.25	0.43
Number of Children	1.06	1.10	1.33	1.19
Any child of age <3 years	0.13	0.34	0.15	0.35
Paris	0.15	0.36	0.15	0.36
Small city	0.35	0.48	0.42	0.49
Large city	0.25	0.43	0.21	0.41
Ile de France	0.17	0.38	0.18	0.38
French nationality	0.93	0.25	0.92	0.28
Employed	0.70	0.46	0.71	0.45
Hourly salary, Euros	9.58	1.36	7.83	4.72
Hourly salary predicted	6.99	1.70	6.83	1.88
Husband employed*	0.89	0.31	0.92	0.27
Husband's income*, Euros	1817.58	2395.78	1500.87	810.26
<i>No. of Observations</i>	<i>32107</i>		<i>96798</i>	

(*) The mean of partner's employment status is computed only for married and cohabiting women. The salary of the husband is the monthly salary, averaged over positive values only. Earnings are measured in current values.

Table 2***Descriptive statistics: treatment and control groups defined on the basis of eligibility rules, 1999-2002***

<i>Variable name</i>	Treatment group		Control group	
	Mean	SD	Mean	SD
Age	36.62	8.01	38.21	7.43
Experience	18.65	9.38	16.86	9.05
Education 1, CEP	0.31	0.46	0.03	0.18
Education 2, BEPC	0.10	0.30	0.03	0.17
Education 3, BEP-CAP	0.32	0.47	0.10	0.31
Education 4, BAC	0.17	0.37	0.13	0.34
Education 5, BAC + 2	0.08	0.27	0.37	0.48
Married	0.55	0.50	0.61	0.49
Cohabitant	0.17	0.38	0.21	0.41
Single	0.28	0.45	0.18	0.39
Number of Children	1.47	1.18	1.11	1.10
Any child of age <3 years	0.16	0.37	0.14	0.34
Paris	0.11	0.32	0.27	0.44
Small city	0.45	0.50	0.33	0.47
Large city	0.21	0.41	0.22	0.41
Ile de France	0.13	0.34	0.30	0.46
French nationality	0.91	0.29	0.94	0.24
Employed	0.66	0.47	0.82	0.39
Hourly salary, Euros	6.55	0.20	9.29	2.97
Hourly salary predicted	5.72	1.05	8.20	1.87
Husband employed*	0.90	0.31	0.99	0.11
Husband's income*, Euros	1322.44	547.47	2096.75	1107.04
<i>No. of Observations</i>	69352		14061	

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

Table 3***Treatment and control groups defined only on the basis of marital status: 1999-2002***

Variable name	Married women		Cohabiting women	
	Mean	SD	Mean	SD
Age	33.28	4.61	29.69	5.24
Experience	14.12	5.86	10.06	6.18
Education 1, CEP	0.21	0.41	0.18	0.38
Education 2, BEPC	0.07	0.26	0.07	0.25
Education 3, BEP-CAP	0.28	0.45	0.26	0.44
Education 4, BAC	0.17	0.38	0.19	0.39
Education 5, BAC + 2	0.15	0.36	0.17	0.38
Number of Children	1.81	1.13	0.91	1.04
Any child of age <3 years	0.27	0.45	0.25	0.43
Paris	0.15	0.36	0.14	0.35
Small city	0.46	0.50	0.44	0.50
Large city	0.20	0.40	0.19	0.39
Ile de France	0.17	0.38	0.16	0.37
French nationality	0.87	0.33	0.96	0.19
Employed	0.63	0.48	0.71	0.45
Hourly salary, Euros	7.62	4.17	7.16	3.63
Hourly salary predicted	6.12	1.61	5.92	1.61
Husband employed*	0.92	0.27	0.90	0.30

Note: The sample includes only women aged 40 or less.

()The salary of the husband is the monthly salary, averaged over positive values only.*

Treatment and control groups defined only on the basis of presence of children for single women: 1999-2002

Table 4

<i>Variable name</i>	“Lone parents”		Single women	
	Mean	SD	Mean	SD
Age	40.34	6.90	37.52	8.71
Experience	22.16	8.20	17.44	10.49
Education 1, CEP	0.33	0.47	0.16	0.37
Education 2, BEPC	0.09	0.29	0.06	0.24
Education 3, BEP-CAP	0.28	0.45	0.20	0.40
Education 4, BAC	0.14	0.35	0.16	0.36
Education 5, BAC + 2	0.10	0.30	0.20	0.40
Number of Children	1.69	0.92		
Any child of age <3 years	0.09	0.28		
Paris	0.16	0.37	0.23	0.42
Small city	0.31	0.46	0.25	0.43
Large city	0.26	0.44	0.25	0.43
Ile de France	0.18	0.39	0.24	0.43
French nationality	0.90	0.29	0.94	0.23
Employed	0.68	0.47	0.86	0.35
Hourly salary, Euros	7.74	4.71	8.19	5.73
Hourly salary predicted	6.45	2.03	7.12	2.29
<i>No. of Observations</i>	11521		11220	

Note: The sample includes women aged 25 and over.

Table 5. Estimation Results: marginal impact of the tax credit on employment

	<i>1999-2002</i>		<i>2003-05</i>		<i>1999-2005</i>	
	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
<i>1) Eligibility rules:</i>						
All women	-0.002	0.013	-0.025	0.016	-0.006	0.013
Married women	-0.032**	0.016	-0.029	0.021	-0.034**	0.016
Cohabiting women	0.060*	0.035	0.025	0.033	0.060*	0.036
All Single women	-0.012	0.028	-0.087	0.044	-0.012	0.030
<i>2) Married against cohabitants</i>	-0.030**	0.011	0.051	0.085	-0.045	0.039
<i>3) Lone parents against single childless women</i>	-0.0009	0.013	0.015	0.022	0.014	0.009

Note: The models estimated are logit models with robust standard errors. The dependent variable is the employment outcome. The covariate vector includes group fixed effects, time effects and the following explanatory variables: a quadratic in age, education dummies, number of children and presence of small children aged under three, region dummies, and size of living area dummies. The marginal estimates are calculated as the change in the probability when “d_i” in equation (1) changes from one to zero.

Table 6. Marginal impact of the tax credit on employment: random effects estimates		
	Marginal effect	Standard error
1) Eligibility rules:		
All women	0.0001	0.013
Married women	-0.029	0.019
Cohabiting women	0.069*	0.036
Single women altogether	-0.010	0.023
2) Married against cohabitants		
	-0.035**	0.014
3) Lone parents against single childless women		
	0.0007	0.010
<p>Note: These estimates relate to the period 1999-2002, the only period for which it was possible to construct a longitudinal sample. The models estimated are random effects logits. The dependent variable is the employment outcome. The covariate vector includes group fixed effects, time effects and the following explanatory variables: a quadratic in age, education dummies, number of children and presence of small children aged under three, region dummies, and size of living area dummies. The marginal estimates are calculated as the change in the probability when “di” changes from one to zero</p>		

Appendix

<i>Variable name</i>	Treatment group		Control group	
	Mean	SD	Mean	SD
Age	37.20	8.44	38.20	7.65
Experience	19.05	9.27	17.56	9.02
Education 1, CEP	0.31	0.46	0.05	0.22
Education 2, BEPC	0.10	0.30	0.04	0.20
Education 3, BEP-CAP	0.30	0.46	0.13	0.34
Education 4, BAC	0.19	0.39	0.15	0.36
Education 5, BAC + 2	0.06	0.23	0.29	0.45
Married	0.53	0.50	0.58	0.49
Cohabitant	0.14	0.34	0.28	0.45
Single	0.33	0.47	0.14	0.35
Number of Children	1.19	1.15	1.02	1.02
Any child of age <3 years	0.14	0.34	0.17	0.37
Paris	0.10	0.30	0.22	0.41
Small city	0.16	0.37	0.13	0.34
Large city	0.26	0.44	0.24	0.43
Ile de France	0.13	0.34	0.25	0.43
French nationality	0.92	0.26	0.96	0.19
Employed	0.64	0.48	0.79	0.41
Hourly salary, Euros	8.66	1.60	11.54	1.77
Hourly salary predicted	5.81	2.56	8.78	2.09
Husband employed*	0.82	0.38	0.99	0.11
Husband's income*, Euros	1088.69	662.06	2427.54	3914.88
<i>No. of Observations</i>	17324		6923	

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

Table B				
Treatment and control groups defined only on the basis of marital status: 2003-05				
Variable name	Married women		Cohabiting women	
	Mean	SD	Mean	SD
Age	33.69	4.55	29.81	5.45
Experience	14.19	5.57	10.08	6.19
Education 1, CEP	0.19	0.39	0.15	0.35
Education 2, BEPC	0.06	0.25	0.06	0.23
Education 3, BEP-CAP	0.25	0.43	0.23	0.42
Education 4, BAC	0.19	0.39	0.22	0.41
Education 5, BAC + 2	0.16	0.37	0.18	0.38
Number of Children	1.77	1.08	0.90	1.01
Any child of age <3 years	0.28	0.45	0.24	0.43
Paris	0.15	0.36	0.15	0.36
Small city	0.16	0.36	0.15	0.36
Large city	0.22	0.42	0.25	0.43
Ile de France	0.18	0.38	0.17	0.38
French nationality	0.89	0.31	0.97	0.17
Employed	0.64	0.48	0.70	0.46
Hourly salary, Euros	9.68	1.68	9.30	1.66
Hourly salary predicted	6.86	2.11	6.51	2.04
Husband's employed*	0.90	0.29	0.86	0.34
Husband's income*, Euros	1624.19	2261.86	1315.95	991.08
<i>No. of Observations</i>	8444		5653	

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

Note: The sample includes only women aged 40 or less.

(*)The salary of the husband is the monthly salary, averaged over positive values only.

Treatment and control groups defined only on the basis of presence of children for single women: 2003-05

Table C

Variable name	“Lone parents”		Single women	
	Mean	SD	Mean	SD
Age	39.36	6.52	39.03	8.98
Experience	20.80	7.14	19.65	10.37
Education 1, CEP	0.29	0.45	0.19	0.39
Education 2, BEPC	0.10	0.29	0.07	0.26
Education 3, BEP-CAP	0.29	0.45	0.19	0.39
Education 4, BAC	0.14	0.35	0.17	0.37
Education 5, BAC + 2	0.11	0.31	0.17	0.37
Number of Children	1.56	0.81		
Any child of age <3 years	0.09	0.28		
Paris	0.16	0.37	0.21	0.41
Small city	0.14	0.35	0.11	0.32
Large city	0.29	0.45	0.31	0.46
Ile de France	0.18	0.39	0.23	0.42
French nationality	0.93	0.25	0.96	0.19
Employed	0.66	0.47	0.76	0.43
Hourly salary, Euros	11.57	18.38	13.58	52.88
Hourly salary predicted	6.64	2.22	7.17	2.24
<i>No. of Observations</i>	2702		3735	

Note: The sample includes women aged 25 and above.