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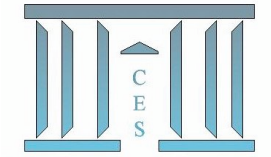

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The Effect of French Family Policies

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Reconciling Work and Family Life: The Effect of French Family Policies[1]

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En France, avoir plus de deux enfants a un effet causal négatif sur l'offre de travail des mères. Cet article pose la question de savoir si certaines politiques familiales altèrent cet effet. L'idée est qu'en améliorant les conditions de la conciliation entre vie familiale et vie professionnelle, les politiques familiales peuvent réduire l'effet négatif d'avoir plus de deux enfants sur l'activité des mères. A l'inverse, certaines politiques familiales peuvent accroître cet effet en incitant davantage les mères à avoir une stratégie d'entrée et de sortie du marché du travail suivant les périodes de leur vie, plutôt que de concilier simultanément responsabilités familiales et professionnelles. Concrètement, nous nous sommes intéressés à deux types de politique familiale : le congé parental d'éducation rémunéré et l'offre de garde pour les jeunes enfants. Afin de pouvoir mesurer l'effet de ces politiques familiales, nous avons repéré des changements temporels ou des différences spatiales de ces politiques qui modifient les conditions dans lesquelles les décisions individuelles sont prises. Dans un premier temps, nous trouvons qu'après l'extension de l'Allocation parentale d'éducation aux parents de deux enfants (dont un de moins de trois ans) en juillet 1994, c'est-à-dire au moment où les familles de deux et plus de deux enfants ont la même possibilité de prendre un congé parental d'éducation rémunéré, avoir plus de deux enfants n'a plus d'effet négatif sur la probabilité d'activité des mères. Et cela concerne en particulier les femmes jeunes et ayant un diplôme inférieur ou égal au baccalauréat, qui se trouvent être les principales bénéficiaires de la mesure. Dans un second temps, en utilisant l'hétérogénéité dans la distribution géographique des taux de scolarisation en maternelle à deux ans, nous trouvons qu'accroître l'offre de garde peu coûteuse, voire gratuite, modifie l'effet de la fécondité sur l'offre de travail des mères et semble aider les mères de jeunes enfants à mieux concilier vie familiale et vie professionnelle mais nos estimations sont moins convaincantes.

Mots clés: fécondité, offre de travail des mères, politiques familiales.

In France, having more than two children has a causal negative impact on mothers' labour supply. The question addressed in this paper is whether some family policies alter this effect. The idea is that by improving the conditions of the conciliation between family life and professional life, family policies could reduce the negative impact of having more than two children on mothers' participation. Conversely, some family policies could increase this effect by inciting mothers to have an entry-exit strategy on the labour market according to the different periods of their lives, rather than to reconcile family and professional responsibilities. To address this issue, we focus on two different types of family policy: the paid parental leave and the supply of child care for young kids. To measure the effect of these family policies, we have spotted temporal or spatial changes that modify the conditions in which individual decisions are taken. Firstly, we show that after the July 1994 extension of the *Allocation parentale d'éducation* to parents of two children (among which one is less than three years old), that is when families of two and more than two children have the same incentive to take a paid parental leave, having more than two children has no longer a negative effect on the participation probability of mothers. In addition, this is particularly true for young women having no more than the school-leaving certificate, which happen to be the main beneficiaries of the benefit. Secondly, using the heterogeneity in the geographical distribution of two-years-old in pre-elementary public schools, we find that supplying mothers of two years old children with developed child care modifies the effect of fertility on mothers' labour supply and seems to help mothers to better conciliate family and professional life but our estimates are less convincing.

Key words: fertility, women's participation in the labour market, family policies.

JEL: J13, J22.

« Reconciling work and family life involves two key goals for both individuals and society: being able to work, to earn an income while participating in the most important social activity of modern life, and providing the best care and nurturing for one's own children. These aspirations need not be mutually exclusive. A failure to balance work and care commitments has implications for either labour force or family decisions - or for both. Parents - or would-be parents - may decide to delay having children, have fewer than they really want, or not have children at all. Or they may change their labour market behaviour. Some who are out of the labour market, either short or long term, prefer to look after their children full-time, regardless of employment opportunities. But others would like to work, or work more - but cannot because they cannot get the childcare services they need in order to continue their careers. Still others work longer than they want, putting their family under strain, in some cases resulting in broken relationships or young people being neglected or poorly raised. »[3]

This is the reason why conciliation policies are a major issue of family policy. It must solve the potentially conflicting trade-off between fertility and activity by making it possible for parents to work and to have the number of children they want. In order to achieve these objectives, family policies can support fertility and/or labour supply, or act on the terms of the trade-off between the two by helping parents to continue working. It is necessary to assess the impact of family policies' current measures on the number of children and on mothers' labour supply who are the most concerned by conciliation difficulties. But it is also important to evaluate how family policies influence the link between the number of children and mothers' labour supply, which is the objective of this paper.

Supporting parents' fertility decisions and mothers' labour supply decisions is all the more important since France is facing since the seventies both a decrease in fertility[4] and a rise in women's participation in the labour market. Both these objectives are essential. On the one hand, family policies aiming at increasing fertility are necessary to reach a level above the one that ensures generation renewal. On the other hand, supporting women's labour supply is optimal from an economic point of view since, as Pierre-Alain Muet notes in introduction of the *Conseil d'Analyse Economique*'s report on gender equality[5], « la participation des femmes

[3] "Babies and Bosses - Reconciling Work and Family Life" (2002), volume 1: Australia, Denmark, The Netherlands; OECD.

[4] According to the INED (Sardon, 2006), the French indicator of fertility has decreased between 1975 et 1990, and risen slightly since: it was 2.47 in 1970 ; 1.95 in 1980 ; 1.78 in 1990 ; 1.87 in 2002 ; 1.88 in 2003 and 1.91 in 2004. In comparison, the average level for Europe 15 is respectively: 2.38 ; 1.82 ; 1.57 ; 1.50 ; 1.52 ; 1.55. Hence, the French indicator of fertility is traditionally high, but with a level that stayed long below the generation renewal rate (2.1), France is confronted with, as the other European countries, the ageing of its population. In 2006, the French indicator of fertility was above two children per women.

[5] Majnoni d'Intignano (1999).

à l'activité économique est un puissant facteur d'amélioration des performances économiques des pays développés parce qu'elle permet la diversification des talents et oriente la demande des ménages vers des services … à fort contenu en emploi ». Also, in the next years, massive retiring will create a labour shortage and women's labour supply will be essential. Governments face two major issues that are potentially contradictory: stimulate fertility without calling into question mothers' participation in the labour market.

The contradiction between these two public policies objectives comes from the negative impact of fertility on French mothers' labour supply. In France, women with the lowest number of children are also the ones with the highest participation rate in the labour market. To what extent having an additional child reduces the mother's probability to participate in the labour market? As Angrist and Evans (1998) on American Data, Moschion (2007) uses a source of exogenous and random variation of fertility to measure the causal effect of fertility on French mothers' labour supply. French parents with same sex siblings have a higher probability of having a third child, and among them, mothers' participation in the labour market is reduced. Because sex mix is randomly assigned and because it has an effect on participation only through its impact on the probability of having a third child, Moschion (2007) produces instrumental variable estimates of the causal influence of having more than two children on mothers' participation in the labour market. Results indicate that having more than two children reduces significantly the mothers' participation probability and the hours worked per week. Also, having more than two children has a stronger negative effect on the labour supply of mothers having no more than the school-leaving certificate, which happen to be the main beneficiaries of the benefit. At the same time, having more than two children has no effect on fathers' labour supply. Insofar as having more than two children reduces mothers' labour supply, how can family policies encourage families to have more children and mothers to stay on the labour market?

On the one hand, historically, French family policies favoured either fertility or mothers' labour supply, but not both simultaneously. Until 1962, the family policy was viewed in an opposition perspective between birth rate and women's work: the objective was fertility and not women's participation in the labour market. Since 1962, the family policy tends less to oppose fertility and women's work. However, by becoming less generous, family policies may have had the opposite effect of policies trying to boost fertility, and may have forced mothers who would have preferred to take care of their children to work out of

financial necessity. Today, it seems that the right balance between measures permitting temporary withdrawals of the labour market and those permitting to reconcile work and family life has not yet been found. In fact, among the working population, nearly 40% find that their work makes the organisation of family life difficult, percentage that reaches 50% among parents of children under 11 (Garner, Méda and Sénik, 2004). We analyse in the first section how French family policies may have an effect on the conciliation opportunities and thus on mothers' labour supply.

On the other hand, stimulating fertility while supporting mothers' labour supply can represent a challenge because of the negative correlation between the number of children and mothers' labour supply: having more than two children reduces mothers' participation in the labour market. As a result, family policies having a positive effect on one of these two variables may have a negative effect on the second one. For example, a policy that stimulates fertility may reduce mothers' labour supply. In this context, it seems that policies acting on the terms of the trade-off between fertility and activity are more relevant than those trying to support either fertility or activity, at the risk of penalising the second. Conciliation policies must make motherhood and professional life compatible.

We ask ourselves if some family policies could alter this negative impact of having more than two children on mothers' participation in the labour market. This effect that differs in time (Foley and York, 2005) and space (Angrist and Evans, 1998, Chun and Oh, 2002) could result from policies favouring more or less the conciliation between work and family life. The idea is that by improving the conditions of the conciliation between family life and professional life, family policies could reduce the negative impact of having more than two children on mothers' participation. Conversely, some family policies could increase this effect by inciting mothers to have an entry-exit strategy on the labour market according to the different periods of their lives, rather than to reconcile family and professional responsibilities.

To address this issue, we focus on two different types of family policy: the paid parental leave and the supply of child care for young kids. To measure the effect of these family policies, we have spotted temporal or spatial changes that modify the conditions in which individual decisions are taken, but do not change anything else. Particularly, we have analysed the consequences of the July 1994 extension of the *Allocation parentale d'éducation* to parents of two children (among which one is less than three years old), and the geographical distribution of two-years-old in pre-elementary public schools. We focus on

mothers having at least two children for several reasons. Firstly, the more the number of children increases, the more conciliation problems are obvious. Second, the family policy traditionally benefited families with three children or more[6]. Lastly, insofar as we will use instrumental variables to measure the causal effect of fertility on mothers' labour supply, the scope of the analysis is restricted to mothers with at least two children (the instrumental variable being the sex of the two eldest siblings). This will make it possible to compare explicitly the consequences of passing from two to more than two children.

In July 1994, the *Allocation parentale d'éducation* was extended to parents of two children. This policy has entirely modified the financial incentives of mothers with two children (among which one is less than three years old): if the youngest is born before July 1994, his mother receives no benefit, whereas if he is born after, she receives a monthly benefit of about 450 euros. As this modification was introduced in one go, it constitutes an exogenous shock that enables us to grasp the effect of the *Allocation parentale d'éducation* on the possibilities for parents to conciliate family and professional life. We try to measure how the extension of the *Allocation parentale d'éducation* to parents of two children modified the terms of the choice between fertility and mothers' participation in the labour market. More precisely, we examine if by reducing the treatment differences between two and three children families, the extension of the *Allocation parentale d'éducation* has created a negative effect of having a second child on mothers' participation and if the negative effect of having more than two children has disappeared. We find that after the extension of the *Allocation parentale d'éducation*, that is when families of two and more than two children are in the same position to take a paid parental leave, having more than two children has no longer a negative effect on the participation probability of mothers. In addition, this is particularly true for young women having no more than the school-leaving certificate, which happen to be the main beneficiaries of the benefit.

The geographical distribution in pre-elementary public schools of two-years-old is extremely heterogeneous across French departments: it varies in 2005 between 4% and 66%. Supposing that this distribution is exogenous, we use it to estimate if supplying mothers of two years old children with developed child care could modify the effect of fertility on mothers' labour supply. On the sample of mothers with at least two children and among which one is two years old, our estimates are non significant but go the right way: we find that in departments where two years old have a low access to pre-elementary public schools,

[6] This is less true since the extension in 1994 of the *Allocation parentale d'éducation* to the parents of two children, and the progressive replacement of it by the *Complément de libre choix d'activité* in 2004. Since then, the relative advantage of parents with three children was reduced: today, parents with one child can take a paid parental leave for six months, and parents with two children for three years.

having more than two children has a negative impact on the participation probability and hours worked by mothers. On the contrary, in departments where two years old have a high access to pre-elementary public schools, having more than two children has a positive impact on the participation probability and hours worked by mothers. In order to know if this non significance of the results is rather due to the imprecision of the estimates or to the fact that offering developed child care to mothers with two years old children has no effect on mothers' labour supply, we produced variants of the previous exercise. Particularly, when we extend our sample to mothers with at least two children among which one is aged two to ten, the estimates are non significant in the departments where two years old have a high access to pre-elementary public schools, whereas in departments where two years old have a low access to pre-elementary public schools, having more than two children has a significant negative impact on mothers' participation probability. We find the same results when second twin births are used as an instrument. These results seem to demonstrate that supplying mothers of two years old children with affordable child care enables them to better conciliate family and professional life. Nevertheless, these results should be interpreted with caution, because the two last exercises that exhibit a significant estimate, both set a problem: the sample in which the child is aged two to ten because families could have moved between the period when the child was two and the moment the family was surveyed, and the use of twin births because the results on this sub-sample are hardly expandable to all mothers with two years old children.

The paper is organised as follows. The next Section provides a discussion of how the different family policies could affect the terms of the conciliation between family and professional life. Section II provides a short discussion of related literature and Section III describes the data. Section IV shows that the French paid parental leave explains the negative impact of having more than two children on mothers' labour supply. Section V provides several pieces of evidence suggesting that supplying mothers of two years old children with affordable child care helps them to better conciliate family and professional life. Last section concludes.

I. A comparative analysis of European Family policies

The objective of this section is to analyse the potential effect of French family policies on the conciliation between work and family life. We are particularly interested in policies that either explicitly favour the conciliation between work and family life, or that has an indirect effect on it (for example by stimulating fertility, some measures may have a negative effect on mothers' labour supply). Do French family policies facilitate the accumulation of familial and professional responsibilities?

In the European Union, most women are active (Table 2). Yet, women's activity rate is much higher in Scandinavian countries than in southern countries. Besides, table 2 clearly illustrates a paradox: it is in countries where women's activity rate is the highest that fertility is also high (Finland, Norway, Denmark, Sweden and Island), whereas conversely in countries where the activity rate is low, fertility is low as well (Italy, Hungary, Greece, Spain). Whereas the relationship between female labour supply and fertility is negative at the individual level, it is now positive at the country level. At the individual level, the negative correlation between women's labour supply and the number of children differs accross countries. In addition to cultural differences, family policies could partly explain these differences: by facilitating the conciliation between work and family life, some countries could manage to stimulate at the same time women's labour supply and fertility.

Aliaga (2005) notes that in almost all member states, the employment rate of women decreases with the number of children whereas that of men does not vary much. Particularly, mothers with three children or more have a very low employment rate: the difference between the employment rate of one child's mothers and that of three children's mothers is especially high in Hungary, Czech Republic, and Slovakia where the employment rate of mothers with at least three children is below 30%. According to her study, regarding women's employment rate according to the presence, number and age of children, France is in an average position in Europe: the activity of French women is negatively correlated with the number and the youth of children, but their employment rate is never particularly high or low. It is therefore necessary to identify policies that do not facilitate the conciliation between work and family life in order to correct them and reduce the trade-off between working and having the number of children one wants.

Comparing France with other European countries, we identify some of the elements of French family policies that could have an effect on the conciliation between work and family life, that is which modify the link between fertility and mothers' labour supply. All references to foreign measures come from Drew's (2005) study for the European Council.

The current measures of family policy that are linked to conciliation matters are essentially of two orders: the compensated parental leave and child care. However, we will see that some measures rather favour an alternation between work and family life than a real conciliation. According to Thévenon (2004), during the eighties and the nineties, some measures were put in place, some of them to help mothers to better conciliate work and family life, and others to reduce their labour supply. Thus, child care investments and benefits facilitated women's work, but the creation and then extension of the *Allocation parentale d'éducation* (compensated parental leave) encouraged mothers of at least three, and in 1994 of two children to leave the labour market. The coexistence of these two tendencies results from a compromise because the State tries to encourage women to work full time (even if they have a first child), while it incites mothers of larger families to withdraw from the labour market.

The compensated parental leave device (*Complément de libre choix d'activité*) is completely egalitarian on the paper since fathers as mothers can benefit from it. It is bound to parents of at least two children (of whom one is less than three years old) who wish to reduce or interrupt their activity for a period running from six months to three years. The benefit amounts 520-750 euros per month at the most, according to the modalities adopted.

However, in practice, it rather favours an alternation strategy of mothers participation in the labour market. On the one hand, this device incites mothers, who do not necessarily wish to, to leave at least temporarily the labour market, and on the other hand, there is no disposal to encourage fathers to take the leave. Practically, without explicit incentives, fathers are not as implicated as mothers in family life. In 2005, 97% of beneficiaries were women. As a matter of fact, with its current device, the parental leave is all but inciting for men. Since the benefit is low and independent of the previous wage[7], as men earn generally more than their spouses, it is financially optimal for most couples that the beneficiary be the mother[8]. This reinforces inequalities within the couple: once again, women are the ones who invest more in family life to the prejudice of their professional life. In this respect, foreign examples show

[7] In opposition to Sweden for example, parental leave benefits take no account of parents wages on the labour market: a monthly lump sum is paid to beneficiaries. Until the end of 2007, the total benefit amounts 530.72 euros for the full time benefit.

[8] According to Boyer (2004), among households in which the father is the beneficiary of the parental leave benefit, in 60% of cases, spouses have a higher professional income, and this counted in their decision.

how incentives can instigate a new dynamic and accelerate the setting up of a fair division of family responsibilities between the mother and the father. Various measures seem to boost fathers' participation: assigning a fraction of the leave to fathers, replacing the lump sum with a benefit representing a high proportion of the wage. According to European data[9], fathers participate more to the parental leave in countries where the benefit is high, and when a period of the leave is assigned to them and non transferable to the mother. In 2003, Island has introduced a modern policy to encourage a more equitable share of work and family responsibilities between spouses. A third of the Islanders' parental leave is assigned to the mother, a third to the father, and a third can be shared between them. Periods that are not used by the assignee are lost. This policy may favour fertility but without putting all its weight on mothers. The first evaluations show that this device works since fathers take a third of the leave, which is the whole period they were assigned. Of course, the aim of such a measure is not to directly lead to total gender equality but to initiate a change. A part of the parental leave is also assigned to fathers in Norway, Denmark and Sweden. Another way to incite fathers to take the leave is to lengthen the leave if the father uses part of it (Italy).

Moreover, the parental leave is very long which may make the reintegration on the labour market harder. In the current context (*Complément de libre choix d'activité*), the device has partly been improved as since July the 1st of 2006, parents of three children at least can choose a parental leave restricted to one year at the most, with a higher benefit (750 euros). This flexibility given only to parents of at least three children has not yet been evaluated but is interesting because it provides a possibility for parents to take care of their small children without staying to long out of the labour market. But why should it be proposed only to parents with at least three children, who may already be quite far from the labour market. In some countries, the parental leave can be taken over a shorter time period but is better compensated. For example, the Swedish parental leave gives right to 480 days of benefits that amount 80% of the wage (in the limit of the social security ceiling) during the 390 first days and a lump sum of about 10 euros per day during the 90 remaining days. A more flexible parental leave could also be considered in order to give the opportunity to parents to take care of their children when they need to. For example, Austrian, Danish and Swedish workers can either take the parental leave in one go or intermittently during the first years of the child. In Sweden, parents can work part time and receive a benefit in proportion of time they do not work. If by the 18 month of the child, all the benefit rights have not been used, parents have

[9] EIROnline, 1997, n°9712201.

additional absence rights until the eighth birthday of the child. In the same way, since January 2000, Germans can turn to part time twice.

In this context where women are the main users of a device that estrange temporarily the beneficiary from the labour market, the parental leave does not seem to really help mothers to reconcile professional and family life. On the one hand, it is inequitable between men and women, all the more that 40% of full rate beneficiaries of the *Complément de libre choix d'activité* declare that they would have liked to keep on working (Berger and al., 2006). On the other hand, the 1994 extension of the *Allocation parentale d'éducation* to parents of two children[10] as well as the introduction of the *Complément de libre choix d'activité* (and so a parental leave benefit for the first child) moves France away from the conciliation model and brings it closer to a model of alternation. The latest cannot be considered as conciliation since it would imply that mothers can simultaneously keep on working and assume their family responsibilities.

The second axis of French family policy regards child care through the development of child care services, child care benefits and the creation of a professional status for Nursery assistants. With child care public centres and Nursery assistants for children under three, and infant schools for children aged three to six, France is relatively well equipped in terms of supply for child care. However, the assumption of young children could be improved.

Child care benefits are essential since the relative cost of child care compared to the potential wage of mothers can influence their labour decision. The lower is this cost; the more women are incited to work, whatever their level of schooling is. With the setting of the *Prestation d'accueil du jeune enfant* on January the 1st of 2004, the *Complément de libre choix du mode de garde* substitutes for all anterior benefits. It is served to parents with a child aged six or less who continue working, whatever type of child care they choose. The objective is to improve the access of families to the different types of child care, and particularly to individual child care, of which low and medium income families were actually excluded[11]. In order to prevent some parents from choosing inactivity because of the cost of child care, the law of March the 23rd 2006 has prioritised the access to child care public centres to welfare beneficiaries who take a job. Child care benefits are rather high in France. Still, the question

[10] The consequences of the extension of the *Allocation parentale d'éducation* to parents of two children in terms of mothers' labour supply have been studied for example by Piketty (2005) and Pailhé and Solaz (2006).

[11] The *Prestation d'accueil du jeune enfant* has highly increased the benefits served to parents who have recourse to a Nursery assistant and has led to a convergence of family participation towards an effort rate of about 12% of their income, which corresponds to the participation of parents in child care public centres. This means concretely that, compared to the previous system, an additional aid of 150 euros per month (which represents an increase of 75%) is offered to parents whose income is less than three times the minimum wage.

of their rise can be asked. In this perspective, it could be relevant to evaluate precisely the cost that would represent the creation of a free child care right for every child under three, as in some countries of Northern Europe, and the consequences of such a right on mothers' work. It would also be interesting to estimate the impact of the creation of the *Chèque emploi service universel* in 2006 on the type of child care chosen by parents and on mothers' labour supply.

Apart from financial benefits, the evolution towards a registration of the status of Nursery assistants (government bill of 2007) may encourage mothers' work: on the one hand, it reassures active mothers who wish that a Nursery assistant takes care of their young children, and on the other hand, it gives a job opportunity to inactive women.

At last, the increase of child care supply is a necessary condition to improve the conciliation between work and family life. With the schooling of the majority of children from the age of three, France is doing far better than most European countries. Yet, child care services for children under three remain insufficient: hardly one third of children under three have access to child care. Since the creation of the *Aide à la famille pour l'emploi d'une assistante maternelle agréée* (AFEAMA), and the law of July 1992 that frames the Nursery assistant certificate[12], the number of certificated Nursery assistants has significantly risen: from 166 700 in 1995, it reached 258 400 in 2001 (Barrère-Maurisson and Lemière, 2006). Despite these progresses, child care supply remains short and unequally distributed on the territory. Thus, for 100 children under three, the number of spaces in child care public centres varies from 3 to 39 depending on the department, the national average being 14 (Chastenet, 2005). This is the reason why the CNAF's aid to create new spaces is henceforth assigned in priority to projects set in worst-off departments. Still, the supply of child care must be increased: in France in 2003, only 29% of children under three had access to a child care public centre or a Nursery assistant. As a comparison, according to the report of the working group on "families and firms", in Sweden in 1999, 75% of children aged 1 to 5 were received in either public centres or by Nursery assistants.

Mothers' work is not an end in itself; it is an objective only because a large number of mothers leave the labour market though they wish to carry on working. For the time being, there still exists a lack of balance between measures making temporary withdrawals possible and those that really facilitate the conciliation between professional and family life (as the development of child care services for example).

[12] The certificate is delivered for five years and Nursery assistants can take care of three children at the most.

It is indeed important to help parents who want to suspend temporarily their working life, but it is also necessary to support mothers who want to continue working. It is no longer possible to support fertility at the expense of women's work, nor is it possible to favour women's work and neglect fertility. This is the reason why conciliation policies are a major issue of family policy. Given the overrepresentation of women among the beneficiaries of the compensated parental leave (97% in 2005) and the fact that among full rate beneficiaries, 40% would have preferred to keep on working, and the fact that nothing is done to incite fathers to participate more in the leave; the French parental leave policy could be interpreted as a "housewife" policy, relying on a strict gender division of roles: while fathers work, mothers take care of the children (Martin, 1998).

In order to give the possibility to parents to make a "free choice" between working and leaving the labour market to raise children, the State must give the indispensable tools of this freedom by suppressing definitely the unbalance, which exists since the end of World War Two in France, between benefits for parents who stay at home and benefits giving the opportunity to both parents to continue working.

II. Related literature

The results of studies using the sex of eldest siblings as an instrument to measure the effect of a third child on mothers' labour supply differ in time and space: having a third child does not always reduce significantly the mother's participation in the labour market. These differences could come from cultural or institutional differences. In the second case, differences in family policies may partly explain these differences in the effect of having more than two children on mothers' labour supply.

The impact of family policies on fertility and mothers' labour supply can be evaluated in two different ways. First, the effect of a family policy on fertility and/or mothers' activity can be measured directly. In this case, the objective is to know whether a specific policy has an effect on fertility on the one hand, and if it had an effect in terms of mothers' activity on the other hand. The economic literature particularly focused on the impact of parental leaves[13] and child care costs[14]. On French data, Piketty (2005) and De Curraize (2005) respectively studied the effects of the compensated parental leave and of the supply of spaces in infant schools. In another perspective, it could also be relevant to interrogate explicitly the effect of family policy in terms of conciliation between work and family life. In this case, the objective is to identify how a family policy measure modifies the effect of fertility on mothers' activity. This idea is supported by Bernhardt (1993) according to whom the negative correlation between fertility and mothers' labour force participation does not come from a direct effect of childbearing, but rather from the process of caring for and raising children. It then becomes intuitive that if family policies help parents to combine professional and family responsibilities, the negative impact of fertility on mothers' labour supply could be reduced. This is what we propose to study in the fourth and fifth sections of this paper. We want to

[13] The effect of parental leave policies substantially depends on the characteristics of the leave. Ronsen and Sundström (1999) study the parental leave device of three Nordic countries between 1972 and 1992. They find that the generous Swedish parental leave (one year in average over the period) favours conciliation and encourages mothers to stay in the labour market during childbearing years. With a shorter entitlement, the Norwegian parental leave (22 weeks at the most during the period) incites some mothers to re-enter the labour market more rapidly, but most of them hardly combine work and family life and end up outside the labour force. The long Finnish parental leave (44 weeks at the end of the period) that has to be used in one go and offers no part-time possibility seems to have negative consequences for women's participation in the labour market. On French data, Choné, Le Blanc et Robert-Bobée (2004) estimate that the suppression of the *Allocation parentale d'éducation* would increase female's employment rate by 4 percent points.

[14] Blau and Robins (1989) show that higher child care costs are associated with lower fertility and lower mothers' labour supply in 1980 in the United States. Other studies on American data confirm the negative impact of child care costs on mothers' labour supply (Connelly, 1992, Ribar, 1992). But, on French data, Choné, Le Blanc et Robert-Bobée (2004) find that child care costs has a little influence on women's participation decisions. Laroque and Salanié (2005) estimated on French data that a monthly childcare credit of 180 euros per child under three would increase fertility by 13.4%. On Norwegian data, Kravdal (1996) suggests that an increase in the supply of day care has a little effect on fertility, if benefits and quality remain unchanged.

answer the following question: to what extent do family policies alter the effect of having a third child on mothers' activity, in other words to what extent do family policies have an effect on the conciliation between professional and family life?

Some papers tried to assess if when, at the country level, the correlation between fertility and mothers' activity becomes less negative, or even positive[15], this could be attributed to the success of specific family policies in terms of conciliation between professional and family life. Brewster and Rindfuss (2000) synthesise European and American researches on the link between fertility and women's work, and on the impact that various policies may have on this relationship. They try to understand the reversal of the correlation between fertility and mothers' labour supply at the country level: fertility rates tend to be higher in the countries where the participation rate of women in the labour market is also high. Their study shows that whereas, between 1970 and 1996, women's participation rates increased similarly in magnitude in European Northern countries and the United States on the one hand and in Mediterranean countries on the other hand, fertility rates barely changed in the first group whereas it fell substantially in the second. According to the authors, these evolutions suggest that in some countries, women succeeded in combining family and professional responsibilities, and in others they have not. The same kind of argument is provided in Brewster and Rindfuss (1996): « the negative association between fertility and labour force participation can be expected to diminish as the conflict between work and family responsibilities is reduced- whether by a change in the nature of work life, shifts in the social organization of childcare, or a combination of the two", which comforts our idea that family policies may alter the effect of fertility on mothers' labour supply. However, Brewster and Rindfuss (2000) put forward the difficulty to analyse the impact of family policies on the relationship between fertility and mothers' labour supply with cross-country analysis, because of the complexity to synthesise complex family policies that differ across a wide range of dimensions.

Thévenon (2007) studies for the OECD's countries the link of different family policies with the performances of different countries in terms notably of fertility and women's work. He finds that a high participation rate of women's in the labour market is not contradictory with a high fertility, but that it depends on family policies. His results suggest that in step with

[15] The development in the 1990's of a positive correlation between fertility and mothers' labour supply at the national level has been suggested by several authors among who Bernhardt (1993), Rindfuss and Brewster (1996).

implemented family policies, the link between fertility and mothers' activity varies. However, he does not demonstrate that a causal relationship exists between these two elements.

The paper of Del Boca et al. (2007) explicitly puts forward the importance of analysing women's participation in the labour market and fertility to determine how public policies aiming at reconciling work and family life influence simultaneously fertility and working decisions of mothers. From a study on the 15 European countries, the authors show that the best combination of family policies to stimulate fertility and mothers' labour supply is to offer parents part time possibilities, child care services and short parental leaves. According to the authors, this combination gives the possibility to mothers to keep on working while taking care of their children. In opposition, proposing full rate long parental leaves to parents (until children are three years old) has important costs in terms of careers and human capital loss for mothers.

Whereas these studies use comparative analysis between countries to evaluate how family policies may alter the link between fertility and mothers' work, we focus on France and use quasi-natural experiments. More precisely, we compare groups that are not subjected to the same policies and compare between them the effect of fertility on mothers' labour supply. The advantage of this approach is that it annihilates cultural differences and makes it possible to investigate the causal impact of family policies on the effect of fertility on mothers' labour supply.

III. Data description

The data used in this paper come from the 13 French Labour Force Surveys (LFS) conducted each year between 1990 and 2002 by the French Statistical Office (INSEE).

The sample of the LFS is representative of French metropolitan population aged fifteen and more (*N*=150 000, sampling rate=1/300). For each respondent, we know his birth date, hiss sex, his family situation, his diploma and his participation in the labour market. We also have for each household, the number, the sex and the birth date of each child living in the housing. We focus on women aged 21 to 35 having at least two children at the time of the survey (*N* = 69 386).

As Angrist and Evans (1998), we have information only on children who still live with their parents. Keeping only women who are less than 36 years old prevents us from underestimating the total number of children and from introducing errors on the rank of siblings. Women who are more than 35 years old potentially have of age children, who have a higher probability to leave outside the parental home. The sample of women aged 21 to 35 having at least two children may appear as a group in which women have children particularly soon. However, our calculations on the LFS show that nearly half women aged 28 to 35 have at least two children, and that this proportion does not increase much when considering older women[16].

Table 1 gives some descriptive statistics. Among all women having two children, 32% had a third child. In this sample, a little more than 50% of families had same sex eldest siblings and a little more than 51% of first births were boys, which is consistent with national statistics.

We present in the second part of table 1 descriptive statistics of demographic variables and labour supply. The labour supply variables we're interested in are whether the woman works, whether she works part time, the average number of hours she works per week, her annual wage.

[16] Among women aged 28 to 35 years old, 48.8% have at least two children, and among women aged 36 to 50 years old, they are 54,6%.

IV. The paid parental leave

A. Related literature

Piketty (2005) uses the LFS (1982-2002) and the Family survey (1999) to measure the impact of the *Allocation parentale d'éducation* on women's labour supply and fertility. He uses the extension of the *Allocation parentale d'éducation* to the second child in July 1994 as a natural experiment. This extension, which occured in one go, constitutes an exogenous shock that permits to capture the effects of this policy on fertility and women's participation in the labour market. This extension has in fact totally modified financial incentives of two children mothers (of whom one is less than three years old): if the second child is born before July 1994, his mother has no benefit, whereas if he is born after, she receives a benefit of about 450 euros per month (if she stops working). Therefore, this reform may have had considerable effects, all the more since the participation rate of mothers with two children to the benefit became rapidly extremely important: Piketty (2005) calculates that by the end of 1997, more than 40% of mothers with two children (of whom one is less than three years old) receive actually the *Allocation parentale d'éducation*, and more than 30% receive a full rate benefit.

In terms of fertility, the effect of the extension of the *Allocation parentale d'éducation* are hardly measurable and rather moderate: according to Piketty (2005), the reform could explain at the most 20-30% of the total increase of French fertility observed between 1994 and 2001[17]. On the contrary, the effect on women's work is significant:

- On the one hand, the extension of the *Allocation parentale d'éducation* has induced in three years an important decline in the labour supply of mothers with two children (of whom one is less than three years old): out of 220 000 full rate beneficiaries of the *Allocation parentale d'éducation* for the second child, between 50% and 70% would not have interrupted their activity at the second birth if they had not benefited from the reform. This additional withdrawal movement was particularly concentrated on low skilled jobs.
- On the other hand, mothers of three children (of whom one is less than three years old) who benefited of the *Allocation parentale d'éducation* for the second child withdraw

[17] Using French Labour Force Surveys of 1997, 1998 and 1999, Laroque and Salanié (2005) provide maximum likelihood estimators based on a discrete choice model. They estimate that the extension of the Allocation parentale d'éducation caused a substantial reduction in the labour supply of eligible women, and that this reform explains nearly half of the increase in the number of births observed in the second half of the 1990s.

more willingly from the labour market for their third child than others, this excess of interruption being close to 50 000 since 1997.

Piketty's (2005) results clearly indicate that the French compensated parental leave has a negative effect on mothers' labour supply. Moreover, having a third child reduces the probability of mothers' activity and this particularly for the low qualified who also happen to be the main beneficiaries of the *Allocation parentale d'éducation* (Moschion, 2007). Could this negative causal effect of the third child on mothers' labour supply be due to the fact that since its creation, mothers of three children at least were eligible to the benefit and that until July 1994, they were the only ones to be? The purpose of this section is to interrogate the reasons of the negative effect of the third child on mothers' labour supply: is it due to an intrinsic effect of the third child or is it due to the incentives of the *Allocation parentale d'éducation*? In other words, we wonder if the *Allocation parentale d'éducation* modifies the trade-off between fertility and mothers' labour supply and thus has an effect on the conciliation between work and family life. Has the extension of the *Allocation parentale d'éducation* to parents of two children modified the terms of this trade-off for mothers of two children? While reducing the treatment differences between families with two children and more than two children[18], has the extension provoked an increase in the negative effect of the second child compared with the first, and reduced the negative effect of the third child compared to the second?

The evolution of the *Allocation parentale d'éducation* provides us with the means to answer this question. It was created in 1985 and until July 1994, it was intended for parents with at least three children only. We propose to evaluate the consequences of the *Allocation parentale d'éducation* in terms of conciliation, and study if the negative effect that sustained the mothers of three children on their working decisions was transferred to mothers of two children at the moment when the *Allocation parentale d'éducation* was extended to them. Using the *'same sex'* instrument that permits to evaluate the effect of having more than two children on mothers' labour supply, we want to see if before the extension of the *Allocation parentale d'éducation*, passing from two to more than two children favoured a temporary interruption or a reduction of work; and if after the extension, passing from two to more than

[18] This is the type of exercise conducted by Martin (1998). She opposes the period before 1962 when family policies where particularly generous towards families having two children and the period after 1962 when they were less. She shows that this evolution of family policies was accompanied with an evolution in women's activity rate: the activity rate of women having two children came closer to that of women having one child whereas it moved away from that of women having three children. However, without using instruments to compute unbiased estimates of the effect of fertility on mothers' labour supply, she cannot conclude for certain that family policies explain these evolutions.

two children do not modify behaviours anymore, in other words if the fact of having more than two children do not cause additional labour supply reductions. Thus, it would not intrinsically be the fact of having a third child that incites mothers to reduce their labour supply, but an influence of the compensated parental leave. The advantage of using a fertility shock is that it permits to evaluate the consequences of this policy apart from the changes it may have caused in terms of preferences in the number of children.

B. Data and descriptive statistics

In order to analyse the effect of the *Allocation parentale d'éducation*, we focus on a sub sample of the sample presented earlier. In this section, we restrict the sample to women that have a spouse who were a priori the only ones concerned by the reform (mothers were alone to who raise a young child benefited from a higher benefit since 1976). Moreover, in order to concentrate on the effects of the extension of the *Allocation parentale d'éducation*, we restrict the period to the 1990-1998 LFS so that we do not interpret the effects of other incentive changes as consequences of the extension of the *Allocation parentale d'éducation*[19]. The benefit being intended only for mothers having at least one child of rank two or more, who is less than three years old, we keep only mothers having two children whose second child is less than three and mothers having three children or more whose third child is less than three[20].

[19] Piketty (2005) stops in 1997, but to compare the effect of having more than two children according to the fact that mothers had their second child before or after July 1994, we also keep 1998 so that mothers having had their second child after the reform had time to have a third child.

[20] Therefore the sample selection is not made on the number of children which would bias our sample, but on the age of children : we prefer to select mothers having at least three children according to the age of the third child rather than the age of the last child, because if the third and the last child have a large age difference, the mother's labour supply at the time when the last child is less than three gives us no information on the impact that had the switch over to more than two children on her labour supply. In other words, we are interested in mothers' labour supply at the time they switch over from two to more than two children (thus when the third child is less than three).

We first study the annual evolution of activity rates[21] and average hours worked per week by active mothers according to the number of children (Graph 1). The activity rate of mothers having one child and that of mothers having three children or more (of whom one is less than three) evolve in the same way between 1990 and 1998. We particularly notice that they do not decrease in 1994-1995. On the opposite, the activity rate of mothers having two children (whose youngest child is less than three) falls between 1994 and 1998 by more than 17 points (whereas it was increasing between 1990 and 1994). We find here the same effects as Piketty (2005): only mothers concerned by the reform experience a fall in their activity rates, and this exactly at the time the reform was implemented. As a consequence, the activity rate of mothers having two children comes closer to that of mothers having three children or more (the difference between activity rates decreases from 37 to 20 points in the period), whereas it moves away from that of mothers having one child (the difference between activity rates increases from 13 to 30 points in the period). The evolution of working hours is not so clear. We still observe the same type of evolution: whereas the average number of hours worked by mothers having two children comes closer to that of mothers having three children or more (the difference decreases from 7 to 4.5 hours in average), it moves away from that of mothers having one child (the difference increases from -0.5 to 2 hours in average). Moreover, during the critical period 1993-1995, whereas hours worked by mothers of one and three children increased slightly, hours worked by mothers of two children decreased. These descriptive statistics are consistent with the idea that the negative effect of having more than two children on mothers' labour supply could to a certain extent come from the *Allocation parentale d'éducation*.

C. Model

[21] Piketty (2005) uses employment rates. We prefer to use here activity rates, i.e. we integrate unemployed, for two reasons. Firstly, we study how the reform modified the effect of having more than two children on working decisions. Yet, an unemployed woman has a priori decided to work, which is not the case of an inactive woman. Even though the limit between the two situations is rather vague and that some inactive women should actually be part of the actives, it seems more relevant to us to consider activity rates rather than employment rates which would be equivalent to considering the actual employment situation of mothers and not the decision they took. Secondly, our activity variable generates two sub samples: the first is constituted of mothers who chose to work and thus not to benefit from the *Allocation parentale d'éducation*, whereas the second is constituted of inactive mothers who are likely to receive the benefit. As unemployment benefits are not compatible with the parental leave benefit, unemployed that have not renounced to unemployment benefits cannot be beneficiaries of the parental leave benefit and thus be part of the second sub sample.

The model used in this paper is inspired from Angrist and Evans (1998)[22]. Let s_j denote the sex of child of rank *j*. It is equal to one if the child is a boy, zero if it is a girl. The *'same sex'* instrument can then be written:

$$ms = s_1 s_2 + (1 - s_1)(1 - s_2)$$

In order to take into account the month and the year of birth of the second child, we created an interaction variable between *'same sex'* and a dummy (*'ape2'*) that indicates if the second child is born before July 1994 or not[23]. While in our sample all mothers with at least three children can have benefited from the *Allocation parentale d'éducation* for their third child, mothers from the first sub sample (whose second child is born before July 1994) cannot have benefited from the *Allocation parentale d'éducation* for their second child whereas mothers from the second sub sample (whose second child is born after July 1994) can have. The dummy variable indicating whether the second child is born before or after July 1994 is also included alone in the regressions. The coefficient associated with this variable gives the effect of the reform on the probability that mothers of two children (with one less than three) are active.

Labour supply variables y_i are linked to the endogenous explanatory variable *'more than two children'* x_i, to the variable *'ape2'*, to the sex of the two eldest children and to other covariates[24] w_i by the following equation:

$$y_i = \alpha'_0 w_i + \alpha_1 s_{1i} + \alpha_2 s_{2i} + \alpha_3 ape2_i + \beta_1 x_i * ape2_i + \beta_2 x_i * nnape2_i + \varepsilon_i$$

The interaction coefficient between *'more than two children'* and *'ape2'* (which is equal to one if the mother had had a third child and that the second is born after July 1994) gives the effect of switching from two to more than two children on labour supply of mothers who could benefit from the *Allocation parentale d'éducation* for their second child. We compare this coefficient with the interaction coefficient between *'more than two children'* and *'non ape2'* (which is equal to one if the mother had had a third child and that the second is

[22] According to Heckman and Macurdy (1985), the use of a two-stage linear probability model is justified when one considers simultaneous equations where the instrument, the endogenous variable and the dependant variable are dummies. Angrist and Evans (1998) as well as Conley (2004) use a model of this type to estimate the impact of fertility on women's labour supply.

[23] For mothers having three children or more, we want to keep only the ones whose third child is born after the 1st of January 1985, date of creation of the *Allocation parentale d'éducation*. Indeed, the objective being to compare mothers who could, if they had a third child, only benefit from the *Allocation parentale d'éducation* for their third child (their second child is born before July 1994) with the ones who could benefit from the *Allocation parentale d'éducation* for their second child (their second child is born after July 1994), we must restrict the sample to women who could benefit from the *Allocation parentale d'éducation* for their third child. As we keep mothers surveyed from 1990 whose second or third child is less than three, this one cannot be born before 1987.

[24] The other covariates are age, age at first and second births, nationality, cohort and diploma.

born before July 1994) which gives the effect of switching from two to more than two children on labour supply of mothers who could not benefit from the *Allocation parentale d'éducation* for their second child.

The first-stage regression connecting *'more than two children'* to the instrument ms_i and to the *'ape2'* variable is:

$$x_i = \pi'_0 w_i + \pi_1 s_{1i} + \pi_2 s_{2i} + \pi_3 ape2_i + \gamma_1 ms_i * ape2_i + \gamma_2 ms_i * nnape2_i + \eta_i$$

D. Results

We report in Table 3 the ordinary least squares and two-stage least square estimates of the effect of *'more than two children'* on mothers' labour supply conditionally on the fact that they had or not their second child before July 1994.

Mothers whose second child is born before July 1994 represent 77% of our sample. The first column gives the proportion of working mothers in each sub sample and the average number of hours worked per week among working women. We notice that the proportion of active mothers is more important among mothers who had their second child before July 1994; and that when they work, they work in average a higher number of hours par week. These results are consistent with Piketty (2005).

First-stage estimates as well as a Fisher's test indicate that the effect of *'same sex'* on the probability of having more than two children is not different according to the second child's date of birth: the reform has not modified the exogenous fertility shock. However, the effect of *'same sex'* on labour supply differs according to the second child's date of birth. Thus, if the second child is born before July 1994, having *'same sex'* eldest children has a negative impact on mothers' working probability whereas if the second child is born after, having *'same sex'* eldest children has no impact on mothers' working probability. However, the effect of *'same sex'* on hours worked does not differ significantly according to the fact that the second child is born before or after July 1994, but the estimates are imprecise. The instrumental variable estimates confirm these effects. Mothers who had their second child after the extension of the benefit do not suffer anymore from a negative effect on their labour supply when switching from two to more than two children. In other words, when a mother had a second child after July 1994, that is when she could benefit from the *Allocation parentale d'éducation* for her second child, the birth of a third child did not cause additional withdrawal from the labour market. Thus, before 1994, mothers withdrew from the labour market after having a third child, whereas after 1994, they withdraw after the second child.

Consequently, the withdrawal decisions of mothers with at least two children seem to be mainly linked to the financial incentives of the *Allocation parentale d'éducation*. This is consistent with Piketty's (2005) result indicating that among the 220 000 mothers who benefited from the full rate benefit for their second child at the end of 1997, at least 35% (and probably more than 50%) would not have stopped working without this new financial incentive.

Nevertheless, other explanations may account for these results. On the one hand, the drop in activity rates of mothers' with two children from 1994 could result from a specific modification in their socio-economic characteristics. For example, if their average education level had decreased in this period relatively to that of other mothers; or, if mothers with two children had always been less graduated than others, but that the effect of the diploma on the activity probability had increased in the period. Piketty (2005) shows that this is not the case. We also have included these individual characteristics in our regressions, and the effect of switching to more than two children on mothers' labour supply differs before and after the reform.

On the other hand, as we work with an instrumental variable, in order to attribute the decrease in the effect of having more than two children on mothers' labour supply to the reform, we have to make sure that the reform has not modified the preferences and characteristics of mothers who are concerned with the fertility shock. In fact, if the reform had altered the effect of having same sex eldest siblings on the probability of having a third child (preference modification), this change could be the cause of the decrease in labour market withdrawals following the birth of a third child. In what sense could the reform had change parents preferences as for the sex mix of their siblings? Intuitively the story could be that before July 1994, only mothers with three children or more can benefit from the *Allocation parentale d'éducation*. It is then possible that mothers who wish to benefit from it are incited to have a third child. In this case, the financial incentive would have created opportunistic behaviours consisting in having a third child. This behaviour should then be logically less dependant on the sex of the two eldest siblings before than after the reform, when there is no more financial incentive to have a third child. But, according to Table 3, we observe the opposite evolution: the effect of *'same sex'* on the probability to have a third child is non significantly higher before 1994 than after. Moreover, in 1994 the financial incentive disappear as mothers with two children can also benefit from the *Allocation parentale d'éducation*. We should then observe a decline in fertility rates of rank three from 1995

among two children mothers (whose youngest child is less than three). According to Graph 2, this is not the case: we observe a quite important decrease in 1994 but that was initiated since 1993 and that reverses in 1995 and that can consequently not be attributed to the extension of the *Allocation parentale d'éducation*. So it seems that the reform has not modified parents' preferences. Besides, we checked that there are no differences in demographic characteristics between mothers having same sex siblings and those having different sex siblings, before and after the reform. The results in Table 4 show that even though mothers' characteristics have evolved between the two periods, this evolution has been identical for mothers having same sex siblings and those having different sex siblings. The *'same sex'* instrument can be used before and after the reform: its effect on the probability to have more than two children and on labour supply is not explained by differences in mothers' individual characteristics.

Another way to check that the negative effect of the third child on mothers' labour supply really comes from the incentives induced by the *Allocation parentale d'éducation*, is to study the evolution of this effect according to the fact that the second child is born before or after July 1994 on subpopulations. We know that the *Allocation parentale d'éducation* is particularly incentive for some categories of women. For example, Afsa (1998) puts forward the fact that the beneficiaries of the *Allocation parentale d'éducation* are mostly low educated young women.

Consequently, we should find that if the *Allocation parentale d'éducation* explains the negative effect of the third child on mothers' labour supply, on these subpopulations, this effect should be significantly negative for mothers who had their second child before 1994 (who could not benefit from the *Allocation parentale d'éducation* for their second child), whereas it should be non significant for mothers who had their second child after 1994. On the opposite, for more educated and older mothers, who benefit less from the *Allocation parentale d'éducation*, the effect of the third child on their labour supply should be insignificant whatever is the date of birth of their second child.

According to Table 5, among mothers having no more than the school-leaving certificate, the effect is significantly negative for the ones who could not benefit from the *Allocation parentale d'éducation* for their second child whereas it is insignificant for those who could benefit from it. It is particularly interesting to notice that when the second child is born before July 1994, the effect on low educated mothers is higher than that on the full sample (-0.752 against -0.509 and standard deviations are close)[25].

[25] Concerning higher educated mothers, the sex of the two eldest siblings do not influence their probability of having more than two children. Consequently, the sex of the two eldest siblings cannot be used as an instrument

We find the same type of results when we split ours ample according to the age (Table 6): for mothers aged 34 or 35, the effect of having more than two children on their labour supply is insignificant whatever is the birth date of their second child, whereas for mothers aged 21 to 33 years old, the effect is significantly negative only for those who could no benefit from the *Allocation parentale d'éducation* for their second child[26].

Thus, switching from two to more than two children has a negative effect on mothers' labour supply precisely on the subpopulations and in the periods when the *Allocation parentale d'éducation* was incentive for mothers of three children or more.

These results are also comforted when the same procedure is followed with the instrument *'twins-2'* (Table 7). This time the fertility shock is produced by the birth of twins at the second pregnancy: *'twins-2'* equals one if the second birth is twin, zero otherwise. The negative effect produced by the birth of a third child on the mother's labour supply is insignificant when the second child is born after the reform. Insofar as the results are similar with two instruments that provoke two different fertility shocks, the observed evolution cannot be explained by the evolution of parents' observable characteristics or preferences as a result of the reform[27]. There is no reason why after the reform, the characteristics of parents with same sex siblings should be modified the same way as parents who had twins. Moreover, even if the reform had modified parents preferences as for the sex mix of their siblings and that this change had reflected in the instrumental variable estimates, nothing like this can have happened with the *'twins-2'* instrument, that do not result from a preference. Using *'twins-2'* instrument, the estimates on the average number of hours worked are more precise and indicate that a mother reduces significantly her hours worked when having a third child only if she could not benefit from the *Allocation parentale d'éducation* for her second child. The dichotomisation of the sample between high educated / low educated (Table 8) provides once more interesting results: it seems that higher educated mothers have also been affected by the reform since when their second child is born before 1994, having more than two children reduces their activity. But this effect is lower than that on lower educated. We also find that

on this subpopulation. Then, we cannot use it here to show that having more than two children has no effect on high educated mothers' labour supply, whatever is the birth date of their second child.

[26] Insofar as our sample of mothers is quite young, to study the effect of age, we are obliged to split our sample in a disproportionate way. However, mothers aged 34 and 35 years old represent nevertheless 17% of our sample and standard deviations remain reasonable. As a comparison, mothers having more than the school-leaving certificate represent 20% of our sample.

[27] It is then hardly plausible that the observed evolution of the effect of having more than two children on mothers' labour supply comes in fact from a change in the first-stage effect, namely the effect of *'same sex'* (resp. *'twins-2'*) on the probability of having a third child. It then seems that it is really the reform in the compensated parental leave that explains this change in the effect of having more than two children on mothers' labour supply.

having more than two children has a significant negative effect on hours worked only for low educated who had their second child before 1994. When they remained in the labour market, high educated mothers did not modify their hours worked whereas low educated did.

We check our results with a falsification test on men: as the conciliation burden rests mostly on women, the reform of the *Allocation parentale d'éducation* should not have modified the behaviour of fathers. Before as after, we should not find any effect of having more than two children on their labour supply. This is confirmed in Table 9: whether their second child is born before or after the reform, the effect of having more than two children on mothers' labour supply is insignificant.

All our results go the same way: with the reform, withdrawals from the labour market caused by a third birth disappear. We found no evidence that this could be explained other than by the 1994 reform.

To enlarge our result, we also evaluated the consequences of the extension of the *Allocation parentale d'éducation* on the behaviour of mothers with one and two children (Table 10). As before, if the *Allocation parentale d'éducation* is the cause of mothers' withdrawal from the labour market, we should observe no effect of the second child on mothers' labour supply if they had their second child before 1994, since at that time mothers with one or two children were confronted to the same incentives. On the opposite, for mothers who had their second child after July 1994, switching from one to two children should affect negatively the labour supply of two-child mothers. To identify this effect, we use a shock on the second birth, namely twin birth at the first pregnancy. We interact *'twin-1'* with a dummy which equals one if the mother had her second child after July 1994, and zero if she could not benefit from the *Allocation parentale d'éducation* for her second child (that is if her second child is born before July 1994 or if she only has one child)[28].

[28] The only difference with the previous exercise is that instead of having four modalities (having two children and the second is born before July 1994, having two children and the second is born after July 1994, having three children or more and the second is born before July 1994, having three children or more and the second is born after July 1994), we have only three : having one child, having two children or more and the second is born before July 1994, having two children or more and the second is born after July 1994. As a consequence, so that the effect of the *Allocation parentale d'éducation* can be identified, we remove the principal effect of the *Allocation parentale d'éducation* for the second child from the covariates (dummy which equals one if the second child is born before July 1994, zero otherwise). So, every coefficient can be interpreted relatively to the situation where mothers had only one child: are the differences in labour supply behaviours between mothers with one and two children or more higher after the extension of the *Allocation parentale d'éducation*

Even if mothers whose second child is born after 1994 reduce their labour supply a bit more than others, the exogenous shock of 1994 has only slightly modified the effect of a second birth on mothers' activity rate. On the opposite, an important difference appeared on hours worked according to the number of children: whereas before 1994, having two children or more did not influence the number of hours worked, after 1994, an active mother that had a second child reduced significantly her hours worked.

To sum up, the extension of the *Allocation parentale d'éducation* had mainly two effects. Firstly, the reform introduced differences in hours worked when switching from one to two children or more. Secondly, switching from two to more than two children does not modify anymore labour supply behaviours. Consequently, it seems that because of the reform, whereas before 1994, mothers moved away from the labour market when they had a third child, since 1994, the first withdrawals occur for the second birth. Labour market withdrawals then seem to depend more on financial incentives than on the number of children.

The effect of the number of children on mothers' labour supply seems to be partly indirect: it comes from the financial incentives. When they are exclusively directed towards mothers with three children or more, they withdraw from the labour market; but when they are also directed towards mothers with two children, working adjustments occur from the second child. The effects of financial incentives are consequently extremely important: a high proportion of beneficiaries of the *Allocation parentale d'éducation* would not have stopped working without this support. We thus need to wonder whether the *Allocation parentale d'éducation* gives the possibility for mothers, who wanted to, to withdraw in which case, it should be reformed in order for all parents have this opportunity, and especially fathers and highly educated mothers (for example, the amount of the benefit could depend on the initial wage, the leave could be shorter, and a guarantee to find one's employment back could be introduced). But, insofar as 40% of beneficiaries declare that they would have preferred to keep on working, we must wonder whether the *Allocation parentale d'éducation* is not used more as an exit to a difficult situation on the labour market than by a choice of mothers to take care of their children. According to Piketty (2005), an important proportion (about one third) of women that were incited to become inactive because of the *Allocation parentale d'éducation* would have been unemployed in absence of this benefit. If the *Allocation parentale d'éducation* is based on the idea that each parent must have the choice between stopping their activity to raise his children and continue working while having satisfactory

child care[29], it seems that the *Allocation parentale d'éducation*'s device do not meet these requirements. It would then be appropriate to search elsewhere the solutions to solve insertion problems on the labour market that some women face while developing child care benefits that can give them the opportunity to make a free choice. In the end, the *Allocation parentale d'éducation* is not a policy of conciliation between work and family life since it increases the negative effect of the number of children on mothers' labour supply. It is rather an alternation policy since it incites eligible mothers to withdraw temporarily from the labour market.

[29] In its report (2007) for Dominique de Villepin, Valérie Pécresse insists on the fact that the ultimate objective is to offer a free choice to families.

V. The supply for child care

A. Related literature

An important number of studies emphasize that the insufficient supply for child care could harm the conciliation between work and family life[30]. Some researchers put forward the fact that the difficulty to find a possibility of child care for children aged less than three could incite mothers to reduce or cease their professional activity to take care of their child[31] in particular in disadvantaged backgrounds. Thus, we may think that an increased development of child care would give the opportunity to mothers to make a free choice between working and taking care of their children full time.

To test the impact of the availability of child care on mothers' labour supply, we can use a natural experiment, namely the heterogeneity in the geographical distribution of two-years-old in pre-elementary public schools[32]. In France, all children aged three must have a space in a pre-elementary public school close to their residence if their parents ask for it. According to a survey on child care, led in 2002 by an administration (Drees), in June 2002, 97% of children aged three by the 31st of December 2001 were in school. On the opposite, the schooling of two-year-olds depends on the number of spaces: the law indicates that children who are two by the start of the new school year can be accepted in pre-elementary public schools if spaces are available (Blanpain, 2006). As a result, we observe a high heterogeneity in the geographical distribution of two-year-olds in pre-elementary public schools: At the beginning of 2005 school year, the schooling rates of two-years-olds in pre-elementary public schools varied by departments from 4% to 66%. Consequently, for mothers who live in a department that provides a high number of spaces for two-year-olds, the pre-elementary public school could have the effect of a free child care, by reducing the mother's opportunity

[30] Méda (2006), report Pécresse (2007).

[31] According to the Observatoire national de la petite enfance, among children living with their two parents and having a mother who works part time, 10% have a mother who works part time because of the lack of child care or because it is too expensive.

[32] The point is not to advocate the generalisation of two-years-olds schooling in pre-elementary public schools. Indeed, as Fabre's (2005) report on child care in Ile-de-France recalls, the two-years-olds schooling in pre-elementary public schools is a contentious idea: child psychiatrists and psychoanalysts give mainly a negative opinion on this issue whereas parents' federations take a stand in favour of this pre-schooling but under some conditions. In any case, the point is here, not to study the consequences of pre-schooling on children's development, but to study its consequences for mothers' labour supply. We simply use the schooling rates of two-years-olds in pre-elementary public schools in order to study whether when a free child care is offered to parents, the consequences of fertility on mothers' labour supply are less important.

cost of working and thus stimulating mothers' labour supply[33]. On the opposite, it can be harder to work for mothers living in departments were the number of spaces provided is low.

Y. De Curraize (2005) tries to identify and measure the effect of pre-elementary public schools' availability on the labour supply of mothers with young children. In France, almost all children aged three and more and one third of children aged two were in pre-elementary public schools in 1982, whereas in 1968, a minority were. By giving the opportunity to mothers to withdraw less often and for a less long time from the labour market after child births, has the increase in pre-elementary public schools' availability contributed to the rise in mothers' employment rate?

To study the effect of this exogenous institutional change on mothers' labour behaviour, he uses the difference-in-difference method. He compares the labour supply behaviour of mothers' concerned with the change, with that of a control group who has not been confronted to the change. A limit of this study is that the access to pre-elementary public schools for children aged two to four was progressive: there is no date such that before no children go to school and after which all go. Insofar as two-year-olds schooling rate increases since 1977, he compares the employment rate evolution of mothers' whose youngest child is two-years-old with that of mothers' whose youngest child is less than two-years-old, opposing the 1969-1976 and the 1977-1981 period. In the first time period, there should be no difference in employment rate between mothers whose youngest child is two-years-old and mothers' whose youngest child is less than two-years-old. In the second time period, there should be a rise in employment rate of mothers whose youngest child is two-years-old and thus a difference between the two groups. Y. De Curraize finds that the effect of two-year-olds schooling in pre-elementary public schools is only significant at the 10% level[34]. According to the author, the difference observed between mothers' employment rates during the first and the second time period could come from the changes in fertility behaviour that occurred in the seventies.

The geographical distribution of two-years-old in pre-elementary public schools provides him with another exogenous variation in the availability level. According to the

[33] According to Blanpain (2006), in June 2002, 37% of children aged two by the 31st of December 2001 were sent to school at least the morning. For the majority of them, school follows parents' care, which is the main child care for pre-school children: among two-year-olds who go to school in the morning, about 68% used to be with their parents at this time of the day. Even if the majority of two-year-olds who go to school go only in the morning, this can give the opportunity to mothers to progressively re-enter the labour market.

[34] Other things equal, the marginal effect of two-year-olds' schooling is reduced : the difference between employment rate of mothers having a two-year-old child and that of those whose child is less than two is only 2.5 higher in the period when the schooling of two-year-olds was high compared with the period when it was low.

author, these disparities are not the consequence of geographical variation in mothers' employment rates. The positive effect of pre-elementary schooling on the labour supply of mothers with young children will be confirmed if the difference between the employment rates of the treatment and control group is higher in departments where two-year-olds' schooling is high. The results indicate that the difference in employment rates according to the age of the child is not higher in departments where two-year-olds' schooling is high. The author explains that departments where two-year-olds' schooling is high are also more rural, and religion is more important. Thus, it should be checked that this un-convincing result is not due to the fact that despite the opportunity of sending their child to school earlier, mothers living in these departments do not work more than others, but for other reasons than the availability of child care. We can add that most children who go to school at age two, only go part time, which do not completely solve the issue of child care and could explain its limited impact on mothers' activity. He recalls that his result does not imply that two-year-olds' schooling has no effect on mothers' labour supply.

Beyond the direct effect that two-year-old schooling can have on mothers' labour supply, it can also affect the conciliation between work and family life. Early schooling possibilities may affect simultaneously fertility and working decisions, but above all they may alter the effect of the number of children on mothers' labour supply. Using the *'same sex'* instrument that enables to evaluate the effect of having more than two children on mothers' labour supply, we wonder if in departments where two-year-olds' schooling is high, the effect of fertility on mothers' labour supply is lower than in departments where two-year-olds' schooling is low. The question we address is whether the activity rate difference between mothers with same sex siblings and mothers with different sex siblings is higher in departments where two-year-olds' schooling is low than in departments where two-year-olds' schooling is high (that is when mothers with same sex siblings, who more often have a third child, are less disadvantaged).

We study in this section if the effect of having more than two children on mothers' labour supply is less important in departments where two-year-olds' schooling is high. Using a fertility shock enables us to assess the consequences of a higher schooling supply for children aged two apart from changes it could cause in terms of preferences in the number of children.

B. Data and descriptive Statistics

Firstly, we have to create two groups of department: the ones where the schooling rate for two-year-olds' is high and the ones where it is low. Insofar as we pile up 13 survey years (1990 to 2002), there should not be too much change during the period. In other words, the classification of departments according to the schooling rate for two-year-olds should not be too different in the beginning and in the end. We use the two-year-olds' schooling rates in 1997 and 2003 (Graph 3)[35]. We classify in the group of high schooling rate for two-year-olds the departments that were in the first third in 1997 and in 2003 (we remove those whose schooling rate for two-year-olds' collapsed between 1997 and 2003). In the same way, we classify in the group of low schooling rate for two-year-olds the departments that were in the last third in 1997 and 2003 (we remove those whose schooling rate for two-year-olds collapsed or increased importantly between 1997 and 2003). The list of departments and their classification is provided in annex. Our two groups are consistent with other studies according to which the schooling rate for two-year-olds' is traditionally high in the West, the North, the Centre and low in Ile-de-France, Alsace and South-East.

We restrict the sample to women with a spouse. In addition, since the objective is to measure how a higher schooling supply for two-year-olds can alter the effect of having more than two children on mothers' labour supply, we decided to restrict the sample to mothers whose second child is two-years-old (for mothers with two children) and to mothers whose third child is two years old (for mothers with at least three children)[36].

Our sample contains 7245 observations, among which about 60% are in the group where the schooling rate for two-year-olds is low.

C. Model

We use the same model as previously. In order to consider the living department, we created an interaction variable between *'same sex'* and a dummy (*'highrate'*) that indicates if the household lives in a department where the schooling rate for two-year-olds is high. The

[35] We have no similar data for previous years.

[36] As in the previous section, the sample selection is not made on the number of children which would bias our sample, but on the age of children : we prefer to select mothers having at least three children according to the age of the third child rather than the age of the last child, because if the third and the last child have a large age difference, the mother's labour supply at the time when the last child is two gives us no information on the impact that had the switch over to more than two children on her labour supply. In other words, we are interested in mothers' labour supply at the time they switch over from two to more than two children (thus when the third child is two).

dummy variable indicating whether the household lives in a department where the schooling rate for two-year-olds is high is also included alone in the regressions. The coefficient associated with this variable gives the difference between the activity probability of mothers who live in a department where the schooling rate for two-year-olds is high and that of mothers who live in a department where the schooling rate for two-year-olds is low.

Labour supply variables y_i are linked to the endogenous explanatory variable *'more than two children'* x_i, to the variable *'high rate'*, to the sex of the two eldest children and to other covariates[37] w_i by the following equation:

$$y_i = \alpha'_0 w_i + \alpha_1 s_{1i} + \alpha_2 s_{2i} + \alpha_3 highrate_i + \beta_1 x_i * highrate_i + \beta_2 x_i * lowrate_i + \varepsilon_i$$

The interaction coefficient between *'more than two children'* and *'highrate'* (which is equal to one if the mother had had a third child and resides in a department where the schooling rate for two-year-olds is high) gives the effect of switching from two to more than two children on labour supply of mothers who live in a department where the schooling rate for two-year-olds is high. We compare this coefficient with the interaction coefficient between *'more than two children'* and *'lowrate'* (which is equal to one if the mother had had a third child and resides in a department where the schooling rate for two-year-olds is low) which gives the effect of switching from two to more than two children on labour supply of mothers who reside in a department where the schooling rate for two-year-olds is low.

The first-stage regression connecting *'more than two children'* to the instrument ms_i and to the *'high rate'* variable is:

$$x_i = \pi'_0 w_i + \pi_1 s_{1i} + \pi_2 s_{2i} + \pi_3 highrate_i + \gamma_1 ms_i * highrate_i + \gamma_2 ms_i * lowrate_i + \eta_i$$

D. Results

We report in Table 11 ordinary least square and two-stage least square estimates of the effect of *'more than two children'* on mothers labour supply conditionally on the fact that they live in a department where the schooling rate for two-year-olds is high or low.

Results are not very convincing in the sense that all coefficients from instrumented regressions are insignificant. However, it is worth noticing that the effects go the right way: for mothers living in departments where the schooling rate for two-year-olds is low, having more than two children has a non significant negative effect on their activity probability and hours worked, whereas these effects are insignificantly positive in departments where the

[37] The other covariates are age, age at first and second births, nationality, cohort and diploma.

schooling rate for two-year-olds is high. We then ask whether this insignificance comes from the imprecision of estimates (standard deviations are rather high) or from the fact that there is no effect.

We checked that there was no bias due to endogenous location of households, namely that households' geographical distribution according to the sex of the eldest siblings is random. In departments where the schooling rate for two-year-olds is high (resp. low), the observed number of households with same sex siblings is identical to the theoretical number[38] (first part of Table 12). In particular, there are no more households with same sex siblings in the departments where the schooling rate for two-year-olds is low. If this was not the case, it could be that the higher negative correlation between the sex of the eldest siblings and mothers' labour supply in departments where the schooling rate for two-year-olds is low is fallacious. In other words, it would be possible that this higher negative correlation does not come from the fact that in these departments having more than two children has a bigger negative impact on mothers' labour supply than in other departments, but from a coincidence of two phenomenon: there are more families with same sex siblings, in which mothers' labour supply is lower.

Besides, this strategy enables to solve the problem linked to the fact that departments with low levels of schooling for two-year-olds may be characterised by other elements which affects mothers' labour supply. Indeed, suppose that in departments where the schooling rate for two-year-olds is low, mothers' activity rate has always been lower and fertility rate higher for religious or cultural reasons. These reasons may explain that the schooling rate for two-year-olds is low. In this case, the relationship is inverted: it is not the schooling rate that explains labour supply, but the low activity which caused a low schooling rate for two-year-olds. But, insofar as households with same sex siblings are randomly distributed, having same sex siblings is not correlated with local characteristics. Thus, instrumentation enables to measure other things equal the effect of having more than two children on mothers' labour supply. Moreover, De Curraize (2005) explains that the hypothesis according to which schooling rates depend more on the evolution of supply, than on the level of demand is credible since we are in a situation of shortage, of demand rationing.

We check (lower part of Table 12) that for a given group of departments (for example those where the schooling rate for two-year-olds is high), mothers with same sex siblings are

[38] For the departments where the schooling rate for two-year-olds is high (resp. low), the theoretical number of households with same sex siblings is equal to the product of the total number of households with same sex siblings in our sample by the proportion of observations that belong to the group where the schooling rate for two-year-olds is high (resp. low).

not significantly different from mothers with different sex siblings. Consequently, differences between these two groups in terms of fertility and activity cannot be attributed to differences in individual characteristics of these mothers other than the sex of their eldest children.

We then try to identify if the non convincing results we found are due to the lack of precision of the estimates or to the fact that schooling at two-years-old has no effect on the link between having more than two children and women's labour supply. We reproduce the same exercise we did previously on other samples on the one hand, and with the *'twins-2'* instrument on the other hand.

Table 13 gives the result for married men aged 21 to 35 having at least two children and whose second or third child is two years old. The estimated coefficients with the instrumental variable method are even less significant than for mothers and the sign of the coefficients is inverted: in departments where the schooling rate for two-year-olds is low, having a third child has a non significant positive effect on fathers' probability to work, whereas it is non significantly negative in departments where the schooling rate for two-year-olds is high. Table 14 gives the result for a larger sample of mothers: we keep mothers whose second or third child is aged two to ten. This extension of the sample has two advantages : it increases the sample and consequently the precision of the estimates, but also it makes it possible to study long term effects that two-years-old schooling could have. However, the disadvantage of this strategy is that with the LFS there is no way to know where the family lived at the time their second or third child was two. They may have moved between the moment when the schooling rate for two-year-olds was important to them and the moment they were surveyed. In particular, some parents could have moved from a department where the schooling rate for two-year-olds was low to a department where the schooling rate for two-year-olds is high or inversely. Results are nevertheless interesting: in departments where the schooling rate for two-year-olds is high, the effect of having more than two children on mothers' labour supply switches from 0.402 to 0.100 and remains insignificant, whereas in departments where the schooling rate for two-year-olds is low, it switches from -0.736 to -0.662 and becomes significant. Consequently, this sample extension provokes a significant reduction of standard deviations and of the coefficient in departments where the schooling rate is high. These results rather seem to indicate that the insignificance of former results in departments where the schooling rate for two-year-olds is low is due to a lack in precision.

The use of *'twins-2'* as instrumental variable (Table 15) tends to comfort this idea. We find that in departments where the schooling rate for two-year-olds is high, the effect of

having more than two children on mothers' labour supply is not significant, whereas in departments where the schooling rate for two-year-olds is low, the effect is significantly negative. However, when using twins as instrumental variable, results should be interpreted with caution given the specificities presented by mothers of twins.

Table 16 gives the results when *'twins-1'* is used as an instrument to measure the effect of having more than one child on mothers' labour supply. It is worthwhile noticing that in this case, whatever the department, having a second child has a negative effect on mothers' labour supply. According to these results, since we observe no difference according to the schooling rate for two-year-olds, it does not seem to affect the conciliation between work and family life for parents of two children, but it seems to have an effect for parents of three children for whom we observe a different effect of fertility on activity according to the schooling rate for two-year-olds in the department of residence.

Our results seem to suggest that the schooling rate for two-year-olds has a small effect on the opportunities for mothers to reconcile work and family life. However, studies from the Ministry of Education show that since pre-elementary public schools are not intended for two-years-old children, it is maladaptive and cannot constitute a sustainable solution. The development of more adapted and low cost child care could have a higher impact on mothers' labour supply since it could incite mothers who did not want to pre-school their children to return on the labour market.

The weakness of our results could come from the fact that what counts is not just the schooling rate for two-year-olds but the total supply of low cost child care. Yet, the geographical distribution of schooling rate for two-year-olds is complementary of other low-cost child care. According to Bailleau (2007), there is a high level of collective child care centres in South-East, Alsace and Ile-de-France whereas it is weak in West, North and Centre. It is thus exactly were schooling rate for two-year-olds are low that the level of collective child care is high and vice versa. As a consequence, it could be more relevant to distinguish the departments according to the whole supply of low cost child care. However, the problem with this is that unlike the schooling rate for two-year-olds, the level of collective child care may be endogenous and result from the demand of mothers who wish to keep on working.

Conclusion

According to OECD, "family policies are defined as those policies that increase resources of households with dependent children; foster child development; reduce barriers to having children and combining work and family commitments; and, promote gender equity in employment opportunities." We showed in this report that some French family policies do not reach the goals in terms of conciliation and equity.

In particular, we showed that the compensated parental leave increases the negative effect of having more than two children on mothers' labour supply, and thus does not facilitate the conciliation between work and family life. It seems especially to have two major defects: some mothers (the highly educated for example) and fathers are in practice excluded from the device although they could wish to benefit from it; whereas others are financially incited to take it although they would have preferred to keep on working. Yet, the parental leave must give the opportunity to each parent to freely choose to raise its children, and thus reduce inequalities between men and women, and between women themselves. A shorter and better compensated parental leave could reduce the non-incentive character of the parental leave for some segments of the population.

Moreover, the parental leave must not be an escape hatch for women facing difficulties to enter the labour market since it is not its role. The role of employment policies, which is particularly to find better solutions for these women that wish to work more, must not be confused with that of family policies, which must help parents improve the combination of professional and private life: raising children must be an active choice and not a by default choice.

Concerning child care, our work partly shows that when the schooling rate for two-years-old is high, mothers' labour supply depends less on the number of children. Thus, conciliation burden seem to be less heavy for mothers. These results are consistent with that of other studies which put forward the need to develop child care in order to improve the conciliation between work and family life[39]. In particular, the Barcelona European Council has set objectives for 2010 concerning the setting up of child care facilities for at least 90% aged three to the age of compulsory schooling, and for at least 33% of children aged less than three. Even if France already meets these requirements, it seems that increasing child care

[39] Pécresse (2007), Périvier and Méda (2007), Méda, Simon and Wierink (2003), Thévenon (2004).

supply would be necessary, in particular for children less than three, in order to give the possibility to mothers to work as much as they want, but also in order to favour gender equality, and equality between women of different social groups.

We evaluated the consequences of some family policies in terms of conciliation between work and family life for mothers with a methodology that enables to capture how a specific family policy alters the effect of the number of children on mothers' activity. A natural extension of this work would be to evaluate with the same methodology the recent modifications introduced in the compensated parental leave.

For example, the creation in 2004 of a six month benefit for mothers of one child could have the same type of effect than that observed on two-children mothers after the 1994 reform. It would thus be interesting to study if since 2004, the activity rate of one child mothers has significantly decreased. Has the negative effect of having more than one child on mothers' labour supply decreased? To answer this question, we must wait at least 2008 so that women who received the benefit for their first child "had time" to have a second child.

Since the 1st of July 2006, the parents who have at least three children can chose a compensated parental leave restricted to one year but that is better compensated (750 euros). This flexibility would be particularly interesting to evaluate since it enables to see if such a device has attracted more educated women and men, but also if it gave the possibility for some mothers to withdraw less durably from the labour market and thus improve the conciliation between work and family life.

Concerning child care, it could be interesting to evaluate how the introduction of the *Complément de libre choix du mode de garde* for children aged zero to six and born after the 1st January 2004 has altered the effect of fertility on activity. Thus, if increasing child care benefits and making them more accessible, conciliation has improved for mothers.

This methodology could also give some elements of explanation on the differences observed between countries. The effect of fertility on mothers' activity differs across countries. These differences could partly come from differences in family policies implemented in the different countries. By evaluating the effect of family policies in different countries, it may be possible to evaluate in each country how the effect of fertility on activity is due to family policies.

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Table 1: Descriptive statistics, women aged 21-35 with two or more children

Variable	Means and (standard deviations)	
	All women	Women with spouse
Number of children	2,43 (0,74)	2,43 (0,74)
Women with more than two children (1)	0,320 (0,466)	0,321 (0,467)
Women whose 1st child was a boy (s_1)	0,512 (0,500)	0,512 (0,500)
Women whose 2nd child was a boy (s_2)	0,510 (0,500)	0,510 (0,500)
Women whose 1st and 2nd child were boys	0,263 (0,440)	0,262 (0,440)
Women whose 1st and 2nd child were girls	0,241 (0,428)	0,240 (0,427)
First two children are same sex (1)	0,504 (0,500)	0,502 (0,500)
2nd birth was a twin	0,010 (0,099)	0,010 (0,099)
Age	31,4 (3,0)	31,4 (3,0)
Age at 1st birth	22,7 (3,4)	22,9 (3,4)
Worked for pay (1)	0,619 (0,486)	0,608 (0,488)
Worked part time (1)	0,394 (0,489)	0,399 (0,490)
Average hours worked per week	27,7 (16,7)	27,5 (16,8)
Labor income	6423 (12255)	6432 (11968)
Number of observations	69386	64108

(1) : these are proportions.

Source: labour force surveys 1990-2002, Insee.

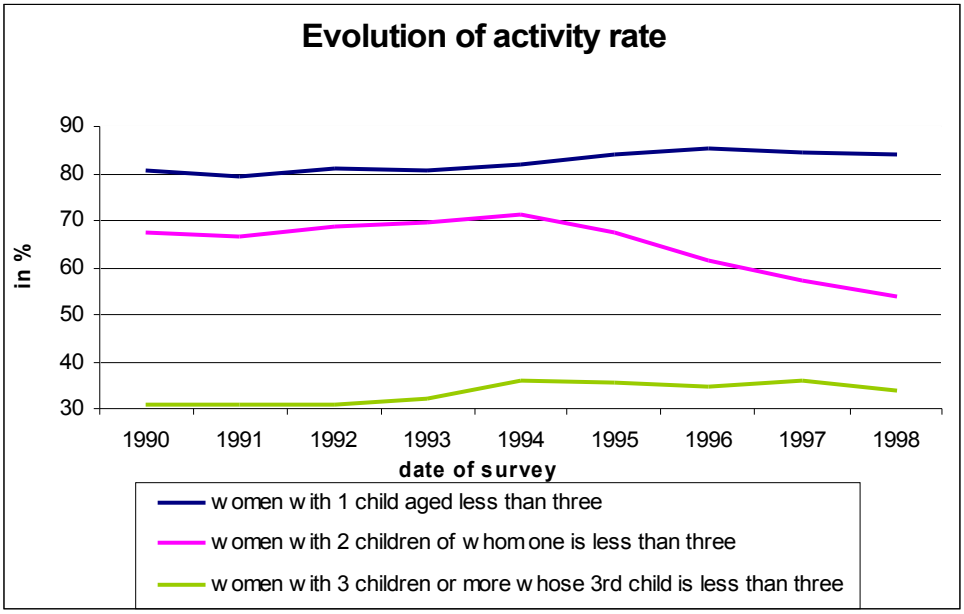
Sample: women aged 21-35 with at least two children.

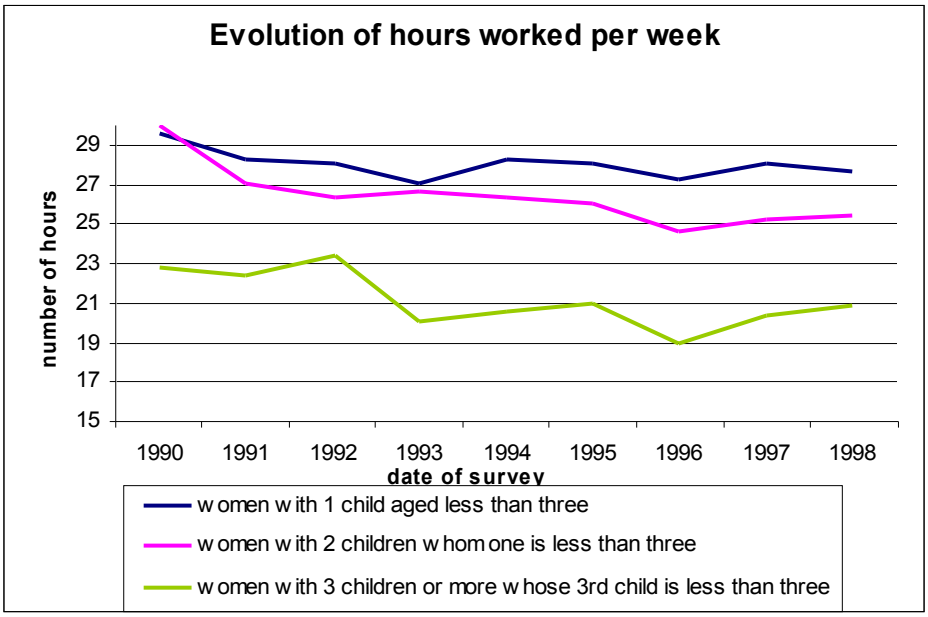
Table 2: Women's activity and fertility rate in 2004

Country	Activity rate	Fertility rate
Italy	50,60%	1,33
Hungary	54,00%	1,28
Greece	54,10%	1,29
Luxemburg	55,90%	1,69
Spain	57,70%	1,32
Ireland	58,00%	1,93
Poland	58,20%	1,23
Czech Republic	62,20%	1,22
Slovakia	62,90%	1,24
France	63,80%	1,91
Austria	64,20%	1,42
Germany	65,80%	1,36
Australia	66,90%	1,77
Portugal	67,00%	1,4
Netherlands	67,80%	1,73
United States	69,20%	2,06
United Kingdom	69,60%	1,63
Finland	71,90%	1,8
Switzerland	73,90%	1,42
Norway	75,70%	1,83
Denmark	76,10%	1,78
Sweden	76,60%	1,75
Island	81,80%	2,04

Source: INED (Observatoire démographique européen et Evolution démographique récente des pays développés, Population, 3, 2006) for fertility indicators (average number of children per woman) and OECD for activity rates of women aged 15-64.
The activity rate has been calculated dividing the concerned active population by the concerned total population. For example, the activity rate of French women aged 15-64 = number of French active women aged 15-64 / number of French women aged 15-64.

Graph 1





Source: labour force surveys 1990-1998, Insee.
Sample: mothers with a spouse aged 21-35 and with at least one of the three first children aged less than three.

Table 3: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,528	0,019	-0,004	-0,171	-0,248
		(0,009)	(0,013)	(0,029)	(0,563)
2nd child born < 1994	0,564	0,027	-0,014	-0,334	-0,509
		(0,005)	(0,007)	(0,009)	(0,249)
B. Results for *hours / week*					
2nd child born >= 1994	23,0	0,019	-1,110	-6,606	-59,953
		(0,009)	(0,731)	(2,106)	(39,821)
2nd child born < 1994	26,3	0,027	-0,499	-11,129	-19,937
		(0,005)	(0,390)	(0,598)	(15,569)
N	22780	22780	22780	22780	22780

Source: labour force surveys 1990-1998, Insee.

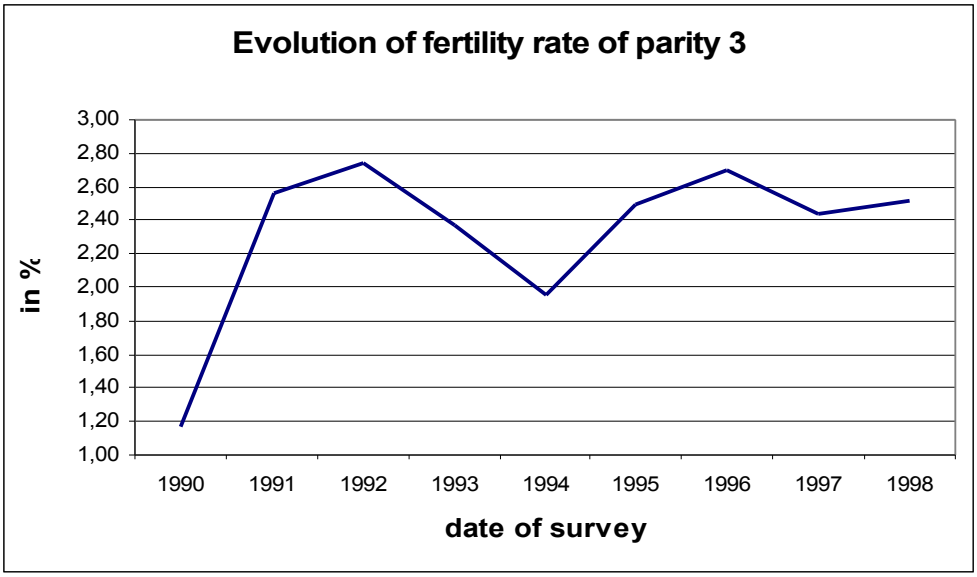
Sample: women with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the *Allocation parentale d'éducation* is included in the equation.

Standard errors are reported in parentheses.

Graph 2



Source: labour force surveys 1990-1998, Insee.
Sample: mothers with a spouse aged 21-35 with at least two children and whose last child is less than three.
The fertility rate of parity three gives the proportion of mothers in the sample that had a third child a given year.
Reading: in 1995, among mothers with a spouse aged 21-35 with at least two children and whose last child is less than three, 2.5% had a third child.

Table 4: Differences in means for demographic variables by *'same sex'* for mothers that could benefit from the *Allocation parentale d'éducation* for their second child

Var.		Age	Age at first birth	Age at second birth	French nationality	Age at the end of studies	Diploma	2nd birth after 1994	Number of children	3rd child
	MS (1)	29,9938	24,7560	28,4106	0,9270	19,3477	0,2413	1,0000	2,0641	0,0618
		(0,0628)	(0,0651)	(0,0625)	(0,0051)	(0,0922)	(0,0084)	(0,0000)	(0,0050)	(0,0047)
	DS (2)	30,0842	24,7837	28,5347	0,9284	19,3592	0,2369	1,0000	2,0399	0,0385
		(0,0607)	(0,0638)	(0,0605)	(0,0050)	(0,1049)	(0,0083)	(0,0000)	(0,0040)	(0,0038)
	Diff	-0,0904	-0,0277	-0,1240	-0,0014	-0,0115	0,0044	0,0000	0,0241	0,0233
		(0,0872)	(0,0912)	(0,0869)	(0,0072)	(0,1397)	(0,0118)	(0,0000)	(0,0064)	(0,0061)

(1): sub sample of mothers whose two eldest children are same sex.
(2): sub sample of mothers whose two eldest children are different sex.
Source: labour force surveys 1990-1998, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children who could benefit from the Allocation parentale d'éducation for their second child.
Standard errors are reported in parentheses.

Differences in means for demographic variables by *'same sex'* for mothers that could not benefit from the *Allocation parentale d'éducation* for their second child

Var.		Age	Age at first birth	Age at second birth	French nationality	Age at the end of studies	Diploma	2nd birth after 1994	Number of children	3rd child
	MS (1)	30,2291	23,4885	26,8993	0,9125	18,4271	0,1869	0,0000	2,4033	0,3806
		(0,0332)	(0,0346)	(0,0354)	(0,0030)	(0,0544)	(0,0041)	(0,0000)	(0,0057)	(0,0051)
	DS (2)	30,1646	23,3962	26,8798	0,9174	18,4250	0,1904	0,0000	2,3705	0,3485
		(0,0338)	(0,0361)	(0,0359)	(0,0029)	(0,0555)	(0,0042)	(0,0000)	(0,0057)	(0,0051)
	Diff	0,0645	0,0924	0,0195	-0,0049	0,0021	-0,0035	0,0000	0,0328	0,0320
		(0,0474)	(0,0500)	(0,0504)	(0,0042)	(0,0777)	(0,0059)	(0,0000)	(0,0080)	(0,0073)

(1): sub sample of mothers whose two eldest children are same sex.
(2): sub sample of mothers whose two eldest children are different sex.
Source: labour force surveys 1990-1998, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children who could not benefit from the Allocation parentale d'éducation for their second child.
Standard errors are reported in parentheses.

Table 5: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of less graduated mothers

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,460	0,021	-0,014	-0,204	-0,697
		(0,011)	(0,015)	(0,034)	(0,612)
2nd child born < 1994	0,521	0,029	-0,022	-0,349	-0,752
		(0,006)	(0,008)	(0,011)	(0,274)
B. Results for *hours / week*					
2nd child born >= 1994	23,3	0,021	-1,783	-9,552	-102,543
		(0,011)	(0,915)	(3,165)	(58,345)
2nd child born < 1994	27,2	0,029	-0,325	-11,483	-11,670
		(0,006)	(0,457)	(0,720)	(16,900)
N	18221	18221	18221	18221	18221

Source: labour force surveys 1990-1998, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children and with the school leaving certificate at the most.
Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.
Main effect for the *Allocation parentale d'éducation* is included in the equation.
Standard errors are reported in parentheses.

Table 6: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of older mothers

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,622	0,042	0,027	-0,156	0,613
		(0,022)	(0,033)	(0,068)	(0,767)
2nd child born < 1994	0,612	0,022	-0,001	-0,351	0,003
		(0,011)	(0,017)	(0,026)	(0,791)
B. Results for *hours / week*					
2nd child born >= 1994	23,1	0,042	-0,807	-14,071	-35,033
		(0,022)	(1,638)	(3,788)	(97,079)
2nd child born < 1994	25,9	0,022	-1,422	-11,731	-132,028
		(0,011)	(0,870)	(1,422)	(169,998)
N	3723	3723	3723	3723	3723

Source: labour force surveys 1990-1998, Insee.

Sample: women with a spouse aged 34 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the *Allocation parentale d'éducation* is included in the equation.

Standard errors are reported in parentheses.

Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of younger mothers

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,512	0,014	-0,010	-0,174	-0,666
		(0,011)	(0,014)	(0,032)	(0,748)
2nd child born < 1994	0,554	0,030	-0,017	-0,324	-0,562
		(0,006)	(0,008)	(0,009)	(0,257)
B. Results for *hours / week*					
2nd child born >= 1994	23,0	0,014	-1,094	-3,004	-74,679
		(0,011)	(0,818)	(2,537)	(59,774)
2nd child born < 1994	26,4	0,030	-0,259	-9,327	-8,598
		(0,006)	(0,437)	(0,635)	(14,458)
N	19057	19057	19057	19057	19057

Source: labour force surveys 1990-1998, Insee.

Sample: women with a spouse aged 21 to 33 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the *Allocation parentale d'éducation* is included in the equation.

Standard errors are reported in parentheses.

Table 7: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Twins-2*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,528	1,015	-0,105	-0,171	-0,093
		(0,042)	(0,061)	(0,029)	(0,061)
2nd child born < 1994	0,564	0,804	-0,251	-0,334	-0,313
		(0,026)	(0,037)	(0,009)	(0,045)
B. Results for *hours / week*					
2nd child born >= 1994	23,0	1,015	0,525	-6,606	0,698
		(0,042)	(3,609)	(2,106)	(3,633)
2nd child born < 1994	26,3	0,804	-5,807	-11,129	-6,310
		(0,026)	(2,550)	(0,598)	(2,735)
N	22780	22780	22780	22780	22780

Source: labour force surveys 1990-1998, Insee.

Sample: women with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the *Allocation parentale d'éducation* is included in the equation.

Standard errors are reported in parentheses.

Table 8: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of more graduated mothers

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Twins-2*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,747	1,011	-0,071	-0,068	-0,064
		(0,068)	(0,089)	(0,055)	(0,090)
2nd child born < 1994	0,745	0,818	-0,194	-0,277	-0,238
		(0,060)	(0,079)	(0,019)	(0,095)
B. Résultats pour les *heures / semaines*					
2nd child born >= 1994	22,5	1,011	3,178	-5,095	3,397
		(0,068)	(4,818)	(2,875)	(4,971)
2nd child born < 1994	24,0	0,818	-1,680	-10,140	-1,853
		(0,060)	(4,983)	(1,077)	(5,452)
N	4559	4559	4559	4559	4559

Source: labour force surveys 1990-1998, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children and with more than the school leaving certificate.

Other covariates are age, age at first and second birth, diploma, nationality, cohort.

Main effect for the *Allocation parentale d'éducation* is included in the equation.
Standard errors are reported in parentheses.

Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of less graduated mothers

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Twins-2*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,460	1,020	-0,151	-0,205	-0,138
		(0,054)	(0,078)	(0,034)	(0,079)
2nd child born < 1994	0,521	0,800	-0,262	-0,349	-0,329
		(0,029)	(0,042)	(0,011)	(0,052)
B. Résultats pour les *heures / semaines*					
2nd child born >= 1994	23,3	1,020	-4,085	-9,661	-4,077
		(0,054)	(5,537)	(3,164)	(5,513)
2nd child born < 1994	27,2	0,800	-7,176	-11,479	-7,745
		(0,029)	(2,963)	(0,720)	(3,151)
N	18221	18221	18221	18221	18221

Source: labour force surveys 1990-1998, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children and with the school leaving certificate at the most.

Other covariates are age, age at first and second birth, diploma, nationality, cohort.

Main effect for the *Allocation parentale d'éducation* is included in the equation.
Standard errors are reported in parentheses.

Table 9: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the second child is born before/after July 1994, sub sample of fathers

	Men with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,988	0,011	0,001	-0,026	0,078
		(0,011)	(0,003)	(0,006)	(0,147)
2nd child born < 1994	0,993	0,023	0,003	-0,001	0,114
		(0,006)	(0,002)	(0,02)	(0,072)
B. Results for *hours / week*					
2nd child born >= 1994	39,1	0,011	-0,626	3,069	-29,282
		(0,011)	(0,525)	(1,226)	(21,885)
2nd child born < 1994	39,2	0,023	-0,316	-0,831	-11,583
		(0,006)	(0,289)	(0,389)	(10,620)
N	17997	17997	17997	17997	17997

Source: labour force surveys 1990-1998, Insee.

Sample: men with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the *Allocation parentale d'éducation* is included in the equation.
Standard errors are reported in parentheses.

Table 10: Ordinary least square and Two-stage least square estimates of the effect of having more than one child on labour supply conditionally to the fact that the second child is born before/after July 1994

	Women with a spouse				
	Average	1st stage (*More than 1 child)*	Reduced form	OLS	2SLS *Twins-1*
Dependant variable:					
A. Results for *work for pay*					
2nd child born >= 1994	0,528	0,710	-0,293	-0,255	-0,414
		(0,037)	(0,044)	(0,008)	(0,063)
2nd child born < 1994	0,699	0,541	-0,204	-0,202	-0,380
		(0,023)	(0,027)	(0,006)	(0,045)
B. Résultats pour les *heures / semaines*					
2nd child born >= 1994	23,0	0,710	-8,164	-6,734	-10,303
		(0,037)	(2,819)	(0,456)	(3,627)
2nd child born < 1994	27,4	0,541	-2,651	-4,405	-4,708
		(0,023)	(1,643)	(0,339)	(2,578)
N	42217	42217	42217	42217	42217

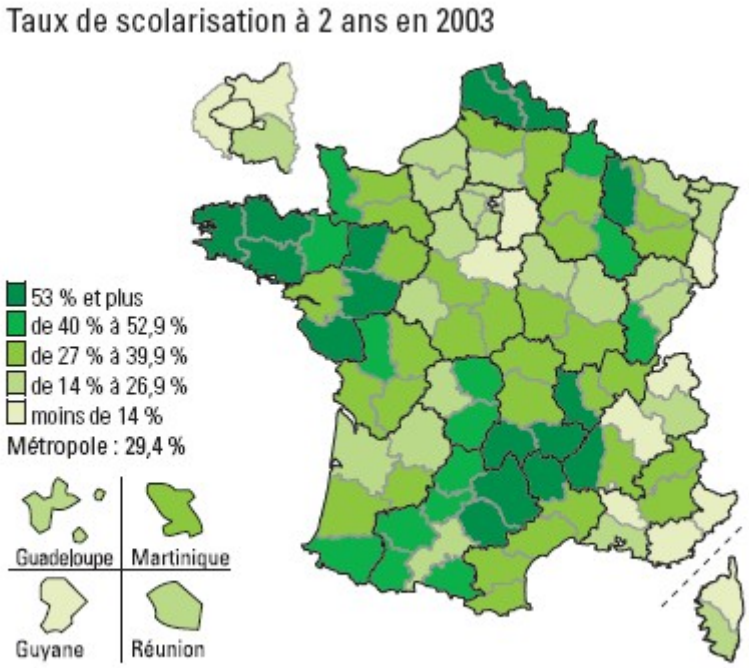
Source: labour force surveys 1990-1998, Insee.

Sample: women with a spouse aged 21 to 35 with at least one child.

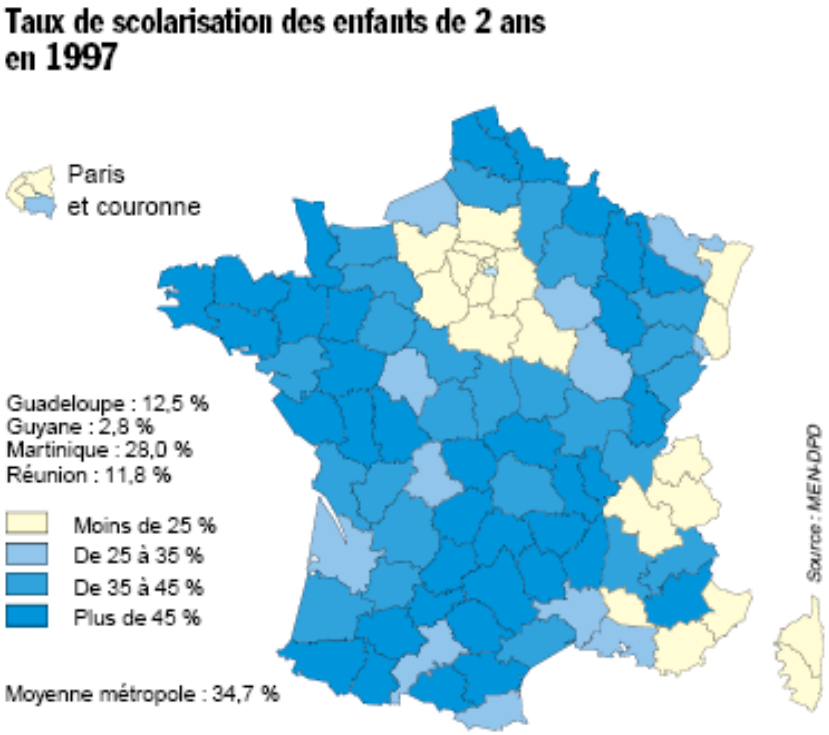
Other covariates are age, age at first birth, diploma, nationality, cohort.

Standard errors are reported in parentheses.

Graph 3: Schooling rate of two-year-olds in 2003 and 1997



Source: Ministry of Education, http://media.education.gouv.fr/file/06/7/3067.pdf



Source: Ministry of Education, ftp://trf.education.gouv.fr/pub/edutel/dpd/geosp4.pdf

Annex

Departments with high schooling rates for two-years-olds:
Departments where the schooling rate was above or equal to 45% in 1997 and above or equal to 40% in 2003.

07 : Ardèche
08 : Ardennes
09 : Ariège
12 : Aveyron
15 : Cantal
19 : Corrèze
22 : Côtes-d'Armor
23 : Creuse
29 : Finistère
32 : Gers
35 : Ille-et-Vilaine
39 : Jura
42 : Loire
43 : Haute-Loire
46 : Lot
48 : Lozère
49 : Maine-et-Loire
50 : Manche
52 : Haute-Marne
53 : Mayenne
55 : Meuse
56 : Morbihan
59 : Nord
62 : Pas-de-Calais
64 : Pyrénées-Atlantiques
65 : Hautes-Pyrénées
79 : Deux-Sèvres
81 : Tarn
82 : Tarn-et-Garonne
85 : Vendée

Departments with low schooling rates for two-years-olds:
Departments where the schooling rate was below 35% in 1997 and below 27% in 2003.

06 : Alpes-Maritimes
13 : Bouches-du-Rhône
2A : Corse-du-Sud
2B : Haute-Corse
21 : Côte d'or
27 : Eure
28 : Eure-et-Loir
31 : Haute-Garonne
33 : Gironde
37 : Indre-et-Loire
38 : Isère
45 : Loiret
57 : Moselle
60 : Oise
67 : Bas-Rhin
68 : Haut-Rhin
73 : Savoie
74 : Haute-Savoie
75 : Paris
76 : Seine-Maritime
77 : Seine-et-Marne
78 : Yvelines
83 : Var
84 : Vaucluse
87 : Haute-Vienne
89 : Yonne
90 : Territoire de Belfort
91 : Essonne
92 : Hauts-de-Seine
93 : Seine-Saint-Denis
94 : Val-de-Marne
95 : Val-d'Oise

Table 11: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the mother lives in a department where the schooling rate for two-year-olds is high/low

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
High rate	0,501	0,014	0,006	-0,264	0,402
		(0,013)	(0,018)	(0,022)	(1,384)
Low rate	0,539	0,021	-0,018	-0,258	-0,736
		(0,010)	(0,014)	(0,019)	(0,687)
B. Results for *hours / week*					
High rate	28,3	0,014	0,518	-4,137	12,400
		(0,013)	(0,943)	(1,407)	(36,402)
Low rate	29,0	0,021	-0,640	-4,506	-25,267
		(0,010)	(0,699)	(1,147)	(28,183)
N	7245	7245	7245	7245	7245

Source: labour force surveys 1990-2002, Insee.

Sample: women with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the schooling rate at two-years-old is included in the equation.

Standard errors are reported in parentheses.

Table 12: Difference between the theoretical and the observed number of *'twins-2'*

	Theoretical number of *Twins-2* in our sample	Observed number of *Twins-2*	Khi-squared statistic
High rate	1365,54	1346	0,280
Low rate	2305,46	2325	0,166

Source: labour force surveys 1990-2002, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children.

Differences in means for demographic variables by *'same sex'* for mothers living in a department where the schooling rate for two-years-olds is high

Var.		Age	Age at first birth	Age at second birth	French nationality	Age at the end of studies	Diploma	High rate
	MS (1)	30,2169	23,8165	27,1233	0,9562	18,8085	0,1761	1,0000
		(0,0832)	(0,0866)	(0,0885)	(0,0056)	(0,1157)	(0,0104)	(0,0000)
	DS (2)	30,2172	23,7079	27,1364	0,9637	18,6756	0,1846	1,0000
		(0,0863)	(0,0914)	(0,0916)	(0,0051)	(0,0743)	(0,0106)	(0,0000)
	Diff	-0,0003	0,1086	-0,0131	-0,0075	0,1329	-0,0085	0,0000
		(0,1199)	(0,1259)	(0,1274)	(0,0076)	(0,1375)	(0,0148)	(0,0000)

(1): sub sample of mothers whose two eldest children are same sex.
(2): sub sample of mothers whose two eldest children are different sex.
Source: labour force surveys 1990-2002, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children who live in a department where the schooling rate for two-years-old is high.
Standard errors are reported in parentheses.

Differences in means for demographic variables by *'same sex'* for mothers living in a department where the schooling rate for two-years-olds is low

Var.		Age	Age at first birth	Age at second birth	French nationality	Age at the end of studies	Diploma	Low rate
	MS (1)	30,6194	24,0865	27,5837	0,8718	18,8696	0,2409	0,0000
		(0,0637)	(0,0726)	(0,0692)	(0,0069)	(0,1194)	(0,0089)	(0,0000)
	DS (2)	30,5856	24,0279	27,6072	0,8818	18,9648	0,2440	0,0000
		(0,0648)	(0,0741)	(0,0707)	(0,0068)	(0,1303)	(0,0091)	(0,0000)
	Diff	0,0337	0,0586	-0,0235	-0,0100	-0,0953	-0,0032	0,0000
		(0,0908)	(0,1037)	(0,0990)	(0,0097)	(0,1767)	(0,0127)	(0,0000)

(1): sub sample of mothers whose two eldest children are same sex.
(2): sub sample of mothers whose two eldest children are different sex.
Source: labour force surveys 1990-2002, Insee.
Sample: women with a spouse aged 21 to 35 with at least two children who live in a department where the schooling rate for two-years-old is low.
Standard errors are reported in parentheses.

Table 13: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the mother lives in a department where the schooling rate for two-year-olds is high/low, sub sample of fathers

	Men with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
High rate	0,989	0,004	-0,006	-0,001	-0,311
		(0,014)	(0,004)	(0,006)	(0,448)
Low rate	0,990	0,016	0,002	-0,006	0,027
		(0,012)	(0,004)	(0,005)	(0,285)
B. Results for *hours / week*					
High rate	39,1	0,004	-0,676	-0,615	-28,502
		(0,014)	(0,714)	(0,923)	(30,408)
Low rate	39,0	0,016	-0,228	-0,986	-13,430
		(0,012)	(0,570)	(0,793)	(23,555)
N	5563	5563	5563	5563	5563

Source: labour force surveys 1990-2002, Insee.

Sample: men with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the schooling rate at two-years-old is included in the equation.

Standard errors are reported in parentheses.

Table 14: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the mother lives in a department where the schooling rate for two-year-olds is high/low, sample of mothers with a child aged two to ten

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Same sex*
Dependant variable:					
A. Results for *work for pay*					
High rate	0,627	0,018	0,001	-0,343	0,100
		(0,007)	(0,008)	(0,009)	(0,476)
Low rate	0,625	0,041	-0,029	-0,334	-0,662
		(0,005)	(0,006)	(0,008)	(0,154)
B. Results for *hours / week*					
High rate	29,1	0,018	-0,321	-4,324	-9,674
		(0,007)	(0,384)	(0,491)	(11,361)
Low rate	29,6	0,041	-0,169	-3,173	-3,767
		(0,005)	(0,300)	(0,420)	(8,504)
N	33270	33270	33270	33270	33270

Source: labour force surveys 1990-2002, Insee.

Sample: women with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the schooling rate at two-years-old is included in the equation.

Standard errors are reported in parentheses.

Table 15: Ordinary least square and Two-stage least square estimates of the effect of having more than two children on labour supply conditionally to the fact that the mother lives in a department where the schooling rate for two-year-olds is high/low

	Women with a spouse				
	Average	1st stage (*More than 2 children)*	Reduced form	OLS	2SLS *Twins-2*
Dependant variable:					
A. Results for *work for pay*					
High rate	0,501	0,879	-0,159	-0,264	-0,170
		(0,070)	(0,102)	(0,022)	(0,132)
Low rate	0,539	0,881	-0,228	-0,258	-0,265
		(0,047)	(0,068)	(0,019)	(0,083)
B. Results for *hours / week*					
High rate	28,3	0,879	11,711	-4,137	13,261
		(0,070)	(6,028)	(1,407)	(7,183)
Low rate	29,0	0,881	4,062	-4,506	4,194
		(0,047)	(3,873)	(1,147)	(4,502)
N	7245	7245	7245	7245	7245

Source: labour force surveys 1990-2002, Insee.

Sample: women with a spouse aged 21 to 35 with at least two children.

Other covariates are age, age at first and second birth, diploma, nationality, cohort and sex of first and second child.

Main effect for the schooling rate at two-years-old is included in the equation.

Standard errors are reported in parentheses.

Table 16: Ordinary least square and Two-stage least square estimates of the effect of having more than one child on labour supply conditionally to the fact that the mother lives in a department where the schooling rate for two-year-olds is high/low

	Women with a spouse				
	Average	1st stage (*More than 1 child)*	Reduced form	OLS	2SLS *Twins-1*
Dependant variable:					
A. Results for *work for pay*					
High rate	0,653	0,520	-0,344	-0,283	-0,572
		(0,060)	(0,072)	(0,012)	(0,098)
Low rate	0,680	0,627	-0,237	-0,241	-0,413
		(0,038)	(0,046)	(0,011)	(0,067)
B. Results for *hours / week*					
High rate	29,2	0,520	2,139	-2,770	3,178
		(0,060)	(4,439)	(0,611)	(5,684)
Low rate	30,4	0,627	1,184	-1,966	1,793
		(0,038)	(2,607)	(0,538)	(3,349)
N	13615	13615	13615	13615	13615

Source: labour force surveys 1990-2002, Insee.

Sample: women with a spouse aged 21 to 35 with at least one child.

Other covariates are age, age at first birth, diploma, nationality, cohort.

Main effect for the schooling rate at two-years-old is included in the equation.

Standard errors are reported in parentheses.