

**CHILDCARE PROVISION AND MOTHERS' LABOUR SUPPLY: EVIDENCE FROM A SCHOOL
REFORM IN BRAZIL**

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September 2013

Abstract

This paper presents the impacts on the mothers' labour supply of a reform on the Brazilian primary education system which took place between 2004 and 2009. This reform anticipated in one year the compulsory enrolment of children in schools, what is supposed to influence the allocation of time of their mothers in leisure and labour. The results show that the imperfect implementation of the program plays a key role on its consequences, by self-selecting the children enrolment in schools for the most educated mothers and of those who have a lower fertility preference. On the mothers' labour supply, instrumental variable estimations show that the reform has a significant influence on the single mothers, contributing for the increase of their participation in the labour markets and their amount of labour time supplied.

Keywords: Childcare; Mothers' Labour Supply; Instrumental Variable Estimation.

JEL Classification: J13; J16; J22.

1. INTRODUCTION

In studies of labour economics, the determinants of the female labour supply appears as one of most relevant topics, regarding its particularities and differences in relation to the male one. The recognition that the female participation follows other rules and characteristics appears as key element for a better understanding of the labour markets structures. Evidences show that the higher the economic development of a society, the higher is the participation of women in its economic life. On the opposite direction, to enforce the increase and the improvement of the female participation in labour market is important socially and politically speaking, even when involving non-economic aspects. Recognizing this, the United Nation Development Program (UNDP) determined as the third of the Millennium Development Goals to “*Promote gender equality and empower women*” (UNDP, 2013), encouraging governments and civil society to design public policies to bring women into the social and economic lives. This way, the understanding and formulation of policies which incentive women to participate in labour markets appear as important topics of research, both because of its academic interest and for the design of policies.

The differences between the female and the male labour supply are mainly related to the fertility cycle women have to face along their lives. The pregnancy, and all the elements it involves, affects women’s allocation of time and skills. Therefore, to provide to them the control on their fertility decision, or the possibility of childcare when they are already mothers, has appeared as extremely important in the empirical literature as an element to empower them economically.

Particularly in developing countries, the participation of women in labour markets is a key element for their economic and social improvement. In these countries, where the participation of women is even lower than when compared to the observed in the developed ones, the design of policies which contribute to their higher economic participation is important and urgent.

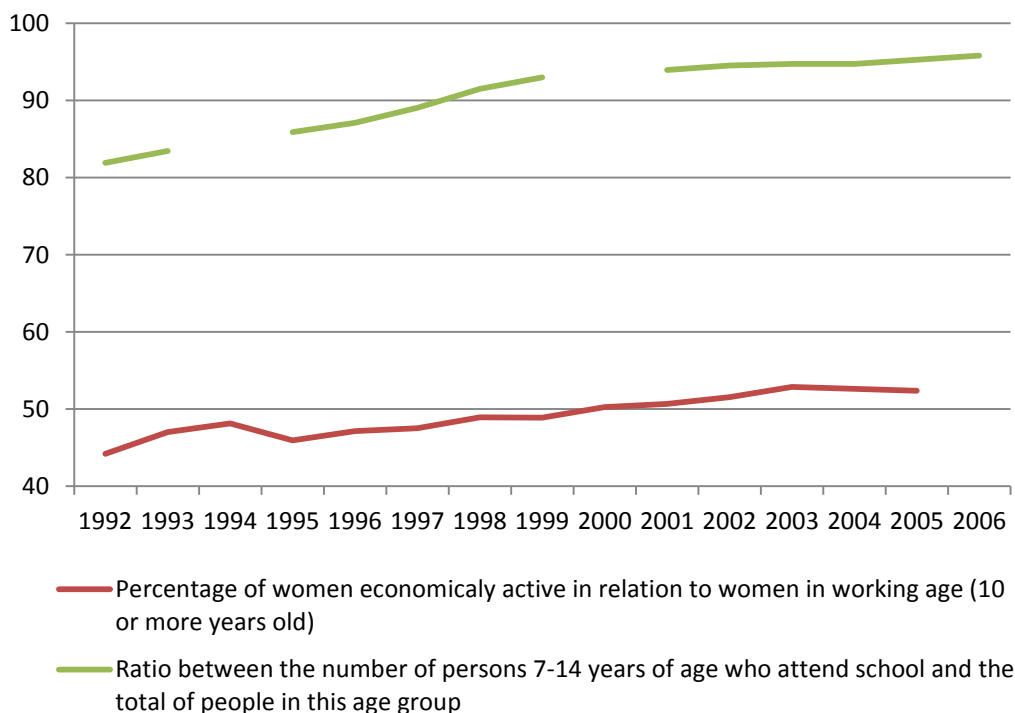
One of these policies is the provision of free childcare to mothers. It is known in the literature about female labour supply, both theoretical and empirical, the importance that free childcare provision has on the female participation in labour markets, providing to the mothers the possibility of leaving their children in a school and supplying labour.

The contribution of this paper to this discussion is to measure the impact of a reform on the children primary education system which took place in Brazil between 2004 and 2009 on the mothers’ labour outcomes of that country. This reform, which made children enrol compulsorily primary schools one year younger, is here interpreted as a provision of free childcare and therefore supposed to have an impact on the labour supply of those mothers affected by the reform.

This expectation is supported by the fact that only recently Brazil has achieved a high level of primary education covering, simultaneously achieving a higher level of female labour participation, as it is

shown by the Graph 1. This graph shows that, between 1992 and 2006, the ratio of children in school age enrolled in primary education schools in Brazil increased from 81.91% to 95.85%, while the ration of women supplying labour in relation to the total of women in working age increased from 44.22% to 52.40% during the same period. It is important to emphasize, however, that in spite of being higher than the observed in the majority of other developing countries, the women’s participation in the Brazilian labour market is still lower when compared to what is found in the developed ones (Costa and Kassouf, 2011).

Graph 1 - Women participation in labour market and enrolment of children in primary schools between 1992 and 2006 in Brazil (in %):



Sources: IPEA and IBGE.

It looks important to understand if there is any causal relation between the children’ school attendance and women’s labour supply increases in Brazil, particularly with this reform the primary education system received along the 2000’s decade. In spite of this correlated phenomena, the number of works about the impact of the increased of free childcare on female labour supply in Brazil is still small (Costa and Kassouf, 2011). This paper aims to cover part of this lack, particularly on the comprehension of the primary education reform on that, what can be also important for the design of future public policies which try to increase the participation of the women in the labour markets.

The next section of this paper presents a brief review of the literature about childcare provision and female labour supply. Later, Brazil’s primary education system reform is explained and the data about it presented and discussed. The look and findings for causal relations between the reform and the

mothers' participation in labour markets are discussed in the final part. Tables with the descriptive analysis of the data and the estimations results are found in the Annex.

2. RELATED LITERATURE

The first discussions about the participation of women in labour markets, its particularities and differences, appeared during the period known as the Great Depression, during the 1920's and 1930's. That time, when unemployment rates achieved unprecedented levels, it was observed a higher participation of women in labour markets trying to complement their household income while their husbands faced strong economic struggles. It was observed, therefore, that the economic role played by women was eventually complementary to that played by men when the household is seen as a production unit. So, women's labour supply can be considered anti-cyclical, with women using to supply more labour during moments of less economic growth, as shown by Humphrey's (1940) and Woytinsk's (1940).

An important contribution would be done later by Becker (1965), who developed a theoretical model where the women's allocation of time is a function of their decision of anticipating or postponing their fertility decision. Women's fertility cycle, therefore, would affect their allocation of skills and time along their whole lives, being the main responsible for the differences between the female and male labour supplies.

An adaptation of this model was made by Connelly (1992), where, considering a nuclear family as a closed production unit, the mother has to decide how long time she will spend on labour, on leisure and on her childcare. This way, she maximizes the following utility function:

$$MaxU = U(X_m, C, t_l) \quad (1)$$

where X_m is her utility with market goods provided by her labour supply, C is her utility taking care of her children, and t_l is her utility spending time on leisure, facing a time constraint, that is defined as:

$$t_m + t_c + t_l = 1 \text{ and } t_c > 0 \quad (2)$$

where t_m is the time spent by the mother in the labour market, t_c is the time spent by the mother taking care of the children, and t_l is the time spent by the mother with leisure. Labour, childcare and leisure fill the whole time, and the time spent taking care of the children is necessarily more than zero. This way, a mother has to allocate a time higher than zero with her childcare, and the left time can be allocated between labour supply and leisure. Consequently, any external shock that diminishes the time spent with childcare will necessarily increase the time spent with leisure and/or work. This external shock can be the provision of childcare, such as a nanny, the presence of a relative at the

household who can take care of the children, or a school where the mother can leave their children during at least part of her day/week time. Other models, such as that developed by Atal (2010), say that labour supply decisions in households among their members is determined endogenously, in a complementary way.

When there is any external variation on the time spent with childcare by the mothers, caused by a free childcare provision, for example, the reallocation of their time between leisure and work depends on the characteristics of the mothers. Mothers with high productivity, such as the higher educated ones, are supposed to prefer more labour instead of leisure. On the other hand, those with lower productivity can prefer leisure and, this way, supply less labour with the decrease of time spend with childcare. Similarly, single mothers are supposed to have a more inelastic labour supply than the married ones, considering that their households may not have other sources of income but that from their own labour, and so single mothers are supposed to demand more childcare and use their new free time more with labour than with leisure. Childcare provision, therefore, can have opposite impacts on the mothers' labour supply depending on their productivity levels, on the household structures, and on the conditions of the labour markets, which will affect differently the income and substitute effects between labour and leisure for these heterogeneous mothers.

The current empirical literature which tests and verifies these hypotheses is extensive. In a general way, it is verified that the presence of children reduces mothers' participation in labour markets and, even when they participate, their wages, in comparison to women without children, is lower. It is also verified that preschool programs are important to increase the participation of mothers in labour markets, and that technological changes, medical advances, higher number of divorces, reduction of the difference of productivity, institutional and cultural changes affect the supply of labour by women as a whole.

In his work, Levison (1990) says that parental childcare and non-parental childcare must be considered differently. Parents are used to see preschool/schools more from the educational point of view, while the other forms of childcare as purely custodial. Besides, full time childcare and part time childcare should also be considered separately, because the first one would be more encouraged for its educational and financial returns while the last one more for the possibilities to increase the mothers' labour supply it creates. With Italian data, Del Boca (2002) also finds differences on the outcomes of the childcare provision, saying it differs depending on the marital status of the mothers and if they are full or part time workers.

Different educational levels of the mothers also affect their decision of supplying labour. It is explained by the fact that higher educated mothers have higher opportunity cost in not supplying labour and providing personal childcare to their children. Following this, Schlosser (2005), with a natural experiment with Arab mothers living in Israel to evaluate the impact of free preschools provision on

their labour supply, verified that it increased the participation of the mothers in labour market, but that this increase occurred mainly of the higher educated ones.

Bhalotra and Umana-Ponte (2012) use data from 153 different demographic and health surveys for 63 developing countries between 1986 and 2006 to estimate a female labour supply equation, where the number of children under five years old is one of the explanatory variables. For Latin American countries, the female labour supply is inversely related to income, and economic recessions are associated to an increase in the supply of labour by women. It is also higher when families are in risk of poverty or when the amount of children in the family is high.

In Brazil, Leone and Hoffman (2004) identify an increase of the female participation in labour market since 1970, mainly because of the increase of their educational level and reduction of their fertility along this time, existing a trade-off between childbearing and labour supply.

Connelly et al (1991) investigates the impact of childcare provision on the female labour supply based on the special questionnaire about childcare of the Brazilian Household Survey Data (PNAD) on 1985. The authors estimate a two stage model for the Brazilian women's labour supply, where the first stage is a probit model for women's labour market participation, and the second one a model for desired labour time for women. The two stages are necessary because the desired labour time model is censored for women who are in labour market. The results show that the presence of children diminishes the probability of a mother supplies labour and that it, by its turn, increases the demand for childcare. The presence of female relatives in the household can substitute the mothers in taking care of the children, having a positive impact on the mother's labour supply decision. Other conclusions of this work are that families will also demand more leisure when they have more children, that the demand for childcare diminishes according to the age of the child, and that the presence of a male household head reduces the likelihood of a woman working.

More recently, Costa and Kassouf (2011) also aim to evaluate the impact of the preschool provision on the female labour supply in Brazil, using now data from the PNADs between 2002 and 2008, and following the model done by Becker (1965) and adapted by Connelly (1992). Using discontinuous regression with fixed effects for region and time, the authors also face a problem of endogeneity between to supply labour and to enrol children in preschool (to enrol children in preschools encourages women to supply labour, and supply labour encourages women to enrol their children in schools, in a reverse causal relation). Besides, mothers have non-observed variables which can affect their supply of labour and their wish to enrol children in preschools at the same time. To sort that, besides the fixed effects, controls for the date when children were born as an instrumental variable are introduced. The work concludes that preschool provision affects positively the amount of labour supplied by women, but not their wages.

3. THE EDUCATIONAL SYSTEM IN BRAZIL AND THE PRIMARY EDUCATION SYSTEM REFORM

The Brazilian educational system is divided into the basic education and by the superior education, both provided by the government and by the private sectors. The basic education is formed by the preschool education and provided by the municipalities for children aged younger than 7; by the primary education, which is provided to children aged between 7 and 14 also by the municipalities; and by the secondary education, which is provided to teenagers aged between 15 and 17 by the state governments. The superior education is formed by the graduate and post-graduate courses, and it is provided by the federal government. In spite of this division, it is common different government levels to provide kinds of education which are not under their responsibility. This way, the majority of the primary education schools in Brazil are provided by the state governments.

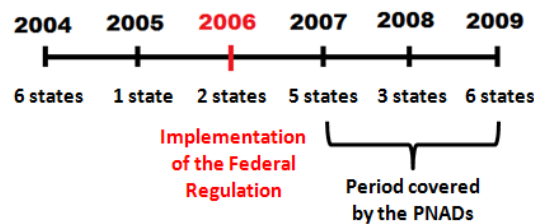
Preschools and superior education are not compulsory, being a decision of the family to enrol their children in pre-schools, in the same way it is a decision of the individual to try an university degree. Although it is an individual decision, the enrolment in preschools and in university courses is obviously related to their provision. Many municipalities do not provide properly preschools to their populations, and the number of vacancies in the superior education is smaller in Brazil even when compared to other developing countries. This way, the enrolment in preschools and in university courses is also correlated to the characteristics of the individuals and families, mainly the the educational, income and regional ones.

On the contrary, the enrolment into the primary education and secondary education is supposed to be compulsory. Nowadays, about 98% of children in the primary education first grade age are enrolled in schools. However, this percentage diminishes drastically along the grades, and about 70% of children who start the primary education first grade do not complete the secondary education on the right age (17 years old) (IBGE, 2010). This way, it is possible to find children who are any age in any grade because, although its compulsion, the provision of schools and the social and economic characteristics of the families and of the children affect their enrolment in schools in the right age. Finally, it is important to emphasize that schools in Brazil are in their greatest majority part-time, what means that children are not used to spend more than four hours per day in school. Extra-school activities for children during their time left are common, but it is evidently demanded by those families who have preference and financial conditions to afford them.

According to the INEP (2008), the number of Brazilian children enrolled in pre-schools decreased from 4.9 million in 2002 to 4.8 million in 2008. One explanation for that is the changes in the women's fertility decisions which occurred in Brazil along the last decades, creating demographic changes and reducing the number of children in pre-school age (Verona, 2004).

Another reason pointed by INEP (2008) is the reform of the primary education system which is the main interest of this paper. This reform, which was officially introduced in a federal level in 2006 to be put in practice gradually until 2010, increased the primary education length from 8 to 9 years of duration. It meant that children would enrol primary education first grade one year younger, aged 6 and not 7 anymore. A pilot program of this new system was applied in 1995 in Porto Alegre, and since then other cities started implementing gradually the reform, as well as some private schools. In a state level, however, it began to be implemented only in 2004, and then in 2006 the Federal Government made a regulation creating a compulsion for this new system implementation on all the states of the federation, having all the states until 2010 to fully implement this system in their schools. In 2007, one year after the federal regulation, the Brazilian Household Survey Data (PNAD), source of the data used in the empirical part of this paper, started collecting information about this new system. Although theoretically in 2010 all the states of the federation should have implemented the reform, in that year four states had not implemented it yet: Paraná, Paraíba, Roraima and Amapá. The timeline of the reform implementation in a state level is the following:

Picture 1 - Timeline of the primary education system reform implementation:



Source: the author.

This kind of reform, which aims to anticipate the enrolment of children in schools, is not new. It has already been implemented in other countries but Brazil, and its main target is not to increase the mothers' labour supply, but to improve children's educational outcomes: Berlinski et al (2007) investigates the impact of preschool attendance and expansion of the primary education on school outcomes in Uruguay; and a Norwegian paper by Drange et al (2012) investigates the anticipation of children's enrolment in schools on their learning outcomes in that country. About the Brazilian reform, there are Ronsoni (2009) and Azevedo (2010) who investigate the impacts of the implementation on the pedagogic structure and the pedagogic differences between the preschool and the first grade of the new primary education system. Maybe because the main intention of this kind of reform is not that, there are no studies about its impacts on the mothers' labour supply.

4. THE DATA AND ITS DESCRIPTIVE ANALYSIS

The micro data used in this paper comes from the Brazilian Household Survey Data (PNAD) which is conducted by the Brazilian Institute of Geography and Statistics (IBGE). This system of household

survey was implemented in 1967 and aims to produce basic information in order to study the socio-economic development of the country.

At present the PNADs are an annual and cross-sectional random sample survey which covers people living in private households, permanent or improvised, in urban and rural areas, and in all parts of the country. Information about all residents of the selected households is collected. The main characteristics investigated are housing characteristics, demographic characteristics, and general characteristics of migration, female fertility, education, employment and income. Information is available for all regions of the country, macro-regions, each federative unit, and for nine metropolitan regions (Belém, Recife, Fortaleza, Salvador, Belo Horizonte, Rio de Janeiro, Sao Paulo, Curitiba and Porto Alegre).

The sample of interest in this paper is formed by the mothers whose youngest child is aged 6 during the years 2007, 2008 and 2009. The importance of this child be aged 6 is that this is the age he/she is supposed to be affected by the primary education reform, being enrolled in school or treated by it, not being, if not treated. This child also must be the youngest of the household because of our interest in the mothers' labour supply, which is supposed to be influenced more by the youngest child than by any of his/her (older) brothers and sisters, regardless any of them is a biological child or not. The time section (years 2007, 2008 and 2009) occurs because those are the years through when the PNADs cover the attendance in the old or in the new primary education system, with a clear question in their questionnaires about it. Following this selection criteria, a sample with 7,791 mothers was created.

Theoretically, between 2007 and 2009, these sample of mothers could be divided in two groups: one of those who are being treated by the reform for living in states where the policy had been already implemented, and consequently whose children are enrolled in the first grade of the new primary education system; and another one, of those mothers do not treated by the program for living in states where the policy had not been implemented yet, and consequently whose children are not enrolled in school. However, when we look at the sample, we find the scenario presented in Table 2.

Table 2 shows it is possible to find mothers whose children aged 6 out of school, in the first grade of the new system, and in the first grade of the old system, regardless they live in states where the policy had already been implemented or not. Although the percentage of mothers living under the policy implementation is about 50% of the sample, only a bit more than 30% in fact have their children enrolled in the new primary education system, and only about 20% are enrolled in the new system in places where the policy implementation had indeed been implemented. It means that about 10% the mothers of the sample have their children enrolled in the first grade of the new system in states where the policy had not been implemented yet.

On the other side, there are also a considerable percentage mothers whose children are enrolled in the first grade of the primary education when aged 6, but surprisingly still in the old system (it means,

anticipating their enrolment voluntarily), even when the policy had already been implemented in their states. In states where the policy had not been implemented yet, about 20% of the families decided for anticipating the enrolment of their youngest child, putting them in school when they were 6 years old, still in old system. This percentage falls to about 7% in states where the policy had already been implemented.

To find children enrolled in the new system in states where the policy had not been implemented is possible, remembering that some specific cities (mainly state capitals) and private schools, although in a much smaller scale, were implementing the policy since 1995. However, to find mothers whose children have enrolled in schools in the first grade of the primary education when aged 6 but still in the old system, in both places where the policy had and had not been implemented, what means they anticipate the enrolment in one year voluntary, is a more complex scenario.

To comprehend this situation, it is necessary to understand better how the implementation of the policy worked. In the moment a state decided to implement the new primary education system, not all the schools of this state adopted it immediately, in the year after. It tooks time and, along this time, the mothers found both kinds of school to enrol their 6-year-old children, with the old and the new system. Then they had to decide for enrolling their children in the new system, for not enrolling them at all, or even for anticipating their enrolment in one year, putting them still in the old one. This situation, found on the sample and presented on Table 2, is supposed to vary according to the mothers' preferences, but it just was possible because of the imperfect implementation of the policy. It is emphasized by a report made by Brazil's Education Ministry (Ministerio da Educacao, 2009) which says that the autonomy that the public schools had to implement the policy after the state regulations could make the process slower than the convenient, and also that some schools and even cities could have more difficulties to implement the reform than others.

Anyway, it is believable that the policy implementation, and consequently the increase of the number of schools with the new system, is supposed to contribute for the enrolment of children in schools. This can be observed on Table 3, where it is possible to see the variation of the different kinds of school enrolment along the three years of the sample. In states where the policy had been implemented, the percentage of children aged 6 out of school fell from 54.68% in 2007 to 48.58% in 2009. Surprisingly, this decrease was bigger in states where the policy had not been implemented, falling from 61.9% in 2007 to 50.92% in 2009. It means that the percentage of children aged 6 out of school diminished both where the policy had been implemented and where it had not.

A similar situation happens with the percentage of children attending the new primary education system: Although the percentage of children in the new system was higher in places where the policy had been implemented along all the time, this percentage increased also in places where the policy had not been implemented. While in states where the policy had been implemented this percentage increased from 36.38% in 2007 to 44.92% in 2009, in the others this increase was from 15.61% to

31.91% during the same time. So, it is possible to say that, in spite of the percentage of children in the new system be higher in places where the policy had been implemented, it is also true that the percentage of children in the new system was also expressively increased in places where the policy had not been implemented yet. Concomitantly, the percentage of mothers who decide to anticipate the enrolment of their children in the old primary education system is much higher in places where the policy had not been implemented, but diminishing between 2007 and 2009.

Given that, it is interesting to see the observed characteristics of the mothers according to their decision of enrolling their children in the new system, of anticipating their enrolment in old system, or for not enrolling their children in school at all, in both places where the policy had been implemented or had not, and along the time. Mothers who decided to anticipate the enrolment of their children in the old system and to enrol them in the new system are supposed to have similar observed characteristics, because, in practice, both have preference for putting their children in school when they are 6 years old, in contrast with those who do not have this preference. However, differences in these observed characteristics between places where the policy had been implemented and those where the policy had not are supposed to be found. These characteristics are presented on Table 4 and on Table 5.

One characteristic of the mothers which presents important differences is their income. The mothers' average income is higher when their children are attending school when compared to those whose children are not for the years 2007 and 2008, and the opposite is observed in 2009. This is expected in a certain way, considering that mothers who earn a higher income are used to supply more labour and, therefore, to have more preference for putting their children in school earlier, anticipating it in the old system, or looking for the new one. The opposite scenario observed in 2009 can be consequence of the policy more spread implemented. Comparing the places where the policy had been implemented with those where it had not, it is possible to see that the mothers' income is higher when their children are attending the new system when compared to those whose children enrolment is anticipated in the old one, but this difference is even higher in states where the policy had not been implemented yet. It means that in places where the policy had been implemented, the difference of income between the mothers whose children are in the old and in the new system is smaller, suggesting that, when the policy is not implemented, only mothers with much higher income have access to the new primary education system to their children. The policy implementation could be diminishing the difference of access to the new system to mothers who had preference for putting their children in school when they are 6 years old, regardless their different income levels.

The percentage of mothers who supply labour, who work part time and who work full time varies a lot along the time. In a general way, we can say that the majority of the mothers who work, regardless the amount of hours, have their children enrolled in schools, what is expected, considering that mothers who work are supposed to demand more childcare. But it does not look to have significant differences between the old and the new system on the labour supply variables, suggesting that the

new system or the enrolment anticipation in the old one are similar concerning the mothers' labour supply variables, regardless the policy implementation or not. It can suggest that the enrolment of children aged 6 in school is the key element for those mothers who work, and not the new or the old system, neither the policy implementation or not. If the policy implementation can increase the children enrolment in schools, however, it can have an indirect impact on the mothers' labour supply.

The majority of the mothers who do not have their children enrol in schools are non-white. The percentage of white mothers who have their children enrol in the new system is higher than those who have them anticipated in the old one, but this difference diminishes where the policy is implemented. The race of the individuals in Brazil is correlated to their income and level of education, which are generally higher for the white individuals when compared to the non-white ones. It starts giving the idea that mothers who have their children in school when they are aged 6 are self-selected, biased in favour of the richer, white, and more educated ones, and that this bias happens again for the enrolment of the children in the new system. When the policy is implemented, however, this bias looks to diminish, maybe because the poorer, non-white and less educated mothers start having more access to schools which offer the new system than in places where the policy is not implemented.

When we look at the mothers' different levels of education, we almost confirm this supposition. Mothers who do not have their children enrolled in schools are those with generally lower levels of education. Mothers with higher levels of education are used to have their children in school. The most educated mothers are also used to put their children more in the new system than in the old one, mainly in those states where the policy had not been implemented yet, again giving the idea that there is a self-selectivity of mothers who enrol their children in school when they are aged 6, and another one of those who enrol theirs in the new system. Again, where the policy is implemented, this difference of educational levels between mothers who access the new system and those who anticipate the enrolment of their children in the old one diminishes, although the differences between those who enrol their children and those who do not remains, regardless the implementation of the policy or not.

In a general way, it has been observed that the increase of the children enrolment in schools and in the new primary education system increased both in states where the policy had been implemented and in those where it had been not, in spite of both be higher where the policy had been implemented. However, it has been also observed that these enrolment increases occurs more among the mothers with higher income, white, and higher educational level, and where the policy is implemented, theoretically increasing the availability of schools with the new system, these differences diminish, but persist.

5. THE MOTHERS' PREFERENCES

Given this situation, questions come about the real impact of the policy implementation on the increase of the children enrolment aged 6 in schools and in the new system. The fact that both took place also where the policy had not been implemented rises doubts about the real impact of the reform on this process and, consequently, on the mothers' labour supply.

Initially, it is important to verify if the policy implementation has some significant impact on the increase of the mothers who enrol their children in schools. For that, a probit estimation is made, where the child enrolment in school is a function of the policy implementation and other mothers' observed controls. The results, presented on Table 6, show that the policy implementation indeed has a positive and very significant impact on the probability of the child be enrolled in school: when the policy is implemented, the mother has her probability of enrolling her child in a school increased in 5.3%. Therefore, the policy implementation is an important element for the 6-years-old children enrolment in school, but other variables also appear as significant. The more educated mothers also have higher probability of having their children enrol in school: 4.7% more if they 10 or 11 years of study, 4.0% more if they have 12 years of study, and 12.1% more if they have at least 13 years of study.

Other variables also have significant and expected impacts on the enrolment of children in schools. If the mother works, for example, the probability of enrolling her child in a school increases in 2.1%, what makes sense considering that mothers who work are used to look for more childcare; this probability is decreased, on the other hand, in about 6.0% when there are between 2 and 6 children living in the household, probably because these other children can take care of the youngest one, diminishing the necessity of childcare and, therefore, of school enrolment. And the unemployment rate of the state where the mother is also presents a significant impact on the probability of children enrolment in school, diminishing it. It is expected because when the unemployment rate is high the mothers' opportunity cost of not working is lower, diminishing the necessity of childcare and, consequently, the school enrolment. However, this decrease is only 1.9%, small when compared to the impact of other variables.

This way, it reinforces the initial suspicion that the children enrolment in schools when they are aged 6, yes, depends on the policy implementation, but also, and even more, on the characteristics of the mothers, such as her educational level and fertility preference (number of children in the household).

Understood that the policy implementation, but not only this, contributes to the increase of the children enrolment in school, it is also important to know if the policy implementation contributes to the increase of the enrolment in the new system, remembering that this increase also happened where the policy had not been implemented. To verify this impact, a multinomial logit is estimated, where the probability of anticipating the enrolment into the old system or the enrolment into new system is

estimated as function of the policy implementation and other mothers' observed controls. The results are presented on Table 7.

According to the results, a mother would prefer to anticipate the enrolment of her youngest child, aged 6, putting him in school still in old system, only if the policy is not implemented in her state yet. The lack of policy implementation appears as the most significant, and with bigger impact, on the probability of anticipating the enrolment of a child still in the old system.

When we look at the enrolment in the new system, however, the policy implementation, although important, is only one among many other variables which appear as significant. The higher mothers' educational levels also present a significant impact on the probability of children enrolment the new system, and the fact that the mother has 13 or more years of study has an impact even bigger in magnitude than the policy implementation itself. Once again, the fact that there are more children living in the household appears as an important observed characteristic, diminishing the probability of enrolment of the youngest one in the new system, as well as the unemployment rate of the state where the mother is.

The fact that the mother works, although with a positive impact on the enrolment of children in any of both systems, was significant for none of them. The fact that the mother works, therefore, does not influence her decision for one or the other system.

These estimations have emphasize some suspicious that existed since the descriptive analysis of the data caused by the imperfect implementation of the policy and its imperfect compliance. The most important point to be understood is that the policy implementation, although important for the increase of children enrolment in schools and their enrolment into the new system, does not explain completely these phenomena. It is not because the policy was implemented that mothers would enrol their children aged 6 into the new system, in the same way that it is not because the policy had not been implemented yet that mothers would not look for schools where it had been eventually implemented and to enrol their children there, or even not to anticipate their enrolment in the old system anyway, if they did not find a school with the new one. To find the perfect compliance, where children aged 6 were not in school because the policy had not been implemented, and children aged 6 were in school because the policy had been implemented, is a special case, maybe exceptional, that depends on the policy implementation, on the mothers' characteristics and on even the conditions of the labour market, everything at the same time. Therefore, besides looking just at the policy implementation, which appeared as a relevant variable, it is also important to look at the characteristics of the mothers, mainly on their educational levels and on their fertility preferences, because these characteristics look to be so important, or even more, to explain the enrolment of children aged 6 at school.

6. METHODOLOGICAL ASPECTS AND THE IDENTIFICATION STRATEGY

The challenge now is to look for an identification hypothesis to understand the causal relation between the policy implementation and its impact on the labour supply of those mothers affected by it. However, it was demonstrated that the way the policy was implemented made it have imperfect compliance, because besides depending on the policy implementation, the 6-years-old children enrolment in schools also depends on the characteristics of the mothers. In other words, it was shown that the policy implementation had a positive impact on the children's enrolment in schools, but that this increase in the enrolment was not caused by a complete exogenous shock (the policy implementation), but that it also depended on endogenous reasons, basically the characteristics of the mothers.

To test the impact of the primary education reform on the mothers' labour supply outcomes, a labour supply equation is estimated as a function of the youngest child enrolment in school:

$$y_i = \beta_0 + \beta_1 \text{enrol} + \beta_2 \text{controls} + \mu \quad (3)$$

where y_i represents the mother's labour supply outcomes; *enrol* represents a variable which indicates if the child aged 6 is enrolled in school (regardless if in the new or old system); *controls* represent other observed variables; μ represents a random error term; and β_0 , β_1 and β_2 are coefficients to be estimated.

However, as we have seen, there are reasons to believe that the enrolment of the 6-years-old children in the new primary education system is not exogenous, depending also on the characteristics of the mothers. The choice made to deal with this situation is the use of an instrumental variable (IV), which aims to capture the endogeneity contained in the children enrolment in schools.

An IV is necessary because there are other characteristics, and not only the observable ones, which affect simultaneously the mothers' labour supply of labour and the children enrolment in schools. For example, we have seen that higher educated mothers have preference for enrolling their children in school regardless the policy implementation or not. At the same time, their higher educational level also incentivises them to supply more labour, considering their opportunity cost of not supplying labour is higher. Therefore, an IV must be a variable that is correlated to the explicative variable of interest, it means, the 6-years-old children enrolment in school, but not correlated to the explained variables, it means, the mothers' labour supply outcomes.

The variable chosen to be the IV is the policy implementation. The fact that the policy implementation has an important and significant impact on children's enrolment in schools was shown before. On the other hand, theoretically there is no reason to believe that the policy implementation, for being a political decision made by the state governments, has any relation to the mothers' labour supply

outcomes. To verify this possibility, the probability of the policy implementation was estimated as a function of the mothers' labour supply outcomes and other mothers' observed controls. The results are presented on Table 8. The results show that the labour supply outcomes do not seem to have significant influence on the policy implementation, meaning that the mothers' labour supply characteristics do not have impact on the decision of implementing the policy by the state governments (only the fact that the mother is a part time worker has some significant impact, but still in a 10% level of significance).

Concluding the formulation of the identification strategy, the search for the causal relation between the policy implementation and the mothers' labour supply outcomes can be adapted from Xavier Pinto (2012), where:

$$enrol = \begin{cases} 1 & \text{if } (\delta policy + \vartheta_i) \geq 0 \\ 0 & \text{if the opposite case} \end{cases} \quad (4)$$

where now *policy* represents the IV, δ represents a coefficient to be estimated, and ϑ_i an random error term. It is assumed that $Cov(\mu, policy) = 0$ and that $Cov(\mu, \vartheta_i) \neq 0$, what means that there is not linear relation between the IV and the random term of the main equation, but that the error terms of both equations (3) and (4) are correlated. It represents the fact that the non-observed elements which interferes on the mothers' decision of supplying labour are correlated with the non-observed elements which interferes on the children enrolment in school, but that the IV (the policy implementation) is not correlated to the non-observed elements which interferes on the mothers' decision of supplying labour.

This model is estimated through the two stage least squares method (2SLS), where the first stage is the 6-years-old children enrolment in the first grade of the primary education (regardless if in the new system or not) as a function of the new primary education system policy implementation and other observed controls, and the second stage is the labour supply outcomes of these children's mothers as a function of their children enrolments in school and other observed controls. Therefore, the identification hypothesis of the estimated model is that the policy implementation has a positive impact on the children enrolment in schools, and the impact of this enrolment on the mothers' labour supply, on its turn, may vary according to the mothers' characteristics, being positive for those who have higher income effects (because of their higher level of education and higher opportunity cost for not working, for example) and negative for those who have higher substitute effect (because of their lower level of education and lower opportunity cost for not working, oppositely), who will prefer to spend their new free time with leisure instead of labour.

7. RESULTS AND DISCUSSION

Initially, the econometric estimation is made considering the full sample, which results are presented on Table 9. The post-estimation statistics are presented on Table 14 and Table 15, and are going to be discussed further.

The results for the full sample show that the policy implementation, used as an instrumental variable in the first stage, has a positive and very significant impact on the enrolment of children in school, increasing it from 4,9% to 5.7% depending on the mothers' outcome variable. This result is expected, considering what was discussed before about the importance of the policy on the increase of the children's enrolment in school. As it was also expected, the highest educational level of the mothers also appear as very significant variables, increasing the probability of the children enrolment in school in a stronger way even than the policy implementation, increasing this probability in 12.7% for the mothers labour supply estimation, and 14.6% for the full time worker one. In the same way, a higher fertility preference diminishes the probability of the youngest child enrolment in school for all the estimations, achieving 7% for the part time estimation.

Looking at the second stage of the estimations, it means, on the impact of the children's enrolment in school on the mothers' labour supply outcomes, we see that the children enrolment has a negative impact on the mothers labour supply, on the probability of being part time workers and on their wages, suggesting that the policy implementation, on providing childcare to the mothers and consequently a reallocation of time between labour and leisure, prefer leisure, what indicates that the substitute effect between labour and leisure is bigger than the income one. The only positive impact of the children's enrolment in school occurs for full time worker estimation, suggesting that the policy implementation, in spite of the negative impact on the mothers' participation in labour markets and on their wages, makes them to supply more time of work. The explanation for this can be on the fact that schools in Brazil are in its greatest majority part time, making the enrolment of children one year earlier only have impact on the amount of hours supplied of work, therefore encouraging them to have more full time jobs. However, its important emphasize that the children enrolment in schools are not statistically significant in any of the estimations, suggesting that it does not have significant impact on the mothers labour supply decisions. The reason again can be the fact that schools in Brazil are in its majority part time, what limits its impacts on the mothers allocation of time.

Other observed variables, by their turn, presented significant impact on the mothers' labour supply, specifically those of educational level, that influenced positively the labour supply outcomes, and the higher fertility preferences, which diminish it. It means that these characteristics are more relevant on the determination of the mothers' labour supply decision than their children's enrolment in schools. Finally, the unemployment rate also appears constantly and significantly diminishing the mothers' labour supply outcomes, suggesting that the supply of labour of the mothers in Brazil is pro-cyclical.

As we have seen before, the higher educated mothers are self-selected in enrolling their children in schools and also on the new primary education system. At the same time, the higher educated mothers are also supposed to supply more labour than the lower ones. Therefore, it is expected that the policy implementation has a different impact when the full sample is divided in these two sub-samples: the lower and higher educated mothers. Mothers with until 9 years of study were classified as lower educated, and those with 10 or more years of education were classified as higher educated. The results for these estimations are presented on tables 10 and 11.

For the higher educated mothers, the policy implementation keeps having a positive and significant impact on the children enrolment in school (except for the wages outcome estimation), but still not as big as the mothers' educational levels and fertility preferences. The mothers' educational levels keeps being relevant, increasing the children enrolment in schools, while the fact there are more children in the household diminishes it, similarly to what we observed with the full sample. At the estimation second stage, it is possible to see, however, that the children enrolment in school still do not present significant impact on the most educated mothers labour supply, although this impact, differently of what was seen for the full sample, now is positive on all labour supply outcomes, suggesting that the most educated mothers, when their children are in school, have preference for labour instead of leisure. This result is expected, considering that the income effect is supposed to be stronger than the substitute effect between leisure and labour for the most educated mothers, with the opportunity cost of not working being higher for them. On the labour supply outcomes, some of the other control variables, such as those of educational level and fertility preferences, also have significant influence, similarly to before.

For the lower educated mothers, the policy implementation keeps being relevant, increasing the children enrolment in schools. However, the educational levels lose their significance, suggesting that, for the lower educated mothers, the policy implementation is a more relevant determination for the children enrolment in schools than the educational level of the mothers, on the contrary to what was found for the whole sample and for the highest educated mothers. It means that when a mother has a lower educational level, the policy implementation becomes more important for her child enrolment in school, what makes sense considering that the lower educated mothers do not have the self-selectivity that the highest educated ones have to enrol their children in schools. The fertility characteristics keep having a similar impact than before, and now also the fact that there is one adult more in the household has a significant influence, increasing children enrolment in schools. It suggests that when there is another adult in the household, such as the husband, the children enrolment in schools tends to be higher, suggesting that the enrolment of children in school can be different for single and married mothers.

At the second stage for the lower educated mothers, the educational levels become significant again, affecting positively the labour supply outcomes of the mothers, with less significance on their decision of being part time workers. As it was expected, for the lower educated mothers the children enrolment

in schools diminishes their labour supply outcomes, because the opportunity cost of not working is supposed to be lower for them than for the most educated ones, making the substitute effect between labour and leisure be stronger than the income effect. And once again, the presence of another adult in the household, such as a husband, increases statistically significantly the labour supply outcomes of the mothers, even more strongly than the educational characteristics and fertility preferences. Therefore, it reinforces the suspicion that the policy implementation can have a different impact for single and married mothers. To verify this hypothesis, again the model was estimated for sub-samples, now separately for single and married mothers. The results are presented on Table 12 and Table 13.

Looking at the first stage of the single mothers estimation, we see the policy implementation keeps having a positive and significant impact on the enrolment of children in school, except when being a part time worker is the labour supply outcome variable. It says that for the single mothers, whose labour supply is supposed to be more inelastic than of the married ones, the presence of the policy does not have significant impact on their decision of being part time workers. Although the fertility preferences keep having an important impact on this process, the educational level does not have a significant one (except when the labour supply outcome is the mothers' wages), emphasizing the fact that, for single mothers, the policy implementation plays a more important role for the children enrolment in schools than the educational characteristics of the mothers, similarly to what was observed for the lower educated ones. The policy implementation has a more decisive determination on the children enrolment in schools for the single mothers than their educational characteristics.

On the second stage, for the first time the enrolment of children in school appears as significant variable, affecting positively the single mothers' participation in the labour market and their decision of being full time workers. The educational levels become again significant variables and, differently to what was found for the other samples, the fertility preferences do not significance anymore. It emphasizes the inelastic characteristic of single mothers' labour supply. On the contrary, the presence of other sources of income for the mothers appears as significant variables, diminishing the supply of labour of the mothers, although in a very small amount.

For the married mothers, the policy implementation is also relevant, also increasing the children enrolment in school (except when the labour supply outcome is the mothers' wages), and the variables of educational levels and fertility preferences keep having similar impact than before. On the second stage, the children attendance in school now has a negative impact on the married mothers' labour supply outcomes, suggesting that, having their labour supply more elastic than that of the single mothers, the enrolment of their children in school makes them prefer more leisure instead of more labour. However, this variable is not statistically significant except when the labour supply outcome is being a part time worker, suggesting that the children enrolment in school diminishes the chances of the married mothers be part time workers. The educational levels are important on their decision of supplying labour, mainly on their decision of participating in the labour markets and be full

time workers. However, the fertility preferences do present importance for the decision of supplying labour of the married mothers.

Summarizing the results, the policy implementation presents a positive and significant impact on the children enrolment in schools but, as it was expected, the mothers' educational levels and fertility preferences also presented a very relevant influence on that. The children enrolment in schools, by its turn, in a general way does not present a significant impact on the mothers' labour supply outcomes. It can be explained by the fact that schools in Brazil are in its great majority part time, limiting its impact on the mothers' allocation of time. Once again, the mothers' educational levels, their fertility preferences and the unemployment rate of the state where they are presented a more significant and bigger impact on that. The response of the mothers' labour supply outcomes to the children enrolment in schools varies according to the sub-samples, being negative for the lower educated and married mothers and positive for the higher educated and single mothers. Finally, children enrolment in schools is statistically significant only for the single mothers, influencing positively their participation in the labour markets in their decision of being full time workers. This way, it is possible to say the new primary education system policy implementation presents impact on the labour supply only of the single mothers.

8. THE POST-ESTIMATION STATISTICS, THEIR INTERPRETATION AND FURTHER DISCUSSION

The post estimation statistics to verify the strength of the instrumental variable (IV) and its exogeneity are available on Table 14 and Table 15 for all the IV estimations presented in this paper.

One of the characteristics an IV must have is its exogeneity, it means, it must not be correlated to the outcome variables. In this case, it means that the new primary education system policy implementation must not be correlated to the mothers' labour supply outcomes. This condition, already discussed and emphasized before, is reinforced by the Wu-Hausman test for all the estimations (Table 15), which rejects the null hypothesis of endogeneity of the IV except when to be a part time worker is the outcome variable, as it was expected by the results presented on Table 8. This way, it is possible to say that the policy implementation does not have correlation with the mothers' labour supply characteristics, being an exogenous political decision of the state governments.

In spite of the policy implementation exogeneity, however, it was also discussed that the six-years-old children enrolment in school depends also on the mothers' observed characteristics, such as their educational levels and fertility preferences. It means that the policy implementation, used as an IV, contributes to the children enrolment in schools, but only partially, as it was evidenced along this paper. This scenario is reinforced by the statistics which test the IV strength, mainly the R-sq and the F tests (Table 14), classifying the IV used in the estimations as weak. A weak instrument means that,

in spite of being exogenous, it is not closely related to the endogenous process presented in the model. In this case, it means that the policy implementation, although exogenous, is not closely related to the children enrolment in schools. In other words, it reinforces that the policy implementation explains the children enrolment in schools but not completely, because other characteristics, mainly of the mothers, also have influence on this decision, confirming what had been discussed and presented along this paper.

The challenge faced for the evaluation of this policy has been the imperfect way it had been implemented. According to the data and the literature, children in Brazil enrol the primary education first grade at any age, regardless the new or still the old system. To try better instrumental variables which are able to capture the school enrolment endogeneity is always a possibility, and for that it's necessary to understand better the implementation of the policy, and why some states and/or schools implement it before others. Table 8, which presents the estimations to verify the causal relations between the mothers' labour supply outcomes and the policy implementation, can raise some insights. Two control variables presented an interesting and significant impact on the probability of policy implementation, in spite of being very small in magnitude (achieving maximum about 4%): the fact that the mother is a migrant and the state unemployment rate had a negative influence on the probability of the mother living a state where the policy had already been implemented. It can suggest that the policy implementation is in some way related to the economic cycles and/or to regional demographic characteristics, therefore explaining its implementation in different moments along the years by the states/schools.

Another difficulty caused by the imperfect implementation of the policy concerns the clear definition of the treatment and control groups. For the treatment group, the definition is easier, because it is possible to identify those children enrolled in the first grade of the primary education under the new system. For the control group, however, this definition is much more complex, because, for those children who are not in school, it is not possible to define if they are eligible for the new system or not. Finally, some children who are eligible for the new primary education system can have their enrolment postponed (instead of anticipated) because of non-observed characteristics, while others, who are not eligible for the new system, can have their enrolment anticipated also because of non-observed reasons. According to Stock and Watson (2003), besides being a problem of failure of the treatment protocol (the policy is not perfectly implemented by the government), there is also a problem of treatment vs. eligibility effects, because those children who are eligible for receiving the treatment are not necessarily treated, and those who are treated, because of non-observed characteristics which are probably correlated to the mothers' labour supply outcomes, are self-selected.

In this case, the causal effect of the policy can vary according to the mothers' non-observed characteristics, generating an unobserved variation within the mothers' population, what means that the treatment effect is different for every individual. To deal with this situation, another option is to implement the average treatment effect method (ATE) with an IV, which considers that the impact of

receiving treatment varies according to the effectiveness of it on that specific individual. The local average treatment effect method (LATE), by its turn and also a possibility, has the advantage that can be used with instrumental variables under very weak conditions, being able to evaluate the impact of the treatment when the treatment group is not clearly identified, it means, when there is no an available sub-population for who the probability of treatment is zero.

9. CONCLUSIONS

This paper aimed to investigate the impact of the new Brazilian primary education system, that replaced its start to children aged 6 instead of 7, on their mothers' labour supply of that country. Its imperfect implementation, however, making it possible to find children aged 6 in the new system, out of the school, and even in the old system in both places where the policy had and had not been implemented, played a key role on the comprehension and approach of this research question.

A discussion was made on the fact that the policy implementation, although increasing the children enrolment in schools and their enrolment in the new system, was not sufficient to guarantee the perfect compliance of the reform. It happened because, besides the policy implementation, the mothers' characteristics were also important to determine the children enrolment in schools and in the new system, transforming it into an endogenous process where the causal relations were not clear.

This way, this seems to be the first conclusion of this paper: in places where the compliance of policies is not perfect, or the policy authority is not able to enforce it completely (a very common situation in developing countries, such as Brazil), just to provide a policy is not sufficient to make it really accessed by the target population. More than providing the policy, it is also necessary to understand which characteristics of the target population self-select it to indeed be treated by it. In this paper, the most educated, with higher income and lower fertility preferences mothers were those who had more access to the new primary education system regardless the implementation of the policy. And the policy, although diminishing the difference of compliance between this self-selected group of mothers and the other, still benefited more the first group, maybe not the one which was supposed to be more affected by it. Therefore, it is extremely important for policy designs purposes to understand how their formats and implementations can indeed achieve the target population.

Later, in spite of increasing the children enrolment in schools, this increase did not present a statistically significant impact on the mothers' labour supply outcomes. This impact was different depending on the sub-sample it was estimated for, being positive for the higher educated and single mothers, and negative for the lower educated and married ones. Other mothers' observed characteristics, such as their educational levels and fertility preferences, as well as the labour market conditions, presented a more relevant influence on their labour supply outcomes than their children enrolment in schools. The only sub-sample for which the increasing of school enrolment caused by

the policy implementation had a statistically significant impact was for the single mothers, increasing their participation in the labour markets and their preference for being full time workers. Thus, from the labour supply point of view, the single mothers appear as the only ones really and positively affected by the new primary education system implementation in Brazil.

It is possible to say that the imperfect implementation of the policy interfered on its results, both on increasing the access of children to schools and on its consequent impact on the mothers' labour supply. In practice, this imperfect implementation made the policy affect more those mothers who did not need it, because their children would be already enrolled in schools even without the policy, in the new system or with their enrolment anticipated in the old one. Finally, the provision of childcare seems to have a limited impact when the mothers are not economically empowered enough to participate in the labour markets. Characteristics such as educational levels and fertility preferences still play a key role on their labour supply decisions, and the provision of childcare, at least in a developing country like Brazil, still looks to be a further step.

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APPENDIX:

Table 1 - Description of the variables

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
labour supply	Variable equal to 1 if the mother supplied at least one hour of paid work during the week before the interview, and zero in the opposite case.	7791	0.60	0.49	0	1
mother's income (in R\$)	Deflated mother's income from any kind of paid work, conditional on labour supply = 1, received during the month before the interview.	4222	807.51	1143.53	12	17883.09
part time labour supply	Variable equal to 1 if the mother supplied until 29 hours of paid work during the week before the interview, conditional on labour supply = 1, and zero if labour supply = 0.	4357	0.28	0.45	0	1
full time labour supply	Variable equal to 1 if the mother supplied until at least 30 hours of paid work during the week before the interview, conditional on labour supply = 1, and zero if labour supply = 0.	6554	0.52	0.50	0	1
mother's age	Mother's age, in years.	7791	33.72	6.65	18	59
white	Variable equal to 1 if the mother self-classifies her race as "white", and zero in any other case.	7791	0.44	0.50	0	1
until 4 years of study	Variable equal to 1 if the mother has until 4 years of formal study, and zero in any other case.	7791	0.16	0.36	0	1
5 years of study	Variable equal to 1 if the mother has 5 years of formal study, and zero in any other case.	7791	0.10	0.30	0	1
6 to 8 years of study	Variable equal to 1 if the mother has between 6 and 8 years of formal study, and zero in any other case.	7791	0.17	0.38	0	1
9 years of study	Variable equal to 1 if the mother has 9 years of formal study, and zero in any other case.	7791	0.11	0.32	0	1
10 to 11 years of study	Variable equal to 1 if the mother has 10 or 11 years of formal study, and zero in any other case.	7791	0.07	0.25	0	1
12 years of study	Variable equal to 1 if the mother has 12 years of formal study, and zero in any other case.	7791	0.27	0.44	0	1
13 or more years of study	Variable equal to 1 if the mother has 13 or more years of formal study, and zero in any other case.	7791	0.12	0.32	0	1
last child born is male	Variable equal to 1 if the gender of the youngest child in the household is male, and zero if it is female.	7791	0.51	0.50	0	1
other mother's income (in R\$)	Deflated mother's income from any source but her paid work received during the month before the interview.	7791	68.56	240.62	0	7823.85
other income in the household (in R\$)	Deflated income received by any other member of the household but the mother during the month before the interview.	7791	1166.70	1906.27	0	34300.00
1 child in the household	Variable equal to 1 if there is only one child the household, and zero in any other case.	7791	0.35	0.48	0	1
2 children in the household	Variable equal to 1 if there are two children in the household, and zero in any other case.	7791	0.36	0.48	0	1
3 to 6 children in the household	Variable equal to 1 if there are between 3 and 6 children in the household, and zero in any other case.	7791	0.27	0.44	0	1
7 children or more in the household	Variable equal to 1 if there are at least 7 children in the household, and zero in any other case.	7791	0.02	0.13	0	1
1 adult in the household	Variable equal to 1 if there is only one adult the household, and zero in any other case.	7791	0.11	0.32	0	1
2 adults in the household	Variable equal to 1 if there are two adults in the household, and zero in any other case.	7791	0.77	0.42	0	1
3 or adults or more in the household	Variable equal to 1 if there are at least 3 adults in the household, and zero in any other case.	7791	0.12	0.32	0	1
migrant	Variable equal to 1 if the mother does not live in the same city where she was born, and zero in the opposite case.	7791	0.51	0.50	0	1
grandmother lives in the same household	Variable equal to 1 if the youngest child's grandmother lives in the household, and zero in the opposite case.	7791	0.02	0.13	0	1
unemployment rate	Annual average unemployment rate of the state where the household is, in percentage.	7791	8.65	2.11	5.60	12.87
policy	Variable equal to 1 if the new primary education system policy is already implemented in the state where is household is, and zero in the opposite case.	7791	0.50	0.50	0	1

Source: PNADs 2007, 2008 and 2009

Table 2 - Description of the variables

	Policy not implemented	Policy implemented	Total
not attending	2,281	2,020	4,301
attending the old system	782	306	1,088
attending the new system	837	1,565	2,402
Total	3,900	3,891	7,791

Source: PNADs 2007, 2008 and 2009

Table 3 - Description of the variables (in %)

year	Policy not implemented				Policy implemented			
	not attending	attending the old system	attending the new system	Total	not attending	attending the old system	attending the new system	Total
2007	61.90	22.49	15.61	100.00	54.68	8.94	36.38	100.00
2008	60.22	19.09	20.69	100.00	53.75	8.65	37.60	100.00
2009	50.92	17.17	31.91	100.00	48.58	6.50	44.92	100.00
Observations:	2,281	782	837	3,900	2,020	306	1,565	3,891

Sample: 7,791

Source: PNADs 2007, 2008 and 2009

Table 4 - Description of the Variables

Variables	2007						2008						2009					
	Policy not implemented			Policy implemented			Policy not implemented			Policy implemented			Policy not implemented			Policy implemented		
	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system
mother's income (in R\$)	730.21	1018.63	1248.02	639.10	809.55	878.31	592.37	760.40	1437.40	744.18	797.83	910.64	741.50	608.23	888.54	749.27	523.84	935.65
mother's age	33.56	33.64	33.69	33.78	34.26	34.11	33.41	32.88	34.15	33.49	34.46	33.87	33.41	33.97	34.28	34.04	34.57	33.65
other mother's income (in R\$)	79.08	47.84	89.61	51.87	46.75	55.95	60.09	55.21	52.72	67.50	99.81	65.38	65.91	78.38	65.66	92.20	65.12	70.25
other income in the household (in R\$)	1110.12	1199.11	1705.93	947.39	1124.17	1216.67	1071.00	1145.14	1740.04	1070.45	1205.84	1334.94	992.59	891.52	1387.11	1043.84	894.85	1319.15
unemployment rate	10.06	10.04	8.70	9.46	9.23	10.07	8.45	8.16	7.63	8.07	8.37	7.74	8.82	8.42	7.64	8.00	7.65	7.70
Observations:	1,043	379	263	526	86	350	713	226	245	739	119	517	525	177	329	755	101	698

Sample: 7,791

Source: PNADs 2007, 2008 and 2009

Table 5 - Description of the variables

Variable:	2007						2008						2009					
	Policy not implemented			Policy implemented			Policy not implemented			Policy implemented			Policy not implemented			Policy implemented		
	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system	not attending	attending the old system	attending the new system
labour supply	57.43%	65.44%	65.78%	54.75%	68.60%	57.14%	58.77%	54.87%	55.10%	55.62%	51.26%	65.38%	56.95%	59.32%	68.39%	61.85%	54.46%	66.62%
part time labour supply	28.39%	32.12%	31.30%	25.16%	40.00%	27.18%	30.66%	27.14%	21.99%	25.45%	17.14%	31.68%	28.03%	30.77%	35.00%	27.27%	24.59%	29.82%
full time labour supply	48.79%	58.68%	59.46%	46.64%	60.29%	48.98%	49.57%	45.74%	48.60%	47.69%	45.79%	58.76%	48.28%	50.34%	61.90%	55.49%	46.51%	61.10%
white	42.86%	44.06%	63.12%	38.97%	51.16%	39.71%	36.33%	37.17%	59.18%	46.96%	43.70%	46.81%	34.67%	35.59%	51.06%	43.31%	50.50%	46.85%
until 4 years of study	19.18%	17.94%	9.13%	17.30%	20.93%	14.57%	17.81%	14.16%	8.57%	16.51%	21.01%	9.86%	18.29%	22.03%	10.64%	16.29%	15.84%	11.60%
5 years of study	10.35%	10.82%	8.75%	13.50%	9.30%	9.43%	9.40%	15.93%	5.71%	9.74%	7.56%	9.09%	10.10%	9.60%	8.21%	10.99%	12.87%	10.17%
6 to 8 years of study	17.16%	13.46%	16.73%	17.87%	20.93%	18.00%	18.65%	16.37%	16.33%	18.94%	21.85%	17.60%	17.90%	14.69%	16.41%	17.48%	17.82%	17.19%
9 years of study	11.70%	11.08%	8.37%	14.07%	12.79%	7.43%	13.46%	13.27%	12.65%	11.91%	16.81%	10.25%	10.29%	9.04%	10.33%	10.73%	12.87%	9.03%
10 to 11 years of study	5.94%	8.97%	5.70%	4.75%	4.65%	7.71%	6.87%	5.31%	6.12%	7.04%	5.88%	6.00%	7.81%	7.34%	5.17%	6.62%	7.92%	6.73%
12 years of study	26.56%	23.48%	31.94%	23.95%	22.09%	26.57%	27.21%	25.22%	27.35%	25.71%	15.97%	30.56%	27.05%	30.51%	31.91%	25.96%	25.74%	29.66%
13 or more years of study	9.11%	14.25%	19.39%	8.56%	9.30%	16.29%	6.59%	9.73%	23.27%	10.15%	10.92%	16.63%	8.57%	6.78%	17.33%	11.92%	6.93%	15.62%
last child born is male	52.92%	52.24%	47.91%	53.61%	56.98%	49.71%	49.65%	46.02%	46.53%	53.86%	51.26%	51.84%	53.71%	46.89%	48.63%	52.72%	44.55%	50.57%
1 child in the household	31.16%	36.15%	44.87%	33.65%	29.07%	36.29%	32.40%	34.51%	38.37%	33.83%	28.57%	41.59%	29.33%	31.07%	39.82%	31.79%	33.66%	39.83%
2 children in the household	37.87%	36.41%	32.32%	37.45%	33.72%	34.00%	37.17%	30.09%	38.78%	38.16%	35.29%	36.36%	37.33%	35.59%	38.91%	36.42%	42.57%	32.66%
3 to 6 children in the household	29.91%	25.86%	21.67%	27.19%	32.56%	28.57%	27.49%	33.19%	20.00%	25.58%	35.29%	20.12%	31.05%	29.94%	19.45%	29.93%	22.77%	26.79%
7 children or more in the household	1.05%	1.58%	1.14%	1.33%	4.65%	1.14%	2.66%	1.77%	2.04%	2.30%	0.84%	1.93%	1.90%	3.39%	0.91%	1.46%	0.99%	0.43%
1 adult in the household	12.27%	10.03%	10.27%	9.89%	8.14%	14.57%	8.70%	9.29%	7.35%	10.01%	9.24%	10.25%	13.14%	11.30%	15.50%	12.32%	9.90%	13.18%
2 adults in the household	76.41%	79.16%	80.99%	79.47%	81.40%	73.71%	78.54%	77.43%	77.96%	77.94%	77.31%	78.92%	75.81%	75.14%	71.43%	76.56%	80.20%	76.22%
3 or adults or more in the household	11.31%	10.82%	8.75%	10.65%	10.47%	11.71%	12.76%	13.27%	14.69%	12.04%	13.45%	10.83%	11.05%	13.56%	13.07%	11.13%	9.90%	10.60%
migrant	54.65%	48.28%	59.70%	46.20%	50.00%	50.00%	53.44%	47.79%	54.29%	46.55%	45.38%	52.61%	50.10%	50.28%	52.28%	45.56%	49.50%	50.86%
grandmother lives in the same household	2.11%	1.58%	0.76%	1.33%	1.16%	1.71%	0.98%	1.77%	2.04%	2.57%	1.68%	2.32%	0.57%	1.13%	2.74%	2.12%	0.99%	2.01%
Observations:	1,043	379	263	526	86	350	713	226	245	739	119	517	525	177	329	755	101	698

Sample: 7,791

Source: PNADs 2007, 2008 and 2009

Table 6 - Results for the mothers' observed characteristics on the enrollment of children in school

	Coef.	Std. Err.		dy/dx
policy	0.136	(0.029)	***	0.053
supply labour	0.055	(0.030)	*	0.021
mother's age	0.059	(0.019)	***	0.023
mother's age squared	-0.001	(0.000)	***	0.000
white	0.041	(0.031)		0.016
until 4 years of study (reference)				
5 years of study	0.077	(0.059)		0.030
6 to 8 years of study	0.071	(0.051)		0.028
9 years of study	-0.003	(0.058)		-0.001
10 to 11 years of study	0.121	(0.068)	*	0.047
12 years of study	0.102	(0.049)	**	0.040
13 or more years of study	0.307	(0.061)	***	0.121
last child born is male	-0.078	(0.029)	*	-0.030
other mother's income	0.000	(0.000)		0.000
other income in the household	0.000	(0.000)	**	0.000
1 child in the household (reference)				
2 children in the household	-0.154	(0.036)	***	-0.061
3 to 6 children in the household	-0.155	(0.041)	***	-0.060
7 children or more in the household	-0.176	(0.121)		-0.068
1 adult in the household	0.044	(0.048)		0.017
2 adults in the household (reference)				
3 or adults or more in the household	0.005	(0.049)		0.001
migrant	0.024	(0.029)		0.009
grandmother lives in the same household	-0.024	(0.114)		-0.009
unemployment rate	-0.050	(0.007)	***	-0.019
constant	-0.884	(0.340)	**	

LR chi2(22) = 239.050

Prob > chi2 = 0.000

Pseudo R2 = 0.022

Observations: 7791

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 7 - Results for the mothers' observed characteristics on the primary education system

Base outcome: not attend school	Old system		New system	
	Coef.	Std. Err.	Coef.	Std. Err.
policy	-0.824	(0.075)	***	0.705 (0.054) **
supply labour	0.074	(0.072)		0.092 (0.056)
mother's age	0.093	(0.046)	*	0.100 (0.036) **
mother's age squared	-0.001	(0.001)	*	-0.001 (0.000) **
white	0.042	(0.074)		0.075 (0.056)
until 4 years of study (reference)				
5 years of study	0.058	(0.131)		0.187 (0.113)
6 to 8 years of study	-0.121	(0.119)		0.270 (0.098) **
9 years of study	-0.026	(0.131)		0.041 (0.112)
10 to 11 years of study	0.059	(0.156)		0.286 (0.129) **
12 years of study	-0.164	(0.114)		0.358 (0.093) ***
13 or more years of study	0.042	(0.147)		0.722 (0.112) ***
last child born is male	-0.103	(0.069)		-0.138 (0.053) **
other mother's income	0.000	(0.000)		0.000 (0.000)
other income in the household	0.000	(0.000)		0.000 (0.000) ***
1 child in the household (reference)				
2 children in the household	-0.147	(0.087)	*	-0.294 (0.065) ***
3 to 6 children in the household	-0.066	(0.098)		-0.343 (0.076) ***
7 children or more in the household	0.032	(0.264)		-0.475 (0.239) *
1 adult in the household	-0.130	(0.120)		0.168 (0.087) *
2 adults in the household (reference)				
3 or adults or more in the household	0.014	(0.114)		0.003 (0.090)
migrant	-0.104	(0.070)		0.112 (0.053) **
grandmother lives in the same household	-0.158	(0.292)		0.010 (0.203)
unemployment rate	-0.008	(0.017)		-0.121 (0.014) ***
constant	-2.462	(0.824)	***	-1.998 (0.631) ***

LR chi2(44) = 800.810

Prob > chi2 = 0.000

Pseudo R2 = 0.053

Observations: 7791

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 8 - Results for the mothers' observed characteristics on the policy implementation

outcome variable: policy implementation	(I)			(II)			(III)			(IV)		
	Coef.	Std. Err.	dy/dx	Coef.	Std. Err.	dy/dx	Coef.	Std. Err.	dy/dx	Coef.	Std. Err.	dy/dx
labour supply	-0.021	(0.030)	-0.008									
part time				-0.074	(0.043)	* -0.029						
full time							0.002	(0.033)	0.000			
wages										0.000	(0.000)	0.000
mother's age	-0.034	(0.019)	* -0.013	-0.012	(0.025)	-0.004	-0.052	(0.021)	** -0.020	-0.050	(0.027)	* -0.020
mother's age squared	0.001	(0.000)	** 0.000	0.000	(0.000)	0.000	0.001	(0.000)	** 0.000	0.001	(0.000)	** 0.000
white	-0.067	(0.031)	** -0.026	-0.059	(0.041)	-0.023	-0.065	(0.033)	* -0.026	-0.067	(0.042)	-0.027
until 4 years of study (reference)												
5 years of study	0.056	(0.058)	0.022	0.046	(0.070)	0.018	0.062	(0.065)	0.025	0.047	(0.095)	0.019
6 to 8 years of study	0.054	(0.051)	0.021	0.052	(0.062)	0.020	0.074	(0.056)	0.030	-0.050	(0.080)	-0.020
9 years of study	-0.023	(0.057)	-0.009	-0.048	(0.073)	-0.019	0.000	(0.063)	0.000	-0.084	(0.087)	-0.034
10 to 11 years of study	0.014	(0.068)	0.005	-0.034	(0.089)	-0.013	0.025	(0.074)	0.010	-0.039	(0.099)	-0.016
12 years of study	-0.003	(0.049)	-0.001	-0.015	(0.063)	-0.006	0.015	(0.054)	0.006	-0.088	(0.074)	-0.035
13 or more years of study	0.088	(0.061)	0.034	0.118	(0.089)	0.046	0.079	(0.068)	0.031	0.010	(0.087)	0.004
last child born is male	0.036	(0.029)	0.014	0.023	(0.038)	0.008	0.013	(0.031)	0.005	0.065	(0.039)	0.026
other mother's income	0.000	(0.000)	0.000	0.000	(0.000)	0.000	0.000	(0.000)	0.000	0.000	(0.000)	0.000
other income in the household	0.000	(0.000)	** 0.000	0.000	(0.000)	* 0.000	0.000	(0.000)	*** 0.000	0.000	(0.000)	0.000
1 child in the household (reference)												
2 children in the household	-0.031	(0.036)	-0.012	0.005	(0.049)	0.001	-0.034	(0.039)	-0.013	-0.070	(0.048)	-0.028
3 to 6 children in the household	-0.032	(0.041)	-0.012	0.023	(0.055)	0.009	-0.023	(0.045)	-0.009	-0.083	(0.056)	-0.033
7 children or more in the household	-0.109	(0.120)	-0.043	0.027	(0.160)	0.010	-0.075	(0.126)	-0.030	-0.348	(0.184)	* -0.137
1 adult in the household	-0.025	(0.048)	-0.010	0.064	(0.071)	0.025	-0.073	(0.053)	-0.029	-0.059	(0.059)	-0.023
2 adults in the household (reference)												
3 or adults or more in the household	-0.052	(0.048)	-0.020	-0.014	(0.066)	-0.005	-0.077	(0.052)	-0.031	-0.059	(0.067)	-0.024
migrant	-0.151	(0.029)	*** -0.060	-0.188	(0.039)	*** -0.075	-0.185	(0.032)	*** -0.074	-0.098	(0.040)	** -0.039
grandmother lives in the same household	0.191	(0.115)	0.075	-0.038	(0.165)	-0.015	0.198	(0.123)	0.079	0.405	(0.152)	** 0.157
unemployment rate	-0.100	(0.007)	*** -0.039	-0.096	(0.010)	*** -0.038	-0.103	(0.008)	*** -0.041	-0.100	(0.010)	*** -0.040
constant	1.491	(0.336)	***	1.119	(0.436)	**	1.847	(0.366)	***	1.786	(0.484)	***
LR chi2(22):	235.030			133.680			221.070			132.240		
Prob > chi2:	0.000			0.000			0.000			0.000		
Pseudo R2:	0.022			0.022			0.024			0.023		
Observations:	7791			4357			6554			4222		

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 9 - Results for the full sample

outcome variable:	labour supply		part time		full time		wages	
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
attending school		-0.145 (0.212)		-0.420 (0.270)		0.012 (0.244)		-329.393 (492.742)
mother's age	0.023 (0.007) ***	0.026 (0.009) ***	0.028 (0.009) ***	0.024 (0.012) *	0.026 (0.008) ***	0.027 (0.010) **	0.016 (0.011)	26.810 (20.443)
mother's age squared	0.000 (0.000) ***	0.000 (0.000) **	0.000 (0.000) **	0.000 (0.000) *	0.000 (0.000) ***	0.000 (0.000) **	0.000 (0.000)	-0.212 (0.282)
white	0.016 (0.012)	-0.001 (0.012)	0.010 (0.016)	-0.016 (0.016)	0.012 (0.013)	0.003 (0.013)	0.025 (0.016)	109.274 (31.490) ***
until 4 years of study (reference)								
5 years of study	0.031 (0.023)	0.079 (0.023) ***	0.002 (0.027)	0.068 (0.027) **	0.037 (0.025)	0.069 (0.026) **	0.062 (0.037) *	48.440 (73.658)
6 to 8 years of study	0.028 (0.020)	0.062 (0.020) ***	0.038 (0.024)	0.044 (0.026) *	0.035 (0.022)	0.072 (0.023) ***	0.015 (0.031)	72.966 (57.029)
9 years of study	0.000 (0.022)	0.083 (0.022) ***	-0.016 (0.028)	-0.018 (0.029)	0.013 (0.024)	0.127 (0.024) ***	0.008 (0.034)	179.372 (61.386) ***
10 to 11 years of study	0.049 (0.026) *	0.115 (0.028) ***	0.041 (0.034)	-0.003 (0.036)	0.066 (0.029) **	0.164 (0.032) ***	0.030 (0.039)	196.388 (71.474) **
12 years of study	0.043 (0.019) **	0.190 (0.021) ***	0.008 (0.024)	0.041 (0.025)	0.056 (0.021) **	0.242 (0.024) ***	0.059 (0.029) **	289.210 (59.035) ***
13 or more years of study	0.127 (0.023) ***	0.353 (0.035) ***	0.094 (0.034) **	0.267 (0.043) ***	0.146 (0.026) ***	0.405 (0.044) ***	0.129 (0.032) ***	1135.723 (86.640) ***
last child born is male	-0.030 (0.011) **	-0.003 (0.013)	-0.026 (0.015) *	-0.009 (0.016)	-0.035 (0.012) ***	0.002 (0.014)	-0.021 (0.015)	-51.763 (29.248) *
other mother's income	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000) **	0.150 (0.084) *
other income in the household	0.000 (0.000) **	0.000 (0.000) *	0.000 (0.000) **	0.000 (0.000)	0.000 (0.000)	0.000 (0.000) **	0.000 (0.000) *	0.256 (0.009) ***
1 child in the household (reference)								
2 children in the household	-0.060 (0.014) ***	-0.054 (0.019) ***	-0.070 (0.019) ***	-0.038 (0.027)	-0.056 (0.015) ***	-0.058 (0.020) ***	-0.053 (0.019) **	-89.375 (42.931) **
3 to 6 children in the household	-0.061 (0.016) ***	-0.028 (0.020)	-0.067 (0.021) ***	-0.023 (0.028)	-0.063 (0.017) ***	-0.032 (0.023)	-0.053 (0.022) **	-101.771 (47.929) **
7 children or more in the household	-0.070 (0.047)	-0.075 (0.048)	-0.095 (0.062)	-0.165 (0.067) **	-0.063 (0.049)	-0.037 (0.050)	-0.036 (0.071)	-86.226 (129.903)
1 adult in the household	0.020 (0.019)	0.152 (0.019) ***	0.040 (0.027)	0.097 (0.030) ***	0.018 (0.020)	0.181 (0.020) ***	0.007 (0.023)	314.299 (41.740) ***
2 adults in the household (reference)								
3 or adults or more in the household	0.002 (0.019)	0.018 (0.018)	-0.017 (0.025)	-0.049 (0.026) *	0.008 (0.020)	0.046 (0.019) **	0.015 (0.026)	10.455 (47.786)
migrant	0.009 (0.011)	-0.007 (0.011)	0.023 (0.015)	-0.024 (0.016)	0.002 (0.012)	0.005 (0.012)	0.005 (0.015)	45.441 (27.898)
grandmother lives in the same household	-0.008 (0.044)	0.026 (0.043)	0.009 (0.063)	0.025 (0.064)	-0.066 (0.047)	0.023 (0.048)	0.046 (0.057)	44.751 (107.023)
unemployment rate	-0.020 (0.003) ***	-0.017 (0.005) ***	-0.019 (0.004) ***	-0.004 (0.007)	-0.019 (0.003) ***	-0.021 (0.006) ***	-0.021 (0.004) ***	-24.361 (13.413) *
policy	0.052 (0.011) ***		0.056 (0.015) ***		0.049 (0.012) ***		0.057 (0.015) ***	
constant	0.167 (0.130)	0.214 (0.136)	0.080 (0.168)	0.037 (0.173)	0.109 (0.142)	0.042 (0.142)	0.297 (0.187)	-188.511 (382.450)
Wald chi2(21):		526.940		101.930		732.890		2897.280
Prob > chi2:		0.000		0.000		0.000		0.000
R-squared:		0.038		.		0.101		0.392
Root MSE:		0.481		0.493		0.474		891.820
Observations:		7791		4357		6554		4222

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 10 - Results for the higher educated mothers

outcome variable:	labour supply				part time				full time				wages			
	1st Stage		2nd Stage		1st Stage		2nd Stage		1st Stage		2nd Stage		1st Stage		2nd Stage	
attending school			0.032	(0.396)			-0.274	(0.506)			0.193	(0.456)			-769.260	(1528.421)
mother's age	0.003	(0.012)	0.039	(0.011) ***	0.005	(0.017)	0.030	(0.017) *	0.002	(0.013)	0.044	(0.012) ***	0.002	(0.015)	23.687	(36.764)
mother's age squared	0.000	(0.000)	-0.001	(0.000) ***	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	-0.001	(0.000) ***	0.000	(0.000)	-0.018	(0.515)
white	0.014	(0.018)	-0.014	(0.017)	0.009	(0.026)	-0.023	(0.026)	0.008	(0.019)	-0.014	(0.018)	0.020	(0.022)	144.051	(60.172) **
until 4 years of study (reference)																
5 years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
6 to 8 years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
9 years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
10 to 11 years of study	-0.080	(0.029) **	-0.219	(0.041) ***	-0.054	(0.042)	-0.265	(0.049) ***	-0.083	(0.031) **	-0.219	(0.048) ***	-0.103	(0.037) **	-915.506	(180.756) ***
12 years of study	-0.086	(0.020) ***	-0.148	(0.039) ***	-0.086	(0.033) **	-0.217	(0.055) ***	-0.092	(0.022) ***	-0.144	(0.047) ***	-0.074	(0.024) ***	-823.483	(128.132) ***
13 or more years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
last child born is male	-0.017	(0.017)	0.022	(0.016)	-0.003	(0.025)	0.014	(0.024)	-0.032	(0.018) *	0.031	(0.022)	-0.006	(0.020)	-83.657	(49.924) *
other mother's income	0.000	(0.000) **	0.000	(0.000) ***	0.000	(0.000)	0.000	(0.000) *	0.000	(0.000) *	0.000	(0.000) ***	0.000	(0.000) **	0.075	(0.195)
other income in the household	0.000	(0.000)	0.000	(0.000) *	0.000	(0.000) *	0.000	(0.000)	0.000	(0.000)	0.000	(0.000) **	0.000	(0.000)	0.279	(0.015) ***
1 child in the household (reference)																
2 children in the household	-0.074	(0.019) ***	-0.053	(0.034)	-0.099	(0.028) ***	-0.038	(0.056)	-0.063	(0.021) ***	-0.060	(0.035) *	-0.061	(0.024) **	-169.345	(108.793)
3 to 6 children in the household	-0.086	(0.026) ***	-0.016	(0.042)	-0.098	(0.038)	-0.002	(0.062)	-0.093	(0.028) ***	-0.018	(0.050)	-0.075	(0.031) **	-166.525	(139.663)
7 children or more in the household	-0.128	(0.086)	-0.036	(0.094)	-0.297	(0.138) **	-0.273	(0.200)	-0.128	(0.087)	0.006	(0.102)	-0.014	(0.107)	2.372	(258.042)
1 adult in the household	-0.011	(0.028)	0.115	(0.026) ***	-0.001	(0.048)	0.053	(0.046)	-0.018	(0.030)	0.148	(0.030) ***	-0.009	(0.033)	535.547	(80.134) ***
2 adults in the household (reference)																
3 or adults or more in the household	-0.011	(0.030)	0.016	(0.028)	-0.011	(0.046)	-0.027	(0.044)	-0.007	(0.032)	0.031	(0.030)	-0.023	(0.036)	-5.157	(94.452)
migrant	0.015	(0.017)	-0.037	(0.016) **	0.010	(0.025)	-0.037	(0.024)	0.015	(0.018)	-0.042	(0.018) **	0.023	(0.020)	68.609	(60.722)
grandmother lives in the same household	0.090	(0.059)	0.065	(0.065)	0.097	(0.099)	0.069	(0.106)	0.040	(0.063)	0.066	(0.063)	0.134	(0.069) *	137.722	(267.633)
unemployment rate	-0.024	(0.004) ***	-0.014	(0.011)	-0.028	(0.006) ***	0.003	(0.016)	-0.022	(0.005) ***	-0.019	(0.012)	-0.023	(0.005) ***	-30.491	(39.378)
policy	0.039	(0.017) **			0.048	(0.025) *			0.038	(0.018) **			0.033	(0.021)		
constant	0.657	(0.211) ***	0.238	(0.339)	0.620	(0.300) **	0.075	(0.448)	0.679	(0.224) ***	0.061	(0.396)	0.684	(0.270) ***	1,045.818	(1281.111)
Wald chi2(21):			199.920				72.950				219.440				1326.170	
Prob > chi2:			0.000				0.000				0.000				0.000	
R-squared:			0.054				.				0.044				0.301	
Root MSE:			0.449				0.471				0.469				1188.000	
Observations:			3542				1581				3056				2373	

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 11 - Results for the lower educated mothers

outcome variable:	labour supply				part time				full time				wages			
	1st Stage		2nd Stage		1st Stage		2nd Stage		1st Stage		2nd Stage		1st Stage		2nd Stage	
attending school			-0.204	(0.255)			-0.450	(0.319)			-0.053	(0.299)			-235.694	(189.217)
mother's age	0.034	(0.009) ***	0.020	(0.013)	0.036	(0.011) ***	0.022	(0.017)	0.040	(0.010) ***	0.020	(0.016)	0.029	(0.015) *	17.273	(11.661)
mother's age squared	0.000	(0.000) ***	0.000	(0.000)	-0.001	(0.000) ***	0.000	(0.000)	-0.001	(0.000) ***	0.000	(0.000)	0.000	(0.000) *	-0.214	(0.161)
white	0.015	(0.016)	0.008	(0.017)	0.006	(0.020)	-0.011	(0.020)	0.012	(0.018)	0.017	(0.018)	0.030	(0.024)	73.913	(18.000) ***
until 4 years of study (reference)																
5 years of study	0.032	(0.023)	0.082	(0.025) ***	0.004	(0.027)	0.067	(0.028) **	0.038	(0.025)	0.074	(0.028) **	0.057	(0.037)	44.995	(28.598)
6 to 8 years of study	0.031	(0.020)	0.063	(0.022) **	0.043	(0.024) *	0.043	(0.028)	0.038	(0.022) *	0.075	(0.025) ***	0.014	(0.032)	64.020	(22.552) **
9 years of study	0.006	(0.023)	0.082	(0.023) ***	-0.008	(0.029)	-0.022	(0.029)	0.020	(0.025)	0.130	(0.025) ***	0.007	(0.034)	182.843	(24.415) ***
10 to 11 years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
12 years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
13 or more years of study	(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)		(omitted)	
last child born is male	-0.041	(0.015) **	-0.023	(0.019)	-0.039	(0.019) **	-0.023	(0.023)	-0.038	(0.017) **	-0.020	(0.020)	-0.041	(0.023) *	-12.534	(17.816)
other mother's income	0.000	(0.000)	0.000	(0.000) ***	0.000	(0.000)	0.000	(0.000) **	0.000	(0.000)	0.000	(0.000) ***	0.000	(0.000)	-0.067	(0.069)
other income in the household	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.079	(0.010) ***
1 child in the household (reference)																
2 children in the household	-0.043	(0.020) **	-0.047	(0.024) *	-0.045	(0.025) *	-0.030	(0.030)	-0.042	(0.022) *	-0.050	(0.025) *	-0.032	(0.031)	-15.490	(22.774)
3 to 6 children in the household	-0.043	(0.021) **	-0.024	(0.025)	-0.046	(0.027) *	-0.022	(0.031)	-0.044	(0.023) *	-0.027	(0.027)	-0.034	(0.032)	-15.472	(23.994)
7 children or more in the household	-0.034	(0.056)	-0.081	(0.059)	-0.030	(0.070)	-0.128	(0.072) *	-0.021	(0.060)	-0.040	(0.060)	-0.033	(0.096)	-12.986	(68.715)
1 adult in the household	0.045	(0.025) *	0.185	(0.028) ***	0.061	(0.034) *	0.123	(0.040) ***	0.049	(0.028) *	0.212	(0.031) ***	0.024	(0.033)	34.745	(23.827)
2 adults in the household (reference)																
3 or adults or more in the household	0.015	(0.024)	0.023	(0.025)	-0.014	(0.031)	-0.057	(0.032) *	0.023	(0.026)	0.063	(0.027) **	0.059	(0.038)	56.685	(28.867) *
migrant	0.005	(0.015)	0.016	(0.016)	0.032	(0.019) *	-0.018	(0.021)	-0.010	(0.017)	0.044	(0.017) **	-0.016	(0.024)	26.062	(17.250)
grandmother lives in the same household	-0.147	(0.067) **	-0.051	(0.078)	-0.061	(0.083)	-0.024	(0.086)	-0.223	(0.073) ***	-0.048	(0.097)	-0.151	(0.104)	50.247	(77.582)
unemployment rate	-0.017	(0.004) ***	-0.016	(0.006) **	-0.014	(0.005) ***	-0.006	(0.007)	-0.017	(0.004) ***	-0.020	(0.007) ***	-0.019	(0.006) ***	-35.560	(5.931) ***
policy	0.062	(0.015) ***			0.060	(0.019) ***			0.055	(0.017) ***			0.087	(0.023) ***		
constant	-0.052	(0.169)	0.312	(0.174) *	-0.116	(0.207)	0.101	(0.212)	-0.142	(0.186)	0.175	(0.185)	0.048	(0.265)	327.088	(189.331) *
Wald chi2(21):			123.940				37.010				183.430				315.040	
Prob > chi2:			0.000				0.005				0.000				0.000	
R-squared:			.				.				0.047				0.070	
Root MSE:			0.503				0.496				0.482				348.300	
Observations:			4249				2776				3498				1849	

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 12 - Results for the single mothers

outcome variable:	labour supply		part time		full time		wages	
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
attending school		0.399 (0.234) *		0.574 (0.912)		0.522 (0.304) *		179.012 (321.631)
mother's age	0.018 (0.014)	0.033 (0.015) **	0.048 (0.020) **	-0.003 (0.048)	0.016 (0.015)	0.041 (0.017) **	0.000 (0.019)	37.276 (32.284)
mother's age squared	0.000 (0.000)	0.000 (0.000) *	-0.001 (0.000) **	0.000 (0.001)	0.000 (0.000)	-0.001 (0.000) **	0.000 (0.000)	-0.365 (0.447)
white	0.004 (0.024)	-0.008 (0.024)	-0.005 (0.035)	-0.037 (0.037)	0.005 (0.026)	-0.002 (0.027)	0.010 (0.030)	199.281 (50.193) ***
until 4 years of study (reference)								
5 years of study	0.013 (0.047)	0.132 (0.046) ***	0.019 (0.061)	0.152 (0.066) **	0.001 (0.052)	0.126 (0.055) **	0.048 (0.062)	6.504 (105.943)
6 to 8 years of study	0.040 (0.040)	0.056 (0.040)	0.041 (0.052)	0.018 (0.065)	0.031 (0.043)	0.067 (0.046)	0.073 (0.054)	46.314 (94.236)
9 years of study	-0.020 (0.044)	0.160 (0.044) ***	-0.092 (0.060)	0.158 (0.106)	-0.012 (0.048)	0.169 (0.051) ***	0.060 (0.058)	103.651 (99.800)
10 to 11 years of study	-0.023 (0.052)	0.166 (0.051) ***	-0.029 (0.074)	0.014 (0.083)	-0.034 (0.055)	0.217 (0.059) ***	0.029 (0.067)	266.120 (113.531) **
12 years of study	0.013 (0.038)	0.189 (0.037) ***	-0.086 (0.052)	0.117 (0.097)	0.012 (0.040)	0.224 (0.043) ***	0.107 (0.050) **	284.714 (91.510) ***
13 or more years of study	0.102 (0.045) **	0.296 (0.051) ***	0.025 (0.074)	0.220 (0.081) **	0.125 (0.048) **	0.327 (0.063) ***	0.161 (0.057) **	1,403.189 (108.762) ***
last child born is male	-0.029 (0.022)	0.004 (0.023)	-0.006 (0.032)	-0.005 (0.034)	-0.036 (0.024)	0.015 (0.027)	-0.038 (0.027)	-41.078 (47.358)
other mother's income	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000) **	0.063 (0.091)
other income in the household	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.253 (0.018) ***
1 child in the household (reference)								
2 children in the household	-0.072 (0.027) **	0.002 (0.032)	-0.122 (0.041) ***	0.042 (0.118)	-0.053 (0.029) *	-0.005 (0.035)	-0.050 (0.034)	12.674 (59.238)
3 to 6 children in the household	-0.074 (0.031) **	-0.014 (0.035)	-0.116 (0.045) **	0.033 (0.114)	-0.074 (0.033) **	-0.023 (0.042)	-0.039 (0.039)	-126.363 (66.504) *
7 children or more in the household	-0.149 (0.083) *	0.029 (0.089)	-0.131 (0.120)	-0.106 (0.170)	-0.112 (0.086)	0.059 (0.097)	-0.203 (0.114) *	92.585 (205.922)
1 adult in the household	0.021 (0.025)	0.104 (0.025) ***	0.044 (0.036)	0.073 (0.056)	0.026 (0.027)	0.112 (0.029) ***	-0.005 (0.031)	216.895 (52.671) ***
2 adults in the household (reference)								
3 or adults or more in the household	-0.024 (0.039)	0.000 (0.039)	-0.044 (0.056)	-0.107 (0.070)	-0.024 (0.040)	0.046 (0.043)	-0.002 (0.051)	23.514 (87.170)
migrant	0.018 (0.022)	-0.008 (0.022)	0.028 (0.032)	-0.049 (0.041)	0.015 (0.024)	0.003 (0.025)	0.020 (0.028)	49.847 (47.243)
grandmother lives in the same household	-0.033 (0.063)	0.079 (0.063)	0.009 (0.097)	0.068 (0.102)	-0.081 (0.067)	0.104 (0.074)	-0.031 (0.077)	-23.896 (129.820)
unemployment rate	-0.029 (0.006) ***	-0.007 (0.009)	-0.029 (0.008) ***	0.011 (0.029)	-0.029 (0.006) ***	-0.006 (0.012)	-0.029 (0.007) ***	-6.064 (16.326)
policy	0.093 (0.022) ***		0.037 (0.032)		0.083 (0.024) ***		0.145 (0.027) ***	
constant	0.362 (0.259)	-0.225 (0.278)	-0.146 (0.361)	-0.089 (0.392)	0.421 (0.277)	-0.539 (0.333)	0.628 (0.341) *	-739.596 (633.989)
Wald chi2(21):		184.790		46.280		192.080		962.690
Prob > chi2:		0.000		0.001		0.000		0.000
R-squared:		.		.		.		0.422
Root MSE:		0.483		0.510		0.515		824.050
Observations:		2008		952		1727		1308

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 13 - Results for the married mothers

outcome variable:	labour supply		part time		full time		wages	
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
attending school		-0.597 (0.397)		-0.566 (0.300) *		-0.409 (0.417)		-2,347.613 (3657.916)
mother's age	0.023 (0.009) **	0.031 (0.013) **	0.021 (0.011) *	0.021 (0.013)	0.028 (0.009) ***	0.031 (0.015) **	0.022 (0.013) *	66.563 (87.804)
mother's age squared	0.000 (0.000) **	0.000 (0.000) **	0.000 (0.000) *	0.000 (0.000)	0.000 (0.000) **	0.000 (0.000) *	0.000 (0.000)	-0.694 (1.120)
white	0.018 (0.014)	0.013 (0.017)	0.013 (0.018)	-0.008 (0.019)	0.011 (0.015)	0.014 (0.016)	0.029 (0.019)	135.286 (118.223)
until 4 years of study (reference)								
5 years of study	0.039 (0.026)	0.080 (0.034) **	-0.002 (0.030)	0.042 (0.033)	0.050 (0.029) *	0.075 (0.038) *	0.080 (0.046) *	224.322 (324.074)
6 to 8 years of study	0.026 (0.023)	0.069 (0.029) **	0.037 (0.027)	0.047 (0.031)	0.039 (0.026)	0.082 (0.032) **	-0.008 (0.038)	46.952 (118.327)
9 years of study	0.009 (0.026)	0.065 (0.030) **	0.006 (0.032)	-0.036 (0.034)	0.024 (0.028)	0.124 (0.032) ***	-0.014 (0.042)	174.341 (134.804)
10 to 11 years of study	0.076 (0.031) **	0.135 (0.047) ***	0.062 (0.039)	0.014 (0.046)	0.103 (0.034) ***	0.188 (0.056) ***	0.032 (0.047)	211.620 (183.856)
12 years of study	0.055 (0.022) **	0.213 (0.033) ***	0.036 (0.027)	0.054 (0.031) *	0.073 (0.024) ***	0.274 (0.040) ***	0.039 (0.035)	338.094 (173.985) *
13 or more years of study	0.137 (0.027) ***	0.414 (0.063) ***	0.110 (0.039) **	0.290 (0.054) ***	0.155 (0.031) ***	0.470 (0.073) ***	0.120 (0.040) ***	1,217.820 (454.368) **
last child born is male	-0.030 (0.013) **	-0.013 (0.019)	-0.030 (0.017) *	-0.012 (0.020)	-0.034 (0.014) **	-0.012 (0.021)	-0.012 (0.018)	-68.885 (70.676)
other mother's income	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000) ***	0.000 (0.000)	0.111 (0.312)
other income in the household	0.000 (0.000) *	0.000 (0.000)	0.000 (0.000) **	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.281 (0.032) ***
1 child in the household (reference)								
2 children in the household	-0.057 (0.016) ***	-0.083 (0.030) **	-0.055 (0.021) **	-0.037 (0.028)	-0.057 (0.018) ***	-0.087 (0.031) ***	-0.057 (0.022) **	-219.538 (219.712)
3 to 6 children in the household	-0.058 (0.019) ***	-0.042 (0.032)	-0.055 (0.025) **	-0.016 (0.031)	-0.060 (0.021) ***	-0.042 (0.033)	-0.065 (0.027) **	-192.313 (254.214)
7 children or more in the household	-0.033 (0.056)	-0.093 (0.067)	-0.087 (0.072)	-0.157 (0.082) *	-0.035 (0.060)	-0.066 (0.065)	0.072 (0.090)	7.510 (372.817)
1 adult in the household	0.056 (0.111)	-0.107 (0.129)	0.123 (0.132)	-0.061 (0.146)	0.056 (0.117)	-0.070 (0.126)	0.021 (0.188)	0.781 (567.068)
2 adults in the household (reference)								
3 or adults or more in the household	0.009 (0.022)	0.030 (0.025)	-0.009 (0.029)	-0.019 (0.031)	0.020 (0.023)	0.053 (0.026) **	0.017 (0.031)	35.882 (110.377)
migrant	0.004 (0.013)	-0.009 (0.015)	0.019 (0.017)	-0.024 (0.019)	-0.004 (0.014)	0.001 (0.015)	-0.005 (0.019)	36.097 (58.823)
grandmother lives in the same household	0.017 (0.063)	-0.015 (0.073)	0.016 (0.084)	0.005 (0.090)	-0.053 (0.068)	-0.069 (0.075)	0.133 (0.088)	178.321 (560.021)
unemployment rate	-0.016 (0.003) ***	-0.022 (0.008) **	-0.017 (0.004) ***	-0.003 (0.007)	-0.015 (0.004) ***	-0.028 (0.008) ***	-0.018 (0.005) ***	-60.129 (67.967)
policy	0.038 (0.013) ***		0.061 (0.017) ***		0.037 (0.014) **		0.015 (0.019)	
constant	0.125 (0.152)	0.360 (0.186) *	0.154 (0.192)	0.146 (0.215)	0.031 (0.166)	0.194 (0.177)	0.179 (0.225)	262.085 (979.334)
Wald chi2(21):		237.930		65.290		392.550		784.610
Prob > chi2:		0.000		0.000		0.000		0.000
R-squared:	
Root MSE:		0.567		0.524		0.522		1475.800
Observations:		5783		3405		4827		2914

*** significant 1%; ** significant 5%; * significant 10%

Source: PNADs 2007, 2008 and 2009

Table 14 - Post-estimation statistics

Sample selection	Outcome variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(1,7769)	Prob>F	Shea's Partial R-sq.	Shea's Adj. Partial R-sq.
full sample	labour supply	0.030	0.027	0.003	21.449	0.000	0.003	0.000
	part time	0.029	0.024	0.003	13.928	0.000	0.003	-0.001
	full time	0.030	0.027	0.002	15.621	0.000	0.002	-0.001
	wages	0.034	0.029	0.003	13.533	0.000	0.003	-0.002
lower educated mothers	labour supply	0.021	0.017	0.004	16.417	0.000	0.004	-0.001
	part time	0.022	0.016	0.004	10.205	0.001	0.004	-0.004
	full time	0.023	0.018	0.003	10.915	0.001	0.003	-0.003
	wages	0.027	0.017	0.008	14.102	0.000	0.008	-0.003
higher educated mothers	labour supply	0.034	0.029	0.002	5.311	0.021	0.002	-0.004
	part time	0.046	0.035	0.002	3.611	0.058	0.002	-0.011
	full time	0.031	0.026	0.001	4.338	0.037	0.001	-0.005
	wages	0.034	0.027	0.001	2.483	0.115	0.001	-0.007
single mothers	labour supply	0.046	0.036	0.009	17.805	0.000	0.009	-0.001
	part time	0.052	0.030	0.001	1.324	0.250	0.001	-0.020
	full time	0.047	0.036	0.007	12.057	0.001	0.007	-0.005
	wages	0.066	0.051	0.021	27.769	0.000	0.021	0.006
married mothers	labour supply	0.028	0.024	0.002	8.428	0.004	0.002	-0.002
	part time	0.027	0.021	0.004	12.719	0.000	0.004	-0.002
	full time	0.028	0.024	0.001	6.466	0.011	0.001	-0.003
	wages	0.032	0.025	0.000	0.669	0.414	0.000	-0.007
Size of nominal 5% Walt test		10%	15%	20%	25%			
2SLS		16.38	8.96	6.66	5.53			
LIML		16.38	8.96	6.66	5.53			

Source: PNADs 2007, 2008 and 2009

Table 15 - Post-estimation statistics

	labour supply	part time	full time	wages
full sample	Durbin (score) chi2(1) = 0.628306 (p = 0.4280) Wu-Hausman F(1,7768) = 0.626501 (p = 0.4287)	Durbin (score) chi2(1) = 3.17537 (p = 0.0748) Wu-Hausman F(1,4334) = 3.16091 (p = 0.0755)	Durbin (score) chi2(1) = 0.001409 (p = 0.9701) Wu-Hausman F(1,6531) = 0.001404 (p = 0.9701)	Durbin (score) chi2(1) = 0.61196 (p = 0.4341) Wu-Hausman F(1,4199) = 0.608715 (p = 0.4353)
lower educated mothers	Durbin (score) chi2(1) = 0.76982 (p = 0.3803) Wu-Hausman F(1,4229) = 0.766335 (p = 0.3814)	Durbin (score) chi2(1) = 2.76279 (p = 0.0965) Wu-Hausman F(1,2756) = 2.74562 (p = 0.0976)	Durbin (score) chi2(1) = 0.041086 (p = 0.8394) Wu-Hausman F(1,3478) = 0.040852 (p = 0.8398)	Durbin (score) chi2(1) = 1.48861 (p = 0.2224) Wu-Hausman F(1,1829) = 1.4737 (p = 0.2249)
higher educated mothers	Durbin (score) chi2(1) = 0.00019 (p = 0.9890) Wu-Hausman F(1,3523) = 0.000189 (p = 0.9890)	Durbin (score) chi2(1) = 0.336025 (p = 0.5621) Wu-Hausman F(1,1562) = 0.332057 (p = 0.5645)	Durbin (score) chi2(1) = 0.121559 (p = 0.7273) Wu-Hausman F(1,3037) = 0.120808 (p = 0.7282)	Durbin (score) chi2(1) = 0.37357 (p = 0.5411) Wu-Hausman F(1,2354) = 0.370638 (p = 0.5427)
single mothers	Durbin (score) chi2(1) = 2.84164 (p = 0.0919) Wu-Hausman F(1,1985) = 2.81308 (p = 0.0937)	Durbin (score) chi2(1) = 0.448772 (p = 0.5029) Wu-Hausman F(1,929) = 0.438137 (p = 0.5082)	Durbin (score) chi2(1) = 3.35014 (p = 0.0672) Wu-Hausman F(1,1704) = 3.31195 (p = 0.0690)	Durbin (score) chi2(1) = 0.212871 (p = 0.6445) Wu-Hausman F(1,1285) = 0.209162 (p = 0.6475)
married mothers	Durbin (score) chi2(1) = 3.30289 (p = 0.0692) Wu-Hausman F(1,5760) = 3.29164 (p = 0.0697)	Durbin (score) chi2(1) = 5.05297 (p = 0.0246) Wu-Hausman F(1,3382) = 5.0263 (p = 0.0250)	Durbin (score) chi2(1) = 1.2621 (p = 0.2613) Wu-Hausman F(1,4804) = 1.25642 (p = 0.2624)	Durbin (score) chi2(1) = 1.20729 (p = 0.2719) Wu-Hausman F(1,2891) = 1.19826 (p = 0.2738)

Source: PNADs 2007, 2008 and 2009