Family allowances and child school attendance. An ex-ante evaluation of alternative schemes in Uruguay

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1. Abstract

A new conditional cash transfer program for households with children will be implemented in Uruguay in 2008. Previous research indicates that both in terms of income poverty and educational achievements, children, and specially those aged 12-18, are the most vulnerable group. The redefinition of the social protection system is directed towards this group, and aims at reducing current and future poverty through investment in education. Evaluations of previous conditional cash transfers are not available, and not much is known about the potential impact on poverty and school attendance of different policy designs. We aim at filling this gap, by carrying out an ex ante evaluation of this conditional cash transfer program. We will undertake our ex ante analysis in two steps. The first one consists on the representation of the incidence of different transfer designs, without simulating any behavioral response from households. The second and main step of this research consists in the estimation of a behavioral model, using cross-section data, in order to generate a counterfactual illustrating how each household would behave under different policy designs. Based on the methodology proposed by Bourgignon et al (2002), we will assess what is the effect on poverty, inequality and school attendance of different policy designs. This research is relevant for the discussion about the social protection system that is at present undergoing in the country, and we believe that it may also shed more light on methodological issues related to the usefulness and accuracy of ex ante policy evaluations.
2. **Main research questions and core research objectives**

*The problem*

Households with children are the group that experiences more relative deprivation in Uruguay. Since the early 1990 decade, poverty incidence, intensity and severity is three fold in households with children compared to elder adults’ households.\(^1\) Previous research shows that this outcome is closely linked with increasing labour earnings inequality and rising unemployment, which mainly hit low skilled workers (UNDP, 2005; Amarante *et al.*, 2004). Meanwhile, the better situation of elder adults is related to the almost universal pensions system that was established in Uruguay since 1950 and to the 1990s increase of average benefits real value.\(^2\)

Another relevant non monetary outcome for children refers to education. Kindergarten supply increased since 1996 as a component of a reform in the educational system. As a result, attendance rates of children aged 4 and 5 increased significantly. Attendance rates in primary school are almost universal and have been steady for a long time. Repetition is a severe problem, particularly in the first year where rates are stagnant around 25% and mainly concentrated in low income groups. The other important failure of the educational system in Uruguay is located at secondary school where dropping out rates have been endemic since the 1980 decade (Chart 1). As a result, average years of schooling in the adult population are stagnant around 8.6% and have been surpassed by other Latin American countries. This problem is concentrated at lower income strata and mainly affects boys who also show higher labour market participation rates (Bucheli and Casacuberta, 2000).\(^3\)

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\(^1\) Poverty incidence among households with children was 37.2% in 1991, 40% in 2002 and 40.6% in 2006 (first semester). In elder adults’ households, the corresponding figures were 5% in 1991, 11.1% in 2002 and 9.6% in 2006 (first semester). This result also holds after adjusting income with equivalence scales (Rodríguez and Vigorito, 2003).

\(^2\) In 1990 pensions started to be indexed on the basis of the past quarter average real wage increase. As inflation was declining, this led to a sharp increase of the real value of pensions.

\(^3\) It is worth noting that during the crisis, attendance rates in secondary school grew (UNDP, 2005). This can be partly related to the scarcity of opportunities for low skilled workers during the crisis. But after the crisis, enrolment rates seem to be decreasing again.
Both in terms of income poverty and educational achievements, which can be translated into present and future poverty, children, and especially those aged 12-18, configure as a vulnerable group.

During the last decade, different programs of means tested conditional cash transfers were adopted in Latin American countries. These programs aim at balancing current and future poverty reduction, mainly through increasing school enrolment and reducing child labor. Investment in human capital is conceived as an essential component for enhancing future poverty reduction, so cash transfers are conditioned on child school attendance and health controls.

Uruguay is at present discussing the reshaping of its social protection system, and future initiatives include the implementation of a conditional cash transfer for children aged 6 to 18. This type of program is not entirely new for Uruguay, as there is a cash transfer directed to children in school age, named Asignaciones Familiares, that was created in 1942. In a way, the program that is being discussed at present is a reformulation of this old program, as this one would be dismantled when the new one is adopted.

It is not a common practice in Uruguay to assess the potential impacts of different policy designs before policy implementation. This research project aims at filling this gap, shedding light on the potential effects of alternative policy designs of this child conditional cash transfer. Our purpose is to consider its impact in terms of poverty, income distribution, and mainly, on school attendance.

Lessons from the old Asignaciones Familiares program on these issues are limited because, as we will discuss later, the amount of the transfer is very low and it seems not
to exert any influence on individual behavior. Besides, controls on compliance with conditionalities have been scarce and incomplete. Another conditional cash transfer program was implemented during 2005 (*Ingreso ciudadano*), but the evaluation of this program will be carried out during 2007 and 2008. Again, lessons from previous experience in the country are not available.

In order to provide inputs for policy design, an ex-ante evaluation seems an useful option in the Uruguayan case. We will undertake our ex-ante analysis in two steps. The first one simply consists on the representation of the incidence of different transfer designs, without simulating any policy response by the agent. This static approach is clearly a merely illustrative approach, as one of the objectives of the policy is to generate behavioral changes among young people. So the second and main step consists in the estimation of a behavioral model, using a cross section of households, in order to generate a counterfactual that illustrates on how each household would behave under different policy designs. Details on the methodology are discussed in section 5.

In order to clarify our main research questions and objectives, we briefly describe the present configuration of the social protection system in relation to cash transfers and the main changes that are under discussion at present.

**Conditional cash transfers in the current social protection system**

There is at present a conditional cash transfer program directed towards children in Uruguay, named *Asignaciones Familiares*. This program was created in 1942, as an income transfer focused on formal workers with children. Following the French legislation, *Asignaciones Familiares* became one of the pioneering programs of this kind in Latin America. Access to child benefits was closely related to contributing to the social security system and to the requirement of school attendance for children aged 6 to 18. Those aged over 15 years old were kept in the system only if they attended secondary school.\(^4\) The value of the benefit was fixed in 8\% of the minimum wage.

In 1995, due to fiscal constraints, the system was modified: access was restricted to parents or adults in charge if their earnings added up to 10 minimum wages or less. The amount of the benefit was also modified: those who earned less than 6 minimum wages

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\(^4\) In Uruguay, primary school lasts six years and is compulsory. Children enter the system when they are six years old. Since 1996 a pre-primary year was also made compulsory. Secondary school takes another six years, and the first three ones are compulsory.
received 16% of the minimum wage whereas for those earning 6 to 10 minimum wages the benefit was kept in 8%. As long as poverty continued increasing and unemployment was growing since 1995, in 1999 the government extended child benefits to those households with total income lower than 100 U$S dollars a month and that either had unemployed workers whose unemployment benefit already expired or were female headed with no other earners in their households.

In 2002 the Uruguayan economy experienced the most severe crisis of its modern history. Per capita GDP fell 11.4% in 2001-2002, unemployment rates reached 19% in 2002 and income poverty incidence among individuals rose from 16.8% in 1998 to 30.9% in 2003. In an attempt to cope with the severity of the crisis, and considering that as an aftermath of this crisis infant poverty was around 70% for the age group 0 to 4, in 2004 the government extended again child benefits including all households whose total income was less than 100 U$S dollars conditional on compliance of attending the educational system for children aged 6 and more. Nevertheless, controls on conditionalities have always been very loose.

At present, the program presents a wide coverage, and most poor and indigent households with children receive Asignaciones Familiares. Even though in terms of coverage and focalization, these recent changes can be read as an improvement, the amount of the benefit is negligible in relation to household needs, as it represents approximately 9% of the amount of the poverty line, 3% of poor households’ average income and 8.9% of indigent households’ income.

It must be remarked that the objectives of the program are not clear at present as long as they are a combination of a welfarist strand and an antipoverty one. Nor the first regime neither the new one pursue effects on child’s outcomes other than poverty alleviation or increased household income as long as compliance with school attendance requirements is not strictly monitored. This is probably related both to existing administrative

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5 Even though economic activity is recovering since the second semester of 2003, poverty incidence is still almost twice the pre-crisis level (27.27% in 2006).

6 In 2006, 540,000 children receive Asignaciones Familiares, 61% of them through the contributive scheme. 57% of the households with children aged up to 18 years receive this transfer. This figure reaches 72% for poor households and 60% for indigent households. The lower coverage of indigent households obeys to the fact that dropping out from the secondary level is more extended among these households and hence, children are not eligible for the program. In poor households, attendance rates are 79.6% for 12 to 17 and 63.8% for 15 to 18. The corresponding figures for indigent households are 71.6% and 49.1%.

7 The amount of the transfer is lower than 10 U$S a month.
problems and to the fact that the meagre amount of the monthly transfer is not expected to encourage human capital investment.

An additional cash transfer scheme was created in 2005. In effect, to foster the social protection system and help households to cope with the remains of the crisis, the new government that rules Uruguay since March 2005 has implemented a new program, Plan de Atención Nacional a la Emergencia Social (PANES) aimed at alleviating poverty and strengthening household earning capacity. Its target population has been set as the first quintile of the population under the poverty line, which is approximately 8% of the whole population.\(^8\) This is a temporary program aimed at coping with emergency and includes an income transfer of 65 U$S dollars a month per household (\textit{Ingreso ciudadano}), a workfare program lasting six months, food transfers (depending on household size), housing interventions, an educational component and an intervention focused on homelessness. Conditionalities on children attending school and health controls were imposed. The effects of this program are still unknown. Its impact evaluation of the program will be carried out around during 2007 and 2008.

\textit{The redefinition of conditional cash transfers in Uruguay}

PANES was conceived as a temporary program, and it will be ending by November 2007. But the government fears that households receiving these transfers will return for their previous situation if a new intervention is not designed, as long as apparently their earnings generation power after PANES is still low. In fact, according to Amarante et al (2006) around 76% of the plan beneficiaries can be labelled as structural poor. The government is designing a \textit{Plan de Equidad} (Equity Plan) with the purpose of providing assistance to population living in poverty. This plan includes a reformulation of the old Asignaciones Familiares.

In order to transform \textit{Asignaciones Familiares} in a successful continuation of PANES, able to provide short and medium run tools for poverty alleviation, many research questions are posed. These issues involve the choice of the means-test, the control of the conditionality, the benefit levels in order to induce school attendance, the potential

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\(^8\) It includes indigent households which were 4% when the plan was set. In 2006 indigence is 2.6%.
impacts on poverty and inequality, the consideration of alternative program designs, among others.

Research questions

This research proposal aims to answer some of the questions that arise when addressing the problem of the reformulation of the social protection system. More specifically, we want to answer the following questions:

- What is the effect on poverty and inequality of the reformulation of Asignaciones Familiares, under different policy designs?

  This question can simply be answered by undertaking static simulations in order to assess changes between the situation without intervention (the present Asignaciones Familiares program) and under different schemes of a conditional cash transfer. These different schemes imply different amount of benefits, means test, and alternative transfer amounts depending on age, school grade or family composition. Changes in the situation of vulnerable groups (children) will be specifically considered.

- What are the effects of different policy designs on child (12-18) school attendance?

  To answer this question we will model behavioral changes at the household level, in order to capture how child school attendance reacts to different policy designs. Again, different schemes imply different amount of benefits, means tests, and alternative transfer amounts depending on age, school grade or family composition. Changes in the situation of vulnerable groups (children in poor or indigent households) will be specifically considered.

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9 The situation without intervention is reflected by the current social protection system that includes Asignaciones Familiares. As the idea is to substitute this program with the new one, comparisons will be made against this alternative. As Ingreso ciudadano was conceived as a transitory program, it will not be considered because we are comparing different policies that constitute the structural social protection matrix of the country.
- What is the effect on poverty and inequality of the reformulation of Asingaciones Familiares, under different policy designs once we allow for behavioral responses?

Under different schemes, household behavioral responses relating to child school attendance imply different total household income. We will compute poverty and inequality measures for the set of total household income vectors corresponding to different policy designs, and then assess changes between the situation without intervention (the present Asignaciones Familiares program) and under different schemes of a conditional cash transfer including behavioral responses. Changes in the situation of vulnerable groups (children) will be specifically considered.

- How do direct costs of alternative policy designs, with and without the inclusion of behavioral changes, compare to actual costs of Asignaciones Familiares?

In order to provide useful information for policy decisions, direct costs of different scheme alternatives under different approaches (static or including behavioral changes) will be reported and compared to actual direct costs of Asignaciones Familiares.

- How do results from the static simulation (in terms of poverty, inequality and direct costs) compare to those obtained once household responses are modelled?

Ex ante evaluation tools constitute a field of research under development. Comparisons of the performance of these tools against static approaches may shed light on the usefulness of the technique.

3. Scientific contribution of the research: including a short list of key literature references and knowledge gaps

The growing importance of conditional cash transfer programs and the increasing concern for distributional issues is generating greater need of ex-ante evaluations. This type of analysis is meant to capture differences between the proposed reform and the status quo, and is intrinsically behavioral, as it is based in the generation of counterfactuals that take agent responses into account. Although the problem of trying to forecast the effects of hypothetical social programs is an old challenge for economists, the development of techniques such as microsimulations to undertake this
type of analysis applied to social policies is relatively new. Applications of these methods concerning labor supply responses to changes in the budget constraint have been used for industrial countries (a survey of these works can be found in Blundell and MaCurdy, 1999), but few examples are available for developing countries. This scarcity is even greater when it comes to cash transfers. Although many studies have estimated ex post impacts of conditional cash transfers on child school performance and labour force status (see for example, Coady, 2001; Coady and Parker, 2002; Skoufias and Parker, 2004), ex ante evaluation has not been a common practice. Probably the most direct and similar attempt is the ex-ante evaluation of Bolsa Escola, carried out by Bourguignon, Ferreira and Leite (2002) and that can be considered the main reference of this project.

Todd and Wolpin (2005) point out many reasons for developing tools of ex ante evaluation of social programs. First, it allows to optimally design a program that achieves some desired impact at a minimum cost or maximizes impacts for a given cost. It may help to avoid the high costs of implementing programs that are later found to be ineffective. It can also provide an idea of what range of impact to expect after a program is implemented. This may be specially relevant in the case of school attendance, as policy makers have to ensure that school supply can cope with the increasing demand in the different geographical areas. Finally, in cases where there is already an existing program in place, ex ante evaluation methods can be used to study how the impacts would change if some parameters of the program were altered.

As mentioned, in Latin America there is an ex ante evaluation of a conditional cash transfer program (Bolsa Escola) carried out by Bourgignon, Ferrerira y Leite (2002). The application of this kind of techniques to another cash transfer in another developing country may help to strengthen our knowledge about the optimal designs of this policies, and the extent to which similar programs led to similar results (or not) in different countries.

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10 Among the causes explaining this scarcity, Bourgignon and Ferreira (2003) point out the fact that direct transfers have been less important in developing countries and that the labor market, with a considerable weight of the informal sector, is harder to model.

11 Ex post evaluations of conditional cash transfers find positive and significant impacts on school attendance and child labor reduction. ECLAC (2006) presents a review of all these programs and the results of their impact evaluations.
The comparison of results obtained under static or dynamic microsimulations is of methodological interest, as this field of research is under development at present. Evidence on this issue is scarce, although it is worth noting that Bourguignon and Ferreira (2003) indicate that a pure accounting approach to the evaluation of Bolsa Escola, assuming 100% enrollment in the program, would have led to a poverty simulation that was a bit, but not massively, off the results obtained with the behavioral ex ante simulation.

On the same line, the possibility of combining ex ante analysis with ex post analysis, in order to compare results and to assess the potentialities and problems of ex ante evaluation is of great interest, and is a field of applied microeconomics that is being currently developed. This exercise could be done in the future, using this research as a basis, if ex post evaluations are carried out, as planned. Examples of this kind of approach are undertaken in Todd and Wolpin (2005) and Attanasio, Meghir and Santiago (2002) and Bornhorst (2004), and have been addressed as the cutting edge of applied microeconomics of development (Bourguignon and Ferreira 2003). These first validation exercises suggest that the overall performance of ex ante microsimulations is good, although results must be taken with caution as they are first approaches, and more evidence needs to be generated. Trying to develop further evaluation of the performance of the ex ante evaluation as a tool for policy design seems a useful road for future research.

4. Policy relevance

As a first step of this research, a simple analysis of the incidence of alternative cash transfer designs will be carried out, and poverty and inequality measures will be computed considering the static effects of both the old Asignaciones Familiares and the new cash transfer program. This pure accounting ex ante marginal incidence technique is useful as an initial step, because it allows, among other things, to set a minimum cost of the policy. But our main objective is to appropriately simulate household responses related to child school attendance, as one of the main purpose of the new policy is to foster secondary school attendance. Uruguay faces high rates of drop outs at the secondary school level (ANEP, 2002). If we consider a cohort that enters secondary school, only 40% finish their studies in the normative time, and 28% drop out (ANEP, 2004). Previous interventions designed to attack this problem were mainly oriented
towards increasing the supply of educational centres, and the results have not been encouraging. The implementation of a new policy focused on the demand side poses an important challenge and it is also the opportunity to design the policy that best achieves the desired impact.

An ex-ante evaluation of the potential impacts of alternative policy designs is a central element for the reformulation of the social protection system that the country is undertaking. The authorities of Banco de Previsión Social (BPS) and Ministerio de Desarrollo Social (MIDES), the main institutions in charge of the social protection system, are very interested in the results of this research. We enclose a letter of interest from the Minister of Social Development (Annex 1).\(^\text{12}\) The research team has previously worked in close contact with these institutions (section 11).

5. **Methodology**

Our initial step consists on undertaking a pure accounting ex-ante marginal incidence analysis, and estimating the static impact of different policy designs on poverty and inequality. This exercise will be carried out using the Uruguayan household survey (2006), and will mainly serve as a learning stage. Nevertheless it may also be useful to compare these results based on static simulations with those obtained when behavioural responses are considered, in order to assess the usefulness of these methodologies, as evidence on this issue is really scarce at present. But the real challenge is to incorporate behavioural changes through the modelisation of household decisions when faced to the policy. This section describes the methodological issues related with the behavioural incidence analysis.

The literature on the incidence analysis of public expenditure and taxation has become a prominent element of economic debate in recent years. There is an increasing demand for evaluation of the effects of social policies, both in aggregate terms or considering specific social groups. This includes the consideration of poverty and distributional issues as well as changes in people’s behaviour due to the implementation of specific policies, and so the analysis must be carried out at the microeconomic level. This has led to the emergence and development of different techniques that in some cases are not completely new, but a revised and improved version of tools previously used in

\(^{12}\) The web page of MIDES is www.mides.gub.uy.
incidence analysis. In fact, policy applications addressing welfare impacts of public taxation and spending have improved their potentiality by incorporating behavioural responses in order to take into account how agents may respond to a specific program. The key issue is how to define the counterfactual of what income or other welfare indicator of the beneficiaries would be in the absence of the program, in order to determine how individuals should be ranked and to infer program incidence. In the case of cash transfers, this implies considering in the without intervention scenario the replacement through household behavioural responses, that is subtracting the intervention benefit but adding the adding in the replacement income households would have achieved through their behavioral responses had they not benefited from the intervention (Van De Walle 2003). Under the premise that ignoring behavioral responses to public spending or social programs can led to wrong results because beneficiaries are not correctly assigned to the pre-intervention distribution, many ex post evaluations have been carried out (examples based on different techniques can be found in Ravallion et al 1995, Jalan and Ravallion 2003, Lanjouw and Ravallion 1999, among others).

As discussed before, different techniques have also been proposed to incorporate behavioral responses in ex ante evaluations of social policies. Todd and Wolpin (2005) illustrate about the use of behavioral models in ex ante evaluation, suggesting different estimation strategies based on a modified version of matching methods. Bourguignon, Ferreira and Leite (2002) (BFL from now on) address a problem similar to the one we are facing, as they develop a model to make an ex ante evaluation of the effects of a conditional cash transfer on school attendance. In our proposal we draw on their empirical strategy. Our methodological option is based on the premise that this first step should be based on the simplest economic model that contains enough structure to capture the mechanisms are affect agent responses.

After that, and as a part of our research, we will try to further elaborate an aspect that BFL leave unchanged which refers to labour supply responses from household adults under different policy designs. We hope that the incorporation of second order effect (such as changes in parental labour decisions) can be undertaken in future steps of the research, although we are aware that the introduction of many parameters in structural approaches poses a problem on the identification of the model.
**The model**

Our main interest is to capture the effects on school attendance, poverty and inequality of a conditional cash transfer. Considering that one of the objectives of the program is to foster school attendance at secondary level and that attendance at primary level is almost universal in Uruguay, we will focus on children aged 12-18.

The issue of child labor supply has been addressed in many empirical analysis (see for example Ravallion and Wodon, 2000 and Arat, 2002). Following BFL, we choose to develop a model of discrete labour supply decision, where a child decides either to go to school, to work, or to carry out both activities. This specification is suitable for developing countries where it is usual for children of these ages to be involved in both activities.\(^\text{13}\)

School attendance decision is taken at the household level, and can modelled as a discrete variable \(S_i;\)^\(^\text{14}\)

\[
S_i = 0 \quad \text{if } i \text{ does not go to school}
\]

\[
S_i = 1 \quad \text{if } i \text{ works and goes to school}
\]

\[
S_i = 2 \quad \text{if } i \text{ goes to school and does not work}
\]

This can be estimated as a multinomial model, with each \(i\) representing an optimal choice according to:

\[
S_i = k \quad \text{if } S_k(.) > S_j(.) \text{ for all } j \neq k
\]

The schooling decision is then a function of a set of variables:

\[
S_j(X_i, H_i, Y_i, v_i)
\]

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\(^\text{13}\) The illustration of the methodology draws on BFL. An adaptation of this methodology to the particular case of Uruguay will be studied as part of the research.

\(^\text{14}\) In this setting we ignore those youngsters do not work nor attend school. To reflect this fact, the choice variable should take four values, and this may generate some problems in the econometric estimation. For the sake of simplicity we stick to the original BFL specification, although the alternative of four choices will be analysed.
where $X_i$ represents characteristics of individual $i$ (age, sex, schooling, etc.), $H_i$ represents characteristics of the household of $i$ (type of household, parental education, etc), $Y_{ij}$ represents the income of the household $i$ when choosing $j$ and $v_{ij}$ is the disturbance term (iid).

Household income is the sum of children’s income ($y_{ij}$) and the income of the rest of the members of the household ($Y_i$). The set of non income variables $X_i$ and $H_i$ can be combined into $Z_i$, and so the linearization of the model becomes the random utility representation for the household of child $i$ under the schooling choice $j$:

$$U_{ij} = \gamma_j Z_i + \alpha_j (Y_{i} - y_{ij}) + v_{ij}$$

If we assume that the potential earnings for child $i$ are observable, and denote them $w_i$, then the contribution of the child to household income, $y_{ij}$, becomes:

$$y_{i0} = Kw_i$$
$$y_{i1} = My_{i0} = MKw_i$$
$$y_{i2} = Dy_{i0} = DKw_i$$

meaning that if the child only works and does not attend school ($S_i=0$) he gets a fraction $K$ of his potential earnings, if he works and attends school ($S_i=1$), he gets a fraction $MK$ of his potential earnings, and if he only goes to school ($S_i=2$) he may contribute to domestic production for a fraction $DK$ of his potential market earnings. This last equation implies including the contribution of children to the income of a household through domestic work.

Assuming that wages are determined in accordance to the standard Mincer human capital model, earnings $w_i$ can be modeled as:

$$\log w_i = \delta X_i + m.1\{S_i = 1\} + u_i$$

where $X_i$ is the traditional set of individual characteristics, $u_i$ is a random term that represents unobserved earnings determinants and the second term (indicator function 1) reflects that earnings of a child under option $S_i=1$ may be lower because some time is spent at school.
Combining these equations in the utility representation of the household of child i under each schooling option becomes:

\[ U_{i0} = \gamma_0 Z_i + \alpha_0 Y_{-i} + \beta_0 w_{i0} + \nu_{i0} \]

\[ U_{i1} = \gamma_1 Z_i + \alpha_1 Y_{-i} + \beta_1 w_{i1} + \nu_{i1} \]

\[ U_{i2} = \gamma_2 Z_i + \alpha_2 Y_{-i} + \beta_2 w_{i2} + \nu_{i2} \]

with \( \beta_0 = \alpha_0 K; \beta_1 = \alpha_1 MK; \beta_2 = \alpha_2 DK \).

In this way we get a complete simulation models. Assuming exponentially distributed errors, this model becomes the multinomial logit model (McFadden 1973) and child’s occupational type selected by household \( i \) is

\[ j^* = \text{Arg max } [U_i(j)] \]

The model can then be used for microsimulation by looking at the effect of an exogenous variation of the household income under the schooling options \( j=1, 2 \). What remains is obtaining the estimates of \( \alpha, \beta, \gamma \) and \( \nu_{ij} \).

**Estimation issues**

A problem arises from the fact that in a multinomial estimation the coefficients are identified only relative to a certain choice category (\( \alpha_j - \alpha_0 \); \( \beta_j - \beta_0 \); \( \gamma_j - \gamma_0 \)), but as the cash transfer is state dependent, meaning that the income variable is asymmetric across alternatives, it is necessary to identify the three components (ie: \( \alpha_0 \), \( \alpha_1 \) and \( \alpha_2 \)).

If we call \( \hat{\alpha}_j \) and \( \hat{b}_j \) the coefficients estimated from the multinomial model, then:

\[ \alpha_1 - \alpha_0 = \hat{\alpha}_1 \]

\[ \alpha_2 - \alpha_0 = \hat{\alpha}_2 \]

\[ \alpha_1 MK - \alpha_0 K = \hat{b}_1 \]

\[ \alpha_2 DK - \alpha_0 K = \hat{b}_2 \]
BFL propose to arbitrarily set a value for $K$ or for $D$, because this strategy allows to identify all the parameters, as $M$ is identified from the earnings equation. Their identifying assumption is that $K=1$, that means that children working on the market and not going to school have zero domestic production. So the estimates from the model can be transformed into the structural parameters of the model:

$$\alpha_1 = \hat{\alpha}_1 - \hat{\beta}_1 \frac{1}{1-M} \quad \text{and} \quad \alpha_2 = \alpha_1 + \hat{\alpha}_2 - \hat{\alpha}_1$$

The set of residuals can not be observed or precisely estimated, but for each $i$ the set of residuals $v_{i0}$, $v_{i1}$ and $v_{i2}$ are expected to belong to a certain interval, such that given the parameter estimates and the individual characteristics they are consistent with the actual choice. For instance, if the observation $i$ has made choice 1, it must be the case that:

$$Z \gamma_1 + Y_i \alpha_1 + \hat{\beta}_1 w_i + (v_{i1} - v_{i0}) > Sup[0, Z \gamma_2 + Y_i \alpha_2 + \hat{\beta}_2 w_i + (v_{i2} - v_{i0})]$$

So the disturbance terms $v_{i0}$-$v_{i1}$ must be drawn so as to satisfy this inequality.

We also need to estimate potential earnings for each child, $w_i$. Following BFL, this estimation will be done by OLS, and random terms $u_i$ for non working kids will be generated by drawing in the distribution generated by the residuals of the OLS estimation. Potential selection bias in the estimation of wage equations will be controlled using traditional techniques (Heckman 1979).\(^\text{15}\)

Once the model is completely identified, the impact of the cash transfer can be simulated. If we suppose that the transfer amount is $T_i$ and we incorporate means test (assuming that the household is eligible if household income is not greater than $Y^0$), our modelization leads to choosing the alternative with maximum utility among the three following conditional cases:

$$U_{i0} = \gamma_0 Z_i + \alpha_0 Y_{-i} + \beta_0 w_{i0} + v_{i0}$$

$$U_{i1} = \gamma_1 Z_i + \alpha_1 Y_{-i} + \beta_1 w_{i1} + v_{i1} \quad \text{if} \quad Y_{-i} + Mw_i > Y^0$$

\(^{15}\) It must be kept in mind that BFL fail to find a correct instrument to correct selection bias. They argue that is does not seem a serious problem and that trying to correct using no convincing instrument led to rather implausible results.
This general framework can be used to evaluate different alternatives: changing the amount of the transfer, changing the means test, making T depend on characteristics of either the household or the child, etc.

In this way, we can:

(i) quantify how the introduction of the transfer leads households from choice 0 to choices 1 or 2, or from choice 1 to choice 2, under different policy designs. This allows to construct aggregate indicators of school attendance (% of children in the age group attending school under each alternative), and specifically considerable the situation of vulnerable groups

(ii) quantify the impact on poverty and inequality of different policy designs, and the role of household behavior. This implies comparing the poverty and inequality measures obtained in the situation without intervention (with the actual Asignaciones Familiares), the poverty and inequality measures calculated in the simple accounting exercise (without behavioral response), and the poverty and inequality measures obtained from the counterfactuals constructed under this modelization that includes behavioral change. This can be done for different policy alternatives

(iii) compare policy direct costs (transfers) under different designs

(iv) the combination of (i), (ii) and (iii) can shed light on the best policy design according to the objectives

Limitations of the method

The behavioral approach relies on a structural model that requires a set of assumptions. In the example that we presented, the schooling decision is reflected in a very simple model that leaves behind more intricate aspects. In particular, the following simplifying assumptions are made:
- Households behave as a unit, as income is assumed to be pooled. The issue of how the decision about child’s time allocation is decided within the household is not addressed.

- The decision about child schooling is taken once occupational decisions of adults in the household have already been made, and it does not affect these occupational decisions.

- Related with the previous assumption, non-child income is also exogenous in the sense that it is not affected by the presence of the means-tested transfer. In this aspect, we aim at deepening into the methodology proposed by modelling adult labor supply and analyzing its response to different transfer settings.

- The problem of more than one children in the same household and the simultaneity of the decision is also not considered. This implies assuming that all households are single child from a behavioural point of view, so transfer ceilings per household can not be introduced.

- Household structure is taken as exogenous.

- Probably the strongest assumption, common to all microsimulation models, is that cross-sectional income effects estimated using a household survey coincide with the income effects that will be produced by the program under study. This means that income effects over time for a given agent are the same that the effect of cross-sectional incomes. As stated by Bourguignon and Ferreira (2003), the combination of ex-ante and ex-post evaluation can shed light about the plausibility of this assumption.

In the course of this research we will try to relax some of the specific assumptions made by the proposed model, in an attempt of advancing in the use of microsimulation techniques for ex-ante evaluation.

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16 BFL argue that assuming that the presence of the means test does not affect labor supply of adults in the household might not be so restricting if means test is based on some score based proxy for permanent income and not on current income.
6. Data requirements and sources

Data sources for this research come from the microdata from the Uruguayan Household Survey (Encuesta Continua de Hogares, ECH) for the year 2006. This survey is carried out by Instituto Nacional de Estadística (INE) along the whole year, and in 2006 it covered urban and rural areas. The household survey contains data on different cash transfers and other social policies received by the household, in particular in contains detailed information about Asignaciones Familiares and Ingreso ciudadano. The survey also provides information on all the other variables traditionally used in this kind of analysis: individual characteristics (education, age, sex, etc.), labour force status, income from different sources and a set of variables gathering information on housing condition, access to public services and command of durable goods. This data set will be available for our research, we enclose a letter from the Director of the Instituto Nacional de Estadística in Annex 2.

7. Consultation and dissemination strategy

The results of this study will be disseminated both at the academic and policy makers level. Dissemination at the academic level will be addressed through the publication of an article containing the main findings in a journal or review specialized on social policies. We also intend to organize a conference to present and discuss our main results, inviting researchers that have worked on ex ante evaluations from other Latin American countries.

We will conduct specific workshops with staff from MIDES and BPS in order to thoroughly discuss our results to improve the final design of the new Asignaciones Familiares.

At the policy-makers level, we will discuss our results with BPS and MIDES authorities.

8. List of team members: indicating their age

The team is composed by four economists who work as researchers in the areas of poverty, income distribution, social policies and labor markets, at Instituto de
Economía, Universidad de la República, Uruguay. The team members are Andrea Vigorito (female, 42), Verónica Amarante (female, 34), Rodrigo Arim (male, 34) and Gioia de Melo (female, 26).

The team has training and experience in working in issues related to the social protection network and microsimulations.

9. Description of the research capacities that team members and their institutions are expected to build through their participation in this project

This project will allow the researchers and the institution involved to deepen their understanding of social policies and to develop techniques to tackle the issues of policy evaluation. Most poverty analysis in Uruguay has been mainly descriptive and this project will help in broadening the scope to address this topic. The literature on social protection networks and cash transfer programmes will be reviewed in depth. As a product of this activity, we will produce a working paper that can be used in our teaching activities at Universidad de la República.

To date, most reforms in non contributive social programmes in Uruguay have been carried out without an ex-ante evaluation of their potential effects. Thus, this research project will provide both the academic community and the policy makers a useful tool for better practices in policy design. Moreover, microsimulation models developed as part of this research will be made available for government agencies, specifically BPS and MIDES. The purpose is that these tools can be used to monitor other changes in Asignaciones Familiares, and also serve as a basis to evaluate other policy changes.

There are many technical issues involved in estimating a microsimulation model that will be studied in depth by the research team. Some of the aspects to be addressed are: alternative specifications of the school-work decision for teenagers; available strategies for distributing the residuals in participation, hours and earnings equations; endogeneity in the income variable included in the child labor supply equation and in other variables included in the estimation; convenience of correcting by sample selection bias using Heckman´s procedure.

In what follows we briefly present the tasks that be will carried out by our team members:

Veronica Amarante: Revision of existing literature on ex ante evaluations, definition of the main assumptions and counterfactuals that will be used for the evaluation, econometric estimation of the models to be tested with emphasis in the problems
coming from the schooling-work decision equation to be estimated. She will participate in the writing of final reports and other scientific communication materials to be prepared.

Rodrigo Arim. Revision of existing literature on ex ante evaluations emphasizing the role of the different assumptions on household labour supply. Econometric estimations and writing of final reports and other scientific communication materials to be prepared.

Gioia de Melo: Revision of the characteristics of the different transfer schemes that have been implemented in the last decade in Latin America and of the existing literature on ex ante evaluation and social protection systems in Latin America. Analysis of the quality of the data that will be used in the estimations, data analysis.

Andrea Vigorito. Coordination. She will participate in the definition of the main assumptions and counterfactuals that will be used for the evaluation, econometric estimation of the models to be tested and writing of final reports and other scientific communication materials to be prepared. Dialogue with the different political actors to be involved in the discussion process.

10. Any ethical, social, gender or environmental issues or risks which should be noted.

11. List of past, current or pending projects in related areas involving team members

In the framework of an agreement with Instituto de Economía, Verónica Amarante, Rodrigo Arim and Andrea Vigorito have been providing technical assistance to the implementation of PANES since March 2005. Some of the activities that have been carried out by the team are:

- design of the proxy means indicator to select beneficiaries of Ingreso Ciudadano

- design of the questionnaire to be filled by applicants to PANES

- design of the impact evaluation of PANES (in collaboration with Dr. Marco Manacorda from the London School of Economics), consisting on the application of a discontinuous design strategy, using panel data of treatment and control groups.

At present survey information is being gathered and in March 2007 the first wave will be available to start the impact evaluation of the program.
Some of the publications and working papers of members of the team on the topics addressed in this proposal include (those containing micro-simulations are starred:


12. References


Bourguignon and Ferreira (2003) “Ex ante evaluation of policy reforms”. In The impact of economic policies on poverty and income distribution. Evaluation techniques and tools (chapter 6). Bourguignon and Pereira Da Silva (eds.)


Vigorito A. (2004), El impacto distributivo del sistema de asignaciones familiares en el período reciente, mimeo, Universidad de la República- UNICEF.

Montevideo, 27 de febrero de 2007

A quien corresponda
Presente

De mi mayor consideración

Por intermedio de la presente, quiero dejar constancia del interés que reportan los resultados del proyecto "Family allowances and child school attendance. An ex-ante evaluation of alternative schemes in Uruguay" presentado oportunamente por investigadores del Instituto de Economía de la Facultad de Ciencias Económicas y de Administración.

Para nuestra cartera y para el diseño e implementación de las políticas que como gobierno impulsamos, el contar con productos analíticos y resultados de estudios como el mencionado constituyen un insumo insoslayable.

Saluda muy atentamente.

Marina Arismendi
Ministra
Poverty and Economic Policy (PEP)
Research Network
Present

To whom it may concern,

This is to inform that the microdata of the Uruguayan National Household Survey corresponding to 2006 will be available to be used by researchers before June 2007.

Yours sincerely,

Ec. Alicia Melgar
Directora Técnica
Instituto Nacional de Estadística (INE) - Uruguay