Evaluating policies to reduce teenage childbearing in Bogotá, Colombia: the effect of policies reducing costs of education faced by households

RESEARCH PROPOSAL

Presented to

PEP-IDB Reducing Teenage Pregnancies Initiative

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Abstract

We propose a study of the effect of recent education policies that reduce cost faced by families in Bogotá (Colombia) on teenage pregnancy. We propose to develop field work on 300 schools in Bogotá to look for information on pregnancy of teenagers and on access to the different education programs implemented in the city of Bogotá.

A. Aims

a. Study overview

In recent years there has been a resurgence of the concern for teenage childbearing in Latin America. This is certainly due to the increase or slow decrease rates of this phenomenon and the strong belief that teenage childbearing is related to many adverse effects on the lives of adolescent mothers and their children. Given that the Demographic Opportunity Window in Latin America is still not closed and that we still have several years before it is closed the concern for childbearing is not only important in relation to the chances of adolescent mothers and their children but also related to the development of Latin American Countries. Many policy measures have been proposed and implemented to reduce teenage childbearing in several of the Latin American countries. These policies concentrate mainly on reproductive health. Without doubt, sexual education and availability of contraceptive instruments are crucial for the reduction of teenage childbearing. However, these are not the only instruments that may affect this phenomenon. If, as it may be true, teenage childbearing is also the result of a conscious decisions of becoming a mother many other policies may help postpone the decision of adolescents to become pregnant. There are many candidates for the list of alternative policies, among them violence reduction, expanding access to media or to support networks and, of course, expanding access to education.

This is a proposal to evaluate the effect of recent education policies in Bogotá, Colombia on teenage childbearing. The main mechanism behind our study assumes that the event of becoming a mother by adolescent girls is not entirely a result of lack of family planning methods knowledge or availability and that in many cases becoming a mother at teenage may be a conscious decision. These statements are justified by recent data. Instead adolescent girls see the possibility of becoming a mother as one of several alternative lifetime investment projects a take a decision consciously about which of the projects to assume. In our framework the alternative projects differ on the degree and timing of different decisions related to having a family and human capital investments.

Our study is a long term study to be developed in around a year. We will do a first stage starting in January 2010 and a second stage starting September 2010. Each stage involves application of different data collection operatives and different evaluation exercises; as it will be clear in this proposal both stages answer to different needs of information and are complimentary. In the budget annexed to this proposal we include only the funding needs for the first stage of the project, however, for completeness of the project we present both stages.

b. Main research questions and core research objectives

The main research question of this research is whether education policies recently implemented in Bogotá have helped to reduce teenage pregnancy rates. It is already known that some of these policies have had some beneficiary effects increasing school attendance; however, other effects of the policies have not been investigated. The study proposes an impact evaluation strategy that allows the use of differences-in-differences methods to identify the effect of policies. The identification strategy uses the school level differences in the implementation of these policies. To develop this

research we use data from several sources, first and most important, we propose to collect data of teenage pregnancy and access to the different programs of teenage girls. Second, we will also use data from administrative records of school management and regulating agencies.

B. Background and policy relevance

a. Literature review directly relevant to main research questions

The literature on teenage childbearing expands different issues and many different disciplines. Here, we first review the main international literature published in academic journals and then review the most relevant pieces of the literature specific to Latin America and Colombia.

The main subjects of the literature directly relevant to our study are[1]: i. the effects of teenage childbearing on the mothers, children or on the society, ii. the determinants of teenage childbearing and iii. Studies of policies that affect teenage childbearing. There are several surveys of this literature, these are: Coley and Chase (1998) who do a survey on recent evidence with emphasis on psychological determinants and consequences; DiCenso et. al. (2002) who review the effectiveness of primary prevention strategies; Haveman and Wolfe (1995) who review methods to study determinants of children attainment which can be used to study the attainment of children born of teenagers; and Maynard (1995) who reviews causes and consequences of teenage childbearing. There are other areas of study related to this subject which, even if very important, we do not survey since our research points in a different direction. Probably the most important is that composed by studies which address the issue of sexual reproductive rights; for a piece of work on this line see Geronimus (1997).

Most of the literature has concentrated on the first two issues. For example Card and Wise (1978) show that individuals who became parents when teenagers with respect to individuals who did not became parents when adolescent tend to interrupt the education process earlier, have low-prestige jobs, have families of size which exceed their preferred family size and experience unstable marriages. Many other studies have addressed similar issues and have also included the effects on children. An important concern of this literature is about validity of using regression analysis that does not account for heterogeneity of individuals and that treats teenage childbearing as exogenous (Angrist and Evans, 1996; Hoffman, Foster and Furstenberg, 1993; Hoffman, 1998; Levine and Painter, 2000; Geronimus, 1993; Geronimus and Korenman, 1992; Rosenzweig and Wolpin, 1995; Ribar, 1994). These studies discuss whether the effects argued by studies such as Card and Wise (1978) survive when the heterogeneity and endogeneity issues are considered, although evidence is mixed it is difficult to conclude form these studies that the negative effects from teenage childbearing disappear completely. Importantly since these studies use data mainly

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1   Also relevant for our study is the literature of identification of endogenous effects, we do not survey this literature here, however, given that we propose a differences-in-differences method the basic references for our study are Angrist and Pischke (2008), Cameron and Trivedi (2007), Shadish, Cook and Campbell (2002). And Lee. (2005).

from the United States and England there is still a case to find stronger effects of teenage childbearing in developing countries.

There other studies that have looked at the effect of teenage childbearing on the society three examples of this are Maynard (1995), Moore (1978) and Eloundou-Enyegue and Stokes (2004). These studies show that teenage childbearing may impose costs on the society since these mothers spend more time on welfare programs due to their low human capital levels and that there is a relation between teenage childbearing and gender-equity.

The second subject addressed in the literature about teenage childbearing is that of its determinants. Probably, the first question that must be answered is to what extent becoming a mother when teenager is a random event or a conscious choice[2]. This is the subject of the studies by Levine (2000) and Paton (2004) who both find that teenage childbearing is not the result of accidents or randomness. A very important consequence of these findings is that at least in the countries studied by these researchers, access to family planning services is not the only means to reduce teenage childbearing. Other very important problems involve the effect of socioeconomic factors, cultural factors, neighborhood or peer group effects. Burton (1990) analyzes the cultural meaning of becoming a mother early in life and shows that for black families, teenage childbearing is an answer to particularities of the social environment these adolescents are involved. Another branch of the literature looks into the problem of the relation between living in a violent environment and teenage childbearing showing a positive relation (Herrenkohl et. al., 1998; Hillis et. al., 2004). Finally there are also studies that study the relation between neighborhood effects and peer group effects and teenage childbearing (Crane, 1991; Evans, Oates and Schwab, 1992).

The third issue analyzed in this literature is that of the effects of policies on teenage childbearing. Most studies stay in the ground of finding determinants or correlations of different variables with teenage childbearing and take conclusions about policy from those studies. Among the studies that use proper methodologies to identify the effect of policies on finds Duflo et. al. (2006), Girma and Paton (2006), and Wolfe, Wilson and Haveman (2001). Girma and Paton (2006) show how matching estimators can be used to evaluate the effect of acces of emergency birth control for teenagers in England. Wolfe, Wilson and Haveman (2001) using data form the United States show how to analyse the effect on changes in the costs and benefits of having a child perceive by teenagers on the risky behavior that may result in pregnancy. They also provide a short survey of some related results. Duflo et. al. (2006) is probably the only study in this line which analyses data form a poor country. Using data on a randomized experiment in which teenagers in Kenya received uniforms they evaluate the effect of reducing costs of attending school on teenage pregnancy rates. All three studies find that the policies they analyse are usefull to reduce teenage pregnancy.

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2   Note that we do not write about rationality. Even if the decision about becoming a mother at very young ages is conscious and can be explained by factors different than chance or lack of knowledge of family planning methods there can be many factors or irrationality, lack of foresight, or lack of understanding of the consequences of their behavior that can be involved in the problem. Many of these factors have been analyzed in the recent literature on psychology and economics although, to the best of our knowledge, have not been applied to the teenage childbearing problem.

b. Explanation of what are the gaps in this literature

The main trends in teenage pregnancy in Latin America are summarized in Flórez and Núñez (2001), Flórez and Soto (2007), Flórez and Soto, (2008). For the case of Colombia these trends are found in Flórez (2005), Flórez et. al. (2004) and Barrera and Jaramillo (2004). The main results show high levels of teenage pregnancy rates (in some countries these levels are even increasing), a negative relation between teenage childbearing and human capital of mothers and strong socioeconomic effects on teenage childbearing. However, there is a serious lack of studies that addresses the problem of heterogeneity and endogeneity and of studies that analyze the effectiveness of the different policies that have been used to reduce teenage childbearing.

Unfortunately most of the literature on teenage childbearing has used data from developed countries, mostly from the United States but also from England. The particularities of these countries imply severe restrictions if one want to think on policies that reduce teenage childbearing in developing countries. The two main reasons for this are: first, the countries where these problems have been analyzed extensively have implemented generalized welfare programs that may help mitigating the negative effects teenage childbearing which may explain some of the results where little or no effect has been found. Second, almost all studies used data of countries in periods in which the Demographic Window of these countries was near to be closed or already closed. Most developing countries can still profit from the Demographic Window for several year which makes important to know whether these policies are effective to reduce teenage childbearing.

c. Explanation of how filling these gaps are relevant to specific country policy issues

The study we propose evaluates the effect of recent education policies implemented in Bogotá (Colombia) on teenage pregnancy rates. The study will be the first one to identify the effect of human capital policies on teenage childbearing and more generally one of the first studies to identify the effectiveness of policies to reduce teenage childbearing.

C. Methods

a. General description of the intervention, population to be studied, outcomes of interest, timing of effects, existing data and/or data to be collected, methods to be used to analyze data.

Our approach will analyze how educational policies that make human capital accumulation less costly would affect alternative life's choices of the young girls, particularly the decision on childbearing and pregnancy. We focus our analysis on girls between 14 to 19 years old currently enrolled in schools in Bogotá. The outcome of interest is the pregnancy rate at the school level, number of pregnant teenagers in the school over the number of 14-19-years-old girls enrolled at school. The timing of the analysis will focus on the year 2009. However, the project studies the effect of several education policies that gradually have been implemented in recent years in Bogotá (with large geographical dispersion across neighborhoods of the city) on the pregnancy rate at schools.

The project attempt to collect first-hand data from implementing a survey at the school level where we can link the education policies already implemented for children at the school and the potential causal effects on girls aptitudes toward childbearing and pregnancy. In addition, existing data will be used to control for school characteristics, infrastructure, teacher experience and skills, and geographical characteristics that can help to control for potential confounding factors.

We will use is the difference-in-difference method, adopting the regression approach.

b. Identification Strategy

The whole strategy implies two exercises, one for each stage of the project. As will become clear below, the first stage is needed to undertake the second one. Before explaining the identification strategy, it is important to characterize the cost-reducing education policies implemented in Bogotá. Policies can be divided in two types: conditional cash transfers and subsidies. The first type of policies consists of a money payment students receive for attending school. Transfers consist of either money for transport expenses (US 30 per month) or money for other expenses (US35 per month). The second type of policies consists of a fee reduction of academic fees and complementary payments (Report Cards, School handbook, ID cards, etc.). Both types are targeted for poor students with less than 19 years old and are allocated at the individuals (not households).

In the same vein of Duflo et. al. (2006) we propose to identify the causal effect of cost reducing policies of education on pregnancy. Using an experimental design they find that giving school uniforms reduces pregnancy rates in 1.5%. Unlike them, we use a quasi-experimental design.

First exercise

In the first exercise we will identify the causal effect of the cost-reducing educational policies on several outcomes related to teenage childbearing at the level of school. The main outcome will be the rate of incidence of teenage childbearing at the school. The exposure to treatment of a school is given by the interaction between the distance from the school to the transport system and the cost-reducing policy at the school. As explained in the previous section, all the cost-reducing education policies are targeted to the poorest students. These students are usually located in areas far away. We can reasonably think that those schools farther away from the main centers are more likely to be treated. Moreover, Bogota is characterized for having a bad system of transportation. In everyday commuting within the city a one way trip lasts for more than one hour on average. The average commuting length is even worst for people that live in peripheral areas. A major improvement in the Bogota's transport system was the introduction of Transmilenio, a new Transport System that was introduced in 1998. However, Transmilenio does not still arrive to the entire city. Particularly, peripheral areas in which the poorest people live are not well served. Therefore, the schools in the treatment group are those farther from a Transmilenio stop, which are those that are more likely to be attended by the poorest. The assignment variable, the distance D, will define the control and treatment groups.

On the other hand, the Secretaría de Educación Distrital (SED) assigns the number of subsidies per school having into account budgetary criteria and the distribution of

targeted students among schools. Afterwards, schools choose the recipients. The proportion of students benefiting from subsidies at school provides a measure of treatment intensity. The treatment variable, P, will define whether the school has received the treatment or not.

Adopting a notation in which the assignment variable, D, and the treatment variable, P, are dummies, we identify the causal effect estimating the following parameter (with no loss of generality this holds for the continuous case):

$$\theta =$$

$$\{E[O_{st}|D = 1, P = 1] - E[O_{st}|D = 1, P = 0]\}$$
$$-\{E[O_{st}|D = 0, P = 1] - E[O_{st}|D = 0, P = 0]\} \quad (1)$$

Where O_{st} is the outcome of school s located at point t.

The first difference in the RHS of the Equation represents the effect of treatment on the treatment group. The second difference in the RHS represents the effect of treatment on the control group. We want to estimate the parameter θ .

In section B.d bellow we will explain the second exercise and there it would be clear why we have chosen to present the exercises in this way.

c. Data collection methods (for projects with data collection only)

c1. What population will be studied?

We focus our analysis on girls in Bogotá between 14 and 19 years old currently enrolled at the school in Bogotá. Our unit of analysis will be the school and we are going to built indicators at the school level based on the female teenagers and pupils enrolled at the school in 2009. In this sense our instruments will try to collect data from three sources of information: i. director of the school, ii. teachers and iii. a sample of female pupils between 14 and 19 years old (see annex for a sample of questionnaires).

c2. Sampling design, sample size and statistical power

Official statistics have shown that the teenage pregnancy phenomenon has risen in recent years in Colombia. According to the National Survey of Demography and Health, in 2005, the percentage of women between 13 and 19 who were already mothers was 24.5%, and the women who were pregnant, 5.2%. These statistics show that the pregnancy rate has large incidence in our population of objective. Furthermore, the last Population Census (2005) found that 7.11% of women between 12 and 19 years in Bogota were pregnant.

Based on this information we propose a Stratified Sampling Design in which our population of study will be approached through the school. In this sense we will consider the school as the enumeration area (agglomeration unit) in which the population of study is located. Then, using the universe of schools in Bogotá we propose to implement a Stratified Sampling where the unit of agglomeration is the school and the final unit to be analyzed is the teenage girl enrolled at the school.

Using a Simple Random Sampling (SRS), an accurate sample size for an anticipated proportion of pregnant girls of 5% with 95% of confidence and an absolute precision of 1% in a population of 510.000 individuals, we need a sample size of 1.800 individuals. Furthermore, in order to estimate the proportion of pregnant girls at the level of locality (Bogota has 20 localities. We will survey 19 localities – excluding Sumapaz, the single rural locality), we need to increase the sample size. Under the same criteria mentioned above (5%, 95% confidence, 1% absolute precision) we would need to increase the sample size more than 10 times. To tackle this problem, we make the sampling using an absolute precision of 2% maintaining the other criteria. Therefore, the resulting estimate will fall within 2 percentage points of the true proportion (5%) with the 95% of confidence. That is with 95% of confidence; the resulting estimate will be between 3% and 7%. Under this sampling strategy we will end up with sample of 452 individuals per locality, and of 8.473 individuals for the 19 localities.

From the methodological perspective, this sample size is accurate to obtain significant estimations using a Simple Random Sampling. However, as described above, we propose an empirical research in two stages (stratified sampling). Following Kish (1995), to deal with this design, we have to double the sample size. Therefore we need a sample size of 2x8.573 = 17.146 individuals. Finally, knowing that the missing data is a big issue on this topic we will survey 30.000 individuals, meaning 100 individuals per school in 300 schools[3].

c3. Key data to be collected (and how this will be done)

The main dependent variable in the empirical strategy is the number of girls that were pregnant at the school in the year 2009, which allows us to build the pregnancy rate at the school level. The set of main explanatory variables is composed by two groups. First, in order to capture the effect of educational policies on pregnancy rate the empirical strategy should account by the incidence (i.e. educational policies that are already in the school) and the intensity (i.e. the number of pupils who are beneficiaries of the programs) of the different educational policies that affect the pupils at the school. Second, the estimation should control for pupils' knowledge of family planning procedures and contraceptives. We would like to have information on the incidence of health policies on family planning procedures at the school level, the pupils' knowledge and use on contraceptives, the teachers' knowledge and their training on those concerns, the quality of direct interventions to prevent teenage pregnancy and the institutional characteristics that would affect our main explanatory variable like religion and academic programs.

The whole set of these information cannot be captured from existing and secondary data and it should be built through a fieldwork and data collection. The data collection will be concentrated in Bogotá, where significant education policies have been implemented in recent years. A total of 300 schools (both public and private) from a universe of 1.245 institutions, in the 19 administrative divisions will be selected with a probability proportional to female pupils' size, which should be estimated from the

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3. In less sensitive information, as households' expenditures, the rate of missing observations goes up to 50% (30% on average).

enrolment information from the Secretaría de Educación – SED[4]. In each of the selected schools, we are going to collect information from three different source of information, with the objective to have cross-checking and to improve the quality of the information. The first instrument should be applied to the most informed staff at the school. The person interviewed is preferably the director of the school. The second instrument will implement to a group of 10 teachers. Finally, the third instrument will be implemented to a sample of female pupils enrolled from 6th to 11th grades[5] and between 14 and 19 years old.

The survey team will be composed by 15 interviewers, 2 persons helping with the logistic and a coordinator (for a total of 18 people in addition to the research team). The main task of the persons in charge of the logistic is the coordination between the survey team and the schools about the date and content of the interview. Each enumerator will interview in average one school per day for 20 days to have a final total of 300 schools. Interviewer's manuals and support materials will be prepared and adequate training will be conducted with the interviews and supervisor. It is important to say that the interviewers will not implement face to face interviews with the sample of girls with the objective to keep anonymity. The training will include substantive, technical and human subject protection components. The fieldwork should begin as soon as possible (even less than a week) after the training, in order to minimize any forgetting of what has learned in the training. Before the fieldwork can begin, a very detailed plan must be drawn up that matches the schools that have been selected (from the sampling plan) with the interviewers who are going to do the work.

c4. Additional data to be collected

The project will use existing data on schools and information at the geographical references. In particularly we will use the census on educational institutions –C600- which is managed by the Departamento Nacional de Estadisticas – DANE. It helps us to control for school characteristics like enrollment rate, infrastructure and institutional characteristics. In addition, the project will collect existing data on socio-demographics at the geographical level (neighborhoods) in order to include community characteristics as controls in our estimation strategy. Finally, the location of the school and its distance from the public transportation infrastructure and from the main road in the neighborhood is required in our estimation strategy. With the objective of filling this requirement the project will use data contained on maps of Bogotá which locates the school and its proximity to the transportation infrastructure and other amenities.

d. Modeling and Testing

We want to estimate the causal effect of the cost-reducing education policies on the incidence rate of childbearing at the school. In order to capture differences in intensity of the cost-reducing policy we propose a regression approach. The effect of one of

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[4] The statistics from the Secretaría de Educación SED shows that around 353.000 girls were enrolled in 1245 schools in Bogotá in 2009. It represents our universe to implement the sampling design and the data collection.

[5] The survey instrument (i.e. questionnaires) will be pre-tested for consistency, validity, comprehension, and coverage prior to the start of the fieldwork and adjusted accordingly. Additionally they will be checked with different institutions in charge of family planning and education policies in Bogota like PROFAMILIA, Secretaría de Salud and Secretaría de Educación. It implies that some of the instruments will be adjusted with respect to the samples presented on this proposal.

such policies on the outcome variable is captured via a difference-in-difference approach by the following regression

$$O_{st} = \alpha_0 + \alpha_1 D_t + \beta P_s + \theta D_t P_s + \vartheta_{st} \qquad (2)$$

where O_{st} is the outcome of school s located at point t. D_t is the distance from the school to the transport system, and P_s is a measure of the program intensity at the school. α_0 measures the overall average of the outcome variable. α_1 measures the prior difference in the average outcome between the treated and non-treated schools. β measures the effect of the policy on the treated schools. The causal effect is identified by the estimation of θ. Notice that both the assignment and the treatment variables are continuous. This makes us able to capture heterogeneous causal effects that are not captured by the alternative strategy of using 0-1 variables. Nevertheless, we can construct the 0-1 variables to estimate the overall causal effect, by defining an indicator variable for the distance variable D (based on a threshold $\bar{D}$) and a dummy variable for the treatment variable P indicating whether the school is treated or not.

In general, the estimation of θ by using Equation (2) will have a problem of selection bias, because the selection of schools is not random, then we need to control for covariates and fixed effect by school and location, as follows

$$O_{st} = \alpha_0 + \alpha_1 D_t + \beta P_s + \theta D_t P_s + \delta X_{st} + \mu_s + \rho_t + \varepsilon_{st} \qquad (3)$$

Where X_{st} is a vector of exogenous covariates and μ_s, ρ_t are the fixed effects at the level of school and location.

Equation (3) captures the causal effect of a single program. Since a given school may be subject to different programs, we may want to look at the causal effect of each of them as well as the causal effect of the interaction between them. To estimate the effect of the interaction between any two pair of programs we will estimate

$$O_{st} = \alpha_0 + \alpha_1 D_t + \sum_{j=1}^{J} \beta_j P_{js} + \sum_{j=1}^{J} \theta_j D_t P_{js} + \sum_{j \neq k} \gamma_j D_t P_{js} P_{ks} + \delta X_{st} + \mu_s + \rho_t + \varepsilon_{st} \qquad (4)$$

As any Diff-in-Diff approach, our strategy relies on the assumption that unobservable variables of both the treatment and control groups are not affected by the treatment. A general equilibrium effect of treatment would challenge the identification strategy. For instance, since the SED assigns students to schools with geographical criteria, geographical variation of policies application may cause student to migrate toward areas in which schools are being treated. Those households more interested in their children's education would migrate to those neighborhoods in which school are being treated. In this migration choice, households face a potential trade-off: migrating can change the conditions of living of households. In particular, since policies are targeting the poorest, the neighborhoods with treated schools are very likely to be the poorest. Therefore, a household can obtain more education for their children at the cost of living in a more deprived neighborhood. Although, we will not model the migration choices explicitly, in our controls battery we will control for parents' education (a proxy for household's interest in children education), years of studies in the current school (a proxy for migration), amenities of schools' neighborhood and historical schools' neighborhood crime rates.

We are aware that many effects of the cost-reducing education policies are not captured at the school level. The whole project includes a second stage that will allow us to identify the effect at the individual level. The distribution of incidence rates of pregnancy across schools that were found in the first stage will be used to make a follow-up of the project by the end of 2010 (October - November). In the follow-up we will survey girls at school with much more detail, having into account the economic and statistical lessons learnt from the first stage.

Second exercise (follow-up)

The exposure of an individual to treatment depends on the distance from home to school and the intensity of treatment at school. A regression approach is adopted. The basic Equation is

$$O_{is} = \alpha_0 + \alpha_1 D_i + \beta P_s + \theta D_i P_s + \delta X_{is} + \mu_i + \rho_s + \varepsilon_{is} \quad (5)$$

Where O_{is} is the outcome of individual i at school s. D_i is a measure of the distance from home to school and P_s is a measure of the program intensity at school *s*. X_{is} is a battery of controls a the individual level and μ_i, ρ_s are fixed effects at the individual and school level, respectively; which are included to reduce the selection bias.

Since the school may be recipient of different cost-reducing policies, not only would we like to measure the effect of each program separately but also the effect of the interaction between them.

$$O_{is} = \alpha_0 + \alpha_1 D_i + \sum_{j=1}^{J} \beta_j P_{js} + \sum_{j=1}^{J} \theta_j D_i P_{js} + \sum_{j \neq k} \gamma_j D_i P_{js} P_{ks} + \delta X_{is} + \mu_i + \rho_s + \varepsilon_{is}$$

(6)

e. Human subjects concerns

The research we propose is not an intervention but an evaluation using first and second hand data, this means that we are not putting the subjects of our evaluation to any risk. As it can be inferred from our data collection strategy we will not be able to identify individuals, consequently, there is no ethical social or gender issues on the fieldwork. In addition, interviewers will not implement face to face interviews with the girls, they will receive the questionnaires and fill them alone to keep anonymity rules.

D. Consultation and Dissemination Strategy

a. How, in the design and execution of your project, will you consult with policy makers, civil society representatives and other parties interested in the research issues you examine?

There are at least three very important organizations in Bogotá that should be considered when doing a study on teenage childbearing in this city: Profamilia, which is the Colombian organization that deals with sexual and reproductive health, the Secretaría de Educación de Bogotá and the Secretaría de Salud de Bogotá which are the two main offices of the city dealing with education and health policy. During the study we will take into account these three institutions. During the planning of the project we will discuss with Profamilia the instrument used to capture data and the sampling of the data. The Secretaría de Educación and Secretaría de Salud will be

consulted also to help us improve the information instrument also; additionally we will count with their help for the field work. In the cases of the Secretarías we have already established contacts with them for the realization of this proposal.

b. How and where will research results be disseminated to academics, policy-makers and the public: publications, policy briefs, media, seminars, conferences, etc?

At least one paper as outlet that will be posted in the Economics Department Working paper series and then sent for evaluation for publication in a international journal with peer review.

We will present the results in several conferences and seminars, some we can already mention are LACEA-LAMES conference (if accepted), the seminars in University of Milan, Banco de la República (Colombia), CEDE (Department of Economics Universidad de los Andes) and the Department of Economics of the Universidad del Rosario, National congress of Public Health (organized by the National association of Public Health Departments in Colombia) and the seminar of the Health Panamerican Organization-HPO.

E. The study team

a. Principal investigator

Darío Maldonado (34 years, male) holds a PhD and Master's degrees in Economics from Université de Toulouse (France) and Master's and undergraduate degrees in Economics from Universidad de los Andes (Bogotá, Colombia). He is assistant professor at Universidad del Rosario. Previously to engaging as teacher at Universidad del Rosario he worked at Universidad de los Andes and did a Postdoc at CORE (Université de Louvain-la-Neuve, Belgium). His main fields of specialization are Public Economics and the Economics of Education. His research has concentrated in several empirical and theoretical issues on the economics of education with emphasis on secondary education and on social security design. Mr. Maldonado is expert on the optimal design of policies (education and social security) that takes into account incentives to achieve adequate information revelation and permanence in education. In his work on the design of optimal social security schemes he has taken into account issues of rationality and models from the literature on psychology and economics. He will be the leader of the group and will be coordinating the relation between all members of the team.

b. Other key research staff and their roles

For this project we have joined together a group of researchers from the Economics Department and the School of Medicine and Health Sciences. The members of the team that belong to the School of Medicine and Health Sciences are specialist in Public Health and Evaluation. The members of the team that belong to the Economics Department are specialists in applied econometrics and project evaluation and in particular in the fields of Public Economics, the Economics of Education, Health Economics and Development Economics.

During the project the members of the team will build capacity in data recollection, project evaluation and the analysis and use of incentives schemes for health improvement and permanence in education of adolescents. The economists will build capacity in understanding the organization of health systems in Colombia, with the

help of the members from the School of Medicine will also understand issues related to the workings of health institutions. The members of the team that belong to the school of Medicine will build capacity in program evaluation. Altogether the team will build capacity in understanding the interrelations between health and education. Also very important the team members will build capacity on collaborative work in interdisciplinary teams.

Specifically the members of the team are:

Darwin Cortés (36 years, male) holds PhD and Master's degrees in Economics from Université de Toulouse (France), a Master's degree from Universidad Nacional de Colombia and an undergraduate degree in Economics from Universidad del Rosario (Bogotá, Colombia). He is assistant professor at Universidad del Rosario. His fields of specialization are Public Economics, Development Economics and Applied Econometrics. His research has focused mainly on education and in particular on the organization of publicly provided education. He has been involved in several studies on education and health where intensive use of data is done. He was recently consultant for the Colombian Statistics Department (DANE) evaluating the Colombian National Income and Expenditures survey. Previously to his engagement as teacher and researcher at Universidad del Rosario he worked on the Colombian Ministry of Education and spend a year as researcher in Universitá degli Studi di Padua (Italy). In the project Mr. Cortés will be in charge of the design and implementation of the econometric evaluation strategy.

Juan Gallego (33 years, male) holds PhD and Master's degrees in Economics from Université de Toulouse (France), a Master's degree from Universidad del Rosario (Bogotá, Colombia) and an undergraduate degree in Economics from Universidad de Antioquia (Medellín, Colombia). He is assistant professor at Universidad del Rosario. Previous to his engagement as teacher at Universidad del Rosario he spend a year as researcher in Centro Studi Luca d'Agliano (Universitá degli Studi di Milano, Italy). His fields of specialization are Development Economics, Applied Econometrics and Health Economics. His research has focused on issues related to the conditions of children in developing countries, migration and health economics; he has experience in data collection field work. In the project, Mr. Gallego will be working in the implementation of the econometric evaluation strategy and will work together with the team in charge of the field work.

Catalina Latorre (43 years, female) holds a Master's degree in Epidemiology for Universidad CES (Medellín, Colombia), a Master's degree in Health Administration and an undergraduate degree in Medicine both from Universidad Javeriana (Bogotá, Colombia). She teaches in the School of Medicine and Health Sciences at Universidad del Rosario (Bogotá, Colombia) where she is also the head of the Department of Public Health and has been head of the Head Management Postgraduate Unit. Catalina is well known for her work on Public Health in several places in Colombia and with marginal groups. She participated in many projects on Public Health and in particular in the subjects of sexuality and reproductive health. In the project Ms. Latorre will be in charge, for all matters, of the revision of issues related to the organization of reproductive health programs in Colombia. She will also collaborate with the team in the final design of the survey instrument. She will also be the link between the team

and the Secretaría de Salud de Bogotá and Profamilia helping in the dissemination of the research.

Mónica Ortegón (35 years, female) holds a PhD degree in Clinical Epidemiology from the Netherlands Institute of Public Health, Erasmus University Roterdam (the Netherlands) and degrees in Epidemiolgy and Medicine and Surgery from Universidad del Rosario (Bogotá, Colombia). She is associate professor at Universidad del Rosario where she teaches since 2007 where she has realized several research projects in economic evaluation in the field of Chronic Deseases. Before coming to Universidad del Rosario she worked for the World Health Organization and Pfizer Phatmaceuticals. Monica is specialist in the use of data for the evaluation process in the area of Health.

In the project Ms. Ortegón will be working analyzing the data and working in the implementation of the econometric evaluation strategy and data management.

c. Collaborators/consortium arrangements

For the realization of the project Universidad del Rosario will sign a contract with ESOCEC (Estudios Sociales y Económicos) which is a consulting firm that has specialized in studies about education intensive in data collection and management. In the side of ESOCEC the person in charge of the project will be Luis Piñeros who has specialized in Education and who will also help the team establishing links with the Secretaría de Educación de Bogotá. ESOCEC will be in charge of all the data collection process.

Any disputes with ESOCEC will be resolved with the help of a third party according to the way stablished in standard contracts of this type. Any way there is already a long lasting relation between Luis Piñeros and members of the department of Economics at Universidad del Rosario. From the cv of Mr. Piñeros you can see that he has worked with several members of the Deparment (v.g. Darwin Cortés, Luis Gamboa, Hernán Jaramillo).

d. Past, current or pending projects in related areas involving team members: list with name of funding institution, title of project, list of team members involved

Darío Maldonado:

1. Crime and Education in a model of Education transmission (funded by University of Padua)

2. The effect of school competition on school performance in Bogotá, Colombia (funded by Fondo de Investigación de la Universidad del Rosario)

3. Equality of educational opportunity in Colombia (funded by Fondo de Investigación de la Universidad del Rosario)

Darwin Cortés:

1. Evaluation of the National Income and Household Survey (funded by Departamento Administrativo Nacional de Estadítica - DANE)

2. Effects on decentralization of education on quality of education on private schools

Juan Miguel Gallego:

1. International migration and social networks in Mozambique: field work and survey in 42 communities in Southern Mozambique (funded by Centro Studi Luca d'Agliano).

2. Engel curves in health expenditure (funded by Universidad de Antioquia)

Catalina Latorre:

1. Significaciones de la sexualidad y salud sexual y reproductiva en adolescentes de Bogotá (funded by Colciencias)

2. Los derechos sexuales y reproductivos: Estudio de caso de unidades de prestación de servicios (funded by Colciencias)

3. Perspectivas de la investigación en la Secretaria Distrital de Salud (funded by Secretaria Distrital de Salud)

4. Conocimentos, actitudes y prácticas en salud sexual y reproductiva en una población universitaria. (funded by Universidad del Rosario).

Mónica Ortegón:

1. Socioeconomic inequalities in health in Colombia (funded by Universidad del Rosario)

2. Economic evaluation of suicidal attempt in children and adolescents (funded by institution Universidad del Rosario)

3. Generalized cost-effectiveness analysis of cardiovascular disease, diabetes and lung diseases for all world regions (funded by World Health Organisation)

4. A prospective cohort study to determine the cardiovascular risk in type 2 diabetic patients in the Netherlands (funded by Institute for Medical Technology Assessment – IMTA - Rotterdam, The Netherlands).

F. Timeline

We propose a change in the schedule stated in the Call for proposal, our ideal timing starts in January 15th and ends in June 30th. The main reason for a change is that we are going to make a survey on schools so that before starting the field work we need that school starts and some time to allow for the socialization of the research objectives and method by the Secretaría de Educación so that we are granted access to schools. For this reason to guarantee success in the field work this should not start too early in the year. Consequently, our timeline starts the 15th of January and ends the 15th of June. In any case we will have a first draft the 15th of May which can be read and accessed by PEP. The proposed timeline is the following:

Timeline	
January 15 – February 15	Planning of data collection
February 15 – April 15	Data collection
April 15 – May 15	First draft
May 15 – June 15	Final draft

H. References

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Annex 1. Description of recent Bogotá´s cost of Education reducing program Policies in Bogota

1.   Cash Transfers

1.1.   District level

1.1.1   Conditional Subsidy to attendance

The beneficiaries of this program are children with

- less than 19 years old

-belonging to Sisben level 1 (0-10 score) or 2 (11- 22 score)

-enrolled in public schools located in one of the nine localities with more education demand (San Cristobal, Usme, Tunjuelito, Bosa, Kennedy, Engativá, Suba, Rafael Uribe and Ciudad Bolivar)

- in 6th 11th grades

In 2009, the SED established the number of beneficiaries according to the budget. It also determined the number of beneficiaries by school. School boards select beneficiaries from eligibles based on academic achievement.

The allocation of the subsidy is done at the level of individuals (a household may have several beneficiaries). The subsidy lasts for two or three years depending of the transfer modality.

Payments are done each two months during the 10 months of the schooling year to a debit card that can be used in the cash points network of the bank in charge of the operation. The debit card is given to the mother of children with less than 16 years old and directly to the student i f older than 16 years old and inscribed to the program personally.

The attendance verification is based on a daily report of beneficiaries attendance made by schools to the CADEL. A maximum of eight justified absences each two months are allowed. No unjustified absences are allowed.

There are two Transfer modalities:

Type 1: This transfer provides incentives to stay in school during the schooling year. In 2006, it pays 60 thousand Colombian Pesos after each two months of studies. Students' attendance must be verified before each payment. This modality is for students of 9th, 10th and 11th grades.

In 2009-2010, it pays 70 thousand pesos.

Type 2: This transfer provides incentives to pass to the next grade. Same amount as before (both in 2006 and 2009) but 20 thousand pesos of each payment are saved until the beginning of the next schooling year. All savings of a given year are available for withdrawal by the end of January next year. This modality is for students of 6th, 7th and 8th grades.

1.1.2   Transport subsidy conditional to attendance

In 2006, this cash transfer consisted of 2600 pesos for each day the student attended school. The transfer is made monthly through a debit card. The potential beneficiaries are the students of Sisben levels 1 and 2.

In 2009-2010, the transfer is up to 60 thousand pesos per month. There is a transfer reduction of 3.000 pesos per day unattended. The payment is anticipated and is done each two months. Potential beneficiaries are students in 8th-11th grades enrolled in public schools that live 2Km or more far away from the school.

The attendance verification is based on a daily report of beneficiaries attendance made by schools to the CADEL

2.   Fees Reduction

2.1   Contracts with private schools

This modality is implemented through contract between the SED and the private schools to enroll children that could not be enrolled in public schools. The SED pays the tuition fees and the complementary payments (transport, materials, uniforms, etc.) must be afforded by the household and cannot exceed some ceilings. The contract lasts for one year.

There exist several modalities:

1.   Supply subsidies with demand criteria. Standard tariff up to 834 thousand pesos a year. This modality is the final phase

2.   Teachers in commission: Teachers paid by the government that teach in private schools

3.   Bank of private schools: Private schools tariffs are recognized. This modality was used till 2006. The largest payment was 1.288.000 pesos

4.   Project of Increasing enrollment (MEN resources): For private schools that attend vulnerable population (forcibly displaced, ethnic minorities, working girls, etc). Tariffs in 2006: 860.000 pesos

5.   Local Education fund: Population in schooling age from "Ciudad Bolivar" locality

There are four payments by year. The first one covers tuition fees. And the other three each quarter after verification of attendance by a third party ("firma interventora")

2.2   "Gratuidad" program

In Bogota, households with children in Public schools have to pay for some fees. Students in 1st-9th grades pay for complementary services (Report Cards, School handbook, ID cards, Pedagogical materials, Maintenance of infrastructure, Field Trips). Students in 10th-11th grades pay for tuition fees and complementary services. The "Gratuidad" program dispensed students of poor households of those payments. In 2004-2005, the program used the Estrato index to target the beneficiaries. Students from Estrato 1 and 2 were beneficiaries of this program. From 2006 on targeting is based on the SISBEN index. Students from Sisben 1 and 2 are beneficiaries of this program. By 2006, students of 1st-9th grades from Sisben 1 received 100% reduction in complementary services. Those from Sisben 2 received no reduction. Students of 10th-11th grades from Sisben 1 received 100% reduction in academic fees and

complementary services. Those from Sisben 2 received 50% reduction. From 2010, the SED intends to cover all students attending public schools.

2.3   Concession Schools

This program started in 1999. It is a partnership between the public and the private education sectors in which private schools provide public education for a period of 15 years. The state provides infrastructure, selects the students a pays a pre-agreed amount per full-time student per year. Private schools provide education to assigned students but they are allowed to contract administrative and teaching staff and implement the pedagogical model they want. Schools were located in extremely poor areas, which had population in schooling age that could not be attended in public schools. Any student in the neighborhood can apply for enrolment in the concession school. The SED allocates places among the applicants. Those not accepted into the concession school are placed into a nearby public school.

Cuestionario para alumnas

Buenos dias, Mi nombre es _____ y estoy implementando una encuesta para la Universidad del Rosario (Mostrar identificación) - Bogotá. El objetivo del estudio es analisar el efecto que las politicas sobre reducción de costos a la educacion implementadas recientemente por la secretaria de educacion han tenido sobre diferentes alternativas de vida en la poblacion adolecente femenina, particularmente en las decisiones de embarazo adolecente. Nosotros no identificaremos ningun individo. Este formulario será llenado anonimamente y no habrá una entrevista persona a persona. La informacion que ustedes nos suministren será estrictamente confidencial. Ni los estudiantes ni el colegio serán identificados en los reportes que planeamos escribir.

Capa. Identificacion del Colegio

Nombre y codigo del colegio: _____ | Cod |

Nombre y codigo de la localidad: _____ | Cod |

AREA:

Urban=1	Rural=2

Direccion: _____

Codigo DANE de la institucion

Cod	

Nombre del colegio: _____

Hoja de control

Para ser llenada por el entrevistador:

Tiempo de la entrevista Inicio: _____
Final: _____

Nombre del entrevistador: _____

Firma: _____

Comentarios: _____

Fecha de la entrevista:

Dia		
Mes		
Año		

Para ser llenado por el supervisor:

Nombre del supervisor: _____

Firma: _____

Questionario revisado:

Si=1	No=2

En la oficina:
Quien digito y fecha: _____

Modulo de caracterisiticas socioeconomicas de la alumna

1 Edad

2 Estado Civil

3 Nivel SISBEN

4 Grado que cursa

5 ¿Cuál es el máximo nivel educativo alcanzado por tu papá o por la persona que cumple el papel de padre en tu hogar? (contesta solamente una opción)

	Sin educación
	Primaria incompleta (no terminó 5º grado)
	Primaria completa (terminó 5o grado)
	Media incompleta (no terminó 11o grado)
	Media completa (terminó 11o grado)
	Superior incompleta
	Superior completa
	Posgrado

6 ¿Cuál es el máximo nivel educativo alcanzado por tu mamá o por la persona que cumple el papel de madre en tu hogar? (contesta solamente una opción)

	Sin educación
	Primaria incompleta (no terminó 5º grado)
	Primaria completa (terminó 5o grado)
	Media incompleta (no terminó 11o grado)
	Media completa (terminó 11o grado)
	Superior incompleta
	Superior completa
	Posgrado

7 ¿dé qué material esta hecha la mayoría de los pisos donde vives?

	Tierra o arena
	Cemento o gravilla
	Tabla, tablón o madera burda
	Baldosa, tableta, ladrillo o vinilo
	Madera pulida, alfombra, tapete, mármol

8 ¿Con qué tipo de servicio sanitario cuenta tu hogar?

	Inodoro conectado al alcantarillado
	Inodoro conectado a pozo séptico
	Inodoro sin conexión
	Letrina
	No tiene servicio sanitario

9 Incluida tú, ¿cuántas personas viven en tu hogar?

	2
	3
	4
	5
	6
	7
	8
	9
	10
	11 mas

10 Contando sala y comedor, ¿cuántos cuartos o piezas tiene la casa o apartamento en que vives? (no

cuentes ni cocina, ni baños, ni garaje)

	2
	3
	4
	5
	6 o más

11 Medio de transporte para ir al colegio

	A pie
	Transporte escolar
	Transporte público
	Automóvil particular
	Otro

12 Tiempo empleado para ir al colegio

	15 minutos o menos
	de 15 a 30 minutos
	de 30 a 45 minutos
	de 45 minuto a 1 hora
	de 1 a 1,5 horas
	Más de hora y media

Modulo sobre programas educativos y de salud sexual y reproductiva

13 Es beneficiaria de alugno de los siguientes programas

	Subsidiado (en colegios privados)
	Subsidio condicionado a la asistencia
	Alimentación Escolar
	Transporte
	Otro

14 Cuánto paga por concepto de

	Matrícula
	Pensión (mes)
	Transporte (semana)
	Textos
	Útiles

15 Ha recibido Educación sexual en el colegio

	si
	no

16 Cómo califica su nivel de satisfacción respecto de la educación sexual que le han brindado en el colegio (1 muy bajo– 10 muy alto)

17 Cuáles han sido las principales fuentes de información que ha tenido sobre sexo

	Padres
	Compañeros
	Libros

	Revistas
	Televisión
	Internet
	El colegio
	Otras

18 En qué momento empezó a recibir educación sexual en el colegio

	Preescolar
	Primaria
	Secundaria
	Media

19 Cómo califica la educación impartida en su colegio sobre los siguientes temas (0-10)

	Los órganos sexuales de hombres y mujeres
	Pubertad
	Sexualidad
	Planificación familiar
	Relaciones homosexuales
	Matrimonio
	Actitudes frente al sexo
	Aspectos éticos y morales
	Como tratar el deseo y las fantasías sexuales
	Uso de métodos anticonceptivos
	Enfermedades de transmisión sexual
	Legislación concerniente al sexo
	Control de la natalidad
	Otras

20 Cómo calificaría su nivel de satisfacción con relación a los siguientes aspectos de la educación sexual

	Cobertura del tema
	Elección de los temas
	Selección de materiales de enseñanza
	La manera de enseñar por parte de los maestros

21 La educación sexual en su colegio (Acuerdo/desacuerdo)

	Satisface sus necesidades de saber sobre el tema
	Es relevante para su vida diaria
	Es interesante
	Es aplicable a su vida diaria
	Es suficiente para saber sobre el tema

Modulo sobre uso de anticonceptivos y embarazos

22 Ha tenido relaciones sexuales

	si
	no

23 En el último mes ha tenido relaciones sexuales

	si
	no

24 Emplea algún método anticonceptivo

	si
	no

25 Alguna vez se ha realizado un test de embarazo

	si

	no

26 Esta embarazada actualmente

	si
	no

27 Ha estado embarazada en el ultimo año

	si
	no

28 Si quedara embarazada que haría

	Retirarme del colegio y hacerme cargo del bebe
	Seguir estudiando. Mi familia me ayudaría con el cuidado del bebe
	Interrumpir el embarazo
	Entregar el bebe en adopción

29 Qué piensa hacer cuando termine el bachillerato

	Continuar estudiando
	Trabajar
	Estudiar
	No se

El cuestionario terminó. Nos gustaria enfatizar que toda la información que recolectamos será mantenida estrictamente confidencial y anonima. Usted ni su colegio serán identificados ni por el nombre de las personas e instituciones educativas en ninguno de nuestros reportes. Muchas gracias por su colaboración y tenga un buen dia. Hasta luego