Conditional Cash Transfers and Cognitive, Non-Cognitive Outcomes: The Case of the Bono de Desarrollo Humano in Ecuador

Izurieta, Gabriela [1], *

[1]*Ministerio de Educación, Quito-Ecuador.*

Abstract: The BDH cash transfer is a social protection program directed to the poorest households in Ecuador. This paper examines the impact of the BDH cash transfer on cognitive and non-cognitive outcomes for students that want to enter a higher education institution. Close attention is put on the Ser Bachiller exam score, student´s expectations, motivations and self-esteem. The data used corresponds to the Ser Bachiller data base and the Associated Factors Survey for the academic cycle 2016-2017 (one cross-sectional period). The short-term exposure to the program was evaluated building a pseudo-assignation index (pseudo RS index) and a regression discontinuity design. The main results show that households that are near the assignation score (28.2) have an increased probability of participating in the program that ranges from 7.1 to 7.9 percentage points. For the cognitive outcomes, IV estimates reveal that the BDH cash transfer has a statistically significant negative effect on the mathematics score that ranges from 0.35 to 0.43 points (over 10 points). Regarding the non-cognitive outcomes, the BDH has a negative impact on students' academic self-esteem on both, mathematics class that ranges from 0.25 to 0.28 percentage points) and a similar effect on language class and a statistically significant and negative impact on the expectation to obtain a master's degree of 0.21 percentage points.

Keywords: Cash transfers, attendance, cognitive skills, non-cognitive skills, poverty, development.

Transferencias Monetarias Condicionadas y Habilidades Cognitivas y No Cognitivas: El Caso del Bono de Desarrollo Humano en Ecuador

Resumen: El Bono de Desarrollo Humano (BDH) es un programa de protección social dirigido a los hogares más pobres del Ecuador. Este artículo examina el impacto de la transferencia de efectivo de BDH en las habilidades cognitivas y no cognitivas para los estudiantes que desean ingresar a una institución de educación superior. Se utiliza el puntaje del examen Ser Bachiller y la información sobre expectativas, motivación y la autoestima de los estudiantes en la Encuesta de Factores Asociados para el ciclo académico 2016-2017. Se evaluó la exposición a corto plazo al programa construyendo un índice de pseudo-asignación (pseudo índice RS) y un diseño de regresión discontinua. Los resultados muestran que los hogares que están cerca del puntaje de asignación del bono (28.2) tienen una mayor probabilidad de participar en el programa que varía de 7.1 a 7.9 puntos porcentuales. Para las habilidades cognitivas, las estimaciones con variables instrumentales revelan que la transferencia tiene un efecto negativo y estadísticamente significativo en el puntaje de matemáticas que varía de 0,35 a 0,43 puntos porcentuales. Con respecto a los resultados no cognitivos, el BDH tiene un impacto negativo en la autoestima académica de los estudiantes, tanto en matemáticas (varía de 0.25 a 0.28 puntos porcentuales), un efecto similar en lenguaje y un impacto estadísticamente significativo y negativo en la expectativa de obtener un título de cuarto nivel de 0.21 puntos porcentuales.

Palabras clave: Transferencias de dinero, habilidades cognitivas, habilidades no cognitivas, educación superior, pobreza, desarrollo.

1. INTRODUCTION

Poor cognitive[2] and non-cognitive[3] development for children affects drastically their future. Literature on children's cognitive and non-cognitive development suggests that these skills are formed in different periods of time: cognitive skills are significantly developed in early life while non-cognitive skills are built in a higher degree during adolescence (Dahl, 2004). The insufficiency of these capabilities in adulthood, limits an individual to achieve crucial opportunities such as having the appropriate food intake, being healthy, having self-esteem, participating in community life or having the expected level of education (Becker, 1981). Cognitive and non-cognitive skills are part of an individual's human capital

[2] Cognitive skills allow an individual to "understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought" (Neisser et al., 1996:77).

(Pfeiffer and Karsten, 2008) and their development depends on the various forms of investments made to improve them throughout the time (human capital accumulation). In this context, Becker (1981) proposes a model for adult human capital and expected earnings:

$$H_t = \Psi(x_{t-1}, s_{t-1}, E_t) \text{ with } \Psi_j > 0; j = x, s, E \qquad (1)$$

Equation (1) shows the human capital production function H_t and is integrated by endowments inherited from parents (E) and by parental expenditures on children's skills (x), health, learning, motivation and public expenditures on their development (s). In a more recent study, Conger (2007) explains that not only the economic side (expenditures and endowments) is important to individuals' development but also the non-economic characteristics such as parents' good health, cognitive abilities, persistence or reliability that motivate children.

Families with enough economic resources can face optimal investments for their children; however, disadvantaged households face financial constraints and depend highly on the amount of public expenditures. The economic pressure on families is also a problem. The complexity of tackling difficulties as unmet material needs (e.g. food and clothing), the incapacity to pay bills, the inability to distribute the available resources and having to cut necessary expenses (health insurance and medical care) has a psychological link with economic distress (Conger, 2007: 179). Furthermore, families that struggle to find additional resources cause that parents are not involved in their childrearing. The lack of attention to children's development causes that children grow up with inadequate health levels, low school involvement, inadequate cognitive development and poor socio-emotional development (Mani et al. 2013; Schady et al. 2014).

The mentioned aspects become determinant for children growing in impoverished environments.

In this sense, public policy programs for children in low-income households are relevant policy interventions as they are effective in tackling childrearing problems by letting parents provide more attention to their children's development (Gershoff et. al, 2007; Wolf, Aber, & Morris, 2013). One of the most important social protection programs in this area is conditional cash transfers (CCT).

In theory, conditional cash transfers have the purpose of breaking the cycle of poverty and reducing inequality both, by redistributing resources and through the accumulation of human capital among poor households. These effects in poverty reduction happen in the short-term and long-term (Oosterbeek et al., 2008).

In the short-term CCT programs guarantee a minimum consumption level by providing an amount of money to disadvantaged families with the conditionalities of sending their children to schools and attending periodically health centers. The expected effect is increased school attendance

(Handa and Davis, 2006) and therefore dropout rates are expected to decrease. Additionally, more time learning at school is related with children's cognitive development (Yaqub 2002:1084). Furthermore, recent literature on behavioral economics points out that these programs are also associated with increased social skills, improved social behavior and better expectations about improvement of future life (Fernald et al. 2010; Handa et al. 2014; Attah et al. 2016).

In the long run, CCT programs are expected to accumulate human capital.

Combining the previous arguments, this study suggests the possibility that investing in poor households through money transfers may have positive effects on individuals' cognitive and non-cognitive development as well as positive effects on school attendance.

This study analyzes the impact of a cash transfer program in Ecuador on adolescents' cognitive and non-cognitive outcomes and school attendance. The focus on adolescents is important because it is considered that they have already developed some capabilities and are more conscious of the difference that the social aid makes on their families (Bettinger, 2010:20). Even though the transfer is a small monthly amount of $50, past studies of this cash transfer evidence that it has effects on improving families' wellbeing. The novelty of this study is the data base used which belongs to the national exam to enter higher education and the survey that students must fill before taking it. Therefore, the study offers information for all the students that pursue higher education in Ecuador.

Most of the literature about these topics work with small samples and evaluate the effects of the transfer on outcomes related with the objectives of the cash transfer i.e. in-crease on household expenditure, increase on school attendance or increased use of health centers. Though they are highly important, the present analysis considers that cash transfers outcomes should be measured beyond the increase of school enrollment and family income. Considering that the final aim of these programs is human capital accumulation, the evaluation on cognitive outcomes is appropriate; furthermore, the inclusion of non-cognitive aspects is outstanding because they may be the factors that motivate an individual to stand out from poverty.

1.1 Background

Cash transfer programs are a development strategy in Latin America. The first countries that implemented them are Mexico (Oportunidades) and Brazil (Bolsa Familia) in the 90s. Since then, cash transfer programs have been adopted in most countries from Latin America as an antipoverty initiative.

In Ecuador, the cash transfer program is called the Bono de Desarrollo Humano (from now, BDH). This program aims to guarantee a minimum consumption level to improve house-holds' living conditions and break the intergenerational

---

[3] Non-cognitive skills are related with personality traits, patterns of thought, feelings and behavior (Borghans et al., 2008) such as preferences, motivation, sociability, emotional stability, cooperation, consistency of

interest, persistence, teamwork, risk aversion, self-control, decision making among others.

transmission of poverty (Ministry of Economic and Social Inclusion, 2018). The BDH conditionalities are called "co-responsibilities" and they are sending children to school and visiting health centers periodically. They are publicized as mandatory (see https://www.inclusion.gob.ec/bono-de-desarrollo-humano1/) but there is not a standardized procedure for the verification of conditionalities or a mechanism of sanction in case of non-compliance, therefore they are "soft conditionalities" (Mideros and Gassmann, 2017, p. 10). However, there is evidence that some beneficiaries think they are being tracked (Martínez et al. 2017).

Research on educational outcomes demonstrates that the BDH has positive and significant results on children's school enrollment and attendance, that is, parents not only enroll their children in a school but they also make sure of sending them periodically. Schady and Araujo (2006) provide evidence on the basis of a randomized experiment of poor children in five provinces. They find a large and positive impact of the BDH on school attendance and a significant decrease in child work. Rosero and Martínez (2012) claim that the effect on school attendance is even bigger for households that take conditionalities as mandatory. In addition, Edmonds and Schady (2012) provide evidence that students from BDH families -aged between 6 and 17- reduce their involvement in economic activities because parents postpone their decision to send their children to work when they start receiving the transfer.

Claiming that the focus on enrollment and attendance is not enough to ensure that students are developing their human capital, Ponce and Bedi (2010) perform a short term study of the impact of the BDH on cognitive outcomes of students in second grade. They used the score of standardized test scores in mathematics and language to measure the program's effect, however, the authors found no significant impact. However, these results are too premature since the data was analyzed one year and a half after the program started in 2003 and they use a small sample of students on rural areas and the capital of the country which may cause biased results.

Paxson and Schady (2010) did a related research about the impact of the BDH program on children's development living in rural areas. The authors test two types of outcomes: cognitive skills and social development measured by the Behavior Problems Index. They collected data for six provinces (out of 22 provinces) in Ecuador and include measures of physical development, mother's physical and mental health. The findings show null results for the whole sample but there are important effects on the poorest children: they have better cognitive and behavioral outcomes compared with the children that do not receive the transfer. These findings encourage the idea that beneficiaries' children may grow in better conditions which in the long-term may be reflected in better educated adolescents with higher expectations about their future.

A more recent evaluation by Araujo et al. (2017) measures the effect of the BDH after 10 years of its implementation. They study the impact on school attainment, learning outcomes and employment status of young adults around 25 and 28 years old. What they found is that cognitive outcomes measured by total

scores and language, math scores are not improved in the long term. There is a small effect of the transfer on school attendance and a positive effect for secondary school completion, specially for girls. Nonetheless, the BDH effect was null for the probability of attending a higher education institution or labor status.

Based on the empirical evidence on the effect of the BDH, particularly on educational outcomes, there is a need to show the effect of the program for older children. The positive results of the program in children opens the question about whether the effect is also positive in adolescents, an age group that is important because they have greater autonomy specially with respect to their education.

Beyond school attendance, this research focuses on cognitive and non-cognitive outcomes (which may be driving cognitive outcomes). This goes by the hand with the reform of the Ecuadorian education system in recent years focused on improving quality and effective learning of students which is an improvement of the previous process that was focused on educational coverage and the elimination of illiteracy (National Institute of Educative Evaluation 2016:9).

The first hypothesis is that the BDH has a positive effect on school attendance provided that the transfer has a co-responsibility with parents sending children to school. The second hypothesis is that there is a positive relationship between the cash transfer and cognitive outcomes because it becomes an incentive for them to develop their own human capital, therefore, they might effort more in school. The third hypothesis is that BDH has positive impacts on students' non-cognitive outcomes because it is related with an improvement in family's emotional wellbeing by mitigating severe economic stress.

1.2 Empirical aspects: cash transfers and attendance, cognitive, non-cognitive effects

There are important pieces of evidence that show how cash transfers, in addition to having effects on school attendance, are related to changes in cognitive and non-cognitive outcomes. When students attend school, dropout rates are expected to decrease, and more children will be able to complete education levels. Time spent learning and effort in school are important predictors of cognitive performance (Yaqub, 2002, p. 1084). Then, a higher education levels incentive the development of cognitive abilities and non-cognitive abilities which is translated into higher productivity and improved social and economic conditions in the long term (Heckman et al., 2006, p. 8).

For instance, Duncan et al. (1994) demonstrate how a low family income is highly correlated with children's, between 0 and 5 years old, cognitive and non-cognitive development. They find that this relation dominates other variables commonly related to children's development such as maternal education, ethnicity and female headship. Furthermore, they find that poverty effects are cumulative, however, they claim that their results do not prove that increases in poor families' income improves child outcomes. Dahl and Lochner (2005)

prove this aspect. The authors focus on children between 8 and 14 years old and find evidence that increases in family income are associated with an effect on test scores (mathematics and reading) and behavioral measures which supports the idea that income transfers to poor families can help to boost their cognitive and non-cognitive development. Is this argument the case of cash transfers?

Gneezy et al. (2011) cash transfers work as extrinsic incentives to beneficiaries that are expected to give parents and additional effort to take children to school and give them a better education. This may to boost students' motivation. However, they argue that empirical evidence supports three main findings:

1. Extrinsic incentives increase attendance and enrollment.
2. They have mixed results on school achievement and effort (cognitive and non-cognitive outcomes).
3. Extrinsic incentives have varied effect for certain groups of students (e.g. children and adolescents).

In the case of conditional cash transfers, the first type of findings is an expected effect because the programs are nudging parents with the conditionality on attendance which is only a proof of the effective implementation of the programs (Handa and Davis 2006, p. 518). However, when the conditionality relies on educational outputs, as better school achievements (linked with the second type of findings), monetary incentives seem to be less effective compared with incentives conditioned on educational inputs (school attendance), because students find it hard to turn their efforts into success (it also depends on their ability and motivation) (see Gneezy et al., 2011; Bettinger, 2010). The studies discussed below reflect these three types of findings and are focused on differences between children and adolescents in terms of attendance, cognitive skills and non-cognitive skills.

Behrman et al. (2005) find interesting effects by age groups of the cash transfer *Progresa* in Mexico. When the authors disaggregate the data, they find that the program participation has a negative effect on grade repetition (a decrease) and a improved school progression for children that are 6 to 10 years old. On the other hand, for older children aged from 11 to 14, the program decreases the dropout rate and motivates school reentry for the ones who dropped school previously. A similar result was found by Angrist et al. (2006) who evaluate the impact of secondary school vouchers in Colombia. They followed up a group of students that applied for the transfer in two occasions. On average, they were 13 years old the first time and 17 years old the second time. The authors find that the students that won the voucher have higher graduation rates from high school which suggests that the program is an incentive specially for the students at risk of repeating a school year.

Baez and Camacho (2011) evaluate the long-term effect of the *Familias en Acción* conditional cash transfer in Colombia and find that that students that received the transfer for a longer time were more likely to graduate from high school (the probability is higher for girls and students in rural areas). However, students do not have higher scores. As the authors

enlighten, the non-correlation between attendance and better school performance may be explained by the fact that if attendance increases then schools may get congested and then classrooms will be overcrowded. The attention that teachers provide to each student is affected and that can cause academic deficiencies. Other possible reason is that children in poverty conditions might feel less motivated and might have less capacity to improve their school performance.

Fernald et al. (2010) evaluate the effects of the Mexican cash transfer program *Oportunidades* on cognitive development, language ability and behavior problems. After 10 years of the program implementation, they did find a decrease in emotional problems, bad conduct and hyperactivity disorders. The study relates this finding to improvement in parents' mental health and the increase in family interactions caused by the reduction in economic stress. Additionally, they find evidence that the continuous receipt of the transfer is associated with higher verbal abilities, cognitive scores and reduced behavioral problems. This is closely associated with the improvement in psychological wellbeing of family members caused by the alleviation on feelings of financial strain and deprivation which was discussed on the previous section.

Results on non-cognitive outcomes are varied. The same cash transfer program *Oportunidades* was evaluated by Ozzer et al. (2009) with a quasi-experimental evaluation in children's behavior between 4 and 5 years old. They conducted a survey about children behavior problems on mothers and find a 10% decrease in aggressive/oppositional symptoms and no effect in anxiety/depressive symptoms. Another example is the study by Handa et al. (2014). The authors analyze the impact of a Kenyan cash transfer that encourages school retention of children. Specifically, they evaluate inter-temporal choices, risk aversion, quality of life, future well-being (in one, three and five years) and subjective future risk assessment (likelihood of a certain event would happen in the near future). Although the authors did not find effects of the program for the first two outcomes, they found that the cash transfer has positive effects on beneficiaries' expectations about their life's improvement in the future. They also found that beneficiaries feel happier and more positive about their future and their quality of life, an important impact related with their self-acceptance, environmental mastery and overall, with their self-efficacy.

Attah et al. (2016) provide evidence of how a cash transfer program can have effect on beneficiaries' well-being. They assess the impact of cash transfers in Kenya, Ghana, Zimbabwe and Lesotho with a mixed method evaluation on beneficiaries' psychological wellbeing (framed by the theory of Ryff and Singer, 1996). What the authors find is the presence of a self-reinforcing cycle that parts from the cash transfer and is followed by increased self-esteem, social integration, interactions and development outcomes that boost their self-efficacy. For instance, they bring to light that children (aged 6 to 17) value the fact that they were able to use clean clothing, to pay school fees and study material which allowed them to increase their self-acceptance. They found that cash transfers influenced the improvement relations with teachers and classmates (diminished stigma from teachers), their autonomy increased because their performance only

depended on their hard work and no other economic concerns which helped them to master over their environment. School performance was evidenced in Kenya derived from these results; while in Ghana, Zimbabwe and Lesotho the cash transfer gave them hope about improving their condition and beneficiaries were more self-reliant. It also helped them to be active participants in social life (self-acceptance) and the confidence to cope with their reality.

2. METHODOLOGICAL APPROACH

This research aims at assessing the impact of the BDH cash transfer on students' cognitive and non-cognitive outcomes. To achieve this objective, I used the database of the National Higher Education Exam Ser Bachiller for the year 2017 (one cross section). This database contains information on students' general characteristics such as sex, geographic area, type of school they attended, their exam score and the students' answers on the AFS. In addition, it contains information about living conditions which was used to build the RS score (assignation rule). This analysis used the latest assignation rule in 2013 (28.2).

It was necessary to verify that the parents of the students are the ones that received the transfer and no other family member such as grandparents, aunts, uncles or the student itself. For this end, two filters were applied. The first filter was used for the variable that indicates who is the head of the household. The selected cases were when the students declared that the head of the household is either his/her mother or his/her father. The second filter was used for the variable that indicates whether the students have children of their own: the students that declared to have children or are expecting one were excluded to guarantee that the student is not the one receiving the transfer. This is also an approach to isolate the effect of the cash transfer from beneficiary parents to their children. The last filter is the students that reported to be from 15 years old to 19 years old; birth dates that are considered valid.

The selected students are only Ecuadorians who took the exam for the first time and have a score. With these specifications, the Ser Bachiller data base has 92.367 students, however, the number of observations changes depending on how many students answered each of the questions that were used. For instance, there are groups of questions that had more than 50% of missing values.

The cognitive and non-cognitive outcomes used in the analysis come from the Ser Bachiller exam score and the AFS for the year 2017.

2.1 Cognitive skills: Ser Bachiller exam score

The cognitive outcomes measured used the Ser Bachiller standardized exam results. The general score assigned for these outcomes ranges from 0 to 10 and it is equivalent to the official score that ranges from 0 to 1000. The other four specific scores include the basic knowledge domains: mathematical domain, linguistic domain, scientific domain and social domain.

2.2 Non-cognitive skills: AFS

One of the challenges of this analysis was the non-cognitive measurement. Previous studies examining the relationship between non-cognitive skills and children's development use indicators that are already part of previously defined and validated scale. For instance, the Ryff and Singer (1996) wellbeing theory was used to describe changes in children's behavior when their parents receive the cash transfer. This wellbeing theory has its own validated scale constructed with specific groups of questions that were tested to reflect each dimension. The pitfall of applying this approach is that the questions on the AFS are not the same to the official questionnaire used to build Ryff's wellbeing scale. The questions in the AFS were not developed to measure a previously defined non-cognitive construct. Instead, they were developed to contextualize the characteristics that are important for students' development and are related to their cognitive achievements.

A relatively straight forward option was used. The variables were selected based on a literature review about non-cognitive skills. Three dimensions were selected: self-efficacy, academic self-esteem and expectations about higher education because they are more related with the type of questions on the survey and all of them are a possible effect of the cash transfer.

The indicator for the self-efficacy dimension comes from the response on the self-reflection of the student to the question: "I always feel that the acquired knowledge motivates me to investigate more, develop new ideas and put them into practice". This question is important because it captures the perception of the students about their non-cognitive capacity.

For the second dimension, the academic self-esteem, a relatively straight forward approach was followed to identify the indicators. In this case, the indicators selected were the response to the statements "I consider I am an excellent student in X class". For the third dimension on expectations, the variable selected is part of the sub-level of "Higher Education Expectations" on the survey where students reflect on the maximum level of studies that they expect to achieve. For this question the options were: 1) I don´t know, 2) Baccalaureate, 3) Technical or Technological, 4) Superior or Third level (University), 5) Postgraduate: master's degree and 6) Postgraduate: doctorate. The level chosen is master's degree because it is the level after the level they are applying with the exam (third level). In total there are six non-cognitive outcomes.

The limitation of the approach used to measure the non-cognitive outcomes is that it is possible to infer conclusions only for the relation of each specific variable and the cash transfer i.e. it was complex to build a condensed non-cognitive index. Another potential limitation is that a technical variable selection approach was not used. The selected variables are of interest considering the theoretical review although it could be that there are other questions that best describe certain non-cognitive dimensions. Finally, the number of non-cognitive outcomes is a disadvantage for a deeper analysis for each

result. This could have been easier with one outcome that includes all the variables (an index).

Nevertheless, the weaknesses of this analysis are also its strength considering that the survey has many different variables that provide interesting information. The possibility to measure the impact for some of them is an opportunity to distinguish effects of the transfer on specific topics.
School attendance

2.3 School attendance

The variable for school attendance was approximated from the survey information. On the section of students' characteristics, the students are asked to select the frequency with which they miss classes for a complete day during the last month of classes. The response options are: 5 or more times, 3 to 4 times, 2 to 3 times 1 to 2 times and never. To compute the school attendance, only the last option was considered to build a binary variable where 1 is assigned for the students that answered that they are never absent and 0 otherwise.

2.4 RS replication: the pseudo-RS index

Participation in the BDH program is linked to the RS index that is generated from the information in the National Social Registry. For this analysis, I created a pseudo-RS index with the available variables in the Ser Bachiller database and assigned a score to each student.

The original RS index was created with 34 welfare variables. The available database allowed the replication of 21 variables which were assigned with the original weights and constructed the total RS as a summation of them as is denoted by equation (2):

$$RS = \alpha + \sum_{i=1}^{21} \beta_i X_i \qquad (2)$$

Where α is a constant term (known from the methodology), β are the original weights and X are the set of replicated variables. This assured that the pseudo-RS index that was built approximate as possible to the original index.

2.5 Effect estimation: RDD

Considering the program design, a simple OLS to compare beneficiaries and non-beneficiaries would yield biased estimates effect: not all the beneficiaries' characteristics are the same, a condition necessary to detect the effect of the BDH. Even if the sample is filtered for those around the threshold, OLS estimates do not consider the endogeneity that arises with program selection and the change on the probability of being treated. The RDD approach approximates a randomized experiment for those around the threshold which is a more sensitive method to stablish a causal impact of the program.

This section outlines the assumptions necessary to use a regression discontinuity design (RDD). The principal assumption is the "no manipulation" of the treatment assignment rule which means that the households that receive the transfer must not be able to select themselves into the program. If this condition is not met, then it implies that there is not a random selection component around the threshold and the regression discontinuity design would be the wrong approach. However, it is not possible that households that receive the transfer are able to perfectly manipulate their score.

First, beneficiaries do not have knowledge about which variables are used to build the RS score and neither the weights that each variable has. Second, even though they may know the cutoff score (which is highly unlikely), they do not know their own score. In a practical sense, it is not possible that beneficiaries can modify their RS score so that they can receive the transfer. Additionally, it can be noticed that the RS score density plot in Figure 1 does not show any visible discontinuity around the cutoff score (red line); the RS density is very similar to the normal density plot. For instance, if beneficiaries could be able to select themselves into the program then there would be grouping around the red line.
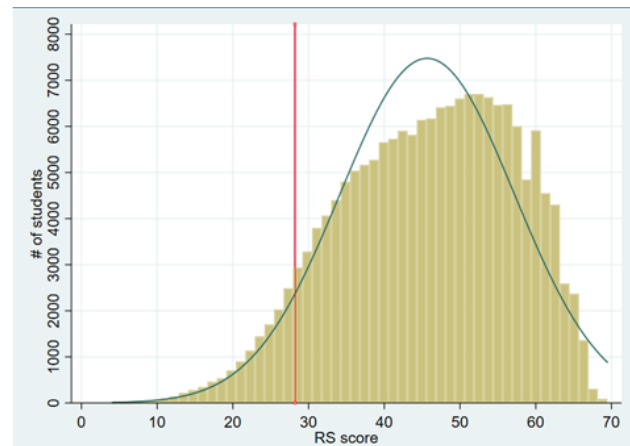

Figure 1. RS score density plot

In addition, the use of the regression discontinuity approach requires that the probability of receiving the BDH conditional on the RS score changes discontinuously at the threshold (28.2). Figure 2 displays two aspects. First, there is a discontinuity on the probability of treatment (to receive the BDH) at the cutoff score and that second, the treatment assignment rule is not perfect, which generates a non-linear relation between the RS score of each student and the actual treatment status (whether they receive or not the transfer).
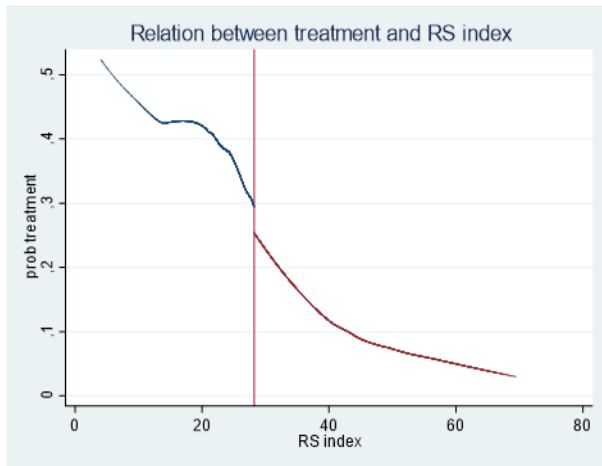
Figure 2. Relation between treatment and RS index

Table 2 Descriptive statistics for selected variables around cutoff (28.2)

	Difference Cutoff ±1	Difference Cutoff ±2	Difference Cutoff ±3
Female student	-0,042*	-0,014	-0,014
	'(0,02)	'(0,02)	'(0,01)
Area	0,167***	0,138***	0,126***
	'(0,02)	'(0,01)	'(0,01)
Number of household members	-0,111***	-0,100***	-0,100***
	'(0,03)	'(0,02)	'(0,02)
Illiterate mother	0,013	0,006	0,003
	'(0,01)	'(0,01)	'(0,01)
ISEC (Socioeconomic index)	-0,01	0,009	0,016
	'(0,02)	'(0,01)	'(0,01)
N	2793	5435	8276

This means that the assignation rule to the treatment (BDH) works as a randomized experiment near the cut off score.

The clear jump on the probability of treatment and the non-linearity of the assignation rule require a fuzzy regression discontinuity design[4] (RDD). The fuzzy design exploits the discontinuity on the probability of being treated by using it as an instrument to explain the treatment status. Fuzzy RDD estimation strategy is a two-stage least squares regression analysis (2SLS). Additionally, to test the causal effect of the BDH program, following Hahn, Todd, and van der Klaauw (2001), I estimated the treatment effect with an instrumental variable (IV) setup:

Previous studies have demonstrated that the BDH has targeting problems, just like any other cash transfer program. There are eligible households that do not receive the transfer (exclusion mistargeting) and not eligible households that are receiving the transfer (inclusion mistargeting). For instance, Rinehart and McGuire (2017) evaluate the BDH using the Living Conditions Survey (ECV) to measure these targeting problems. Out of the 11.410 BDH beneficiaries (household level) in the survey, 35% of them are part of the inclusion mistargeting while the exclusion mistargeting affected 35% of the eligible population. Table 1 shows the statistics for this analysis. Out of 92.367 beneficiaries, the 74% of them are part of the inclusion mistargeting whereas from the non-beneficiaries the 6% should receive the BDH.

IV-First stage:
$$D_i = \alpha_0 + \alpha T_i + \alpha_{RS} f(RS_i) + \alpha_x X_i + w_i \quad (3)$$

IV-Second stage:
$$Y_i = \beta_0 + \beta D_i + \beta_{RS} f(RS_i) + \beta_x X_i + u_i \quad (4)$$

Reduced form:
$$Y_i = \theta_0 + \theta T_i + \theta_{RS} f(RS_i) + \theta_x X_i + v_i \quad (5)$$

For equations 3 to 5, Y_i is the outcome variable, X_i is a vector of individual, household and educational characteristics and w_i, u_i and v_i random error terms. T_i is the instrument and it based on the decision rule for the BDH assignation: it takes the value of 1 for those scoring below the cutoff in the RS index (28.2) and the value of 0 for those scoring above the cutoff.

Table 1. Treatment status according to RS index

	More than 28.2	Less than 28.2	Total
Non-beneficiaries	76087	4945	81032
	94%	**6%**	**100%**
Beneficiaries	8351	2984	11.335
	74%	**26%**	**100%**
Total	84438	7929	92367

By estimating (5), the endogenous treatment status D_i is instrumented by the cutoff T_i, conditional on the polynomial of RS. Equation (5) is the regression of the outcome variable Y_i on the instrument T_i. The fuzzy IV-RDD estimator is β is obtained as the ratio of the reduced form coefficient of the instrument on the instrument estimated on the first stage (Angrist and Pischke, 2014:229).

Continuing with the empirical approach, the regression discontinuity is a good method to study the groups that are surrounding the cutoff line in 28.2. Students that are close to the cut off score are supposed to be comparable considering that they have the same characteristics and their only difference is that one group receives the treatment and the other does not. This can be evidenced on Table 2 where I use a difference in means test to check if the selected observable characteristics are statistically different between beneficiaries and non-beneficiaries adding three types of subsamples that are ±1, ±2 and ±3 points around the cut off score. Only two of them present significant differences (area and number of household members) whereas the others are not statistically different from each other (the subsamples are balanced).

The non-linearity of the assignation rule observed in Figure 2 requires a fuzzy RDD where the probability functions f(RS) can be approximated by pth-order polynomials (Angrist and Pischke, 2008).

The RDD strategy has some pitfalls that are worth to be mentioned. First, RDD assumes that the functional relation

---

[4] In the Fuzzy RDD the probability of being treated does not changes from zero to one at the cutoff point (Imbens & Lemieux 2007).

between the outcome variable and treatment variable is known. If this relation is mis-specified, then the resulting estimates may be biased Ponce and Bedi (2010). Second, the resulting estimations are valid for the individuals that are around the cutoff line. It is not possible to generalize the results for all the individuals in the distribution.

Instead, an alternative approach that can be used is a difference in difference strategy but for that it is necessary to have data for one or more periods. However, the available information and the existence of the assignation rule permit to assume that the individuals around the cutoff line are randomized which is what is desired by an impact evaluation methodology

3. RESULTS

Two different specifications were used: specification 1 (column 1 in tables) includes the variables female student, household's geographic location (urban or rural) and the RS polynomial., Specification 2 (column 2) ads variables about the type of school (public or private) and the time spent traveling to school in minutes (between 15 and 30 minutes, between 31 minutes and 1 hour or more than one hour), the number of household members and the mother's education (basic general education, baccalaureate-technical or higher level).

5.1 Regression discontinuity estimates

Program participation is not random, and it is based on the RS index. This index was used to build a binary instrumental variable where 1 is assigned to the students which living conditions are below the allocation threshold and 0 if their score is above the threshold.

The first stage includes this instrument variable and provides the treatment effect (program participation) in the presence of the fuzzy discontinuity observed in Figure 2. Table 6 shows the estimates for equation (4). The difference in the number of observations for each specification is explained because of the non-response for some variables included in the specifications.

Table 3. RDD first stage (summary)

Variable	Specification 1	Specification 2
Below cutoff point of 28.2 (Z)	0.086***	0.075***
	(0.01)	(0.01)
N	92367	92028
R^2	0.084	0.093
F-Statistic on excluded instrument	86.85***	65.12***

There is a significant effect of the instrumental variable on program participation. Students from households that have a score equal or lower than 28.2 have an increased probability of participating in the program that ranges from 7.5 to 8.6 percentage points. The F-statistic from the excluded instrument is statistically significant indicating that there is a relationship between participation in the BDH and the assignment rule.

The instrumental variable estimates the effect of the BDH on attendance, cognitive outcomes and non-cognitive outcomes are in Tables 7, 8 and 9 respectively. Considering that there are

mis-targeting inclusion problems (non-eligible households that receive the transfer) and mis-targeting exclusion problems (eligible households that do not receive the transfer), the effect is computed in the second stage as a ratio with the first stage-equation (3). In the case of the attendance outcome, the BDH program has a significant and positive effect on students' attendance of about 0.40 percentage points.

Table 4. RDD second stage: IV estimates for attendance (summary)

	Attendance (1)	Attendance (2)
BDH student	0.405***	0.400***
	(0.14)	(0.14)
N	92021	91865
R^2		

Then, the effect of the BDH program over the global score ranges from -0.34 to -0.35, significant effect at the 10% level of confidence. For the specific scores, the BDH has a negative and significant effect at the 10% level on the mathematics score that ranges from -0.37 to -0.44 points.

The effect of the BDH on sciences score is also negative significant at the 5% level of -0.49 points for specification 1 and -0.54 points for specification 2 (significant at the 10% level). The program effect for language, sciences and social studies scores is negative and non-significant.

Table 5. RDD second stage: IV estimates for cognitive outcomes (summary)

Panel A

	Global Score (1)	Global Score (2)
BDH student	-0.343+	-0.352+
	(0.18)	(0.21)
N	92367	92028
R^2	0.081	0.109

Panel B

	Mathematics (1)	Mathematics (2)	Language (1)	Language (2)
BDH student	-0.373+	-0.440+	-0.309	-0.243
	(0.20)	(0.24)	(0.23)	(0.26)
N	92367	92028	92367	92028
R^2	0.061	0.076	0.084	0.111

	Sciences (1)	Sciences (2)	Social Studies (1)	Social Studies (2)
BDH student	-0.488*	-0.536+	-0.199	-0.186
	(0.24)	(0.28)	(0.23)	(0.27)
N	92367	92028	92367	92028
R^2	0.040	0.055	0.046	0.066

In the case of non-cognitive outcomes, Table 9 shows that the effect of the BDH is small and positive for the motivation specifications, but they are not significant. Similarly, the BDH has a nonsignificant effect on the expected level of studies (master program).

The program has a negative and significant effect at the 5% level for the academic self-esteem on mathematics class that ranges from -0.23 to -0.26 percentage points. For the academic self-esteem on language class the effect is higher: negative and significant at the 5% level of confidence and ranges from -0.29 to -0.33 percentage points. The effects for the academic self-

esteem on sciences class and social studies class are not significant.

Table 6. RDD second stage: IV estimates for non-cognitive outcomes (summary)

Panel A

	Motivation	Motivation	Expected Level	Expected Level
	(1)	(2)	(1)	(2)
BDH student	0.064	0.056	-0.187	-0.193
	(0.14)	(0.14)	(0.12)	(0.12)
N	91592	91427	92148	91999
R^2	0.016	0.017	.	.

Panel B

	Esteem-Math	Esteem-Math	Esteem-Lang	Esteem-Lang
	(1)	(2)	(1)	(2)
BDH student	-0.228*	-0.258*	-0.294*	-0.327*
	(0.10)	(0.10)	(0.13)	(0.14)
N	46162	46071	46153	46062
R^2	.	.	.	.

	Esteem-Sci	Esteem-Sci	Esteem-Soc	Esteem-Soc
	(1)	(2)	(1)	(2)
BDH student	0.051	0.047	-0.127	-0.141
	(0.11)	(0.12)	(0.13)	(0.14)
N	46162	46069	46166	46074
R^2	0.004	0.010	.	

6. DISCUSSION

The BDH cash transfer has varied results among attendance, cognitive and non-cognitive outcomes. By exploiting the program's design and using an RDD strategy, the study shows that the BDH has a positive impact on beneficiaries' attendance which gives continuity to the group of findings of the positive impact of the program on children's school attendance (Schady and Araujo, 2006; Rosero and Martínez, 2012). This effect also fits into the first type of findings that Gneezy et al. (2011) distinguished for conditional cash transfers. On the other hand, the BDH has a negative impact on the general score amongst those close to the program eligibility threshold. It may be that the BDH only retains low-performance students that would have dropped school if they would not be receiving the transfer as it was evidenced by Araujo et al. (2017) but does not motivates them to have better achievements compared with their pairs around the threshold.

Specifically, the BDH does not have a positive impact on mathematics and sciences scores amongst those close to the program eligibility threshold. Previous results for the Ser Bachiller exam evidence that the mathematics module is the hardest as it has the greatest percentage of students with insufficient results (whereas the best results are for the language module) (National Institute of Educative Evaluation, 2016, p. 103). The cognitive results for mathematics are linked with the negative impact found for the academic self-esteem. BDH students do not consider themselves excellent on the mathematics class and it may be the reason why they have an insufficient score on that exam module. The program has a negative impact on academic self-esteem for language class. Considering that language class requires more social interaction compared to mathematics class, it may be that BDH students feel less confident about interacting with their peers

or integrating in group activities and therefore do not consider themselves as good students on this class.

Another result is that BDH beneficiaries are not expecting to achieve a higher education level (fourth degree) than the one they are applying for (undergraduate education) compared with no beneficiaries close to the program eligibility threshold. This is coherent with the fact that students that perform bad on school tend to have lower expectations for their future and feel less motivated to achieve higher education levels (Little, 2017, p. 32). The results may be also related with Kearney and Levine's claim about how the lack of resources lead young household members to perceive lower returns of educational investments made on them which in turn affects their decision to aspire for a higher educational level (Kearney and Levine, 2016, p. 335). Though the overall household income is affected by the transfer, it is not translated into better academic achievements.

Another explanation related with the results is that because of the increased attendance, classrooms may be congested which affects negatively to students' learning. As it is argued by Bandura (1994), a more personalized classrooms enable students to receive individualized instruction and helps them to improve their perceived capabilities, expand their competencies and provides less basis for demoralizing social comparison (Bandura, 1994, p. 12). Congested classrooms are usual in Ecuador. The Ecuadorian legislation allows to have at most 40 students per room in public schools (Ministry of Education, 2017) but, educational institutions tend to have more than the limit. Moreover, it is a fact that the poorest groups assist to public schools; in the case of the data used on this study, 85% the BDH students attend to a public school.

Though the findings are not related with better school performance, the fact that adolescents are attending school reduces the probability of engaging in risky situations if they have more free time (alcoholism, drug addiction, teenage pregnancy, etc.). On the other hand, as it is argued by Wolf et al. (2013), cash transfers can also have unintended consequences as they can encourage beneficiaries to stop investing in further education or stop working because of the incoming amount of money that the receive periodically. It means that cash transfers generate dependency feelings towards the government's social assistance which is not motivating beneficiaries to improve their living conditions.

The findings of this study show that beneficiaries are only attending school, which was claimed by Wolf et al. (2013) as the main effect of cash transfers on adolescents, but it is not translated into better achievements, more motivation or expectations which are the also important elements to improve their conditions and a more conscious solution to reduce inequality gaps and break the cycle of poverty. These students are only graduating from high school, but they do not own the necessary capacities to face the next educational level or to perform well on a job which detracts the goal of social assistance of improve the lives of beneficiaries. Are cash transfers just a money "handout"?

7. CONCLUSIONS AND RECOMMENDATIONS

The BDH cash transfer program has negative effects on cognitive and non-cognitive measures. Though the impact on school attendance is positive, it is not translated into better academic achievements or increased motivation, self-esteem or expectations.

The results indicate that students that are near the assignation score (28.2) have an increased probability of participating in the program of 7.5 to 8.6 percentage points. The BDH has a statistically significant positive impact on school attendance of around 0.40 percentage points amongst those close to the program eligibility threshold.

For the cognitive measures, the program revealed a statistically significant negative effect on the general score that ranges from -0.34 to -0.35 points and a negative and significant effect for the mathematics and sciences score. For the non-cognitive outcomes, the BDH has a negative impact on students' academic self-esteem in mathematics (ranging from 0.23 to 0.26 percentage points) and in language class (ranging from 0.29 to 0.33 percentage points).

The present study does not examine long-term effects of the BDH cash transfer. In this sense, any result is an inference for the year 2017. On the educational sphere, even if the transfer is promoting school attendance it does not imply that children are doing better in school and feel motivated enough to pursue an improved wellbeing condition. Handa and Davis (2006) point out that the increases on school attendance is only a proof of effective implementation of the programs as they are conditioned on parents sending their children to school, but this does not mean that children are better educated. Additionally, it is important to highlight the conclusion that many of the authors have claimed about these programs: demand side interventions are not sufficient to boost educational outcomes; these programs must go with the hand of improvements in education quality (e.g. better curriculums) and well-trained school teachers (Ponce and Bedi, 2010; Handa and Davis, 2006).

Further studies should consider long-term analysis to check if the continuous receipt of the monetary compensation meet program's long-term objectives: human capital development. It is also important to check the role of conditionalities, whether they should be strong conditionalities or the program should be unconditional.

These findings and previous studies findings must be considered to improve the program and add new elements that can help to accomplish them. For instance, there are cash transfer programs that are mixed with familiar psychological stimulation (interventions that support parents) and have significant benefits on tests for cognitive outcomes like reading and mathematics and non-cognitive outcomes such as self-esteem or social inhibition in the long term (Walker et al., 2011; Fernald et al., 2017). Finally, it is also important to understand how child development (e.g. cognitive and non-cognitive skills), parents' behavior and home environment interact with socioeconomic status and the cash transfer

REFERENCIAS

Angrist, J.D. and J. Pischke (2014) *Mastering'Metrics: The Path from Cause to Effect.* Princeton University Press.

Angrist, J.D. and J. Pischke (2008) *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton university press.

Angrist, J., E. Bettinger and M. Kremer (2006) 'Long-Term Educational Consequences of Secondary School Vouchers: Evidence from Administrative Records in Colombia', *The American Economic Review* 96(3): 847-862. DOI: 10.1257/aer.96.3.847

Araujo, M.C., M. Bosch and N.R. Schady (2016) 'Can Cash Transfers Help Households Escape an Inter-Generational Poverty Trap?', 'Can Cash Transfers Help Households Escape an InterGenerational Poverty Trap?', *The Economics of Poverty Traps,* Cambridge, Mass.: National Bureau of Economic Research.

Attah, R., V. Barca, A. Kardan, I. MacAuslan, F. Merttens and L. Pellerano (2016) 'Can Social Protection Affect Psychosocial Wellbeing and Why does this Matter? Lessons from Cash Transfers in Sub Saharan Africa', *The Journal of Development Studies* 52(8): 1115-1131. DOI: 10.1080/00220388.2015.1134777

Baez, J.E. and A. Camacho (2011) 'Assessing the Long-Term Effects of Conditional Cash Transfers on Human Capital: Evidence from Colombia', *IZA Discussion Paper No. 5751.*

Bandura, A. (1994) 'Self-Efficacy', V. S. Ramachaudran edn. Vol. 4. pp. 71-81. New York: Academic Press.

Bandura, A. (1997) *Self-Efficacy: The Exercise of Control.* New York, NY, US: W H Freeman/Times Books/ Henry Holt & Co.

Becker, G.S. (1981) *A Treatise on the Family.* Harvard university press.

Becker, G.S. (1993) *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education.* (3rd ed. edn) Chicago: The University of Chicago Press.

Behrman, J., P. Sengupta and P. Todd (2005) 'Progressing through PROGRESA: An Impact Assessment of a School Subsidy Experiment in Rural Mexico', *Economic Development and Cultural Change* 54(1): 237-275. DOI: 10.1086/431263

Bettinger, E.P. and National Bureau of Economic Research. (2010) 'Paying to Learn : The Effect of Financial Incentives on Elementary School Test Scores.', *NBER Working Paper No. 16333* 94(3).

Borghans, L., A.L. Duckworth, J.J. Heckman and B. Ter Weel (2008) 'The Economics and Psychology of Personality Traits', *Journal of human Resources* 43(4): 972-1059.

Calonico, S., M.D. Cattaneo and R. Titiunik (2014) 'Robust Nonparametric Confidence Intervals for regression-discontinuity Designs', *Econometrica* 82(6): 2295-2326. https://doi.org/10.3982/ECTA11757

Casullo, M.M. and A.C. Solano (2000) 'Evaluación Del Bienestar Psicológico En Estudiantes Adolescentes Argentinos (Evaluation of Psychological Wellbeing in Argentinean Adolescent Students)', *Revista de*

Psicología 18(1): 35-68. https://doi.org/10.18800/psico.200001.002

Chowdry, H., C. Crawford, L. Dearden, R. Joyce, L. Sibieta, K. Sylva et al. (2010) 'Poorer children's Educational Attainment: How Important are Attitudes and Behaviour', *Joseph Rowntree Foundation* : 1-72.

Coleman, J.S. (1988) 'Social Capital in the Creation of Human Capital', *American Journal of Sociology* 94: S95-S120.

Conger, R.D. and M.B. Donnellan (2007) 'An Interactionist Perspective on the Socioeconomic Context of Human Development', *Annual Review of Psychology* 58(1): 175-199. https://doi.org/10.1146/annurev.psych.58.110405.08 5551

Cunha, F. and J. Heckman (2007) 'The Technology of Skill Formation', *American Economic Review* 97(2): 31-47. DOI: 10.1257/aer.97.2.31

Dahl, G.B. and L. Lochner (2005) 'The Impact of Family Income on Child Achievement', NBER Working Paper No. 11279.

Dahl, R.E. (2004) 'Adolescent Brain Development: A Period of Vulnerabilities and Opportunities. Keynote Address', *Annals of the New York Academy of Sciences* 1021(1): 1-22. DOI: 10.1196/annals.1308.001

Dercon, S. and P. Krishnan (2009) 'Poverty and the Psychosocial Competencies of Children: Evidence from the Young Lives Sample in Four Developing Countries', *Children Youth and Environments* 19(2): 138-163.

Duckworth, A.L., P.D. Quinn and M.E.P. Seligman (2009) 'Positive Predictors of Teacher Effectiveness', *The Journal of Positive Psychology* 4(6): 540-547. DOI: 10.1080/17439760903157232

Duncan, G.J., J. Brooks-Gunn and P.K. Klebanov (1994) 'Economic Deprivation and Early Childhood Development', *Child development* 65(2): 296-318. https://doi.org/10.2307/1131385

Edmonds, E.V. and N. Schady (2012) 'Poverty Alleviation and Child Labor', *American Economic Journal: Economic Policy, American Economic Association* 4(4): 100-124. DOI: 10.1257/pol.4.4.100

Emadpoor, L., M.G. Lavasani and S.M. Shahcheraghi (2016) 'Relationship between Perceived Social Support and Psychological Wellbeing among Students Based on Mediating Role of Academic Motivation', *International Journal of Mental Health and Addiction* 14(3): 284-290. https://doi.org/10.1007/s11469-015-9608-4

Evans, G.W. and M.A. Schamberg (2009) 'Childhood Poverty, Chronic Stress, and Adult Working Memory.', *Proceedings of the National Academy of Sciences of the United States of America* 106(16): 6545-6549. https://doi.org/10.1073/pnas.0811910106

Executive Function of Ecuador (2011) 'Ley Orgánica De Educación Intercultural (Organic Law of Intercultural Education)'. Education Regulation, Accessed 1 November 2018 <https://oig.cepal.org/sites/default/files/2011_leyedu cacionintercultural_ecu.pdf>.

Fernald, L.C.; Gertler, P.J. & Neufeld, L.M. (2009) '10-Year Effect of Oportunidades, Mexico's Conditional Cash Transfer Programme, on Child Growth, Cognition, Language, and Behaviour: A Longitudinal Follow-Up Study', *The Lancet* 374(9706): 1997-2005. DOI: 10.1016/s0140-6736(09)61676-7.

Fernald, L.C., R. Kagawa, H.A. Knauer, L. Schnaas, A.G. Guerra and L.M. Neufeld (2017) 'Promoting Child Development through Group-Based Parent Support within a Cash Transfer Program: Experimental Effects on children's Outcomes.', *Developmental psychology* 53(2): 222-236. https://doi.org/10.1037/dev0000185

Fischer, K.W. (1980) 'A Theory of Cognitive Development: The Control and Construction of Hierarchies of Skills', *Psychological review* 87(6): 477-531.

Fiszbein, A. and N.R. Schady (2009) *Conditional Cash Transfers: Reducing Present and Future Poverty.* The World Bank.

Gao, J. and R. McLellan (2018) 'Using Ryff's Scales of Psychological Wellbeing in Adolescents in Mainland China', *BMC psychology* 6(1): 17. https://doi.org/10.1186/s40359-018-0231-6

Genicot, G. and D. Ray (2017) 'Aspirations and Inequality', *Econometrica* 85(2): 489-519. https://doi.org/10.3982/ECTA13865

Gershoff, E.T., J.L. Aber, C.C. Raver and M.C. Lennon (2007) 'Income is Not enough: Incorporating Material Hardship into Models of Income Associations with Parenting and Child Development', *Child development* 78(1): 70-95. doi: 10.1111/j.1467-8624.2007.00986.x

Gneezy, U., S. Meier and P. Rey-Biel (2011) 'When and Why Incentives (Don't) Work to Modify Behavior', *Journar of Economic Perspectives* 25(4): 191-210. DOI: 10.1257/jep.25.4.191

Hahn, J., Todd, P., & van der Klaauw, W. (2001). Identification and estimation of treatment effects with a regression-discontinuity design. Econometrica, 69(1), 201–209.

Handa, S. and B. Davis (2006) 'The Experience of Conditional Cash Transfers in Latin America and the Caribbean', *Development policy review* 24(5): 513-536. https://doi.org/10.1111/j.1467-7679.2006.00345.x

Handa, A., B. Martorano, C. Halpern, A. Pettifor and H. Thirumurthy (2014) 'The Impact of the Kenya CT–OVC on Parents' Wellbeing and their Children'.

Haushofer, J. and E. Fehr (2014) 'On the Psychology of Poverty', *Science (New York, N.Y.)* 344(6186): 862-867. DOI: 10.1126/science.1232491

Heckman, J.J., J. Stixrud and S. Uzrua (2006) 'The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior', NBER Working Paper No. 12006 24.

Kearney, M.S. and P.B. Levine (2016) 'Income Inequality, Social Mobility, and the Decision to Drop Out of High School', *Brookings Papers on Economic Activity* 2018(1): 333-396.

Little, A.W. (2017) ''Non-Cognitive' Constructs and Measures for the Young Lives School Surveys', Young Lives Working Papers 170.

Macours, K., N. Schady and R. Vakis (2008) 'Can Conditional Cash Transfer Programs Compensate for Delays in Early Childhood Development', *Processed. World Bank, Washington, DC*.

Mani, A., S. Mullainathan, E. Shafir and J. Zhao (2013) 'Poverty Impedes Cognitive Function.', *Science* 341(6149): 976-980.

Martinez, D. (2016) 'Sistematización, Documentación y Estimación De Información Relacionada Con El Bono De Desarrollo Humano (BDH): Su Implementación," Timing" y Las Bases De Datos (Systematization, Documentation and Estimation of Information Related to the Human Development Bond (BDH): Its Implementation, Timing and Databases)'. Quito: Inter-American Development Bank, Ministry Coordinator of Social Development and Ministry Coordinator of Economic Policy.

Martínez, D., T. Borja, N. Medellín and P. Cueva (2017) '¿Cómo Funciona El Bono De Desarrollo Humano?: Mejores Prácticas En La Implementación De Programas De Transferencias Monetarias Condicionadas En América Latina y El Caribe (How does the Human Development Bond Work? Best Practices in the Implementation of Conditional Cash Transfer Programs in Latin America and the Caribbean)' No. IDB-TN-1 350, Inter-American Development Bank.

Mideros, A. and F. Gassmann (2017) 'Fostering Social Mobility: The Case of the Bono De Desarrollo Humano in Ecuador', Working Paper 2017-002. United Nations University-Maastricht Economic and Social Research Institute on Innovation and Technology.

Mideros, A. and C. O'Donoghue (2015) 'The Effect of Unconditional Cash Transfers on Adult Labour Supply: A Unitary Discrete Choice Model for the Case of Ecuador', *Basic Income Studies* 10(2): 225-255.

Ministry Coordinator of Social Development (ca. 2014) 'Reproducción Del Índice Registro Social-RS En La Encuesta Urbana De Empleo, Desempleo-ENEMDU (Reproduction of the Social Register-RS Index in the Urban Employment Survey, Unemployment-ENEMDU)', Methodological note. Quito: Office of Information, Analysis and Evaluation of the Social Sector.

Ministry of Economic and Social Inclusion (2018) 'Bono De Desarrollo Humano (Human Development Bonus)' (a webpage of Ministry of Economic and Social Inclusion-Ecuador). Accessed 10/17 2018 <https://www.inclusion.gob.ec/bono-de-desarrollo-humano1/>.

Ministry of Education (2017) 'Planificación De Servicios Públicos Del Ministerio De Educación-Acuerdo Nro. MINEDUC-MINEDUC-2017-00047-A (Planning of Public Services of the Ministry of Education-Agreement no. MINEDUC-MINEDUC-2017-00047-A)'. Agreement.

Ministry of Education of Ecuador (2015) 'Estadística Educativa: Reporte De Indicadores (Educational Statistics: Indicators Report)', No. 1. Quito: Ministerio de Educación. Accessed 1 November 2018 <https://educacion.gob.ec/wp-content/uploads/downloads/2016/01/Publicaciones/PUB_EstadisticaEducativaVol1_mar2015.pdf>.

National Institute of Educative Evaluation (2017) 'Ser Bachiller 2017: Ficha Técnica y Conceptual (Ser Bachiller 2017: Technical and Conceptual Report)'. Quito.

National Institute of Educative Evaluation (2016) 'Resultados Educativos, Retos Hacia La Excelencia (Educational Results, Challenges Towards Excellence)'. Quito.

National Secretariat of Planning and Development (2013) 'Plan Nacional Del Buen Vivir 2013-2017 (National Plan for Good Living 2013-2017)'. Quito.

Neisser, U., G. Boodoo, T.J. Bouchard Jr, A.W. Boykin, N. Brody, S.J. Ceci et al. (1996) 'Intelligence: Knowns and Unknowns.', *American psychologist* 51(2): 77.

Oosterbeek, H., J. Ponce and N. Schady (2008) 'The Impact of Cash Transfers on School Enrollment : Evidence from Ecuador', World Bank Policy Research Working Paper.

Opree, S.J., M. Buijzen and E.A. van Reijmersdal (2018) 'Development and Validation of the Psychological Wellbeing Scale for Children (PWB-c)', *Societies* 8(1): 18.

Ozer EJ, Fernald LC, Manley JG and Gertler PJ (2009) 'Effects of a Conditional Cash Transfer Program on Children's Behavior Problems.', *Pediatrics* 123(4): 630-7.

Palacio, M.G. (2016) 'Little People, Big Words: 'Generationating' Conditional Cash Transfers in Urban Ecuador', 'Little People, Big Words: 'Generationating' Conditional Cash Transfers in Urban Ecuador', *Generationing Development : A Relational Approach to Children, Youth and Development,* pp. 243-265. London : Palgrave Macmillan UK : Palgrave Macmillan.

Paxson, C. and N. Schady (2010) 'Does Money Matter? the Effects of Cash Transfers on Child Development in Rural Ecuador', *Economic Development and Cultural Change* 59(1): 187-229. DOI: 10.1086/655458

Pfeiffer, F. and K. Reuß (2008) 'Age-Dependent Skill Formation and Returns to Education', *Labour Economics* 15(4): 631-646.

Ponce, J. and A.S. Bedi (2010) 'The Impact of a Cash Transfer Program on Cognitive Achievement: The Bono De Desarrollo Humano of Ecuador', *Economics of Education Review* 29(1): 116-125.

Ponce, J. (2008) 'Educational Policy and Performance: Evaluating the Impact of Targeted Education Programs in Ecuador', Doctoral thesis. The Hague: Institute of Social Studies.

Rosero, J. and J. Martínez (2012) 'Impacto Del Bono De Desarrollo Humano En El Trabajo Infantil (Impact of the Human Development Bonus on Child Labor)'. Quito: Ministry Coordinator of Social Development.

Ryan, R.M. and E.L. Deci (2000) 'Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions', *Contemporary educational psychology* 25(1): 54-67. https://doi.org/10.1006/ceps.1999.1020

Ryff, C.D. and B. Singer (1996) 'Psychological Well-being: Meaning, Measurement, and Implications for Psychotherapy Research', *Psychotherapy and*

psychosomatics 65(1): 14-23. https://doi.org/10.1159/000289026

Schady, N., J. Behrman, M.C. Araujo, R. Azuero, R. Bernal, D. Bravo et al. (2014) 'Wealth Gradients in Early Childhood Cognitive Development in Five Latin American Countries', *Journal of Human Resources* 50(2): 446-463.

Schady, N.R. and M.C. Araujo (2006) 'Cash Transfers, Conditions, School Enrollment, and Child Work: Evidence from a Randomized Experiment in Ecuador', World Bank Policy Research Working Paper No.3930.

Schady, N.R. and J.L. Rosero (2008) 'Are Cash Transfers made to Women Spent Like Other Sources of Income?', *Economics Letters* 101(3): 246-248.

Schultz, T.W. (1960) 'Capital Formation by Education', *Journal of Political Economy* 68(6): 571-583.

Skinner, E.A., M. Zimmer-Gembeck and J.P. Connell (1998) 'Individual Differences and the Development of Perceived Control', *Monographs of the Society for Research in Child Development* 63(2-3): v-220.

Walker, S.P., T.D. Wachs, S. Grantham-McGregor, M.M. Black, C.A. Nelson, S.L. Huffman et al. (2011) 'Inequality in Early Childhood: Risk and Protective Factors for Early Child Development', *The Lancet* 378(9799): 1325-1338. https://doi.org/10.1016/S0140-6736(11)60555-2

Wolf, S., J.L. Aber and P.A. Morris (2013) 'Drawing on Psychological Theory to Understand and Improve Antipoverty Policies: The Case of Conditional Cash Transfers', *Psychology, Public Policy, and Law* 19(1): 3-14. https://doi.org/10.1037/a0029498

Wuepper, D. and T.J. Lybbert (2017) 'Perceived Self-Efficacy, Poverty, and Economic Development', *Annual Review of Resource Economics* 9(1): 383-404. https://doi.org/10.1146/annurev-resource-100516-053709

Yaqub, S. (2002) ''Poor Children Grow into Poor Adults': Harmful Mechanisms Or over-deterministic Theory?', *Journal of International Development: The Journal of the Development Studies Association* 14(8): 1081-1093. DOI: 10.1002/jid.951

BIOGRAPHY

Gabriela Izurieta received a master's degree in Development Studies with a major in Economics of Development and a specialization in Econometric Analysis of Development Policies from the Erasmus University, The Netherlands, in 2018. Her main interests are focused on economics of education, social security, behavioral economics and public policy analysis by using econometrics and impact evaluation methods. Her current position is at the Ministry of Education where she works on educational research focused on teacher's workload and rural schools. ORCID iD: https://orcid.org/0000-0002-8510-5949