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Abstract

Covering the full population of applicants to the Jamaican Conditional Cash Transfer Program (PATH), we explore whether receiving PATH during childhood causally affects school progression and academic performance at the primary, secondary and tertiary levels. To uncover causal associations, we exploit exogenous variation arising from the PATH eligibility criteria within a regression discontinuity design. We find that for both, boys and girls, PATH significantly increases the likelihood of completing primary and secondary school. Furthermore, among boys, PATH increased the likelihood of pursuing tertiary studies. However, conditional on primary school completion, PATH had no effects on academic performance at any educational level. ¹

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1 Introduction

Conditional cash transfers (CCT) are fundamental components of social protection policies in Latin America and the Caribbean (Fiszbein and Schady, 2009; Stampini and Tornarolli, 2012; Paes-sousa et al., 2013; Ibararán et al., 2013). They also operate in several developing countries in Asia and Africa, as well as in some high income countries, including the United States. With their dual objective of (a) alleviating current poverty and (b) fostering demand for health and education services (through conditioning the monetary transfers to school attendance and regular medical screenings); they seek to alter households' incentives to increase human capital of children in ways that may improve long-term productivity. Therefore, it becomes highly relevant to evaluate the effectiveness of CCT programs on long-term human capital.

In this paper, we assemble unique administrative data covering the full population of applicants to the Jamaica's CCT Programme of Advancement through Health and Education (PATH) between its inception in 2001 and 2013. The PATH applications data is matched, at the individual level, with national assessments at the primary, secondary and post-secondary levels. We then investigate whether benefiting from PATH since childhood altered academic outcomes over time. To identify causality we rely on the exogenous variation that emerges from the PATH eligibility criteria. At PATH application, households complete a socioeconomic form that provides information to compute a poverty proxy means test (PMT) score. Eligibility for the PATH program is based on whether the PMT falls below a predetermined and unknown threshold to applicants. We exploit this fact within a regression discontinuity design to isolate PATH impacts.

For both girls and boys, our main findings suggest positive and significant effects of PATH on the likelihood of completing primary school by 5- 6.5 percentage points. About half of these effects are driven by on time primary school completion (i.e., before turning 12 years old). We also find equivalent impacts on the likelihood of secondary school completion. When looking at the likelihood of pursuing post-secondary studies, the magnitude of impacts are diminished with point estimates below 1 percentage point, although still statistically significant among boys. Nonetheless, conditional on completing primary school, we find no impacts of PATH on academic achievement neither at the end of primary, secondary or post-secondary levels. Nonetheless, the fact that PATH improved school attendance and completion rates, could have conveyed unmeasured benefits in terms of nonacademic outcomes like reduced teen crime or fertility that could have increased adult labor market productivity. The investigation of these issues are left for future research.

Our study adds to the body of research that has analyzed the effects of CCTs on several short, medium and long-term outcomes. This evidence consistently documents desirable effects on poverty reduction, school enrollment and attendance to health services (Attanasio et al., 2011; Bastagli et al., 2016; Baird et al., 2013; de Walque et al., 2017; Schultz, 2004; Todd and Wolpin,

2006). Studies investigating CCT effects on school learning mostly suggest null impacts (Araujo et al., 2017; Baez and Camacho, 2011; Baird et al., 2014), with some exceptions that find modest positive impacts (Barham et al., 2013; Stampini et al., 2018). More recent studies explore CCT effects on longer-term educational attainment, labor market outcomes, and resilience against poverty among individuals who were treated during childhood (Araujo and Macours, 2021; Atanasio et al., 2021; Barham et al., 2017, 2018; Parker and Vogl, 2021; Molina Millán et al., 2020; Oconnor, 2024).² We contribute to this literature investigating short and medium-term educational effects of CCTs exploiting nationally institutionalized policies and full-population administrative data.

The remainder of this paper is organized as follows. Section 2 summarizes the Jamaican context. Section 3 presents the data and summary statistics. Section 4 lays out the empirical strategy used to isolate the causal effects of PATH. Section 5 presents our results and their discussion. Section 6 concludes.

2 The Jamaican Context

2.1 Programme of Advancement through Health and Education (PATH)

PATH targets households in the bottom two quintiles of the income distribution. It encompasses a dual aim of alleviating current poverty (through income support) and developing children’s human capital (through health and education conditionalities). It was launched in 2001 with a one-year pilot in the parish of St. Catherine, after which it was rolled out to the entire country.³ To date, it has about 350,000 beneficiary households.

Enrollment is demand driven. A household representative starts the application process at a Parish Office, where s/he completes a socioeconomic form. This information is used to compute a poverty proxy means test (PMT) score with a formula that is unknown to applicants.⁴ Applicant households with a score under the predetermined eligibility threshold are declared eligible. Applicants exceeding the threshold by less than five points enter an automatic appeal process. Although applicants exceeding the threshold by more than five points do not enter an automatic appeal, they can appeal on their own initiative. A social worker visits appealing households and collects updated information that is used to calculate a rectified PMT score. For all our empirical work, we use the initial formula-based score as the running variable for PATH eligibility as it is calculated homogeneously for all applicants.⁵

²For a comprehensive review of CCT’s long-term impacts, see Molina Millán et al. (2019).

³A parish is a geopolitical area that has its own local government arrangements. Jamaica is divided into 14 parishes.

⁴The research team was granted access to the PATH applications databases and the PMT score of each applicant. However, the formula used to obtain the score was not revealed.

⁵For our empirical work, we observe PATH applications with the initial PMT score for the 2001-2013 period. However, we only observe both the initial and the rectified PMT score for the 2009-2013 period. During this period,

Once a family is declared eligible, it starts receiving transfers, which are paid every two months. The education transfer is conditioned on children attending at least 85% percent of school days. Compliance is verified through information provided by the schools to the program (Levy and Ohls, 2010).⁶ The transfer is granted to each eligible child until the completion of secondary school, and the amount differs by the age of the child. The amounts have varied over time to account for inflation, and between 2012 and 2015 they also varied by the gender of the child (with boys receiving transfers 10 percent higher than girls). On average, the per-child monthly transfer has represented about 9 percent of the prevailing monthly full-time minimum wage.⁷

There are different channels through which CCTs could improve learning. First, the documented positive impacts of CCTs on school enrolment could translate into learning outcomes if the increased time spent at school is productive through a reception of good quality instruction. Second, increased and steady income from the CCT could enhance children's cognitive development as: (a) additional resources could be invested in providing a more stimulating home environment (Votruba-Drzal, 2003), and; (b) relief of material hardship and stress could improve parenting practices (Gershoff et al., 2007). Third, increased income might also improve food security by enhancing diets with better variety and quality of items which in turn could improve cognitive development and schooling attainment (Maluccio et al., 2009). This channel is reinforced where, as in Jamaica, the PATH grants access to school feeding. Finally, CCTs can improve children's health through increased use of preventive health services (such as those documented in Jamaica by Levy and Ohls (2007, 2010); this can positively affect learning.

2.2 The Education System

At the end of primary school, students register to take the Grade Six Achievement Test (GSAT). This is a national examination that, for the cohorts that we study, their performance determined the priority for secondary school allocations in the Jamaica's centralized school choice system studied in Beuermann et al. (2025). The GSAT is comprised of five subjects that all students take:

out of the 12,819 applicant households, 808 (or 6.3% of all applicants) went through a rectification process and, of those, only 288 (or 2.25% of all applicants) ended up qualifying to receive PATH benefits.

⁶The share of eligible households that did not receive the transfers within our study period accounts for 5.8%. Administratively, the main reason for which eligible households could have not received transfers resides in not complying with the conditionality.

⁷In 2006, the value of the education transfer amounted to J\$ 600 (about US\$ 10) per month per child. Later, the value was differentiated by grade and sex of the beneficiary. For example, in 2012, girls in grades 1–6 (primary), 7–9 (lower secondary) and 10–13 (upper secondary) received J\$ 750 (US\$ 8.4), J\$ 975 (US\$ 11) and J\$ 1150 (US\$ 12.9) per month, respectively; the transfers for boys were 10% higher, at J\$ 825 (US\$ 9.3), J\$ 1075 (US\$ 12.1) and J\$ 1265 (US\$ 14.2) per month, respectively (in 2012, J\$ 88.99 = US\$ 1). In 2015, the differentiation by sex was removed; the education transfer amounted to J\$ 1045 (US\$ 9), J\$ 1400 (US\$ 12) and J\$ 1600 (US\$ 13.8) for primary, lower secondary and upper secondary children, respectively, irrespective of their sex (in 2015, the average exchange rate was J\$ 116.28 = US\$ 1). In 2017, the education transfer amounted to J\$ 1350 (US\$ 10.5), J\$ 1800 (US\$ 14) and J\$ 2100 (US\$ 16.4) for primary, lower secondary and upper secondary children, respectively, irrespective of their sex (in 2017, the average exchange rate was J\$ 128.30 = US\$ 1).

mathematics, science, language arts, social studies, and communication tasks.

After primary school completion, all secondary schools teach a homogeneous national curriculum. Secondary school begins in first form (the equivalent of 7th grade) and ends at fifth form (the equivalent of 11th grade) when students take the Caribbean Secondary Education Certification (CSEC) examinations. These are equivalent to the British Ordinary levels examinations and are externally graded by the Caribbean Examinations Council (CXC). The CSEC examinations are given in 37 subjects. Passing five subjects (including English and mathematics) is a sufficient entry requirement for community colleges, technical schools, or training schools. It can also be used for entry at some colleges in the United States. Students who complete these requirements could either continue their studies at a tertiary institution (if accepted) or pursue the Caribbean Advanced Proficiency Examination (CAPE), also externally graded by CXC.

The CAPE is a tertiary-level program. Students seeking to attend university (as opposed to a community college) take the CAPE. The CAPE is equivalent to the British Advanced levels examinations. The CAPE is a two-year program and includes two core units (Caribbean and Communication Studies) and six other units. Passing six CAPE units is a common admission requirement to British higher education institutions. The post-secondary qualification of a CAPE Associate Degree is awarded after passing seven CAPE units (including the core units).

3 The Data and Summary Statistics

We observe the full population of households who applied to the PATH between its inception in 2001 and 2013. Among these, we focus on those households with at least one member who: (i) was younger than 11 at the time of application (as students typically take the GSAT and enroll in secondary school at 11–12 years old); and (ii) belongs to year of birth cohorts that allow sufficient time to reach the age of CSEC/CAPE taking by 2020 (which is the most recent data available). This because we seek to study potential effects of PATH on GSAT, CSEC, and CAPE outcomes. As students enroll in secondary school at 11–12 years old, our relevant sample includes those who were below this age threshold at PATH application and with enough age to observe the outcomes of interest within our data. This delivers 280,888 individual-level observations.

We then merged the PATH data with the official administrative GSAT data from 2003 until 2015. In the absence of individual identifiers, the data were linked by full name, gender, and date of birth. We matched 78.4% of PATH applicants to the GSAT records. This closely mimics the 78.7% official statistic of school age children enrolled in primary school.⁸ This suggests that our match rate is not an artifact of our methodology but reflects the true primary school enrollment

⁸Source: World Development Indicators Database (<https://databank.worldbank.org/source/world-development-indicators>). Country: Jamaica. Year: 2013.

rate.⁹ The matched data comprise 220,092 individual-level observations of which 113,140 are girls and 106,952 are boys. These data include the parish of residence, the gender and educational attainment of the adult who filed the PATH application, household income, home ownership status, household size, the PMT score, the PMT eligibility cutoff, whether the household actually received PATH benefits, the individual-level GSAT performance and the ranked list of secondary schools the student wished to attend.

We then collected population data on the CSEC examinations between 2005 and 2020; as well as population data on the CAPE examinations between 2009 and 2020. Both the CSEC and CAPE data contain scores for each subject examination taken. The CSEC and CAPE data were linked at the individual level to the GSAT data.¹⁰ Notice that since the CAPE is completed seven years after the GSAT and the most recent CAPE data is 2020, then the last relevant GSAT cohort for these outcomes is 2013. By similar logic, since the CSEC is completed 5 years after GSAT and the most recent CSEC data is 2020, then the last relevant GSAT cohort for these outcomes is 2015.

Table 1 reports summary statistics. The average individual was 80 months old at the time of PATH application. About 86% of household representatives applying to the program were female; 38% of them had completed secondary education. Household weekly income was about PPP US\$ 25.7 (equivalent to 23% of the prevailing weekly full-time minimum wage).¹¹ About 42% report owning the dwelling; households had on average 5.7 members. About half of applicants ended up receiving PATH benefits.

The average student took the GSAT at 143 months of age. Girls score about 0.46 sd higher than boys in the GSAT and attend more selective schools, with 0.27 sd higher in incoming peer GSAT scores than those attended by the average boy. We measure the selectivity of school choices by computing the average GSAT standardized score of students assigned to each school choice. While both girls and boys consistently rank more selective schools higher, the choices of girls are always relatively more selective than those of boys. About 40-45% were assigned to one of their first three school choices.

About 53% of boys took at least one CSEC subject compared to about 73% of girls. Similarly, while 27.4% of girls qualified for tertiary education based on CSEC performance (i.e., passing at least five subjects including English and math), only 14.9% of boys achieved the same. Post-secondary outcomes confirm this pattern; 16.9% of girls took the CAPE, against 9% of boys. CAPE

⁹ As an additional check, we computed the ratio of the total number of individuals in the GSAT database aged 10–12 by the census date (April 4th, 2011) divided by the population aged 10–12 counted in the census. This exercise delivers an implied GSAT taking rate of 80.2% which is in line with our PATH-GSAT match rate.

¹⁰ The full population GSAT data was linked to the CSEC/CAPE data by full name, gender, and date of birth. 92% of CSEC and 96% of CAPE observations were matched to the GSAT data. The 4-8% of unmatched observations closely mimics the 6% enrollment rate in private secondary schools who would not have taken the GSAT.

¹¹ Monetary figures expressed in real 2019 U.S. dollars in purchasing power parity (PPP).

success also favors girls, with 7% of them earning an Associate Degree, against 3.2% of boys.

4 Empirical Strategy

PATH eligibility depends on whether the household's PMT score is below a fixed eligibility threshold unknown to potential beneficiaries. If nothing else differs among households scoring just above and below the eligibility threshold, any sudden change in outcomes through the threshold can be attributed to the PATH (Hahn et al., 2001). One can exploit the discontinuity in the likelihood of being a PATH beneficiary through the threshold by estimating the following two-stage least-squares (2SLS) model:

$$Received_{it} = \pi \cdot AboveP_{it} + f_1(Score_{it}) + X_{it}\gamma_1 + \varepsilon_{1,it} \quad (1)$$

$$Y_{it} = \beta \cdot Received_{it} + f_2(Score_{it}) + X_{it}\gamma_2 + \varepsilon_{2,it} \quad (2)$$

In the first stage (1) the model predicts whether individual i who applied for PATH benefits in year t actually received them, $Received_{it}$, as a function of scoring above the PATH eligibility threshold, $AboveP_{it}$, and controls.¹² To account for latent outcomes that vary smoothly through the thresholds, the model controls for a smooth function of the PATH score net of the threshold fully interacted with the $AboveP_{it}$ indicator, $f_1(Score_{it})$.¹³ It also controls for parish of residency fixed effects, gender, education of the household member who filed the PATH application, household income, home ownership status, and household size (included in X_{it}). In the second stage (2), the outcome of interest (Y_{it}) is a function of the predicted reception of PATH benefits and all controls from Equation (1). The second stage excluded instrument is $AboveP_{it}$. In this context, estimates of yield the causal effect of receiving PATH benefits on the outcome of interest.

The key identifying assumption is that nothing other than the change in PATH reception changes in a discontinuous manner through the cutoff. We test this assumption in several ways. We first show that the likelihood of receiving PATH benefits discontinuously changes through the PATH eligibility threshold (Table 2). The first stage estimates of the $AboveP_{it}$ indicator from equation (1) by gender are reported. Scoring above the cutoff increases the likelihood of receiving PATH benefits by 77 percentage points. By contrast, the socioeconomic composition of households remains smooth through the PATH cutoff. To show this, we follow Kling et al. (2007) and compute a baseline sociodemographic standardized index defined as the equally weighted average of the z-scores of all available sociodemographic variables reported at PATH application.¹⁴ Then we estimate a reduced-form model as in (1) with this standardized index as dependent variable and report

¹²We use the negative of the PATH PMT score and thresholds in all our specifications.

¹³We use a cubic polynomial.

¹⁴These variables include parish of residency, gender of the household head, education of the household head, household income, home ownership status, and household size.

the estimates on the $AboveP_{it}$ indicator by gender (Table 2). Consistent with smoothness through the cutoffs, scoring above the PATH cutoff is unrelated with these summary indexes for both boys and girls. In addition, we follow McCrary (2008) and test for a discontinuity in density through the cutoff and find no discontinuity for either boys or girls (Table 2). These tests suggest that our estimation strategy to estimate PATH effects is likely valid.

5 Results

We start exploring the direct impacts of PATH, among all PATH applicants, on school progression. To do so, we estimate the 2SLS model outlined in equation system (1)-(2). Table 3 (Panel A) reports estimates of the γ parameter from equation (2) for both boys and girls. We observe positive and significant effects of PATH on the likelihood of taking the GSAT for both boys and girls equivalent to 5- 6.5 percentage points ($p - value < 0.01$). About half of these effects are driven by taking the GSAT on time (i.e., before turning 12 years old). Given that taking the GSAT is necessary to be placed in a secondary school, these positive effects indicate an increased intention to continue studying beyond primary school. This intention translates into actual secondary school completion as there are equivalent impacts in terms of CSEC taking (overall and on time). When looking at the likelihood of pursuing post-secondary studies, the impacts on taking the CAPE are diminished with point estimates below 1 percentage point, although still statistically significant among boys.

We then proceed to measure impacts on secondary and post-secondary learning among those who completed primary school (i.e., took the GSAT). Table 3 (Panel B) shows that there were no direct impacts of PATH on learning at the end of primary school as measured by the GSAT standardized score. There were also no impacts on the likelihood of qualifying for tertiary education based on CSEC performance. This is true for overall CSEC qualification and also for CSEC qualifications obtaining on time (i.e., within 5 years of taking the GSAT). At the extensive margin, there were also no effects on the number of CSEC subjects taken and passed. Similarly, there were no effects on the likelihood of obtaining the CAPE Associate Degree, CAPE units taken or CAPE units passed. Overall, our evidence suggests null effects of PATH on academic achievement.

6 Conclusion and Future Research

In this paper we investigate the effects of the Programme of Advancement through Health and Education (Jamaica's Conditional Cash Transfer Program or PATH) on school progression and academic achievement at the primary, secondary and post-secondary levels. Administrative data covering the full population of students suggests that PATH significantly increased the likelihood of school completion at both primary and secondary levels. These positive effects on school progression are observed for both girls and boys. We also found that PATH positively affected the likelihood of undertaking post-secondary studies among boys. However, conditional on complet-

ing primary school, we found no impacts on academic achievement at any educational level.

Although no impacts were found on performance in standardized examinations, recent evidence suggests that this does not necessarily precludes possible longer-term effects on labor market employment and productivity. Indeed, [Beuermann and Jackson \(2022\)](#) show that while attending more selective schools in Barbados had no impact on secondary school performance, they did convey reductions in teen pregnancy rates and long-term benefits in terms of adult employment and earnings. Therefore, the fact that PATH improved school graduation rates, could have conveyed nonacademic benefits like, for example, reductions in teen pregnancies or crime. In addition, improved graduation rates could have generated long-term benefits in terms of adult employment and earnings. The investigation of these issues are left for future research..

Table 1: Summary Statistics

	Boys			Girls		
	mean (1)	sd (2)	N (3)	mean (4)	sd (5)	N (6)
<i>Panel A: Baseline indicators at PATH application (PATH applicants 2001 - 2013)</i>						
Age at PATH application (in months)	80.4292	26.5825	106,952	79.8970	26.9368	113,140
PATH applicant is female	0.8580	0.3491	106,952	0.8633	0.3435	113,140
PATH applicant completed secondary education	0.3831	0.4861	106,952	0.3788	0.4851	113,140
Household income per week - real 2019 PPP US\$	25.7866	20.0508	106,952	25.6181	18.6474	113,140
Own dwelling	0.4251	0.4944	106,952	0.4220	0.4939	113,140
Household size	5.7471	2.7176	106,952	5.7674	2.7307	113,140
Received PATH	0.4946	0.5000	106,952	0.5025	0.5000	113,140
<i>Panel B: Academic indicators</i>						
Age at GSAT date (in months)	143.7216	5.4064	106,952	142.8496	5.2366	113,140
GSAT standardized score	-0.2374	1.0060	106,952	0.2245	0.9406	113,140
Peer GSAT score	-0.1259	0.8432	106,952	0.1456	0.8441	113,140
Selectivity of school choice 1	1.1373	0.7605	106,506	1.3898	0.6463	112,837
Selectivity of school choice 2	0.9547	0.7719	106,452	1.2118	0.6850	112,802
Selectivity of school choice 3	0.7885	0.8094	106,340	1.0697	0.7477	112,711
Selectivity of school choices 4+	0.5586	0.7135	99,160	0.7667	0.6971	104,884
Assigned to school choice 1	0.1595	0.3662	106,952	0.1496	0.3566	113,140
Assigned to school choice 2	0.1401	0.3471	106,952	0.1316	0.3380	113,140
Assigned to school choice 3	0.1418	0.3488	106,952	0.1213	0.3264	113,140
Assigned to school choice 4+	0.5586	0.4966	106,952	0.5976	0.4904	113,140
Took CSEC	0.5344	0.4988	106,952	0.7283	0.4449	113,140
CSEC qualification for tertiary education	0.1490	0.3561	106,952	0.2736	0.4458	113,140
Took CAPE	0.0907	0.2872	96,171	0.1686	0.3744	100,975
Associate Degree	0.0316	0.1748	96,171	0.0700	0.2552	100,975

Notes: This table displays means (columns 1 and 4), standard deviations (columns 2 and 5), and number of individual observations (columns 3 and 6) differentiated by gender. For CSEC outcomes, we use GSAT cohorts up to 2015 because CSEC is taken five years after GSAT and the latest CSEC data available is for year 2020. The number of observations for CAPE outcomes are lower as these are restricted up to GSAT cohort 2013 given that the CAPE is fully taken seven years after GSAT and the latest CAPE data available is for 2020.

Table 2: Validity of the Identification Strategy (All PATH applicants 2001 - 2013, individual-level database)

	Boys	Girls
	(1)	(2)
First stage: received PATH	0.7720*** (0.0041)	0.7713*** (0.0042)
Exclusion restriction: sociodemographic index	0.0017 (0.0019)	0.0031 (0.0019)
Differential density at PATH eligibility cutoff [p-value]	0.9731 [0.3305]	0.8481 [0.3964]
Observations	142,991	137,897

Notes: The table reports first stage estimated coefficients on 'AboveP' from equation (1); estimated coefficients on 'AboveP' having the baseline sociodemographic index as dependent variable within a reduced-form model with the same structure as equation (1); and the results of the [McCrary \(2008\)](#) cutoff manipulation test around the PATH eligibility cutoff. Heteroskedasticity robust estimated standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Table 3: PATH 2SLS Effects on School Progression and Learning

	Boys		Girls	
	Effects (1)	Observations (2)	Effects (3)	Observations (4)
<i>Panel A: PATH 2SLS effects on school progression (all PATH applicants)</i>				
Took GSAT	0.0500*** (0.0083)	142,991	0.0649*** (0.0076)	137,897
Took GSAT (on time)	0.0306*** (0.0094)	142,991	0.0295*** (0.0099)	137,897
Took CSEC	0.0509*** (0.0094)	142,991	0.0427*** (0.0096)	137,897
Took CSEC (on time)	0.0268*** (0.0082)	142,991	0.0271*** (0.0098)	137,897
Took CAPE	0.0079* (0.0046)	142,991	0.0095 (0.0065)	137,897
Took CAPE (on time)	0.0087** (0.0044)	142,991	0.0101 (0.0064)	137,897
<i>Panel B: PATH 2SLS effects on learning (conditional on taking the GSAT)</i>				
GSAT standardized score	0.0097 (0.0110)	106,952	0.0075 (0.0103)	113,140
CSEC qualification for tertiary education	0.0040 (0.0076)	106,952	-0.0029 (0.0094)	113,140
CSEC qualification for tertiary education (on time)	0.0038 (0.0068)	106,952	-0.0042 (0.0088)	113,140
CSEC subjects taken	0.1101 (0.0687)	106,952	-0.0722 (0.0741)	113,140
CSEC subjects taken (on time)	0.0630 (0.0651)	106,952	-0.0869 (0.0796)	113,140
CSEC subjects passed	0.0877 (0.0587)	106,952	-0.0582 (0.0697)	113,140
CSEC subjects passed (on time)	0.0507 (0.0546)	106,952	-0.0555 (0.0706)	113,140
CAPE Associate Degree	0.0007 (0.0037)	96,171	0.0057 (0.0053)	100,975
CAPE Associate Degree (on time)	0.0011 (0.0036)	96,171	0.0056 (0.0053)	100,975
CAPE units taken	0.0115 (0.0377)	96,171	0.0050 (0.0502)	100,975
CAPE units taken (on time)	0.0180 (0.0371)	96,171	0.0088 (0.0498)	100,975
CAPE units passed	0.0177 (0.0346)	96,171	0.0119 (0.0474)	100,975
CAPE units passed (on time)	0.0240 (0.0341)	96,171	0.0132 (0.0471)	100,975

Notes: This table displays estimated 2SLS coefficients on 'Received' PATH benefits using 'AboveP' as the excluded instrument (resulting from equation system (1)-(2) in the text). GSAT outcomes on time refer to those measured before the individual turned 12 years old. CSEC outcomes on time refer to those measured within 5 years after GSAT taking. CAPE outcomes on time refer to those measured within 7 years after GSAT taking. Heteroskedasticity robust estimated standard errors are shown in parentheses.*** p<0.01, ** p<0.05, * p<0.10.

References

- Araujo, M. C., M. Bosch, and N. Schady (2017). Can Cash Transfers Help Households Escape an Intergenerational Poverty Trap? In C. B. Barrett, M. R. Carter, and J.-P. Chavas (Eds.), *The Economics of Poverty Traps*, Chapter 10, pp. 357–394. Chicago, IL: University of Chicago Press.
- Araujo, M. C. and K. Macours (2021). Education, Income and Mobility: Experimental Impacts of Childhood Exposure to Progresa after 20 Years. Working Paper 1288, Inter-American Development Bank.
- Attanasio, O., L. Cardona Sosa, C. Medina, C. Meghir, and C. Posso (2021). Long Term Effects of Cash Transfer Programs in Colombia. Working Paper 1288, National Bureau of Economic Research.
- Attanasio, O., C. Meghir, and A. Santiago (2011). Education choices in Mexico: Using a structural model and a randomized experiment to evaluate PROGRESA. *The Review of Economic Studies* 79(1), 37–66.
- Baez, J. E. and A. Camacho (2011). Assessing the long-term effects of conditional cash transfers on human capital: Evidence from colombia. Working Paper 5751, The Institute for the Study of Labor (IZA).
- Baird, S., F. Ferreira, B. Özler, and M. Woolcock (2014). Conditional, unconditional and everything in between: a systematic review of the effects of cash transfer programmes on schooling outcomes. *Journal of Development Effectiveness* 6(1), 1–43.
- Baird, S., F. H. G. Ferreira, B. Özler, and M. Woolcock (2013). Relative Effectiveness of Conditional and Unconditional Cash Transfers for Schooling Outcomes in Developing Countries: A Systematic Review. *Campbell Systematic Reviews* 9(1), 1–124.
- Barham, T., K. Macours, and J. Maluccio (2017). Are Conditional Cash Transfers Fulfilling Their Promise? Schooling, Learning, and Earnings After 10 Years. CEPR Discussion Papers 11937.
- Barham, T., K. Macours, and J. Maluccio (2018). Experimental Evidence of Exposure to a Conditional Cash Transfer During Early Teenage. CEPR Discussion Papers 13165.
- Barham, T., K. Macours, and J. A. Maluccio (2013). Boys’ Cognitive Skill Formation and Physical Growth: Long-Term Experimental Evidence on Critical Ages for Early Childhood Interventions. *American Economic Review* 103(3), 467–471.
- Bastagli, F., J. Hagen-Zanker, L. Harman, V. Barca, G. Sturge, and T. Schmidt (2016). Cash transfers: What does the evidence say? a rigorous review of programme impact and the role of design and implementation features. Technical report, London: Overseas Development Institute.
- Beuermann, D. W. and C. K. Jackson (2022). The Short and Long-Run Effects of Attending The Schools that Parents Prefer. *Journal of Human Resources* 57(3), 725–746.

- Beuermann, D. W., A. Ramos-Bonilla, and M. Stampini (2025). Can Conditional Cash Transfers Alter the Effectiveness of other Human Capital Development Policies? *Economic Development and Cultural Change* 73(4).
- de Walque, D., L. Fernald, P. Gertler, and M. Hidrobo (2017). Cash Transfers and Child and Adolescent Development”. in d.a.p. Bundy, N. de Silva, S. Horton, D.T. Jamison, and G.C. Patton (eds), *Disease Control Priorities: Volume 8, Child and Adolescent Health and Development*, Third Edition, 325–41. World Bank, Washington DC.
- Fiszbein, A. and N. Schady (2009). *Conditional Cash Transfers: Reducing Present and Future Poverty*. Washington, D.C.: The.
- 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.
- Hahn, J., P. Todd, and W. Van Der Klaauw (2001). Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design. *Econometrica* 69(1), 201–209.
- Ibarrarán, P., N. Medellín, F. Regalia, M. Stampini, S. Parodi, L. Tejerina, P. Cueva, and M. Vásquez (2013). How conditional cash transfers work. Technical report, Washington, DC: Inter-American Development Bank.
- Kling, J. R., J. B. Liebman, and L. F. Katz (2007). Experimental analysis of neighborhood effects. *Econometrica* 75(1), 83–119.
- Levy, D. and J. Ohls (2007). Evaluation of Jamaica’s PATH Programme: Final Report. Technical Report 8966-090, Mathematica Policy Research.
- Levy, D. and J. Ohls (2010). Evaluation of Jamaica’s PATH conditional cash transfer programme. *Journal of Development Effectiveness* 2(4), 421–441.
- Maluccio, J., J. Hoddinott, J. Behrman, R. Martorell, A. Quisumbing, and A. D. Stein (2009). The Impact of Improving Nutrition During Early Childhood on Education among Guatemalan Adults. *Economic Journal* 119(537), 734–763.
- McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics* 142(2), 698–714.
- Molina Millán, T., T. Barham, K. Macours, J. A. Maluccio, and M. Stampini (2019). Long-term impacts of conditional cash transfers: Review of the evidence. *World Bank Research Observer* 34(1), 119–159.
- Molina Millán, T., K. Macours, J. A. Maluccio, and L. Tejerina (2020). Experimental long-term effects of early-childhood and school-age exposure to a conditional cash transfer program. *Journal of Development Economics* 143, 102385.

- Oconnor, C. (2024). Do conditional cash transfers create resilience against poverty? long-run evidence from jamaica. *World Development* 176(April 2024), 106513.
- Paes-sousa, R., F. Regalia, and M. Stampini (2013). Conditions for Success in Implementing CCT Programs: Lessons for Asia from Latin America and the Caribbean. Technical Report 8966-090, Mathematica Policy Research.
- Parker, S. W. and T. Vogl (2021). Do Conditional Cash Transfers Improve Economic Outcomes in the Next Generation? Evidence from Mexico. Working paper 24303, National Bureau of Economic Research.
- Schultz, T. P. (2004). School subsidies for the poor: Evaluating the Mexican Progresa poverty program. *Journal of Development Economics* 74(1), 199–250.
- Stampini, M., S. Martinez-Cordova, S. Insfran, and D. Harris (2018). Do Conditional Cash Transfers Lead to Better Secondary Schools? Evidence from Jamaica’s PATH. *World Development* 101, 104–118.
- Stampini, M. and L. Tornarolli (2012). The Growth of Conditional Cash Transfers in Latin America and the Caribbean: Did They Go Too Far? Policy brief 185, Inter-American Development Bank.
- Todd, P. E. and K. I. Wolpin (2006). Assessing the impact of a school subsidy program in mexico: Using a social experiment to validate a dynamic behavioral model of child schooling and fertility. *American Economic Review* 96(5), 1384–1417.
- Votruba-Drzal, E. (2003). Income changes and cognitive stimulation in young children’s home learning environments. *Journal of Marriage and Family* 65(2), 341–355.