

CCTs, Performance Pay and Complementarities: Enhancing the Impact of CCTs on Learning

By

Erin E. Straight

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Approved:

Felipe Barrera-Osorio, PhD

Gretchen Selcke, PhD

I'd like to dedicate my work to my Uncle Kevin, who always assured me I would find the path forward to reach my academic goals. Indeed, I have, and it was your words that gave me the patience for all to become clear.

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## Introduction

Cash transfer programs have been implemented in several countries around the world as both an anti-poverty initiative and educational tool for building human capital. The world's first cash transfer program, *PROGRESA* was started in 1997 and over the past twenty years, economists, political scientists, and educational advocates alike have sought to determine the relationship between cash transfer programs and learning outcomes. Based on human capital theory, conditional cash transfer programs operate on the assumption that investments in human capital via children attending school at higher rates will lead to improved long-term learning outcomes for student beneficiaries. Studies such as Schultz (2004) and Filmer and Schady (2011) have found evidence, indeed, that conditional cash transfer programs succeed in increasing attendance rates of children and García and Saavedra (2017) have found that CCTs on average have an overall positive impact on primary enrollment.<sup>1</sup> Yet, the next question naturally becomes whether these CCTs are improving learning outcomes for these beneficiaries, given that generally, more students are attending school. I define "improved learning outcomes" as increased learning, as opposed as opposed to grade completion and promotion. In making this distinction, an "effective" program becomes one in which the students are not only attending school and graduating more frequently but learning more information while they attend school.

To this extent, CCTs have been shown to be only minimally effective. Literature reviews such as Baird et al. (2013) suggest that conditional cash transfer programs have only minimally impacted learning outcomes. Various authors of these studies, however, posit that while CCTs help create greater demand for schooling and incentivizing attendance, they do not address

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<sup>1</sup> Sandra García and Juan Saavedra, "Educational Impacts and Cost-Effectiveness of Conditional Cash Transfer Programs in Developing Countries: A Meta-Analysis," *Review of Educational Research* 87, no. 5 (2017): 29.

supply-side issues such as school quality. Heinrich (2007), moreover, provides evidence in favor of this hypothesis, in finding that in one CCT program in Argentina, the student beneficiaries performed better academically in schools with greater institutional capacity. Given this finding, they conclude that the efforts to strengthen the role and support of teachers are important supply-side factors matter for CCT program effectiveness.

To improve the effectiveness of the CCT program, therefore, requires a supply-side intervention that addresses school quality. Of the many viable supply-side interventions, I recommend pairing CCT programs with a teacher pay-for-performance (P4P) programs. I argue throughout this paper that such a two-pronged policy approach will form complementarities that ultimately enhance the effectiveness and long-term learning outcomes of CCT programs. Addressing CCT effectiveness by tackling teacher quality aligns with Hanushek and Rivkin (2005), which identified variation in teacher quality as a large factor in driving reading and mathematical achievement. There is evidence, moreover, from studies such as Muralidharan and Sundaraman (2017) that suggests that teacher pay-for-performance programs (P4P) can be effective at improving learning outcomes. As such, teacher-pay programs may be useful in the same contexts that cash transfers have been shown to be successful in the past.

Some researchers have already found evidence to suggest that complementarities formed by a two-pronged policy educational intervention may have a positive impact on learning outcomes. Mbiti et al. (2019) examines combining PFP programs with inputs, while offering insights on how teacher effort can affect classroom dynamics and learning outcomes. Their study found evidence to strongly suggest that a combined intervention effort can have a stronger effect than two individual programs. When grants to schools were provided (inputs), there was no effect. Similarly, providing only performance-based pay had no effect. Complementarities had a

positive effect, as combination schools were significantly greater than the sum of the gains in Grant and Incentive schools across all tested academic subjects. Given these considerations, it is plausible that teacher-pay programs may increase the efficiency of education in classrooms that combine CCTs and teacher bonus-pay.

The thesis is structured as follows. Chapter 1 presents an overview of the rationale behind conditional cash transfers, programs around the world, and current evidence on the relationship between conditional cash transfers and learning outcomes. Chapter 2 discusses the theory behind utilizing supply-side interventions to improve the effectiveness of conditional cash transfers on learning. It also summarizes the evidence on complementarities and supply-side interventions. Chapter 3 explores in greater depth the theory and evidence behind teacher pay-for-performance programs. Chapter 4 presents two case studies in Latin America with long-standing CCT programs. Using the case studies of Brazil and Chile, I suggest that the individual-based teacher-pay programs would be effective policy pairings to the CCT programs, *Bolsa Familia* and *Chile Solidario* respectively. For both countries there is substantial data that indicates both these countries struggle with issues of low teacher quality and pay, and thus an individual-based P4P program may be a promising policy tool. Chapter 5 concludes.

The significant limitation of this work rests in the inability to conduct an experiment to test assumptions and determine whether this specific policy pairing of cash transfers and teacher pay incentives improves learning outcomes. An experiment would allow researchers to observe ways in which stakeholders such as teachers, students and administrators also respond to this two-pronged policy approach. Nevertheless, by reviewing similar two-pronged approaches and assessing the cases of Brazilian and Chilean public education, it is possible to envision how CCTs and P4Ps may form powerful complementarities. These complementarities

could positively impact the classrooms in a manner that increases learning for millions of children.

The aim of this study is to provide a greater understanding on how to improve an educational intervention that has become increasingly popular over the past 24 years. On the pragmatic end, understanding the relationship between conditional cash transfers (CCT) and learning allows governments to analyze the cost effectiveness of continuing such programs. While many policymakers and researchers laud CCTs as the “silver bullet” for poverty-reduction, CCTs garner a more mixed reception regarding its impact on learning outcomes.<sup>2</sup> This study acknowledges these considerations and responds by providing a policy recommendation to improve on a significant success of CCTs: getting more children to school. The hope is ultimately that this study will ultimately contribute to CCT participants having a positive and fruitful educational experience in their classrooms, as each child deserves.

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<sup>2</sup> Jayati Ghosh, “Cash Transfers as the Silver Bullet for Poverty Reduction: A Skeptical Note,” *Economic and Political Weekly* 46, no. 21 (May 2011): 67.

## Chapter 1: Conditional Cash Transfer programs: An Overview

### 1.1. Conditional cash transfer theoretical framework

Conditional cash transfer programs are programs in which governmental institutions provide monetary funds to households with the stipulation that households fulfill specific behavioral conditions, such as investing in education and health.<sup>3</sup> The household is allowed to use the cash in any manner they deem appropriate. As a form of social protection, these programs typically target households from poor to extremely poor backgrounds. Its two main objectives are to reduce poverty and encourage the accumulation of human capital. The theoretical rationale behind conditional cash transfer programs is rooted in Gary Becker's Human Capital Model which emphasizes the importance of investments to education. In Becker's 1967 model:

increases in a person's stock of knowledge or human capital raise his productivity in the market sector of the economy, where he produces commodities that enter his utility function. To realize potential gains in productivity, individuals have an incentive to invest in formal schooling and on-the-job training. The costs of these investments include direct outlays on market goods and the opportunity cost of the time that must be withdrawn from competing uses.<sup>4</sup>

In the education model, units of "human capital" can be considered the amount of schooling and learning that a child attains. As such, investments in human capital transfer into the pragmatic investment in schooling. According to human capital theory, these kinds of investments can ultimately contribute to an individual's economic earnings throughout their lifetime. With this model as the foundation, conditional cash transfer programs aim to increase the amount of

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<sup>3</sup> Ole Doetinchem, Ke Xu, and Guy Carrin, *Conditional Cash Transfers: What's In It for Health?* (Geneva: WHO, 2008), 1.

<sup>4</sup> Michael Grossman, "Human Capital Model," *Handbook of Health Economics* 1, no. 7 (2000): 349.

schooling that children receive. CCTs theorists argue that families from extremely poor backgrounds face economic constraints that cause an underinvestment in schooling and thus, human capital. Fizein and Schady (2008) utilizes Ferreira (2008)'s model to outline how parents of family households may require that children work and contribute to family resources instead of sending the children to school. Fizein and Schady note that this tradeoff is starker in developing countries. They argue that parents may underinvest due to possible misinformation on the returns of education that studies such as Jensen (2010).<sup>5</sup> Additionally, imperfect credit markets that make it difficult, if not impossible, for the poor to access credit can lead families to decide that their child will be a consumption smoothing-mechanism.<sup>6</sup>

Researchers argue that CCTs address these issues by providing cash to families that lowers the opportunity cost of schooling and increases the household consumption floor. In conjunction with program enrollment and attendance requirements, parents are more apt to send children to school. In this way, CCTs are expected to provide children from these extremely poor backgrounds with greater access to schooling and overall promote higher amounts of human capital investment.

With cash transfer programs, there is the question of whether program officials should force parents and heads of households to use transfers for specific purposes or allow parents to utilize their specific knowledge of their needs to decide on how best to use the funds. Proponents for the conditionality aspect emphasize that market failures cause underinvestment in human capital such as education. Unconditional cash transfers do not guarantee that investments will be

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<sup>5</sup> See Robert Jensen, "The (Perceived) Returns to Education and the Demand for Schooling," *The Quarterly Journal of Economics* 125, no. 2 (May 2010): 516 for a further discussion on how parents' and students' perceived returns to education can negatively affect the student's probability of completing secondary education.

<sup>6</sup> Ariel Fizein and Norbert Schady, *Conditional Cash Transfers: Reducing Present and Future Poverty* (Washington D.C.: The World Bank), 56.

made towards education, or if parents do invest in education, they are more prone to underinvesting. Even in cases where there are perfect credit markets, unconditional cash transfers will have no effect because “credit allows for a separation between investment and consumption decisions.”<sup>7</sup> A conditional cash transfer, however, addresses the risk of underinvestment by making it less costly to decide that a child should study instead of contributing to family resources.<sup>8</sup> The CCT essentially therefore, lowers the price of investment in education. As such, conditionality makes it more likely that private decisions will be optimal.

## 1.2. Features of CCT Programs Around the World

**Table 1: Conditional cash transfer (CCT) programs around the world<sup>9</sup>**

<b>Country</b>	<b>Program</b>	<b>Index used to determine eligibility</b>	<b>CCT amount (USD) monthly</b>	<b>Health component?</b>	<b>Program coverage</b>
<b>Brazil</b>	<i>Bolsa Família</i>	Poverty Threshold (below \$13 USD)	\$11-\$24	Yes	National
<b>Colombia</b>	<i>Familias en Acción</i>	Multidimensional Index and Discriminant Score	\$5-\$11	Yes	National
<b>Mexico</b>	<i>PROGRESA</i>	Marginality Index	\$25-\$60	Yes	National
<b>Ecuador</b>	<i>Bono de Desarrollo (BDH)</i>	Composite Welfare Index	\$15-\$50	Yes	National
<b>Chile</b>	<i>Chile Solidario</i>	Proxy Means Test	\$6-\$8	Yes	National
<b>El Salvador</b>	<i>Comunidades Solidarias Rurales</i>	Marginality Index	\$15-\$20	Yes	Regional
<b>Cambodia</b>	<i>CESSP Program</i>	Dropout Risk Index	\$45-\$60	No	Regional

<sup>7</sup> Fizebein and Schady, *Conditional Cash Transfers*, 56.

<sup>8</sup> *Ibid*, 56.

<sup>9</sup> “Non Contributory Social Protection Programmes Database,” (2020), distributed by United Nations ECLAC.

<b>Pakistan</b>	<i>Punjab Female Stipend Program</i>	District and Poverty Overlap	\$10 (quarterly)	No	Regional
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In 1997, the Mexican government initiated the first national conditional cash transfer program, *PROGRESA* that integrated targeting to poor and extremely poor households in addition to addressing inequities in health, education and nutrition.<sup>10</sup> The structure of the program was that the government provides cash grants to households with the requirement that families fulfill educational and health requirements.<sup>11</sup> With a budget of US\$777 million in 1999, the cost of the program stands at 0.2 percent of Mexico’s gross domestic product. *PROGRESA* became the model for as many as 52 programs since its launch in 1997.<sup>12</sup> Table 1 features several of these programs and their characteristics.

To determine eligibility for would-be beneficiaries, some programs use a poverty threshold value or proxy means test to determine cutoffs or target only the extremely poor. *Chile Solidario*, for instance, uses a proxy means test that ranks families according to sociodemographic and economic conditions. Yet, many policy designers create indices that incorporate not only absolute poverty values, but also level of access to health and education resources, rural/urban distinctions and on occasion, literacy levels among other holistic indicators. *PROGRESA* used two layers of indices as part of a three-stage targeting mechanism based on community and household characteristics. In the first stage of targeting, the program identified eligible communities by rating them on the “marginality index” that comprised of 7

<sup>10</sup> “A Model from Mexico for the World,” The World Bank, last modified November 19, 2014, <https://www.worldbank.org/en/news/feature/2014/11/19/un-modelo-de-mexico-para-el-mundo>.

<sup>11</sup> Quentin Wodon, Benedicte de la Briere, Corinne Siaens, and Shlomo Yitzhaki, “Mexico’s PROGRESA: Innovative Targeting, Gender Focus and Impact on Social Welfare,” En Breve, The World Bank 17 (Jan 2003), <https://openknowledge.worldbank.org/bitstream/handle/10986/10396/267850English0En0breve0no1017.pdf?sequence=1&isAllowed=y>.

<sup>12</sup> “A Model from Mexico for the World,” the World Bank.

variables.<sup>13</sup><sup>14</sup> In the second stage, program officials provided discriminant scores using income variables to determine who needed the program most. El Salvador's *Comunidades Solidarias Rurales* program first uses a national map of poverty that draws from cluster analyses of stunting and extreme poverty, and then utilizes a marginality index based on poverty, education levels and housing characteristics.<sup>15</sup>

The amount of the CCT transfer is fairly heterogenous across countries. Expanded budgets, adjustment for inflation and/or economics crises often warrant governments increasing cash transfer amounts and as such, many countries have increased the amount of the conditional cash transfer over the life of the program. In Ecuador, for example, the *Bono de Desarrollo (BDH)* transfers began as monthly USD \$15 payments, and by 2022, have increased to USD \$50. In some countries, eligible families receive two different amounts depending on whether they fall into a certain range or have a certain number of dependent children. Using the dropout index, in Cambodia, the most likely to drop out were offered a “large” scholarship of US \$60 per year, while those with a moderate probability were offered a “small” scholarship of US \$45 per year.<sup>16</sup> In Colombia, for *Más Familias en Acción*, a modification of *Familias en Acción*, the educational transfer funding varies according to the number of children within the household and their respective grade levels.<sup>17</sup>

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<sup>13</sup> These variables include: share of illiterate adults, share of dwellings without water, share of dwellings without draining systems, share of dwellings without electricity, average number of occupants per room, share of dwellings with a dirt floor and share of population working in the primary sector.<sup>13</sup>

<sup>14</sup> Wodon, Briere, Siaens, Yitzhaki, “Mexico’s PROGRESA.”

<sup>15</sup> Chico et al., “Six Years of Comunidades Solidarias Rurales: Impacts on School Entry of an Ongoing Cash Transfer Program in El Salvador,” *IDB Working Paper Series* IDB -WP-908 (June 2018): 5, <https://publications.iadb.org/publications/english/document/Six-years-of-Comunidades-Solidarias-Rurales-Impacts-on-School-Entry-of-an-Ongoing-Conditional-Cash-Transfer-Program-in-El-Salvador.pdf>

<sup>16</sup> Deon Filmer, and Norbert Schady, “Does More Cash in Conditional Cash Transfer Programs Always Lead to Larger Impacts on School Attendance?” *Journal of Development Economics* 96, no. 1 (September 2011): 151.

<sup>17</sup> Nadin Medellín, and Fernando Sánchez, “How Does Más Familias en Acción Work? Best Practices in the Implementation of Conditional Cash Transfer Programs in Latin America and the Caribbean,” *Inter-American Development Bank* IDB-TN-884 (November 2015): 5, <https://publications.iadb.org/publications/english/document/How-does-M%C3%A1s-Familias-en-Acci%C3%B3n->

Most CCT programs do not create conditionalities based on meeting educational requirements alone. Many require that family households invest time into attending annual medical check-ups for dependent children and/or frequent meetings that inform caretakers on proper nutrition. For *PROGRESA*, the children must not only attend school for 85 percent of school days, but families must also attend public health clinics and informational sessions on health and nutrition.<sup>18</sup> Brazil's *Bolsa Familia* parent beneficiaries must assure program officials that children are receiving vaccinations.

Concerning coverage, many countries have historically expanded and scaled-up programs to increase the threshold and expand eligibility. Mexico's *PROGRESA* at first targeted rural communities of Mexico, but then in 2002 the government expanded the program to reach urban populations and renamed the program, *Oportunidades*. *Chile Solidario*, on the other hand, is a national program, yet has continually targeted the extreme poor, around 5% of the Chilean populations. Still, some programs only offered regional coverage, and in the case of El Salvador, this is due to the program targeting the poorest 100 municipalities out of 262 municipalities.

While several of the CCT programs created in the early 2000s are ongoing, some programs have ended. Some of the persisting programs have undergone a transformation in name and design, often due to new government administrations taking office. Conditional cash transfer programs, regardless, have become known increasingly as an anti-poverty tool and as an educational tool for getting children into the classroom. National data reveal that many of these programs have had thousands, if not millions of beneficiaries, while taking up only a small

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[Work-Best-Practices-in-the-Implementation-of-Conditional-Cash-Transfer-Programs-in-Latin-America-and-the-Caribbean.pdf](#)

<sup>18</sup> Quentin Wodon, Benedicte de la Briere, Corinne Siaens, and Shlomo Yitzhaki, "Mexico's PROGRESA: Innovative Targeting, Gender Focus and Impact on Social Welfare," En Breve, The World Bank 17 (Jan 2003), <https://openknowledge.worldbank.org/bitstream/handle/10986/10396/267850English0En0breve0no1017.pdf?sequence=1&isAllowed=y>.

portion of the governmental budgets, which lends to the survival of many of these programs. The programs discussed above are only a snapshot of the large number of conditional cash transfer programs around the world yet provide the general framework of CCT objectives, structures, and implementation processes.

### *1.3. CCTs, Enrollment, Attendance Rates, and Grade Completion*

There is significant evidence in the field of educational interventions that conditional cash transfer programs can increase enrollment and schooling attendance rates. In the literature review García and Saavedra (2017), the authors meta-analyze for impact and cost-effectiveness for 47 conditional cash transfer programs across 94 low-middle countries. They find an overall random-effects average primary enrollment impact is 3.0 percentage points, statistically different from zero.<sup>19</sup> Although they note a significant heterogeneity in attendance, they observe an average increase in attendance of about 3 percent for CCT programs and an average school completion impact estimate of (3.28) percentage points. Regarding effectiveness in implementation, they found that the programs with the largest primary enrollment impact estimates were those that also coexisted with supply-side interventions such as school grants. They also observe that higher impacts on school enrollment and attendance are more likely when baseline enrollment is low and there is not binding supply constraints on school capacity. These general findings contribute to understanding the ideal environment for conditional cash transfers, and thus subsequently understanding the conditions that impede or enhance CCT program effectiveness. These findings add to those of Baird et al. (2013), in which the study found that CCT programs increased enrollment compared to no program and that cash transfers will

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<sup>19</sup> García and Saavedra, “Educational Impacts and Cost-Effectiveness,” 29-31.

perform more efficiently when the program strictly monitors compliance.<sup>20</sup> Behrman et al. (2008) studied the impact of *PROGRESA* on grade attainment in addition to impacts on learning, labor market outcomes, migration and marriage, and found that the program positively impacted grade promotion/attainment. These studies show that there is substantial evidence to suggest that CCTs positive impact the areas of enrollment, attendance, and grade promotion. In Millán et al. (2019), the researchers found, however, that there was scant evidence for improved long-term learning outcomes and note that evaluating CCT programs is generally difficult because of attrition and initially randomized control groups eventually receiving the program (152). Millán et al. (2019) call into question the presumed relationship between CCTs and learning outcomes, which merits further discussion.

#### *1.4. Theorizing the relationship between CCTs and learning outcomes*

Policymakers and researchers have considered conditional cash transfer programs a powerful policy tool in human capital accumulation because conceptually they are able to counteract private decision failure. Fiszbein and Schady (2008) argue that CCTs can increase learning outcomes because CCTs essentially address three obstacles to human capital investment. The first obstacle is regarding consumption. In thinking about the decision to invest in human capital, there are two consumption periods of childhood and adulthood. In such a household with budget constraints, households may receive four sources of income: non-employment income, mother labor, child labor and a fraction of future earnings of children.<sup>21</sup> Households can use family income towards investing in human capital and consumption.<sup>22</sup> While

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<sup>20</sup> Baird, S., Ferreira, F.H.G., Özler, B. and Woolcock, M. (2013), Relative Effectiveness of Conditional and Unconditional Cash Transfers for Schooling Outcomes in Developing Countries: A Systematic Review. *Campbell Systematic Reviews*, 9: 1-124. <https://doi.org/10.4073/csr.2013.8>

<sup>21</sup> García and Saavedra, "Educational Impacts and Cost-Effectiveness," 9.

<sup>22</sup> García and Saavedra (2017) outline four sources of income for families: non-employment income, mother labor, child labor and a fraction of future earnings of children.

the payoffs to parents asking children to study are more apparent, the future payoffs to investing in studying may be unknown to parents. If the parents ask students to work in the first period, then that not only decreases investment in human capital during that period, but also detracts from consumption and earnings during adulthood.<sup>23</sup>

CCTs, therefore, may induce more consumption in the childhood period. By lowering the opportunity cost of continued education and conditioning the cash transfer on attendance, this will lead to overall increased attendance in school for the participating student beneficiary. With continued schooling and grade completion, CCTs are expected to contribute to increased learning outcomes as the students who may have been formerly working now can learn more subjects in school and secure higher earnings in adulthood because of greater educational attainment.

#### *1.5. CCTs and lack of evidence of impact on learning outcomes*

Of the many evaluations completed on the relationship between conditional cash transfers and learning outcomes, there is not conclusive evidence, however, that CCTs benefit learning outcomes and increase student achievement. Although many studies report no evidence of linkages between CCTs and learning outcomes, these same studies offer varying possible explanations for the lack of causal effect. Various studies such as Behrman et al. (2008) have found that conditional cash transfers are insufficient in improving learning outcomes. Behrman et al. (2008) examines the medium-term impacts of the *Oportunidades* (formerly *PROGRESA*) program on the rural youth populations of Mexico. In their study, they utilize a randomized

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<sup>23</sup> Fiszbein and Schady, *Conditional Cash Transfers*, 68.

experimental design, diff-in-diff approach combined with density rewriting method to assess the impact of the program. Their results do not reveal a positive or significant impact on scores.<sup>24</sup>

Baird et al. (2013) sought to assess the relative effectiveness of conditional and unconditional cash transfers in improving enrollment, attendance, and test scores in developing countries. Drawing from 35 studies and 75 reports, Baird et al. coded enrollment and attendance as odd ratios, and test scores using standardized mean differences. Baird et al. states that although they considered ten studies that report impact estimates on achievements tests in the areas of mathematics, reading, writing etc., they only include five studies in their analysis of effectiveness. Although an obvious limitation, from these five studies the researchers found the pooled effect sizes of CCTs on test scores to be small at 0.08 standard deviations.<sup>2526</sup>

Regarding Ecuador's *BDH* program, Araujo, Bosch and Schady (2017) examined the 10-year absolute impacts of the program. They found, using regression discontinuity estimation, that young women in transfer-eligible households tended slightly to complete secondary school at higher rates than transfer-ineligible households.<sup>27</sup> Moreover, they did not see a measurable effect on the subsequent education and work choices upon completion of secondary school. Sanchez et al. (2018) examined the El Salvadorian CCT program, titled *Comunidades Solidarias Rurales* and found that the CCT program "improves (early) enrollment of five-year-olds as well

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<sup>24</sup> Jere R., Behrman, Susan Parker, and Petra Todd, "Medium-Term Impacts of the Oportunidades Conditional Cash-Transfer Program on Rural Youth in Mexico," in *Poverty, Inequality, and Policy in Latin America*, eds. Stephen Klasen, Felicitas Nowark-Lehmann (Boston: The MIT Press, 2008): 243-245.

<sup>25</sup> Baird et al., "Relative Effectiveness of Conditional and Unconditional Cash Transfers," 26.

<sup>26</sup> The authors argue that the data from the five included studies is more helpful than the other five because researchers used standardized test scores from tests that were specifically designed to assess the impact of the CCTs on learning outcomes.

<sup>27</sup> M. Caridad Araujo, Mariano Bosch, and Norbert Schady, "Can Cash Transfers Help Households Escape an Inter-Generational Poverty Trap?," IDB Working Paper No. 767 (January 2017): 15, accessed January 15, 2022, <https://publications.iadb.org/publications/english/document/Can-Cash-Transfers-Help-Households-Escape-an-Inter-Generational-Poverty-Trap.pdf>.

as an index of household assets and dwelling characteristics for families of six-year-olds.”<sup>28</sup>

However, they did not find long-term accumulation of wealth within families with CCT participants.

Millán et al. (2019) provides an updated review that suggests that evidence regarding CCTs and learning outcomes is at best, mixed.<sup>29</sup> Millán highlights the findings of two studies related to Colombia’s *Familias en Acción* program. Regarding the *Familias en Acción* program in Colombia, García et al. (2012) study reported that differential exposure to *Familias en Acción* had no significant impact on the Raven’s Progressive Matrices test, but increased mathematics scores by 1.07 SDs for the cohort that was 2-7 years old at baseline. Baez and Camacho (2011) found beneficiaries of the program were 4-8 years p.p. more likely than non-beneficiary children to complete secondary school but did not find evidence of higher test score performance. Given these considerations, Millán et al. (2019) acknowledge that it can be difficult to ascertain whether the portion of results in studies on CCTs that are not statistically significant from zero are due to actual lack of impact or rather methodological concerns.<sup>30</sup> For instance, they emphasize the challenge in assessing the impacts on individuals given the fact that many participants may still be transitioning into the labor market even in their late twenties. As such, this dampens the ability of assessing the relationship between CCTs and labor market outcomes. Yet, overall their review does not offer conclusive evidence of substantial positive impact on learning outcomes.

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<sup>28</sup> Ana Sanchez Chico, Karen Macours, John Maluccio, and Marco Stampini, “Impacts on School Entry of an Ongoing Conditional Cash Transfer Program in El Salvador,” IDB Working Paper No. IDP-WP-908 (June 2018): 14-17, accessed January 15, 2022, <https://publications.iadb.org/publications/english/document/Six-years-of-Comunidades-Solidarias-Rurales-Impacts-on-School-Entry-of-an-Ongoing-Conditional-Cash-Transfer-Program-in-El-Salvador.pdf>.

<sup>29</sup> Teresa Molina Millán et al., “Long-Term Impacts of Conditional Cash Transfers: Review of the Evidence,” *The World Bank Observer* 34, no. 1 (February 2019): 119-159.

<sup>30</sup> Teresa Molina Millán, “Long-Term Impacts of Conditional Cash Transfers,” 152.

In general, the issue of low learning outcomes despite increased attendance is a significant policy issue for researchers. Muralidharan et al. (2019), for instance, highlight that in India, “over 50 percent of students in the 5<sup>th</sup> grade cannot read at the grade 2 level, despite primary school enrollment rates over 95 percent.”<sup>31</sup> If increased enrollment does not necessarily affect learning outcomes, why is that the case?

#### *1.6. Possible explanations for lack of impact*

Various authors posit reasons for the lack of evidence, citing classroom instruction challenges, difference between beneficiary and non-beneficiary groups, and lack of supply-side interventions. Fizein and Schady (2008), for instance, cites Banerjee et al. (2007) in arguing that it is possible that the schools fail the CCT beneficiaries who enroll because of the CCT because the curricula and methods are designed for students who are more advanced. That is to say, the curricula may target the students whose families did not make the tradeoff between schooling and non-schooling, and lessons may assume prior knowledge that CCT recipients would not have. This could leave children from such families without the resources to “catch-up.”<sup>32</sup>

Behrman et al. (2008) hypothesize that lack of impact of the *Oportunidades* program on test scores could be due to the issue that it was impossible to preprogram differences between beneficiary and non-beneficiary groups, given that evaluators only provided the test in 2003. Moreover, they explain that there is not a way to overcome this issue of verifying whether “any preprogram difference existed in achievement test scores.”<sup>33</sup> They also question whether the small sample size of students aged 15 to 21 in 2003 made it more difficult to capture modest size

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<sup>31</sup> Karthik Muralidharan, Abhijeet Singh, and Alejandro Ganimian. “Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India,” *American Economic Review* 109, no. 4 (2019): 1426.

<sup>32</sup> Fizein and Schady, *Conditional Cash Transfers*, 162.

<sup>33</sup> Behrman et al., “Medium-Term Impacts,” 229.

impacts. However, in addressing this concern by estimating the impacts of the *Oportunidades* program on grades of schooling for the sub-sample of youth taking the achievement tests, they did not find the impact on test scores to be significant for the subsample of girls nor the subsample of boys who took the exam.

For their last plausible explanation, Behrman et al. (2008) discuss the idea of *low school quality*. In such a situation, students could be completing grades at a higher rate, while still not improving their performance on tests. They also state that higher enrollment could crowd schools and lower school quality, instead. The authors are not the only researchers to question whether low school quality has a principal role in dampening the effects of conditional cash transfer programs. Baird et al. (2013) also conclude that it is likely that “without complementing interventions, cash transfers are unlikely to improve learning.”<sup>34</sup> An important caveat is that given that CCTs lead to higher enrollment, it is plausible that new students from the poorest households are less well-prepared or behind in their learning. In turn, the average test scores of schools can decrease typically.<sup>35</sup> This phenomenon may mute the impacts of conditional cash transfer programs for these new student populations. Regardless, Baird et al. (2013) and the other studies mentioned highlight how complementary interventions may be necessary to address the lack of impact of CCTs on learning outcomes. To improve the efficiency of these programs for the sake of both the governmental funding and the students and their families, then it is critical to consider possible alternatives in the form of complementary interventions.

### *1.7. Chapter summary*

In this chapter, I covered how policymakers and researchers conceptualize CCTs as a human capital accumulation tool, various programs throughout the world, and how the theory

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<sup>34</sup> Baird et al., “Relative Effectiveness of Conditional and Unconditional Cash Transfers,” 48.

<sup>35</sup> Fiszbein and Schady, *Conditional Cash Transfers*, 161.

compares to the evidence. Conditional cash transfer programs aim to increase human capital accumulation by offering cash to families that face significant budget constraints and may prefer that school-age children of the household contribute to family income instead of attending school. As the number of programs has increased over the past 24 years across the world, with many being instituted in Latin America, more impact evaluations and reviews have become available as well. The literature on CCTs suggest that the programs have had a significant effect on increasing enrollment, attendance rates and grade promotion.

However, the theory surrounding CCTs and learning outcomes does not appear to match the available evidence. Limitations aside, reviews do not find conclusive evidence that conditional cash transfer programs have lived up to their promises in supporting the marginal student and their family via higher test scores and higher job market outcomes. If CCTs are indeed insufficient alone in producing increased learning outcomes, then alternatives must be identified to address the lack of impact. Studies suggest that addressing supply-side factor of education may be the key route to take. Additionally, García and Saavedra (2017) found that the programs with the largest primary enrollment impact estimates were those that also coexisted with supply-side interventions such as school grants.<sup>36</sup> Behrman et al. (2008) posit that low school quality might result in students achieving higher grades of schooling without improving their performance on achievement tests. Similarly, Baird et al. (2013) conclude that without complementary interventions, CCTs are unlikely to increase learning. As will be discussed in the following chapter, pairing CCTs programs with supply-side programs, therefore, such as teacher performance pay programs is a promising way to create a longer-lasting impact of the many CCT programs across the world.

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<sup>36</sup> García and Saavedra, “Educational Impacts and Cost-Effectiveness,” 7.

## Chapter 2: Pairing Supply-Side Interventions with CCTs

### 2.1. Demand-side and supply-side interventions

In considering complementary policies, categorically possible policy interventions can fall under two distinct categories—demand-side interventions and supply-side interventions. As governments decide how to allocate resources and funding, they can decide whether to address the demand for schooling or the quality of education. Coady and Parker (2002) assert that the debate to choose a demand-side or supply-side educational intervention “centers on the relative importance of improved education quality versus improved education access.”<sup>37</sup> However, this binary in investment is not set in stone as there are a few CCT programs that contain a supply-side component. Of course, these supply-side components of the intervention are not as pronounced as the two-pronged intervention I recommend in this paper. For instance, Galasso (2006) highlights how the *Chile Solidario* program essentially addresses demand-side and supply-side factors of education. She discusses how the supply side intervention entails improving the bureaucratic components of various social services that would also be available to the beneficiary population so that beneficiaries are better able to take advantage of the resources around them. To do so, they add more local officials to monitor social services and work directly on a local level with municipalities. She argues that in this way, *Chile Solidario* moves away from “an approach with isolated and sectoral programs towards a ‘system’ of social protection.”<sup>38</sup> This point is useful for also supporting why CCTs may benefit a multi-dimensional

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<sup>37</sup> David Coady and Susan Parker, “A Cost-Effectiveness Analysis of Demand-Side and Supply-Side Education Interventions: The Case of PROGRESA in Mexico,” IFPRI Discussion Paper 127 (2002): 1, accessed December 3, 2021, <https://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/47976/filename/43434.pdf>.

<sup>38</sup> Emanuela Galasso, “With Their Effort and One Opportunity: Alleviating Extreme Poverty in Chile,” Development Research Group, World Bank (March 2006): 3.

approach, as the main issue is that the demand-side intervention only minimally impact educational quality. Regardless, Galasso acknowledges that her analysis of the *Chile Solidario* program could not include an evaluation of the supply side component due to a lack of information on the implementation process. The *Comunidades Solidarias* program also, as mentioned earlier, provides a supply side aspect in strengthening health and education services. To argue for a full-fledged performance, pay program to complement CCTs would be a significantly larger supply-side intervention than these discussed. Yet, these examples suggest that policymakers may be willing to address supply-side factors such as teacher quality.

Researchers have identified and discussed the demand-side and supply-side determinants that contribute to the effectiveness of conditional cash transfer programs. One such study is Heinrich (2007), which examined the *Programa Nacional de Becas Estudiantiles* CCT program in Argentina that was designed as a poverty alleviation and human capital accumulation tool and targeted towards Argentine youth. In comparison to earlier studies on CCT program effectiveness, the author also focuses on school-level factors and the effect of school-level factors on variance within the CTT program implementation across schools. They find that the *Programa Nacional de Becas Estudiantiles* program increased attendance, reduced grade repetition, and improved student performance on exams. The effect of continued participation in the program on higher grade-point averages proved long-lasting as well. Yet, regarding supply-side factors, they also found that “student performance was higher in schools with greater institutional capacity, better conditions for learning, and superior management.”<sup>39</sup> Given this finding, they conclude that the efforts to strengthen the role and support of teachers are important and that both demand and supply-side factors matter for program effectiveness. This study aligns

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<sup>39</sup> Carolyn Heinrich, “Demand and Supply-Side Determinants of Conditional Cash Transfer Effectiveness,” *World Development* 35, no. 1 (2007): 122.

with the substantial literature on educational interventions in developing countries that strongly suggest that conditions of each school must be considered when implementing an educational program.

## 2.2. Complementarities

Some studies have since examined the possibilities of complementarities between demand-side and supply-side interventions. Ham and Michelson (2018) studied whether Honduran municipalities exposed to the Honduran *Family Allowances Program* (PRAF) from 2000 to 2005 experienced lasting effects on human capital and labor market outcomes. The two researchers interpret “human capital gains” to indicate an increase in the number of years of schooling. Ham and Michelson explored the effect of solely demand-side incentives on human capital versus supply-side only incentives versus combined delivery of incentives. They found that relative to the comparison group, additional exposure to demand-side exposures individually has no lasting effect. Yet, combining demand and supply-side incentives led to an average increase of years of schooling by 8.5%.<sup>40</sup>

Others have also sought to understand the relationship between incentives and inputs when forming complementarities between programs. For instance, Gilligan et al. (2018) examines how inputs in the form of textbooks in addition to Pay-for-Percentile (PFP) incentive systems impacted learning outcomes. To analyze learning outcomes, the authors measure achievement via scores on primary leaving exams. Regarding attendance, they found that for the students who received textbooks, the PFP program increased the probability of the children who started sixth grade continuing for an additional two years of schooling, from .57 to .64. The performance pay program in Uganda had no impact on learning in schools without textbooks, but

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<sup>40</sup> Andrés Ham and Hope Michelson, “Does the Form of Delivering Incentives in Conditional Cash Transfers Matter Over a Decade Later?,” *SSRN* (May 2018): 5, accessed January 4, 2022, <https://dx.doi.org/10.2139/ssrn.3051745>.

significant positive impact in schools with textbooks. Among schools with books, PFP raised achievement on fourth grade (P4) through sixth grade (P6) subtest by .12 standard deviations. This greatly differs from schools that featured PFP programs but did not report as offering textbooks for students, as PFP had a negative effect on achievement. Given these findings, Gilligan et al. suggest that complementarities may be far more efficient in fostering higher learning outcomes than separated, individual interventions.<sup>41</sup>

Mbiti et al. (2019) also examines combining PFP programs with inputs, while offering insights on how teacher effort can affect classroom dynamics and learning outcomes. Their study suggests strongly that a combined intervention effort can have a stronger effect than two individual programs. They found that when grants to schools were provided (inputs), there was no effect. Similarly, providing only performance-based pay had no effect. Complementarities had a positive effect, as combination schools were significantly greater than the sum of the gains in Grant and Incentive schools across all tested academic subjects. They conclude, “we find strong evidence of complementarities between inputs and incentives. At the end of two years, test score gains in the Combination schools were significantly greater than the sum of the gains in the Grant and Incentives schools in the three subjects (math, Kiswahili, and English).”<sup>42</sup>

In considering their results using the framework of the principal-agent model, the teacher acts as the agent that optimizes their response to inputs increasing by lowering effort. Yet, when the program presents financial incentives to these teachers, teachers will increase their level of effort in the presence of more resources (inputs). Overall, their analysis offers compelling evidence that program complementarities contribute to higher learning outcomes than

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<sup>41</sup> Daniel Gilligan et al., “Educator Incentives and Educational Triage in Rural Primary Schools,” *Journal of Human Resources* 57, no. 1 (November 2019): 3-9.

<sup>42</sup> Mbiti et al., “Inputs, Incentives, and Complementarities in Education: Educational Evidence from Tanzania,” *The Quarterly Journal of Economics* 134, no. 3 (April 2019): 1630.

introducing two programs separately. These papers suggest and demonstrate with evidence that combining programs is more efficient than one program. It is now important to consider the why a P4P intervention would be an ideal supply-side intervention to complement CCT programs, as opposed to other viable supply-side options.

### *2.3 Supply-side interventions*

Improving the quality of schooling is an enduring debate in the educational intervention literature as researchers seek to understand best practices for assuring higher learning outcomes for students. Policymakers and educators often argue for allocating more resources to improve the quality of education.<sup>43</sup> Das et al. (2013) argues, however, that providing additional school resources in the form of grants will lower the household's financial contribution to schooling.<sup>44</sup> Others may consider addressing issues of low-teacher quality as the resolution to improving test scores and retention of curriculum. Yet, some researchers worry that incentivizing teachers may have unintended consequences on testing. These brief examples demonstrate that the context surrounding interventions matter. To counteract possible negative unintended consequences, the optimal supply-side intervention is that which i) does not allow for the substitution effect/families to spend less per child and ii) must not encourage teachers to perform the same amount of effort or reduce effort. Within the context of developing countries, where conditional cash transfer programs are typically utilized, certain interventions may be less effective than expected because of significant budget and institutional constraints. Given these considerations, it is important to review the literature on how resources, grants and improvements to teacher

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<sup>43</sup> Russ Marion and Jack Flanigan, "Evolution and the Punctuation of Theories of Educational Expenditure and Student Outcomes," *Journal of Education Finance* 26, no. 3 (Winter 2001): 239.

<sup>44</sup> Das et al., "School Inputs, Household Substitution, and Test Scores," *American Economic Journal: Applied Economics* (2013): 31.

effectiveness serve as viable supply-side interventions for improving the efficiency of conditional cash transfer programs.

### 2.3.1. School grants, textbooks (and other materials), and teacher quantity

A significant category of supply-side interventions that researchers have heavily studied is the allocation of additional resources to schools. With this approach, the assumption is that schools across developing countries are underfunded and therefore, exhibit low school quality. By allocating additional resources to schools, students will have what they need to have more edifying educational experiences. Conversely, teachers will have the resources to teach with the ideal number of materials, textbooks, technology etc. to deliver impactful lessons for student. However, Hanushek and Woessmann (2007) emphasizes that various scholars have not found substantial evidence to suggest that increasing resources or expanding the size of facilities will positively impact student performance.<sup>45</sup> Subsequent studies such as Glewwe, Kremer and Moulin (2009) and Sabarwal et al. (2016) also did not find that the increasing the provision of textbooks, for instance, influenced test scores and overall student learning.<sup>46</sup> Das et al. (2013) and Carneiro et al. (2019) examined the provision of additional school grants in India and Senegal, respectively, and did not identify lasting and consistent positive effects on student learning. Das et al. (2013), found that household spending, rather, declined in face of an anticipated school grant.<sup>47</sup> Duflo, Dupas, and Kremer (2015) explore how increasing the number of teachers may affect learning outcomes.<sup>48</sup> They examined the *Extra Teacher Program* (ETP) in

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<sup>45</sup> Eric Hanushek and Ludger Woessman, "The Role of Education Quality for Economic Growth," World Bank Policy Research Working Paper no. 4122 (2007): 66, accessed on February 1, 2022, <http://hdl.handle.net/10986/7154>.

<sup>46</sup> Shwetlena Sabarwal, David Evans, and Anastasia Marshak, "The Permanent Input Hypothesis: The Case of Textbooks and (No) Student Learning in Sierra Leone," World Bank Policy Research Working Paper no. 7021 (April 2016): 3.

<sup>47</sup> Das et al., "School Inputs, Household Substitutions, and Test Scores," 31.

<sup>48</sup> Esther Duflo, Pascaline Dupas, and Michael Kremer, "School Governance, Teacher Incentives, and Pupil-Teacher Ratios: Experimental Evidence from Kenyan Primary Schools," *Journal of Public Economics* 123 (2015): 92.

Kenya, which began in 2005 and 2006 in the Western Province. Their study suggests, however, that additional contract teachers could have a negative effect on teacher attendance. They infer that the additional teachers, especially contract teachers, could cause veteran teachers to lower their effort.

### 2.3.2 Teacher pay

Other hypotheses focus on teacher quality over quantity, especially as studies Hanushek and Rivkin (2005) found that variation in teacher quality is a large factor in student outcomes.<sup>49</sup> For instance, in the review by Finan, Olken and Pande (2017), they highlight that governments often enact wage increases to attract higher-quality teachers who may require higher compensation. They use Mexico's experimental teacher recruitment program under the *Regional Development Program* (RDP) as an example of the program officials studying the effects of varied wages across sites and study determined that the higher wages did attract more experienced and smarter candidates.<sup>50</sup> There is no evidence, however, that addressing teacher quality through providing simply more income leads to higher learning outcomes for students, despite popular usage of this intervention. De Ree et al. (2017) highlights how various governments and policymakers try to address issues of teacher quality by improving compensation. They present the government of India as an example of providing significantly higher compensation rates to attract higher quality teachers and to "better motivate existing employees."<sup>51</sup>

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<sup>49</sup> Eric Hanushek, Steven Rivkin, and John Kain, "Teachers, Schools, and Academic Achievement," *Econometrica* 73, no. 2 (2005): 449.

<sup>50</sup> Frederico Finan, Benjamin Olken and Rohini Pande. "The Personnel Economics of the State," NBER Working Paper Series no. 21825 (2015): 27, accessed February 3, 2022, <http://www.nber.org/papers/w21825>.

<sup>51</sup> Joppe de Ree et al. "Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia," *The Quarterly Journal of Economics* 133, no. 2 (May 2018): 994.

#### 2.4. Unconditional and conditional bonus pay

Similar to CCTs, there are primarily two strands of addressing teacher quality through additional compensation. The first being unconditional salary increases and the second being conditional monetary increases such as bonus pay based on performance or another metric. They present experimental evidence on the impact of a large unconditional salary increase on effort from teachers and their respective levels of productivity. The experiment succeeded in improving teacher welfare for many teachers, as numerous teachers acknowledged after receiving the treatment that they were satisfied with their incomes and were not stressed over finances. Improved teacher welfare, however, did not necessarily contribute to higher learning outcomes. De Ree et al. (2017) ultimately argue that the common intervention of fixed wages increases does not necessarily translate into higher learning outcomes for students. Bau and Das (2020) contribute to the literature on teacher pay as they conducted teacher value-added (TVA) estimation for over 1,000 public school teachers across 574 schools in Pakistan. The researchers did not find a strong correlation between compensation in the public sector and productivity.<sup>52</sup> Given that there is not conclusive evidence that increasing base pay or creating similar certification processes with promise of increased pay will contribute to higher learning outcomes, this input initiative is not likely to serve as an effective supply-side intervention to complement CCT programs.

Overall, studies of the input interventions discussed in this section suggest that merely adding funding to teachers and towards resources is unlikely to improve the quality of schooling. While these discussions of inputs interventions are not exhaustive, they broadly capture highly

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<sup>52</sup> Natalie Bau and Jishnu Das, "Teacher Value Added in a Low-Income Country," *American Economic Journal: Economic Policy* 12, no. 1 (February 2020): 63-65.

relevant forms of supply-side interventions that policymakers and organizations such as UNICEF and UNESCO advocate for when addressing educational inequities in the developing world. These studies also do not provide evidence that a supply-side intervention that involves simply “pure resource policies” (as termed by Hanushek) would augment learning outcomes for conditional cash transfer beneficiaries. Given that CCT programs already intrinsically target families that typically experience drastic tradeoffs, it is likely that it would be rational for these same families to invest less in educational spending once they knew that governments would provide additional funding. Given these considerations, I argue, therefore, that providing incentives to teachers may be the most appropriate alternative for enhancing CCT programs and warrant further discussion and exploration.

### *2.5 Chapter summary*

In this chapter, I explored the idea of complementarities between demand-side and supply-interventions. In support of this two-pronged approach, some CCT programs already feature limited supply-side components such as *Chile Solidario*, which incorporates supply-side interventions to improve the bureaucratic components of various social services. Researchers have identified and discussed the demand-side and supply-side determinants that contribute to the effectiveness of conditional cash transfer programs. Heinrich (2007), which examined the *Programa Nacional de Becas Estudiantiles* CCT program in Argentina, asserts that the efforts to strengthen the role and support of teachers are important and that both demand and supply-side factors matter for program effectiveness. In arguing for combined intervention efforts versus two disconnected programs, Mbiti et al. (2019) found that when grants to schools were provided (inputs), there was no effect. Similarly, providing only performance-based pay had no effect. It was the complementarities between the two had a positive effect, as combination

schools were significantly greater than the sum of the gains in Grant and Incentive schools across all tested academic subjects.

Evidence suggests that providing more money, more textbooks and more teachers is unlikely to move the dial on increased learning outcomes. Of all the supply-interventions, as will be discussed in the following chapter, there is evidence of P4P programs having a positive impact as a supply-side intervention, by comparison. By tackling teacher quality through incentivizing effort, the CCT program participants who attend school because of the lower opportunity cost may be more likely to receive a more enriched learning experience.

## Chapter 3: The Argument for Teacher Pay-for-Performance (P4P) Programs

### *3.1 Incentivizing teacher effort*

The relationship between effort of teachers and learning outcomes is an empirical question that various researchers have studied because of the importance of teachers as highlighted in Hanushek and Rivkin (2005), who argues that teacher quality is the most important factor apart from students' family background.<sup>53</sup> Hanushek's findings and similar studies that find little to no correlation between observable teacher characteristics such as holding master's degrees have prompted researchers to examine the effectiveness of pay-for-performance programs that add incentives to the salary structure of teachers. Pay-for-performance, also called performance-based pay programs (P4P) in the education sector reward teachers financially based on their students' academic outcomes, often measured by performance on exams. Proponents of P4P programs argue that rewards will motivate teachers to induce higher effort in the classroom. This theory aligns with that of the principal-agent model in which effort is often unobserved, although an important factor in driving outcomes. Variance between programs often arises from different interpretations of "high performance," units of analyses, and the question of designing P4P programs with an individual-based rewards structure or with a structure that rewards teachers collectively. Policy designers also may vary in how they craft programs to avoid specific structures within the given educational system that would allow for perverse incentives such as teaching only concepts that are featured on the test or excluding weaker students.

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<sup>53</sup> Hanushek and Rivkin, "Teachers, Schools, and Academic Achievement," (2005): 449.

### 3.1.1 Theory of teacher effort and the principal-agent model

The principal-agent model is an economic model that addresses the near unobservability of effort that can also be applied to the teacher realm. Levačić (2009) examines how teacher incentives and performance can map onto principal-agent model theory to reveal important characteristics of teacher incentives. They argue that in non-marketed services, citizens/taxpayers organize public services from the state organizations, and workers in the state bureaucracies are the agents. In the public sector, it is a significant issue to find what incentives will drive agents to produce the output desired.<sup>54</sup> Levačić lists the conditions that shape the optimal contract between the principal and the agent:

- i. The motivation of the agents;
- ii. Moral hazard, which concerns the nature of the relationship between the effort expended by the agent and their output;
- iii. The amount of distribution of information between principal and agent about the relationship between the agent's effort and output and the costs to the principal of obtaining such information;
- iv. Whether the agent performs multiple tasks or has several principals—conditions that are more likely to occur in the public sector than the private sector<sup>55</sup>

Regarding these conditions, the explanations surrounding these aspects are fairly intuitive. Motivation matters in a principal-agent model because the model assumes that the agents want to maximize utility, so recognizing what “utility” means for the agent is helpful for directing resources. In the case of the teacher, Levačić states that financial rewards can be a form of external utility for the agent, and may co-exist with intrinsic modes of effort. Moral hazard lays in the perspective of the principal, in which they cannot observe completely the effort that an

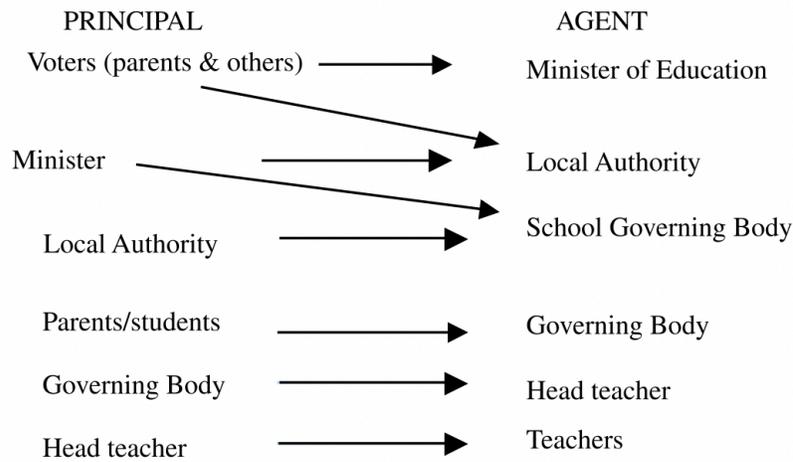
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<sup>54</sup> Rosalind Levačić, “Teacher Incentives and Performance: An Application of Principal-Agent Theory,” *Oxford Development Studies* 37, no. 1 (2009): 34.

<sup>55</sup> Levačić, “Teacher Incentives and Performance,” 34-35.

agent undertakes, and they can only view the results of the interaction between the agent's efforts and external factors. The inability to distinguish between the two makes it more difficult for the principal to reward the agent based on their effort. In a teaching setting, results such as good test scores may be an interaction between the teacher effort and student ability, or may be entirely a result of the student's dedication, while the teacher did nothing to help the student. Given this uncertainty, in a typical school system (without external, monetary incentives), hard-working teachers are not as likely to receive the rewards they deserve and thus, are likely to be underpaid. The possibility of this outcome reflects the information asymmetry between the principal and the agent. If the principal provides a fixed wage and can only determine "success" in the form of test scores which somewhat lays outside of their control, the agent will not have the incentive to improve their teaching or go out of their way to show more effort. The fixed wage system for teacher, therefore, may induce an environment in which teachers are not motivated to use additional effort in the classroom, which can hinder the learning experience. Levačić offers a helpful figure in conceptualizing the various principals and agents in education (see Figure 1). Levačić concurs

Figure 1. Multiple principal-agent relationships in education.



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that many developing countries struggle with teacher absenteeism and poor standards of teaching for this reason. She argues that an effective contract depends on teacher motivation as it varies across countries. P4P programs address this problem by shifting some of the potential income for teachers to measures of student output. To avoid moral hazard issues, Levačić suggests that student information also be collected to determine value-added and also control for factors that affect student performance that teachers do not impact.

Cultural context also matters for Levačić, as countries in which teaching is a very esteemed profession will likely present more intrinsically motivated teachers. Yet, for countries in which teachers are poorly motivated, “improved incentives for teacher performance are an essential component of reforms aimed at raising the quality of the education system.”<sup>57</sup>

<sup>56</sup> Levačić, “Teacher Incentives and Performance,” 37.

<sup>57</sup> Levačić, “Teacher Incentives and Performance,” 44.

With this theoretical model as the basic argument for teacher incentive programs as an effective supply-side program, it is important to explore whether the evidence on teacher incentive programs supports this theory. It is from that point that it will be useful to consider how teacher incentive programs could complement CCT programs. Levačić's framework expands the understanding of why teacher effort and motivation matters.

### *3.2. Evidence on performance pay*

Evidence on P4P programs, although mixed, suggests that providing teachers with incentives can produce higher learning outcomes regarding test performance. Muralidharan & Sundararaman (2011) provide evidence from a large, randomized evaluation of a PFP in the state of Andhra Pradesh of India. They studied two forms of bonus pay, where in the first form, a group of teachers received group bonuses based on student performance and in another the individuals were eligible for bonus-pay. They found that the teacher performance pay program was effective in improving school learning and the individual structure had longer-lasting results that did not fade after the second year. Moreover, they also did not find evidence of any adverse consequences.<sup>58</sup> Filmer et al. (2020) evaluated the impacts of a performance-based incentive program in Tanzanian secondary schools and found small positive effects on student achievement.<sup>59</sup> Leaver et al. (2019) similarly found that P4P contracts incentivized effort. They found that “averaging over the two years of the study, the within-year effort effect of P4P was .11 standard deviations of pupil learning and for the second year alone, the within-year effort

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<sup>58</sup> Karthik Muralidharan and Venkatesh Sundararamen, “Teacher Performance Pay: Experimental Evidence From India,” *Journal of Political Economy* 119, no. 1 (February 2011): 40-68.

<sup>59</sup> Deon Filmer, James Habyarimana, and Shwetlana Sabarwal, “Teacher Performance-Based Incentives and Learning Inequality,” World Bank Policy Research Working Paper no. 9382 (August 2020): 3, accessed on February 15, 2022, <https://openknowledge.worldbank.org/bitstream/handle/10986/34468/Teacher-Performance-Based-Incentives-and-Learning-Inequality.pdf>.

effect of P4P was 0.16 standard deviations.”<sup>60</sup> They also acknowledge that although some teachers contracted under P4P had lower intrinsic motivation, they promoted learning to the same level in the classroom as teachers under traditional contracts. They state that combining pay-for-percentile schemes with measures of teachers’ inputs (effort) can ensure that the structure of the incentive does not disadvantage any group and that the incentive program is not too narrow. Finally, in the review of the literature on teacher incentives by Glewwe and Muralidharan (2016), the authors also indicate that nonexperimental studies by Contreras and Rau (2012) suggested that the SNED performance pay program in Chile led to large and significant increases in mathematics scores.<sup>61</sup> In their review, they cite Muralidharan (2012) as evidence of positive effects of P4P on student learning, who conducted a follow-up evaluation for the 2011 setting and found that students who had been enrolled solely during the time frame of the extended P4P program performed significantly better than those in control schools. They summarize that while performance pay programs can produce positive effects on student learning, “however, not all performance pay programs are likely to be effective, so it is quite important to design the bonus formulae well.”

As referenced earlier, structure of teacher pay programs also matters in terms of creating an effective program. Barrera-Osorio and Raju (2017) did not find a strong linkage between a government-administered pilot performance pay program in Pakistan and increases in exam scores in any year the program was implemented. In comparison to some performance pay programs, the bonus was linked to not only test scores and quantitative achievement, but also

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<sup>60</sup> Leaver et al., “Recruitment, Effort, and Retention Rates of Performance Contracts for Civil Servants: Experimental Evidence from Rwandan Primary Schools,” The World Bank Policy Research Working Paper no. 9395 (September 2020): 3, accessed February 15, 2022, <http://hdl.handle.net/10986/34481>.

<sup>61</sup> Paul Glewwe and Karthik Muralidharan, “Improving Education Outcomes in Developing Countries: Evidence, Knowledge Gaps, and Policy Considerations,” in *Handbook of Economics of Education* Volume 5 (2016): 653-743.

level of student exam participation and changes to enrollment. Barrera-Osorio and Raju (2017) posit that the lack of statistically significant positive results between the performance pay program and test scores may be issues in the incentive structure, a structure which Levačić highlights as extremely important for tailoring performance pay programs. Barrera-Osorio and Raju argue that inconsistencies in data collection of national/regional test data can create “noise in the data,” which may contribute to low correlation of test scores and program implementation. Furthermore, they argue that acknowledgement of these inconsistencies among teachers may induce lower effort on their part. They also list a lack of knowledge on the part of teachers in raising test scores as a possible explanation for the lack of impact on test scores. Even a student achieving a performance score in one year may create issues for the next year since it will be harder to marginally improve the score, making a similar score more likely, while appearing as though students have not improved. Teachers cognizant of this phenomenon may reduce their effort, as results and thus, bonuses, are partially out of their control. They conclude that in low-income countries, it may be very difficult to implement an effective teacher-pay program.<sup>62</sup> As such, the institutional structures of a particular school at which the program is implemented matters for successful implementation. Of course, higher long-term human capital outcomes are the main objective of P4P programs and evidence in this area is mixed. Glewwe, Ilias and Kremer (2010) found using data from a randomized trial that a teacher performance pay program in Kenya produced higher test scores for students whose teachers were offered gifts as a reward for the results. Yet, they did not find that the program or promoted the acquisition of human capital.<sup>63</sup> This does not imply necessarily that teacher performance pay programs do not have an

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<sup>62</sup> Felipe Barrera-Osorio and Dhushyanth Raju, “Teacher Performance Pay: Experimental Evidence from Pakistan,” *Journal of Public Economics* 148, C (2017): 76.

<sup>63</sup> Paul Glewwe, Nauman Ilias, and Michael Kremer, “Teacher Incentives,” *American Economic Journal: Applied Economics* 2, no. 3 (July 2010): 205-206.

impact on human capital accumulation, however, as the authors acknowledged that the gains may have appeared after the evaluation ended, which is supported by Chetty et al. (2011), that finds that long-term gains may exist even after the test score gains decay. Overall, most studies have found that performance pay programs tend to elicit small, measured positive treatment effects.<sup>64</sup>

To summarize this section, there is evidence to support the notion that teacher incentives can be a provocative tool for improving the quality of teaching in schools. The literature on teacher quality reveals that the public sector struggles generally to provide incentives for effort. While teaching as a profession has its fair share of intrinsically motivated teachers, the traditional system as a whole lacks extrinsic incentive for teachers to display effort. Moreover, the very system of teaching and lack of accountability and rewards for additional units of effort may hinder morale and lead to gradual decreases of effort among the teaching profession. In many low-middle income countries, this may be seen through significant absenteeism. The studies discussed suggest that providing incentives in the form of pay-for-performance programs can give teachers the extrinsic motivation needed to provide more effort, which is crucial as some argue that teachers are the second most-important inputs for quality of education. That being said, studies such as Barrera-Osorio and Raju (2017) and Mbiti et al. (2019) remind policy designers that incentive structure is critical and other constraints such as low resources may demand additional components to the program.

Beyond the quantitative evidence that suggests the potential of teacher incentives, it is relevant to qualitatively discuss why this supply-side intervention could be a strong complementarity with CCT programs. First and foremost, studies such as Mbiti et al. (2019) and

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<sup>64</sup> Glewwe and Muralidharan, “Improving Education Outcomes in Developing Countries,” 653-743.

Gilligan et al. (2018) suggest that combining two interventions may have higher learning gains when compared to running two programs independently. Mbiti et al. (2019) also supplies evidence that complementarities can lead to improved efficiency for the two pay-for-performance programs. Regarding acknowledging household behavior, increasing additional inputs to schools, teacher incentives increase teacher input in a way that households cannot respond to in kind.

### 3.3. CCTs, P4Ps, and monitoring

Additionally, the studies discussed how monitoring and consistent standardized test-taking improves the efficiency of teacher incentives. Fortunately, CCT programs such as *Bolsa Familia*, *Chile Solidario*, *PROGRESA*, and *Más Familias en Acción* are known for including elements of monitoring and evaluation, and consistently accruing data. Monitoring, therefore, of the supply-side pay-for-performance program in the form of tests could be rolled into the monitoring components of conditional cash transfer programs.

### 3.4. Ethical considerations

It is important to consider the populations that CCT programs target and how pay-for-performance programs will interact with these target populations. CCT programs target generally poor and extremely poor students who would otherwise not be encouraged to attend school. Incentive structure for the pay-for-performance prong of the dual-approach, therefore, must not disadvantage this group and instead reward teachers for helping these marginal students. In fact, from the literature on teacher incentives, teachers may have the incentive to help the “weaker” students because their improvements may be relatively larger than those of already high achievers.<sup>65</sup>

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<sup>65</sup> By using the term “weaker,” that is not to imply that the poorest learners are also the weakest learners. That term usage is only meant to imply that those most likely to attend school because of the CCT program may be years

### 3.5. Chapter summary

In this chapter, I explored the theory and evidence behind pay-for-performance programs. I presented theory and evidence to support that CCT programs and teacher incentive programs have currently a strong possibility of forming complementarities that will lead to improved learning outcomes for CCT beneficiaries. The literature on teacher quality reveals that the public sector struggles generally to provide incentives for effort. While teaching as a profession has its fair share of intrinsically motivated teachers, the traditional system lacks extrinsic incentive for teachers to display effort. The fixed wage system for teachers may induce an environment in which teachers are not motivated to use additional effort in the classroom, which can hinder the learning experience. Moreover, the very system of teaching and lack of accountability and rewards for additional units of effort may hinder morale and lead to gradual decreases of effort among the teaching profession. In many low-middle income countries, this may be seen through significant absenteeism. The studies discussed suggest that providing incentives in the form of pay-for-performance programs can give teachers the extrinsic motivation needed to provide more effort, which is crucial as some argue that teachers are the second most-important inputs for quality of education. That being said, studies such as Barrera-Osorio and Raju (2017) and Mbiti et al. (2019) remind policy designers that incentive structure is critical and other constraints such as low resources may demand additional components to the program. In allowing for flexible, local adaptation in designing a CCT/P4P program, policy designers are more likely to construct a program that taps into the school dynamics and discourages harmful practices among stakeholders. Whether that means providing gifts instead of cash or using an individual-based rather than school-based incentive scheme, ideal implementation of this two-pronged approach

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behind in curriculum, given that they may have had to make a trade-off between education and family work prior to the introduction of the program.

will take into account the socio-economic contexts. This becomes particularly relevant in the following case studies as the countries of Brazil and Chile have incredibly different historical precedents for educational intervention programs. Thus, a CCT/P4P program might look very differently between these countries if policy designers were to collaborate with local teachers and administrators on the nature of teacher incentives.

## **Chapter 4: Case Studies**

### *4.1 CCT programs in Latin America*

To help illustrate why P4P programs may increase the efficiency of education in classrooms that combine CCTs and teacher bonus-pay, I present two case studies. The first is on public education in Brazil, a middle-income country, with particular emphasis on the contemporary situation of teacher effort and incentive schemes (or lack of). The second explores the public education context in Chile, and specifically the acrimonious relationship between Chilean public school teachers the government. With these case studies, it is possible to envision how carefully designed pay-per-performance initiatives would address concerns of school quality and increase the effectiveness of CCT programs within such countries. Given that some of the oldest and well-studied CCT programs operate in the Latin American region, the case studies

will feature various Latin American countries with long-standing CCT programs, which offer extensive data and numerous program evaluations.

#### *4.2. Overview of teacher quality and pay in Latin America*

As stated in previous sections, while there is evidence that CCT programs across Latin America have overall increased educational attainment and grade promotion, there is less substantial evidence that the CCT programs have positively impacted learning outcomes. Studies such as Heinrich (2007) have pointed out issues in implementation of a CCT program in Argentina, for instance. Accordingly, there is a case to be made that the public schools in Latin America that CCT student beneficiaries attend may suffer from substantial issues of school quality, and moreover for the focus of this study, teacher quality. A 2013 UNESCO report notes that in comparison with many OECD countries, various teacher education programs require courses that emphasize general knowledge rather than discipline-specific knowledge and lack clinical experience, contributing to an overall weak quality among teachers.<sup>66</sup> Other issues concerning content mastery can be found in countries such as Perú, where 84% of teachers scored within the bottom two levels of a math content mastery test and Chile, where both primary and secondary teachers scored quite low on the IEA's international study of math skills. Some studies have highlighted that teacher education programs attract students who tend to be weaker academically than their peers. In Chile, Colombia, and Brazil, according to the Inter-American Dialogue, the teacher education students tend to score lower than students who enter other disciplines. Although this information is not exhaustive, these trends point towards a concern of teacher quality in Latin America that echoes the findings of Heinrich (2007) and other

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<sup>66</sup> Jeff Puryear, "Producing High-Quality Teachers in Latin America," PREAL Policy Brief (March 2015) 2, accessed February 26, 2022, <https://www.thedialogue.org/wp-content/uploads/2015/04/Producing-High-Quality-Teachers-v.2.pdf>.

CCT program evaluations that suggest that school factors may inhibit the effectiveness of the programs. To gain greater insight into how performance pay could address teacher quality, scholars suggest that pay-for-performance programs are more suitable towards countries and educational systems in which quality is low, and teacher pay is also low. For this reason, I will present two case studies on teacher quality and pay in these countries.

### *4.3. Brazil*

Brazil is not only an upper middle-income country, but on the cusp of being considered a developed industrialized economy. This notion continues, despite the economic downturn the country has experienced since 2014. Regarding educational spending, Brazil already spends around 6 percent of its GDP on education, which is more than other Latin American countries such as Argentina (5.3%), Colombia (4.7%), Chile (4.8%), Mexico (5.3%) and even more than the US (5.4%). This would suggest that education is a considerable priority for the Brazilian government. However, according to World Education News and Reviews (WENR), Brazil “spends less per elementary and secondary student than most OECD nations and its educational outcomes fall short (using results from the 2015 OECD PISA study as the barometer).”<sup>67</sup>

Although there are some debates on whether PISA scores ought to be used to compare educational quality across countries, nonetheless the results do not suggest that schools in Brazil producing, on average, high achievers. Educational funding is handled through the states, as laws demand that states and municipalities spend at least one quarter of their tax revenues on education while the federal government must spend at least 18 percent of its tax income.

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<sup>67</sup> Carlos Monroy, Ryan McNally, and Stefan Trines, “Education in Brazil,” Education System Profiles, WENR World Education and News, November 14, 2019, <https://wenr.wes.org/2019/11/education-in-brazil>.

Bruns, Evans and Luque (2012) discuss four key challenges for era of Brazilian education from 2011 to 2021, and of those four challenges, improving teacher quality is one significant challenge. As mentioned above, teaching profession in Brazil tends to attract students with lower academic performance. The country typically recruits students from the bottom third of students. Teaching is a low-status profession that does not attract high academic performers.<sup>68</sup> Teaching is also at the bottom of the skill distribution for its income level. Furthermore, the cut-off ENEM score required for admission to public higher education institutions is lower for those who “major” or seek the teaching equivalent to an undergraduate degree (licenciatura) than for other courses of study. In 2014, the cut-off scores for licenciatura degrees across disciplines and pedagogy were, respectively, the 5<sup>th</sup> and 2<sup>nd</sup> lowest in a classification of 75 courses of study.<sup>69</sup>

State and municipal governments in Minas Gerais, Pernambuco, and Rio de Janeiro municipality have initiated practices of classroom observance using standardized protocol by OECD countries. They found that teacher effectiveness is highly varied not only across schools, but within schools. OECD countries encourage good practice norms of 85 percent of classroom time on instruction—Brazilian classrooms exhibit instruction at a rate of less than 66 percent. Teachers do not utilize any materials between 8 percent and 21 percent of the time. Inequities between schools exist as shown in the Rio de Janeiro municipality example in which teachers from the city’s schools considered within the top 10 percent, as measured on the IDEB devoted 70 percent of time to instruction. This figure differs significantly from 54 percent, as observed in the bottom 10% of schools. While these figures are suggestive at best, they do offer insight into

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<sup>68</sup> Barbara Bruns, David Evans, and Javier Luque, “Building Better Teachers,” in *Achieving World-Class Education in Brazil: The Next Agenda* (Washington D.C.: The World Bank, 2012) 55-56.

<sup>69</sup> Marcelo Ponte Barbosa and Leandro Oliveira Costa, “Requirements to Be a Teacher in Brazil: Effective or Not?” Policy Research Working Paper no. 9006 (September 2019): 4, accessed March 1, 2022, <http://hdl.handle.net/10986/32380>.

the life inside the Brazilian classroom. They suggest that teachers may not be exhibiting their best efforts, as implied by the figures on time spent on instruction. Given these considerations, there is evidence to support that there are issues concerning the quality of teachers and instruction across Brazil, although it is likely that the exact issues concerning teachers are heterogenous due to the educational systems being largely managed by the municipalities and the states, rather than the national government.

#### *4.3.1. Teacher pay in Brazil*

For pay-for-performance programs to be successful, it is presumed that there is space for the teacher pay system to be improved and increased. That is certainly the case in Brazil. It must be noted that teacher salary in Brazil varies as the decentralized education system allows for salaries to be determined by local, regional, or national authorities, depending on the school. The OECD 2020 estimates that the annual starting salary for Brazilian teachers in public institutions is 13,981 USD, converted using PPPs, while the actual annual salary is 27,739 USD.<sup>70</sup> This makes for a low-wage profession, especially as Mizala and Ñopo (2016) find that teachers in Brazil, among other Latin American countries, are underpaid vis-à-vis other professionals and technicians with similar qualifications.<sup>71</sup> This phenomenon is a large concern for education policy experts in Brazil. In 2019, *The Rio Times* article cites the statement by Maria Inês Fini, former president of INEP (National Institute of Educational Studies and Educational Research Anísio Texeira), in which she laments that the average salary of public-school teachers in Brazil is “horrible,” given that the current wage floor is R \$2,557 (\$US640) per month.<sup>72</sup> These

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<sup>70</sup> *Education at a Glance: Teachers' Statutory Salaries* (2020), distributed by OECD Education Statistics (database), <https://doi.org/10.1787/b43a4622-en>.

<sup>71</sup> Alejandra Mizala and Hugo Ñopo, “Measuring the Relative Pay of School Teachers in Latin America 1997-2007,” *International Journal of Economic Development* 47, issue C (2016): 30.

<sup>72</sup> Richard Mann, “Brazil’s School Teachers Have the Lowest Salary, Says Study,” *The Rio Times*, June 23, 2019, accessed March 2, 2022, <https://www.riotimesonline.com/brazil-news/rio-politics/national-politics/brazils-school-teachers-have-the-lowest-salary-says-study/>.

observations suggest that public school teachers in Brazil are not paid very well, which explains why some regional policymakers in Brazil have already implemented P4P programs, which lends insight into the effectiveness of such programs in the country.

#### *4.3.2 Performance-pay programs in Brazil*

In 2009 in Pernambuco, a state in Northeastern Brazil often noted for its large socio-economic disparities, the state began a teacher bonus program that is school-based, rather than individual-based. In this structure, all schools that achieve at least 50 percent of their targets receive a proportional bonus, and the school staff members of those that reach 60 percent or more each receive 60 percent of the bonus in additional pay.<sup>73</sup> In constructing a long-term program that would be of larger-scale, experimental evidence from Muralidharan and Sundaraman (2011) suggest that individual-based incentives will produce more long-term learning outcomes than school-based incentives. Nonetheless, the experimentation of this program allows for greater understanding of how the program interacted with the classroom culture. This is especially important as numerous social scientists argue, some discussed in this paper, that cultural context plays a significant role in teacher motivation. Any effective incentive scheme must be aware of the cultural context. In the report, Ferraz and Bruns (2012) found that school directors positively reacted to the introduction of the bonus pay program. Schools with higher targets experienced more test score gains, which the authors attribute to the interaction of setting higher targets at the time of a recent implementation of the incentive program.<sup>74</sup>

In 2007, the state of São Paulo also initiated a P4P program based on school performance. The program provided boosts to monthly wages for any school that reached a

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<sup>73</sup> Claudio Ferraz and Barbara Bruns, "Paying Teachers to Perform: The Impact of Bonus Pay in Pernambuco, Brazil," *Society for Research on Educational Effectiveness Report* (2012): 73.

<sup>74</sup> Ferraz and Bruns, "Paying Teachers to Perform," 74.

certain level along the quality IDESP index, the Index of Educational Development of the State of São Paulo.<sup>75</sup> The annual bonus was paid to all schoolteachers and workers that reached the target, with the bonus equating to 2.4 times the monthly wages. Researchers have identified issues of testing-day noise and suggest that some schools may have received bonuses that would not have received them in the absence of measurement error. Given the entirely different regional economic contexts of these programs, they cannot speak the implementation issues that an expanded P4P program across Brazil would face. Yet, they suggest that addressing teacher quality via incentives for teacher pay is a tool that Brazilian policymakers may be willing to use to enhance Brazilian education and CCT programs.

#### *4.3.3. Discussion*

From exploring the Brazilian context, including the bonus-pay programs that already exist, certain insights can be gleaned that are important for building a framework for a two-pronged policy approach that combines the *Bolsa Familia* program and a pay-for-performance program. Such insights include the fact that teacher salary is incredibly low for public education teachers as most of the teacher contracts do not use a bonus-pay structure, but rather a standard contract. Teachers may also be devoting too much time towards logistical practices in the classroom, rather than instruction. There are monitoring initiatives already in relation to the bonus-pay programs and the monitoring and evaluation schemes have been efficient, rather than haphazard or inconsistent. Many of these characteristics and conditions resemble the contexts that Levačić presents theoretically in the principal-agent model and experimental studies find when examining various countries' teacher incentive programs. In a country such as Brazil, low

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<sup>75</sup> Índice de Desenvolvimento da Educação do Estado de São Paulo

salaries and low rewards or non-existent reward systems may mean that teachers are not investing as much time into students as is necessary to improve learning outcomes.

If a two-pronged approach is implemented in Brazil, it is likely that the CCT demand-side intervention of *Bolsa Família* and a pay-for-performance supply-side intervention will lead to higher learning outcomes for the beneficiary students. The CCT participants are more likely to interact with teachers who are incentivized to induce effort, provided that the incentive structure is properly tailored. In comparison to other supply-side interventions, a national pay-for-performance program will address issues of low teacher quality and pay in the country. Consequently, it is most compelling candidate to enhance the impacts of the *Bolsa Família* program on the classrooms.

#### 4.4 Chile

Chile is a middle-income country with the highest GDP per capita among Latin American countries, but also features significant socio-economic inequalities. Most teachers graduate from universities with a degree and certification in teaching. Public school teachers receive wages that do not hinge on merit, and thus it is not common for low-performing teachers to be expelled from the system. Canales and Maldonado (2018) cite various studies (Lara et al., 2010; Meckes and Bascope, 2012; Mizala and Torche, 2012) etc. to argue that higher performing teachers may be more attracted to private schools, where there is more flexibility regarding hiring, dismissal and promotion. The authors also cite Bruns and Luque (2015) in arguing that regarding teacher quality, Chile has perhaps made some of the largest strides in improving teacher quality, despite the limitations of existing literature due to lack of classroom-level data. Chilean governments

have sought to improve teaching quality via various reforms focusing on teacher training.<sup>76</sup> Toledo and Valenzuela (2015) did not find that postgraduate qualifications were linked to higher language and math scores, echoing Hanushek (2005), but found that short-term courses had a higher effect. Canales and Maldonado confirm that distribution of teachers for language and math is nonrandom among schools. They also find that there is a negative relationship between value-added estimates of teachers and indigenous students in the classroom, suggesting that schools with higher indigenous or other minority populations feature lower quality teachers. These studies that the authors discuss suggest that Chile's teacher quality in public schools may typically be lower than those of private schools, given the considerations of sorting. Canales and Maldonado (2018) argue that they found in their study that teacher quality has a significant outcome on students, particularly in math, contrasting narratives and findings of low teacher quality in Latin America. However, given the amount of sorting that happens within schools and across schools, even if higher teacher quality does have a significant effect on learning, there is still a large amount of heterogeneity in teacher quality in Chile, and heterogeneous effects of teachers on learning outcomes presently.

#### *4.3.1 Teacher pay in Chile*

The OECD estimates that the annual starting salary for teachers is 25,147 USD converted using PPP. Annual actual salary for teachers is 29,981 USD, which is higher than other South American countries (lower than Mexico), but still considered low when compared to other OECD countries and within the country as well among Chilean teachers and researchers.<sup>77</sup>

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<sup>76</sup> Andrea Canales and Luis Maldonado, "Teacher Quality and Student Achievement in Chile: Linking Teachers' Contribution and Observable Characteristics," *International Journal of Educational Development* (May 2018): 33-38.

<sup>77</sup> *Education at a Glance: Teachers' Statutory Salaries* (2020), distributed by OECD Education Statistics (database), <https://doi.org/10.1787/b43a4622-en>.

In Chile, there is a long history since the dictatorship (1973-1990) of decreasing salaries as part of the privatization efforts in education. During the dictatorship, the educational system in Chile became more decentralized, with administration responsibilities being handed over to municipality governments. Employment status for these teachers changed and they became private, instead of public, workers. The Historical Debt is a term that refers to promised compensation by the State to teachers from this era that was never handed out.<sup>78</sup> In 2004, Teacher Evaluation was approved as a program, and additional pay based on individual performance became institutionalized. Although between 1990-1995, and again in 1995-2000, there were unconditional salary increases, salaries remained stable until 2014. Similar to Brazil, these teachers remain underpaid compared to other professions.

#### *4.4.2 Pay-for-performance programs in Chile*

Considering that Chile features low-quality teachers in some public schools, low base pay, and pay-for-performance initiatives in theory should positively impact learning outcomes for students in public schools that have issues of low teacher quality. Chile already enacted a nation-wide school-based performance pay program since 1996, but Carnoy et al. (2007) presents significant issues with assessing the impact of this teacher incentive program and constraints for school-based bonus pay initiatives.<sup>79</sup> Starting in 1996, The SNED competition awarded schools based on falling in the highest-rated schools, index based on absolute test scores, differentials between tests, grade promotion, grade retention, equality in schools, teacher and parent participation, and work conditions. The authors first inform the reader that all schools

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<sup>78</sup> José Valdes, "Teachers' Strikes in 2015 and 2019 and the Debate Surrounding the Education System in Chile," *The Latin Americanist* 65, no. 2 (June 2021): 268.

<sup>79</sup> Martin Carnoy, Iliana Brodziak, Andres Molina, and Miguel Socías, "The Limitations of Teacher Pay Incentive Programs Based on Inter-Cohort Comparisons: The Case of SNED," *Education Policy and Finance* 2, no. 3 (Summer 2007): 194.

were eligible for the award, which implies that there is no control group to compare the impact of the SNED performance pay. The authors, additionally, argue that assessing incentive portion of teacher effort is quite difficult because of the salary increases that simultaneously occurred during the first era of implementation, leading teachers to having an increased salary even when they did not earn SNED bonus wages as part of winning the competitions. As such, it is not feasible to determine how the program impacted student learning. Nevertheless, this program does not offer individual incentives, leaving room for such a program.

#### *4.4.3. Teacher unions and Chilean government*

At the same time, the historically contentious relationship between teachers, teachers unions and the government is important to consider when designed a two-pronged policy approach between CCTs and P4P programs. According to Morales-Valdes (2021), teachers strikes in 2015 and 2019 link back to the decrease in salaries and increased privatization due to the dictatorship and continued low salaries. Many public-school teachers, according to Morales-Valdes, associate incentive programs with the marketization and privatization of Chilean education and strongly oppose such incentives and, similarly, teacher accountability. Morales-Valdes argues that such opposition rises from stagnant salaries and increased measures of accountability that “weigh down” the already poorly paid teachers. Initiating an individual P4P program in the country to complement the CCT program will require significant communication and specific adaptations for the Chilean context. One such adaptation may be an initial period prior to starting the P4P of increased base-pay to integrate the concerns of teachers and allow for more open-mindedness towards an additional, or reformed, P4P program. Teacher adherence and willingness to cooperate is an important aspect of implementation, as these initiatives do not only

seek to improve the experience of the student, but also imply an improvement of the experience for the teacher as well.

#### *4.4.4. Discussion*

Overall, Chile's heterogeneous levels of teacher quality and widespread low base-pay point towards P4P becoming a promising tool for enhancing the effectiveness of CCT programs. Design and implementation may differ from designing a similar two-pronged program in Brazil for reasons of differences between historical political contexts. Nevertheless, by addressing supply determinants of learning outcomes via teacher quality, it is possible to envision enhanced effectiveness of the CCT program in Chile and improved long-term learning outcomes for its beneficiaries.

#### *4.5. Chapter summary*

In this chapter, I presented two case studies of Brazil and Chile to demonstrate why P4Ps will increase the efficiency of education in classrooms that have CCT participants. I showed that public schools in these countries and other countries that CCT programs often struggle with low teacher quality and pay. As such, when P4P programs interact with teachers from these public schools, evidence on P4Ps suggest that teacher quality will improve, and school quality will consequently improve. To support the idea that governments are willing to use this policy tool, I also presented cases in which state governments in Brazil and the national government of Chile have already introduced P4P programs separately. The case of Chile highlights, however, that any P4P intervention paired with CCTs must consider perceptions that teachers have towards government intervention and merit pay.

## Chapter Five: Concluding Remarks

Conditional cash transfer programs now have been in place for over 20 years, and while there is much evidence that they have contributed to higher levels of student enrollment, these improved rates of attendance and health have not necessarily transferred into improved learning outcomes. Rather than seeing these interventions as ineffective, it is important to instead see these programs as “winning half the battle” in terms of providing children access to education who might otherwise have household constraints that would require them to work. In this study, I have sought to show that pairing CCTs with pay-for-performance programs can offer a cost-effective way of ensuring the students are encountering motivated teachers in school. P4Ps, as opposed to other supply-side interventions, have supporting evidence to suggest that they successfully target the performance of teachers and induce higher test scores and learning. Given that Hanushek argues teachers are one of the most important school determinants of student achievement, this intervention combined with CCTs may have a quite significant impact on CCT participants. It could be especially effective in developing countries, where countries like Brazil and Chile face pronounced income inequalities. Hanushek and Rivkin (2005) argue that good teachers over time “go a long way to closing the achievement gaps across income groups,” and so P4Ps may help close such long-standing gaps.<sup>80</sup> While P4Ps do not address every factor that is related to school quality, it would certainly address the important factor of teachers. Ultimately, a P4P component would expound upon the gains of the many CCT programs that families have come to rely on.

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<sup>80</sup> Hanushek, “Teachers, Schools, and Academic Achievement,” 449.

Avenues for further research are plentiful. Options may include a small-scale experimental intervention in which a pay-for-performance aspect is added to the CCT programs, as well as informant interviews for teachers to better capture a sense of whether individual-based or school-based incentives would produce a higher level of effort among teachers. That will be helpful for tailoring the two-pronged program to fit cultural contexts and build an incentive structure that teachers respond to positively. Overall, considering the alternatives to improving learning for students who have participated in conditional cash transfer programs is a promising way to expound on the obvious benefits that CCTs pose for learners across the world.

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