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**Evaluating Service Supply
in Conditional Cash Transfers**

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To Benjamin and Silvia,

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Abstract

EVALUATING SERVICE SUPPLY IN CONDITIONAL CASH TRANSFERS

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Abstract: Conditional cash transfers are poverty reduction mechanisms that seek to increase demand of social services by combining an income effect with a health or education requirement. This demand-side strategy relies on a tacit assumption about the quality of and access to those services as a path to improve human capital outcomes. Some conditional cash transfers have included supply-side complementary incentives to ensure that services are suitable to deliver a good education and better health. This study reviews the existing evidence on the impact of supply-side incentives in the context of conditional cash transfers. The review finds that a limited number of studies estimate effects of supply in human capital outcomes and only a few impact evaluations consider the role of schools or health centers in enabling access. The evaluations reviewed find no evidence that supply side interventions coupled with conditional cash transfers directly improve program outcomes. Nonetheless, several studies highlight the relevance of school organization, in terms of school modalities and student/teacher ratios in school

enrollment and attendance. Impact estimations as well as the implementation of the supply-side programs also signal the need for a more nuanced understanding of how school management influences a variety of schooling outcomes. In general, the small number of impact estimations and the restricted set of variables used limits the generalizability of the results. For this reason, a principal conclusion of the review is the need for further research on the topic, as well as consistency across impact measures and a more in-depth analysis of school supply and their influence on learning outcomes.

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Introduction

Conditional Cash Transfers (CCTs) have become a widely used program meant to improve educational and health outcomes in marginalized populations throughout the developing world. CCTs are poverty reduction mechanisms that seek to increase demand of social services by combining an income effect with a health and education requirement. This approach presumes that the supply of those social services is adequate and accessible. Nonetheless, this assumption is not consistent across sites of implementation, which can limit the capacity of the transfer to deliver expected goals (Morley & Coady, 2003; Valencia Lomeli, 2008). For this reason, some CCT programs include supply side interventions meant to bridge the gap between the demand and availability of these services. To better understand how these elements influence CCTs program outcomes, impact evaluations have started to consider how variations of implementation and supply-side interventions might affect expected goals.

CCTs have been the objects of extensive scholarly literature on the targeting and design of these program as well as impact evaluations examining outcomes and some of its shortcomings. These impact evaluations have in turn given rise to several meta-analysis on CCTs (Fizbein & Schady, 2009; Adato & Bassett, 2012; Hagen-Zanker, McCord, & Holmes, 2011) and one review that compares evaluations on conditional and unconditional transfers (Baird, Ferreira, Ozler, & Woolcock, 2012). There are also numerous reviews that focus on specific impacts of CCTs such as health outcomes or education outcomes (Lagarde, Haines, & Hulme, 2007; Saavedra & Garcia, 2012). This review complements the existing literature by looking at supply-side interventions associated with CCTs and their effects on program outcomes.

The focus of this paper are those impact evaluations that go beyond estimating an average program effect, and try to disentangle each component of the program and their effects on certain educational and health outcomes. An in-depth understanding of the availability and quality of services in the context of CCTs is a necessary first step to unravel the mechanisms that make these programs successful for long-term objectives such as poverty reduction. This review of the evidence seeks to inform program design by assessing what elements must be in place to link the enforcement and fulfillment of the conditions to better human capital outcomes.

The paper is structured as follows. First, I succinctly discuss the political and economic arguments that support CCT programs. Second, I explain the fundamental role that supply plays in accomplishing the intended social policy goals and then I discuss some challenges with designing an effective supply policy. A fourth section reviews the existing impact evaluation evidence, by starting with the more rigorous approaches to estimating supply-side effects and then presenting other strategies that shed light on how supply affects CCT outcomes. Finally, drawing from the lessons of the available literature, I argue in favor of certain requirements for an optimal evaluation design of supply effects on educational outcomes.

I. Conditional cash transfers: rationale

CCTs seek to improve human capital outcomes as well as long-term poverty reduction. For this reason they include program features that address complementary human capital outcomes: education, health and nutrition. (Rawlings & Rubio, 2005) To improve such outcomes the cash transfer provides sufficient funds to influence household resources allocations, by decreasing the opportunity cost of accessing to human capital related goods. There are several studies that analyze such spending framework in the context of existing CCT programs, by comparing the costs of attending to school (pecuniary and non-pecuniary costs, as well as foregone earnings) and how they relate to existing benefits (utility of attending to school, savings in childcare, and future earnings). (Attanasio, Meghir, & Santiago, 2012; Todd & Wolpin, 2006) Throughout this literature, there is a common concern over how CCTs influence intra-household resource distribution, and whether the improvements in human capital outcomes come with substantial trade-offs for other household members. (Behrman & Skoufias, 2010)

The link between human capital outcomes and poverty reduction is subject to criticism. In particular, there is not enough evidence of the relation between modest educational outcomes, for example, and higher future wages. (Reimers, da Silva, & Trevino, 2006) More emphasis is needed in this topic to better understand how improvements in human capital will generate returns in the labor markets available in each CCT context.

Economic theory with the analysis of utility functions indicates that an unconditional cash transfer increases utility more than a conditional one. Nonetheless, the inclusion of conditions can increase the efficiency of the transfer. If the household does

not have the same preferences as society in terms of investment in children outcomes, or there are other market failures in terms of availability of information and externalities, such as the positive returns to society of having an educated and healthy population, then a conditional transfer might be needed. However, the efficiency of the transfer can come with trade-offs in terms of equity, since when the condition is set on a normal good, then it is hard to establish which individuals get the transfer even though they would spend more on the good even without it. (Das, Do, & Özler, 2005) Moreover, the increase in consumption of the good that the transfer is conditioned on might come with a decrease in some close substitute, which could reduce or offset the positive human capital outcomes purposely induced by the transfer.

Other reasons to support conditions on cash transfers come from the political economy of welfare programs in general. CCTs can garner political approval for their limited targeting by including conditions to change beneficiary's behavior when disbursing public funds. (Fizbein & Schady, 2009) Beyond the theoretical reasons to support CCT, a meta-analysis comparing conditional and unconditional cash transfer has found greater effects for the first one especially in enrollment and attendance when the conditions are explicit and they are regularly monitored. (Baird, Ferreira, Ozler, & Woolcock, 2012)

II. The role of service supply

The role of supply on CCTs can be analyzed through two related but different issues. First, CCTs target the demand for education and health services and thus, they can lead to an increase in the number of users, which might exceed the service capacity of the existing supply. Congestion is usually associated with a decrease in the quality of available programs and thus it affects the education and health outcomes of CCTs' beneficiaries and other individuals that use those facilities. Some of the common solutions to this problem, such as a rise in prices or a fee, are not plausible in this context since they would counteract the needed increase in consumption that a CCT is meant to create. A second related problem is whether the existing program service is adequate for the development of CCTs' human capital outcomes. This paper presents some evidence that congestion has not been an issue for several CCTs, but the main focus is on how the programs address and evaluate the pre-existing supply quality.

The importance of supply-side interventions in the context of CCTs has been underscored in several studies. Nonetheless, a recent review of the evidence on these programs in Latin America points out that the availability of supply can be a major constraint for CCT programs:

“CCTs are largely designed around the assumption that there is a “demand” constraint, that is, that families need incentives to participate in services. However, the services need to be available, offered at a reasonable distance, and of sufficient quality for the programs to work as intended. Inadequate quantity and quality of supply of health and education infrastructure, staff and supplies- and how to improve them in order for the program to work better-have challenged

most governments that have undertaken CCT programs.” (Adato & Hoddinott, 2010, p. 354)

Adato and Hoddinott highlight some of the existing challenges in the implementation of CCTs in conjunction with supply-side transfers, among them the difficulties in garnering support for such strategies in the complex institutional frameworks in which CCTs develop and the tensions between public and private contractors. Nonetheless, they consider that designing an effective supply side intervention and evaluating its outcomes is fundamental in the evolution of CCTs. Supply side limitations might hamper the efforts of school and health subsidies or they might limit their effectiveness on short-term and long-term outcomes that require access to quality services. The role of supply becomes even more important when implementing programs in new contexts that might not have the school and health infrastructure of the Latin American countries that pioneered CCTs.

Schady and Fizbein also emphasize the importance of interventions that strengthen the supply and delivery of services, both in terms of expanding services and improving their quality, although they caution on the push to include such components in CCTs given the lack of evidence of their joint effects on education and health outcomes. The authors refer issues with the administration and coordination of funds for supply-side programs in Nicaragua’s “Red de Proteccion Social (RPS)” and Honduras “Programa de Asignación Familiar (PRAF)” as a note of caution on the use of supply side incentives in CCTs. In this line, they stress the need to assess the productivity and effectiveness of these policies relative to other standalone supply strategies. (Fizbein & Schady, 2009, pp. 190-193)

The discussion of supply-side interventions is characterized by a limited understanding of what are the possible effects of more encompassing programs. Bastagli analyzes several of the implementation problems of the transfers, in terms of conditionality, targeting and institutional framework, but her evidence on synergies of supply and demand interventions is limited. For this reason, she concludes that strengthening supply could “possibly” lead to more effective outcomes. (Bastagli, 2010, p. 23) In addition, a review of the existing evidence on CCTs leaves out supply-side interventions even though they constitute an important part of many CCT programs. (Baird, Ferreira, Ozler, & Woolcock, 2012)

III. Designing supply-side interventions

There is certainly an imbalance between the weight assigned to the supply of adequate educational and health services and how much is known about the status of such services, in the context of CCT implementation. This imbalance leads some authors to question the assumption that supply is adequate and there is a need for improvement only on the demand side of education and health programs in developing countries.

Reimers, da Silva and Trevino highlight that lack of knowledge on the basic indicators of school quality such as instruction, teacher education and school management, limits evaluators' ability to explain how CCTs lead to certain educational outcomes. (Reimers, da Silva, & Trevino, 2006) In particular, they point to the limited evidence on CCTs' impact on student learning outcomes as well as more general human capital outcomes, given that very few evaluations analyze the role of school and instructional quality in student outcomes. Most of the CCTs programs, as stated before, assume that the quality of education or services provided is adequate. Reimers, da Silva and Trevino challenge this assumption and contest that many of the supply-side interventions meant to improve inadequate services are "poorly designed and implemented" (Reimers, da Silva, & Trevino, 2006, p. 11)

"The fact that CCT programmes treat schools as "black boxes" may reflect a conceptual and disciplinary limitation in their design as much as an organizational limitation in how these programmes are set up institutionally. There are no incentives, and arguably large transaction costs, to design or evaluate CCT programmes with an eye to developing a coordinated strategy that takes on the task of improving quality." (Reimers, da Silva, & Trevino, 2006, p. 46)

A coordinated demand/supply strategy can be hard to design, nonetheless, given the sparse and inconclusive evidence available on what enhances school quality and leads to better student outcomes. (Hanushek, 1995; Glewwe & Jacoby, 1994) Glewwe, Hanushek, Humpage and Ravina review several studies of school resources and educational outcomes and conclude that there is not enough robust evidence on the effect of some school and teacher characteristics that are common targets of educational policy. (Glewwe, Hanushek, Humpage, & Ravina, 2014) They explain that a bundle of characteristics related to school infrastructure and teacher quality, consistently generates better student outcomes, but they cannot parse out the effects of those elements to provide ground for promoting one policy over another. The authors favor a new research agenda in education randomized controlled trials that tests how the organization of schools and the incentives faced by all stakeholders included in the educational process can lead to better educational outcomes.

The need for a supply-side intervention spurs from assessments of how existing supply can cope with the increasing demand expected given a CCT, while ensuring high quality services. It is important to bear in mind that the long-term effect of many CCTs is poverty reduction, which cannot be accomplished by increasing just the access to services. Their quality must also be high to improve human capital outcomes in targeted populations. In the case of education, if quality varies across contexts, then traditional measures of schooling outcomes such as years of education, enrollment and attendance, might not lead to learning outcomes or improvements in human capital.

A similar concern exists with the provision of health services and the fulfillment of conditions associated with the CCTs. A study in Mexican villages that receive a health related CCT, showed through site visits and interviews with health personnel and

patients, that the quality of services delivered in the context of the program was suboptimal. (Gutiérrez, 2008) In this qualitative study, the evaluators concluded that service delivery restricted the effectiveness of the cash transfer. Increasing access to health centers then, might not be an effective policy if the care received is not adequate. In addition, strategies that strengthen the supply through training and subsidies might have more lasting effects than only a demand side incentive. Another qualitative study on the supply-side incentives for performance of health providers in Nicaragua, showed that even after demand subsidies were interrupted the uptake of health services continued to be high among beneficiaries and non-beneficiaries of the program. The evaluators consider that strengthening supply allowed for high quality service delivery as well as improved preventative health outcomes over time. (Regalía & Castro , 2007)

Many CCTs seek to ensure an adequate quality of the services they are conditioned on by incorporating supply-side subsidies. Some of the programs include direct transfers to schools, they incentivize transfers from beneficiaries to the schools they assist to or they encompass complementary strategies to improve existing supply infrastructure through training, subsidizing needed provisions, etc. To better understand the role that the supply of education and health plays in CCTs in developing countries, I now turn to the existing impact evidence on the general features of supply and how it varies across regions and contexts.

IV. Impact evaluations

THE EVIDENCE

There is limited evidence of the effectiveness of supply-side interventions on human capital and health outcomes in the context of CCTs. Such scarcity is related to limited available data on school or health centers' quality in impact evaluations and the piecemeal implementation of supply side incentives.

First, many studies are unable to disentangle the supply and demand side incentives that constitute the cash transfer. In some cases, there is no available data on different supply characteristics, given that the evaluations are solely based in household and individual level data. When the program includes supply-side incentives in its design, some impact evaluations caveat their results by indicating that they correspond to the “whole” package of the CCT. Other evaluations incorporate supply-side variables as control in quasi-experimental designs, to indicate that there is some variability in what schools and health centers' beneficiaries access to, but they do not further explore differential effects of the program in such scenarios. These indicators of supply quality vary in accuracy and sometimes they cannot be directly linked to the program under evaluation since they are more generally a control for existing differences between treatment and comparison groups.

Second, a common problem in trying to estimate the effect of supply-side interventions that are coupled with CCTs is that these interventions are not implemented uniformly across units of treatment (usually villages or regions) and as a result, impact evaluations require additional assumptions and methods to create treatment measures. Such is the case of the PRAF in Honduras, which started with a robust design for

comparing demand, supply and combined interventions, but supply-side measures were not implemented in time for their evaluation.

The impact evaluations discussed in this review represent different methodological approaches that seek to unravel the effect of service availability and quality in human capital outcomes. Given the emphasis on human capital development, this review leaves out the estimations that consider general household consumption as a CCT outcome. The more robust procedures incorporate estimations of the differential effect of CCTs supply components or an analysis of how demand-side incentives vary in effectiveness with diverse levels of service quality. Other evaluations consider indicators of service availability as controls in their regression models, whether to estimate program effects or to establish a counterfactual for the treatment group with an adequate comparison group. Finally, I discuss some strategies to adjust for different service quality with limited information.

DIFFERENTIAL EFFECTS

The eleven studies presented in this section provide an array of methodologies intended to estimate the differential effect of supply-side interventions. The evaluations that follow have in common the objective of incorporating outcome estimations at the individual level for supply quality indicators. They differ in their approach to impact evaluation, since some of them rely on experimental or quasi experimental designs, while others do not have control over the assignment to treatment or the general design of the program and thus need to adjust for differences between treatment and comparison groups. In the classification of their methodologies, I follow Wong, Cook and Shadish's definition of experimental, quasi-experimental and non-experimental designs. (Wong,

Cook, & Shadish, 2008)

Programa de Asignación Familiar (PRAF)

The conditional cash transfer from Honduras, PRAF, included a rigorous experimental evaluation, in which 70 municipalities were randomly assigned to four different groups: 1) demand-side intervention, 2) demand and supply-side intervention, 3) supply-side intervention only and 4) control group. (Glewwe & Olinto, 2004, p. 3) The supply side component of the program, nonetheless, was only partially implemented by the time the evaluation was conducted. By 2002, the health supply component going to the Units of Primary Health was implemented only to 17% of the communities, there was no capacity building and the component on integral care of children was implemented to 11-22% of the communities. The supply education component of PRAF also had limited implementation, the training of teachers reached 74% of intended beneficiaries, but transfers to schools were limited to a 7%. (IFPRI, 2003, p. 6)

This review considers three mid-term evaluations of PRAF, between 2000-2002, which do not find positive effects for the supply-side program or the combined supply and demand programs. In general, the evaluations caveat their results given the partial implementation of the supply incentives. A first evaluation of the intermediate effect of the program finds no positive program outcomes for the supply intervention or the combined supply/demand strategy, even though it finds positive outcomes for health services uptake and school enrollment, attainment and drop-out rates for the CCT alone. (IFPRI, 2003)

Glewwe and Olinto concentrate their evaluation on the effects of PRAF on schooling outcomes: enrollment, attendance, drop out rates, grade promotion and on

children labor force participation during the same intermediate period. (Glewwe & Olinto, 2004) The authors also recognize that the supply component was not duly implemented, and thus, their conclusions on its effectiveness are intrinsically limited. Moreover, they explain that the municipalities that only received supply were interviewed during coffee harvest months in Honduras, while those in the demand-only treated municipalities, were interviewed during different months. This difference constitutes a threat to the validity of the data collected, especially in terms of results of labor force participation. Glewwe and Olinto found again no positive effects for supply side interventions of PRAF focused on schooling outcomes and labor force participation.

A third evaluation of PRAF in Honduras focuses on the use of health services and the coverage of preventive health interventions. The evaluation finds no significant effects for the supply-side intervention, consisting of transferring resources to peripheral health service centers. The evaluators again caveat their results by explaining that the service-level intervention was not fully implemented by the time they conducted the evaluation. (Morris, Flores , Olinto, & Medina, 2004)

Red de Protección Social (RPS) - Nicaragua

Mallucio, Flores and Regalia evaluate the RPRS program in Nicaragua, which had a sizable supply component in the form of a “teacher transfer” provided to the beneficiary household to then disburse to the teacher. The rationale behind this portion of the cash transfer is that teachers have to cope with additional reporting requirements and bigger class size when students’ transfers are conditional on enrollment. (Maluccio, Murphy , & Regalia , 2009, p. 6). The study relies on random assignment of the program and thus, it can be considered experimental but it is an intent-to-treat approach since it

includes all households in the treated municipalities, even though close to 10% of them did not receive the cash transfer. Supply information comes from RPS administrative data on the school availability in the treated areas, from 2000-2004. In the design of the evaluation, the treatment group received the transfer for three years and then only the supply component for one year. Even though there was a substantive supply-side component in RPS, the evaluators cannot parse out its effect from the demand portion of the CCT, and so outcomes estimations are calculated for a combined supply/demand intervention. The evaluation incorporates supply-side variables at two levels: 1) program effect estimations are conditioned on initial supply and 2) program effects are calculated for schooling supply. The authors conclude that initial supply has a positive effect on all considered outcomes. One characteristic that was especially influential was the autonomy of the school. Nicaragua underwent a school reform in the 1990s that gave some rural schools or clusters of schools, more autonomy from the central government in decision making over pedagogy, administration and finance. The evaluators hypothesized that autonomous schools have more flexibility and can better adapt to changes in the demand for school and for these reasons, autonomy is associated with better educational outcomes. (Maluccio & Flores, 2005, pp. 16, 22) In the areas with poor initial supply, the program showed bigger effects in improving school quality (more room for improvement).

PROGRESA/Oportunidades – Mexico

Coady adopts a non-experimental approach to analyze the effect of supply-side policies in conjunction with a CCT program in Mexico. The Mexican program PROGRESA included supply incentives to cope with the increase in enrollment. He considers indicators of school quality by level of education in estimating PROGRESA's

effect on enrollment, attendance and completed years of education. The author couples the CCT evaluation data with information from the Secretary of Public Education on the type of schools available at the locality level, by considering that each student from the control and treatment groups assist to the school closest to him/her. The main limitation of this approach is that given the proximity of treatment and control communities, children are most probably attending to the same schools and thus they cannot parse out the effect of the PROGRESA on the treated. (Coady, 2000, p. 54) For secondary school students, Coady finds that greater distance to school and having only a telesecondary school has negative effects in enrollment and for primary school students, a higher student/teacher ratio leads to a reduction in enrollment. Program effect estimations do not change when including supply-side variables as controls. The author concludes that there is no evidence of a differential improvement of supply in treatment communities, but he cannot rule out that school quality improved in both treatment and control communities. (Coady, 2000, pp. 60-63)

In a later paper, Coady and Parker adopt the same non-experimental approach to analyze the effect of supply-side policies with a similar set of school-level variables with data from the Secretary of Public Education. (Coady & Parker, 2002). Their strategy tries to isolate supply effects by controlling for certain indicators of school quality in their impact estimation models. Given that positive outcomes for the treated households remained unchanged even when controlling for supply characteristics, the authors conclude that the supply component of the program has no significant effects. Nonetheless, when incorporating data of supply expansion through the construction of new schools, they find that decreasing distance to school has a positive influence in enrollment to school as well as in extra years of education. They also find positive effects

for teachers' human capital on girls' enrollment and negative effects of student/teacher ratios for boys, at a 90% confidence level.

In a medium term evaluation of PROGRESA/Oportunidades in the period 1998-2003, Behrman, Parker and Todd study the impacts of the program in grade progression, completion and test scores. The authors consider the differential effects associated with the type of school and the student/teacher ratio with information gathered by the ENCEL2003 evaluation survey. They find that all the schooling outcomes they measure are higher in general and technical secondary schools, than in those schools that rely on teleconferences. (Behrman, Parker, & Todd, 2008). They find that a lower student/teacher ratio also leads to a higher number of grades completed.

Bobonis and Finan consider the impacts of the Mexican CCT on peers living in the same neighborhood as direct beneficiaries in the period 1997-2000. (Bobonis & Finan, 2009) Their hypothesis is that higher enrollment as a product of the condition for cash transfer recipients, can increase student/teacher ratios. The authors do not find substantive evidence supporting this hypothesis, since the number of teachers and student/teacher ratios between PROGRESA schools and non-PROGRESA schools are only slightly different in the first years of the program in secondary schools, but those differences tend to fade out in later years. Moreover, the program schools have teachers only slightly better educated. In general, they do not find evidence of changes in supply due to PROGRESA that could then translate into educational outcomes for peers living in the same neighborhood. Nonetheless, they do not rule out indirect effects of the program as teachers could respond to the increase interest in school in different ways that they cannot analyze with the available data. The evaluators find positive effects of PROGRESA in peer's probability of enrollment and grade progression, and this are

robust to the school quality variables already mentioned. (Bobonis & Finan, 2009, pp. 711-712)

Another study of educational policy outcomes in Mexico compares the outcomes of PROGRESA with those of a supply side intervention, “Apoyo a la gestión escolar (AGE)”, that was implemented in the same localities. (Gertler, Patrinos, & Rubio-Codina, 2007) The AGE Compensatory program included support to school management in the form of grants to parental associations, improvement of infrastructure and provision of school supplies and administrative and pedagogical training to all the educational staff. The study uses a non-experimental approach to find comparison localities, identified as those that did not receive the compensatory program and had less than 25% individuals receiving the cash transfer for the evaluation period. With a targeting index constructed from the 2000 Census data, the study balances covariates among treatment and comparison groups to ensure that their conclusions have causal value. Using a difference-in-difference methodology, the authors estimated fixed effects at the school level and additionally control for other co-existing educational programs. They do not find positive effects for the bundle of the Compensatory program once controlling for the intensity of the cash transfer. Nonetheless, the component of “empowering parents” has a positive effect on preventing failure and repetition. The authors found that incentives for parent involvement in managing and monitoring educational quality have a positive role in educational outcomes and they conclude that “supply-oriented interventions should be redirected towards decentralizing school management and decision-making to the local level once basic input needs have been met.” (Gertler, Patrinos, & Rubio-Codina, 2007, p. 4)

The Mexican CCT PROGRESA/Oportunidades also included a health cash

transfer intended to increase access to health services. Bautista Arredondo *et al.* evaluate the influence of health facilities quality in several outcomes in the period 1997-2000. (Bautista Arredondo, 2008) The evaluation relies on a non-experimental procedure that takes advantage of the roll out of the program during three years to distinguish treatment and comparison localities. The evaluators construct comparison groups from localities that had not received treatment at a certain point in time using propensity score matching. The study elaborates an index considering health facilities quality using the following variables: percentage of areas, supplies, equipment, medicines, and services provided, comparing what they should have or should provide, according to the type of unit. This index serves as a proxy variable to estimate the effect of the quality of health services on a number of outcomes related to prenatal and children's health, metabolic syndrome, older population health and use of services. The study concludes that the index had almost no effect on indicators for specific illnesses but it had a positive effect in the general use of services. These results were considered an indication that the population was "responsive" to improved quality in health services. (Bautista Arredondo, 2008, p. 227)

Programa Nacional de Becas Estudiantiles - Argentina

In the case of the "Becas" program in Argentina, the evaluation considers some supply components when estimating program effects even though the program per se did not include a supply incentive. (Heinrich, 2006) This impact evaluation is non-experimental since it compares treatment and control groups by balancing covariates through matching techniques. The evaluation estimates the differences in educational outcomes between beneficiaries and non-beneficiaries, and beneficiaries of 1-year scholarship versus 2 years of scholarships or more. Heinrich considered several supply

variables among them indicators for school quality such as the average grade of all enrolled students, as well as administrative strategies to communicate and implement the program, including institutional climate and teacher support. She found that institutional capacity and conditions for learning and management had a positive effect on student performance. The evaluation also found a positive effect for the administrative support related to the Becas program in schooling outcomes.

Impact evaluations of CCTs' supply-side components present mixed evidence. Three out of the four programs considered in this section had substantive supply components. Their evaluation had limited internal validity given the lack of data on the supply variables directly affected by the supply-incentive or because there was partial implementation of that portion of the CCT. The conclusions from this set of robust supply evaluations cannot be easily generalized, since they respond to very specific program contexts and they use a variety of methodologies.

The evaluations, nonetheless, yield some insights about the relevance of service quality as well as the effects of the CCT in supply-side measures. The evidence provided suggests a prominent role for the organization and management of schools and the participation of parents in schooling decisions, to promote better schooling outcomes. In the case of PROGRESA the access to institutions and certain type of schools were also related to better schooling outcomes, but it is not clear how the CCT program would affect such variables. In terms of the CCTs' effects in supply availability, one study finds that teacher/student ratios do not increase as a result of the CCT, perhaps an indication of the school's ability to adapt to changes in demand, while the study in Nicaragua recognizes that RPS helped improve supply in some areas that had lower quality schools at baseline. In the context of health services, one out of two studies found some effect for

an index of service quality on the general use of services. More evidence is needed to assess the value of health service features in delivering the expected goals of CCTs.

CONTROLLING FOR THE QUALITY OF SUPPLY

As discussed before, a common issue when including supply indicators in the estimation of program impacts is the lack of information or the inability to correlate evaluation data with other sources. Nonetheless, many times some available school quality information can be included in models that estimate program effects, as well as when creating adequate comparison groups if these are not available by the design of the evaluation. This particular use of supply variables in the assessment of cash transfer programs is crucial to understand the effect of service quality in the outcomes of interest. Moreover, such considerations can shed light on what are some of the important variables to be considered in the context of CCTs' evaluations.

Effects of supply at the school level

The correlation between household outcomes and school and community level characteristics might not be possible when there are no identifying indicators across data sources. Nonetheless, possessing such macro level information can provide insights on CCTs' effects at the school or municipality level. A study of the Bolsa Escola/Familia in Brazil considers the differential effect of the CCT given certain school quality characteristics in girls education at the school or municipality level. Using census data from 1998-2005, the authors consider a wealth of quality indicators such as characteristics of school facilities and teacher training. They find that in general, the Bolsa cash transfer has larger effects in enrollment, drop out rates, grade promotion and repetition in higher quality schools. (Glewwe & Kassouf, 2012, p. 27) Nonetheless, their

approach is limited because they cannot identify what features of supply are valuable to improve individual effects.

Another study considers the effect of PROGRESA in schools performance, as average test grades of all students in each grade. Without identifying particular students or distinguishing between beneficiaries and non-beneficiaries, the authors estimate the effect of having some PROGRESA students in a school's average math, writing and reading scores. (Mancera, Andrade, Barrios, Serna, & García, 2009) They conclude that most of the variation in student performance at the average school level can be explained by individual and socio-economic characteristics of schools. In addition, they find that when controlling for such indicators and school quality, the PROGRESA schools have equal performance as non-PROGRESA schools. (Mancera Corcuera, Serna Hernández, & Priede Schubert, 2008, p. 88)

The influence of supply in program effect estimations

A second group of papers includes supply variables as control variables in their estimation models, that is, they condition their outcome estimations on such variables. In general, these strategies rely on some group of community level features that are used to better isolate the effect of the program on the treated households. This strategy is adequate when even though the cash transfer is randomly distributed at the community level, there are concerns that beneficiaries have access to substantially different services than control households. In such cases, a model controlling for supply features in the community, can accurately capture how these affect individual educational or health outcomes. A set of common supply-side variables included as controls in program outcome estimation are student/teacher ratios and type of school referring to school

organization and distance to school, which is a proxy for the cost of school and it also measures the accessibility to services.

Student/teacher ratios

In general, student/teacher ratios are negatively associated with on educational outcomes such as enrollment in PROGRESA/Oportunidades evaluations. Schultz explains that the teacher/student ratio is high even in rural primary schools in Mexico that received PROGRESA and he recommends a policy that addresses this issue as part of an improvement of service quality. (Schultz, 2004) As discussed in the previous section, Behrman, Parker and Todd provide support to the hypothesis that higher student/teacher ratios are detrimental for grade progression. (Behrman, Parker, & Todd, 2008) Coady finds a negative effect of student/teacher ratios for enrollment at the primary level in Mexico. (Coady, 2000)

A study in Pakistan considers the effects of a female stipend program and it finds that at baseline school quality is worse in the stipend program districts. They measure school quality using infrastructure indicators, such as water, electricity and toilet facilities availability, as well as average enrollment at the school level and student/teacher ratio and private/public schools ratios. When estimating absolute and percent change in girls' enrollment, these variables seem positively related to enrollment but such correlation is not consistent across all models. (Chaudhury & Parajuli , 2012)

The variation of effects of the student/teacher ratio across sites is consistent with the findings of a recent review of school supply effects. In this review, the authors assert that there is a general negative effect on enrollment and other schooling outcomes, but that such effect might be small and as a result of random variation, appear as positive in

some cases. (Glewwe, Hanushek, Humpage, & Ravina, 2014, pp. 38-39)

A common concern with CCTs is that the condition on enrollment might increase student/teacher ratio in schools where beneficiaries enrolled. Parker in a study of PROGRESA/Oportunidades reports that the treatment villages do not show an increase in the student/teacher ratio contrary to the expectations, given the increase in enrollment. She considers that such results might indicate an effective administrative response to the program at the school level. Nonetheless, there is an increase in such ratio in middle schools. (Parker, 2003, p. 8) Bobonis and Finan also report small increases in the student/teacher ratios in treatment schools. (Bobonis & Finan, 2009)

Baez and Camacho include student/teacher ratio and the square feet per student as proxies for educational quality and infrastructure available, respectively in their study the “Familias en Acción(FA)” CCT in Colombia. (Baez & Camacho, 2011) The inclusion of such variables is crucial given that they are assessing the effects of the CCT in student attainment (test scores in Math and Language) as well as the rate of students that finish high school over all the enrolled ones. They do not find substantial gains in these educational outcomes as a result of the FA program. In explaining their results, they point to the quality of schools in targeted areas as well as the effects of increased enrollment in teacher/student ratios, which they are unable to measure since they only possess information at baseline. (Baez & Camacho, 2011, pp. 2-3) Even though they include supply variables in their estimations of main effects, they do not provide information on the direction and significance of such controls. When reporting values at the baseline level, treatment and control are significantly different in terms of the available square feet per student.

Type of school

In the case of several evaluations of the PROGRESA/Oportunidades program evaluators considered the type of school as an important indicator of school quality. In Mexico, secondary schools can be: general, telesecondary (using teleconference delivery) and technical schools. The program has differential effects depending on the type of school beneficiaries assist to. In the case of enrollment, Parker shows that PROGRESA had a larger effect in the enrollment in telesecondary schools and general secondary schools in rural and semi-rural areas. (Parker, 2003) As shown before, medium term impacts of the program in grade progression, completion and test scores, nonetheless, seem to be higher in general and technical secondary schools, than in those schools that rely on teleconferences. (Behrman, Parker, & Todd, 2008). In line with these results, Coady also finds that when the closest school to a student is a telesecondary school, probability of enrollment decreases. (Coady, 2000)

Distance to service centers

Another common supply variable that is included in program outcome estimations is the distance to the service centers. Distance can be considered a measure of the costs of accessing to health and education services. Todd and Wolpin confirm such framework for schooling outcomes by analyzing how distance to school influences enrollment decisions using data from the PROGRESA cash transfer. (Todd & Wolpin, 2006)

When including distance to school as a measure of “access” to school, evaluators obtain mixed educational results. In the case of PROGRESA, villages had to have a primary school in the area to be eligible for the program. For this reason, primary school enrollment is unaffected by the distance to school. Nonetheless, in the case of secondary

school enrollment, the presence of the school is proven fundamental to increase enrollment rates, and in that context, distance to school is negatively correlated with kids attending school. (Schultz, 2004; Attanasio, Meghir, & Santiago, 2012) Skoufias also includes distance to school in his estimation of PROGRESA's effect on enrollment to school and child work, but he does not provide information on the direction and significance of the variable's influence in the studied outcomes. (Skoufias & Parker , 2001) Dubois, De Janvry and Sadoulet confirm the negative correlation between distance to a secondary school and educational outcomes, in their case, for grade continuation. They show distance to school tempers the effects of the transfer, which disappear for children that live more than 3 km away from school. By highlighting such heterogeneity, the authors show that that distance is a condition that affects CCTs effectiveness. (Dubois, de Janvry, & Sadoulet, 2012).

Another study in Colombia concludes that distance to school has also a negative effect in school enrollment, but such effect is smaller than anticipated. (Attanasio, Fitzsimons, Gomez, Lopez, & Meghi, 2008) One study finds contradicting effects for a cash transfer in Cambodia. Evaluators explore the differential effects of the program on those girls that leave further removed from school and conclude that the enrollment effects of the CCT are larger for girls that leave at least four kilometers away from school. (Filmer & Schady , 2006)

In the evaluation of health outcomes, the distance to health centers is also a common proxy for the cost of accessing to services. An evaluation of a CCT in India, concludes that distance to such centers is not significantly related to the uptake of cash transfer and maternal health services. (Lim, Dandona, Hoisington, James, Hogan, & Gakidou, 2010) Other possible strategy to assess health service quality is to analyze

beneficiaries' perspectives on such services, in the same line as the study of PROGRESA previously reviewed. (Bautista Arredondo, 2008) A study in Tanzania considers the effect of the treatment in the perception of public service quality. They find that being a CCT beneficiary does not increase the likelihood of rating school or health facilities higher. (Evans, Hausladen, Kosec, & Reese, 2014)

Creating comparison groups

Supply-side variables are important when trying to establish an adequate comparison group. An evaluation of health outcomes of a CCT in Burkina Faso considers the characteristics of health services when assessing comparability between control and treatment groups. The authors do not include these variables in their estimation of program outcomes. (Akresh, de Walque, & Kazianga, 2012) In the case of a CCT evaluation in the Philippines, the evaluators collect information on the quality of health services (average number of health workers, age of health workers, number of patients and villages served and instruments used) and the characteristics of schools (student-teacher ratio, student-classroom ratio and other educational outcomes at the school level) in treatment and comparison groups to ensure that they are similar on those indicators. (Chaudhury, Friedman, & Onishi, 2013)

In the case of an evaluation of Brazil's Bolsa Familia, the evaluators include school supply measures in their estimation of propensity scores for creating a matched comparison group. They use the number of schools per capita and the number of students per elementary class as indicators of the municipality's school quality. (Brauw, Gilligan, Hoddinott, & Roy, 2014)

Parker uses several school quality indicators, among them how many classrooms

are in use, the number of groups, number of teachers and number of teachers per gender in her study of the PROGRESA/Oportunidades program. (Parker, 2003) She only includes them in the baseline assessment of control and treatment groups, not only to balance them on those covariates but because she considers that the program could change these characteristics. For this reason, if these supply-side measures were to be included in the program estimation they could capture some of the program impact and then lead to an "underestimate" the total effect. (Parker, 2003, p. 18) Baez and Camacho use a similar approach in their study of a CCT in Colombia, that is, they only include baseline school quality information in their models for program effect estimation. (Baez & Camacho, 2011)

Other considerations of supply-side variables

Some cash transfer evaluations consider a bundle of supply and demand side interventions, and thus they understand program outcomes as the effects of these combined strategies. Such is the case of studies of Nicaragua's RPS (Maluccio & Flores, 2005) or Honduras' PRAF (Rackstraw, 2014). Behrman, Sengupta and Todd propose an indirect way of analyzing the effects of supply-side interventions by exploring spillover effects of ineligible children attending schools that receive PROGRESA funds. Such a component of the program was meant to offset any burden to schools given the increase in enrollment. The authors consider that the inexistence of spillover effects is an indication of the lack of supply-side effects for the CCT. (Behrman, Sengupta, & Todd, 2005, p. 260)

Finally, a group of evaluations includes school fixed effects to ensure that they control for some of the unobservable characteristics of schools that might affect

educational outcomes for individuals that attend to the same institution. Some examples include studies of Cambodia's scholarship program (Ferreira, Filmer, & Schady , 2009), another study in Bangladesh (Khandker, Pitt , & Fuwa , 2003) and a study in Colombia (Barrera-Osorio, Bertrand, Linden, & Perez-Calle, 2011). An evaluation of Honduras' PRAF includes fixed effects for the intervention's group, since the cash transfer included supply-side variables by groups. (Rackstraw, 2014) This is a less informative use of supply considerations, since the results do not provide insights on what specific supply elements affect the educational outcomes of interest in CCT evaluations or whether variations of school quality across schools are associated with different levels of program effects.

CHALLENGES IN EVALUATING SUPPLY-SIDE CONDITIONS

Throughout this review, it becomes clear that the studies' emphasis on service quality is not always correlated with the role of supply in the cash transfer program itself. It is more often related to the availability of administrative information on school or health centers supply as well as the original design of the evaluation. In the following sections, I concentrate the discussion on educational outcomes given the limited evidence on the role of supply incentives in health sector CCTs. The evaluations reviewed provide important insights into some of the challenges that any educational study faces. First, data availability is limited and sometimes hard to match with the existing evaluation information, especially if that survey data is collected at the household level.

Second, even when those data are available, there is substantive variation in the types of variables considered as proxies of school quality or management. As shown in the previous section, teacher/student ratio and the modality of the school are commonly

used as indicators of school quality but the results associated with them are mixed. Another set of indicators analyzes school access, for example by using distance to school, which is usually considered a pre-condition for CCTs to work. Finally, school management and administration has a positive effect according to several evaluations, which signals the primary role that schools play in implementing CCTs. The more robust analyses consider a set of these characteristics using individual and school level information. Nonetheless, researchers and evaluators alike struggle to establish an adequate set of supply measures that can help estimate the effect school quality on educational outcomes. There are intrinsic limitations with some of the proxy variables for teachers' characteristics, school infrastructure and access and as mentioned before, the evidence on their effects is not conclusive. (Glewwe, Hanushek, Humpage, & Ravina, 2014)

The need for including service quality indicators is particularly critical when the programs affect initial supply conditions and there are concerns over the “congestion” of services. School management can be instrumental to adapt to such changes in demand, as suggested by the Nicaraguan CCT evaluation. (Maluccio & Flores, 2005) To this respect, evaluations that include supply as an “outcome” are also interesting, even though it is hard to isolate the effect when the strategies on supply and demand are intertwined in the implementation.

Similarly, the studies showed ample variation in the outcome variable considered. Most of the decisions on which program outcomes to measure depends on the program design. Nonetheless, when studying the supply of services it is important to consider which of those outcomes can be effectively affected by changes in the supply of services. Many evaluations of educational CCTs report enrollment rates, attendance or drop out

rates instead of school attainment. Nonetheless, this focus has several limitations and it crystalizes a bias toward reporting access outcomes versus other measure of schooling success, even though the second ones can be more informative of human capital improvement. It is suggestive that in many other studies of the quality of education outside the CCT realm, supply is primarily linked to student learning outcomes such as test scores. (Glewwe, Hanushek, Humpage, & Ravina, 2014)

Third, the role of supply throughout the evaluations analyzed proved to be highly contextual, which makes an in-depth assessment of the existing supply very important. Qualitative studies that collect participant and implementers' observations can be particularly useful to parse out the needs and constraints of existing supply in different developing countries. Such studies coupled with quantitative comparisons of baseline and after program supply conditions are instrumental to understand the effects of school quality.

Fourth, several evaluations encounter issues in defining the right unit of analysis. Many of the cash transfers were randomized at the locality level, partly to avoid ethical problems of withholding treatment and to make implementation easier. Nonetheless, school characteristics might vary within a village and also, within schools themselves and across grades. It is unclear how the models presented in the reviewed papers could estimate and explain intra and inter school variation of student outcomes. One of the papers mentions that beneficiaries and non-beneficiaries would receive the same supply conditions in certain schools, which can produce an underestimate of the supply effect on the treated. (Coady, 2000) In the case of school supply, detailed information on some of the indicators of organization, infrastructure and teacher characteristics can be particularly important to estimate spillover effects.

V. Requirements for optimal evaluation designs

The evaluations in this review present a range of methodologies that vary in their ability to estimate the effects of supply, that is in how well they can attribute measured outcomes to the program (internal validity). The studies also have shown diverse levels of validity in terms of generalizability (external validity). Random assignment to treatment including demand and supply-side interventions, as well as supply-side alone, is a powerful design to ensure adequate comparison and treatment groups. When the study was not designed to consider supply effects, nonetheless, coupling evaluation data with other sources can provide useful estimations as well, as long as the evaluation considers the effects of such supply-side interventions on the outcomes of interest. A variation of this model combines supply and demand programs using statistical modeling and it can also provide useful estimations of program effects. Finally, many evaluations consider supply-side variables in their model, to estimate differential effects of treatment, in some cases through interaction terms, and other include them just to ensure that the accuracy of their program effect estimations.

The available evidence provides some insights on the features of an optimal evaluation of supply-side incentives in CCTs. A best-case scenario is the availability of a robust evaluation design of supply-side policies coupled with CCTs, such as the one present for PRAF. In this design, a supply-side intervention is randomized, most probably at the locality level, and as a result, the evaluator does not need to have extensive information on the existing quality of supply to ensure comparability across treatment and control groups. Nonetheless, the collection of such information proves fundamental in the “real world”, where problems can arise in the implementation of the program and complicate the evaluation design.

The supply component in this best-case scenario design can target a selected characteristic of supply, for example school infrastructure, given the major role played by access to school in CCTs educational outcomes. Not every supply component lends itself to randomization, nonetheless, given that certain features of school quality are difficult to measure and manipulate in the context of program evaluation. School management, for example, is often related to institutional practices and policy changes over which evaluators have little control. In terms of school organization, evaluators can allocate different class sizes or student/teacher ratios to consider supply effects on program outcomes. School inputs and teacher characteristics are also amenable to random assignment across different schools to explore supply impacts on educational indicators. If having to choose one element of supply over the other, evaluators must not only consider the feasibility of their randomization but also how well those elements address service supply limitations in the backdrop of scarce evidence on their effects. Another option is to create a bundle of strategies meant to improve the overall quality of the educational service, but this alternative can face political backlash given the cost associated with it in conjunction with CCT expenditures. In each of these cases, program advocates have to harness support supply improvements and then justify the need for its randomized allocation, which can face ethical and/or legal barriers. Resource constraints might tilt the balance one way or the other but in any case it is important to inform program design and evaluation with a thorough analysis of the supply available in each context and how demand-side incentives interact with the existing services.

More importantly, the evaluator needs to carefully select the variables that can measure program agency beyond the treatment status. This set of variables will fundamentally depend on the context, but they should be linked to what a supply-

incentive can effectively change at the school level. For example, the RPS in Nicaragua disbursed funds to teachers indirectly, but the evaluation did not include an efficient measure of how teachers were affected by such policy beyond the student/teacher ratio. On the part of outcomes, the evaluation should go beyond measures of access to school, such as enrollment and attendance, to explore the effect of supply-side incentives in learning outcomes when these are available. A greater number of these indicators can unpack the mechanisms by which the characteristics of schools can affect educational outcomes and inform education policy.

In fact, beyond the evaluation of supply-side incentives in the framework of CCTs, the present review has highlighted the lack of information on the general availability of educational and health supply. More studies in this direction can help understand how supply of these services reacts to an increase in demand. If evaluations incorporate a greater wealth of supply variables, then they will also provide insights on how the cash transfer effects vary across different levels of supply. An emphasis on schools' organization and management could be adequate to explain variation in student outcomes across schools. If these measures are built-in to a data collection procedure, especially in the context of the administrative data already available to track fulfillment of conditions, then policy-makers will have a more complete picture of how CCTs lead to improvements in human capital outcomes and poverty reduction.

Conclusion

CCTs might not be a magic bullet for human capital improvement in developing countries if they are conditioned on a supply that is inefficient, difficult to access or of poor quality. By reviewing the available impact evidence on the different ways in which supply influences CCT program outcomes, I have demonstrated the need for further research on several aspects. Rigorous estimates of how the supply of health services shapes preventive health outcomes remains thin compared to qualitative studies on those characteristics. A similar story appears in the context of educational outcomes, with a large number of evaluations based on the same supply-side variables and a limited number of outcomes, which only suggest the mechanisms that increase access to schools but do not address processes that provide better learning outcomes.

This review has limitations in terms of access to resources and gray literature on the topic. Nonetheless, it provides a rough picture of how CCT impact evaluation evidence deals with supply-side incentives and measures. A more complete study could also include an analysis of non-CCT evaluations, such as those that center on unconditional cash transfers which are also heavily based on the assumption that there is an adequate supply of services.

Throughout the review, the relevance of school organization was highlighted with evidence from several studies, in terms of school modalities and student/teacher ratios. Impact estimations as well as considerations on the implementation of the supply-side programs highlighted the need for a more nuanced understanding of how school management influences a variety of schooling outcomes. The small number of evaluations that estimated effects of supply-side interventions found no positive effects

for such component of the CCTs but their impact estimations faced several limitations, among them partial implementation or treatment identification problems. More evidence on supply-side features can provide information needed to adapt CCTs to other contexts outside of Latin America, as well as help these programs evolve to ensure that they accomplish the longer-term objectives of poverty reduction.

Appendix

METHODOLOGY

Searching Protocol

The search methodology included a pool of impact evaluations of conditional cash transfers of which only those with some reference to supply were considered. The final subset of robust evaluations of supply included effect estimations for supply on individual educational and health outcomes.

Table 1: Screening Procedure for the sample of studies

Searching Procedures			Number of Articles
Phase 1: impact evaluations of CCTs	Electronic search		139
	Unable to access		12
Phase 2: separate ineligible articles	Articles considered		32
	Reason Ineligible	Qualitative evaluation	9
		Implementation evaluation	21
		CCT/UCT or just UCT evaluation	20
		Impact evaluation without supply considerations	57

Phase 3: analysis of supply	Articles with robust methodology	11
	Other articles with supply considerations	21

Some of the screening questions considered in the review of the papers was: What supply component does the intervention include? What is their methodology: experimental, quasi-experimental or non-experimental and which supply variables do they include? How accurate and informative are their school quality indicators? Where do they find information about supply? What are the limitations of the study?

Sources considered

The search for papers covered several electronic search engines and databases, as well as website repositories of evaluations and agency specific sites. Moreover, the paper search also included other meta-analysis bibliographies and an extensive search guided by program designs, to find evaluations of those programs that included a supply-side component.

Databases: Ebsco, JSTOR, Social Science Citation Index, IE3 Impact Evaluations

Publisher platforms: Wiley Interscience, Sage Journals, and CAB Direct

Websites: Internal Food Policy Research Institute, USAID, Centre for Global Development, World Bank Research Observer, Independent Evaluation Group, UNESCO, UNICEF, ResearchDFID, ILO, Poverty Action Research Lab, International Policy Center for Inclusive Growth, Overseas Development Institute, Transfer Program, Governance Resource Centre, IDEAS.

Bibliographies of several papers, among them, (Baird, Ferreira, Ozler, & Woolcock, 2012; Adato & Hoddinott, Conditional Cash Transfer in the Second Decade: Current Debates and New Frontiers, 2010; Fiszbein & Schady, 2009; Rawlings & Rubio, 2005; Reimers, da Silva, & Trevino, 2006; Morley & Coady, 2003)

SUMMARIES OF MAIN STUDIES

Table 2: Studies Included in this review

Paper	Evaluation Design	Outcomes	Supply Variables	Conclusions on supply
IFPRI, 2003, <i>Proyecto PRAF/IBD: Impacto Intermedio</i>	Experimental method with 70 municipalities assigned randomly to four different groups: 1) demand side intervention only for 20 municipalities, 2) Demand and supply side interventions for 20 municipalities, 3) Supply side intervention only for 10 municipalities, 4) Control group without intervention for 20 municipalities. The evaluation focuses on the supply-side incentives alone (group 3) and the supply and demand program (group 2). The study estimates the mean impact of offering the treatment	<ul style="list-style-type: none"> • Health services access • Enrollment • Attendance • Enrollment • Drop-outs • Consumption 	<ul style="list-style-type: none"> • Supply is controlled by design 	No positive program outcomes for the supply intervention or the combined supply/demand strategy, even though the evaluation finds positive outcomes for health services uptake and school enrollment, attainment and drop-out rates for the conditional cash transfers alone.

	(intent to treat strategy).			
Glewwe & Olinto, 2004, <i>Evaluating the Impact of Conditional Cash Transfers on Schooling in Honduras: An experimental approach</i>	Same experimental design as above for the period 2000 to 2002, with baseline-follow up estimations as well as intermediate ones.	<ul style="list-style-type: none"> • Enrollment • Drop-out rates • Attendance • Grade promotion • Labor force participation • Simulation of final school attainment 	<ul style="list-style-type: none"> • General information on the school (days open, number of grades, etc.) • Characteristics of teachers) • Pedagogical aids (library books, dictionaries, paper etc.) • School organizations (PTA, teachers association, etc.). 	In contrast with the success of demand side interventions, the supply side intervention had no effect on any outcomes, which is not surprising given that most parts of it were never implemented by the follow up year, 2002.
Morris, Flores , Olinto, & Medina, 2004, <i>Monetary incentives in primary health care and effects on use and coverage of preventive health care interventions in rural Honduras: cluster randomised trial</i>	Experimental evaluation of the health portion of the PRAF conditional cash transfer, consisting on transferring resources to peripheral health service centers. Results are limited because the resources to health centers were not fully implemented when the evaluation was conducted due to legal issues.	<p>Indicators of service use</p> <ul style="list-style-type: none"> • Antenatal care • 10-day post-partum check-up • Child taken to health center at least once in last 30 days <p>Indicators of coverage of preventive health interventions, including Tetanus, Measles, DTP1/pentavalent vaccines and weight.</p>	<p>Municipality-level features</p> <ul style="list-style-type: none"> • Mean (SD) number of doctors or nurses, or both, in government health centers per 10000 population <p>Household-level features:</p> <ul style="list-style-type: none"> • Median (IQR) distance to nearest health center, on foot, in min 	The evaluation finds no significant effects for the supply-side intervention. The lack of effects could be explained by the partial implementation of the service-level incentive.
Coady, 2000, <i>The Application of Social Cost-Benefit Analysis to the</i>	The study uses a quasi-experimental strategy to analyze the	<ul style="list-style-type: none"> • Enrollment • Attendance levels • Completed years of education 	<p>For secondary school students:</p> <ul style="list-style-type: none"> • Distance to the closest secondary 	No difference in program outcome estimation when including supply-

<i>Evaluation of Progresa</i>	<p>effect of supply-side improvements in a series of educational outcomes. The identification strategy consists in combining data from the experimental design with information on school quality, by assuming that students assist to the school that is closest to them. There is potential for bias of these estimates since localities are very close to each other, and therefore, children might need to assist to school in control communities.</p>		<p>school and its square</p> <ul style="list-style-type: none"> • Type of secondary school available. • Education level of the teacher. • Percentage of children who reported failing the previous year <p>For primary school students:</p> <ul style="list-style-type: none"> • Student/teacher ratio • Distance to school 	<p>side variables in program effects estimations for secondary schools, and slightly smaller effects for primary school. There is no evidence of a differential improvement of supply in treatment communities, but the study does not rule out that school quality improved in both treatment and control communities. Greater distances to school and only having a telesecondary school, decreases probability of enrollment. Student/teacher ratio has a negative effect on enrollment.</p>
Coady & Parker, 2002, <i>A Cost-Effectiveness Analysis of Demand and Supply Side Education Interventions: The case of PROGRESA in Mexico</i>	<p>This evaluation adopts a similar non-experimental approach as the previous one to analyze the effect of supply side-measures in conjunction with the cash transfer. It incorporates information</p>	<ul style="list-style-type: none"> • Enrollment 	<ul style="list-style-type: none"> • Distance to the closest secondary school and its square • Type of secondary school • Education level of the teacher • Percentage of children who reported failing the previous year • Teacher/student 	<p>By including supply controls, the study concludes that conditional cash transfers are principally running the program results. Distance to school was an important determinant of enrollment.</p>

	about school construction to test the effects of the CCT for different levels of school access.		ratio	Other school quality indicators showed mixed results. Teachers' human capital had a positive effect on girls' enrollment and negative effects of student/teacher ratios for boys, at a 90% confidence level.
Gertler, Patrinos, & Rubio-Codina, 2007, <i>Do Supply-Side-Oriented and Demand-Side-Oriented Education Programs Generate Synergies? Evidence from Rural Mexico</i>	Non-experimental comparing a CCT with a School Management Program. The study identifies comparison localities as those that did not receive the compensatory program and had less than 25% individuals receiving the cash transfer for the evaluation period. The evaluation uses a targeting index constructed from the 2000 Census data to balance covariates among treatment and comparison.	<ul style="list-style-type: none"> • School- aggregate probability of failing an exam • Repetition rates • Dropout rates 	Compensatory intervention as a package and divided into the three components: <ul style="list-style-type: none"> • School Management Support (AGEs) to parent and teacher associations • Supplies provision • Teacher and administrative staff training. 	No positive effects for the bundle of the Compensatory program once controlling for the intensity of the cash transfer. The component of "empowering parents" has a positive effect in reducing failure and repetition.

Bautista Arredondo, 2008, <i>Ten years of Oportunidades, Effects on Health Service Utilization and Health Status</i>	Non-experimental approach based on the time spent on the program (all localities included are treatment localities). Comparison groups created through propensity score matching. The groups created were: treated in 1998, treated in 2000 and control in 2003. Supply variables are considered at the locality level.	<ul style="list-style-type: none"> • Number of prenatal visits • Doctor attended birth • Children sought attention in the previous two weeks • Biological measurements of the women evaluated for metabolic syndrome • Older population health condition, coverage and use of services 	<ul style="list-style-type: none"> • Community characteristics in terms of low/medium/medium-high/high structural quality • Health clinic, community clinic and private. 	The health service quality index had almost no effect on indicators for specific illnesses but it had a positive effect in the general use of services. These results were considered an indication that the population was “responsive” to improved quality in health services.
Behrman, Parker, & Todd, 2008, <i>Medium Term Impacts of Oportunidades Conditional Cash Transfer on Rural Youth in Mexico</i>	Quasi-experimental study. It evaluates the differential effect of the program on children that assist to certain type of schools using school quality indicators at the municipality level.	<ul style="list-style-type: none"> • Grade progression (completed) 	<ul style="list-style-type: none"> • Type of School • Teacher/student ratio 	Medium term impacts of the program in grade progression, completion and test scores are higher in general and technical secondary schools, than in those schools that rely on teleconferences. A lower student/teacher ratio also leads to a higher number of grades completed.
Bobonis & Finan, 2009, <i>Neighborhood</i>	Non-experimental analysis that	<ul style="list-style-type: none"> • Enrollment (peer effect) • Grade Progression 	<ul style="list-style-type: none"> • Type of school • Number of groups and classrooms 	The evaluation finds no substantive

<i>Peer Effects in Secondary School Enrollment Decisions</i>	considers the effects of PROGRESA in non-eligible children living in the same village as PROGRESA beneficiaries. They consider PROGRESA as an exogenous shock to secondary school participation (an instrumental variable approach). Improvements in supply are used to rule out alternative explanations of enrollment improvements and as sensitivity tests for their estimates including supply variables.	(peer effect)	<ul style="list-style-type: none"> • Number of teachers • Teacher/student ratio • Teacher qualifications • Enrollment levels 	evidence of changes in supply due to the CCT. The number of teachers and student/teacher ratios is only slightly higher in PROGRESA schools, as well as teachers' educational level in those schools. The study cannot rule out indirect effects of the program as teachers could respond to the increase interest in school in different ways that they cannot analyze with the available data.
Maluccio, Murphy , & Regalia , 2009, <i>Does Supply Matter? Initial Supply Conditions and the Effectiveness of Conditional Cash Transfers for Grade Progression in Nicaragua</i>	Quasi-experimental. The evaluation relies on random assignment of the program with an intent-to-treat approach. This evaluation incorporates supply-side	<ul style="list-style-type: none"> • Number of approved grades progressed between the baseline survey and a later period • Schooling conditions 	<ul style="list-style-type: none"> • Time to school (at the child level) • School autonomy, • Number of grades offered, • Student-teacher ratio • Textbooks per student) 	RPS was more effective in areas with autonomous schools, suggesting flexibility at the school level better, enabled schools to respond to changing demand conditions. In

	variables at two levels: 1) it conditions program effect estimations on initial supply, 2) it estimates effects of the program on schooling supply. Cross-over design to estimate effects over 4 years.			areas with poor initial school supply conditions, the program was relatively more effective in improving school supply as measured by grade availability, number of sessions per day and number of teachers.
Heinrich, 2006, <i>Demand and Supply-Side Determinants of Conditional Cash Transfer Program Effectiveness</i>	In this study, non-experimental methods are used to assess the impact of Argentina's Becas program on students that receive the scholarship compared to those that did not, as well as those that had the Becas for different periods. A multi-level estimation is used to estimate the effect of school quality and management variables on educational attainment and performance in school.	<ul style="list-style-type: none"> • Student school attendance and absences • Grade repetition • Performance (grades) • School completion rates. 	<ul style="list-style-type: none"> • The grade average of all enrolled students • A rating (1–10) of the effectiveness of communication and the execution of program procedures by school administrators • A rating (1–4) of the contributions of the Becas program to retention of students • A rating (1–4) of the importance of school attributes that contributed to effective functioning of the Becas program 	Institutional capacity, conditions for learning and management had a positive effect on student performance. The evaluation also estimated a positive effect for the administrative support related to the Becas program in schooling outcomes.

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