

Understanding the factors that matter in the implementation of Bolsa Família

Using an analysis of federal datasets to look inside the programme's 'black box'

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Published by the RAND Corporation, Santa Monica, Calif., and Cambridge, UK

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Preface

Through ESRC/DFID Award RES-167-25-0563, a three-year grant from the UK Economic Social Research Council (ESRC) and Department for International Development (DFID), RAND Europe and the Institute for Fiscal Studies (IFS) assessed the effectiveness of conditional cash transfer (CCT) programmes in low- and middle-income countries. By analysing the impact of external conditions on CCT programmes at both the institutional and household level we aim to address some of the gaps in our understanding of the effectiveness of CCTs, and therefore to contribute to more efficient government programmes to alleviate short- and long-term poverty.

CCTs have been extensively evaluated, but important questions remain unanswered. CCTs produce extremely varied results in different contexts. We need to understand how this variety is explained by environmental factors, by the availability of health and education services, and by individual background variables. We need also to understand the mechanisms by which CCT programmes secure the results they do. Without this knowledge we cannot determine whether CCTs are likely to alleviate poverty effectively in the current economic climate.

This report looks specifically at factors involved in the delivery of Bolsa Família, a large CCT programme in Brazil. It tries to establish which factors are associated with more effective implementation.

This report is directly relevant for policymakers and those involved in the administration and design of CCT programmes.

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Summary

This report (part of the wider research project under ESRC/DFID Award RES-167-25-0563) aims to promote a greater understanding of how the ‘black box’ of implementation in a conditional cash transfer (CCT) programme interacts with the quality of implementation. The ‘black box’ of implementation refers here to factors both within the programme itself and externally, all of which may influence the outcome of the programme. These include the capacity of municipalities; the supply of services; the integration of services; geography; political motivations; levels of poverty; and urban versus rural contexts.

Bolsa Família in Brazil and similar CCT programmes have been established in Latin America and other continents and countries such as the Philippines, Indonesia, Uganda and India. Evidence suggests that CCTs help to raise household expenditure and promote the take-up of health and education services, contributing in some cases to significant reductions in poverty rates (Fiszbein & Schady 2009; Fried 2012). Impact evaluations have increased our understanding of the relationship between the coverage of beneficiaries, targeting of households and incentive levels (level of benefits) in a CCT programme with the effectiveness of these programmes at household level (Fiszbein & Schady 2009). However, our understanding of which factors – both within a programme itself and externally – influence the success of a CCT remains limited. This in turn constrains our knowledge about what works in what context, which is of crucial importance as CCT programmes spread across the globe.

This report seeks to shed further light on the ‘black box’ of a CCT by reviewing relevant Brazilian federal datasets and modelling associations between key variables. The ‘black box’ of implementation refers to a range of programme and external factors which may affect the outcome of a CCT programme. Programme variables can refer to the capacity and resources of those implementing Bolsa Família (BF), as well as the provision of health and education services. External variables consist of political, demographic and geographic factors. Regarding outcomes, the report looks at the municipal level of implementation and examines the quality of registrations and compliance with conditionalities at local level.

The report’s findings on the nature of poverty in municipalities suggests that, overall, resources are perhaps less important than the way in which municipalities implement the BF programme. The supply-side appears to matter, both in terms of the quality of BF services and how they are provided. As a result, the report suggests that those designing CCTs should invest more resources in thinking about how local services are supplied, coordinated and integrated.

Acknowledgements

The authors wish to thank Simon Chorzlewski for his background work for this paper, Alex Kokkoris for his editing work, and Catalina Gomez for assistance in gathering and making sense of the data. Any remaining mistakes are our own. This research was made possible by ESRC/DFID Award RES-167-25-0563, a three-year grant from the UK Economic Social Research Council (ESRC) and Department for International Development (DFID).

1. Introduction to Bolsa Família

Bolsa Família (BF) is a conditional cash transfer (CCT) social-development programme that seeks to alleviate poverty and build human capital by providing financial support to households in poverty. Households receive financial support as long as they comply with certain conditions such as agreeing to appropriate vaccinations and regular health check-ups for mothers and their children, and ensuring that all children attend school (Fiszbein & Schady 2009). In addition, the programme seeks to empower beneficiaries by linking them to complementary services such as local social and municipal services, and other state-sponsored or federal government programmes. BF is fully funded by the Brazilian federal government.

Introduced in 2003, the BF programme combined a number of earlier federal Brazilian CCT programmes – the Bolsa Escola, Bolsa Alimentação, Cartão Alimentação and Auxílio Gas, which were aimed respectively at improving school enrolment, household food consumption, and lowering household fuel costs. The programme is strongly identified with the former President Luis Inácio Lula da Silva (Hall 2011; Hunter & Power 2007). It currently covers all Brazilian poor, equivalent to over 13 million Brazilian households or about one-quarter of the total population (Hall 2011). As such it is the largest CCT of its kind in the world. As of 2008, only four out of the country's 5564 municipalities had not signed an agreement with the federal government to implement the programme (Sánchez-Ancochea & Mattei 2011).

An important feature of BF is the decentralised manner in which it is administered (Lindert et al. 2007). The Ministry of Social Development (MDS), created in January 2004, sets the overall social protection policy and supervises the implementation of BF. Secretariats in the MDS are responsible for overseeing the programme and its registry; selecting beneficiaries; authorising payment; complying with conditionalities; training municipal managers; coordinating with other ministerial departments that implement other parts of the government's social policy; and undertaking impact evaluations and wider monitoring.

Municipalities have a wide range of roles. These include providing a local point of contact or BF coordinator; registering beneficiaries, monitoring health and education conditionalities; monitoring local programmes; and referring BF beneficiaries for other services. As such, municipalities are the main interface between BF and its beneficiaries. Most municipalities have created a specific BF implementation unit tasked with registering eligible households, updating the registry, and providing an interface with claimants. These BF units are part of the social assistance unit at municipal level. Other units of the municipal administration such as the education and health units, and Centros de Referência de Assistência

Social (Social Assistance Reference Centres; CRAS) do play a role in the implementation of BF, but their involvement is variable across Brazilian municipalities.

Interestingly given their importance in the Brazilian federal system, the states have traditionally had a more limited role in BF (Lindert et al. 2007). They mainly provide training and support to municipalities, though their role has expanded more recently to include greater involvement in ensuring consistency of implementation and some overseeing of municipalities. Other parties involved in administering BF include the Caixa Econômica Federal, which manages the national registry database and provides unique identifiers and electronic payment cards; the Ministries of Health and Education, which have responsibility for the guidance and training of municipal officers in relation to conditionalities, and for providing information on compliance to the MDS; the General Controllers Office (CGU), the Federal Audits Court (TCU), and the Office of the Public Prosecutor (MP), which are control bodies responsible for formal oversight.

Finally, BF uses a performance-management system. The programme monitors the quality of implementation by tracking the accuracy of registrations and by measuring the degree of compliance with conditionalities.

2. Implementing Bolsa Família: into the 'black box'

Most literature on BF consists of case studies on implementation, highlighting the importance of many factors – both within BF and externally – and examining their influence on the programme's effectiveness. These factors include the capacity of municipalities; the supply of services; the integration of services; political motivations; levels of poverty; and urban versus rural contexts.

2.1. Municipal capacity

Municipal capacity is generally seen as a significant problem in the effective implementation of BF. This is confirmed by a number of anecdotal studies that have looked at municipal capacity in different places. One study points to difficulty in gathering data on eligible families (Sánchez-Ancochea & Mattei 2011).

Rio Branco, in the state of Acre and with a highly mobile population, is an example of a remote municipality with a severely limited administrative capacity. Before the BF programme the local administration lacked any systematic and up-to-date registry of its population. The registries that did exist, like the Bolsa Escola CADBES registry, were not compatible and could not be integrated into the Cadastro Unico (the unified BF registry). The municipal government relied on local civil society including the university in a concerted reform effort, reducing the total number of eligible families by about 30 per cent by updating the registry and deleting double entries (Lindert et al. 2007).

Producing timely data measuring compliance with conditionalities has also exceeded the capacities of many municipalities, especially poorer ones. In 2005, only 55 per cent of hospitals provided reporting data (Fiszbein & Schady 2009). In 2009 the health information provided for recipients was still only 63 per cent (Bastagli 2010). In addition, there were few consequences associated with non-compliance. Only in 2007 did the authorities start cutting benefits because of non-compliance, but overall the measuring of compliance remains a challenge (Bastagli 2010). Slow capacity building could explain the relative performance of municipalities, while early adopters of previous programmes like Bolsa Escola appear to have a significant advantage because of their experience with such programmes (Fenwick 2009).

The national government has tried to address this issue in municipalities like Vitória in the state of Espírito Santo. In Vitória the local infrastructure was lacking in several respects. The result was an intense overhaul of many local governmental institutions and the adoption of new responsibilities including reaching out to families, upgrading local information technology, establishing national semi-monthly supervisory meetings, providing training for local staff and coordinating with local pre-schools. The results of this overhaul have been very positive. The number of children benefiting from the programme

tripled within two years, malnutrition among that group was halved to seven per cent and the risk of malnutrition fell to 12 per cent (Lindert et al. 2007).

2.2. Quality of education and health services

Supply-side issues, such as substandard educational and medical institutions, have a significant negative influence on the success of CCTs like BF (Rocha 2009). The less-developed northeast of Brazil is home to 49 per cent of all families receiving cash transfers through BF (Fenwick 2009). Schools and health centres are often inadequate and access to these facilities can be difficult. Public health expenditure per capita in 2006 was 42 per cent higher in the southeast compared to the northeast (Sánchez-Ancochea & Mattei 2011). These severe geographical differences exist not only in healthcare but also in the educational sector. As Sánchez-Ancochea and Mattei (2011) describe it: “In 2000 spending in education per capita was three times higher in Roraima than in Pará and all the states in the northeast were below the Brazilian average. Unfortunately, differences in spending have changed little in the last decade.” Without a proper supply infrastructure, the impact of any intervention is expected to be limited. CCTs “can themselves only function properly in terms of strengthening demand for and democratizing access to basic social services such as education and health if the actual supply of such services is adequate in the first place” (Hall 2008).

2.3. Coordination and integration of services

Coordinating different levels of government and local institutions proves challenging in many contexts. Other CCTs like Youth Agent, a programme for young children in the Brazilian city of Campinas, encountered similar issues, including serving families twice or being unable to combine different registries (Schwartz & Abreu 2007). Lindert et al. (2007) identify three areas of coordination problems: third-party principal agent problems (i.e. third party providers not having good incentives to deliver services); the heterogeneous quality of implementation; and interaction between the BF and other local programmes.

Integration of services is also a clear factor in the successful implementation of BF. Evidence from studies suggests that integration of services has clear benefits for service users, although integrating social policies seems to be a difficult process. In general, Sánchez-Ancochea (2011) notices a “limited integration between different components of the system” in local Brazilian administrations. When looking at the implementation of the BF in Manguinhos, Magalhães et al. (2011) identify this lack of integration between local governmental and quasi-governmental institutions as a major limiting factor in the programme’s success.

On a national level, large-scale governmental programmes remain disconnected or run parallel. There are, however, some instances of successful vertical integration in which BF has been linked with other social programmes, including coordinated or joint payments.

However, progress can be made. Some municipalities like São Paulo and Belo Horizonte have shown significant progress in the integration of health, education and employment support by coordinating the efforts of BF with local initiatives (Lindert et al. 2007). These are normally well-financed initiatives

introduced by state or city governments such as public health campaigns and social programmes aimed at the poor.

2.4. Political motivation

The relationship between political motivation and successful implementation of BF is also important. The Brazilian states have significant power under the country's federal system, resulting in a heterogeneous range of policies nationwide. Minimising the involvement of the states and organising the project mostly at the national and an empowered municipal level is seen as one of the reasons for the success of the CCT programme in Brazil (Fenwick 2009). Even though BF was closely associated with President Lula, the programme and its predecessors were supported by a large number of political parties. Because of the absence of strong partisan identification, the programme was accepted in many cases by mayors of other party affiliations at the local level (Sugiyama 2012). Financial support and the allocation of BF funds do not seem to be determined by municipalities' party affiliation. Fried (2012) compared the number of families eligible for financial support through the BF programme with the number of families actually receiving support, finding that variations in the distribution of support did not correlate with the affiliations of local politicians. Bypassing governors at the state level is also seen as beneficial for the BF because of these governors' ability to severely constrain national policies and limit their effectiveness. The BF's direct contracts between national government and the municipalities have circumvented that risk (Fenwick 2009).

However, there also appears to be an interesting relationship between electoral gain and successful implementation of BF, as shown by examining the relationship between municipal elections and BF performance. Good performance – or more precisely, absence of “public denunciations of illegitimate inclusion of beneficiaries” – results in a 26 per cent increase in the chance of winning a subsequent election (Janvry 2005; Janvry, Finan & Sadoulet 2010), and this positive influence of successful BF programmes on election results seems to be understood by local politicians. If a mayor is running for a second term, the programme's impact increases by 36 per cent compared to mayors already in their second term who cannot be re-elected, meaning that the performance of the BF programme depends upon whether the respective mayor is eligible for re-election or not (Janvry 2005).

BF is also said to have been used to gain popularity by politicians at municipal level (Hall 2011). A recent analysis of state elections at municipal level suggests that the popularity of CCTs has a positive effect for the incumbent in general. Interestingly, this effect is independent of party affiliation (Zucco 2011). From this perspective, one could hypothesise that a better performance in BF implementation would be expected in municipalities where there are a larger proportion of eligible families.

2.5. Municipal poverty levels

Extreme poverty has a detrimental effect on the educational impact of BF. Even if the programme achieves its goal of increasing participation in the school system, children of extremely poor families are likely to start with a significant disadvantage (Fiszbein & Schady 2009). This may be one of the reasons why the school system has been largely unable to capitalise on increased attendance and hasn't been able

to produce notable increases in educational parameters (Sánchez-Ancochea & Mattei 2011). However, the effect on educational outcomes is a point of contention and progress is judged more positively in other studies (Hall 2011). In addition, the poor and extremely poor have less access to public medical and educational services, widening the gap between classes and limiting BF's impact on the health of those most affected by poverty (Soares, Ribas & Osório 2007). Health parameters show a persistent inequality in health and in access to healthcare between different groups of the population. As a result child mortality, for example, is 138 per cent higher among the indigenous population and 37 per cent higher in the black population compared to the white population (Rocha 2009).

Targeting the delivery of support is a challenge for many CCT programmes. Overall, the BF is seen in some papers as being very good at targeting (Bastagli 2010) although it still suffers from significant exclusion rates due to problems with the enrolment of specific groups and populations. Enrolment in the BF is voluntary but requires potential beneficiaries to provide specific items of information such as identity cards and a verification of their place of residence. As such, some authors argue that the families most reliant on BF cash transfers might be excluded because they are unable to provide the necessary paperwork (Sánchez-Ancochea & Mattei 2011; Soares 2011). Additionally, information about BF and the availability of financial support reaches different households to different degrees (Ferreira, Jimenez & Holzer 2011). These problems are also mentioned by Fiszbein and Schady (2009), who suggest that 'household constraints' – meaning a family's ability to take advantage of the provided governmental assistance programmes – could limit the effectiveness of CCTs.

2.6. Urban versus rural contexts

The urban or rural nature of the place in which BF is administered may have an impact on the effectiveness of a programme (Ferreira, Jimenez & Holzer 2011). However, the evidence is mixed. Rural areas show higher drop-out rates from the programme but a greater degree of success in terms of outcomes overall. In the Mexican Oportunidades programme, a nationwide CCT with similar conditions to BF, this has been visible through higher drop-out rates among the poorest families living in remote, mostly rural, areas (Bastagli 2010). However, this does not mean that families in urban environments can take better advantage of the BF programme. In fact, the opposite seems to be the case, and BF appears to be less effective in helping the urban poor move out of poverty than it does in assisting poor families in rural areas, where the programme has proved more effective (Sánchez-Ancochea & Mattei 2011). When looking at regional and supply-side issues the effects seem to be multi-layered, and in some cases work in contrary directions.

2.7. Towards research hypotheses

In summary, the literature, though in places quite anecdotal, suggests a number of hypotheses that can be tested further in the modelling for this paper:

- Low-capacity municipalities have a poorer quality of BF implementation
- Larger municipalities with more resources have better quality of implementation
- Good-quality service provision is significantly associated with good implementation

- Lack of coordination and integration leads to lower quality of implementation
- There is an association between electoral gain and quality of implementation
- Extreme poverty of the municipality is associated with more problematic implementation
- The rural and urban context should not matter in the quality of implementation

3. Methodology

3.1. Defining the variables

Brazil lends itself well to a study looking at the ‘black box’ of a social protection programme. Firstly, it is a large country with over 5564 municipalities operating in different geographical and local policy contexts, giving an opportunity to see a federal programme being implemented in a range of different local contexts. Secondly, Brazil, unlike some other mid-income countries, has good and recent federal datasets in a number of areas related to the ‘black box’ of implementation covering most municipalities. Finally, as discussed earlier, BF is one of the few CCTs that have an explicit quality-of-implementation measure against which all municipalities are assessed, the Decentralized Management Index (Índice de Gestão Descentralizada; IGD). This index also provides a performance incentive. On the basis of the IGD score, municipalities are given additional programme resources. Initially, these resources consisted of providing municipalities with an increased quota, allowing them to enrol new families into the BF programme. As the coverage of the programme has expanded, however, municipalities have been given more discretion on how to use these additional resources. The number of municipalities that qualify for additional programme support has increased as IGD scores have improved over time.

This report analyses these datasets and seeks to establish the associations between programme and external variables and the quality of BF implementation in municipalities. These associations are based on a snapshot analysis of the data covering the period of 2009–2010 or the most recent available data. As such, the analysis is not longitudinal.

Programme and external variables included in the analysis are given in Table 1 and fall into five main categories:

- Municipal capacity variables such as per capita municipal budgets and resources
- The provision of services at municipal level including supply-side variables such as the quality of education and health provision and the way services are integrated or not at the municipal level
- Political variables such as electoral outcomes and elections
- Demographic variables such as poverty levels and ethnicity
- Geographic variables such as regions.

Most of these variables were collected in the year 2010, except the following variables from the year 2011: political variables, the health service performance index (IDSUS), basic education index (IDEB), and binary variable for presence of food card programme. In addition, these data come from a variety of sources collected using a variety of survey instruments. The preliminary 2010 Census poverty estimates are from the Ministry of Social Development and Fight Against Hunger, collected through household surveys. The Brazil census classifies population groups mainly on the basis of skin colour and whether they belong to indigenous groups. The data related to electoral outcomes were obtained from the website of Estatística TSE (Estatística TSE homepage 2014). These political variables correspond to the results of 2008 municipal elections. The municipal financial information was taken from the Secretaria do Tesouro Nacional (Treasury Secretariat) of the Ministério da Fazenda through the report *Finanças do Brasil: Dados Contábeis dos Municípios 2010*. We also use data (from 2010) related to basic social protection services provided through social assistance centres called Centros de Referência de Assistência Social (CRAS).

The health service performance index (IDSUS) for year 2011 is a composite index on a scale of 0 to 10. The Ministry of Health assigns this index after giving consideration to a variety of factors including population, socioeconomic background and child mortality. IDSUS encompasses three sub-indices: socioeconomic development (IDSE), health conditions (ICS) and structure of the municipality's health system (IESSM). It captures the level of access and quality of health service based on these three indices and groups the municipalities into six homogeneous groups according to their score.

The basic education index¹ (IDEB) for the year 2011 was developed by the Anísio Teixeira National Institute for Educational Studies and Research (INEP) under the Ministry of Education to measure the flow and quality of education on a scale of 0 to 10. We used the IDEB values for fourth-grade students in schools administered by municipalities.

We created composite indices (v3249_total to v3261_total) for relationship between CRAS and other services, programmes or institutions in each municipality. Each index, on a scale of 0 to 8, was developed from the following conditions and the satisfaction of each condition counted as one point in the index.

1. It has location data (address, phone, etc.)
2. Accepts users referred by this CRAS
3. Forwards users to this CRAS
4. Tracks your referrals
5. Holds regular meetings
6. Information exchange
7. Performs case studies together
8. Carries out activities in partnership

¹Source:

http://download.inep.gov.br/educacao_basica/portal_ideb/o_que_e_o_ideb/Nota_Tecnica_n1_concepcaoIDEB.pdf

Table 1: Names and codes of the variables available for regression

Variable Code	Details
<i>Variables related to revenue and finance (C)</i>	
Top100_GDP	Municipality is in the list of 100 most revenue (GDP) generating municipalities
PC_Budget_Revenues	Per capita budget revenues (R\$)
PC_Transfer_Intergov_Union	Per capita transfers from federal government (R\$)
PC_Transf_Intergov_State	Per capita transfers from state (R\$)
PC_SUS_Union	Per capita transfer from Resources Health System (R\$)
PC_FNAS	Per capita transfer of resources from National Social Assistance (FNAS) (R\$)
PC_FNDE	Per capita transfer of resources from National Education Development (ENDF) (R\$)
<i>Variables related to other programmes (S)</i>	
presence_of_Food_Card	Presence of food card program in the municipality (1: yes, 0: no), Data from the year 2011
IDSUS	SUS performance (health service) index, data from the year 2011
IDEB	Basic Education Development Index, data from the year 2011
v3243_0	Does the municipality have a list of BF beneficiaries?
v3244_0	Does the municipality have a list of families in violation of education conditionalities in the BF programme?
v3245_0	Does the municipality have a list of families in violation of health conditionalities in the BF programme?
<i>Integration software questions: does CRAS have access to the following federal computer systems and for what purpose? 0:no access, 1: for consultation/data entry, 2: for both consultation and data entry (S)</i>	
v3603_total	CadÚnico: single registry for the federal government's social programmes
v3604_total	Sicon: integrated management of the conditionalities of BF Program
v3605_total	SIBEC: citizen benefit system
<i>Type of relationship between CRAS and other entities. Codes 0 to 8 (0: no relationship or entity does not exist, >0: sum of the relationship indicators) (S)</i>	
v3249_total	Public units of the basic social protection network
v3250_total	Covenanted units of the basic social protection network
v3251_total	Units of the special social protection network
v3252_total	Health services
v3253_total	Education services
v3254_total	Agencies/services related to labour and employment
v3255_total	Food security services and programmes
v3256_total	Public safety services and programmes
v3257_total	BF grant programme
v3258_total	Protection council
v3259_total	Public policy and advocacy councils

v3260_total	Digital inclusion programmes and projects
v3261_total	Non-governmental organisations (NGOs)
<i>Political variables (P), data from the year 2008</i>	
perc_votes_Municipality	Percentage votes won by the party in power in the municipality
suppl_election_municipality	Supplementary election held (1: yes, 0: no)
Same_Party_StateMunic	Same ruling party both at municipal and state level (1: yes, 0: no)
votegt95	Ruling party secured very high over 95% (almost all) of the votes (1: yes, 0: no)
<i>Variables related to population (D)</i>	
Total_households	Number of households
log_Total_households	Log (total households in the municipality)
large_100k	Population of the municipality is over 100,000 (1: yes, 0: no)
<i>Variables related to poverty (D)</i>	
perc_Rural_households	Percentage of households in rural areas
perc_rural_hhlds_in_ext_pov	Percentage of households in rural area in poverty
perc_urban_hhlds_in_ext_pov	Percentage of households in urban area in poverty
perc_males_in_ext_poor	Percentage of male residents in extreme poverty
perc_White_in_ext_poor	Percentage of white residents in extreme poverty
perc_Black_in_ext_poor	Percentage of black residents in extreme poverty
perc_Yellow_in_ext_poor	Percentage of yellow residents in extreme poverty
perc_Brown_in_ext_poor	Percentage of brown residents in extreme poverty
perc_Indigenous_in_ext_poor	Percentage of indigenous residents in extreme poverty
perc_BlcknIndg_in_poor	Percentage of black or indigenous residents are in extreme poverty
perc_minority_in_poor	Percentage of black, yellow and indigenous residents in extreme poverty
<i>Geography (G)</i>	
Region_N	North (1: if municipality is situated in the northern region, 0: otherwise)
Region_S	South (1: if municipality is situated in the southern region, 0: otherwise)
Region_NE	Northeast (1: if municipality is situated in the northeast region, 0: otherwise)
Region_CW	Central-west (1: if municipality is situated in the central-west region, 0: otherwise)

Source: own compilation

Table 2: Descriptive statistics for variables

Variable code	N	Minimum	Maximum	Mean	Std Deviation
<i>Dependent variables</i>					
avg_IGD	5565	.13	.97	.79	.08
<i>Revenue and finance related variables (C)</i>					
Top100_GDP	5565	.0000	1.00	.02	.13
PC_Budget_Revenues	5212	364.32	13671.62	1858.80	915.39
PC_Transfer_Intergov_Union	5212	.00	11548.69	929.51	577.59
PC_Transf_Intergov_State	5212	.00	8259.79	443.28	452.22
PC_SUS_Union	5212	.00	813.86	105.89	56.03
PC_FNAS	5212	.00	120.85	13.99	13.00
PC_FNDE	5212	.00	630.67	38.24	20.71
<i>Variables related to other programmes (S)</i>					
presence_of_Food_Card	5565	.00	1.00	0.11	.32
IDSUS	5563	2.50	8.37	5.65	.84
IDEB	4960	1.40	8.60	4.42	1.01
v3243_0	4437	.00	1.00	0.06	.23
v3244_0	4437	.00	1.00	0.16	.35
v3245_0	4437	.00	1.00	0.20	.39
<i>CRAS integration</i>					
v3603_total	4421	.00	2.00	1.12	.76
v3604_total	4421	.00	2.00	.93	.79
v3605_total	4421	.00	2.00	.88	.81
<i>Type of relationship between CRAS and other entities</i>					
v3249_total	4437	.00	8.00	4.83	2.82
v3250_total	4437	.00	8.00	2.40	2.90
v3251_total	4437	.00	8.00	3.39	3.19
v3252_total	4437	.00	8.00	5.39	2.07
v3253_total	4437	.00	8.00	5.05	2.23
v3254_total	4437	.00	8.00	1.44	2.22
v3255_total	4437	.00	8.00	1.79	2.51
v3256_total	4437	.00	8.00	1.63	2.27
v3257_total	4437	.00	8.00	6.07	2.27
v3258_total	4437	.00	8.00	5.95	2.15
v3259_total	4437	.00	8.00	3.76	2.95
v3260_total	4437	.00	8.00	2.53	2.63
v3261_total	4437	.00	8.00	2.16	2.69
<i>Political variables</i>					
perc_votes_Municipality	5555	21.76	100.00	57.03	13.82
suppl_election_municipality	5564	.00	1.00	.02	.15
Same_Party_StateMunic	5564	.00	1.00	.16	.37
votegt95	5555	.00	1.00	.05	.22
<i>Variables related to population</i>					

log_Total_households	5565	5.48	15.09	8.20	1.14
large_100k	5565	.00	1.00	.05	.22
<i>Variables related to poverty</i>					
perc_Rural_households	5565	.00	.95	.35	.21
perc_rural_hhlds_in_ext_pov	5565	.00	.86	.16	.15
perc_urban_hhlds_in_ext_pov	5565	.00	.48	.09	.08
perc_males_in_ext_poor	5565	.00	.75	.50	.03
perc_White_in_ext_poor	5565	.00	1.00	.39	.22
perc_Black_in_ext_poor	5565	.00	.59	.08	.06
perc_Yellow_in_ext_poor	5565	.00	.22	.01	.01
perc_Brown_in_ext_poor	5565	.00	1.00	.50	.20
perc_Indigenous_in_ext_poor	5565	.00	.94	.02	.08
perc_BlcknIndg_in_poor	5565	.00	.94	.10	.10
perc_minority_in_poor	5565	.00	.94	.11	.10
<i>Geography</i>					
Region_N	5565	.00	1.00	.08	.27
Region_S	5565	.00	1.00	.21	.41
Region_NE	5565	.00	1.00	.32	.47
Region_SE	5565	.00	1.00	.30	.46
Region_CW	5565	.00	1.00	.08	.28

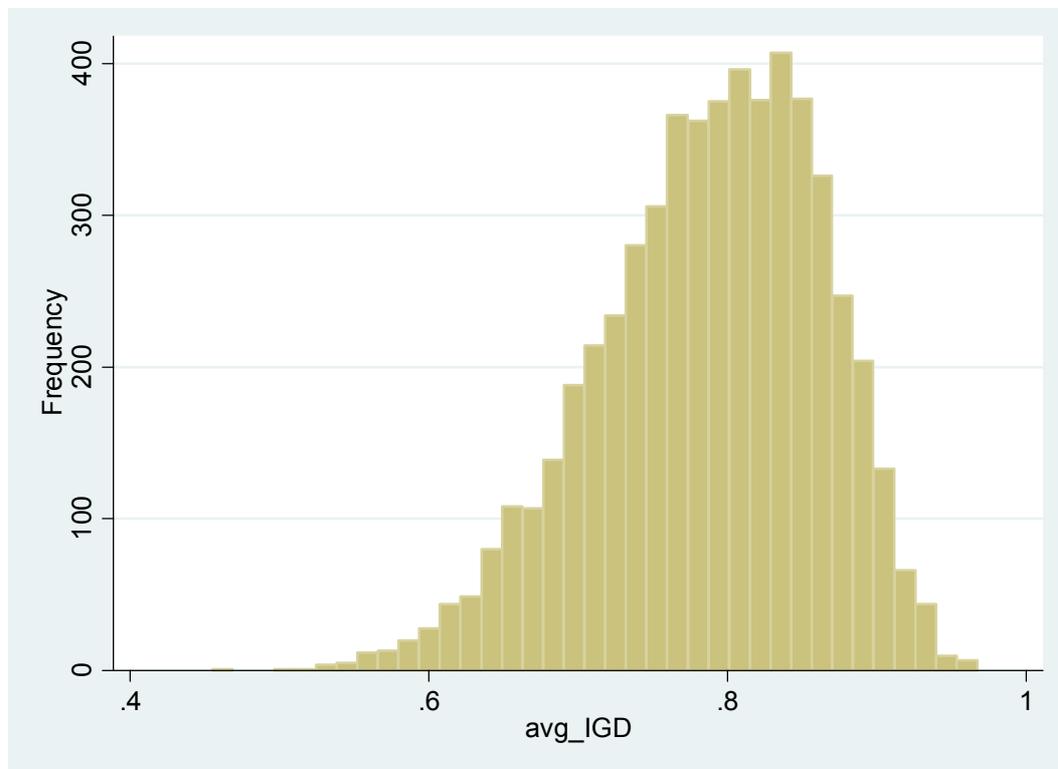
Source: own calculations

The quality of implementation is assessed by looking at the IGD score of each municipality. The IGD was introduced in 2006 by the MDS to measure the quality of municipal implementation and to incentivise municipalities to improve performance (Lindert et al. 2007). The IGD combines aspects of the demand for services with supply of services. The index is calculated on the basis of the sum of four components which have equal weight in calculating the index. These components are: the share of families with a complete and consistent registration; the share of families with registries updated within at least the last two years; the share of families with complete information on compliance with health conditionalities; the share of children in the programme with complete information on compliance with education conditionalities (as a share of all BF children aged 6–15). The sum of these components is then divided by four.

This report looks at the whole IGD as an outcome measure as it aligns our model with how Brazilian policymakers assess the quality of implementation and incentivise municipalities.

Figure 1 gives a sense of the distribution of IGD scores across municipalities for the period 2009–2010 and suggests a clustering of municipalities around the 0.8 quality threshold. The outcome measure we used is based on averaging out the IGD score across this period.

Figure 1: Average IGD scores across Brazilian municipalities from January 2009 to October 2010



Source: own calculations

3.2. Modelling the associations between variables

Regression analysis was used to examine the associations between the various variables. The programme and external variables were taken as independent variables and the IGD as a dependent variable. The IGD score for each municipality was used as the dependent variable in the analysis to test its correlation with other variables (capacity, supply-side, geography, demographic and political). The dependent variable is the average of scores over time (from January 2009 to November 2010) for a given municipality. In addition, the values of IGD are between 0 and 1, hence the regression technique used must account for it. We used a generalised linear model (glm) for our data analysis. In a glm the dependent variable, IGD, is transformed using a link function.

The glm can be denoted as:

$$g(\mu) = \sum_{k=1}^K \beta_k X_k \quad \text{Eq (1)}$$

In this model μ is the expected value of the dependent variable and $g(\mu)$ is a smooth and invertible link function. The logit link function defined as $g(\mu) = \log[\mu/(1-\mu)]$ is used to transform μ which is confined in the interval $[0, 1]$ to an entire real line from $-\infty$ to ∞ . The right-hand side of Equation 1 represents a systematic/measurable component which is linear in terms. β_k represent the unknown parameters to be

estimated and are interpreted as expected change in the log odds of increase in the dependent variable. The glm also includes an error term or the random component which specifies the conditional distribution of the dependent variable given the values of the independent variables X . For our data we use binomial distribution (family) which is more suitable for a dependent variable in $[0, 1]$. The glm is estimated using maximum-likelihood estimation. We use STATA² to estimate the glm with a logit link and the binomial family as proposed by Papke and Wooldridge (1996).

In building the model we gradually included variables one by one and retained only those variables which were significant at the 90 per cent level of confidence. The number of observations for the model depends on the missing values in the independent variables. For example, the average value of IGD across months for the municipality Nazária is very low because of zero scores in the initial months. Similarly, there are 34 municipalities for which the IGD scores in October and November 2010 are missing. These municipalities were excluded from the regression analysis.

3.3. Limitations

The approach chosen has a number of limitations. Firstly, the datasets included do not all cover the same period, as indicated in Table 1. For example, the political variables correspond to the year 2008, the basic education development index is for the year 2011, while most of the other variables are from 2010. There are practical reasons for this, which relate to when this data was collected by the Brazilian government and made available. As such, the model may not capture specific or subtle changes in the datasets. In some ways, the expectation inherent in the model is that certain variables such as municipal capacity, quality of services, integration of services and poverty are unlikely to show significant changes in a relatively small number of years. Nonetheless, Brazil has shown rapid social changes and there is a risk that our model may not capture specific and substantial changes.

Similarly, the model offers a snapshot rather than a longitudinal picture. As such, it does not show trends over time between a range of variables. For instance, it cannot reflect changes in macro-economic conditions or specific changes in government budgets. Secondly, the municipal datasets are not all complete and therefore we had to exclude some municipalities from the analysis. This may create a small bias if this exclusion is systematic as a result of correlation between missing data and implementation.

Thirdly, the datasets as outlined in Table 1 do not cover all relevant variables that make up the ‘black box’ of implementation. The model uses proxy variables that may only capture factors to a certain extent. For instance, municipal capacity is likely to extend beyond the resources a municipality has and includes aspects such as the experience and skills of staff, which we do not measure. Moreover, the model does not include variables related to other factors in implementation such as the federal and state government and audit bodies. There are no variables related to accountability and oversight. Finally, there are no variables capturing social capital in Brazilian municipalities.

Fourthly, the model uses the IGD as an outcome measure. This measure is self-reported in parts by the municipalities. As such, it is open to potential manipulation and may not be as reliable as data gathered in

² see details at: <http://www.stata.com/support/faqs/statistics/logit-transformation/> (accessed December, 2014).

a more controlled manner such as through household surveys. Furthermore, there seems to be a considerable amount of variation or volatility in the monthly IGD score of municipalities over a certain period. To smooth out some of the volatility in IGD reporting the modelling approach presented here took an average IGD score over a period of about 18 months, as explained earlier. Though this may give a more consistent picture of performance over time, it may not counter a determined effort by some municipalities to misrepresent their quality of implementation, especially given the incentive associated with a score over 0.8.

Fifthly, the model captures associations and cannot be specific on the direction of causality. As such, it is hard to know whether the quality of implementation is caused by a specific factor such as the level of poverty or whether poor quality of implementation influences the level of poverty. Finally, several of the factors included in the analysis may be interrelated. For example, the capacity of a municipality may influence the quality of services, which may influence the integration of services. Such interdependencies have to some extent been controlled for but need to be taken into account when interpreting the model and findings.

4. What we found

The model shows the associations between the key independent variables and the dependent variable (quality of implementation) included within it. Table 3 present the outputs of the final model. The log pseudo-likelihood for the final model (-1314.81) is much higher than that for the constant only model (-1987.27), indicating a better model fit than the constant-only model. We use this information for the analysis of deviance (analogue to the ANOVA for linear models). The residual deviance for a glm is defined as: $D_m = 2(\log L_s - \log L_m)$, where $\log L_m$ and $\log L_s$ are the log of maximum likelihoods for the given model and the saturated (one parameter to each observation) model respectively (Fox 2008). The residual deviance for the constant only model (D_c), also called the null deviance, can be used to estimate R^2 , which represents the proportion of the null deviance accounted for by the final model. The R^2 is estimated as $R^2 = 1 - (D_m/D_c)$. We find that the final model has an R^2 value of 0.61. The glm coefficients can also be presented as an odds ratio (Table 3). An odds ratio over 1 represents a positive association and increased odds of getting a higher score with an increase in the independent variable. An odds ratio below 1 represents a negative association.

Table 3: Significant results from model

Description	Coeff.	Std. Er.	P	90% CI		Coeff. as odds ratio
Basic education development index	0.024	0.009	0.009	0.006	0.041	1.024
Health service index	0.033	0.008	0.000	0.016	0.050	1.033
Indicator for CRAS relationship with education service agencies (score 0 to 8)	0.006	0.003	0.045	0.000	0.013	1.007
Indicator for CRAS relationship with BF program (score 0 to 8)	0.008	0.003	0.011	0.002	0.014	1.008
Binary (ruling party in municipality got more than 95% votes)	-0.082	0.037	0.028	-0.155	-0.009	0.921
Percentage votes for the winning party	0.165	0.055	0.003	0.056	0.274	1.180
Binary variable: presence of food card in the municipality	0.077	0.019	0.000	0.040	0.113	1.080

Percentage of “yellow” people in (extreme) poverty	1.007	0.540	0.062	-0.052	2.066	2.737
Percentage of “brown” people in (extreme) poverty	0.338	0.040	0.000	0.260	0.416	1.403
Percentage of rural households in extreme poverty	0.451	0.068	0.000	0.318	0.584	1.570
Log (per capita budget revenues)	-0.101	0.027	0.000	-0.155	-0.047	0.904
Log (per capita transfers from federal government)	0.07	0.026	0.007	0.019	0.121	1.072
Log (per capita transfers from state)	-0.023	0.009	0.012	-0.042	-0.005	0.977
Log (per capita transfers from national social assistance)	0.008	0.002	0.000	0.004	0.012	1.008
Log (total households in the municipality)	-0.114	0.009	0.000	-0.131	-0.098	0.892
Binary (municipality in northeast region)	0.240	0.020	0.000	0.201	0.278	1.271
Binary (municipality in central-west region)	-0.074	0.021	0.000	-0.116	-0.033	0.928
Constant	1.907	0.220	0.000	1.475	2.339	6.734
Number of observations: 3,777 Log pseudo-likelihood: -1314.81 Deviance: 73.06 Log pseudo-likelihood (constant-only model): -1987.27 Deviance (constant-only model): 187.169						

Source: own calculations

These findings are discussed below in the light of the research hypotheses developed earlier in the report on the basis of a review of the literature.

4.1. Municipal capacity

One hypothesis we derived from the literature was that low municipal capacity was associated with poor quality of implementation. The model presents some conflicting evidence and indicates that this may be the case to some extent. Capacity here is measured mostly by transfers and municipal revenues. Municipalities that have lower transfers from the federal government and the National Social Assistance Fund also have lower quality-of-implementation scores. As such, there is a positive association between such transfers and the quality-of-implementation index (IGD). However, not all relevant variables show a positive correlation. Transfers from the states and per capita budget show a negative association with quality of implementation.

How can this be explained? States have a relatively minor implementation role in BF and simply support municipalities through training and technical support. One possible explanation is that state transfers are made available to poorer-performing municipalities. As such, the model may be capturing a more targeted approach by states making funds available to those municipalities with problems implementing BF to a

high standard. As a result, larger state transfers would logically be associated with poorer municipal performance.

In terms of per capita budget, the model suggests that those municipalities with more resources per citizen also have a worse IGD score. Intuitively, this result does not make sense as one would expect better resources to lead to better administrative capacity or service delivery, and then better programme implementation. There could be two explanations. Firstly, it could be related to the size of municipalities implementing BF. The second reason could be the targeting of financial support. The literature appears to suggest that more targeted support can have a significant impact (Lindert et al. 2007). Therefore, one could surmise from the modelling results that targeted transfers with specific aims (e.g. training and infrastructure improvements) are likely to be more important in raising the quality of BF implementation than overall municipal resources. This would also speak to raising the quality of supporting or complementary services. In short, our model suggests that the capacities of a municipality matter less than the targeted resources a given municipality receives.

4.2. Size of municipality

The expectation was that larger municipalities with better resources would also show a better quality of BF implementation. However, the model seems to suggest otherwise. The number of households in a municipality appears to be negatively correlated with the IGD score, as is per capita budget. Moreover, there is no relationship between IGD score and municipal or state per capita GDP. There could be good reasons for this. It may be difficult to reach all beneficiaries in large municipalities due to distances between populations, the presence of isolated communities and the occurrence of violence in communities. In terms of the latter, larger municipalities tend to have areas with significant levels of violence. These areas can at times be out of the programme's reach. In other words, access to services may be easier in smaller municipalities. The provision of services may also be uneven, which may affect the quality of registration and checking of conditionalities, which make up the IGD score. The organisation of BF implementation is less complex in smaller municipalities than in larger municipalities. It may also be the case that BF implementation is not a sole priority in larger and better resourced municipalities. The poorest may compete with other groups for political influence and indeed access to services. The results seem to suggest that 'smaller is better'.

4.3. Quality of services

An important aspect of municipal capacity is the quality of services. As discussed above, it may be that the quality of services and how services are provided is the best way to measure municipal capacity in a CCT.

The literature suggests a correlation between quality of services and IGD (Rocha 2009). The model supports this association. Municipalities with a better quality of health and education services according to the indices also have a better IGD score. The index of health (IDSUS) is a synthetic score measuring health services coverage (i.e. the number of service providers as a proportion of the population) as well as outcomes (e.g. vaccination rates, live births and the number of cervical smears performed), while the education index (IDEB) measures student performance on standard tests. These associations seem to

underline the importance of service supply (as represented in the indices) in CCT programme design, something also noted in the growing body of evidence on the effectiveness of CCT programmes globally (Hall 2008).

4.4. Integration and coordination

Similarly, studies in different areas of Brazil have found that the integration and coordination of services appears to remain limited, and suggest the importance of such integration in good programme implementation (Sánchez-Ancochea & Mattei 2011). Such integration and coordination are hard to measure and as such also to model. Using data from a survey of the local CRAS, the model shows strong associations between particular aspects of integration and the IGD score. CRAS serves to provide certain social services (e.g. counselling) directly to those requiring help as well as being a reference centre for citizens to wider public services. In particular, the associations between IGD score and the level of integration of the local CRAS in the BF programme, and between the IGD index and the level of integration between the CRAS and education units at municipal level, seem significant. The latter is a proxy indicator for the perceived cooperation between education services and those involved more generally in social assistance. ‘Level of integration’ here means deeper integration of service provision (e.g. being able to register BF beneficiaries in CRAS; cross-use of databases at municipal level; and using BF to assign beneficiaries to complementary services) as captured in the CRAS survey.

Municipalities with deeper specific integration (e.g. close coordination between BF and social and health services) also have higher quality-of-implementation scores. This finding is interesting as it reflects not just on the quality of services but also on how services are provided. However, this finding is not significant for all areas of integration and coordination. Other factors such as integration with municipal health units and other social agencies show no significant association with the overall quality-of-implementation index. This may indicate either that collaboration between specific parts (in this case CRAS centres) of public administration are more critical to successful BF implementation or that certain programmes are just not particularly complementary.

4.5. Politics

One hypothesis is that BF could be used for political gain or that better implementation might be associated with particular political parties being in power or specific election results. The model does not find a significant association between the political party and the quality of implementation, reflecting current literature (for example, Fried 2012) and suggesting that BF has been broadly embraced across the political spectrum. Certain political parties are just as likely as others to show good implementation of BF when in power. However, the election result does seem to matter, again in agreement with the literature (Janvry 2005; Janvry, Finan & Sadoulet 2010). The model suggests that the majority of the winning party in municipal elections is associated with a higher IGD score.

There are a number of possible explanations. Firstly, those with a larger winning percentage could be perceived to have a mandate to make changes and, as such, to promote more effective administration of BF. This explanation would suggest a time lag between election and improved IGD score, which the

snapshot approach in this model cannot capture. The absence of a time lag in the data suggests that the causal direction may be reversed, namely, that better BF implementation is associated with a higher winning percentage in local elections. In other words, political parties that are in power could achieve better electoral results by promoting better BF implementation before the election. This explanation makes sense given the small time lag in the datasets, with the model including municipal election data from 2008 and IGD data mostly from 2010. The model has a further interesting finding. It finds that incumbent parties that win more than 95 per cent of the vote also, in principle, show a lower municipal IGD score. This would suggest that an absence of political competition is not helpful in promoting good programme implementation.

4.6. Poverty and ethnicity

Following on from the capacity argument, one hypothesis is that those municipalities with higher levels of poverty or significant groups of ethnic minorities would have lower quality of BF implementation. The reason for this, as noted by Fiszbein and Schady (2009) could be that poorer households are less able to take advantage of a programme. The model does not find a significant association between overall municipal poverty levels and quality of implementation. However, the model finds some significant associations between the number of households in subgroups living in poverty and the overall municipal IGD score. Those subgroups are specific groups of coloured individuals (as classified in the Brazilian census) and the rural poor. The relationship tends to be positive rather than negative. This finding would go against what was hypothesised in some earlier studies. An explanation could be specialisation, meaning that municipalities with poverty in specific groups would prioritise BF implementation more than others. In other words, it may be a reflection of the relevance of BF implementation in the local policy context. Local administrators and politicians may have more of an incentive to raise the quality of implementation as the poorer groups in their municipalities make up a more significant constituency. As such, the implementation issue is less the intrinsic nature of poverty, which is discussed as a main factor in explaining beneficiary take-up of CCT programmes, but more about how services are delivered as part of BF (Fiszbein & Schady 2009).

The fact that poorer municipalities tend to prioritise BF implementation may also be self-reinforcing, given the performance incentive in the BF programme. Fiszbein and Schady (2009) see a positive impact from these incentives in the way social programmes and other administrative tasks are organized. Municipalities with better implementation receive a higher quota or additional programme resources, which may also increase the performance gap compared to relatively lower-performing municipalities.

4.7. Geography

The fact that some municipalities appear to prioritise BF implementation seems to some extent corroborated by looking at the relationship between geography and IGD implementation. Municipalities in the northeast tend to have higher poverty levels than those in other regions. The model finds a positive relationship between municipalities in the northeast and central west and the IGD score compared with others elsewhere. Once again, this may reflect the importance of BF and the quality of implementation in

specific regional and demographic contexts. However, in general terms the geographic variable has limited significance as other regional and state variables do not have significant associations with the IGD score.

The model finds no significant association between IGD scores in rural and urban areas, contributing further to the ongoing debate in the literature about how such contexts affect enrolment and implementation (Ferreira, Jimenez & Holzer 2011; Sánchez-Ancochea & Mattei 2011). Previous studies have examined some of the mixed evidence concerning programme effectiveness in rural and urban contexts. The model suggests that there is no strong evidence, using the IGD measure, of differences in quality of implementation between such contexts.

5. Conclusion

The findings suggest that despite the limitations of our approach, using the BF quality-of-implementation index (IGD) as an outcome or dependent variable appears viable. The results of the model are plausible and seem largely to fit observations made in the literature. As such, the approach implies that evaluations could pay more attention to self-reported data collected as part of a CCT programme. These data lend themselves well to understanding programme and contextual factors that influence the effectiveness of a CCT. Such factors are not readily captured in a systematic way in impact evaluations. As a further step, models using the IGD could be enhanced by aligning this outcome information with information that is collected independently from the programme such as household survey data. The main restriction in looking at this relationship is the way evaluations of CCTs are currently set up and designed. Models using the IGD could also be enhanced by looking at the constituent components of the IGD. This model looked at the IGD as a whole, but further analysis could look at the IGD as consisting of components reflecting demand from BF claimants and the supply of services to support the programme's conditionalities. This would allow for better differentiation between the key components that make up the quality-of-implementation measure.

The model also produced some nuanced findings on capacity which seem to suggest that, overall, resources are perhaps less important than the approach taken in a municipality to BF implementation. In terms of the supply-side, the model finds that not only is the quality of service delivery associated with the quality BF implementation, but so is the way in which services are delivered. The latter emphasizes the need for integration and coordination of services, especially between outreach centres (CRAS) and the BF programme. Furthermore, the model implies some specialisation of municipalities in BF. This could be explained by the relative importance of BF in a locality. The implementation scores of smaller municipalities with higher levels of poverty and more minority groups are no worse than others, and, in some instances, are actually significantly higher. This could be the result of a range of issues in service delivery. Smaller municipalities may be able to provide services closer to the citizen (which may be especially useful in targeting the poorest of the poor); they may have more control over coordinating social, health and education services, and non-governmental actors; and administrators and politicians in smaller municipalities with a larger proportion of poor people may have a greater incentive to enrol households in BF and improve the quality of implementation. The latter would indicate a form of specialisation in BF implementation which may be self-reinforcing given the incentive offered to high-performing municipalities under the BF programme. A further implication is that the nature of poverty itself may not influence enrolment that much and that the quality and nature of service provision may matter more.

As might be expected of a meta-review of Brazilian datasets, the model raises a number of questions.. Firstly, this approach is useful in understanding risk factors in CCT implementation – risk factors which can be found in all the variables included in the model. Addressing these risks might lead to measures such as (among others) additional technical support for municipalities and service provision at municipal level; guidance on integration of services at municipal level; and specific support programmes for larger municipalities with more complex service delivery. Secondly, the model could inform further research at municipal level in order to understand some of the dynamics implied by the model. For instance, a link between student outcomes and the quality of implementation is interesting but does not explain the direction of causality or the factors behind each (the quality of local civil servants and teachers, for example) that could be contributing to this positive association. The key to improving our knowledge of how programme and external factors influence the quality of implementation is to understand the dynamics behind some of the positive associations identified by the model, especially when they are less intuitive.

Finally, there is a question of how actionable these findings are for policymakers and those designing and implementing CCTs. Here, we make two observations. Firstly, there is little systematic work on the implementation of CCTs and how contextual factors affect the implementation of a CCT. There is a wider debate to be had concerning the optimal size of local implementation units, the capacities the units have, the constituencies they serve, and the support they receive. This report contributes to this debate but we acknowledge that more (arguably qualitative work) needs to be done to understand local dynamics. This is important as the delivery of programmes does not always focus on evaluations, and as a result lessons are not being learnt. This in turn may compromise the effectiveness of CCTs in general. Secondly, those involved in designing CCTs appear to prioritise managing the demand for a programme and worry less about the supply of complementary services such as health and education, all of which affect a programme's success. This appears to be a mistake. There seem to be significant associations between the quality of some of these support services and good implementation in general. This is perhaps not surprising but would speak to those designing CCTs to invest more time and resources in this important aspect of service supply. Finally, integration of services appears to have a positive impact, which again suggests that more thought should be given to the way in which services are configured at the local level.

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