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Sergei Soares

Institute of Applied Economic Research, IPEA

and

Rafael Guerreiro Osório

Fábio Veras Soares

Marcelo Medeiros

Eduardo Zepeda

International Poverty Centre

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**International Poverty Centre
United Nations Development Programme**

International Poverty Centre
SBS – Ed. BNDES, 10º andar
70076 900 Brasília DF
Brazil

povertycentre@undp-povertycentre.org
www.undp-povertycentre.org
Telephone +55 61 2105 5000
Fax +55 61 2105 5001

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CONDITIONAL CASH TRANSFERS IN BRAZIL, CHILE AND MEXICO: IMPACTS UPON INEQUALITY*

Sergei Soares; ** Rafael Guerreiro Osório; *** Fábio Veras Soares; ***
Marcelo Medeiros *** and Eduardo Zepeda ***

ABSTRACT

This Working Paper decomposes changes in the Gini coefficient in order to investigate whether Conditional Cash Transfers (CCT) have had an inequality reducing effect in three Latin American countries: Brazil, Mexico and Chile. Its technique is the decomposition of the Gini coefficient by factor components. Its main finding is that CCT programmes helped reduce inequality between the mid-1990s and roughly the mid-2000s. The share of total income represented by the CCTs has been very small: about 0.5 per cent in Mexico and Brazil and a very small 0.01 per cent in Chile. But since their targeting has been outstanding, their equalizing impact was responsible for about 21 per cent of the fall in both the Brazilian and the Mexican Gini index, each of which fell by approximately 2.7 points during the period that this paper reviewed. In Chile the effect was responsible for a 15 per cent reduction in inequality, although the total reduction in inequality was very modest: a mere 0.1 Gini point. The difference was due to the small size of the Chilean programme relative to the larger Mexican and Brazilian programmes.

Keywords: Income Distribution; Conditional Cash Transfers.

JEL Classification: D31

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** Institute of Applied Economic Research, IPEA.

*** International Poverty Centre, IPC/UNDP.

1 INTRODUCTION

Conditional cash transfer (CCT) programmes in Latin America are increasingly appealing to both governments, which are anxious to do something effective but are facing difficult fiscal constraints, and multilateral and bilateral cooperation agencies, which are anxious to rid themselves of the stigma of cumbersome bureaucracies whose work has had little impact upon the poor. Unlike some other social programmes, CCTs have shown effectiveness in reaching many of their objectives according to the results of rigorous process and impact evaluations. Yet, it might still be too early to judge their long-term impact on development. The literature on CCT evaluations is rich: it notes significant impacts upon schooling, health, infant mortality, child labour, and poverty.¹ Like other programmes, CCTs have come to generate expectations in areas where they were not explicitly intended to have impacts, although perhaps such impacts should have been anticipated. One of these is the chronically high and long-lasting inequality that plagues Latin America.

Much has been written on the common historical origins of high Latin American inequality and its increasingly negative consequences on economic performance.² The region was colonized by Spanish and Portuguese crowns that installed ‘the institutions of plunder’ foremost among which were African slavery and Indigenous servitude. These institutions left a legacy that has hampered the region since decolonization. Many authors argue that until inequality is adequately addressed, Latin America will be condemned to remain a post-colonial backwater with little to contribute to the global economy. This, of course, makes the unintended role of CCTs in fighting inequality possibly more important than many of its intended objectives.

Unlike other historical periods, when there was considerable synchronicity among Latin American countries vis-à-vis development strategies, growth patterns, and distributional results, recent decades have been characterized by more idiosyncratic trends. While Chile, Mexico, and Brazil all successfully adopted import substitution industrialization in the 1960s, since 1974 their trajectories have been different. In Chile, there has been remarkable growth but growing inequality based upon an open economy strategy highly dependent upon a few products. In Mexico, there has been reasonable growth and falling inequality based upon a more recent opening of the economy, with exports ranging over a diversity of products but heavily dependent upon a single trading partner and based on a high import content. In Brazil, there has been trade liberalization along with diversification of exports and imports, poor growth but falling inequality. Given this heterogeneity of trends in the evolution of the primary income distribution in such countries, CCTs appear to be one of the few reliable policy instruments to reduce inequality from the Rio Bravo to Tierra del Fuego.

Our objective in this Working Paper is to use a simple decomposition methodology to shed some light on the record of CCTs in reducing inequality in three major Latin American countries. We hope that the results will also illuminate policy analysis in other countries of the region.

2 HOW CONDITIONAL CASH TRANSFER PROGRAMMES WORK?

Below we detail some of the history of CCT programs in Brazil, Chile and Mexico and indicate how they have worked. Thereafter, we proceed to address issues of data and methodology.

2.1 BRAZIL: THE BOLSA FAMÍLIA

Before October 2003, Brazil had four Federal CCT programmes in place. The first, created in 1996, was the *Programa de Erradicação do Trabalho Infantil (PETI)*, which, as indicated by its name, aimed at the eradication of child labour. This was a highly targeted cash transfer, given for children aged 7 to 15 years, working (or prone to work) in hazardous and degrading activities. It provided R\$ 25 (\$ 37 PPP)³ for children in rural areas and R\$ 40 (\$ 59 PPP) for children in urban areas and a supplement earmarked for municipalities to increase schooling hours to occupy the entire day through the creation of after-school activities known as *Jornada Ampliada*. Its conditionality stipulated a commitment that children younger than 16 years of age would not work and would maintain 75 per cent attendance in school. The Social Assistance Secretariat (of the Federal Government) ran *PETI*.

In 2001, another CCT, the Federal *Bolsa Escola* programme, was created. Its conditionality stipulated school attendance for school-age children (i.e., 6-15 years old) in families whose *per capita* income was below R\$ 90 (\$ 97 PPP). The transfer was R\$ 15 (\$ 16 PPP) per child, up to a maximum of R\$ 45 (\$ 49 PPP) and the programme was administered by the Ministry of Education. The third CCT programme was the *Bolsa Alimentação*, whose conditionality stipulated medical check-ups for pregnant women, breast feeding for mothers, and immunization of young children. The transfer was R\$ 15 (\$ 16 PPP) per child up to six years of age, up to a maximum of R\$ 45 (\$ 49 PPP), and the programme was run by the Ministry of Health. In 2003, a fourth CCT programme, the *Cartão Alimentação*, was created, with a transfer of R\$ 50 (\$ 54 PPP) for families with monthly *per capita* income below half of the minimum wage. The transfer was to last for six months, and involved a conditionality that the funds had to be spent on food.

Each of these programmes had its own financing, implementing agency, conditionality and information system.⁴ As their control systems did not exchange information, one family could receive all four transfers while another, equally needy, could receive none. The values of the transfers were not harmonized so that the Federal Government was inevitably engaged in transferring different amounts to similar individuals. The programmes were run by different agencies that had virtually no coordination among themselves.

In October of 2003, the *Bolsa Família* programme was created to merge and organize⁵ the various Federal CCTs on the basis of the unified information system that started being implemented in 2001, the *Cadastro Único*. Families in extreme poverty (with monthly *per capita* income below R\$ 50 (\$ 42 PPP)) that are beneficiaries of *Bolsa Família* receive R\$ 50 (\$ 42 PPP)/month each, regardless of their composition. For every child or pregnant woman, the family receives an additional benefit of R\$ 15 (\$ 13 PPP) per month, but benefits are limited to three children or pregnant women. Therefore, R\$ 95 (\$ 91 PPP) is the highest amount transferred by *Bolsa Família* to a family in extreme poverty.

Families in moderate poverty (with monthly *per capita* income between R\$ 50 (\$ 42 PPP) and R\$ 100 (\$ 85 PPP)) receive only the R\$15 (\$ 13 PPP)/month per child or pregnant woman, also up to a maximum of three children or women. So, the amount of R\$ 45 (\$ 42 PPP) is the

highest value transferred to a moderately poor family. The programme requires 85 per cent school attendance for school-age children, updated immunization cards for children up to six years old, and regular visits to health centres for breast-feeding or pregnant woman. For those families that are in extreme poverty but have neither children nor a pregnant woman, conditionalities are loose, comprising participation in training programmes.

When the Brazilian National Household Survey (Pnad), our data source, was fielded in September 2004, the merging of all previous CCTs into *Bolsa Família* was being carried out. Most families, while already registered in a single information system, were still receiving transfers from previously existing programmes with different conditionalities and values of transfers. For our estimation purposes, we consider that any family receiving a Federal conditional cash transfer, regardless of the programme, was receiving *Bolsa Família*, since this is what happened shortly thereafter.

The beneficiary identification process for *Bolsa Família* is somewhat complicated. Brazil is a decentralized federation and, while the responsibility for defining policy in the case of CCTs belongs to the Federal Government, many implementation details are left to municipalities and states. The first aspect that is decentralized is verification of conditionalities. The Federal Government in Brazil does not run primary schools or primary health care centres, so it is the responsibility of the municipalities and states, particularly the former, to verify compliance. Overall, this set-up yields a loose control over conditionalities, although qualitative studies show that families overwhelmingly do comply.

The second crucial task is the primary identification of potential beneficiaries and provision of information about them. Although information must be recorded on a single Federal information form, it is the responsibility of municipal social workers to select potential beneficiaries and fill in all the information. In 2004, there were more candidates than available benefits, although this situation has improved with the expansion of the programme. Since beneficiaries are selected based solely upon income and social workers know this, they also decide, in practice, who ultimately gets selected and who does not. But the results we will present suggest that social workers have been using wisely their discretionary authority in the selection process.

2.2 CHILE: CHILE SOLIDARIO

Chile Solidario was created in May 2002 as a social protection system targeted at people living in extreme poverty. Its goal was to assist the 225,000 families (out of a total population of about 16 million people) identified as living in extreme poverty according data from the Casen 2000, the Chilean National Household Survey. We have used this survey as our data source. *Chile Solidario* has three components: i) Family support and conditional cash transfers (*Bono de Protección a la Familia - Programa Puente*); ii) Monetary subsidies: *Subsidio Único Familiar* (Family subsidy), potable water subsidy, and disability and old-age non-contributory pension (*PASIS*); and iii) Priority access to other social protection programmes.

The entry-door of *Chile Solidario* is *Programa Puente*. Families are invited to take part in this programme based on a score derived from the form *Ficha CAS-2*, which generates a multidimensional ranking index. The higher the score, the worse is the situation of the families regarding unmet basic needs. These needs are grouped into 4 major categories: housing condition, education, job and income. The *Programa Puente* is responsible to deliver family

support for two years. Families are visited by a social assistant – or a similar professional – in order to set up a plan to tackle major problems in several areas, including access to public services, identification (i.d. cards), health aids, employment and domestic violence. *Programa Puente* is implemented by the national government through the *FOSIS* (Social and Solidarity Investment Fund) in partnership with municipalities.

In addition to the family support, beneficiaries are also entitled to *Aporte Solidario* or *Bono de Protección a la Familia*, a conditional cash transfer that lasts as long as the family support and is paid to females heading families or to the female partner of the head. In order to receive the *Bono de Protección*, families have to comply with the conditionalities necessitating actions to achieve the agreed targets of a contract with the government. The aim of the *Bono de Protección* is to help the family to pay for a basket of goods, amenities and services that is considered as the minimum level below which a family could be considered socially excluded. After 24 months, the family will continue to receive financial support, the *Subsidio Único Familiar*, and will have priority access to social protection programmes or initiatives for another three years in order to help them out of poverty. If the family meets the target before two years, it is automatically excluded from the programme based on verification of its condition by the social assistant responsible for the family.

A distinct feature of the Chilean Bono is that its value decreases over the two-year period. In 2003, the value was 10,500 pesos (\$ 33 PPP) per month during the first six months in the programme; the value of the *Subsidio Único Familiar* during the last six months of the programme was 3,716 pesos (\$ 12 PPP).

2.3 MEXICO: OPORTUNIDADES

Internationally, *Oportunidades* is the best known CCT programme. Originally named *Progresá*, it began in 1997 during the Zedillo administration (1996-2001), superseding the highly controversial *Solidaridad* programme of the former Salinas administration (1989-1994). *Progresá* covered initially 0.3 million households and expanded to 2.5 million by 2000. In its initial years, the focus was on poor rural municipalities with fewer than 2,500 inhabitants that had the minimum necessary school and health facilities for conditionalities to be applied. The Fox administration (2001-2006) changed the name of the programme to *Oportunidades*, expanded its membership to five million beneficiary households by 2004, and extended its coverage to include small urban locations with 2,500 to 14,999 inhabitants in 2001, and to all urban areas one year later.

Selection of beneficiaries follows a three-stage procedure. First, municipalities are chosen according to an index of marginality that classifies them into five categories—very high, high, medium, low, and very low marginality. Secondly, households within chosen municipalities are selected according to a socio-demographic study based on discriminant analysis. In municipalities with very high indices of marginality, about 90 per cent of the households are selected; this percentage decreases to about six per cent in those municipalities that are classified in the very low range. The third and final step involves feedback from communities in order to check eligibility. It takes about five months from the initial request to be included as a beneficiary of the programme to the actual first transfer of funds.

The transfer has three basic components, two of which are conditional and one non-conditional. Households benefiting from *Oportunidades* receive an unconditional transfer in the amount of 250 pesos (\$ 32 PPP) per elderly adult in the household. Additionally, households receive a food support transfer of 189 pesos (\$ 24 PPP) conditional on attending training sessions on nutrition and health. The more substantive transfer, though, is the scholarship given to children and young adults in grades three to 12. Scholarships are conditional on attendance in school and health check-ups; schools certify the first while health clinics attest to compliance on the second.

The value of the scholarship increases along with the grade and is generally higher for females. Starting with an amount of 120 pesos (\$ 15 PPP) for children in primary education, the value rises to 760 pesos (\$ 98 PPP) for females in grade 12. On the whole, a household can receive a maximum of 1,095 pesos (\$ 141 PPP) in scholarships if it receives scholarships only for students in primary and secondary education, but the ceiling is 1,855 pesos (\$ 239 PPP) if the household includes students in lower or upper secondary education. Scholarships and the food support stipend are transferred electronically on a bimonthly basis to the female heading the household. Transfers for the elderly started only in 2005 and are received directly by the elderly in households.

3 DATA AND METHODS

3.1 INCOME DATA

To investigate the impacts of CCTs upon income inequality in Brazil, Chile and Mexico, we will simply decompose the Gini coefficient of the income distribution by the components of total income. For this purpose, all that is needed is the average *per capita* household income by hundredths of its total distribution, as well as the averages of each component. This information should be available for two points in time, before and after the implementation of CCT programmes. Finally, and crucially, the information should be as standardized as possible across time and countries.

This last desirable characteristic of the data imposes on us the use of income instead of consumption, because information on expenditures, although available, cannot be found in the same sources that yield data on CCTs (Mexico being the only exception). Comparability across time was not an issue because we deployed different rounds of the same household surveys to gather income data. These surveys have not gone through significant methodological changes during the period that we review. For all countries, the point of time before the implementation of CCT programs was in the mid nineties, 1995 or 1996, and the point of time afterwards was the closest available, 2003 or 2004.

We tried to construct income variables that were as similar as possible for all countries. The first step was the construction of total household income. This was done by adding up all of the individual income components, regardless of source, within households. However, we followed the standard procedure of many statistical offices of computing neither the income of domestic servants nor that of their relatives, nor the income of boarders or lodgers. The total household income was then divided by the household size (net of the residents whose income was not counted). The result was household income *per capita*.

We decomposed total household income into four categories: i) *labour income*; ii) *social security income*; iii) *CCT income*; and iv) *other income*. Labour income is all income from labour, and includes the estimated monetary value of non-monetary income from labour (in-kind payments). Social security income is all transfers that can be classified as such, mainly pensions, but also including some unconditional cash transfers. CCT income is the component under scrutiny, and is the income received by the families registered in the programmes. This component exists, however, only for 2003-2004. The category of 'other income' includes every form of income registered by the survey that was not classified in any of the other three categories. This last component is comprised mainly of rents, investment earnings and private transfers (donations and domestic or international remittances). Means-tested, unconditional cash transfers are also included in 'other income'.

This four-fold categorization of income was applied to the original income information collected by the household surveys in order to obtain the income components described above. Then the four components were separately added within households, and divided by the household size in the same way as total income. We ended up with four *per capita* income components, which sum up to *per capita* household income. Finally, the real value of income from the first period was adjusted to be consistent with the value of the last period using the general consumer price index of each country and for each period.

Although it was relatively easy to apply this conceptual schema to obtain the components from the original data, the contents of each income component vary across countries. This happens because household surveys are idiosyncratic in the way that they treat non-labour income, in spite of being quite similar in the way that they address labour income. This is the main reason why, although income could have been disaggregated into more categories, we opted for working with only four major components. Fortunately, the component with the greatest weight in total income is labour income in all three countries. This helps improve comparisons across the three.

We encountered three major challenges that needed to be overcome in aggregating the original income components into our four-category schema. The first was related to the degree and type of detail of income information on income components. In Mexico and Chile, for instance, CCT income was already split from other components into its own variable, or flagged in a way that easily enabled its computation. In Brazil, CCT income was mixed with 'other income', so that we had to use the methodology developed by Soares *et al.* (2006) in order to separate it.

The second challenge was related to adjustments that the disseminating institutions of each country had made to the income data gathered in the field. In the Brazilian survey, we have access to the information as it was collected, and thus could identify the people whose income was not reported because they had a special code. We simply dropped out all of the members of the households in which at least one member had unknown or missing income. This approach reduced the sample by two per cent. In Chile and Mexico, unknown income was imputed, so there is no way to distinguish people with imputed income from those without it.

Chile also applies another adjustment to income variables in order to make the aggregate statistics yielded by the survey match with those from national accounts. The adjustment factor varies according to income type. For labour income, the factor also varies with the type

of recipient (e.g., wage employee or self-account worker). The information available in Chilean datasets makes it very difficult, however, to reverse this adjustment. Also, this adjustment cannot be reproduced for the other countries.

The third challenge was related to the construction of total income.⁶ This involved questions about what should be computed, and what should not. In Chile and Mexico, it is customary to impute the rental value of self-owned housing units as household income. In the case of Mexico, some other expenditures related to the housing unit could also be imputed. But we did not impute any of these income items; instead, we opted for working only with declared incomes and we retained only imputed incomes already embedded, without declaration, in the data, since it was impossible to identify in which particular cases income had been imputed.

While we managed to construct reasonably comparable total income aggregates across countries, we had to accept the condition that our estimates of inequality are not always the same as official or widely recognized country estimates. In the case of Mexico, the difference between official statistics and those we present is greatest. This is due to two main reasons. First, as already mentioned, in contrast to methods for official estimates, we did not impute any values related to the housing unit. Second, and more important, is that we computed neither the estimated monetary value of in-kind donations nor that of household production for own-consumption. As the poorest fractions of the populations are the ones that tend to receive donations and produce for own-consumption, not imputing these items is likely to increase the level of inequality. However, although we did not compute in-kind items that were not received as payment for labour, we still followed closely all methods of treatment of data applied to income variables by the Mexican Technical Committee on Poverty Measurement. So, monetary incomes were calculated as the price-adjusted average of the six-month period for which incomes were observed.

All of the surveys we used had complete or almost complete national coverage, and corresponded to the main sources often used to address inequality in each of the countries. Brazilian data come from the 1995 and 2004 rounds of the *Pesquisa Nacional por Amostra de Domicílios* (Pnad), an annual general-purpose household survey undertaken by the Brazilian Institute of Geography and Statistics – *Instituto Brasileiro de Geografia e Estatística* (IBGE). Chilean data come from the 1996 and 2003 rounds of the *Encuesta de Caracterización Socioeconómica Nacional* (Casen) carried out by the Ministry of Planning (MIDEPLAN). Mexican data come from the 1996 and 2004 rounds of the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (Enigh), an income and expenditure survey fielded by the Mexican National Institute of Statistics, Geography, and Informatics – *Instituto Nacional de Estadística Geografía e Informática* (INEGI).

3.2 DECOMPOSITION OF THE GINI COEFFICIENT

Kakwani (1980) and Shorrocks (1982) show that the Gini coefficient can be easily decomposed according to factor components. The resulting expression depends only upon the concentration coefficient of each component and its weight in total income. Equation [1] shows this expression:

$$G = \sum_k c_k \varphi_k$$

[1]

Where G is the Gini index, c_k represents the coefficient of concentration of factor component k relative to total income and φ_k is the weight of factor k in total income. Differencing [1] we have:

$$\Delta G = \sum_k (\bar{c}_k \Delta \varphi_k + \bar{\varphi}_k \Delta c_k) \quad [2]$$

The first term in the summation represents the composition effect and the second the effect of the change in the coefficient of concentration. If we keep in mind that the sum of changes in the weights of all factor components is zero, we can subtract the sum from the formula above:

$$\Delta G = \sum_k (\bar{c}_k \Delta \varphi_k + \bar{\varphi}_k \Delta c_k) - \sum_k \bar{G} \Delta \varphi_k \quad [3]$$

Re-arranging, we have the following expression:

$$\Delta G = \sum_k ((\bar{c}_k - \bar{G}) \Delta \varphi_k + \bar{\varphi}_k \Delta c_k) \quad [4]$$

The advantage of expression [4] is that it shows clearly that income components less concentrated than the Gini coefficient are inequality reducing while those more concentrated than the Gini are inequality increasing. This is a result that is both intuitive and useful. It is intuitive because it reasonably states that if an income component becomes less concentrated, or if a negatively concentrated component is added to a given income distribution, inequality will fall; and if the opposite happens, inequality will rise. And it is useful because it allows us to identify the contribution of any income source to a change in inequality.

A criticism that has been levelled at this decomposition by factor components is that it does not have a counterfactual interpretation. In other words, $G - c_k \varphi_k$ does not necessarily represent what the Gini coefficient would be if income source k vanished because the order of individuals in the distribution might change and, if so, so would the Gini coefficient. While this critique is certainly valid, we believe that this does not affect our results since our objective is not constructing counterfactuals, but decomposing changes.

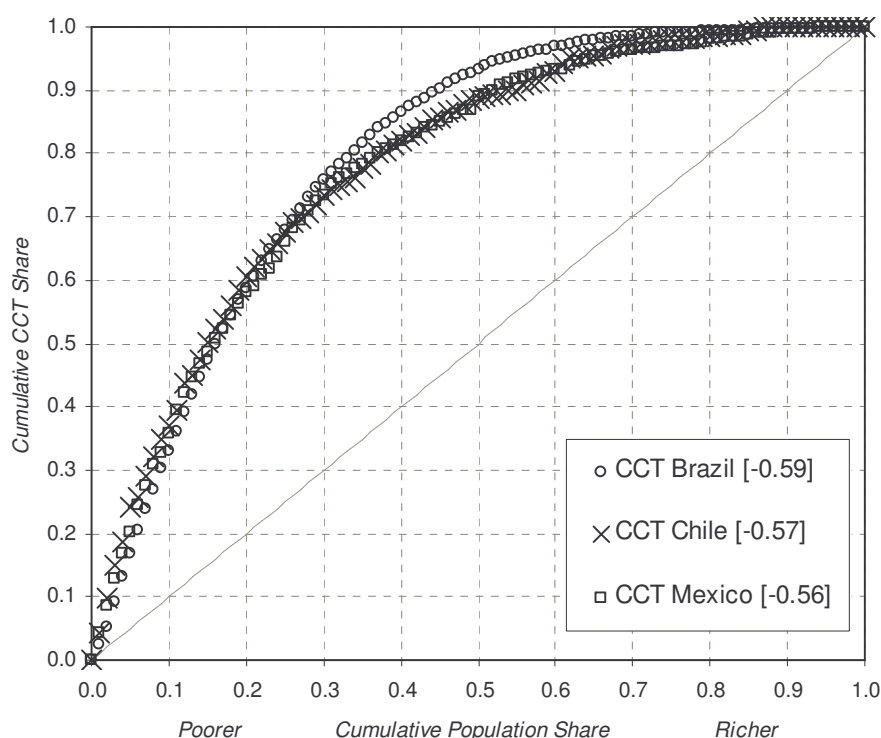
4 RESULTS

Before calculating the impact of each CCT upon inequality, we start our discussion with a review of the ex-ante targeting of the three programmes in order to determine their efficacy in reaching the poor. Instead of examining the proportion of beneficiaries per hundredths of the income distribution, we will examine the proportion of the CCT income that flows to each hundredth of the distribution net of CCT transfers. In other words, we calculate the concentration coefficient of CCT income ordering individuals by the sum of labour, social security and 'other income' but not CCT income itself. The reason we do this is that if CCT income is high, it may cause individuals to move up in the income distribution, creating the appearance that the transfers are not as well targeted as they really are. It must be noted that

these ex-ante concentration coefficients do not add up to the Gini coefficient and thus cannot be used to decompose changes in inequality.

FIGURE 1

Incidence of CCTs per hundredths of the net *per capita* income distribution



Source: Pnad 2004; Casen 2003; Enigh 2004.

Figure 1 shows that on average, about 60 per cent of the CCT resources flow to the poorest 20 per cent of the population. The *Bolsa Família* appears to be a slightly better targeted programme for the lower-income deciles. While the *Chile Solidario* programme appears to be well targeted for the lowest percentiles, its performance worsens as we move up along the distribution. Since the curves depicting the three programmes cross, we cannot say that one programme is unambiguously better targeted than the other two. Nevertheless, we can use the ex-ante concentration index (as explained above) of the CCT transfer as a measure of targeting. According to this measure, the Brazilian *Bolsa Família* is the best targeted programme with a concentration index of -0.59, followed by *Chile Solidario*, with an index of -0.57, and the Mexican *Oportunidades*, with -0.56. The most relevant information here is that they are all very well targeted to the poorest individuals in each country.

4.1 THE EVOLUTION OF INCOME INEQUALITY

We begin this analysis by comparing the household *per capita* income distributions of each country during two moments in time, one in the mid-1990s, before the conditional cash transfer programmes were put in place, and the other roughly in the mid-2000s, when these programmes were already established.

Inequality was and still is very high in all three countries. Using a scalar measure of inequality, the Gini index, we are able to examine the magnitude of the changes in overall inequality in each of the three countries. Table 1 shows changes of -0.0274 and -0.0271 points in the Gini indexes of Brazil and Mexico. These changes were tantamount to a reduction in overall inequality of five per cent in both countries. In Chile, however, the Gini coefficient was approximately constant (dropping only by 0.001 points)..

TABLE 1

Gini coefficients and their decompositions by concentration coefficients, and weights in total income of each income source

$G = \sum_k c_k \varphi_k$	Income	Brazil		Chile		Mexico	
	Source - k	1995	2004	1996	2003	1996	2004
G - Gini	Total	0.5985	0.5711	0.5630	0.5620	0.5374	0.5103
c_k Concentration coefficient	Labour	0.5943	0.5633	0.5692	0.5815	0.5420	0.5080
	Social Security	0.5858	0.6118	0.4778	0.4201	0.5646	0.6320
	Other	0.7422	0.6206	0.5715	0.5186	0.4764	0.5264
	CCT		-0.5271		-0.5383		-0.4855
φ_k Weight in total income	Labour	0.8204	0.7260	0.8319	0.8164	0.8906	0.8600
	Social Security	0.1425	0.2270	0.0701	0.0794	0.0298	0.0501
	Other	0.0371	0.0419	0.0980	0.1041	0.0795	0.0844
	CCT	0.0000	0.0051	0.0000	0.0001	0.0000	0.0055
$c_k \varphi_k$ Contribution to total inequality	Labour	0.4875	0.4090	0.4735	0.4747	0.4827	0.4369
	Social Security	0.0835	0.1389	0.0335	0.0333	0.0168	0.0317
	Other	0.0275	0.0260	0.0560	0.0540	0.0379	0.0444
	CCT		-0.0027		-0.0001		-0.0027

Note: Values rounded.

Source: Pnad 1995, 2004; Casen 1996, 2003; Enigh 1996, 2004.

We maintain that although the success of Mexico and Brazil in reducing inequality has been due to many other non-transfer reasons, it has also been clearly due to the effectively targeted conditional cash transfers that have been massively reaching the poor. In contrast, we maintain that in Chile the extremely reduced coverage of the programme⁷ and the proportionally small values that it has transferred have prevented any relevant impact on inequality.

4.2 SHARE AND DISTRIBUTION OF TYPES OF INCOME

Table 1 shows the concentration coefficients for each type of income (labour, social security, other income and CCT income) and the weight of each income source in total income. When the concentration index of a source is higher than the Gini index of total income, we claim that this source is contributing to increase inequality, and vice-versa. By multiplying the concentration index of an income source by its weight, we have the total contribution of the source to the overall inequality as measured by the Gini index (equation [1]). Dividing this result by the Gini gives the percentage contribution of the source to total inequality.

Labour is the main source of income in the three countries of our study. Its share in total income varies from 72.6 per cent (Brazil, 2004) to 89.1 per cent (Mexico, 1996). Yet, its importance has been declining over time, as Table 1 shows. The pattern of this decline differs from country to country. In Brazil and Mexico, this trend was associated mainly with an increase in the share of social security incomes; in Chile, the country that had the most modest change in the weight of labour, this trend resulted from a combination of a slightly larger share of social security and 'other income'.

Government direct transfers – defined here as representing both CCTs and Social Security – are the second most important source of income in these countries. Their share has been increasing in all three countries over the years. When these transfers are disaggregated, it becomes clear that the weight of social security transfers is much higher than that of the conditional cash transfers. The latter are well below one per cent of total income. In Brazil, social security – both of a contributory and non-contributory nature – came to represent almost one quarter of total income. In Chile and Mexico, the shares of social security reached 7.9 per cent and 5.0 per cent, respectively. It should be noted here that part of the 'other income' source is also composed of non-conditional cash transfers

The concentration indexes presented in Table 1 give an idea of how each type of income is distributed across the population. Given its weight in the total, labour income indexes roughly reproduce the Gini coefficients in each country.⁸ Only in Chile are the social security transfers inequality-reducing at both points of time; the high concentration of social security transfers contributes to increase inequality in Brazil and Mexico. Conversely, the income from CCTs is the least concentrated income source in all three countries.

So far we have been examining either the concentration index or the weight of each income source relative to total income. By weighting the concentration index of each source by its share in total income, we can develop an idea of how each source affects total inequality, as measured by the Gini index.

Between the mid-1990s and roughly the mid-2000s, the concentration of labour income rose in Chile, although some of the inequality-increasing impacts of this change were attenuated by the reduction of its share in total income. Conversely, labour income in Brazil and Mexico became less concentrated but drastic reductions in its shares in total income—particularly in Brazil—forestalled further reductions in inequality. The combination of a lower concentration index and a smaller share in total income resulted in a decrease in labour income's contribution to total inequality: in Mexico this contribution fell from 89.8 per cent to 85.6 per cent and in Brazil from 81.5 per cent to 71.6 per cent.⁹

Due to the larger share of social security income in total income, one could expect an increased contribution of this source to total inequality. In fact, this can be observed in Mexico and Brazil. Moreover, a considerable increase in the concentration index of this source also contributed to a higher contribution of social security transfers to the inequality of total income in these two countries. In contrast, the reduction in the concentration of social security incomes in Chile was sufficient to compensate for its growing share in total income, keeping the contribution of this source to inequality constant.

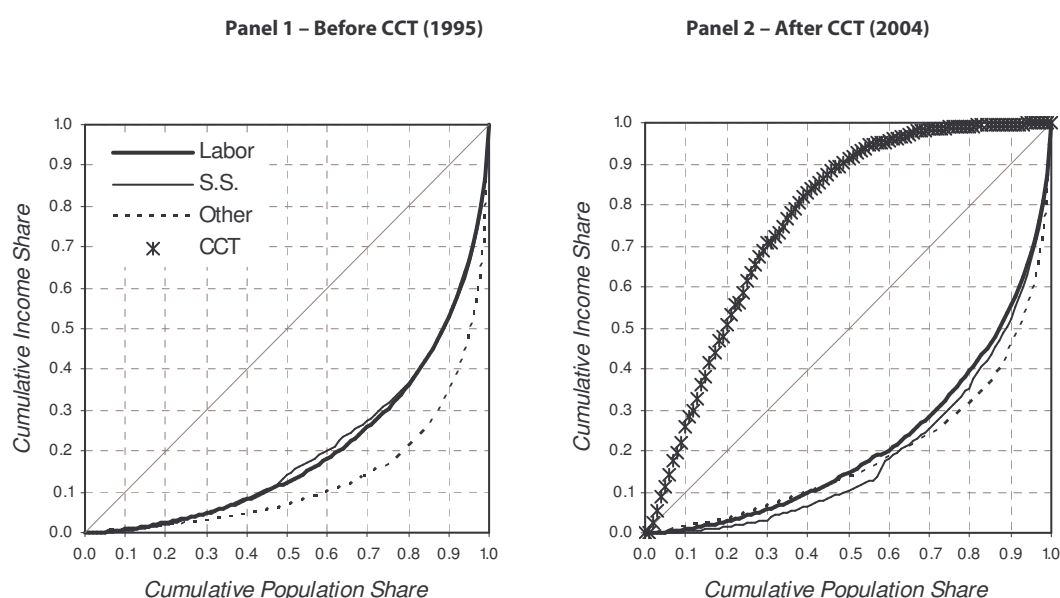
Before moving to the decomposition of the changes in inequality, it is worthwhile to examine the concentration curves of the income components in each country. We chose not to represent the Lorenz Curves of total income in Figures 2-4 because they are indistinguishable from labour income's concentration curves. The diagonal line in Figures 2-4 represents perfect equality.

4.3 BRAZIL

Brazil exhibits two peculiar features that are not present in the other two countries. The first is that the 'other income' source in 1995 is much more concentrated than in Mexico or Chile; it is also more concentrated than either social security income or labour income. This is due to the fact that 1) what is categorized as transfers – private and public – constitute a small proportion of 'other income' and 2) income from assets – such as rents, dividends and interest – makes up a relatively large part. In 2004, 'other income' becomes much less concentrated. This effect is due to *Benefício de Prestação Continuada*, a large means-tested but non-conditional cash transfer programme implemented over the nine years between 1995 and 2004.

FIGURE 2

Income sources' concentration curves, Brazil



Source: Phad 1995, 2004.

The second peculiar feature is that the concentration curve of social security income is very similar to that of labour income.

The CCT concentration curve in the right panel of Figure 2 testifies to the effective targeting of *Bolsa Família*: the 40 per cent poorest Brazilians receive over 80 per cent of the total amount distributed by the programme.

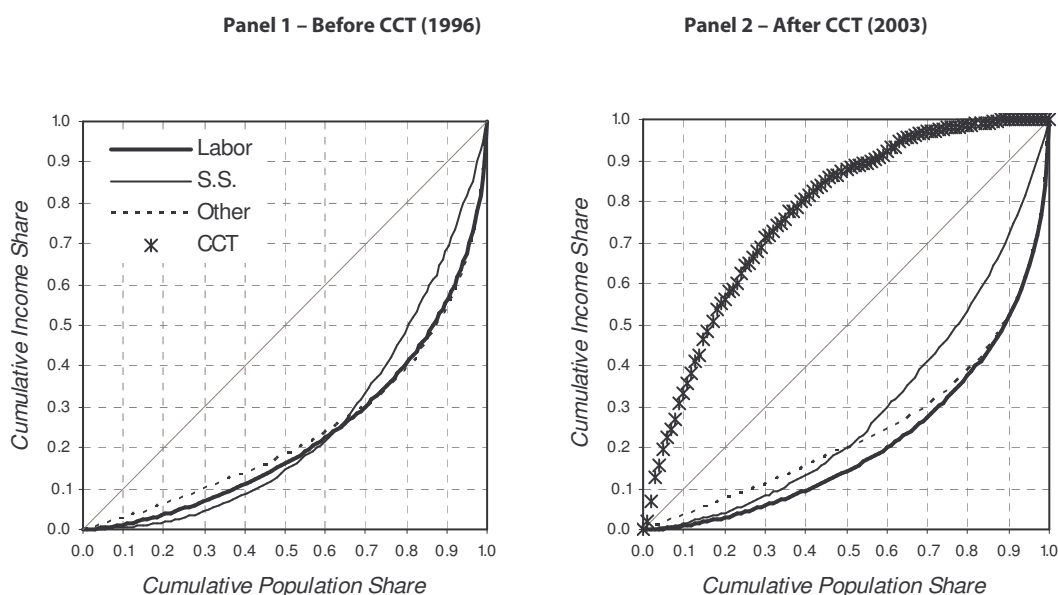
4.4 CHILE

In Chile, two characteristics stand out in comparison to those in the two other countries. The first is that social security income became less concentrated in 2003, although the bottom of the distribution continued to be poorly covered. The second characteristic is that 'other income' covered the bottom of the distribution reasonably well.

The CCT concentration curve in the second panel of Figure 3 shows that, similar to *Bolsa Família*, *Chile Solidario* is well targeted: the 40 per cent poorest Chileans received 80 per cent of the benefits in 2003.

FIGURE 3

Income sources' concentration curves, Chile



Source: Casen 1996, 2003.

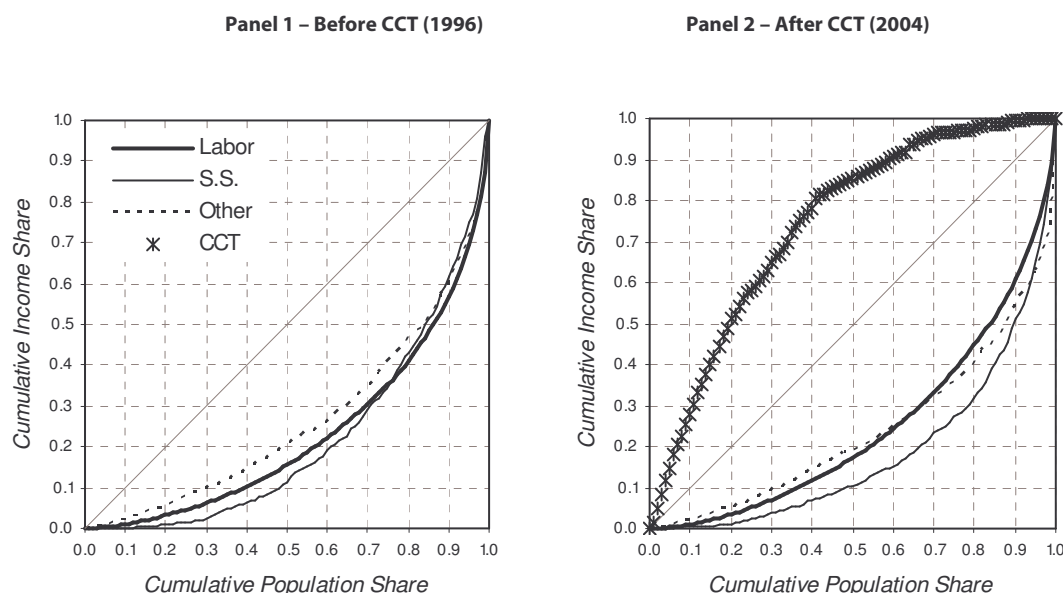
4.5 MEXICO

The evolution of income sources in Mexico is similar to that in Brazil. First and foremost, labour income became less concentrated. But, as in Brazil, this reduction in concentration occurred mainly above the 40th income percentile. In other words, the decrease in the concentration of labour income did little for those among the poorest percentiles. Secondly, there was an increase in the concentration of social security income, but this was due mostly to gains of the very highest percentiles at the expense of middle percentiles, once again leaving the poorest untouched. Contrary to what happened in Brazil, 'other income' became more concentrated.

Lastly, the CCT curve in panel 2 of Figure 4, which depicts the concentration of *Oportunidades*, shows excellent targeting. Similar to the record in the Brazilian and Chilean CCTs, 80 per cent of income from *Oportunidades* goes to the 40 per cent poorest Mexicans.

FIGURE 4

Income sources' concentration curves, Mexico



Source: Enigh 1996, 2004.

4.6 DECOMPOSITION OF CHANGES IN INEQUALITY

From Table 1 we learned that in Brazil and Mexico total inequality fell about five per cent from the mid-1990s to roughly the mid-2000s. The fall in Chile was a meagre 0.2 per cent, however. The composition of factors behind each of these changes is quite different across the countries. In Table 2 we present the factor decomposition [4] of changes in inequality from the mid-1990s up to 2003/4 for each country. The decomposition points out the contribution of the changes in the share (composition effect) and the concentration of each source of income to the total change in the Gini index. By dividing the contribution of the change in each factor by the change in the Gini index, we derive the contribution of the factor as a percentage of the total change in inequality.

Labour income was the main driving force of the level of inequality in the three countries. This is understandable since labour income accounts for a large share of total income. More specifically, changes in the concentration of labour income were the most important factor causing changes in inequality. Although we can observe changes in the weight of labour income, the contribution of this composition effect to the reduction of inequality in Brazil and Mexico was small. In Chile, the percentage of total change associated with the fall of the share of labour income in total income was 19 per cent; however, there was only a negligible drop in total inequality in Chile; hence, the 19 per cent corresponded to only a decrease of 0.0002 Gini points.

TABLE 2

Changes in Gini coefficients and their decompositions by changes in concentration coefficients, and in weights in total income of each income source

$\Delta G = \sum_k ((\bar{c}_k - \bar{G})\Delta\varphi_k + \bar{\varphi}_k\Delta c_k)$	Income Source - k	Brazil		Chile		Mexico	
		Value	%	Value	%	Value	%
ΔG - Change in Gini	Total	-0.0274	100	-0.0011	100	-0.0272	100
$\bar{\varphi}_k\Delta c_k$ Concentration effect	Labour	-0.0239	87.3	0.0101	-941.2	-0.0297	109.5
	Social Security	0.0048	-17.5	-0.0043	401.7	0.0027	-9.9
	Other	-0.0021	7.5	-0.0048	450.2	0.0018	-6.7
$(\bar{c}_k - \bar{G})\Delta\varphi_k$ Composition effect	Labour	0.0006	-2.1	-0.0002	18.6	0.0000	0.1
	Social Security	0.0012	-4.3	-0.0011	98.1	0.0015	-5.6
	Other	-0.0023	8.3	-0.0006	57.9	0.0022	-7.9
$(\bar{c}_k - \bar{G})\Delta\varphi_k + \bar{\varphi}_k\Delta c_k$ Concentration and composition	Labour	-0.0234	85.2	0.0099	-922.7	-0.0298	109.6
	Social Security	0.0060	-21.8	-0.0054	499.8	0.0042	-15.5
	Other	-0.0043	15.8	-0.0054	508.2	0.0040	-14.7
	CCT	-0.0057	20.8	-0.0002	14.7	-0.0056	20.5

Note: Values rounded.

Source: Phad 1995, 2004; Casen 1996, 2003; Enigh 1996, 2004.

Income from social security also had an important contribution to the dynamics of inequality. It raised inequality in Brazil and Mexico but not in Chile. In Brazil and Mexico, a combination of greater concentration and a larger share of this more concentrated income component in the total overturned one sixth of the equalizing effect of the improved distribution of labour incomes in Mexico and over-turned one quarter in Brazil. In Chile, however, social security incomes became less concentrated and more important in total income, counteracting the trends observed in the labour market. The contribution of social security income to reduce inequality in Chile compensated for more than half of the inequality-increasing contribution of labour incomes.

The content of the variable 'other income', as already stated, varies according to the country. In Brazil, the reduction in the concentration and increase in the share of this source are related to a significant expansion of the *Benefício de Prestação Continuada*, a large non-conditional means-tested transfer to the elderly and to people with disabilities that render them unable to work. Although this income source also includes rent, interest, dividends and private transfers, these were not relevant to changes in income distribution over the period that we study (Soares *et al.* 2006). In Mexico, 'other income' includes non-conditional targeted cash transfers, such as *ProCampo*, and public and private scholarships, donations from NGOs, income from capital and national or international remittances. In Chile, 'other income' also includes important non-conditional cash transfers (*PASIS*), as well as capital and other income items. Available evidence suggests that means-tested unconditional cash transfers were also important in reducing inequality in Brazil and Chile. But as our focus in this paper is on CCTs, we leave the inquiry into the impact of those unconditional transfers upon inequality for future research.

The conditional cash transfers¹⁰ proved to be an important inequality-reducing factor in all three countries. In Mexico and Brazil, they were surpassed in importance only by labour income. But their contribution to the fall in inequality was disproportionately high given their small share in total income. With a share of about 0.5 per cent of total income in Brazil and Mexico and much less in Chile, the CCTs were responsible for 21 per cent of inequality reduction in Brazil and Mexico and 15 per cent in Chile. Just to give an idea of the relative impact on inequality of the CCTs, in both Mexico and Brazil they were more than enough to counteract the increase in concentration of social security incomes, although their shares in total income amounted to a small fraction of the latter.

In Chile, cash transfer income is very well targeted but it amounts to such a very small share of total income that its contribution to the fall in inequality has been very modest. Indeed, among all inequality-reducing factors in Chile, cash transfers were the least important; the effect of social security incomes, for instance, was more than 30 times greater than that of CCTs. Since targeting of CCTs is similar in all three countries, if the CCT share of total income in Chile were larger, we would expect an impact as high as that observed for Brazil and Mexico.

These results allow us to identify some general patterns of change in inequality in the three countries covered by our study. In Brazil and Mexico, the story is almost the same. Inequality is falling mainly due to reduced concentration in labour incomes. This fall is also due to an important contribution from conditional cash transfer programmes. In contrast, the concentration of social security incomes is increasing in both countries and preventing inequality from falling even more. In Chile, the labour market is driving inequality up but the social security system (including the non-contributory pensions and non-conditional targeted transfers grouped in the category of 'other incomes') is compensating for the negative performance of the labour market. The CCTs play a very minor role in the dynamics of inequality in Chile; nevertheless, they have an inequality reducing effect. Were their share of total income increased, CCTs could have a significant effect on reducing inequality

5 CONCLUSIONS

Mexico, Brazil and Chile are countries marked by a high degree of income inequality. This, however, is not a static picture. Both the levels and the composition of this inequality have been changing over the years. Some income sources have increased or decreased their share of total income, and some have had the concentration of their distribution rise or fall. The result of these changes is that from the mid-1990s to roughly the mid-2000s, the level of total income inequality was stable in Chile but fell significantly in Mexico and Brazil.

Our results indicate that while changes in labour income were important forces contributing to a more equal income distribution in Mexico and Brazil, the opposite occurred in Chile, where they were inequality-increasing. The second most important source of income, social security, also behaved differently in Chile than in Brazil and Mexico. In Chile social security counteracted about two-thirds of the increase in inequality driven by labour income. In Brazil and Mexico, however, social security increased its share while becoming more concentrated; it therefore had an inequality-increasing effect that counteracted the inequality-decreasing effect of labour income. Finally, the 'other income' component is composed of very different income items in each of the three countries, but in Brazil and Chile it contains a targeted and unconditional government cash transfer: *Benefício de Prestação Continuada* in Brazil, and *PASIS* in Chile. But only in Mexico did the 'other income' component have an inequality-increasing effect.

All three countries have put in place Conditional Cash Transfer programmes. The total amount transferred by these programmes is still modest, its share in total income ranging from 0.01 per cent in the Chilean *Chile Solidario* to 0.5 per cent in the Brazilian *Bolsa Família* and the Mexican *Oportunidades*. These figures pale in comparison to the weight of transfers from the social security system. However, CCT income is so well distributed that even with a small share of total income, it has made an important contribution to decreasing inequality in Mexico and Brazil. In those two countries, CCTs were the second most important determinant of the fall in inequality between 1996 and 2004. Only in Chile, where their weight was negligible, did CCTs have no relevant contribution to the dynamics of inequality.

The analysis presented in this Working Paper has some clear limitations. The most obvious one is that we treat the social security system as a single unit despite the fact that it contains several different programmes. By lumping together contributory and non-contributory pensions and some social assistance programmes and thereby concluding about the overall impact of social security, we are not being explicit about the important impact of social assistance programmes on inequality. Similarly, since the content of what we call 'other income' is equally heterogeneous, we are not able to single out the impact of different types of private and public transfers on inequality. Although we recognize that isolating such different sources of income would not have been advisable for this particular study, we believe that the same analysis done on a country by country basis could, indeed, benefit from more disaggregated categories.

Our study does not lead to conclusions that allow us to prescribe detailed recommendations for redistributive policies. Nevertheless, we can derive some general implications of our results for development strategies aiming at the reduction of inequality.

The factors driving the dynamics of inequality between the mid-1990s and roughly the mid-2000s in Brazil, Chile, and Mexico were quite different in nature. Even so, there were some characteristics shared by all three. One aspect that the three countries illustrate is that CCTs are a very low-cost way of reducing inequality that can be replicated in many other countries. Even in the countries where the CCTs are consolidated and cover a significant share of the population, they could still be amplified before they begin to represent a heavy fiscal burden.

But CCTs are not a panacea and cannot be expanded endlessly. Their expansion is limited by political, administrative and budget constraints. Moreover, labour and social security incomes determine most of inequality in these countries and others. Therefore, substantial reductions of inequality are not likely to be achieved without paying ample attention to employment policies and reversing the inequality-increasing bias of social security systems.

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NOTES

1. Most evaluations were based on the PROGRESA/OPORTUNIDADES programme in Mexico; see, for instance, Hoddinott and Skoufias (2004), Skoufias and Parker (2001) and for an overview of CCTs' main impacts and a discussion of their limits in Latin America, Handa and Davis (2006).
2. See Furtado (1966), Acemoglu et al. (2001), Aghion et al. (1999), Atkinson (1997), Szekely and Hilgert (2001), and Fragoso and Florentino (2001) for different views on inequality, as well as its relation with growth.
3. All values in this text are provided in Reais and Pesos. Purely for illustrative purposes, we provide values in 2000 Constant Purchasing Power Parity Dollars, as calculated using the World Bank's World Development Indicators facility. The conversion value used is the ratio between GDP in local currency units and GDP in 2000 Constant Purchasing Power Parity Dollars. Conversions are made using the PPP factor relevant for the year for which the values are expressed. For example, in 1995 the PPP conversion factor between Reais and 1995 Dollars was 0.577, but in 2004 the same factor was 1.33.
4. Although the unified information system, the *Cadastro Único*, was created in 2001, it was not operational before the end of 2003.
5. *Bolsa Familia* also incorporated the *Auxílio Gás*, a targeted unconditional cash transfer programme designed to subsidize cooking gas. The *PETI* has been semi-incorporated into *Bolsa Familia* since it now shares the same information system and value of the stipend but in localities highly prone to child labour, municipal school systems still receive aid to maintain the *Jornada Ampliada*.
6. Note that by "total income", we mean total income as measured by household surveys. Even when adjustments, such as those for the Chilean dataset, are applied, total income as measured by household surveys is quite different from total income as reported in the national accounts. By definition, household surveys measure neither consumption by public administrations nor retained profits by firms. Furthermore, unless the wealthy are over-sampled and questionnaires specially designed to capture property income are used, household surveys will also under-estimate very high incomes, particularly very high property incomes.
7. It is important to bear in mind that in 2003 the programme was still expanding in order to achieve the target of 225,000 beneficiary families.
8. In Chile the concentration coefficient for labor income is closer to the Gini coefficient in 1996. In 2003, labor income became more concentrated than total income and the two diverged somewhat, but the difference was still less than two Gini points.
9. To obtain these figures from Table 1, divide $ck\phi_k$ by the appropriate Gini coefficient.
10. The joint composition and concentration effects are represented for CCTs only in Table 2 because this component did not exist in earlier years.



International Poverty Centre

SBS – Ed. BNDES, 10º andar
70076 900 Brasília DF
Brazil

povertycentre@undp-povertycentre.org
www.undp-povertycentre.org
Telephone +55 61 2105 5000
Fax +55 61 2105 5001