



Nova Economia

ISSN: 0103-6351

ISSN: 1980-5381

Nova Economia

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Nova Economia, vol. 29, no. 1, 2019, January-April, pp. 249-275
Nova Economia

DOI: 10.1590/0103-6351/3992

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Poverty upsurge in 2015 and the rising trend in regional and age inequality among the poor in Brazil

O aumento da pobreza em 2015 e a crescente desigualdade etária e regional entre os pobres no Brasil

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Abstract

The aim of this article is threefold. Firstly, to present income-based poverty and extreme poverty indicators for 2015, when the macro-economic crisis led to a generalized deterioration affecting all areas and regions. The second aim is to discuss long-term evolution, emphasizing the period since 2004, when sustained improvement of income indicators as well as convergence of regional and area results began. Considering the period from 2004 to 2014/2015, the third aim is to show that the reduction in poverty and extreme poverty was parallel to increased inequality in poverty regarding two critical aspects: the regional aspect, since inequality among the five regions became higher, thus reinforcing the dichotomy between the North/Northeast versus the Centre-South; the age aspect, because the recent improvements since 2004 have not sufficiently benefited children as to reverse their disadvantaged position, so much so that in 2015 children still had a share in poverty that was twice their share in the total population. The last section concerns policy measures that may reduce the impact of the crisis on the poor.

Keywords

poverty; inequality; income; regions; areas; age brackets.

JEL Codes I32; I38; J14.

Resumo

Este artigo tem três objetivos. Primeiro, apresentar indicadores de pobreza para 2015, quando a crise macroeconômica levou ao seu agravamento em todas as regiões e áreas do país. Segundo, discutir a evolução de longo prazo enfatizando o período 2004-2015, caracterizado por melhoria sustentada dos indicadores e convergência espacial dos resultados até a reversão de 2015. Terceiro, mostrar que a queda da pobreza de 2004/2014 se fez acompanhar pelo agravamento da desigualdade na pobreza quanto a dois aspectos críticos: o regional – a desigualdade entre as cinco regiões aumentou, acentuando a dicotomia Norte/Nordeste versus Centro-Sul; e o etário, já que redução da pobreza e da indigência não beneficiou primordialmente as crianças, que em 2015 ainda tinham participação na pobreza e na indigência que era o dobro da sua participação na população em geral. Ao final são tratadas medidas de política passíveis de reduzir os efeitos da crise sobre os mais pobres.

Palavras-chave

pobreza; desigualdade; renda; regiões; faixas etárias.

Códigos JEL I32; I38; J14.

1 Introduction

As a result of the economic downturn, poverty rates in Brazil increased in 2015 after a remarkable sustained decline since 2004.¹ Over the last few years there have been clear signs of a lack of dynamism in economic activity, as well as evidence of a wide array of macroeconomic problems.² However, the economy continued to grow, although at a rather sluggish pace, and quarterly GDP rates only became negative in the second quarter of 2014. Due to the crucial influence of the largely non-competitive tertiary sector, which accounts for over 70% of Brazilian GDP, labor market indicators still presented positive results until the first quarter of 2015, when both the unemployment rate and labour income ultimately reversed the favourable trend they had followed for several years. Thus, it came as no surprise that poverty estimates for 2015, based on the National Household Survey (PNAD) released at the end of 2016, showed the reversal of this sustained declining trend that had been maintained since 2004.

The aim of this paper is threefold. Firstly, to present poverty and extreme poverty income indicators for 2015, which constitute the first set of these indicators to reflect the impact of the present crisis on family per capita income and on poverty.

The microdata used herein, as well as the 2015 indicators derived from them, have another important feature: they are the last ones from the “old” annual household survey, which was definitively discontinued in 2015. Thus, the empirical results presented in this paper complete and close the long-term series of monetary poverty indicators from the “old” PNAD.

The new continuous household survey (PNAD-C) is not comparable to the “old” PNAD. Thus, this is an inimitable and timely occasion in which to review the long-term poverty series derived from the discontinued survey, looking into their spatial component – regions, as well as the urban/rural/metropolitan areas. The second aim of the paper is hence to shed light on the long-term spatial changes of poverty and extreme poverty.

Differently from the most usual practice of using a single national

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1 Instituto de Estudos do Trabalho e Sociedade, IETS (website); Hoffmann (2017).

2 Some date the beginning of the present economic crisis to when the investment rate began to decline in 2013. For an excellent description of macroeconomic policy errors that led to the crisis and the critical aspects to be dealt with for correcting them, see Pastore, Gazzano, & Carbone (2016).

parameter, we use locally specific poverty and extreme poverty lines to derive income indicators.³ Whenever this detailed within-the-country approach is possible, that is, the required data being available, its adoption is recommended and valued as a relevant methodological asset⁴: once differences in consumption patterns and prices are explicitly considered, real spatial differences among regions and areas are better reflected in poverty and extreme poverty indicators.

The third aim of this paper is to measure and analyze the 2004 to 2014-15 evolution of inequality among the poor, considering two traditionally adverse aspects of poverty in Brazil: regional inequality and age inequality. We derive an indicator of inequality that is often adopted in regional analysis (Azzoni, 1994), but which was previously used in Brazil for measuring spatial inequality among the poor (Rocha, 1997). The indicator has the advantage of synthesizing in a single value the results of the relative position of different components of each variable. Consequently, the measure of inequality for each variable – in the present case regions, areas or age brackets – goes further than recognizing that the Northeast is the poorest region or that children are over-represented among the poor. It is particularly useful in revealing the temporal trend of inequality in poverty for a given characteristic of the poor, therefore orienting public policy accordingly.

Finally, some basic methodological observations are due. Although it is well established that poverty is a multidimensional syndrome, income is often considered as an adequate proxy of well-being. Analyses and results presented in this text are based on an income approach to poverty. It is a direct heritage of Rowntree's (1901) seminal work, which identified the poor using a monetary parameter corresponding to the observed cost of a basic basket of goods and services. The income approach remained unchallenged until the 1970s, when difficulties in using it in international comparisons made popular the so-called basic needs approach (Hicks & Streeten, 1979). Many insisted on its multidimensional advantage, but

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 3 Most estimates of poverty and extreme poverty in Brazil are obtained applying a single poverty line and a single extreme poverty line to the whole country. This is the case of estimates produced by the World Bank, the ECLAC/Un and the IBGE and available on their respective websites. IBGE has recently released poverty indicators for 2016 based on the PNAD-C microdata using different values as lines, but each value was applied countrywide (IBGE/SIS, 2017).

4 World Bank (2017).

the basic needs approach was plagued by problems of comparability and weighting of indicators, thus leading to the search for a synthetic poverty index (Morris & Liser, 1977), and ultimately to generalized indexes of well-being such as the Human Development Index (IBRD, 1988).

However, conceptual and measurement restrictions persist when adopting solely any of these approaches, hence some combination of them became common practice in published academic writings. For instance, the poverty profile – that is, characterizing the poor according to different dimensions of well-being after having identified them by means of the income criterion, is found everywhere, being especially useful as a basis for the planning of targeted policies (World Bank, 2016). Also, although there is a continuous flow of proposals for new multidimensional poverty measures (Bourguignon & Chakravarty, 2002; Kageyama & Hoffmann, 2006), the use solely of the income approach is by far the most widely seen. In the case of Brazil, it is worth mentioning that the National Statistical Institute (IBGE) releases income-based poverty indicators using poverty and extreme poverty lines from four different sources.⁵ This is evidence of the predominant role that the monetary approach plays in countrywide large-scale poverty studies.

2 The Rise in income poverty rates in 2015

Measured in September 2015, household per capita income that serves as a basis for deriving poverty rates had probably been declining since the beginning of that year.⁶ As a matter of fact, national quarterly data from the “new” continuous household survey showed that labour income had deteriorated since the first quarter of 2015, despite the upwards adjustment of

5 Lines based on the value of the minimum wage (1/2 and 1/4 MW), legal poverty lines (R\$ 85 and R\$ 170), World Bank lines (US\$ 1.9; 3.1; and 5.5 at 2011 PPP), 50% national and 50% regional median incomes.

6 Using PNAD microdata, family per capita income from all sources associated to all family members living in the same household is applied in tandem with locally specific consumption based poverty (and extreme poverty) lines to generate income poverty indicators (for a detailed methodology, see Rocha (2003), chapter 3). The annual PNAD, as well as the periodical expenditure surveys also produced by IBGE (POFs) have been the only comprehensive sources for this statistical information in Brazil. By the end of 2017, estimates of poverty in 2016 using the new PNAD-C became available. However, results from the two surveys, that is, the old PNAD and the new PNAD-C, are not comparable. Thus for long-term series we still depend on the old PNAD.

the minimum wage in January 2015 by 8.8%, which helped to neutralize part of the effect of rising inflation and loss of dynamism in the labour market. The minimum wage is widely recognized as playing a central role in Brazil as far as poverty and income distribution are concerned, since it is not just the formal labour market minimum, but also serves as the floor value for social security benefits⁷ and for each one of the almost 4.4 million constitutionally-guaranteed social assistance monthly cash transfers⁸.

However, in September 2015, the 8.24% inflation⁹ occurring since the beginning of the year had already significantly eroded the value of the minimum wage. Also, poverty and extreme poverty lines used herein¹⁰, which are based on both observed regional baskets and regional prices so as to represent minimum benchmarks for the cost of living of the poor across the country, were affected by rising inflation, particularly the above average increase of government-controlled prices which had been artificially contained in previous years.

Hence, the rise in poverty and extreme poverty rates from 2014 to 2015 did not come as a surprise. Income losses at the bottom of the distribution led rates to return to their 2012 level: the proportion of poor people in the total population increased from 13.9% in 2014 to 16.0% in 2015, while that of the extremely poor grew from 3.4% to 4.2% within the same period (Table 1). Although there are various methodologies for deriving poverty indicators – for instance, using a single national income parameter or regionally-specific poverty lines, or even using different approaches to establish the lines themselves – whatever parameters are used, they necessarily show increased rates because of the general decline in household per capita income all along its distribution.¹¹ The PNAD income results for

7 Around 64% of all social security benefits paid in December 2015 corresponded to the minimum wage.

8 The number of allowances paid in December 2015. The *Benefício de Prestação Continuada* (BPC) is a means-tested constitutional social assistance benefit paid monthly to low-income elderly and disabled persons.

9 INPC rise from January to September 2015.

10 Indicators are derived using 24 different poverty and extreme poverty lines based on low-income families' observed consumption, corresponding to the five Brazilian macro-geographic regions, as well as to the metropolises, rural and urban areas in each region. The methodology used for establishing and updating the lines is presented in Rocha (2003).

11 Rafael Osório estimated 2015 poverty rates using different national poverty lines, such as the R\$ 77/month official poverty line (2014: 2.58%; 2015: 2.87%), the World Bank US\$1.25/day (2014: 3.22%; 2015: 3.73%), the World Bank US\$ 3.10/day (2014: 8.90%; 2015: 10.44%). These unpublished results update the series previously released up to 2014 (Osório, 2016).

2015, announced in November 2016, were perceived as just the very first of a series of bad news. The economy continued to deteriorate: there was a 3.6% decline in GDP in 2016, and a quite modest rate, slightly below 1%, is expected in 2017. Thus there is a consensus that some of the progress that had been made since 2004 in reducing the incidence of poverty and extreme poverty is to be lost in the process of economic adjustment.

Comparing the 2015 results to those of the previous year, the rates of poverty and extreme poverty increased in most areas under analysis.¹² Table 1 presents the national indicators, as well as regional and area aggregations.¹³ As usual, when an economic crisis strikes, the impact on poverty is most severe in the metropolises, the focal centres of economic activity. In all nine metropolises the rising poverty rates resulted in an almost 20% increase in the number of metropolitan poor (around 2 million additional individuals, of whom 570,000 were extremely poor). Although, due to their demographic size, the metropolises of São Paulo and Rio de Janeiro concentrate the largest absolute numbers – 56% of the metropolitan poor – the rates climbed the most in Fortaleza (from 17.3% in 2014 to 22.0% in 2015) and Recife (from 32.7% in 2014 to 36.5% in 2015), which may be explained by some indirect effects of the drought that has afflicted the Northeastern hinterland.

Despite the drought in the Northeast, national indicators for rural poverty showed the least adverse evolution among the three areas (rural, urban and metropolitan) from 2014 to 2015. This was due to relatively favourable results in rural areas outside the Northeast, some states even presenting a decline in poverty rates in 2015 (Pará, Rio de Janeiro, São Paulo, Santa Catarina).

However, such compensation was not possible in the case of extreme poverty, since it is highly concentrated in the drought-stricken rural North-

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12 There are 62 areas of analysis, these being the number of sampling areas for which we may generate specific results at the more detailed level. For example, there are three areas of analysis in São Paulo (the metropolis, and the non-metropolitan urban and rural areas) and two areas of analysis in Piauí (rural and urban areas). Only in 12 of these areas did the poverty rate not increase in 2015, nine of these being rural areas. Detailed results for all poverty and extreme poverty income indicators can be obtained from the author.

13 Table 1 presents the usual income indicators (headcount, gap ratio, quadratic gap ratio), taking into account the different aspects of insufficiency of income given poverty and extreme poverty parameters (Foster, Greer, & Thorbecke, 1984). However, the analysis in the paper is mostly centred around the headcount, often referred to as the poverty rate, because it is the most sensitive to changes among the income indicators.

east area, which accounts for a fifth of the number of extremely poor people in Brazil. Thus, the relatively favourable evolution in the rural South-Southeast was unable to compensate for the deterioration that took place in the rural Northeast, where the extreme poverty rate increased sharply from already very high levels (10.1% in 2014 to 12.1% in 2015).¹⁴ As a result, the extreme poverty rate in rural areas remained much higher than the level observed in metropolitan and urban areas.

Table 1 **Poverty and extreme poverty income indicators – 2014/15 Brazil, regions and areas**

Regions and Areas	No. (1,000)		Proportion (%)		Gap Ratio (%)		Quadratic Gap Ratio (%)	
	2015	2014	2015	2014	2015	2014	2015	2014
Poverty								
North	3,116	2,895	18.1	17.4	40.3	40.0	4.5	4.3
Northeast	13,874	11,686	24.9	21.4	42.1	40.9	6.4	5.2
Southeast	11,446	9,572	13.8	11.9	38.7	37.6	3.3	2.7
South	1,525	1,152	5.3	4.1	43.3	45.4	1.6	1.3
Centre-West	2,031	1,750	13.3	11.7	38.3	35.4	3.1	2.4
Metropolitan	12,063	10,107	19.8	17.1	38.1	35.6	4.4	3.4
Urban	15,072	12,709	13.8	11.8	41.9	41.3	3.7	3.1
Rural	4,859	4,237	16.6	15.1	42.4	43.2	4.2	3.9
BRAZIL	31,993	27,053	16.0	13.9	40.6	39.5	4.0	3.3
Extreme Poverty								
North	977	813	5.7	4.9	51.2	59.2	2.1	2.3
Northeast	4,435	3,451	8.0	6.3	43.9	43.7	2.3	1.9
Southeast	2,205	1,877	2.7	2.3	68.7	66.4	1.6	1.3
South	485	403	1.7	1.4	69.5	72.7	1.0	0.9
Centre-West	347	255	2.3	1.7	75.2	70.6	1.5	1.0
Metropolitan	2,003	1,428	3.3	2.4	63.4	64.9	1.7	1.3
Urban	4,212	3,502	3.8	3.2	57.3	57.5	1.7	1.5
Rural	2,234	1,869	7.7	6.6	39.2	41.0	1.8	1.8
BRAZIL	8,448	6,800	4.2	3.5	53.9	54.5	1.7	1.5

Source: Based on IBGE/PNAD microdata.

14 These rates refer to the Rural Northeast and are not presented in Table 1.

Considering the regional breakdown, the Northeast, where poverty and extreme poverty rates are traditionally the highest, presented the most unfavourable evolution in 2015, probably as a combined result of the macroeconomic crisis and the drought. However, since there is a notorious resilience of rural poverty to ups and downs of economic cycles¹⁵, the drought was the main cause of increases in poverty and extreme poverty rates in the rural area of the Northeast.¹⁶ Because of the especially adverse evolution in the Northeast, the enormous dichotomy between the North-Northeast and Southeast-South-Centre-West was maintained in 2015, and even reinforced in the case of extreme poverty: poverty and extreme poverty rates are almost five times higher in the Northeast than in the South.

The gap ratio, the indicator that measures the deviation between the average income of the poor and the poverty line, behaved differently in the case of poverty and extreme poverty.

As far as extreme poverty is concerned, the ratio declined at the national level, and in most sampling areas as well. That is, the rise in the proportion of the extremely poor and the decline in income gap partly compensated each other, revealing that the increase in the extreme poverty rate was mostly due to the incorporation of individuals with incomes slightly below the value of the extreme poverty line, a “frontier effect”. There was no loss in terms of average income of the extremely poor from 2014 to 2015, which is, considering the economic crisis, a relatively favourable result.

In the case of poverty, the crisis had a more severe impact, since most frequently both indicators evolved in the same direction: the proportion of the poor rose, and their average income in 2015 was lower than in 2014 as well, thus increasing the gap ratio. These two adverse effects combined unfavourably to influence the synthetic income poverty indicator – the squared gap ratio – which also takes into account income inequality among the poor. All three income effects indicate that the recent evolution of poverty was more adverse than that of extreme poverty.

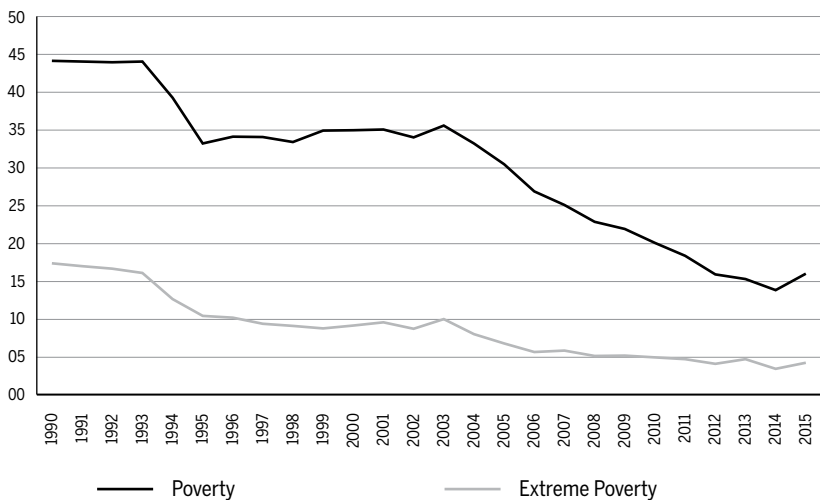
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15 This resilience is explained by large sub-sectors of the agricultural activity that remain at the subsistence level having weak links with the market. This resilience also affects the position in the Northeast in the regional breakdown, due both to the high relative weight of the rural area in the region and to the existence of a large sector characterized by marginal income generation activities.

16 In the rural Northeast the poverty rate increased from 22.6% in 2014 to 26.0% in 2015, and the extreme poverty rate from 10.0% to 12.2% in the same period.

3 Long-term evolution and its spatial component

Poverty and extreme poverty rates in Brazil show a long-term decline, but three different phases can be clearly identified. From the early eighties to the 1994 monetary stabilization, this downward trend encompassed a succession of yearly ups and downs associated with short-term cycles. After the sharp drop that followed the introduction of the Real Plan, the rates stabilized around new levels – 34% and 9%, for poverty and extreme poverty, respectively. Only when the new cycle of economic growth was established in 2004 did rates begin to decline steadily until 2014. In 2011, the extreme poverty rate reached 4%, considered low enough to make further decreases much harder to attain. However, successful changes in the Bolsa-Família programme design and targeting probably helped to make additional progress possible, so that the extreme poverty rate attained its lowest historical level of 3.4% in 2014 (Figure 1).

Figure 1 Poverty and extreme poverty rates in Brazil (%) – 1990-2015



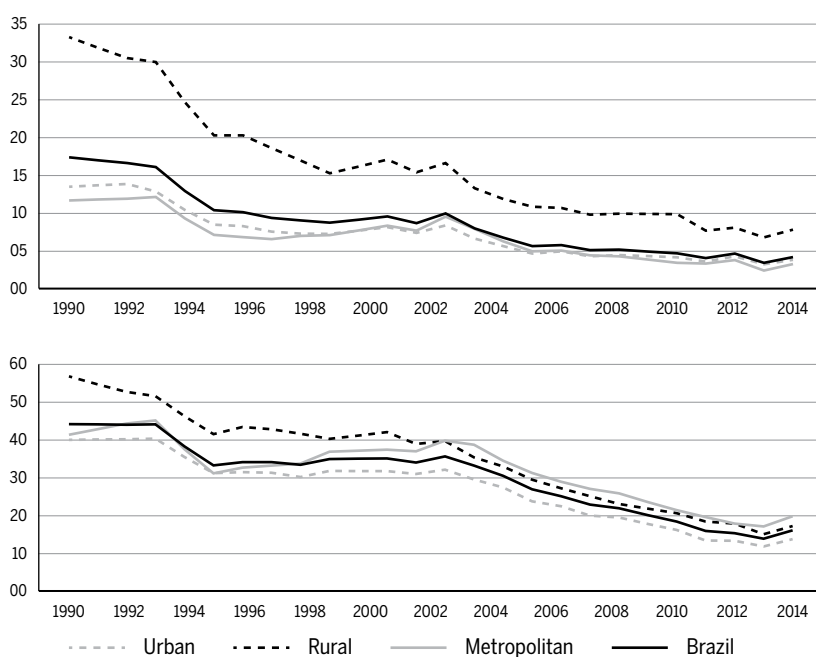
Source: Based on IBGE/PNAD microdata.

Note: Rural North not included.

There are three basic facts about these trends. Firstly, both rates declined in the long run, but extreme poverty rates presented an earlier and steadier reduction, since they are less affected by short-term economic

cycles. Secondly, the 2004 new cycle of economic growth was associated to with a parallel and sustained decline in poverty and extreme poverty rates for a length of time, which is unique in Brazil.¹⁷ Thirdly, there were relevant spatial differences in these trends, which are concealed by the aggregated results at the national level. This section will focus on the spatial evolution referring solely to the headcount indicator since 2004, when the survey sample incorporated the rural North, thus completing its national coverage.¹⁸

Figure 2 **Extreme poverty and poverty rates (%) by areas – 1990-2015**



Source: Based on IBGE/PNAD microdata.

Note: Rural North not included.

The period extending from 2004 to 2014 was marked by a continuous decline in poverty and extreme poverty rates, affecting all areas and regions,

17 Statistical evidence from the National Household Survey is available from 1981.

18 In 2004, when the PNAD coverage of the Brazilian territory was complete, the rural area of the Northern region being fully incorporated into the survey sample, the Northern population represented 2.1% of the Brazilian population.

so that there was no fundamental change in their ranked positions. As a matter of fact, by 2003 the process of spatial changes in poverty incidence in different areas – urban, rural and metropolitan – was completed (Figure 2).

This process had been characterized, on the one hand, by the relative increase in poverty incidence in metropolitan areas due to the rural–urban migration boom in the seventies.¹⁹ On the other hand, it was characterized by a steeper pace in poverty reduction in rural areas associated with the modernization of agriculture, but also to a gradual generalization of the relatively generous social security benefits in rural areas,²⁰ which may have compensated for some adverse effects of modernization there.

The fact that during the period extending from 1990 to 2003 poverty and extreme poverty rates in rural areas declined at a faster pace, while these rates had a very modest decline in the metropolises²¹, drastically changed the spatial picture of poverty in Brazil, reducing the differentials of poverty incidence between these two areas. When, in 2003, all rates climbed as a result of the political change, poverty rates in both metropolitan and rural areas were at the same level. Thus 2003 marks not only the peak of rates since the monetary stabilization, but also the reversal of the relative ranked position of rural and metropolitan areas as far as the income poverty rate is concerned.²² The critical levels of extreme poverty in rural areas was harder to revert: although the rural extreme poverty rate

19 The metropolises, especially Rio de Janeiro and São Paulo, were perceived as the privileged locus of modernity, economic progress and social mobility, while rural areas were associated with backwardness, stagnation and poverty. As a result, rural migration followed. Rural–urban migration peaked between 1970 and 1980 – 17.4 million people moved to large urban centres according to Martine and McGranahan's estimates – which certainly contributed to growing metropolitan poverty. Martine and McGranahan (2014) impute dysfunctional Brazilian urban results to lack of planning, absence of urban focus in the national agenda and to the local authorities' "systematic attempt to obstruct poor people, especially migrants".

20 The social security retirement policy is more generous in rural than in urban/metropolitan areas. In rural areas it is a non-contributory benefit that equals the minimum wage and benefits all elders, regardless of family arrangements, income level or assets. In 2004, when the rural area of the Northern region was fully incorporated into the survey sample, the Northern population represented 2.1% of the Brazilian population.

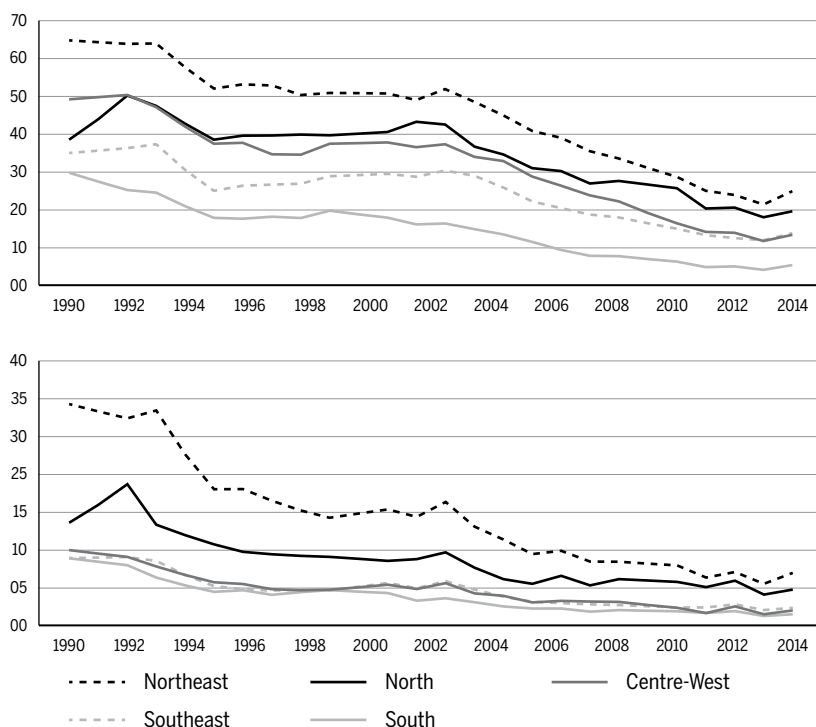
21 Poverty rates in the metropolises declined modestly from 41.4% in 1990 to 39.8% in 2003, after ups and downs along the period (extreme poverty rates declined from 11.7% to 9.5%). Although departing from critically high rates in 1990, rural areas presented a much better performance: the poverty rate evolved from 56.8% to 39.7%, and the extreme poverty rate was halved (from 33.3% to 16.6%).

22 Some of today's poverty estimates still show rates in rural areas being much higher than in the other two areas (ECLAC). However the cost of living is generally lower in urban areas than in the metropolises and it is the lowest in rural areas. Thus, rural poverty (extreme poverty) is overestimated whenever a single poverty (extreme poverty) line is used in all areas of the country.

remains much higher than that of other areas, its convergence to the level of urban and metropolitan extreme poverty rates stalled after 2004.

Regarding this long-term trend in the three areas, two facts should be highlighted. Firstly, the process of convergence of rates was continuous, largely overpowering short-term ups and downs. However this process is far from complete as far as extreme poverty is concerned. Secondly, the “metropolization” of poverty – that is, a more adverse evolution of poverty rates in the metropolises than in the other two areas – lost its impetus after 2003, but the present crisis may have more direct effects on it, as has happened in the past.

Figure 3 Poverty and extreme poverty rates (%) by regions



Source: Based on IBGE/PNAD microdata.

Note: Rural North not included.

The regional results present the same general downward trend observed above for the three areas: although at different paces, the decline of both

poverty and extreme poverty rates occurred in all five macro-regions. However, differently from the area results, the rank order of regions was essentially maintained throughout the 1990-2015 period for extreme poverty and for poverty as well (Figure 3), the Northeast and the South being in the extreme rank positions.

There are two noteworthy facts concerning the regional poverty rates. Firstly, the Centre-Western region that until 2003 presented rates close to those of the North has been converging towards the Southeast in terms of results since 2004. As a consequence, from 2012 onwards, rates in the Centre-West and Southeast have been roughly at the same level. Secondly, the South, which had the lowest rates throughout the period, made the most headway and since 2012 has presented poverty rates as low as 4-5%, thus a long way from Northern and Northeastern rates, respectively, 24.9% and 19.5% in 2015. At the end of the period, there are four well differentiated levels of regional poverty rates.

The convergence of regional rates is much more accentuated in the case of extreme poverty. Figure 3 shows significant progress achieved over the last 25 years. The dichotomy between the Centre-South and North-Northeast remains, but quite low rates – below 3% – had been reached by the former group, despite the slight increase in 2015. As in the case of poverty, regional differences remain: in the Northeast extreme poverty rates are almost five times higher than in the South (respectively 8.0% and 1.7% in 2015). Also, regional results in the Northeast veil inequalities of extreme poverty incidence among states, as well as further down, that is, when urban and rural area results within each state are considered. The extreme case, Maranhão, may be used as an example: it presents the highest extreme poverty rates at the state level, with the situation being still more critical in its rural area. Although the household survey does not allow for any further spatial decomposition, results refer to averages that certainly encompass more critical situations that would appear at a still more disaggregated level.

Table 2 Extreme poverty rates (%) 2015 – some selected results

Northeast	7.9	Rural Northeast	12.3
Maranhão	11.8	Rural Maranhão	16.2

Source: Based on IBGE/PNAD microdata.

The decline poverty and extreme poverty rates involved a significant convergence of rates whenever the rural/urban/metropolitan breakdown is considered (Figure 2). However, taking into account the five macro regions, the convergence was actually much slighter (Figure 3). This is because, in Brazil, the reduction in rural poverty at a faster pace is very much associated with the progress attained in the South, where both small-holdings and large-scale farming prospered, as well as modern large-scale farming that expanded in the Centre-West. In the poorest Northeast region, where agricultural modernization continues to lag well behind, small inefficient rural family holdings still account for a large share of regional economic activity, employment and income. As a result, almost 80% of the extremely poor rural dwellers lived in the Northeast in 2015 (Figure 4).²³

Figure 4 Regional shares in the number of rural extremely poor – 2015



Source: Based on IBGE/PNAD microdata.

Income trends are closely associated with economic cycles and during boom years the more developed and modernized regions are likely to benefit the most. As a result, inequalities in poverty rates among regions tend to increase during periods of economic expansion, as empirical results for Brazil in the eighties and nineties have confirmed.²⁴ Considering that the 2004-2014 period was characterized by a relatively high and sustained GDP growth rate – 3.6% yearly average – it is pertinent to verify the results in terms of regional inequality in poverty and extreme poverty rates.

23 These are the numbers of the rural extremely poor by region in 2015 (in thousands): North: 266; Northeast: 1,755; Southeast: 121; South: 60; Centre-West: 32.

24 Rocha (1997). Regional inequalities in income poverty were measured for the years ranging from 1981 to 1995: inequalities among regions were reduced during the boom that followed the Cruzado Plan and the Real Plan, and increased during the 1990 crisis. No such effect was observed in relation to income poverty inequality among urban, rural and metropolitan areas: the relative rise in metropolitan poverty in tandem with the reduction of rural poverty was the dominant trend, thus reducing inequality among the three areas.

4 Inequality in poverty rates

The concepts of poverty and inequality intermingle in several ways. The poor, whatever the concept used, are those underprivileged in the distribution of income and wealth, as well as in access to public services, information and other desired elements for adequate quality of life. In many medium-income countries, as is the case of Brazil, absolute income poverty persists because of the inequality in income distribution, not because of a global insufficiency of means to guarantee a reasonable level of living for all. Thus, in this sense, the distributive aspect is essential for poverty analysis.²⁵

Much has been written about the relationship between income poverty and income inequality, but this is not the concern here. Since poverty and extreme poverty have been significantly reduced in Brazil since 2004, it is worth looking at inequality from another angle. How has the recent poverty decline affected income poverty rates in the two aspects of inequality recognized as being the most critical in Brazil, regional inequality and age inequality?

Firstly, we consider regional inequality in poverty rates. As shown above (Figure 3), poverty rates declined in all five macro-regions. But has inequality in poverty rates among regions been reduced in this process? The second critical aspect of inequality concerns the age differences with respect to poverty rates. It is well known that in Brazil poverty rates are much higher among young children, declining monotonically as ages increase. Differently from other countries, poverty rates in Brazil are the lowest for the elderly.²⁶

In both cases, the inequality of poverty rates among regions (or among different age brackets) was calculated based on the number of poor people in each region (or age bracket). The concept behind the inequality indicator is that inequality in poverty rates among regions (or among age brackets) would be nil if each region (age bracket) had its “fair” share of the total number of poor people in Brazil. This “fair” share of the poor corresponds to the region’s (or age bracket’s) share of the total Brazilian population.

25 Barros *et al.* (2006); Kakwani, Khandker, & Son (2004).

26 Rocha (1993); Barros, Mendonça, & Santos (1999).

The ratio between the share of the population and the share of the number of poor for each region (or age bracket) can be taken as a measure of inequality, that is, how much it deviates from the theoretical equilibrium that corresponds to both shares being the same, thus their ratio being equal to 1.²⁷ Applying the logarithmic function, the indicator is the weighted sum of deviations and varies from 0 (total equality) to 1 (maximum inequality).²⁸

4.1 Inequality in income poverty rates among the five macro-regions

Firstly, let us examine the most recent inequality results, those associated with 2014 and 2015, when a general increase in poverty and extreme poverty rates occurred (Table 3).²⁹

Regional inequality of poverty rates declined as expected, due to an increased share of poor in the South and Centre-West that traditionally have harbored a smaller than “fair” share of national poverty, while the North reduced its share. The observed change in the poverty inequality index was mild because the Northeast that accounts for most of the Brazilian poor – that is 43% of the national number of poor for its 28% share in the Brazilian population – presented some increase in its poverty share. Thus, the poorest region was not relatively better off because of the economic crisis as could normally be expected; on the contrary, its relative position among regions deteriorated, probably as a result of the adverse effects of the long drought that began in 2012.

27 For instance, the share of the Northeast in the total Brazilian population was 27.8% in 2015, thus its “fair” share in poverty should be the same. However its share in poverty was 43.4%. The inequality index consolidates the deviations in both senses from the “fair” share for the five regions. For the inequality index among areas and regions, the shares can be derived from Table 1 (2014 and 2015).

28 Population shares for the five i regions or age brackets are defined as $N_i = ni/\Sigma ni$, where ni is the population in each area/age bracket and $\Sigma ni = 1$; and the number of poor shares are $P_i = pi/\Sigma pi$, where pi is the number of poor in each area/age bracket and $\Sigma pi = 1$. The deviation between the two shares is $Di = N_i/P_i$. The inequality index may be expressed as $I = \Sigma N_i \ln(D_i)$, thus following closely Theil’s T inequality index. Since there are no zero shares of poor in these two applications, the I assumes values in the $[0,1)$ interval.

29 For the absolute number of poor and extremely poor, as well as for the derivation of total population by regions used to calculate the inequality indexes referring to 2014 and 2015 presented in Table 3, see Table 1.

Table 3 **Inequality in poverty and extreme poverty among the five macro-regions**

	2004	2014	2015
Poverty	0.0642	0.1136	0.1000
Extreme Poverty	0.1433	0.1551	0.1696

Source: Based on microdata from IBGE/PNAD.

Note: Calculations for 2014 and 2015 can be made from data presented in Table 1.

The drought may also explain the unexpected rise in regional extreme poverty inequality from 2014 to 2015. The Northeast accounts for the largest share of those in extreme poverty by far, while at the same time it presents a very pronounced deviation of its population and extreme poverty shares (respectively 28% and 52% in 2015).³⁰ Thus, the local effects of the Northeast drought on extreme poverty inequality could easily outweigh the favourable impact that the economic crisis could possibly have had on regional inequality.

As far as the 2004-2014 period is concerned, thus abstracting the effect of the recent crisis, regional inequality both in terms of poverty and extreme poverty increased, which corresponds to the expected results of the long period of sustained growth. However, the evolution of extreme poverty inequality is more critical for three reasons. Firstly, it remains high because of the extraordinary share of extreme poverty in the Northeast and the evident failure to revert even slightly this situation: the Northeastern share in national extreme poverty remained at 52% both in 2004 and 2015. Secondly, inequality in extreme poverty is growing essentially due to the increased share of extreme poverty in the North, which evolved from 8.7% in 2004 to 12.0% in 2014 (the Northern population share increased much more modestly, from 8.0% to 8.5% within the same period). Hence, there has been an increase in the dichotomy between North-Northeast and the Centre-South. Thirdly, regional inequality being much higher in the case of extreme poverty reflects the acuteness of historical regional imbalances.

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30 The shares derive from the absolute numbers of poor and extremely poor, as well as from the total Brazilian population. For 2014 and 2015 these numbers can be obtained from Table 1.

4.2 Inequality in income poverty among age groups

The steady decline in poverty and extreme poverty rates since 2004 consistently benefited all age groups, although at different degrees (Table 4). The improved coverage of retirement benefits and the BPC³¹, coupled with the policy of increasing the real value of the minimum wage, have strongly reduced poverty and extreme poverty rates among the elderly, reinforcing their favourable position. However, the lack of a mechanism as efficient to help low income families with children led to a much milder decline of rates among children, thus maintaining their overrepresentation among the poor and the extremely poor (Table 5).

Table 4 **Poverty and extreme poverty rates (%) by age groups (2004, 2014 and 2015)**

Ages	2004		2014		2015	
	Poor	Extr. Poor	Poor	Extr. Poor	Poor	Extr. Poor
0 to 14	50.7	14.3	25.8	6.6	29.0	8.0
15 to 19	36.6	8.8	17.9	4.6	22.3	5.8
20 to 59	27.4	5.9	11.1	2.8	13.2	3.5
60 +	11.0	1.2	3.4	0.6	4.0	0.6
Total	33.1	8.0	13.9	3.5	16.0	4.2

Source: Based on IBGE/PNAD microdata.

The elderly and children remain situated at opposite ends of the poverty and extreme poverty scales and present the highest imbalances between their respective shares in poverty/extreme poverty and in the total population (Table 5). The fact that the better-off elderly have had since 2004 quicker gains in further improving their situation, while children lagged behind, is the main factor behind the growing inequality in poverty and extreme poverty rates according to age.

The indexes of inequality in poverty and in extreme poverty are presented in Table 6, considering the four age brackets in Tables 4 and 5. From 2014 to 2015, when poverty rates increased for all groups, there was some reduction in poverty inequality, due to the fact that the 0-14 age group did

31 *Benefício de Prestação Continuada* is a constitutional stipend within the scope of the Social Security policy paid to those aged 65 years or more who have a monthly per capita household income lower than a quarter of the minimum wage. Its value corresponds to the minimum wage.

relatively a little better than the elderly: in spite of the increase in their poverty rate from 25.8% in 2014 to 29.91% in 2015, their share in the number of poor in Brazil was reduced (from 40% to 38%), as well as their share in the total population. The elderly presented a slightly worsening condition, though still maintaining quite a privileged position: their share in poverty increased, but stayed low (3.3% in 2014 and 3.6% in 2015), while their poverty rate evolved from 3.4 % in 2014 and 4.0% in 2015, thus far below the 13.8% average rate in Brazil in the last year (Tables 4 and 5).

Table 5 Percentage shares in poverty, extreme poverty and total population by age bracket (%) – 2004, 2014 and 2015

Ages	2004			2014			2015		
	Poor	Extr. Poor	All	Poor	Extr. Poor	All	Poor	Extr. Poor	All
0 to 14	41.9	48.8	27.4	40.7	41.2	21.9	38.3	40.3	21.2
15 to 19	10.8	10.7	9.8	11.2	11.4	8.6	11.9	11.6	8.5
20 to 59	44.1	39.1	53.2	44.8	45.0	55.9	46.2	46.0	56.0
Total	3.2	1.4	9.6	3.4	2.5	13.6	3.6	2.1	14.3

Source: Based on IBGE/PNAD microdata.

Table 6 Inequality in poverty and extreme poverty among four age groups

	2004	2014	2015
Poverty	0.0796	0.1559	0.1515
Extreme Poverty	0.1809	0.1918	0.2203

Source: Based on IBGE/PNAD microdata.

Concerning extreme poverty, inequality among age groups increased from 2014 to 2015 and at a faster pace than in the entire 2004-2014 period. Although shares of extreme poverty remained more or less constant for the different age groups, the elderly increased their participation in total population the most, thus reinforcing their advantage in relation to the theoretical “fair” share and adversely affecting the degree of age equality. As a matter of fact, the elderly represent 2.1% of the total number of the extremely poor in Brazil, while their share in total population corresponds to 14.3% in 2015 (Table 5).

As in the case of regional inequality, age inequality in extreme poverty is much higher than that of poverty, and there was a significant in-

crease from 2014-2015. That is, the share of children among the extremely poor is disproportionately high, 40.0%, considering their 21.1% share in the total population (Table 5). This adverse result derives partly from the fact that the *Bolsa Família* programme guaranteed, in September 2015, an income transfer that brings the family per capita income to the national R\$ 77 official extreme poverty line level. This official parameter is slightly above the value for extreme poverty lines used herein for most of the rural areas, but it is well below the value consistent with the higher living costs in urban and metropolitan areas. Age inequality being so high confirms the fact that anti-poverty policies are clearly unbalanced and that the present *Bolsa Família* programme of family transfers has been unable to compensate children for their vulnerability and dependency.

The evolution since 2004 shows that age inequalities increased both for poverty and extreme poverty. The evolution was particularly adverse in the case of poverty, which, within a context of general decline of poverty rates, reflects the fact that the elderly, already better off at the beginning of the period, benefited proportionately more from income transfer policies over this last decade than did the other age groups.

5 Conclusions and perspectives

As expected, considering the severity of the economic crisis that has hit Brazil since 2014, PNAD results for 2015 showed an increase for all three income poverty indicators in most areas of analysis. The adverse effects were widespread, but as usual during an economic crisis, the metropolises, focal points of economic activity, were most severely affected. Regionally, the Northeast presented the most adverse results because of the combined effects of the economic crisis and of the drought. Also, the rise of extreme poverty was more pronounced than that of poverty, due to the high concentration of extreme poverty in the Northeast, particularly in the Northeastern rural area – respectively 51% and 26% of the total number of the extremely poor in Brazil – and the direct effects of the drought there. Certainly, the drought affected not only family income as far as it relies directly on economic activities, but also living conditions in general that were not considered in the present text. However, the regular doling out of social security and social assistance benefits, as well as emergency measures of wa-

ter distribution and subsidies for animal feed provided some relief. Hence, despite the severity of the drought and the consequent deterioration of poverty and extreme poverty income indicators, there has been no report of famine or pillaging. The absence of the usual migration movements from the countryside to the cities confirms the relative effectiveness of public policy mechanisms, be they emergency mechanisms or not.

Considering the period since 2004, 2015 marks the reversal of the sustained declining trend, which as far as poverty is concerned, had not even been interrupted in 2009, when GDP declined as a result of the global crisis. Differently from the 1990-2003 period, which was deeply affected by the positive and timely effect of the 1994 monetary stabilization, during the 2004-2014 period the rates declined at a more regular pace. After the most prolonged period of sustained decline observed, the historical minima both for poverty and extreme poverty were attained in 2014, respectively 15.8% and 3.4%.

From a spatial point of view, the evolution since 1990 shows the most accentuated decline of rates in rural areas, the traditional locus of poverty in Brazil, resulting in the convergence of rates considering both area and regional breakdown. In hindsight, until 2003 there had been an obvious process of relative metropolitan pauperization, while a sharper decline in poverty took place in rural areas. As a result, in 2003 poverty rates for rural and metropolitan areas were equalized, reversing from then on their rank position, metropolitan poverty becoming higher than rural poverty. Within the 2004-2015 period there were no changes in rank position of areas and regions as far as poverty rates were concerned. However, a few trends are noteworthy during this most recent period of poverty decline.

Firstly, the reduction in rural poverty was more robust in the Southeast and South. As a consequence, the high concentration of rural poverty in the Northeast not only persisted, but has even increased since 2004.³²

Secondly, Centre-Western poverty and extreme poverty rates converged to those of the South-Southeast, intensifying the dichotomy between North-Northeast and the other three regions. As a matter of fact, this increased dichotomy was also due to the relatively unfavourable evolution in the North since 2004.

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32 Rural poverty in the Northeast in relation to total rural poverty in Brazil evolved from 67% in 2004 to 77% in 2015; and in the case of extreme poverty, from 75% to 78% over the same period.

Thirdly, the extreme poverty rate had been converging to zero until 2014, when the minimum 3.4% was attained; despite the reversal to 4.2% in 2015, it will certainly continue to decline as soon as the crisis is abated. Although extreme poverty rates remained below 2% in the South in 2015, there is still a long way to go in the Northeast, where rates can be as high as 16% in Maranhão's rural area, a result that is largely unrelated to the economic crisis. Hence, there is much progress to be made based on spatially-focused anti-poverty policies.

Fourthly and lastly, in spite of the decline in poverty and extreme poverty rates until recently, inequality in poverty has been growing in relation to two basic aspects: regional inequality and age inequality. Growth, even pro-poor growth as experienced in Brazil, usually benefits the most modern and advanced regions. As a result, during the 2004 to 2015 period, inequality in poverty and extreme poverty among the five Brazilian regions increased, reinforcing the nefarious dichotomy between the Centre-South and North-Northeast. The situation is especially critical in the case of extreme poverty, for which regional inequality is much higher, the Northeast corresponding to an unchanged and very large share of the total number of extremely poor individuals in the country – 52% both in 2004 and 2015. This situation is quite unfavourable and unbalanced considering the Northeastern share of the Brazilian population being 28%. With regard to age inequality in poverty and extreme poverty, children remain largely over-represented among the poor. As a matter of fact, the process of valorization of the minimum wage benefited the elderly directly, since both social security and LOAS benefits are indexed to it. The expansion of the *Bolsa Família* programme, and certain of its features that aim at compensating families with children, was unable to reverse the fact that children below 14 years of age correspond to around 40% of both the poor and extremely poor individuals; therefore, an alarmingly high share that is almost double their share of the total population.

Perspectives are gloomy since the GDP lost more than 7% of its value since its peak in 2014. When the economy begins to recover – there were some positive signs in 2017 – there will still be some delay before the unemployment rate declines to comfortable levels and income recovers to its pre-crisis level.³³ In fact, income is the last labour market variable to react

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33 In the case of the most favourable scenario implying a growth rate of 0.5% in 2017, the World Bank (2016) had estimated the poverty rate would rise to 9.8%, up from 8.7% in 2015, using the R\$140 poverty line in real prices.

after a crisis, and total labour income has already declined 10% since the beginning of 2016.³⁴ Throughout this time, the poor are the most severely hit, not necessarily because their income loss will be relatively the highest, but because they have the highest utility for every *Real* lost. Also, they are the most severely hit by the inevitable disruption of public services on which they rely exclusively.

In this context of unavoidable poverty increase, for obvious reasons the poor, and especially the extremely poor, deserve priority in terms of protection. The empirical evidence presented in this paper gives some indications as to the paths to follow.

Rural poverty has been falling faster because of agricultural modernization and demographic factors, but the Northeast has still been lagging well behind. Dealing with poverty in the rural Northeast requires two basic lines of action. On the one hand, social assistance, emphasizing the mother/child services of education and health, in addition to the Bolsa-Família income transfer. The main difficulty consists in providing the basic services and assistance to isolated areas where poverty is endemic and the effective presence of local government is nil. In times of financial crisis at all levels of government, often marked by the disruption of public services, protecting the poorest segments is thus a challenge. On the other hand, it is essential to introduce simple means to deal with the adverse physical environment, considering the low level of human capital and the lack of resources for investment. Building simple small water tanks, as well as planting and stocking cacti for cattle fodder are two examples of unpretentious initiatives that have had a significant impact in terms of increasing productive capacity and improving living conditions in the *sertão* (dry and arid backlands), where poverty and extreme poverty rates are the highest.

The pauperization of the metropolises had been subdued since 2004, but with the downturn in economic activity, the poor segment of the population in the great urban centres will probably be more affected by the present crisis. For instance, the sharp increase in unemployment in the metropolises is an indicator in this direction.³⁵ In addition to income transfers, job training initiatives for the youth, associated with a small stipend, would help in the current situation and improve perspectives for future

34 Percentage loss of total labour income from the first quarter 2016 to the third quarter 2017 (IBGE, PNAD-C 2016-03).

35 IBGE/PNAD-C.

beneficiaries as well. Quality day care centres and progress in urban mobility would be effective in the sense of enhancing the chances of engaging the poor in the labour market, especially women. In a period of scarce resources, government authorities could design the framework for some of these initiatives and coordinate them, counting on private or third sector partners to run and finance them totally or partially.

In middle-income, urban and monetized economies, cash transfers are the most direct and immediate way to soften the critical effects of economic crises, but the present financial crunch makes budget increases difficult to achieve. However, estimates of additional funds needed for *Bolsa Família* transfers in order to guarantee that poverty levels remain the same as in 2015 seem feasible³⁶: an additional 4.73% in the total amount of *Bolsa Família* transfers would avoid a further increase in poverty. This corresponds to a 2017 *Bolsa Família* budget of R\$ 30.41 million.³⁷

Although the Brazilian targeted policy of social assistance transfers has been quite successful, there is ample ground for further improvement.³⁸ Guaranteeing that the policy reaches the poorest segment and that they get the benefit has an obvious positive effect on extreme poverty. Also, integrating the two programmes, the *Benefício de Prestação Continuada* (BPC) and the *Bolsa Família*, is a long-awaited and overdue step that will improve policy targeting and coherence. Although there are institutional and legal obstacles to integration, simply unifying the rosters as well as the scheduled monitoring and control procedures would have a huge effect on increasing the distributive effectiveness of both income transfer programmes.

The distributive aspect is crucial in order to avoid the poor having to carry the burden of the adjustment. Although an increase in poverty may be inevitable, since income has been falling all along its distribution, and perfect targeting of possible new transfers is far from guaranteed, inequality can continue to decline, as happened in 2015. By the end of 2016, the

36 World Bank (2017) micro-simulations are based on PNAD 2015 and the impact on individual incomes of macroeconomic scenarios, leading to estimates of the new poor. The additional funds required for *Bolsa Família* supposes that the model corresponds faithfully to reality, but also that the income transfer programme is able to detect and target perfectly the new poor.

37 The required budget according to the World Bank is not far above the programme budget for 2017, R\$ 29.8 million. The authorities deem this amount sufficient because of the recent exclusion of around one million families from the register of beneficiaries for no longer meeting the eligibility criteria.

38 On the income transfer policy and the characteristics of the two programmes, see Rocha (2013).

Gini coefficient of labour income remained stable, thanks to the income gains of workers in the lowest tenth of the labour income distribution, reversing heavier losses in the two previous quarters.³⁹ The trend of income distribution depends on government decisions concerning, for instance, the minimum wage and social transfers. The especially tough conditions in the labour market require that special attention be given to preserving the income of the extremely poor, who increasingly depend on social security and social assistance transfers.

Even though monetary income is crucial for maintaining a minimum level of private consumption and well-being, the age profile suggests that the cash transfer policy is insufficient to protect a large group of the extremely poor: 40% of them are 14 years old or under, and as many as 16% or 1,356,000 are less than four years old. The younger the child, the less effective the family cash transfer is in protecting them. Services targeted for these families (day-care centres, health clinics, social assistance) are essential. However, they are expensive, and on a per capita basis much more expensive than the present cash transfers, so that their adoption on a large scale is out of the question during the crisis. However this integrated approach to the anti-poverty policy should be introduced, even during such hard times as these, in select local areas where extreme poverty is acute and widespread.

Finally, as dramatic as income losses can be, the poverty rate returning to pre-2014 levels does not mean that there will be a regression to the past. The years of economic bonanza have changed the characteristics of families in the lower income brackets for good, in aspects related not only to private income and consumption, but also to the more widespread access to public services and citizens' rights in general. The boom years have also changed the way Brazilian society deals with its internal inequalities. Transitory income loss during the crisis will not sweep away most of these changes, which are definitive.

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About the article

Submission received on March 23, 2017. Approved for publication on February 4, 2018.