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social policies in Brazil? A
simulation experiment

**Jens Matthias Arnold,
Matheus Bueno**

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ECONOMICS DEPARTMENT

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EXPERIMENT**

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By Jens Matthias Arnold and Matheus Bueno

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Abstract/Resumé**How effective are different social policies in Brazil? A simulation experiment**

Brazil spends around 15% of GDP on different social benefits, but within these expenditures, different benefits have different social impacts. While the small conditional cash transfer programme Bolsa Família is well-targeted to the poor and has a strong diminishing effect on inequality, pension benefits largely reach those with above-median incomes. Over many years, and as a result of different indexation mechanisms, the real value of pension benefits has increased rapidly, while conditional cash transfers have struggled to keep pace with inflation. This paper presents a simulation experiment using household data to demonstrate the significant potential that changes in the annual benefit indexation mechanism of social security benefits could have had for reducing inequality. Maintaining the purchasing power of pension benefits while shifting the increased pension spending that resulted from automatic indexation towards conditional cash transfers would have allowed significantly stronger progress in reducing inequality. This strengthens the case for rethinking the current indexation mechanism of social security benefits in Brazil.

Key words: Brazil, poverty, inequality, social protection, pension system, conditional cash transfers

JEL codes : D24, O47, O54, F13, F15, L51, K23, K41, H20.

This Working Paper relates to the 2020 OECD Economic Survey of Brazil (<https://oe.cd/brazil-snap>)

Quelle est l'efficacité des différentes politiques sociales au Brésil? Une expérience de simulation

Le Brésil consacre environ 15% de son PIB à différentes prestations sociales, mais au sein de ces dépenses, différentes prestations ont des impacts sociaux différents. Alors que le petit programme de transferts monétaires conditionnels Bolsa Família est bien ciblé sur les pauvres et a un fort effet de diminution sur les inégalités, les prestations de retraite atteignent largement ceux dont les revenus sont supérieurs à la médiane. Depuis de nombreuses années, et en raison de différents mécanismes d'indexation, la valeur réelle des prestations de retraite a augmenté rapidement, tandis que les transferts conditionnels en espèces ont eu du mal à suivre le rythme de l'inflation. Cet article présente une simulation utilisant des données sur les ménages pour démontrer le potentiel significatif que les changements dans le mécanisme d'indexation annuelle des prestations de sécurité sociale auraient pu avoir sur les inégalités. Le maintien du pouvoir d'achat des prestations de retraite tout en déplaçant les dépenses de retraite additionnelles résultant de l'indexation automatique vers Bolsa Família aurait permis des progrès significativement plus forts dans la réduction des inégalités. Cela renforce la nécessité de repenser le mécanisme actuel d'indexation des prestations de sécurité sociale au Brésil.

Mots clé: Brésil, pauvreté, inégalités, protection sociale, système de retraites, transferts monétaires conditionnels

Codes JEL : D24, O47, O54, F13, F15, L51, K23, K41, H20.

Ce Document de travail a trait à l'Étude économique de l'OCDE du Brésil 2020 (<https://oe.cd/brazil-snap>)

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How effective are different social policies in Brazil? A simulation experiment

By Jens Matthias Arnold and Matheus Bueno¹

Introduction

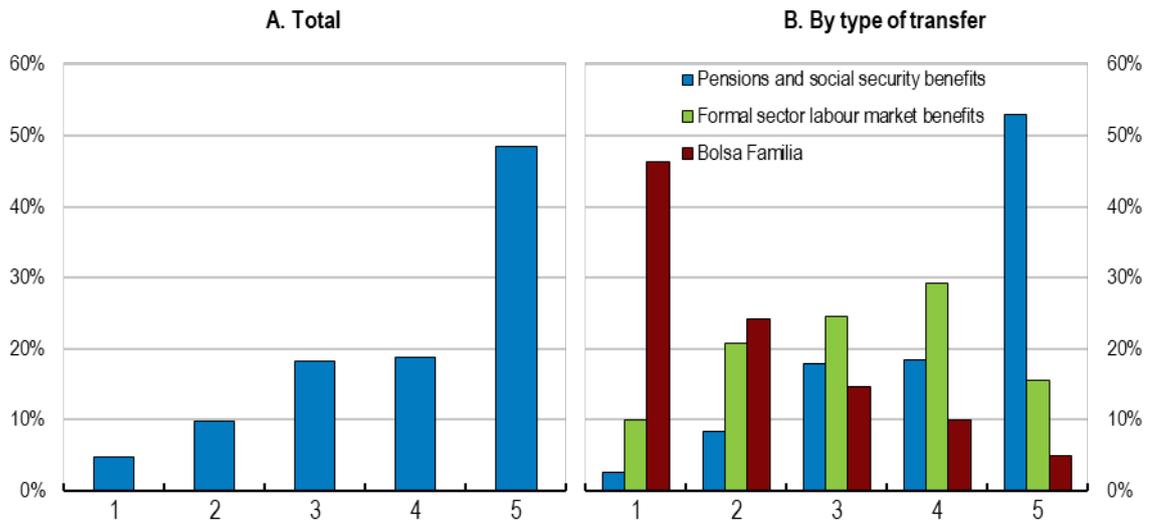
The COVID-19 pandemic has highlighted the need for providing social protection to poor and vulnerable households, and those who face a sudden loss of their livelihoods. This legitimate objective, however, is not easy to reconcile with Brazil's complex fiscal situation (OECD, 2020^[1]). Even before the pandemic, rising public debt and an already high tax burden, have triggered a discussion about possible ways to raise the efficiency of public spending in Brazil, and in Latin America more widely (Izquierdo, Pessino and Vuletin, 2018^[2]). The pandemic has only exacerbated these challenges.

Spending on social transfers exceeded 15% of GDP in Brazil before the pandemic, of which around 13% of GDP on old-age pensions (OECD, 2018^[3]). Fiscal pressures from population aging will grow as the proportion of people over 65 years old is projected to increase from the current 7% to 23% by 2050. While social spending has contributed significantly to past reductions in inequality and poverty, increases in social spending have not been well-targeted towards the most vulnerable households. Almost half of total social benefits is currently paid to the highest income quintile, which is principally the result of pensions (Figure 1). Benefit levels have been the prime driver of rising pension spending over many years, explaining much of the rise of public expenditures.

A pension reform approved in 2019 will raise effective retirement ages and make contributions more progressive. This will help fiscal sustainability as pension spending would have otherwise doubled by 2060 (OECD, 2018^[3]; OECD, 2017^[4]). It will also improve the redistributive character of Brazil's large pension system. But the reform will contain rather than reduce spending pressures. By 2030, pension outlays are expected to be only 0.2% of GDP lower than today (IFI, 2019^[5]). In light of demographic change, a need for further adjustments is likely to come up in the future, or at a minimum safeguards to limit further increases in pension spending.

1. Jens Matthias Arnold is a Senior Economist and the Head of the Brazil Desk at the OECD Economics Department. Matheus Bueno is a graduate student at the Toulouse School of Economics and a consultant at the OECD. The opinions expressed and arguments employed are those of the authors and should not be attributed to the OECD or its member countries. Special thanks go to Michael Koelle for useful comments, Anne Legendre for research assistance, and Carolina Gonzalez and Karimatou Diallo for editorial assistance.

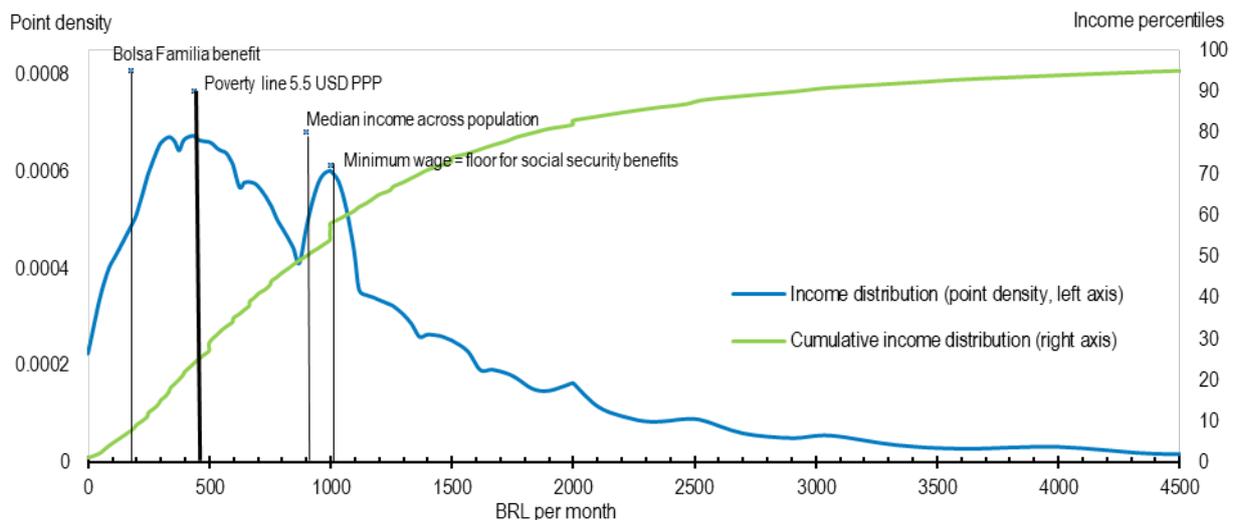
Figure 1. Distribution of monetary transfers by quintiles of the income distribution



Source: SEAE(2017), based on 2015 PNAD data.

In particular, one driver of the rapid expansion of pension spending over the last decade may well become relevant again in the future: the current indexation mechanism for social security benefits, which has largely escaped the 2019 pension reform. Most pension and other social security benefits are still tied to the minimum wage as Brazil’s constitution stipulates the minimum wage as a floor for any individual monthly social security benefit paid. Only a minority of people contribute sufficiently during their working lives to get higher pension benefits than this constitutional minimum, and more than half of current pension beneficiaries receive the minimum wage.

Figure 2. Benefits tied to the minimum wage reach only those above median income



Note: The blue line represents the point density distribution of income for Brazil. Higher values mean that more people have incomes of the corresponding level on the horizontal axis. The green line is the cumulative distribution function, showing how many people have incomes equal or lower than the corresponding income level on the horizontal axis. The 2019 minimum wage of 998 BRL, for example, corresponds to the 55th income percentile, meaning that 54% of Brazilians had incomes of BRL 998 or less in 2019.

Source: Authors’ calculations based on 2019 Pesquisa Nacional por Amostra de Domicílios, IBGE.

The minimum wage has seen real increases of 74% over the last 15 years, while real per-capita-incomes have risen by 18%. Nowadays, 54% of Brazilians earn less than the minimum wage, implying that all social security beneficiaries have above-median incomes (Figure 2). Minimum wage increases have been particularly pronounced during the period 2011-2014, which is the focus of this analysis. During this period alone, the minimum wage outgrew a relevant price index for low-income households (INPC) by over 12% (Table 1). While minimum wage growth has been more in line with inflation since 2015, the political pressures that were somewhat attenuated during a deep recession may well resurface again. As long as the current pension indexation to the minimum wage persists, this would have immediate implications for public spending and for the efficiency of Brazil's social policies.

Table 1. Actual minimum wage developments 2011-2014, in current BRL

	Minimum pension (equivalent to min. wage)	Real increase relative to previous year	Accumulated real increase relative to January 2011
2011	545	0.40%	--
2012	622	8.05%	8.0%
2013	678	2.81%	11.6%
2014	724	1.22%	12.4%

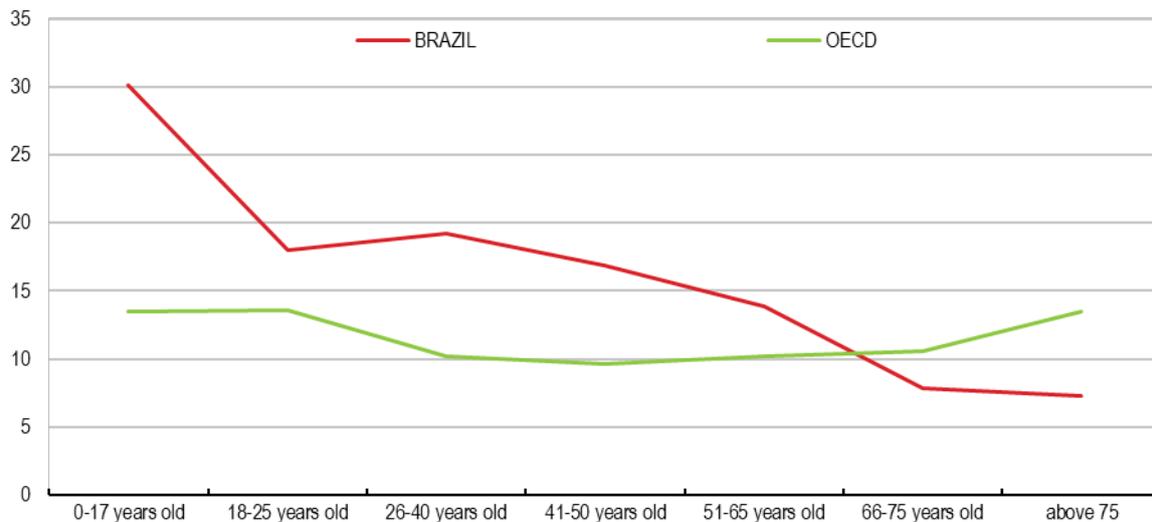
Source: Ministério das Cidades, Brazil.

Besides social security benefits, Brazil has other social protection programmes that achieve a remarkably good targeting to poor families, such as the conditional cash transfer programme *Bolsa Família*. This benefit complements household income for families living in poverty, which is defined by monthly per-capita incomes below BRL 178, and effectively lifts it to that level. This is still less than half of the World Bank's poverty line of USD 5.50 at 2012 purchasing power parities, which corresponded to BRL 436 or the 24th percentile of the cumulative income distribution in 2019. As a result, raising Bolsa Família benefit levels towards the poverty line would be a cost-effective way to reduce poverty. By shifting resources towards the very bottom of the income distribution, it would also be one of the most effective ways to reduce inequality. Unlike social security benefits, Bolsa Família benefit levels, which simultaneously correspond to the eligibility threshold for participation in the programme, are not subject to any automatic indexation mechanism and have barely kept up with inflation over time.

These contrasting indexing mechanisms, in combination with strong minimum wage increases, have implied that over several years, increases in social spending have mostly reached households that are not poor. Rethinking these differential indexation mechanisms could avoid a resurgence of this episode, during which social transfers basically shifted resources towards middle-class families, as opposed to the poor. If this situation had been avoided, more resources would have been available to raise spending on *Bolsa Família*, the only regular transfer where incremental spending would really reach Brazil's poor families. One way to avoid a replay of this episode would be to adjust social security benefits in line with prices, which would still preserve their real purchasing power.

In addition, the current indexation mechanisms have exacerbated the social spending bias to the detriment of children and youths. While public pensions have been instrumental in reducing old-age poverty in the past, and have achieved old-age poverty rates below the general average, today poverty is concentrated among children and youths (Figure 3).

Figure 3. Poverty is relatively high for young people



Source: OECD Income distribution database.

The purpose of this paper

This paper undertakes a simple simulation exercise based on household survey data for the years 2012-2014, which saw the most significant rises in the real value of the minimum wage. The question asked in this simulation is how much more progress in reducing inequality Brazil could have made if policies had been characterised by a stronger focus on the most efficient redistribution tools. More specifically, the analysis evaluates the additional yearly reduction in the Gini coefficient that would have resulted if minimum pensions had been adjusted only by the relevant inflation index for low-income households (INPC) and the resulting savings had been channelled to *Bolsa Família* beneficiaries.

Data and methodology

The simulation exercise is conducted using Brazilian official household data (*Pesquisa Nacional por Amostra de Domicílios* – PNAD), published by the national statistics institute IBGE. Inequality measures applied here are based on income *per capita*, instead of household income *per capita*, in order to keep consistency with IBGE's official calculations of the Gini coefficient. In the household data, income *per capita* is the sum of thirteen income variables corresponding to labour income, pensions, rents, social assistances and donations.

For each year, the simulation counterfactual is constructed in two steps: First, we deduct any real increases from the minimum pension benefit on the basis of the price index INPC and calculate the resulting savings. In a second step, we redistribute these resources to *Bolsa Família* recipients. In each step and for all years from 2012 to 2014, several intermediary steps are taken as detailed below.

Calculations and results

Starting in 2012, the first step is to subtract the real increases from minimum pensions. However, in order to subtract the real increase only from minimum pensions, pensioners on minimum benefits must be identified and their income subtracted only in the relevant pensions component. Minimum pensioners are

identified as those pensioners receiving less than 630 BRL, in order to take into account possible rounding when responding to the survey. It turns out that the data are fairly reliable, with less than 5% of declared pension benefits below 622 BRL. The expected savings from the hypothetical lower indexation mechanism for minimum pensions amount to 760 million BRL or 0.02% of GDP.

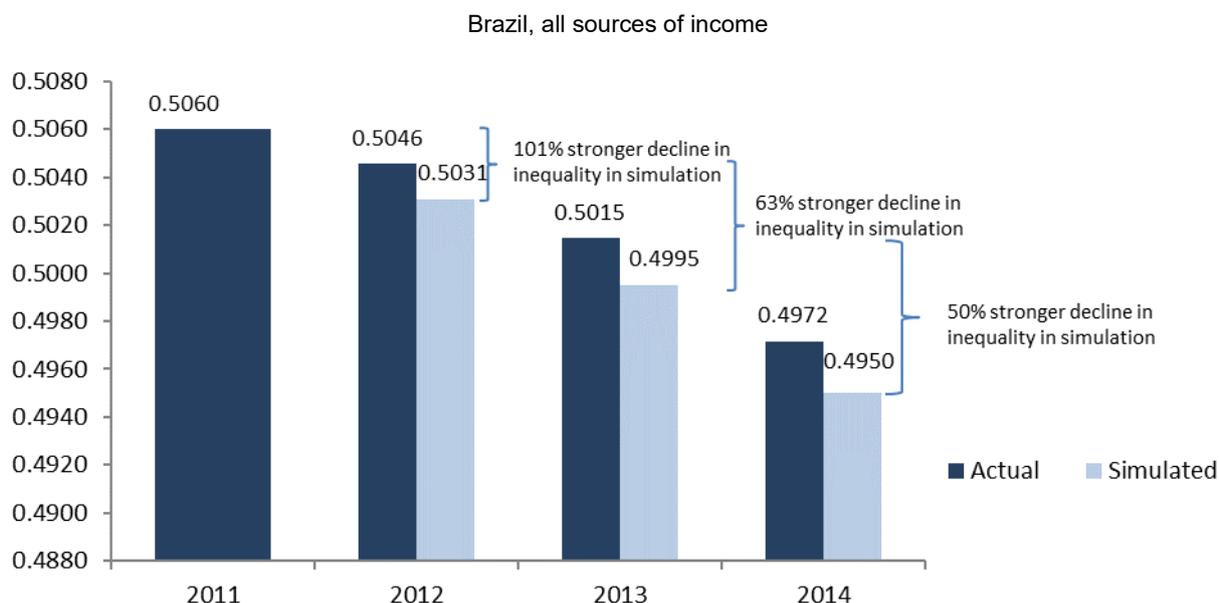
The second step is to identify *Bolsa Família* recipients in the PNAD household data. Identifying *Bolsa Família* recipients is less straightforward as there is no specific question on this in the survey. In addition, these benefits are aggregated in an income variable encompassing not only social assistance programs, but also interests from financial assets, dividends, and other sources of income. Our identification strategy follows previous work in the area (de Souza, Osorio and Soares, 2011^[6]). We consider all individuals with values lower than the maximum possible amount of *Bolsa Família* benefits for this income variable as potential beneficiaries of the assistance program. By law, the benefit ceiling per household was 306 BRL in 2012, corresponding to 70 BRL of basic benefit, 160 BRL of variable benefit and 76 BRL of teenage benefit. Due to possible rounding in survey answers, the ceiling is considered to be 310 BRL². This strategy identifies 12.2 million families *Bolsa Família* beneficiaries, close to the 13.9 million families declared by Ministry of Social Development (MDS) for 2012. This overlap is also very similar to results from the same strategy (de Souza, Osorio and Soares, 2011^[6]).

The final step is to distribute the previously calculated savings equally among the identified beneficiaries. This yields additional income of 62 BRL for each *Bolsa Família* beneficiary. After this hypothetical income shift, the Gini coefficient is recalculated using the standard methodology applied by Brazil's national statistics office IBGE. The simulated Gini coefficient of 0.5031 is below the actual Gini of 0.5046 in 2012. This hypothetical decline would have implied approximately doubling the pace of inequality reduction.

The same exercise is then repeated for subsequent years, where we calculate once again simulated yearly changes in the Gini coefficient and compare them to those that actually occurred. In 2013, the Gini coefficient declined to 0.5015, from 0.5046 in the previous year. The savings from changing the pensions indexation could have financed a 65% increase in total public spending on *Bolsa Família*, in which case the Gini coefficient could have declined to 0.4995 instead. In other words, the pace of inequality reduction could have been 63% faster in that year (Figure 4). Repeating the same exercise for 2014 would have resulted in a 50% higher reduction in inequality between 2013 and 2014.

2. It is worth noting that some households receive transfers higher than this ceiling, since a complementary benefit introduced in mid-2012 tops-up the other *Bolsa Família* benefits in case the after-benefit household income per capita is still below the extreme poverty threshold. However, casual evidence suggests that this share is low, around 2%.

Figure 4. Actual and simulated GINI coefficients



Source: Authors' calculations based on IBGE data (PNAD 2012, 2013 and 2014).

Conclusions

The simulations undertaken in this paper demonstrate the significant potential that changes in the annual benefit indexation mechanism of social security benefits could have for reducing inequality. During an episode of rapid minimum wage increases from 2012-2014, real pension benefits, and overall pension spending, rose strongly on the back of the constitutionally guaranteed minimum pension benefit, defined at the same level of the minimum wage. Brazil could have achieved substantially faster progress in reducing inequality if it had transferred this increased pension spending to poor households participating in the conditional cash transfer programme Bolsa Família, while adjusting pension benefits in line with inflation to preserve their purchasing power. In our simulations, this shift would have led to a 101% stronger decline in income inequality in 2012, a 63% stronger decline in 2013, and a 50% stronger decline in 2014.

Although minimum wage increases have been significantly lower since 2014 in the context of a deep and protracted recession, political pressures towards real increases could easily emerge again as the economy recovers after the COVID-19 pandemic. If current indexation mechanisms are maintained, this would immediately raise social security expenditures but not transfers to poor families, and therefore further curtail the effectiveness of social transfers for combating inequality in Brazil.

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