ETHNO-RACIAL POVERTY AND INCOME INEQUALITY IN BRAZIL.

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ABSTRACT

Fiscal policy played an important role in reducing poverty and inequality in Brazil (Higgins and Pereira, 2014) over the last fifteen years, but how much redistribution and poverty reduction is being accomplished across ethnic groups? How was the ethno-racial divide affected by fiscal policy? We estimate the effects of taxes and social spending on inequality and poverty among ethnic groups using household survey. We find that direct transfers have similar effects on inequality across ethnic groups, but the reduction is larger for pardos after adding the monetized in-kind benefits (health and education). However, the income ratio between whites and non-whites is virtually unchanged. Poverty is reduced after direct transfers, but the reduction is higher for whites despite the prevalence of poverty is at least twice as high among pardos, blacks, and indigineous. The positive effects on poverty is tempered by a deleterious effect from indirect taxes. In addition, per capita transfers are on average higher for whites and benefits can twice as large as those for non-whites. Fiscal interventions did not have a significant impact in reducing the divide between whites and non-whites in Brazil.

Keywords: D31, H22, I32, 054
JEL classification: Fiscal policy, great divide, Brazil, inequality, ethno-racial

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1 Introduction

Historically, Brazil has had one of the highest levels of inequality in the world; in 1989, for example, Brazil had a Gini coefficient of 0.63, making it the second most unequal country in the world, narrowly behind Sierra Leone.[1] However, inequality has fallen in Brazil every year since 2001. The recent decline is largely due to increased public cash transfers[2] and a more equitable distribution of educational attainment resulting from expanded access to education in the 1990s.[3] Social spending has become both larger and more progressive.[4] Poverty decreased every year since 2003 - whether measured by the headcount index, poverty gap index, or squared poverty gap index. Brazil's conditional cash transfer program, Bolsa Família, is very effective at reducing poverty[5], especially in rural areas.[6] There is also evidence that the racial divide has declined; as showed by Soares[7] and Blackman and others[8], the income ratio between whites and non-whites (blacks and pardos) decreased between 1987-2012, albeit slowly.

Despite its relative success in reducing overall income inequality and poverty, Brazil's ethno-racial divide is still substantial. Afro-Brazilians lag behind in almost every social indicator.[9] Afro-Brazilian poverty rates are twice those of white Brazilians.[10] Afro-Brazilian unemployment rates are typically 35% higher than those of whites, income per capita is about 50% less than that received by whites – according to that study, it would take 41 years to equalize it if we keep the same trend from 2001-2012[11]. Lower Afro-Brazilian educational attainment is one explanation for the income divide. In 2012, less than 13% of the Afro-Brazilian population over 16 had tertiary education compared to almost 28% of whites. However, even if we consider the same level of education, Afro-Brazilians with tertiary education earned only 70% (men) and 41% (women) compared to whites. According to Campante, Crespo, and Leite[12], discrimination may explain up to 25% of the wage gap between whites and Afro-Brazilians.

Given these facts, the extent to which governments use fiscal policy to reduce inequality and poverty differentials between Afro-Brazilians and other ethno-racial groups is of great relevance. Most Brazilian fiscal incidence studies do not disaggregate the results by such socially relevant groups.[13] This paper summarizes the results of applying a standard benefit-tax

[1] Ferreira, Leite, and Litchfield (2008).
[2] Barros and others (2010).
[3] Gasparini and Lustig (2011).
[4] Silveira and others (2011).
[5] Soares (2012).
[6] Higgins (2012).
[7] Soares (2008).
[8] Blackman and others (2014).
[9] Blackman and others (2014).
[10] Paixão and others (2010).
[11] Blackmand and others (2014).
[12] Campante, Crespo, and Leite (2004).
[13] Recent incidence analyses for Brazil include Immervoll and others (2009); Nogueira, Siqueira, and Souza (2011); Silveira and others (2011); Higgins and Pereira (2014). However, as far as we know, there is no fiscal incidence analysis accounting for the ethno-racial divide.

incidence analysis to estimate the effect of taxes and social spending on inequality and poverty among ethnic groups in Brazil using the Pesquisa de Orçamento Familiar (POF), 2009. In particular, I use the methodology described in chapter 1 (Lustig and Higgins), chapter 5 (Higgins and Lustig), chapter 7 (Higgins), and chapter 8 (Aranda and Ratzlaff)[14] to estimate the effects of taxation (direct and indirect) as well as cash transfers, indirect subsidies, and in-kind benefits on income distribution and poverty among ethnic groups in Brazil. The rich detail of our data set allows us to single out the effects of each direct tax and transfer without needing to simulate most taxes or benefits.

The paper is organized as follows. The next section describes the social spending and taxation systems in Brazil in addition to describing the data and methodology used. Section 3 summarizes the main results of our incidence analysis. Conclusions are presented in section 4.

2. Methodology

In addition to describing the social spending and taxation systems in Brazil, this section focuses on the aspects of methodology that are unique to the country.

2.1. Definitions and Measurements

The fiscal incidence analysis is based on the CEQ methodology as described in chapters 1, 5, 7, and 8 in the CEQ handbook.[15] As described in chapter 1, we use four income concepts in our incidence analyses: market, disposable, consumable, and final income.[16] Market income is total current income before direct taxes. It is equal to the sum of gross (pre-tax) wages and salaries in the formal and informal sectors (also known as earned income), income from capital (dividends, interest, profits, rents, etc.) in the formal and informal sectors (excludes capital gains and gifts), auto-consumption, imputed rent for owner-occupied housing, private transfers (remittances and other private transfers such as alimony), and old-age and other pensions from the contributory social security system. Disposable income equals market income minus direct personal income taxes on all income sources (included in market income) that are subject to taxation and all contributions to social security except for the portion going towards pensions[17] plus direct government transfers (mainly cash transfers, but can include food transfers). Consumable income is defined as disposable income plus indirect subsidies minus indirect taxes (e.g., value added tax, sales tax, et cetera). Final income is defined as

[14] Lustig and Higgins (2017), Higgins and Lustig (2017), Higgins (2017), and Aranda and Ratzlaff (2017).
[15] Although this paper was based on an earlier version of the CEQ Handbook (Lustig and Higgins, 2013), the relevant reading is chapters 1, 5, 7, and 8 in the CEQ Handbook.
[16] For more details on concepts and definitions, see Lustig and Higgins (2013).
[17] Since here we are treating contributory pensions as part of market income, the portion of the contributions to social security going towards pensions is treated as "saving."

consumable income plus government in-kind transfers in the form of free or subsidized services in education, health, and housing, minus co-payments or user fees.[18]

In the fiscal incidence literature, pensions from contributory systems are sometimes treated as part of deferred income or other times as government transfers.[19] Since this is an unresolved issue, we estimate both scenarios in our study. In the deferred income scenario, contributory pensions are part of market income. In the government transfer scenario, contributory pensions are treated as any other government transfer. The results presented here are for the scenario in which pensions are deferred income.[20]

2.2. Social Spending and Taxation in Brazil[21]

Social spending used in our analysis accounts for about 15 percent of GDP in Brazil in 2009.[22] This figure includes social assistance (direct transfers and other social assistance), health spending, and education spending and includes spending at the federal, state, and municipal levels. Direct transfers include conditional cash transfer programs, non-contributory pensions, food transfers, unemployment benefits, special circumstances pensions, and others. In-kind transfers are benefits received from universal free public education and health systems.

There are more than eighty-five taxes in Brazil.[23] Total tax revenues at the federal, state, and municipal levels were about 35 percent of GDP in 2009. Direct taxes represent 45 percent of the taxes levied by the government and indirect taxes 55 percent. The Brazilian tax system is exceedingly complex and the "cascading effect" is one of its major distortions[24] as taxes (federal, state, and municipal) compound on each other and are applied to the final sales price of the good, not the pre-tax sales price. The cascading effect was estimated to be 18% of the tax collected in 2003[25] and the overall cost of the distortions created by it was about 2 percent of GDP.[26]

The distortions generated by the Brazilian tax system are even more important in our study due to the effects of indirect taxes on the purchasing power of the poorer families. The cascading effect and inexistence of exemptions, even for the basic basket of goods and services, can have detrimental effects on those that spend a larger proportion of their income on food.

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[18] One may also include participation costs such as transportation costs or foregone incomes because of use of time in obtaining benefits. In our study, they were not included.
[19] See Lustig and Higgins (2013) for more details.
[20] For an explanation of why it might be more appealing to choose this scenario, see chapter 1 by Lustig and Higgins.
[21] A complete description of the transfer and tax systems is given on Higgins and Pereira (2014).
[22] Social spending including contributory pensions is about 26% of GDP. The complete table with all different groups of social spending and their share of GDP is available on Higgins and Pereira (2014, page 349).
[23] Portal Tributário (2012).
[24] Amaral, Olineike, and Amaral Viggiano (2007).
[25] Nogueira, Siqueira, and Souza (2010).
[26] Amaral, Olineike, and Amaral Viggiano (2007).

3. Data

Ethno-racial groups[27] in Brazil considered in our study are: whites, pardos, blacks, and indigenous. The self-reported information is collected by the Brazilian national statistical office (IBGE). In the 2010 census, the proportion of whites, pardos, blacks, and indigenous were 48.8, 43.1, 7.7, and 0.4% respectively. In some studies, Soares[28] and Paixão and others[29], pardos and blacks are aggregated as blacks, but they will kept separated here.

The data on household incomes, taxes, and transfers come from the most recent Pesquisa de Orçamento Familiares[30] (Family Expenditure Survey, POF) 2008-2009. This survey has national coverage, sampling 56,091 households using a two-stage stratified sample design, and is conducted approximately once every five years. It contains detailed information about many labor and non-labor income sources, direct taxes paid, transfers received, use of public education, and consumption. Data on the use of public health services come from the Pesquisa Nacional por Amostra de Domicílios (National Household Sample Survey, PNAD) 2008, which contains income data and a detailed supplemental health survey containing the necessary information regarding the use of public health services. Both POF and PNAD are representative at the state level.[31] In-kind education benefits are equal to the average spending per student by level (early childhood development, pre-school, primary, lower secondary, upper secondary, and tertiary), which is obtained from national accounts and imputed to students who attend public school.

Data on government revenues and spending, which are used to scale up household survey data for the inequality (but not poverty) calculations, come from Brazil's national accounts. In general, the amounts received from direct transfers are directly identified from the survey. On the tax side, individual income taxes (IRPF and the portion of ISS paid by workers) and property taxes (IPTU and ITR)[32] are directly identified in the survey. By using the values reported in the survey, we are implicitly assuming that the incidence of individual income tax is borne entirely by labor (specifically, those workers who report paying the taxes in the household survey) and property taxes entirely by the owners of property (specifically, those who report them in the survey). Consumption taxes are imputed by applying effective tax rates to the very detailed consumption data available from the survey. We assume that the incidence of consumption taxes falls fully on consumers.

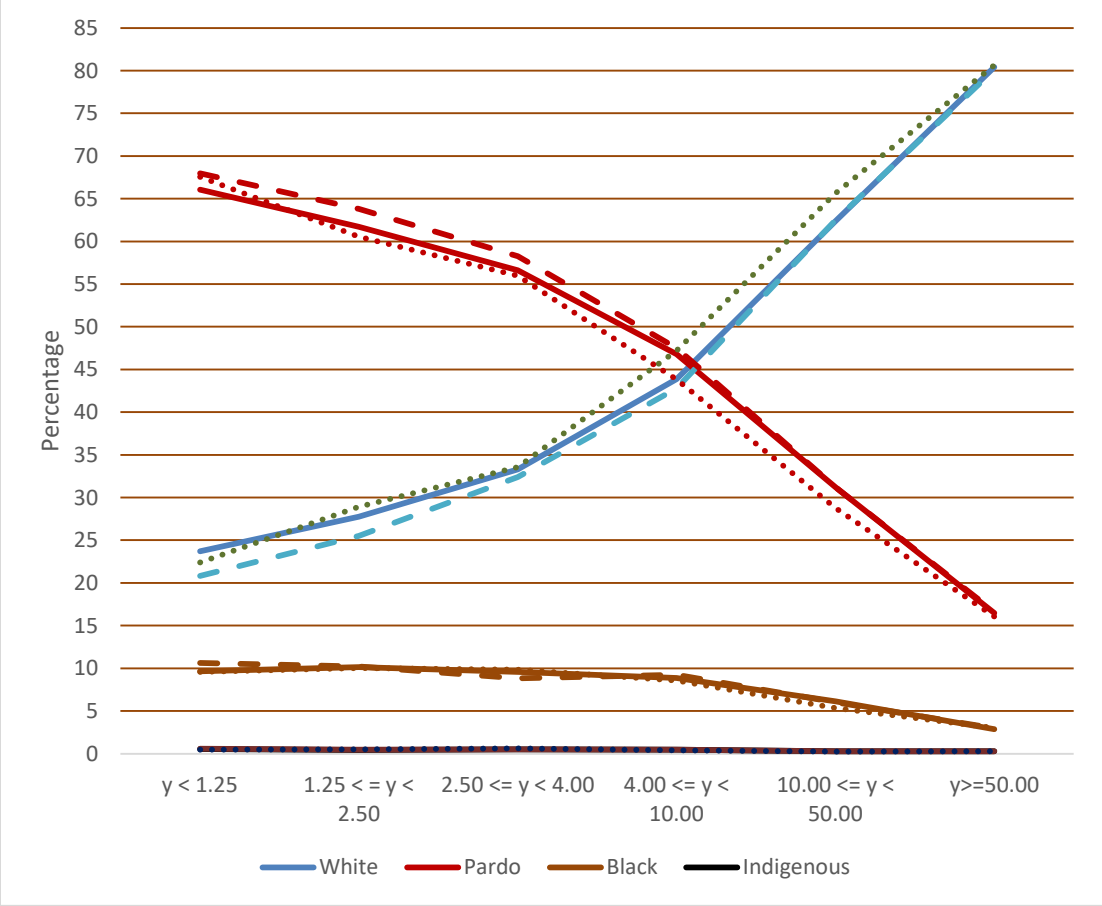
[27] Asian descendants accounted for about 1% and undeclared individuals 0.003%. Both groups were counted as whites.
[28] Soares (2008).
[29] Paixão and others (2010).
[30] A new issue of the POF has been delayed due to budget problems and is expected to be released in 2017.
[31] See IBGE (2008, 2012) for more information on PNAD and POF respectively.
[32] IRPF is "imposto de renda da pessoa física" (households's income tax), ISS is "imposto sobre serviços" (municipal service tax), IPTU is "imposto predial e territorial urbano" (urban property tax), and ITR is "imposto territorial rural" (rural property tax).

To impute indirect subsidies, we use the total spent on electricity, in combination with income, to determine who was eligible for the electricity subsidy. We assume that all eligible households received the subsidy.

4. Results[33]

Figure 1 shows the distribution of ethnic groups according to their income (market, disposable, and consumable). Their income ranges from less US$1.25 to greater than US$50. There is clearly a great divide between whites and non-whites. The vast majority of those living with less than US$4 are pardos and blacks. On other end, whites are the overwhelming majority of those living with more than US$4 daily, with an increasing representation as income rises. In addition, Brazil's great divide persists after accounting for taxes and transfers (consumable income).

Figure 1: Brazil's Great Divide. Distribution of the Population by Ethnic Groups, Market Income (full line), Disposable Income (dashed line) and Consumable Income (dotted line)



Note: Y is income (PPP).

[33] Tables and graphs are based on Higgins and Pereira (2013).

Fiscal policy played an important role in reducing poverty and inequality in Brazil[34], but how much redistribution and poverty reduction is being accomplished across ethnic groups? How was the ethno-racial divide affected by fiscal policy? The results are shown in section 3.

4.1 Inequality

As seen in table 1, market income inequality at the national level is considered very high in Brazil, with a Gini coefficient of 0.579. Indigenous and whites present the highest inequality with a Gini coefficient of 0.588 and 0.558, respectively. Blacks present the lowest level of inequality with a Gini coefficient of 0.525. When we consider the impact of direct taxes and direct transfers (disposable income vs. market income) inequality falls for all ethnic groups, but the effects of fiscal policy are relatively equal across groups. The average reduction in the Gini coefficient is about 3% for whites, pardos, and blacks and slightly higher for indigenous. Therefore, direct transfers are not playing a significant role in reducing the great divide.

Table 1: Gini Coefficient and its Change with Respect to Market Income by Ethnic Groups

Ethnicity	Gini/Change	Market	Disposable	Consumable	Final
White	Gini	0.558	0.527	0.528	0.45
	Change	…	-0.031	-0.029	-0.107
Pardo	Gini	0.552	0.512	0.515	0.376
	Change	…	-0.039	-0.037	-0.175
Black	Gini	0.525	0.486	0.488	0.36
	Change	…	-0.038	-0.036	-0.165
Indigenous	Gini	0.588	0.536	0.541	0.408
	Change	…	-0.051	-0.046	-0.179
National	Gini	0.579	0.544	0.546	0.439
	Change	…	-0.035	0.033	-0.139

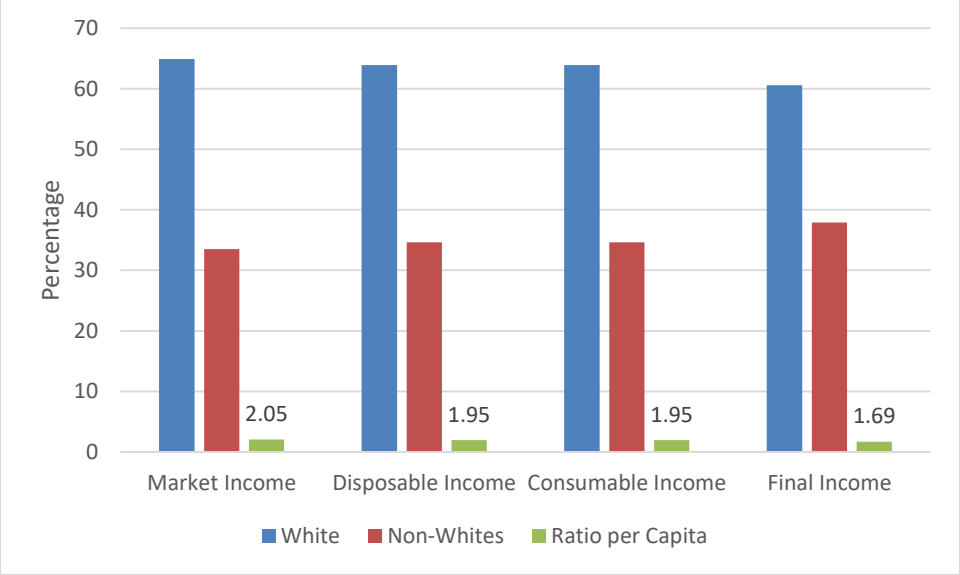
… means the value is not applicable

When compared with disposable income inequality, net indirect taxes are slightly unequalizing. As shown in table 1, when adding the monetized value of education and health spending, the Gini coefficient falls more significantly, especially for non-whites. Income inequality for pardos and indigenous falls by about 17% compared to only 10% for whites and 13% at the national level. The lower effect on inequality may be only reflecting whites opting out of the public health and educational systems. In fact, according to the Educational Census (IBGE, 2005), non-whites accounted for just 30% of those attending a private school.

[34] Higgins and Pereira (2014).

In spite of the apparent improvement, the per capita incomes of Afro-Brazilians is still about 50% of whites (figure 2). The fiscal system is reducing the gap, but only moderately and only after monetized values for public health and education are added.

Figure 2: Distribution of Income Between Groups



4.2 Poverty

To measure the impact of fiscal policy on poverty, we use three poverty lines: US$1.25 PPP per day (ultra-poverty), US$2.50 PPP per day (extreme poverty), and US$4.00 PPP per day (moderate poverty).[35] Results are showed in table 2.

Market income poverty shows a wide difference between whites and non-whites. For any poverty line, prevalence of poverty among pardos, blacks, and indigenous is at least twice as high as that of whites, with the largest difference occurring among the ultra-poor.

At the national level, ultra-poverty is reduced by 54 percent by direct transfers (net of any direct taxes paid), extreme poverty by 26 percent, and moderate poverty by 11 percent. Nonetheless, when indirect taxes are considered, the reduction in ultra-poverty is weakened, and extreme and moderate poverty actually increase when one compares market income with consumable income. In other words, the number of near-poor who are pushed into moderate poverty by paying more in taxes than they receive in benefits (i.e., direct transfers and indirect subsidies) is higher than the number of poor who escape poverty by receiving more in transfers and subsidies than they pay in taxes.

[35] The poverty lines are in 2005 purchasing power parity.

Table 2: Headcount, poverty lines (US$1.25, US$2.50, US$4)

Market Income					
	White	Pardo	Black	Indigenous	National
$1.25 (ultra poor)	2.8	8.8	7.1	8.2	5.8
$2.5 (extreme poor)	8.2	22.1	19.2	18.3	15.1
$4 (poor)	15.8	36.6	32.8	32.6	26.2
Disposable Income					
	White	Pardo	Black	Indigenous	National
$1.25 (ultra poor)	1.2	5.2	3.6	4	2.7
$2.5 (extreme poor)	5.6	16.7	14.7	14.1	11.2
$4 (poor)	13.7	32.9	28.3	30	23.2
Consumable Income					
	White	Pardo	Black	Indigenous	National
$1.25 (ultra poor)	2.1	7	5.4	5	4.5
$2.5 (extreme poor)	9.2	23.6	20.6	20.4	16.3
$4 (poor)	19.3	42.5	39	42.7	31

Ultra-poverty is reduced for all four ethnic groups, anywhere from 40 to 57%. However, whites had a considerably higher reduction at 57% compared to pardos and blacks with a 40% and 49% reduction respectively. A similar result is also found on extreme poverty (US$2.50) and poverty (US$4.00) with whites having a significantly higher reduction than other ethnic groups. In all poverty lines, whites had a higher poverty reduction than the national average. Considering net indirect taxes, consumable income (compared to market income) poverty reduction is tempered for the ultra-poor and increased for the other two poverty lines across all groups. After accounting for all taxes and transfers, the prevalence of poverty between non-whites and whites stayed practically unchanged, however the headcount ratio between pardos and whites increased from 3.1 to 3.3 for those living under US$1.25.

At the national level, the moderate success of direct transfers at reducing poverty can be attributed to high coverage of the poor: 85 percent of the poor live in households receiving at least one direct transfer. This figure is even higher among the extreme poor (93 percent) and ultra-poor (98 percent). Table 3, shows the percent of individuals living in beneficiary households across different ethnic groups. The ultra-poor (white, pardo, and black) have similar coverage also comparable to the national average. The overall coverage for the extreme poor and poor is higher for pardos and blacks than whites.

While non-whites have higher overall coverage, table 3 shows that the per capita transfer for whites is higher for all income groups. The table also shows difference being higher on the two extremes (below $1.25 and above $50). The average benefit for pardos living under $1.25 is

just 60 percent of the amount received by whites. For those living above $50, whites are receiving more than twice the amount per capita received by pardos.

This unwelcome result occurs because coverage for two particularly generous programs is considerably higher for the white population than non-whites. Coverage for Special Circumstances Pensions and Scholarships programs is higher for whites than pardos and blacks at any poverty line (U$1.25, US$2.50, and US$4). The coverage for the Scholarships program is twice as big for whites living with less than US$1.25. Special Circumstances Pensions have a significantly higher coverage for whites at any poverty line.

Table 3: Percent of Individuals Living in Beneficiary Households

	PERCENT OF INDIVIDUALS LIVING IN BENEFICIARY HH							BENEFITS PER CAPITA IN DAILY US$PPP DOLLARS (PPP 2005)						
White Groups:	y<1.25	1.25<y<2.5	2.5<y<4	4<y<10	10<y<50	y>50	Total	y<1.25	1.25<y<2.5	2.5<y<4	4<y<10	10<y<50	y>50	Total
Bolsa Familia	84.40%	70.90%	53.40%	18.50%	2.40%	0.20%	16.90%	0.31	0.26	0.18	0.06	0.01	0.00	0.06
Scholarships	1.50%	2.50%	1.20%	0.90%	1.20%	2.00%	1.30%	0.19	0.02	0.01	0.02	0.03	0.10	0.03
BPC	7.00%	4.20%	3.30%	2.40%	0.40%	0.20%	1.60%	0.17	0.09	0.08	0.05	0.01	0.00	0.04
Unemployment	2.40%	3.30%	3.20%	5.70%	4.70%	0.90%	4.50%	0.01	0.02	0.02	0.04	0.05	0.01	0.04
Special Circumstances Pensions	18.10%	16.40%	12.40%	12.50%	10.50%	5.70%	11.40%	0.62	0.62	0.49	0.56	0.68	1.82	0.71
Other Transfers	1.30%	2.50%	2.30%	2.40%	2.80%	2.20%	2.50%	0.00	0.01	0.01	0.01	0.01	0.02	0.01
All Above	98.40%	84.50%	67.20%	37.70%	20.70%	10.70%	34.20%	1.30	1.02	0.77	0.73	0.79	1.96	0.89
Pardo Groups:	y<1.25	1.25<y<2.5	2.5<y<4	4<y<10	10<y<50	y>50	Total	y<1.25	1.25<y<2.5	2.5<y<4	4<y<10	10<y<50	y>50	Total
Bolsa Familia	93.20%	87.30%	69.00%	30.90%	5.10%	1.00%	42.20%	0.36	0.32	0.24	0.10	0.02	0.01	0.15
Scholarships	0.80%	2.10%	1.80%	1.30%	1.00%	1.00%	1.30%	0.00	0.01	0.01	0.01	0.02	0.05	0.01
BPC	7.30%	4.50%	3.70%	2.30%	0.60%	0.40%	2.80%	0.16	0.08	0.08	0.05	0.01	0.00	0.06
Unemployment	2.60%	3.40%	3.40%	5.60%	5.10%	2.70%	4.50%	0.01	0.01	0.02	0.03	0.05	0.06	0.03
Special Circumstances Pensions	12.00%	9.30%	9.40%	9.80%	9.20%	5.00%	9.60%	0.26	0.23	0.21	0.33	0.54	0.71	0.36
Other Transfers	1.30%	2.60%	2.40%	3.30%	3.00%	0.90%	2.80%	0.00	0.01	0.01	0.01	0.01	0.01	0.01
All Above	98.30%	93.10%	77.50%	46.20%	22.20%	10.50%	54.70%	0.80	0.66	0.57	0.54	0.65	0.84	0.62

The reasons why whites have better coverage than non-whites on those programs are still not completely understood. The Special Circumstance Pensions program benefits those living in urban areas and working in the formal sector more than their counterparts as you must be enrolled in the social security system to be eligible. If pardos and blacks occupy a majority of the informal sector and/or rural areas, then they will be underrepresented. The data available corroborates such a possibility. According to Araujo and Lombardi[36], using 2009 data, about 56% of all pardos and blacks were working in the informal sector versus 44% % in the case of the white population.

The fact that poverty is not reduced further despite Brazil's high spending on direct transfers is also due to high leakages to the non-poor (in addition to the deleterious effect of indirect taxes): 73 percent of total direct transfer benefits go to the population that is above the US$4.00 poverty line.[37]

[36] Araujo and Lombardi (2013).
[37] Higgins and Pereira (2014).

5. Conclusions

This paper summarizes the results of applying a standard benefit-tax incidence analysis to estimate the effect of taxes and social spending on inequality and poverty among ethnic groups in Brazil.

Direct transfers through fiscal intervention had similar effects on inequality across ethnic groups. The average reduction of the Gini coefficient is 3% for whites, pardos, and blacks and slightly higher for indigenous. Adding monetized in-kind benefits, health and education, the reduction in inequality for pardos is significantly higher than for whites (17% vs. 10%). However, the income ratio between whites and non-whites is virtually unchanged from market income to final income. Non-whites' incomes are still about half of that of whites. The fiscal system reduces the divide, but only very slightly. The higher effect in the Gini coefficient for pardos may be only reflecting whites opting out of the public health and educational systems. According to the Educational Census, about 70% of those attending private schools were whites. [38] In addition, the proportion of pardos and blacks with private health insurance is less than 18% compared to over 32% for whites.[39]

Poverty rates are at least twice as high for non-whites for any poverty line (US$1.25, $2.50, and $4.00). The fiscal system reduces poverty across all ethnic groups and poverty lines after accounting for direct transfers. However, consistent with Higgins and Pereira[40], such positive effects are offset by a deleterious effect from indirect taxes, reversing the benefits accrued all ethnic groups. In fact, the results for ultra-poverty are weakened, and extreme and moderate poverty actually increased.

In addition, we found another unwelcomed result. While direct transfers have a high coverage of the poor especially for pardos and blacks, per capita transfers are on average higher for whites and benefits can be twice as large as those for non-whites.

Brazil has experienced a significant decrease in income inequality and poverty over the last fifteen years. Fiscal policy played an important role, especially on reducing inequality at the national level.[41] However, our study shows that fiscal interventions did not have a significant impact in reducing the divide between whites and non-whites.

[38] IBGE (2005).
[39] IBGE (2009).
[40] Higgins and Pereira (2014).
[41] Higgins and Pereira (2014).

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