INEQUALITY AND POVERTY IN URUGUAY BY RACE: THE IMPACT OF FISCAL POLICIES

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ABSTRACT

In Uruguay tax structure and social spending reduce inequality and poverty for society as a whole (Bucheli et al. 2013). In this study we analyze the effect of fiscal policy by race and ethnicity, disaggregating to consider whites, African descendant and indigenous descendant Uruguayans. Our paper seeks to discover whether the reduction in inequality and poverty benefits a particular ethno-racial group over others or if it affects ethno-racial groups equally.

The three ethno-racial groups are equally likely to escape extreme poverty through the direct transfer system. However, the likelihood of escaping moderate poverty is lower for indigenous peoples than for the other ethno-racial groups. While the direct transfer system reduces poverty among individuals of all three groups, it does not fully achieve racial equality in terms of the incidence of poverty.

When analyzing average income, the qualitative conclusions are similar. The ethno-racial gap narrows, predominantly due to in-kind transfers, but does not disappear completely.

JEL Codes: I38, I32, D63, H22, H24
Keywords: inequality, poverty, race, fiscal policy, direct transfers

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1 INTRODUCTION[1]

Uruguay's population is predominantly composed of Spanish and Italian descendants who self-classify as white in national censuses and surveys. Minorities account for a very small portion of Uruguay's population; according to the last census, less than 5% of people self-identified their main descent as African descendant and 2% indicated being predominantly of indigenous descent.[2] Previous studies about the Uruguayan Afro-descendant population show that ethno-racial gaps exist in areas such as poverty, income, housing conditions, educational level, and labor market discrimination (Bucheli and Cabella, 2010; Bucheli and Porzecanski, 2011). To our knowledge, there are no studies examining ethno-racial gaps and indigenous peoples in Uruguay.

Uruguay has low levels of inequality and poverty by Latin American standards. Public policies play an important role in ensuring this trend. When comparing income before and after fiscal policy, inequality (as measured by the Gini index) and the extreme poverty rate decline by 19.6% and 71%, respectively (Bucheli et al, 2013).

In this paper we explore differences in the incidence fiscal policy by race and ethnicity. The broad method utilized in this analysis is to compare poverty rates and average incomes between white, afro-descendant and indigenous-descendant Uruguayans across different income concepts.[3]

Our analysis is guided by the philosophy of inequality of opportunity. This approach distinguishes between two sources of inequality; one part due to individual effort and responsibility and another part due to circumstances beyond an individual's control. Following the ethical logic behind an inequality of opportunity approach, the objective of fiscal policy should be to diminish the latter form of inequality, that which is due to circumstances outside of the control of an individual (Romer 1998, 2001).

Thus, we may qualify a fiscal policy as successful if it equalizes the distribution of income across different racial groups. In terms of poverty, a successful policy should equalize poverty rates between racial groups. Therefore, fiscal policy should treat individuals of different characteristics differently in order to compensate for inequality of opportunity. We are aware that the set of circumstances that effect individual outcomes is more complex than just their race or ethnicity so inequality within ethno-racial groups is not completely due to individual effort or responsibility.

This paper is structured in the following manner. In section 2 we describe the data base, income variables and racial classification utilized in this study. In section 3 we present a brief description of welfare by racial group using disposable income. As is usually done, we analyze the average differences between groups, but attention to the heterogeneity within groups is important as the average differences may be driven by a particular sub-section of a ethno-racial group. Thus, we also examine inequality and poverty within the

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[1] This article was prepared as part of the Commitment to Equity (CEQ) project, a joint initiative of CIPR and the Department of Economics, Tulane University and the Inter-American Dialogue. This study was partially financed by IDB.

[2] It is important to note that in Uruguay, surveys and censuses ask individuals to identify a primary and, if applicable, secondary ethno-racial identity. For the purpose of our analysis, we have defined individuals based on their primary self-identification. This will be discussed in greater detail in section 2.

[3] These different income concepts are defined so as to see the impact of different types of government intervention on poverty and inequality within a society.

groups. In section 4 we analyze the effects of direct taxes and transfers (in-cash plus food transfers). We also calculate the hazard rate of individuals moving to a different income class as a result of fiscal policy. We use these rates to study racial differences in the impact of fiscal policy. However, we also analyze whether the average gap between races declines. In section 5 we focus on the effect of health and educational transfers. We conclude with section 6.

2 DATA

We use the so-called Commitment to Equity (CEQ) database for the purpose of this analysis. This dataset contains information on the amount of taxes paid by households, their received public benefits, and complied results in the form of five income variables. Data is disaggregated at the individual level and assigned per capita taxes, benefits and income from the household. The CEQ database was constructed from Uruguay's 2009 household survey, the *Encuesta Continua de Hogares* or ECH, collected by the National Institute of Statistics (*Instituto Nacional de Estadística* or INE). This survey contained 130,054 observations.

The definitions of the income concepts are defined by Lustig and Higgins (2013) a detailed account of the procedures for estimating Uruguay's income concepts can be found in Bucheli et al. (2012). In remainder of this section we present a brief review of these income concepts as well as a description of the population by race and ethnicity.

i Taxes, public benefits and income variables

Market income includes gross labor earnings and capital income, auto-consumption, imputed rent form owner-occupied housing, private transfers and the contributory pensions paid by the social security system. Net market income is the market income minus direct taxes. Net market income plus direct transfers yields disposable income. Direct transfers include in-cash public transfers (noncontributory pensions, family allowances, unemployment insurance, disability and sickness allowances and maternal benefits) and food public transfers. Note that social security contributions are treated as savings.

Post-fiscal income is disposable income minus indirect taxes. As the ECH reports disposable income by source, the legal schedules of direct taxes and contributions were used to estimate market and net market income. Tax evasion due to labor informality was considered for these estimations. These calculations mean that direct taxes and contributions are entirely paid by workers. As the ECH does not report spending, a matching survey technique was used to take advantage of the information provided by an expenditure survey collected by INE between November 2005 and October 2006. Indirect taxes were estimated using the legal schedule and assuming no tax evasion.

Final income is post fiscal income plus in-kind education and health transfers. The benefits of educational and health services were estimated as the ratio of spending per beneficiary based on administrative data. The derived benefit was assigned to beneficiaries and the per capita transfer.

Educational transfers were calculated considering six separate levels. These levels were childcare, pre-school and primary school, middle school (*ciclo básico*), high school (*bachillerato*), technical secondary school, and tertiary education. The per capita cost of each program was assigned to the student attending the

corresponding program in a public institution. The highest transfers correspond to programs of the tertiary level of education and the lowest to programs of child care and primary level.

The estimation of health benefits is reliant on the healthcare system which individuals utilize. If an individual is covered by a mutual system institution and receives health benefits, the estimated transfer is equal to the per capita subsidy received by the mutual system. If the individual is covered by a private insurance company and receives health benefits, the estimated transfer is equal to the per capita government subsidy paid to the insurance system. If the individual is covered by the public healthcare system, the estimated transfer is equal the per capita cost of the public healthcare system. The largest transfer corresponds to public system and the lowest to private insurance system. Due to the difference of copayments and other private costs between these systems, the option for private insurance is predominantly utilized by the richest segments of society while poorer segments are more likely to use public institutions.

Note that in-kind transfers are measured by their per capita budgetary cost so the comparison of final income with other income concepts requires that other components be scaled up to their macroeconomic values. Income was only scaled up for the analysis of inequality and progressivity. For this study, poverty was only analyzed between market and disposable income.

ii Classification by race

The ECH asks individuals to identify their ethno-racial identity in two distinct ways. First individuals are asked, through separate questions, if they believe that they have African, Asian, white, indigenous, or other (can be specified) ancestors. This is followed by a question asking individuals to self-identify which of the previous ethno-racial groups they believe is their principal heritage. For this paper, we choose to classify the population according to self-identification of an individual's principal ethno-racial group.

Table 1 reports the ethno-racial composition of our database as well as in the 2011 National Census, utilizing both principal ethno-racial identification and allowing for multiple identities. Both of the data sources reveal that the majority of the population self-identifies as having white ancestors with 5% of the population identifying as being of indigenous descent and between 8% and 9% identifying as being of African descent.

TABLE 1. RACIAL CLASSIFICATION BY SELF-REPORTED DESCENT. PERCENTAGES

	CEQ Database		Census	
	Allows racial descent	Main racial descent	Allows multiple descent	Main racial descent
Total	113.6	100.0	107.7	100.0
Afro	9.3	3.4	8.0	4.7
White	98.9	95.5	93.1	89.9
Indigenous	5.1	1.0	5.0	2.4
Other	0.3	0.1	1.6	2.9

Source: *Censo de Población* 2011, INE (2011) and author's calculations based on *Encuesta Continua de Hogares*, INE (2009).

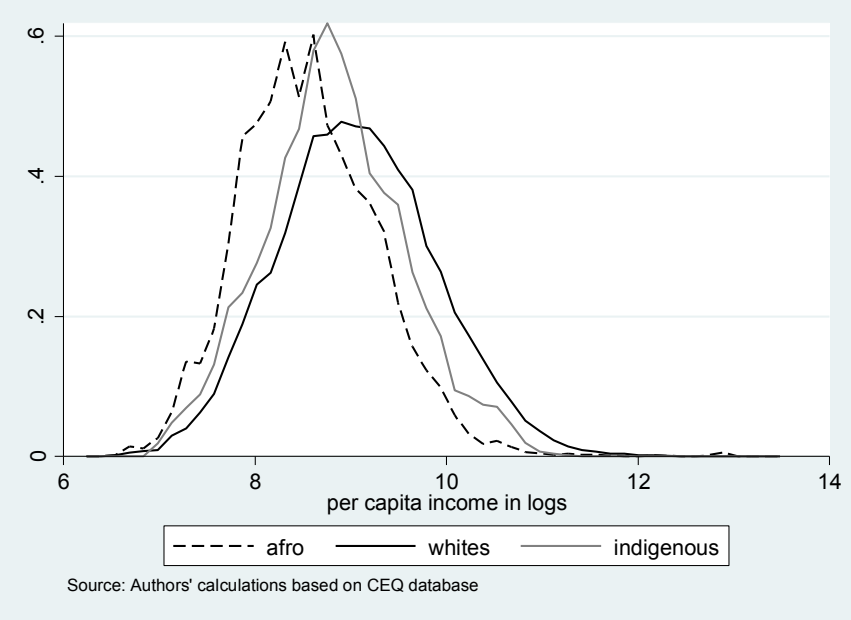
In our database, around 12% of individuals declared multiple ancestries. When utilizing primary identity, 3.4% of the individuals self-identified as Afro-descendant, 95.5% as white and 1.0% as indigenous.[4] The proportion of individuals identifying as predominantly Afro-descendant or indigenous is higher in the Census, which reports that 4.7% of the population is Afro-descendant, 2.4% is indigenous and 2.9% identified as being of a different descent. We have no explanation for the differences between the Census and the ECH.

3 AN OVERALL DESCRIPTION OF WELFARE BY GROUP

On average, the disposable income of indigenous peoples in Uruguay is 24% higher than that of Afro-Uruguayans. The ethno-racial gap is even more pronounced when including white Uruguayans, who have a disposable income 70% higher than their Afro-Descendant counterparts. If we examine the overall distribution, a similar trend is evident across the income distribution. In Figure 1 we present the kernel density functions of the per capita household disposable income (in logs) for whites, Afro-descendants and indigenous peoples. The distribution with the majority of its population in the lowest income levels represents the Afro-descendant population. The income distribution of the white population is situated to the far right and reveals that the majority of white Uruguayans have higher levels of income than indigenous peoples and Afro-descendants. The overall picture shows that whites are the most advantaged ethno-racial group while African descendants are the most disadvantaged.

[4] For our purposes, individuals who identified as "Asian" or "other" are both included in the category "other".

FIGURE 1. DENSITY FUNCTION OF (LOG) DISPOSABLE INCOME FOR RACE-GROUPS. URUGUAY, 2009.



Source: Authors' calculations based on *Encuesta Continua de Hogares, INE* (2009).

By analyzing across the entire income distribution, we are able to examine the ethno-racial gaps at different levels. When comparing two ethno-racial groups, an increasing income gap across the distribution is an indicator of the presence of barriers to reach the highest income positions. In table 2 we report the ratio of income between white and Afro-descendant and white and indigenous peoples at different deciles of the income distribution. At the lower end of the distribution, the white population sees incomes around 34% and 18% greater than Afro-descendants and indigenous peoples, respectively. This gap increases across the income distribution for Afro-Descendants and from the second decile on for indigenous peoples. The gap increases more for Afro-Uruguayans than indigenous peoples, with the white population having mean incomes 66% and 28% higher at the 9th decile , respectively.

TABLE 2. RATIO OF PERCENTILES OF THE INCOME DISTRIBUTION: WHITE/AFRO AND WHITE/INDIGENOUS

Decile	White/Afro	White/Indigenous
1	1.34	1.18
2	1.51	1.15
5	1.58	1.19
8	1.66	1.20
9	1.68	1.28

Source: Author's calculations based on *CEQ database*

Inequality, as measured by the Gini index, is presented in Table 3. Consistent with what is seen in table 2, inequality among indigenous peoples is lower than within the white population. However, the difference in the Gini index of whites and Afro-descendants is not statistical significant. Further analysis of the microdata reveals that a small proportion of Afro-descendant population does very well, belonging to the top 10% of the overall income distribution. If we do not include the richest segment of the population, disposable income inequality among whites becomes higher than Afro-descendants (p-value=0).

In table 3 we also present poverty rates by ethno-racial group. The poverty lines utilized are the international extreme threshold (US$ 2.50 PPP per day), the international moderate line (US$ 4 PPP per day) and the national moderate poverty line.[5]

If we focus on the low end tail of each group, we find that Afro-descendants face the highest incidence of extreme poverty (US$ 2.50 PPP per day) at a rate of 3.7%. Indigenous peoples and white Uruguayans face similar rates of extreme poverty, at 1.5% and 1.4% respectively, substantially lower than their Afro-descendant peers. However, utilizing higher poverty thresholds reveals differences in the poverty rates faced by whites and indigenous peoples, with indigenous peoples being nearly 50 percent more likely to be in moderate poverty (living below $4 PPP/day).

[5] This threshold varies with geographical region and with the number of persons in the household. On average for all individuals, the line is equivalent to US$ 7.7 PPP per day in 2009.

TABLE 3. GINI INDEX AND POVERTY HEADCOUNT RATIO BY RACE IN PERCENTAGE AND DIFFERENCE BETWEEN RACES (DISPOSABLE INCOME). PERCENTAGES.

	Gini Index	US$ 2.50 PPP per day	US$ 4 PPP per day	National Poverty Line
All	45.7	1.4	6.6	22.3
Whites	45.5	1.4	6.3	21.3
Afros	44.1	3.7	14.5	47.5
Indigenous	40.6	1.5	9.3	30.0
Afros-Whites diff.	-1.5	2.3***	8.2***	26.2***
Indigenous-Whites diff.	-4.9***	0.1	3.0**	8.7***
Afros-Indigenous diff.	3.5	2.2***	5.2***	17.5***

Notes: Differences of Gini index and poverty rate in percentage points
*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations based on *CEQ database*

In brief, indigenous peoples are the most homogenous group. Although they appear to be at a disadvantage compared to whites, welfare indicators for Uruguay's indigenous peoples are higher than for Afro-Uruguayans. As for African descendants, with the exception of a small portion who is very wealthy, they are faced with the deepest societal constraints.

4 EFFECTS OF DIRECT TAXES AND DIRECT TRANSFERS: FROM MARKET TO DISPOSABLE INCOME

i Inequality

To determine if a policy is effective at reducing inequalities in ethno-racial terms, we will utilize definitions progressivity in ethno-racial space and pro-disadvantaged group (Lustig, 2014). A program is considered to be progressive in ethno racial terms if those groups who face lower incomes receive a greater share of resources than the share of market income held by this group (Lustig, 2014). Conversely, a tax is considered progressive if the amount paid by the disadvantaged group is less than their share of market income. Both taxes and transfers are considered neutral if the incidence of spending is similar to shares of market income.

Table 4 presents the incidence of different government interventions as a share of the program's budget across ethno-racial lines. As direct taxes are similar to market income across all ethno-racial groups, the overall impact of direct taxation is neutral in ethno-racial terms. However, the incidence of direct transfers is

highly progressive, with Afro-descendants and indigenous peoples receiving 5.8% and 1.3% of national direct transfers, respectively compared to the 1.9% and 0.7% of market income held by these respective groups. The progressivity of direct transfers is particularly robust in conditional cash transfer (CCT) expenditure, with Afro-descendants and indigenous peoples receiving 8.1% of total benefits.

TABLE 4. ETHNO-RACIAL INCIDENCE OF FISCAL INTERVENTION URUGUAY, 2009.

	White	Afro-Descendant	Indigenous
	% nat'l	% nat'l	% nat'l
	95.5%	3.4%	1.0%
Market Income	97.2%	1.9%	0.7%
Direct Taxes	97.6%	1.7%	0.6%
All Direct Transfers	92.8%	5.8%	1.3%
CCT	91.9%	6.7%	1.4%
Non-contributory	92.6%	6.1%	1.3%
Other Direct Transfers	93.3%	5.3%	1.3%

Source: Author's calculations based on *CEQ database*

The progressivity of a program may be in part due to the number of individuals of a specific group receiving the program due to reasons other than their race or ethnicity. For example, a program targeted at individuals living in poverty should disproportionately reach the group that has more individuals in poverty. Thus, examining the incidence of poverty across ethno-racial lines is an important element in determining if a program is pro-disadvantaged group or not.

ii Poverty and mobility

Table 5 presents extreme and moderate poverty calculated using market and disposable income.[6] Market income is defined as the income received before any government intervention (ie., before taxes), but including income from labor, capital, and contributory pensions. Disposable income refers to the level of income individuals have for use on expenditures after direct taxes, contributions to social security, cash transfers, and non-contributory pensions. Direct taxes and transfers have a strong effect on extreme poverty which decreases from 5% to 1.4% nationally. Moderate poverty also declines sharply, falling from 11.4% to 6.6%. All ethno-racial groups benefit from these reductions in poverty.

[6] For more information on the definitions of the different income concepts, please refer to Lustig, Nora and Sean Higgins (2013). Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook, CEQ Working Paper No. 1, July 2011; revised January 2013.

TABLE 5. HEADCOUNT RATIO BY RACE. URUGUAY, 2009.

	Total	Whites	Afro	Indigenous
Poverty line: $2.50 PPP/day				
Income market	5.0	4.8	12.4	5.8
Disposable income	1.4	1.4	3.7	1.5
Poverty line: $4 PPP/day				
Income market	11.4	10.9	25.5	15
Disposable income	6.6	6.3	14.5	9.3

Source: Author's calculations based on *CEQ database*

To determine if a policy is pro-disadvantaged group, we utilize the concept of fiscal mobility proposed by Lustig (2011). We also utilize the term fiscal mobility to refer to the movements across the income distribution due to fiscal policy. Lustig and Higgins (2012) apply this concept using a fiscal mobility matrix that "measures the proportion of individuals that move from a before taxes and transfers income group (e.g., non-poor) to another income group (e.g., poor) after their income is changed by taxes and transfers". Following this idea, we calculate the hazard rates of climbing out of poverty through fiscal intervention and more generally, the rates of changing from socio-economic class.

In order to determine if a program is pro-disadvantaged group, we consider that a policy is successful if it equalizes poverty rates of between ethno-racial groups, that is, that the policy leads to the ethno-racial composition of the poor being more representative of the population as a whole (Lustig, 2014).[7] In order to achieve this goal, fiscal policy should treat individuals of different races or ethnicities differently. In terms of the estimated hazard rates of climbing out of poverty, the policy is considered successful if the rate higher for the before-policy disadvantaged ethno-racial group(s) than for the advantaged group(s) (see Appendix).

The population is divided into five income classes: the extreme poor (y<US$ 2.50 PPP per day), the moderate but not extreme poor (US$ 2.50 PPP≤y<US$4 PPP), the vulnerable class (US$ 4≤y< US$10 PPP), the middle class (US$ 10≤y<US$50 PPP) and finally, the rich (y≥US$ 50 PPP).

These classes are defined for both market and disposable income. An individual belongs to class *i* according to market income and to class *j* according to disposable income, where *i* and *j* may be equal or different. We denote these individuals by ι^m_i and ι^d_j. We are interested on estimating the hazard rate of moving from ι^m_i to ι^d_j where $i<j$ (upward mobility) and the rate of moving from ι^m_i to ι^d_j where $j<i$ (downward mobility). If we

[7] For more on the definitions utilized to determine the impact of fiscal incidence in ethno-racial terms, please refer to Lustig, 2014.

order the sub-index from 1 to 5 where 1 denotes the poor and 5 the rich, the hazard rate of upward mobility for each class is:

$$H_c^{up} = \frac{1}{n_c^m} \sum_{i=c+1}^{5} n_i^d \quad with\ c < 5 \qquad (1)$$

where n^m_c is the number of individuals of class c according to market income and n^d_c is the number of individuals of class c according to disposable income. Similarly the hazard rate of downward mobility can be calculated as:

$$H_c^{down} = \frac{1}{n_c^m} \sum_{i=1}^{c-1} n_i^d \ with\ c > 1 \qquad (2)$$

In table 6 we present the hazard rates for each income class by ethno-racial group. For each ethno racial groups, the probability that an individual leaves extreme poverty as a result of government intervention is above 70% while the probability of escaping moderate poverty is more than 50%. Although the probability of escaping extreme poverty is similar amongst each ethno-racial group, indigenous peoples see lower likelihoods of escaping moderate poverty through fiscal policy. Overall, the probability of escaping poverty (both extreme and moderate) is around 40% with negligible differences across ethno-racial lines, particularly between whites and Afro-descendants. Therefore, the impact of direct taxes and the transfer system does not contribute to closing the ethno-racial divide in terms of poverty.

TABLE 6. HAZARD RATES OF LEAVING THE MARKET INCOME CLASS. PERCENTAGES.

	Whites		**Afro**		**Indigenous**	
Class defined by market income	**H^{up}**	**H^{down}**	**H^{up}**	**H^{down}**	**H^{up}**	**H^{down}**
y<2.50	71.5		70.3		73.5	
2.50≤y<4	63.1	0.0	66.6	0.0	52.8	0.0
y<4	42.2		43.6		37.6	
4≤ y < 10	5.7	0.1	4.3	0.2	6.5	0.0
10 ≤ y < 50	0.0	0.9	0.0	1.7	0.0	2.0
50 ≤ y		17.3		13.0		20.1

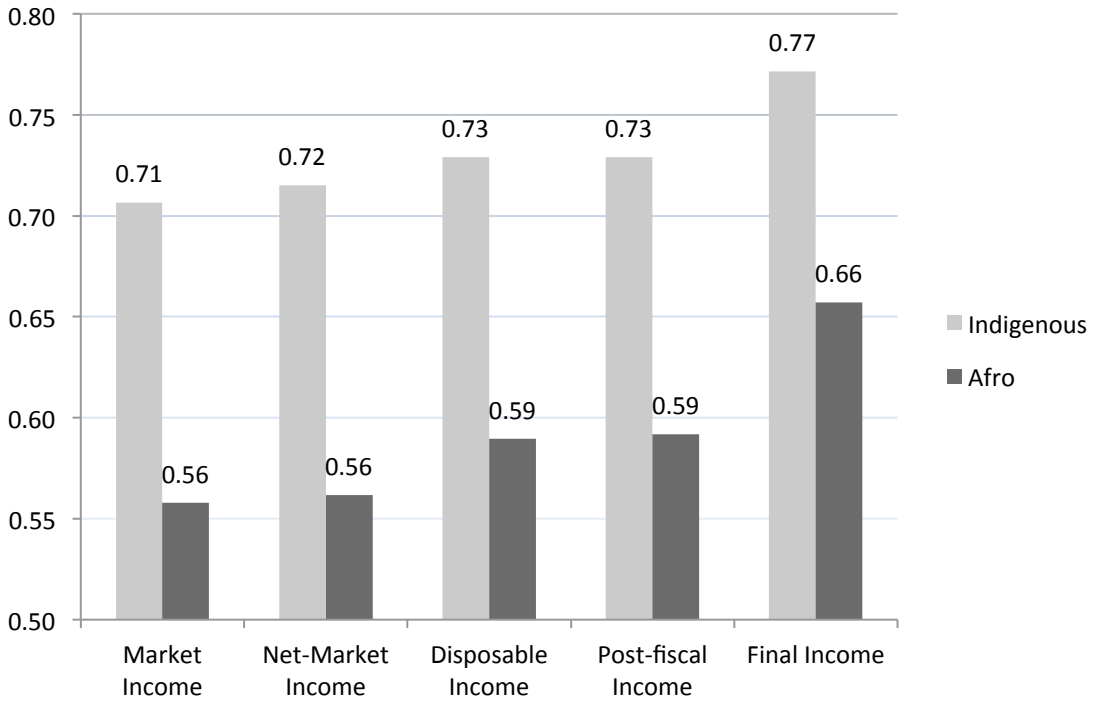
Source: Author's calculations based on *CEQ database*

The socio-economic classes above the poverty line see lower mobility as a result of fiscal policy. The probability that an individual of the vulnerable class entering the middle-class is very low, ranging from 4.3% for Afro-Uruguayans to 6.5% for indigenous peoples. The hazard rate of moving from the middle class into the richest class is zero for all races. Finally, direct taxes and transfers have a negligible effect on downward mobility.

iii Average gaps

In Figure 2 we show the average income of Afro-descendants and indigenous peoples relative to the white population across all income concepts. In this section we are interested in the effect of direct taxes and transfers, so we focus on changes between market and disposable income. Across all income concepts, the ratio of Afro-descendant and indigenous income relative to white income is less than one. However, the average ethno-racial gap in income decreases as a result of direct transfers (the change from net market to disposable income). Mean income of Afro-descendants relative to whites grow from 0.56 to 0.59 when we pass from market to disposable income. In the case of indigenous peoples, the ratio changes from 0.71 to 0.73.

FIGURE 2- PER CAPITA MEAN INCOME: VALUES RELATED TO THE PER CAPITA MEAN INCOME OF WHITES. URUGUAY, 2009.



Source: Author's calculations based on *CEQ database*.

As a synthetic measure of inequality between groups, we decompose the Theil index to include a between-group component. It is important to note that the contribution of this component is dependent on the relative sizes of each group. In the case of Uruguay, indigenous peoples and Afro-Descendants represent a small portion of the national population. As such, it is not surprising that inequality driven by ethno-racial

differences is low. As shown in Table 7, this component accounts for approximately 1% of inequality at market income. When including direct taxes and transfers in our analysis, the between group component remains at approximately 1% even though inequality within groups declines. The results suggest that there is no visible equalization of opportunities across ethno-racial line.

TABLE 7. THEIL INDEX BY RACIAL GROUP AND CONTRIBUTION OF THE BETWEEN-GROUP COMPONENT TO INEQUALITY

	Market income	Net market income	Disposable income	Post fiscal income	Final income
All	0.456	0.422	0.389	0.399	0.299
Whites	0.449	0.416	0.385	0.394	0.296
Afro	0.632	0.558	0.472	0.489	0.320
Indigenous	0.355	0.329	0.284	0.289	0.194
Between-groups	0.004	0.004	0.004	0.004	0.003
(%)	1.0	1.0	1.0	0.9	0.9
Within-groups	0.452	0.418	0.385	0.395	0.296
(%)	99.0	99.0	99.0	99.1	99.2

Source: Author's calculations based on *CEQ database*

5 THE EFFECTS OF HEALTH AND EDUCATIONAL BENEFITS

The shift from disposable to post fiscal income takes into consideration the impact of indirect taxes. As shown in Figure 2 and Table 7, the effect of indirect taxes is negligible. However, the shift from post fiscal to final income, which takes the impact of in-kind benefits into account, reduces the ethno-racial gap more than direct transfers. The income ratio between Afro-descendants and whites grows from 0.59 to 0.66 when shift from post fiscal to final income and the ratio between indigenous peoples and whites increases from 0.73 to 0.77. As a result, we can even observe a slight decrease in the between-group component of the Theil index (Table 7).

For the purpose of our analysis, in-kind transfers include health and education benefits. Both of these benefits contribute to the observed reduction in Uruguay's ethno-racial gaps. In order to analyze the effect of each program we add the per capita transfer of each program to post-fiscal income. In Table 8 we present demonstrate how the addition of each in-kind benefit impact the income ratio between Afro-descendant and indigenous peoples relative to whites.

In-kind health transfers close the ethno-racial gap, especially between Afro-descendants and whites, with the income ratio increasing from 0.59 to 0.63. This reduction in the ethno-racial gap is related to the health program chosen by individuals. Afro-descendants are more likely to choose public institution health coverage options. Please note that this has an impact on the amount of the health transfer: for this analysis, we base the transfer on the per capita cost of the program which says nothing about quality of services.

TABLE 8. PER CAPITA MEAN INCOME OF AFRO AND INDIGENOUS DESCENT INCLUDING IN-KIND TRANSFERS, RELATED TO THE PER CAPITA INCOME OF WHITES

Income concept	Afro	Indigenous
Post-fiscal income	0.59	0.73
Post-fiscal income +		
Health	0.63	0.76
Child care and primary education	0.62	0.74
Secondary education	0.60	0.74
Tertiary education	0.59	0.73
All education	0.62	0.75
Final income	0.66	0.77

Source: Author's calculations based on *CEQ database*

Public child care and primary education also contribute to the reduction in the ethno-racial gap. This is once again related to individual choices between public and private systems.[8] However, the magnitude of the reduction in the ethno-racial gap through the education system declines with education level.

In Table 8 we present the enrollment rates of different levels age cohorts (public or private). Primary school attendance is nearly universal across ethno-racial lines. The gap in educational participation begins to emerge in secondary education. Although there is a reduction in enrollment rates across all ethno-racial groups, the reduction is greater for indigenous peoples and Afro-descendants than for whites. However, the gap between indigenous peoples and the white population is lower than the usually accepted levels. A similar pattern can be seen for tertiary education.

[8] This may also be, in part, due to the different demographic structure of the ethno-racial groups.

TABLE 9. ENROLLMENT RATES BY AGE COHORT AND RACE/ETHNICITY. PERCENTAGE.

Age-group	Total	Whites	Afro	Indigenous
6-12	98.7	98.7	99.4*	100.0***
13-17	83.7	84.0	76.5***	76.4
18-24	39.2	40.1	19.1***	20.8***
Notes: Difference between afro and whites, and indigenous and whites: *** p<0.01, ** p<0.05, * p<0.1				

Source: Author's calculations based on *CEQ database*

In sum, public primary education equalizes opportunities across ethno-racial lines. However, as with health, we are not taking into account the differences in quality between public and private education. However, public secondary and tertiary education are not equalizing due to higher drop-out rates among indigenous peoples and Afro-descendants.

6 CONCLUDING REMARKS

In this study we have analyzed the effects of fiscal policy on poverty and inequality by race and ethnicity in Uruguay.

Before fiscal policy, the Afro-descendant population faces the highest rates poverty rate and whites the lowest rates. The likelihood that individuals escape extreme poverty through direct transfers is more than 70%, while the likelihood of climbing out of moderate poverty is more than 50%. The three ethno-racial groups are equally likely to be taken out extreme poverty through fiscal policy, but the probability of leaving moderate poverty is lower for indigenous peoples than for the other two groups. These results show that while the direct transfer system does reduce poverty across all ethno-racial groups, it does not favor those groups who face higher rates of poverty. Thus these programs are not considered pro-disadvantaged group. In other words, direct transfers do not put racial groups on an equal footing.

When analyzing average incomes, the qualitative conclusions are similar: the ethno-racial gap narrows but does not disappear. Average disposable incomes of Afro-descendants remains at 59% of that of whites while mean indigenous peoples' incomes is 73% of white incomes. However, the contribution of racial inequality to overall inequality, as measured by the Theil index, is only 1%. This however is in part due to the small portion of the population that is made up of indigenous peoples and Afro-descendants. The other reason for the low contribution of ethno-racial inequality is the high levels of inequality within each of these groups. In particular, a small sub-section of the Afro-descendant population is very successful and belongs to the richest 10% of the national income distribution.

In-kind transfers show a greater reduction in the ethno-racial gap than direct transfers. Though this conclusion appears optimistic, two critical questions emerge from these results. First, Afro-descendants and

indigenous peoples receive more health benefits than whites because the government subsidy is higher for the beneficiaries of public services than private options. As whites are more likely to opt for private options, it appears as though these policies are highly progressive and pro-disadvantaged group. However, this analysis does not take quality into consideration. An effort to consider adjusting benefits to incorporate quality is very important for future research. Second, Afro-descendants benefit from the public primary school system (with the afore-mentioned concerns about quality), but have lower enrolment rates than the white population at higher levels of education. Thus, they are not capturing all of the potential education transfers. A relevant consequence of this fact is that the investment in human capital for the Afro-descendant population is lower than for whites. This is particularly important given the low tertiary education graduation rates of Afro-descendants. This phenomena should be a special focus of policy in order to equalize opportunities.

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APPENDIX THE HAZARD RATE OF LEAVING POVERTY AND THE POVERTY RATIO

If the before-policy poverty rate is higher for the group *a* than for the group *w*, the post-fiscal poverty rate will be equal only if the hazard rate of leaving poverty is higher for the group *a* than for the group *w*.

Suppose that in the pre-policy situation the poverty rate is higher for the group *a* than for the group *w*. If we denote the number of poor by *Z* and the number of persons in each group by *N*:

$$\frac{Z_{a,pre}}{N_a} > \frac{Z_{w,pre}}{N_w}$$

The hazard rate of leaving poverty of the group *i* (*i*=*a*,*w*) is h_i:

$$h_i = -\frac{Z_{i,pos} - Z_{i,pre}}{Z_{i,pre}}$$

So, a positive hazard rate indicates that the policy reduces the poverty rate.

If the after-policy poverty rates of the groups are equal:

$$\frac{Z_{a,pos}}{N_a} = \frac{Z_{w,pos}}{N_w}$$

We can rewrite the equality:

$$\frac{Z_{a,pre} + \left(Z_{a,pos} - Z_{a,pre}\right)}{N_a} = \frac{Z_{w,pre} + \left(Z_{w,pos} - Z_{w,pre}\right)}{N_w}$$

$$\frac{Z_{a,pre}}{N_a} + \frac{\left(Z_{a,pos} - Z_{a,pre}\right)}{Z_{a,pre}}\frac{Z_{a,pre}}{N_a} = \frac{Z_{w,pre}}{N_w} + \frac{\left(Z_{w,pos} - Z_{w,pre}\right)}{Z_{w,pre}}\frac{Z_{w,pre}}{N_w}$$

$$\frac{Z_{a,pre}}{N_a}[1 - h_a] = \frac{Z_{w,pre}}{N_w}[1 - h_w]$$

$$\frac{\frac{Z_{a,pre}}{N_a}}{\frac{Z_{w,pre}}{N_w}} = \frac{1 - h_w}{1 - h_a} > 1 \Leftrightarrow h_w < h_a$$

WHAT IS CEQ?

Led by Nora Lustig since 2008, the Commitment to Equity (CEQ) project is an initiative of the Center for Inter-American Policy and Research (CIPR) and the Department of Economics, Tulane University, the Center for Global Development and the Inter-American Dialogue. The project's main output is the CEQ Assessment, a methodological framework designed to analyze the impact of taxation and social spending on inequality and poverty in individual countries. The main objective of the CEQ is to provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies.

Since its inception, the CEQ has received financial support from Tulane University's Center for Inter-American Policy and Research, the School of Liberal Arts and the Stone Center for Latin American Studies as well as the Bill & Melinda Gates Foundation, the Inter-American Development Bank (IADB), the World Bank, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean (UNDP/RBLAC), the Development Bank of Latin America (CAF), the African Development Bank, the International Fund for Agricultural Development (IFAD), the Canadian International Development Agency (CIDA), the Norwegian Ministry of Foreign Affairs, and the General Electric Foundation.
www.commitmentoequity.org

COMMITMENT TO EQUITY

The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).