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The Distributive Impact of Taxes and Expenditures in Colombia

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Abstract

Colombia has reduced extreme poverty in the past 16 years by almost half, moderate poverty by 22 percentage points, and made more than four million Colombians jump the threshold of multidimensional poverty. However, it remains one of the most unequal countries in the region, after Brazil and Panama. Fiscal policy is one of the instruments that allow governments to speed up the decline in inequality levels and reduce poverty. This study presents an exhaustive and comprehensive analysis of the distributional impacts of taxes and expenditures in Colombia in 2017. It makes a methodological comparison with the Commitment to Equity, which was previously implemented, and includes multiple improvements in the methodology. The results suggest that the combined effect of taxes and social spending in Colombia contributes to poverty reduction between 0.3 and 2.6 percentage points for US$5.5 and US$3.2 per day per person respectively, while inequality is reduced by almost one Gini point. Taxes and direct transfers, as well as indirect transfers, are progressive and pro-poor, while indirect taxes are regressive and contribute to an increase in inequality. Finally, transfers in-kind for education and health services are progressive and contribute to the reduction of inequality.

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The Distributive Impact of Taxes and Expenditures in Colombia

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I. Introduction

The economic consolidation of Colombia from the beginning of the 21st century has led to an improvement in many of the country's social indicators. Extreme poverty in Colombia has been reduced by more than half in the last 16 years, from 17.7 percent in 2002 to 7.2 percent in 2018. Similarly, moderate poverty has been reduced by 22.7 percentage points since 2002, reaching a 27 percent rate in 2018, leading to a reduction in the number of people in poverty from approximately 20 million in 2002 to 13.1 million in 2018. These improvements are not only observed in monetary poverty, but also in multidimensional poverty, where Colombia managed to reduce the poverty incidence from 49 percent in 2003 to 19.6 percent in 2018. That is, 4 million Colombians managed to jump the threshold of multidimensional poverty.

Despite the country's notable progress in reducing the poverty incidence at the national level, geographical disparities remain. To wit, in 2018, extreme poverty in rural areas was more than three times that of urban areas, and moderate poverty was about 48 percent higher in rural areas. In addition to the significant urban-rural gaps, poverty data at the departmental level reveal even more deep-rooted geographical disparities, one of Colombia's most pressing challenges in fostering balanced territorial development. Twelve of the sixteen departments that had higher poverty rates than the national one in 2002 moved further away from the national average in 2018.

Despite the vast geographical disparities in Colombia, it is imperative to emphasize that, in poverty reduction, Colombia has managed to veil the patterns experienced in the Latin America and Caribbean region. While it is true that the incidence rates of poverty in Colombia remain high compared to other countries in the region, Colombia has achieved the most significant reduction in poverty since the beginning of the 2000s.

Although Colombia managed to make progress in reducing poverty, much remains to be done in terms of inequality. For the second time in the last decade, inequality in Colombia in 2017 was lower than that of Latin America. The average Gini coefficient of the Latin American and Caribbean countries was 51.4 in 2017, while that of Colombia for the same year reached 49.7.[1] However, in 2017 Colombia was the third most unequal country in the region after Brazil and Panama. On the other hand, the rate of inequality reduction in the last 14 years was much lower than that of countries that started with the same or higher levels of inequality in 2003. For example, the Gini of Peru and Colombia stood at 53.4 in 2003, and while Peru's Gini fell to 43.3 in 2017, Colombia's was only 49.7. In 2017, in Colombia, 20 percent of the wealthiest people in the country owned 55.5 percent of total income, while wealth in the hands of the poorest 20 percent barely rises to 4 percent. Fiscal policy is one of the instruments available to the national government to help Colombia reduce the inequality levels that it currently experiences and continue on the path to eliminating poverty.

The country's general deficit rose to 3.6 percent of Gross Domestic Product (GDP) in 2017.[2] This deficit is due in part to low tax revenues, resulting from exemptions, deductions, evasion, and tax avoidance. While collections in Colombia barely reached 18.8 percent of GDP in 2017, OECD countries collect 34.2 percent,

[1] The information was obtained from the socioeconomic database for Latin America and the Caribbean (CEDLAS and the World Bank) and the last update was made in April 2019.

[2] Andi (2017), Informe: Balance 2017, perspectiva 2018. Colombia.

Latin America 22.8 percent, Ecuador 19.9 percent, Argentina 30.3 percent, Brazil 32.3 percent, and Uruguay 30.9 percent.[3]

Colombia has submitted to the Congress 15 interventions in its tax system during the last 29 years to achieve balance in its public finances. These reforms have made different adjustments to the country's tax system, such as the VAT increase from 10 percent in 1990 to 19 percent in 2017 and the inclusion of a 5 percent rate for certain goods such as prepaid medical plans, and certain cured meats. Likewise, the equity tax was increased from 0.3 percent in 2004 for persons whose assets exceeded $3,000 million, to 1 percent for people whose assets exceed $5,000 million and 1.5 percent for those with equity exceeding $8,000 million. Reforms, among others, included an increase in the taxable base on income and the creation of new taxes, such as the CREE firm tax, and its subsequent elimination in 2018.[4] The latest tax reform considers that net collections in 2019 represent 14.3 percent of GDP, and the difference between income and expenses, that is, the fiscal deficit for 2019, is forecast to be on the order of 2.4 percent of GDP.

The work done to date that seeks to study the distributive impact of fiscal policy in Colombia found that, on the one hand, indirect taxes were regressive and contributed to the increase in inequality, while direct taxes and transfers contributed to a reduction of the same. Lustig et al. (2014) found that the redistributive impact of taxes and transfers in Colombia is relatively low compared to other developing countries.

Although these efforts have been beneficial, none of them include the cascading effect that products excluded from VAT payment have. Additionally, in the preceding studies, general assumptions have been made, such as non-payment of VAT in rural areas. Given that VAT is one of the primary sources of tax collections in the country, the inclusion of the cascade effects of products purchased in informal places as well as of goods excluded from payment are relevant for the study of the redistributive impact of the tax system in Colombia. Additionally, in previous studies, it was not possible to include all the social programs that the national government has. This last was because the publicly available data up to that time did not contain such information. This work seeks to fill these gaps to aid in a more complete and informed public policy discussion.

At the end of 2018, the National Statistical Office (DANE) published the National Household Budget Survey (ENPH). This survey has both an expenditure module and an income module. It is important to emphasize that the expenditures module is very detailed. The last survey of this type carried out in Colombia was the Income and Expenditures Survey of 2006. However, given the different tax reforms applied since then and the variation of household spending patterns, the latest fiscal impact studies carried out for Colombia have used the 2010 Quality of Life Survey, since this survey contains both an expenditures module and an income module. However, this survey's expenditures module is much more in the aggregate than that found in the current ENPH, which limits the extent of the analysis.

Given the novelty and relevance of the data, the ENPH is one of the main inputs for the work presented here. The information in this survey is complemented by public information, sourced from different instances such as the Ministry of Finance and Public Credit, the Utilities Information System, and the National Statistical Office, among others. It is important to note that, given the nature of the household survey, the study does not cover taxes applied to companies and VAT paid by the government or non-

[3] All the figures mentioned here were taken from OECD et al. (2017), *Revenue Statistics in Latin America and the Caribbean 2017*, OECD Publishing, Paris, https://doi.org/10.1787/rev_lat_car-2017-en-fr.

[4] The laws that frame the different tax reforms since 1990 are: Law 49 of 1990; Law 6 of 1992; Law 223 of 1995; Law 488 of 1998; Law 633 of 2000; Law 788 of 2002; Law 863 of 2003; Law 1111 of 2006; Law 1370 of 2006; Law 1430 of 2010; Law 1607 of 2012; Law 1607 of 2013, Law 1607 of 2014; Law 1819 of 2016 and finally Law 1943 of 2018.

governmental institutions. As far as government expenditures are concerned, the paper only includes social spending, and the subsidies granted in the use of essential utilities, given it is challenging to allocate other types of benefits to the individuals of the households.

The results found suggest that the combined effect of taxes and social spending in Colombia contributes to the reduction of poverty and inequality, even more so than in some of the countries of the region, such as Chile, Ecuador, and Mexico. Furthermore, the finding was that direct taxes are progressive and pro-poor, while indirect taxes are regressive and contribute to an increase in inequality. Direct transfers, for their part, are progressive and pro-poor. Transfers in kind for education and health services are progressive and contribute to the reduction of inequality. Nevertheless, these results should be interpreted with care since the quality of these services is not considered in the analysis.

The rest of the paper is structured as follows: section II provides a brief description of the structure of taxes and social spending in Colombia. Section III makes a general presentation of the methodology applied in this work, the data used, and the main assumptions. Section IV describes the impacts of fiscal policy on poverty and inequality and presents a methodological comparison with the previous CEQ. Section V shows the impact of taxes and expenditures. Finally, section VI offers the final reflections and future lines of work.

II. The tax system and social spending in Colombia in 2017

This section provides a brief description of the taxation, transfers, and social spending system in Colombia for the year 2017. It merits clarifying that the fiscal situation of 2017 was considered a point of reference given that the households survey used for the exercise correspond to that year. The section begins with direct and indirect taxes and subsequently with the subsidies and social spending of the Colombian system.

i. The Colombian government's revenues

The revenue structure of the Colombian government is in Table II-1. The total government revenue considering taxes paid by residents and non-residents amounted to 225,889 billion pesos, which is equivalent to 24.5 percent of GDP in 2017. When exclusively viewing taxes paid by residents, collections total 205,056 billion pesos, equal to 22.3 percent of GDP in 2017 (see column 2, Table II-1). Revenue from the payment of taxes was the largest revenue earner. These collections accounted for 16.6 percent of GDP in 2017. The analysis in this study focuses on the central taxes such as income tax, value-added tax (VAT), and consumption tax. Income taxes are equivalent to 6.2 percent of GDP (see column 2, Table II-1), while revenue from social security contributions is equivalent to 5.4 percent of GDP (see column 2, Table II-1). Thus, government revenues considered in this paper represent 11.6 percent of GDP, that is to say, 52.1 percent of total general government revenues in 2017. As mentioned earlier, corporate taxes paid could not be considered because of the difficulty in allocating their impact to a specific household. Similarly, taxes paid by non-residents were also not included because the household survey fails to capture them.

Column 6 of Table II-1 presents the ratio between the total collections obtained with the household survey, and the one reported in the administrative data. This ratio is different from 100 percent since the survey only captures taxes paid by households and administrative data consider not only household

contributions, but also those made by companies and organizations, both governmental and non-governmental.[5]

TABLE II-1 TOTAL REVENUES OF THE COLOMBIAN GOVERNMENT 2017

	Fiscal accounts		Portion of the fiscal accounts analyzed		Totals in the household survey	Ratio between survey total and external statistics %
	In billions of Pesos	% GDP	In billions of Pesos	% GDP	In billions of Pesos	
	(1)	(2)	(3)	(4)	(5)	(6)
Total Revenue	**205,056**	**22.3%**	**106,852**	**11.6%**	**63,637**	**31.0%**
Taxes	**152,621**	**16.6%**	**56,937**	**6.2%**	**22,392**	**14.7%**
Income Tax	**56,655**	**6.2%**	**9,273**	**1.0%**	**2,881**	**5.1%**
Fees	15,071	1.6%				
Deductions	41,584	4.5%	9,273	1.0%	2,881	6.9%
Deductions for persons	9,273	1.0%	9,273	1.0%	2,881	31.1%
Deductions for companies	32,311	3.5%				
VAT	**37,517**	**4.1%**	**37,517**	**4.1%**	**16,080**	**42.9%**
Internal VAT	37,517	4.1%	37,517	4.1%	16,080	42.9%
National Fuels Tax	**1,619**	**0.2%**				
National consumption tax	**2,108**	**0.2%**	**2,108**	**0.2%**	**1,705**	**80.9%**
Equity tax	**3,975**	**0.4%**				
Property tax	**7,298**	**0.8%**	**7,298**	**0.8%**	**1,240**	**17.0%**
Vehicles tax	**741**	**0.1%**	**741**	**0.1%**	**486**	**65.6%**
Other taxes*	**42,708**	**4.6%**				
Social security contributions**	**49,915**	**5.4%**	**49,915**	**5.4%**	**41,245**	**82.6%**
Other income	**2,520**	**0.3%**				

Source: Ministry of Finance and Public Credit, National Statistical Office, Directorate of National Taxes and Customs, Internal calculations based on the 2017 ENPH.
Note:* 0.4% of GDP was deducted from the other taxes, which is equivalent to the external collection (different from external VAT) of the general government of the nation. The corresponding amount for local governments could not be discounted due to a lack of information.
** The social security contributions amounts are the contributions of the general government to social security, which appear in the medium-term fiscal framework of the Ministry of Finance and Public Credit

a) Direct taxes and contributions to the social security system

The personal income tax in Colombia taxes the income of individuals, once it is cleaned to account for certain exemptions and deductions under law. Law 1819 of 2016 established an income type system for the filing and payment of personal income tax. Thus, income is classified according to its origin, with different deductions and exemptions applied accordingly. Consequently, income is divided into labor, pension, capital, non-labor, and dividend income. According to the Central National Government figures, revenue from income tax during 2017 was $ 56.655 billion.

[5] For more information on the reasons why the survey differs from the administrative data, see annex I and II in Nuñez et al. (2019).

Contributions to the Social Security System in Colombia are payable by the employer, employees, pensioners, and, in general, those who have payment capacity to do so. These contributions are made to the pensions, health and occupational risks subsystems and are not part of the National General Budget.[6]

b) Indirect taxes:

The value-added tax (VAT) is one of the primary sources of the Colombian national government's collections. The VAT paid by residents represents 18.3 percent of government revenue in 2017. In the 2016 tax reform, the general VAT rate was raised from 16 percent to 19 percent. Additionally, a reduced tax of 5 percent and 0 percent was established for certain goods and services and goods were selected, mainly those considered basic goods, to be excluded from paying the tax.[7]

The collection of excise taxes applied to alcoholic beverages and cigarettes amounted to 0.15 percent of GDP in 2017. The excise taxes applied to this set of goods are composed of two parts. The first part refers to a lump-sum tax and the second part to an ad-valorem tax.

ii. Government spending

The total expenditure of the Colombian government amounted to 305,241 thousand of millions of pesos in 2017, which represents about 33 percent of GDP in that year (see column 2, Table II-2). A large proportion of this expenditure is devoted to social protection (i.e., 9 percent of GDP in 2017), while education and health expenditures represent 4.8 and 4.9 percent of GDP in 2017, respectively. Table II-2 presents the composition of Colombian government expenditures in greater detail. The expenditures analyzed in this work represent 33.7 percent of total government expenditures and 42.9 percent of social protection expenditures. A brief description of government expenditures is presented below.

Column 6 of Table II-2 presents the ratio between total government expenditures that are obtained with the household survey and the amount reported in the administrative data. This ratio differs from 100 percent since the household survey is not representative of each social program or transfers analyzed in this document, so the number of beneficiaries differs from that of the administrative records. Consequently, the total resources transferred likewise vary by the program. However, in the case of large programs, such as *Más Familias en Acción* and in-kind transfers for education and health, it is possible to have a better approximation of the total values. An additional reason why the survey data do not align with administrative records is the non-existence of a municipality variable. That is, a domain variable is available for the 38 municipalities that are representative of the survey and the department variable, but, in many cases, a municipality is necessary to be able to perform a better allocation of the transfer.[8]

[6] For more details on how personal income tax and social security contributions operate, as well as how they were processed for inclusion in the incidence analysis, see annex I in Nuñez et, al. (2019).
[7] For more detailed information see annex III, in Nuñez et, al. (2019).
[8] For more information see annexes II, IV, V, and VI, in Nuñez et, al. (2019).

TABLE II-2 TOTAL EXPENDITURES OF THE COLOMBIAN GOVERNMENT 2017

	Fiscal accounts		Portion of the fiscal accounts analyzed		ENPH Totals	Ratio between total in the survey and external statistics,%
	In billions of Pesos	% of GDP	In billions of Pesos	% of GDP	In billions of Pesos	
	(1)	(2)	(3)	(4)	(5)	(6)
Total expenditures	**305,241**	**33.3%**	**122,464**	**13.3%**	**90,922**	**29.8%**
Social protection	**82,439**	**9.0%**	**50,617**	**5.5%**	**35,386**	**42.9%**
Pensions	33,360	3.6%	33,360	3.6%	31,921	95.7%
Colombia Mayor	1,054	0.1%	1,054	0.1%	961	91.1%
Unemployment subsidy	198	0.0%	198	0.0%	15	7.7%
Más Familias en Acción	2,001	0.2%	1,911	0.2%	1,936	96.7%
Jóvenes en Acción	191	0.0%	189	0.0%	169	88.4%
Victims' Policy	13,800	1.5%	13,800	1.5%	232	1.7%
Familias en su Tierra	105	0.0%	105	0.0%	152	144.7%
Other social protection expenditures	31,730	3.4%				
Education	**44,505**	**4.8%**	**31,558**	**3.4%**	**28,458**	**63.9%**
Early childhood	3,967	0.4%	3,967	0.4%	3,432	86.5%
School Meals Program	1,849	0.2%	1,849	0.2%	1,500	81.1%
Primary and secondary education	22,713	2.5%	22,713	2.5%	22,753	100.2%
Higher education	3,029	0.3%	3,029	0.3%	773	25.52%
Other education expenditures	12,947	1.4%				
Health	**44,902**	**4.9%**	**35,946**	**3.9%**	**22,928**	**51.1%**
Subsidized healthcare system	17,336	1.9%	17,109	1.9%	16,334	94.2%
Contributory health system*	23,595	2.6%	18,837	2.0%	6,594	79.1%
Other health expenditures	3,972	0.4%				
Subsidies minus contributions	**11,633**	**1.4%**	**4,344**	**0.5%**	**4,150**	**35.7%**
Utilities	*2,833*	*0.4%*	*4,344*	*0.5%*	*4,150*	*146.5%*
Electricity	1,869	0.2%	2,921	0.3%	2,735	146.3%
Subsidy	3,058	0.3%	3,058	0.3%	2,808	91.8%
Residential contributions**	137	0.0%	137	0.0%	73	53.2%
Non-Residential contributions	1,052	0.1%				
Natural gas	478	0.1%	537	0.1%	513	107.2%
Subsidy	571	0.1%	571	0.1%	536	93.8%
Residential contributions	34	0.0%	34	0.0%	23	67.2%
Non-Residential contributions	59	0.0%				
Water, sewage and waste collection	486	0.1%	885	0.1%	902	185.7%
Subsidy	1,150	0.1%	1,150	0.1%	1,116	97.0%
Residential contributions	265	0.0%	265	0.0%	214	80.7%
Non-Residential contributions	399	0.0%				
Fuels	*8,800*	*1.0%*				
Other expenses	**121,762**	**13.2%**				

Source: World Bank Group staff estimates using information from the Ministry of Finance and Public Credit, National Statistical Office, and the ENPH, 2017.

Notes: * For the contributory health system, the sources in 2017 corresponded to $15,105 billion correspond to RC and REE contributions, $ 7,886 billion to income tax and $ 908 billion to other sources

** Residential contributions refer to contributions made by households or buildings for residential use, non-residential contributions refer to contributions made by buildings for commercial, industrial use, among others.

a) Subsidies and contributions in utilities

In Colombia, the socioeconomic stratification of dwellings is used as the main tool for targeting the subsidy mechanism[9] for utilities established by law 142 of 1994. According to this stratification, dwellings are classified into six strata based on observable characteristics of their exterior.[10] Housing classified as the poorest, from its external features, belongs to stratum 1, while stratum 6 is composed of the dwellings identified as those with the highest income.

Law 142 of 1994 establishes that dwellings classified in strata 1, 2, and 3 receive a subsidy on the utility rates of up to 70, 40, and 15 percent respectively. Those users residing in strata 4 dwellings pay the full rate, while users in strata 5 and 6, industrial users, and commercial users pay an extra cost of up to 60 percent.[11] The contributions made are used to offset part of the subsidies. However, there is a deficit that must be covered by the national government. In 2017, this deficit amounted to 2,433 billion pesos, which represents 0.3 percent of GDP. [12] Out of this deficit, 61.2 percent corresponds to the difference between subsidies and contributions for electricity.[13]

b) Social spending in Colombia

Over the past decade, the public social spending by the Central National Government has remained relatively stable at around 13 percent of GDP. The spending of the highest import is on labor and social security, which accounts for 6.4 percent of GDP in 2017 and 49.4 percent of total social spending. However, its importance has been declining over the past decade (Figure II-1). The most important item of this expenditure (labor and social security) is pensions, which represent 57 percent in 2017 and amount to 28 percent of public social spending and 3.6 percent of GDP in the same year.

Public spending on education and health follows in importance with 3.1 and 2.8[14] percent of GDP respectively. Both expenses represent 45.5 percent of total social expenditures (education 24 percent and health 21.5 percent). Health spending has been growing over the last decade, with a significant leap in 2014 that may be due to the implementation of the CREE wealth tax.[15] This tax replaced payments to SENA, ICBF, and health made by employers for workers who earn less than 10 monthly minimum wages and which are partially used to finance the health care system. The social security contributions that also fund the contributory health system do not constitute collections, nor are they part of the budget. Finally, spending in other sectors such as housing, water and sanitation, and culture and sports amount to 5.1 percent of total social expenditures and 0.66 percent of GDP. A brief description follows of the components of social spending and the programs included in the incidence analysis.[16]

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[9] In this document, subsidies refer to indirect transfers via price delivered by the government. Whenever reference is made to transfers, it refers to direct transfers, that is, the delivery of money that the government provides to households. Fuel subsidies were not included in this version.

[10] For more details, see annex IV, in Nuñez et, al. (2019).

[11] For further information on the conditions and operation of subsidies and contributions, see annex IV, in Nuñez et, al. (2019).

[12] The number refers to the deficit when only regular users who belong to interconnected areas are considered in electricity.

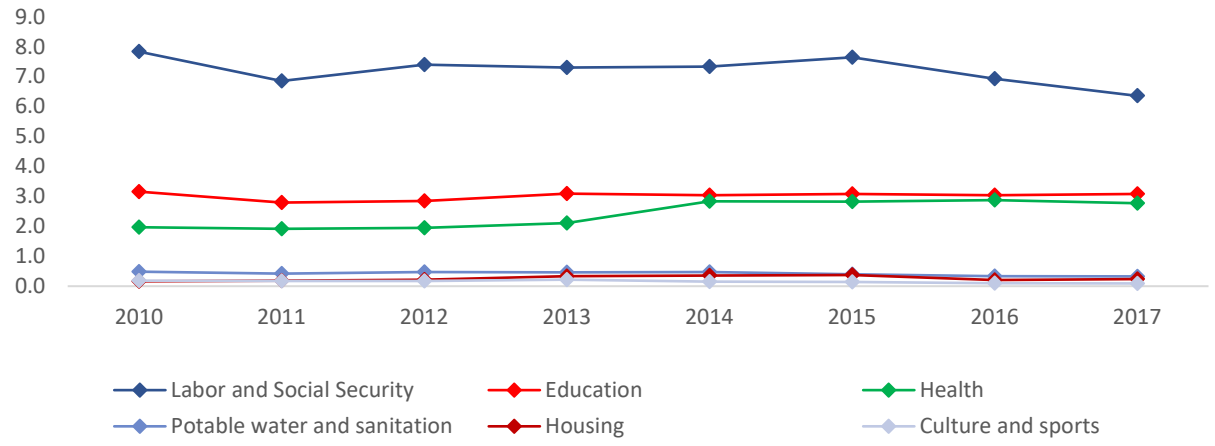
[13] Data downloaded from the Utilities Information System on March 19, 2019. It is important to mention that the wide deficit in energy is partly due to the fact that decree 2860 of 2012 excluded industrial establishments from payment of contributions for this service.

[14] There is a need to clarify that these amounts refer to central government spending and exclude the spending of local administrations. Meanwhile, the amounts found in Table I-2 include both central government's spending as well as that of local administrations.

[15] Firm Tax (CREE) created by Law 1607 of 2012 that taxes business profits at a 9 percent rate between 2013 and 2015 and 8 percent onwards.

[16] For a description of the methodology employed, see annexes II, V and VI in Nuñez et, al. (2019).

FIGURE II-1: SOCIAL PUBLIC SPENDING AS A PERCENTAGE OF GDP



Source: World Bank Group staff estimates based on the Ministry of Finance and DANE (information to March 23, 2019)

Pensions

The Colombian pension system aims to guarantee income to the population for old age, disability, or in case of death. This system is mandatory for all the country's employees and the independently employed, who contribute according to their income. The rate corresponds to 16 percent of salary: employees contribute 4 percent and employers, 12 percent. Self-employed workers contribute to the full percentage. The General Pension System (SGSSP) is divided into two mutually exclusive regimes: The Private Pension Savings scheme (RAIS) and the Public Pension Scheme (RPM).

The RAIS is a defined contribution system, managed by private pension funds (AFP) and where subscriber savings go into an individual account. The only requirement for retirement by this means is that savings and their financial yields be sufficient for a pension not under the minimum wage.[17] In case a person does not reach this level of savings, there are two alternatives. The first is the Minimum Pension Guarantee Fund (FGPM) that helps cover what is needed.[18] The FGPM is financed with a percentage of the contributions made by high-income subscribers. The second alternative is to receive their savings with their respective financial yields. The RPM is a defined benefit public system, managed by Colpensiones, in which the contributions of the subscribers allow funding, together with the National General Budget (PGN), the pension payments of current pensioners. The right to a pension through the public regime is acquired once a person has contributed at least 1,300 weeks and reached an age of 57 years for a woman or 62 years if a man. If these requirements are not met, a substitute Indemnification is received, which is a system created by law to return to subscribers what they have contributed when, once they reach the age, they do not have the requisite number of weeks and cannot continue to contribute.[19] A solidarity component also operates in this regime. In this manner, subscribers or pensioners with a high-income level contribute an additional percentage to subsidize the contribution of vulnerable groups or for subsidies to the elderly poor.

[17] The minimum wage for 2017 was $737,717.

[18] This option is available only for individuals who have contributed at least 1,150 weeks, who are 62 years old if they are men or 57 if they are women and who do not have other income above the minimum wage.

[19] The Indemnification is equivalent to the average base settlement salary on which the subscriber has made contributions (adjusted for inflation), multiplied by the number of weeks they have contributed and by the weighted average of the percentages in regard to which the subscriber has contributed.

Colombia Mayor

The analysis included transfers delivered by the Colombia Mayor program to the elderly in poverty who do not have access to a pension or other income for their survival. The requirements to participate in the program are: i) being at least 54 years old in the case of women or 59 in the case of men, that is, three years less than the minimum pension age, ii) having resided in Colombia during the last 10 years, iii) being classified as vulnerable or poor by the targeting tool SISBEN III, iv) lack sufficient income to survive. This program provides an economic subsidy every two months and is funded with resources from the Pension Fund and with resources from the National General Budget. In 2017, $1.05 trillion was allocated for this program, equivalent to 0.115 percent of GDP.

Unemployment subsidy

Law 1636 of 2013 created the Protection Mechanism for Unemployment (MPC). The beneficiaries are provided for a semester, or until their employment status changes, a monetary stipend, contributions to health care and pensions based on the minimum wage, food vouchers, among other benefits. Only the unemployed who have contributed to a Family Compensation Fund during the past three years are eligible for this program.[20] In 2017, 198 billion pesos were allocated to the program, equivalent to 0.022 percent of GDP.

School meals

The School Meals Program (PAE) offers supplementary nutrition to students attending public institutions. Among the objectives of the program are: increase school attendance, improve their learning, and supplement their nutrition with the requirements of energy, macronutrients, and micronutrients. The PAE is financed with resources from the Ministry of Education (MEN), the General System of Transfers (SGP) and with own funds of the Certified Local Administrations (ETC), which are responsible for the delivery of the service. In 2017, 1,848.6 billion pesos were allocated to the program, considering both the contributions of the national government and the local administrations, equivalent to 0.2 percent of GDP.

Early Childhood

The State Policy for the Integral Development of Early Childhood "*De Cero a Siempre*" (From Zero to Always) includes all inter-institutional actions aimed at guaranteeing the development of children under six years of age. Although it is a policy in which various actors can participate, given its intersectoral nature, only the resources allocated through the Colombian Institute of Family Welfare (ICBF) were considered. This [institute] is in charge of the implementation of the "Zero to Always" strategy. ICBF programs in their institutional care and family care modalities are financed with PGN resources, but local administrations can also contribute. For early childhood care through the ICBF, 3,967.24 billion pesos were allocated in 2017, considering contributions from the nation and local administrations, which corresponded to 0.43 percent of that year's GDP.

Más Familias en Acción

This is a conditional cash transfer program whose objective is to promote the building of the human capital of minors in poverty. The transfer provided by the program is composed of two incentives: a health incentive for those households with children up to six years old, the incentive is conditional on compliance

[20] Dependent workers need to have made contributions for 12 months and the independently employed for 24 months, either continuously or discontinuously.

with attendance to growth and development checks of the minors. Additionally, an education incentive is provided, the incentive is conditional on attendance to at least 80 percent of the classes and repeating no more than two years. The value of the transfer differs according to the educational level and the municipality. The health incentive is delivered per household, while the transfer for education is assigned for each child and up to three per household.

All families with children and adolescents under 18 years of age and who are defined as poor and vulnerable according to the targeting tool are eligible, as well as families belonging to the Estrategia Unidos [United Strategy], who are indigenous or victims of armed conflict. In 2017, 2,001 billion pesos were allocated to this program, equivalent to 0.217 percent of GDP, out of which 1.911 billion pesos correspond only to transfers.

Jóvenes en Acción

This conditional cash transfer program is targeted at young people in conditions of poverty and vulnerability, who are between 16 and 24 years old. The program seeks to incentivize young people to continue their education process. More precisely, the program incentivizes young people to enroll in a tertiary education institution. The program provides a bi-monthly incentive to young people who meet the poverty requirements or belong to a vulnerable group and are enrolled in a Higher Education Institution (IES) or the National Apprenticeship Service (SENA). In 2017, 191,35 billion pesos were allocated to this program (of which 188.64 billion pesos correspond only to transfers), that is to say, 0.021 percent of GDP.

Transferencias por Victimización

Due to the armed conflict that Colombia suffered for more than five decades, the country has 8,785,305 victims registered in the Victims Registry.[21] In 2011 Law 1448 or the "Victims Law" was enacted as a regulatory framework for truth, justice, assistance, reparations, and a guarantee of non-repetition to this population. The law includes, among others, measures for immediate humanitarian aid for victims; assistance through inclusion in programs that lead to the restoration of the rights of this population and the generation of decent living conditions and return to social life; reparations, which include restitution, indemnification, rehabilitation, satisfaction and guarantees of non-repetition.

Within the framework of the Victims Law, entities at the national level attached to the National System of Comprehensive Assistance and Reparations for Victims (SNARIV) have increased the resources and efforts devoted to the integral assistance and reparations of the victims. Following this, the Ministries and Agencies of the State have implemented various programs on issues of education and training for work, health and psychosocial care, humanitarian care, returns and relocations, housing, job creation, among others, especially focused on victims. In this incidence analysis, the amount reported by the beneficiaries was considered as the victimization transfer. However, neither the program nor the transfer associated with that program can be accurately identified. According to DNP (2018), the budget allocated for the victims' policy was $ 13.8 trillion in 2017, about 1.5 percent of GDP.[22]

Familias en su tierra (FEST)

This study includes transfers through this program, which is administered by the Department for Social Prosperity (DPS) for the accompaniment of the Internal Displaced Population (IDP), who decide to return

[21] Cut off to March 23, 2019.

[22] Budget Report on Public Policy Directed to the Victims of Forced Displacement Population 2017-2018.

or relocate. This intervention seeks to contribute to the rootedness, effective enjoyment of rights, and comprehensive reparations for victims, through the delivery of economic incentives, in-kind, and training. Throughout the year, the beneficiaries of this program receive three cash transfers and supplies and materials to reduce basic housing deficiencies, implement food security projects, and to realize a productive idea. This is accompanied by strengthening and training for 2 years on technical issues for the generation of an idea, self-subsistence skills, integration with the community and collective reparation activities. In 2017, the program cost $ 104,528 million pesos, something close to 0.011 percent of GDP.

Education

Expenditures on education in Colombia amount to 3.1 percent of GDP and are second in importance, representing 24 percent of public social spending of the National Central Government of Colombia. The education system is divided into several levels: i) initial and transition for children under five, ii) primary school comprising five grades for children between 6 and 10 years old, iii) secondary education with four grades for children between the ages of 11 and 14 years, iv) two grades of secondary education to obtain a high school degree and, v) higher education, which is subdivided into university, technical and technological education.

Public education from primary to secondary education is decentralized and administered by Certified Local Administrations (ETC), which is to say, departments or municipalities with more than 100,000 inhabitants.[23] This system is financed with resources from the General System of Transfers (SGP), which are the transfers made by the nation to the local administrations for the administration of the basic services they are in charge of, such as education. Likewise, local administrations can contribute their funds or royalty resources to finance the service. The Ministry of Education (MEN), in turn, can provide resources for programs to improve education, such as the School Meals Program, which is considered as a separate transfer. The MEN formulates educational policy and monitors and regulates the delivery of the educational service; while it is responsible for the distribution of the resources of the SGP, among other functions. Meanwhile, ETCs are primarily responsible for directing, planning, and providing the education service.

Higher education in Colombia is regulated by Law 30 of 1993. People can gain access to it once they have completed secondary education and submit the results of the standardized state tests Saber 11. Tertiary education has two levels of training, undergraduate and graduate, while the undergraduate level includes technical, technological, and professional levels, and the graduate includes education at the level of specialization, masters, and doctorate. In 2017, undergraduate enrollments reached 2.28 million, which represents 52.4 percent coverage for this level.

In turn, there are three types of higher education institutions: universities, technical schools and colleges. Public or private institutions can provide higher education. State institutions are funded from the National General Budget, the local administrations, and the resources they obtain through registration, tuition, and others. During 2017, the Ministry of Education transferred 3,029,180 million pesos to public universities,[24] which represents 0.3 percent of GDP.

[23] A municipality can be certified in education before a department as long as it meets the technical, administrative and financial requirements to administer the service, in accordance with Law 715 of 2001.

[24] The figure was taken from the Budget Execution Report of the public universities of the 2017 fiscal year, excluding items transferred by pension concurrences. The information was reviewed on March 1, 2019.

Health

Social public spending on health care by the National Central Government was close to 2.8 percent of GDP and amounted to 21.5 percent of public social spending, making it the third item in importance. The Colombian Health System consists of two regimes, one contributory and one subsidized. The contributory health system is mandatory for all formal employees and pensioners, who contribute according to their ability to pay. Taxpayers and their beneficiaries are guaranteed access to the mandatory health plan (POS) and must join a Health Promotion Entity (EPS) that they can freely choose from a set of options. The EPS is responsible for managing financial and health risks. The rate for the contribution is 12.5 percent of salary, where the employer contributes 8.5 percent and the employee 4 percent; for their part, the self-employed and independent contractors pay the full rate. The Firm Tax (CREE) helps finance this scheme to the extent that it replaced employer contributions for workers with less than 10 monthly minimum wages.[25]

The subsidized regime enrolls people who do not have payment capacity; that is, they are categorized as poor or vulnerable by the SISBEN.[26] This population also joins an EPS and is guaranteed access to the POS.[27] The subsidized health care system is financed with resources from the National General Budget and with contributions from local administrations. The total coverage between subsidized and contributory scheme is 94.8 percent. The unenrolled without payment capacity, called Poor Uninsured Population (PPNA), can receive medical care in public hospitals for free.

III. Data, methodology, and assumptions

i. Data

The National Household Budget Survey (ENPH)

The ENPH is a nationally representative survey conducted by the National Statistical Office (DANE). This survey captures information about the resources that Colombian households receive and how they spend them. It includes variables related to physical characteristics and fixtures of the homes, attributes of the people of the household such as age, gender, educational level, enrollment in the social security health care system, occupation, monetary income (permanent and occasional), non-monetary and other, goods and services acquired frequently and less frequently by urban and rural households, as well as those obtained on a personal basis, meals bought outside home, quantities purchased, amounts paid and estimated from the acquisition, forms of procurement, places of purchase, purchase frequency, among others.

The ENPH interviewed 87,201 households. Of this total, 81,438 households were interviewed in urban areas, and the remaining 5,736 correspond to households located in rural areas. The ENPH has national

[25] The tax reform (Law 1607 of 2012) reduced the corporate income tax from 33 percent to 25 percent while exempting them from making contributions to SENA, ICBF and 8.5 percent for health care for employees who earn less than 10 monthly minimum wages. The CREE equity tax was created to compensate for this reduction in parafiscal costs, which seeks to guarantee social programs such as SENA, ICBF and health care.

[26] In the case of the Subsidized Regime, people are classified in level I of the SISBEN III if their score is lower than: i) 47.99 and they live in the 14 main cities, ii) 44.79 and live in the other administrative seats, iii) 32.98 and live in a rural zone. Similarly, those who are classified as level II have scores: i) between 48 and 54.86 and live in the 14 main cities, ii) between 44.8 and 51.57 and live in the rest of the administrative seats and, iii) between 32.99 and 37.8 and live in rural areas.

[27] The POS is the set of health care and technologies to which any member of the Colombian Health System is entitled, without distinction between contributory and subsidized regimes.

coverage that allows obtaining results in 4 of the 5 regions, in which the national territory is divided: Atlantic, Eastern, Central, Pacific and finally the capital cities of departments of the Amazon and Orinoco. Additionally, the survey is representative of the 32 capital cities of the country's departments and the following 6 prioritized municipalities: Rionegro, Soledad, San Andres de Tumaco, Barrancabermeja, Buenaventura, and Yumbo.

Administrative Data

Additional information was required to complement the household survey information. Some of the sources used in the development of the model are the following[28]: (i) DIAN administrative data: Amount in returns for each of the income types and exempt income; (ii) Utilities Information System; (iii) Energy and gas rate bulletins; (iv) Investment Project monitoring system; (v) School Meals Program Report for January-December 2017; (vi) The information available in the Pension Fund; (vii) Local Fiscal Account; (viii) Information from the General System of Transfers; (ix) Resolution 6411 of 2016; (x) The tax statute in force in 2017 which is Law 1819 of December 29, 2016; (xi) The 2010 input-output matrix on 2005 basis[29]; (xii) The matching between the products of the ENPH, the CPC 2.0 and the national accounts; and (xiii) The reference prices of alcoholic beverages and tobacco products for the year 2017.

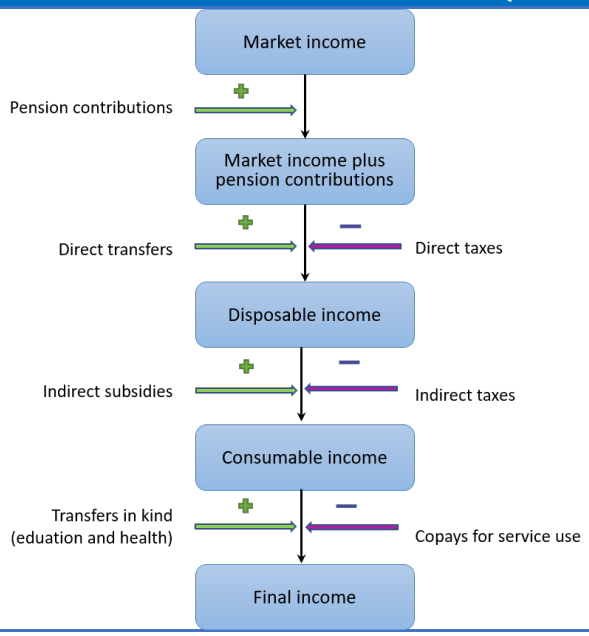
ii. Methodology

For the incidence analysis of each one of the fiscal interventions, and the impact on poverty and inequality of each one of the taxes and the social spending of the government, the Commitment to Equity methodology proposed by Lustig (2018) was followed. This method calculates per-capita income before and after each of the tax interventions, as shown in Figure III-1. More precisely, the following income definitions are used for each household:

- *Market income:* This income includes salaries before tax and before contributions to the social security system, as well as income received from yields on capital assets (interest, dividends, leases) and transfers from private institutions or other households.
- *Disposable income:* direct transfers are added to market income to build this income, which in the case of Colombia stems from transfers received from government programs such as Familias en Acción, from which direct taxes, that is, income tax is subtracted. Similarly, contributions made to the social security system are subtracted.
- *Consumable income:* Consumable income is defined as disposable income plus indirect subsidies, minus indirect taxes. Indirect taxes included in this analysis are VAT, consumption tax, and excise taxes applied to tobacco and alcoholic beverages, as well as contributions in the payment of utilities for strata 5 and 6. Indirect subsidies correspond to those received by strata 1, 2, and 3 in the utility rates. The fuel subsidy has not been included in the analysis.[30]
- *Final income:* Lastly, the in-kind benefits for health and education services are added to consumable income to obtain final income.

[28] For more information on the administrative data used in each section see the annexes in Nuñez et, al. (2019).
[29] In this version of the document, the 2010 input-output matrix was used since that for 2015 had not yet been published by DANE.
[30] To be able to model fuel subsidies it is necessary to have the fuel reference pricing series. The work team is searching for said information to be able to model these subsidies.

FIGURE III-1: REVENUE DEFINITIONS FOLLOWING THE CEQ METHODOLOGY



Source: Lustig, 2018.

Pensions in Colombia are a mix of savings made by people and transfers made by the government in the case of people who retire through the public system (public pension scheme) or net savings for those who retire through the private system. The survey, however, does not allow differentiating in which of the two regimes current pensioners belong. Likewise, the Lustig (2018) methodology was applied to maintain comparability between countries.[31] Two scenarios were created for the treatment of pensions. In the first scenario, pensions are treated as deferred income, so pensions are added to market income, and pension contributions are subtracted (both those made by the employee and those made by the employer). In the second scenario, pensions are treated as a government transfer, so they are added as direct transfers, while contributions to the pension system are treated as direct taxes.

Consider the following example, a self-employed worker who receives a pension for a monthly value of $1,000,000 and has a monthly salary of $2,000,000. Their monthly pension contributions amount to $320,000. Additionally, this person does not pay direct taxes, nor receive any direct transfer. In the first case, when considering pensions as future income, the market income of this worker would be $ 2,680,000, while, if we consider pensions as a transfer, the market income of this worker would be $ 2,000,000. Subsequently, when passing from market income to disposable income, $1,000,000 would be added to this person as a direct transfer, and $320,000 would be subtracted from the contribution. Thus, the disposable income of this person would be $2,680,000.

As considered in the CEQ manual, when it is possible to establish the percentage of the pension received by a person that corresponds to their savings and the percentage that corresponds to transfers made by the government, they should be used to model an intermediate scenario. Box III-1 presents the results of this scenario for the Colombian case. However, to maintain the comparability of the results of this paper with the results in other countries, the results presented throughout the document correspond to the scenario in which all pension income is considered deferred income.

[31] In a future paper, the Colombian pension system will be modeled with its particularities.

BOX III-1: THE PENSION SYSTEM IN COLOMBIA: DISTRIBUTIVE IMPACT AND SENSITIVITY ANALYSIS

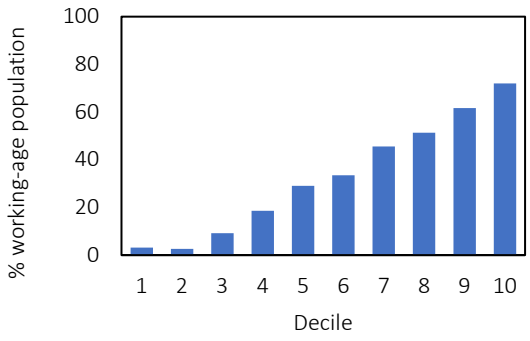
In Colombia, there are two pension schemes: **The Public Pension Scheme (RPM) and the Private Pension Scheme (RAIS)**. It is important to underline that both systems differ in their financing, administration of resources, requirements to access the pension, and calculation of benefits. The RPM is managed by Colpensiones. The contributions of the subscribers, together with the National General Budget (PGN) allow funding the payments of current pensioners. The right to a pension through the public regime is acquired once a person has contributed at least 1,300 weeks and reached an age of 57 years for a woman or 62 years if a man. If these requirements are not met, a substitute indemnification is received, which is a system created by law to return to subscribers what they have contributed when, once they reach the age, they do not have the requisite number of weeks and cannot continue to contribute.

The RAIS, for its part, is managed by private pension funds (AFP) and, where subscriber savings go into an individual account. The only requirement for retirement by this means is that savings and their financial yields be sufficient for a pension not under the minimum wage*. In the event a person does not reach that level of savings, there are two alternatives: the first is the Minimum Pension Guarantee Fund (FGPM) that helps cover what is needed for the pension of individuals who have contributed at least 1,150 weeks, who are 62 years old if they are men or 57 if they are women and who do not have other income above the minimum wage. The FGPM is financed with a percentage of the contributions made by high-income subscribers. If these requirements are not met, the person receives their savings with their respective financial yields.

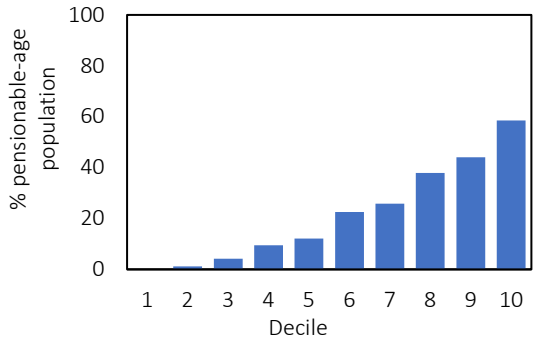
An important limitation of the main source of information used in the CEQ exercise (i.e., ENPH) is the inability to identify the type of pension scheme to which each person belongs. Given the low proportion of people in the RAIS, it was considered appropriate to carry out the calculations assuming that all pensioners belong to the RPM. Thus, panel A of Figure 1 shows the percentage of people making contributions to the pension system by income decile and panel B shows the percentage of people of pensionable age (i.e., older than 57 years if female and older than 62 years for men) who receive pension by income decile.

Figure 1. People that made contributions and pensioners among income deciles

Panel A: Percentage of the population that makes contributions to the pension system by decile



Panel B: Percentage of the population of pensionable age that receives pensions by decile



Source: World Bank Group staff estimates based on the 2017 ENPH
Note: The deciles were put together using market income + per-capita pensions

As stated above, the Colombian State is obliged to guarantee the payment of pensions to the beneficiaries of the RPM as well as to those belonging to special schemes, such as the Military Forces, the National Police, and the Teachers. During 2017, the National Central Government allocated $ 33.4 trillion Colombian pesos for pension payments. However, not all of the income a person receives as a pension constitutes a government transfer; this, to the extent that they made pension savings for their old age. Therefore, a percentage was applied to the pension

income reported in the survey to determine the part corresponding to the transfer. The following percentages were considered to capture this particularity of the Colombian pension system, which varies depending on gender, age, pension amount, and time of retirement. The values shown in Table 1 correspond to the percentage of the pension paid with the National General Budget. The remaining value corresponds to deferred income (i.e. savings).

TABLE 1: PERCENTAGES OF THE PENSION CORRESPONDING TO GOVERNMENT TRANSFER

Panel A: Pensioners before Law 100: men older than 78 and women older than 73

Range of monthly minimum wage		Percentage	
Min.	Max.	Men	Women
	1	82.5%	85.4%
1	2	48.5%	51.4%
2	3	50.5%	54.4%
3	4	53.5%	57.4%
4	5	56.5%	60.4%
5	6	59.5%	63.4%
6	8	62.5%	69.4%
8	9	68.5%	72.4%
9		71.5%	75.4%

Panel B: Pensioners transitional regime: men under 78 years old and women under 73

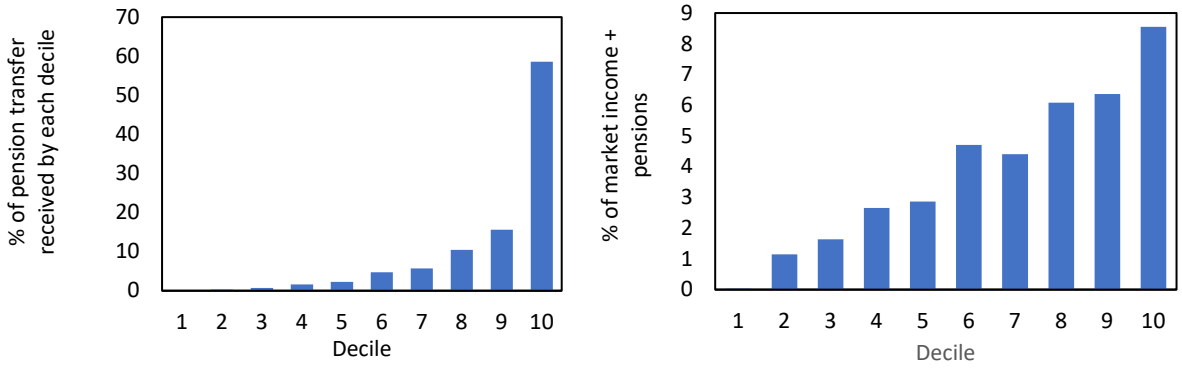
Range of monthly minimum wage		Percentage	
Min.	Max.	Men	Women
	1	74.4%	79.3%
1	2	61.1%	65.9%
2	3	64.1%	68.9%
3	4	67.1%	71.9%
4	5	70.1%	74.9%
5	6	73.1%	77.9%
6		75.1%	79.9%

Source: (Núñez 2009)

In the household survey, there are 1,803,623 pensioners, whose total pension value is 32.8 trillion Colombian pesos, a figure very close to the total government budget for pensions (98 percent). Once the percentages of Table 1 are applied, a total subsidy of 21,6 trillion pesos is obtained. Figure 2 presents the results of the distribution of transfers for pensions throughout the income distribution and also presents the results of progressivity in relative terms of these transfers.

Figure 2. Absolute and relative progressivity of government transfers for pensions

Panel A. Progressivity in Absolute Terms **Panel B. Progressivity in Relative Terms**



Source: World Bank Group staff estimates based on the 2017 ENPH
Note: The deciles were put together using market income + per-capita pensions

As stipulated in Colombian legislation and as ratified by the Constitutional Court, "a person who has reached the age and met the number of weeks required by law to access the old-age pension, has configured in his favor the right to enjoy said benefit and therefore is in the face of an entitlement, which cannot be taken away." The fact that pensions in Colombia are considered an entitlement suggests that all income in respect to pensions should

be considered in market income, regardless of whether a percentage of this is a transfer from the national government, which would avoid jumps throughout the distribution that could lead to wrong conclusions. Take an example; let's imagine a person who is currently working and has a labor income of $10,000,000 per month. Given this income, this person belongs to the upper part of the income distribution. Suppose this person belongs to decile 10 of the distribution. In one year, this same person is pensioned, and their only source of income is pension income, which is $10,000,000 monthly. Since 75.4 percent of the pension is a government transfer, this person would have a market income equal to $ 2,460,000, which would place her in decile 5 of the distribution, even though their monthly income would place her in decile 10. For this reason, for the calculations presented in this Box, the income distribution was calculated using market income plus pensions.

Finally, the Kakwani coefficient associated with transfers in respect to pensions is -0.1577, suggesting that pensions are regressive. When considering this scheme, we found that the GINI coefficient for market income would be 54.7, and the GINI coefficient for disposable income would be 51.7, suggesting a 3 points reduction. This variation is less than that found when considering all pensions as market income and all pensions as a transfer. In such cases, the reductions are 3.33 and 4.17 points, respectively.

Note: * The minimum wage for 2017 was $737,717.
** More than 90 percent of pensioners in 2017 belonged to the RPM, as can be seen in the reports made by the Financial Superintendence of Colombia

iii. Assumptions

In the present paper, no modeling of tax evasion, either direct or indirect, is performed. This exercise is due to a *de jure* approximation, rather than *de facto.* In the remainder of the document when the term informality is used for the modeling of indirect taxes, this is due to the modeling of the non-payment of VAT established by law for all such commercial agents belonging to the simplified regime,[32] since belonging or not to the simplified regime depends on the income of the establishment, which is unknown, the assumption made in this paper is that the establishments classified as "informal" do not exceed the amount established by law. It is important to emphasize that what is sought with this treatment is to have an estimate of the incidence of VAT considering that the effective rate is lower than the statutory one (it is greater than zero for the VAT paid on inputs, but it also does not become equal to the statutory rate) and given that the economic effect is the same as when the establishment evades payment of the tax, the term informality is used for convenience in the literature.

In terms of taxes, only those that accrue to a person's income, namely income tax, and social security contributions, were considered. For income tax, income was classified according to its nature and per the five income types stipulated in the tax statute in force in 2017: labor, pensions, capital, non-labor, and dividends. We use information from DIAN administrative records to clean the income for each income type; precisely, the data used was the percentage of deductible and exempted income. This was considered because the survey does not ask for many of the deductible items, and when applying the

[32] An economic agent belongs to the simplified regime if it meets the following characteristics: (i) The total gross income derived from the commercial activity of the previous year is less than 3500 UVT (units of tax value), a sum that for 2017 is equivalent to $ 104,136,000; (ii) They have only one site, store, commercial establishment, office or business to carry out their profession or activity; (iii) They do not carry out activities under the model of a franchise, concession, royalty, authorization or other system that involves the exploitation of intangible assets in the aforementioned place; (iv) They are not customs users; (v) During the current or previous year, they have not signed contracts for the sale of goods or the provision of services taxed in an amount equal to or greater than 3500 UVT, that is, $104,136,000 in 2017, and that (vi) The sum of the bank deposits, financial deposits or investments associated with their name and made during the current or previous year does not exceed 3500 UVT overall, that is, $104,136,000 in 2017.

rules of the tax statute, it was not possible to capture a good percentage of the exempt income and deductions.

As for contributions to social security for pension, when the workers report that they pay a portion and their employer the remainder, the employee contribution is equal to 4 percent of his wage, and the remainder 12 percent is paid by the employer. When the worker reports paying the full contribution, the worker's contribution is 16 percent of the wage. In like manner, the contribution of the workers for health care corresponds to 4 percent, while the employer's contribution equals 8.5 percent of the salary, provided that the employee earns more than ten monthly minimum wages.[33] If the employee reports paying the full contribution or if the contribution is deducted from the pension, the rate is equivalent to 12.5 percent. In the case of work accidents and professional disease insurance, a rate of 0.52 percent was applied for those who report been enrolled. The rates for this subsystem depend on the economic activity and are higher for the highest risk activities. In this case, the lowest rate was used from a lack of sufficient evidence on the type of rate to be used.[34]

Regarding social spending, all the social programs whose beneficiaries were directly identifiable in the household survey were included. The per capita cost of the program was calculated by dividing the total budget by the number of beneficiaries, taking information from administrative records. This per capita value was assigned to those who reported receiving the transfer.[35] When regional information was available, the additional transfer from the department or city to which the beneficiary belongs was attributed, as was the case with transfers for early childhood care and school meals. For Más Familias en Acción and Colombia Mayor, the incentive value provided by the government to its beneficiaries was assigned, according to the municipality or department in which they reside.[36]

Programs, such as rate subsidies or interest forgiveness, were excluded since access to each of these loan types and debt forgiveness depends on the score from the Targeting Selection System (SISBEN III). Programs targeted through the SISBEN, such as BEPS or Ser Pilo Paga, were also excluded, although their magnitude is low.[37] Likewise, housing or interest rate subsidies for the purchase of housing, rural housing, or income generation programs in rural areas were not considered.

As far as indirect taxes are concerned, it is assumed that consumers exclusively pay the burden of indirect taxes. The amount paid in respect to indirect taxes was estimated by applying the rates established in law to each article present in the ENPH, which was acquired from a formal retailer. Additionally, given the existence of informality and goods excluded from the payment of this tax, the Cost-Push model was used to estimate the "embedded VAT" to finally calculate the effective tax rate for VAT (calculated as the total VAT collections divided by total private consumption by households). For the national consumption tax and taxes on alcohol and tobacco consumption identified in the ENPH, only the rates established by law were used, which allowed estimating the direct burden of these taxes on households.[38]

[33] The CREE replaced employers' contributions for their workers with incomes below ten monthly minimum wages.

[34] For the details on the tax law applicable to direct taxes and social security contributions, see annex II , in Nuñez et, al. (2019).

[35] The only exception is victimization transfers, the value of which was taken directly from the survey having been unable to clarify what kind of subsidy it is.

[36] For detail on the procedure, see annex II, in Nuñez et, al. (2019).

[37] BEPS: Periodic economic benefits [BEPS], is a voluntary savings program for the elderly for those who do not have the resources to obtain a pension (income up to a monthly minimum wage). The value of the subsidy is 20% of the total saved once the person reaches retirement age (57 years for women and 62 years for men). "Ser Pilo Paga" is a National Government scholarship program that subsidizes higher education for poor students (according to the SISBEN score) and have obtained a good score on the Saber 11 State standardized tests. The program benefited 40,000 students.

[38] More detailed information is found in Annex III in Nuñez et, al. (2019).

Subsidies and contributions in the payment of utilities were determined using the value reported by households in the ENPH and the percentage of subsidy or contribution available in the administrative data. For those departments for which administrative information was not available, aggregate information was taken nationally. In addition to these subsidies, in Colombia, there are gasoline and diesel subsidies. However, due to the lack of a historical series of reference prices for these fuels, it was not possible to model them.

In-kind transfers in education were determined by calculating how much each student costs the national government and local administrations. For the calculation of this per capita value, the value allocated by the national government per student at the beginning of each year was taken, and an adjustment factor was calculated to account for the additional resources provided by local administrations to finance primary and secondary education. Subsequently, this value was imputed to the students of public schools, differentiating them according to the level of education, the territorial entity in which they live, and whether it is an urban or rural area.[39]

The exercise concerning higher education is still under construction because of the many obstacles present in carrying it out. The first problem is that even if the household survey allows students who are attending higher education to be identified, it does not allow their differentiation between technical, technological, and university levels. Added to the preceding is that it is not possible to identify to which educational institution they belong: one of the 32 public universities, or any technical or technological institution, or the SENA (National Apprenticeship Service). In the case of public universities, the national government contributes to their financing, but so do the local administrations, often through stamp taxes that are not recorded in the FUT (Local Fiscal Account). Likewise, the budget of technical and technological institutions can fall heavily on the contributions of departments and municipalities, making identification of the budget very difficult. Due to these difficulties, and as a temporary alternative, the per capita value per public university student was allocated to higher education students identified in the ENPH. This cost was obtained by dividing the total budget of public universities by those enrolled by the semester.[40]

Finally, health care transfers were considered for people enrolled in the subsidized health care system using a cost of insurance approach. Although the survey identifies who a beneficiary of the subsidized health care system is, there are no questions to determine the use of health services. Moreover, following Inchauste and Militaru (2018), this approach keeps individuals who use the services more or who get sick more from receiving a larger transfer, and therefore have a much higher final income just because they are sick. However, instead of a per capita cost, the value of the Capitation Payment Unit (UPC) of the subsidized health care system was assigned, which is the value recognized annually by the Ministry of Health to the EPS for each of the subscribers of the subsidized health care system. Associated risk factors adjust this value regarding age and gender and by the residential zone. A higher value is also delivered to indigenous EPS since, by their nature, they must provide services in addition to the POS.

Additionally, 68[41] percent of the UPC from the contributory health system was included for employees with incomes below 10 smmlv, given that, from the entry into force of Law 1607 of 2012, the portion of the contribution that corresponded to employers was eliminated and replaced by the CREE. Subsequently, Law 1819 of 2016 eliminated the CREE tax (tax with specific destination), and since then, the national government uses resources from the National General Budget to make the missing money transfers to the contributory health care system. Figure 1 in Box III-2 presents the legislative changes that the

[39] The detailed procedure and the sources of information used are presented in Annex VII, in Nuñez et, al. (2019).
[40] See Annex V in Nuñez et, al. (2019).
[41] For more details on the calculation of said percentage see Box III-2.

Colombian health care system has undergone. Furthermore, Box III-2 presents an exhaustive analysis of the results obtained when considering different scenarios for the treatment of transfers in kind for health services.[42]

Following Lustig (2018), allocating the cost of transfers in kind for health care and education may overestimate the redistributive effect of these transfers since they are forced to be equal to administrative values, but income and taxes are not. Therefore, the author suggests reducing health and education benefits by following this procedure: i) take the value of disposable income from national accounts, ii) take the total value of national accounts for each category of education and health and define its proportion concerning disposable income, iii) reduce each category of education and health expenditure in the survey so that this proportion is preserved with the information in the survey.[43]

BOX III-2: THE HEALTH CARE SYSTEM IN COLOMBIA: DISTRIBUTIVE IMPACT AND SENSITIVITY ANALYSIS

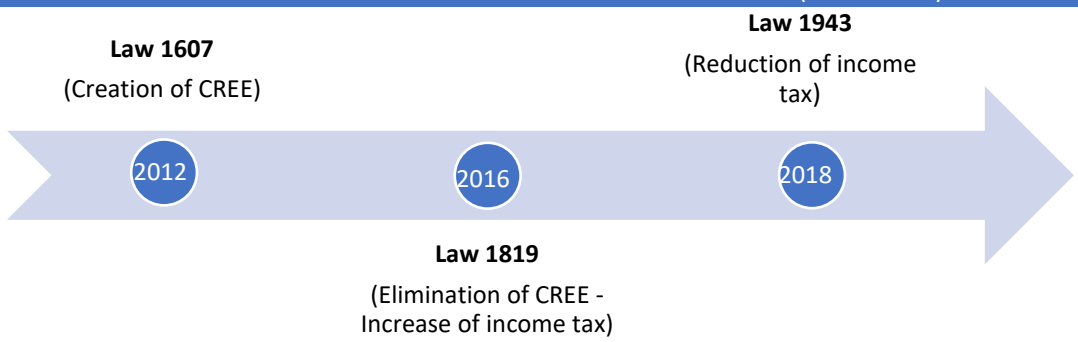
The Colombian health care system has undergone modifications in recent years as a result of changes in contributions to the social security system. Until 2012, all Colombian employers were required to contribute to 8.5 percent of the employee's salary for health care. For their part, during that same fiscal year, employees were required to contribute to 4 percent of their salary. Article 20 of Law 1607 of 2012 created the income tax for equity (i.e., CREE). This tax establishes that all contributors* would be exempt from contributions to SENA, ICBF, and health care of those workers who earned less than 10 monthly minimum wages (smmlv).

Law 1607 established the following CREE tax rates: 9 percent for the years 2013, 2014 and 2015, and 8 percent as of 2016. This percentage was distributed as follows: 2.2 points allocated to ICBF, 1.4 points to SENA, and 4.4 points to the social security health system. 40 percent of the additional point charged in the first three years was set aside to finance public universities, 30 percent for leveling of the subsidized health care system's UPC, and 30 percent for social investment in the agricultural sector.

In 2016, Law 1819 eliminated the CREE. However, the tax exemption established in Law 1607 remained in force. It is important to clarify that although the CREE tax was eliminated, the income tax rates for the agents' subject to the CREE payment increased in 2017. In this manner, most of the agents suffered an increase from 25 to 33 percent or from 15 to 20 percent, while others were reduced from 25 to 9 percent.

It should be noted that, on the one hand, the direct contribution by employers for workers with incomes below 10 monthly minimum wages disappeared, but on the other, it was first replaced by the CREE tax and subsequently by the increase in the income tax rate paid by employers. However, it is also important to note that the last funding law passed in December 2018 reduced the income tax paid by legal entities.

FIGURE 1: LEGISLATIVE CHANGES OF PARAFISCAL CONTRIBUTIONS (2012-2018)

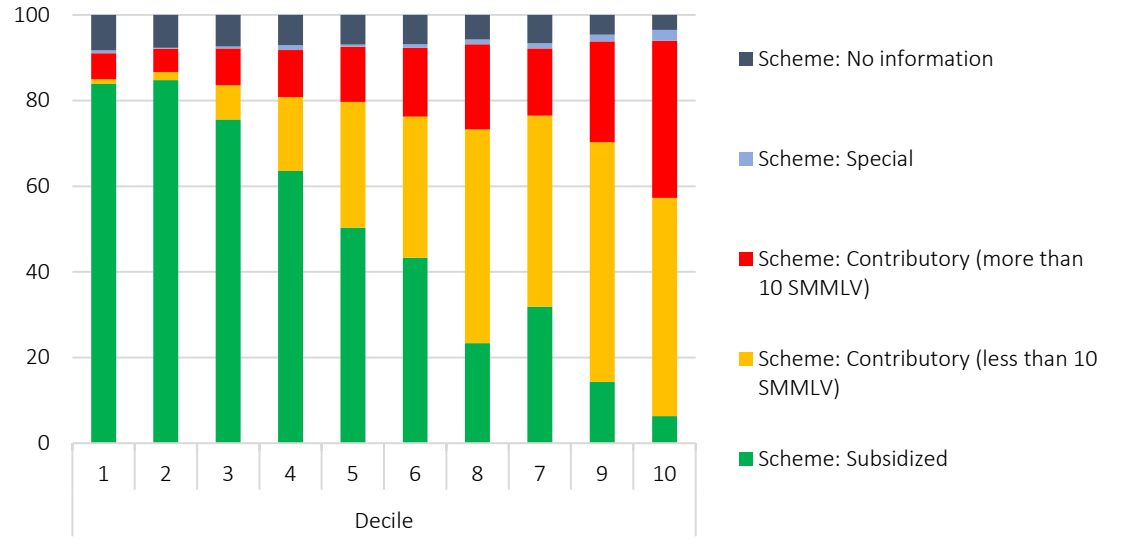


Source: World Bank Group staff estimates
Note: The modifications submitted are to taxes paid by legal persons.

[42] Additionally, the procedure and the UPC values by age group are presented in detail in Annex VIII in Nuñez et, al. (2019).
[43] More details regarding this procedure are presented in Annexes VII and VIII in Nuñez et, al. (2019).

Figure 2 shows the distribution of health care systems by income decile, differentiating all such contributory health system workers with incomes below 10 monthly minimum wages and their beneficiaries, from those with incomes above 10 monthly minimum wages.

FIGURE 2: DISTRIBUTION OF HEALTHCARE SYSTEMS IN COLOMBIA BY INCOME DECILE



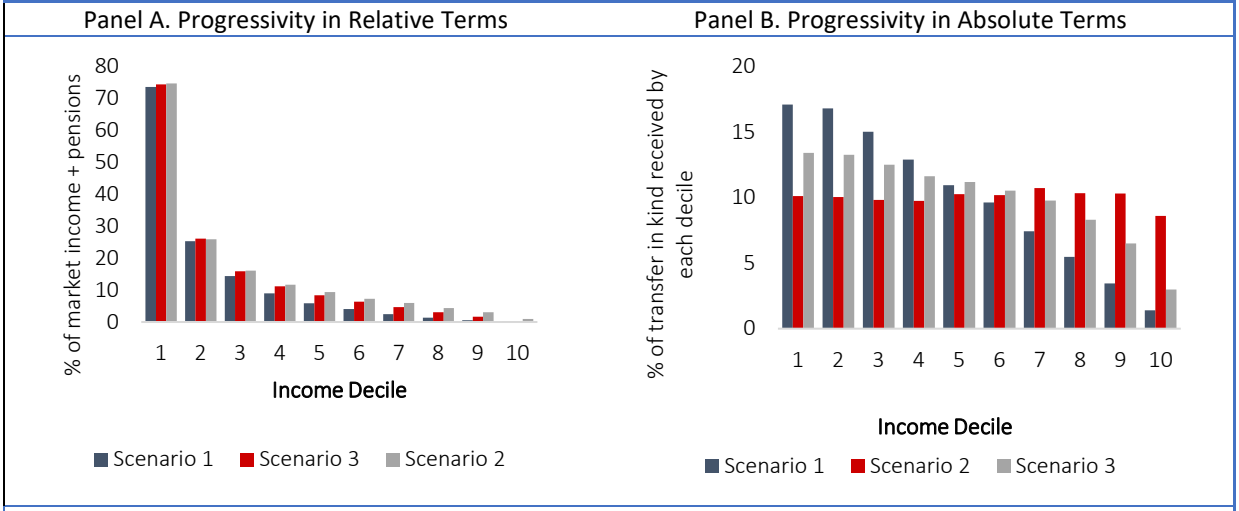
Source: World Bank Group and staff estimates based on the 2017 ENPH
Note: The deciles were put together using market income + per-capita pensions

Given the particularity of the Colombian health care system, there are three scenarios for the treatment of transfers in kind for health services. In the first scenario, it is assumed that only workers belonging to the subsidized health care system** receive a transfer in kind for health services. The following two scenarios consider that given the CREE tax (tax with specific allocation) was eliminated, and currently, the national government uses resources from the National General Budget to make transfers of money shortfalls to the contributory healthcare system. Therefore, these funds must be treated as a national government transfer, similar to pensions.

Thus, in the second scenario, in addition to considering the persons belonging to the subsidized health care system, all employees who belong to the contributory health care system but who have incomes below 10 monthly minimum wage are included. In other words, it is assumed that all such employers of workers with incomes below 10 smmlv [monthly minimum wage] do not make any direct contribution to the health care system. This makes employees potentially eligible for a transfer in kind for health services. Thus, the transfer received by the workers is equivalent to 68 percent *** of the contributory health system's UPC.

The last scenario considers that even when employers do not make direct contributions, there are employees whose contribution exceeds the cost of health services, while there are some other employees whose contributions do not cover the cost of health services, and therefore receive a transfer from the national government. Thus, for example, in the case of two workers, one with a monthly salary of 1,000,000, while the other receives a monthly salary of 7,000,000. The contribution to the health care system of these workers per year is 4 percent of their annual salary. In the case of the first worker, their contribution totals 480,000, while the second worker makes contributions worth 3,360,000. The average cost of a person enrolled in the contributory health system in 2017 was 1,070,281.66 Colombian pesos. In our example, the contributions made by the first worker are insufficient to cover the average cost of the average health cost, while the contributions of the second worker exceed the average cost of the same. It should be noted that for 87 percent of people belonging to the contributory health system, whose contributors have incomes below 10 smmlv, the contributions made to the health care system are lower than the cost of services received by the entire family group.

FIGURE 3: PROGRESSIVITY IN ABSOLUTE AND RELATIVE TERMS OF THE COLOMBIAN HEALTHCARE SYSTEM



Source: World Bank Group and staff estimates based on the 2017 ENPH
Note: The deciles were put together using market income + per-capita pensions

Given this particularity, in the last scenario, only employees whose contributions are less than the sum of the costs of the average health cost of the contributor and their beneficiaries **** is considered eligible to receive transfers in kind for health services. However, it should be mentioned that the contributory health system considers cross-subsidies, that is, that the surplus of the contributions of some people is used to pay part of the shortfall of the others. This situation means that on average, 82.4 ***** percent of the difference between the cost of the average premium and the contributions made by the contributor is paid with resources from the National General Budget. Figure 3 presents the results of the three scenarios.

When calculating the Kakwani coefficients and the marginal contribution to the reduction of inequality for each of the scenarios, it is found that: under the first scenario, the Kakwani coefficient associated with health care transfers is 0.7210, while the marginal contribution is 0.0239. On the other hand, when considering the second scenario, the Kakwani coefficient hardly amounts to 0.4301, and the marginal contribution coefficient is 0.0254. And finally, when calculations are made using scenario number three, the Kakwani coefficient is 0.6381, while the marginal contribution is 0.0385. It is important to emphasize that the Kakwani coefficient of the first scenario can be interpreted as an upper limit, while that associated with the second scenario can be considered the lower limit.

Note: * They must submit and pay the CREE tax, Corporations, Legal and similar persons, Foreign companies, and entities from their income from national sources that are taxpayers of income and supplementary taxes.

** As defined by the Ministry of Health, the subsidized healthcare system is the mechanism through which the poorest population in the country, without payment capacity, has access to health services through a subsidy offered by the State.

*** Since employers are exempt from making the 8.5 percent payment, this is equivalent to 68 percent of the total payment, which is 12.5 percent. It is important to emphasize that the employee contributes the other 4 percent, and the rule does not exempt employees from paying.

**** If a household is made up of 4 people, the cost of the average health cost of this household is equal to the sum of the UPC values for all the household members.

***** The cost of the average health cost of the contributory health system in 2017 amounted to 21,041,466 million pesos. 66.7 percent of the people who responded belong to the contributory health system and are employees with a salary of less than 10 smmlv and their beneficiaries. In other words, the cost of health services for this population amounts to 15,749,559 million pesos. To cover the costs of the contributory health system in 2017, the national government made contributions amounting to 8,794,582 million pesos. In other words, the national government covered 56 percent of the cost of the "contributory-subsidized" system. If cross-subsidies did not exist, government contributions would need to cover 68 percent of the system's costs. This means that, on average, 82.4 percent of the difference between contributions and the cost of health services is paid with resources from the National General Budget, and the remainder is paid with cross-subsidies.

IV. Impact of taxes and social spending on poverty and inequality.

This section presents the general results of the impact of the tax system and social spending in Colombia on poverty and inequality. Likewise, some comparisons are shown with the results obtained for other countries and with the results of the exercise previously carried out in the country. Likewise, the main methodological differences between the present work and the previous exercise that sought to assess the distributional impacts of the tax policy and social spending for Colombia are presented.

i. Methodological comparison

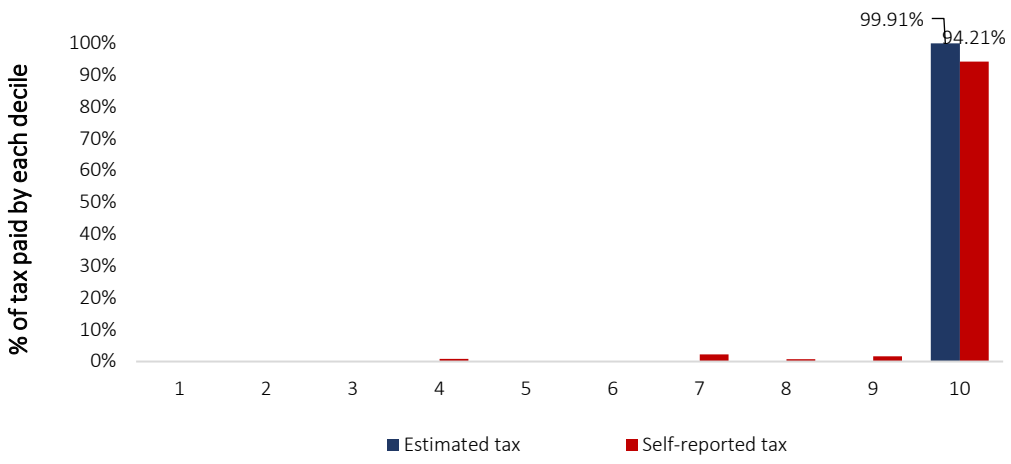
This section discusses some of the methodological differences between the present and the previous Commitment *to Equity* (CEQ from now on) made for Colombia. The first and main limitation of this comparison lies in the non-existence of a public document that sets out the details of the assumptions made in the previous exercise. This comparison is based on the work of Lustig, Meléndez, and Rodriguez-Castelán (2014). To the extent that the assumptions were clear, and the existence of programs allowed, the calculations were made following the previous methodology. However, in many other cases, the lack of available information or the elimination of certain programs made comparison impossible.

a) Direct taxes

Lustig, Meléndez, and Rodríguez-Castelán (2014) include direct taxes, those corresponding to income, property, betterment levies, and vehicles and directly take the payments reported by households for these items from the Quality of Life Survey. As far as it can be seen in the methodology of the previous version of the CEQ, social security contributions were not included as part of direct taxes. This new version of the CEQ for Colombia takes the sum of personal income tax, property tax and betterment levies, vehicle tax and social security contributions paid by both employers and employees as direct taxes. The property and betterment levies tax and the vehicle tax had the same treatment as in the previous CEQ, as the values reported in the survey were used. The main difference lies in the treatment of personal income tax and in the inclusion of social security contributions that were calculated with the rates in law and the income of the people who report they are contributing.

Concerning income tax, for this version of the CEQ, there was the advantage of having aggregate information from the DIAN tax returns. This information allowed for a better simulation of what households pay. Information from DIAN was used to calculate, for each of the income types, the proportion of revenue that does not constitute taxable income, that is exemptions and deductions, to finally deduce the net taxable income. It is also important to recall the significant changes in the tax code between 2010 and 2017, where the form of a statement of personal income and rates have changed at least twice. The tax law applicable to 2017 classifies income according to their origin and imposed upper bounds on the values that could be deducted in each income type and tax dividends.

FIGURE IV-1: INCOME TAX DISTRIBUTION BY DECILE



Source: World Bank Group staff estimates by based on EPNH 2017 and DIAN
Note: The deciles were created using market income + per-capita pensions

If the income tax reported by households in the survey was used, a total estimated value for this tax of 152 billion pesos would be obtained, which is equivalent to only 4.4 percent of the value obtained using the DIAN information and income from the survey ($ 2,881 billion). As shown in the chart, the percentage of tax paid for each decile of income has a similar distribution; but in the case of the tax estimated with the income from the survey and the information from the DIAN, almost all the tax is paid by the highest decile.

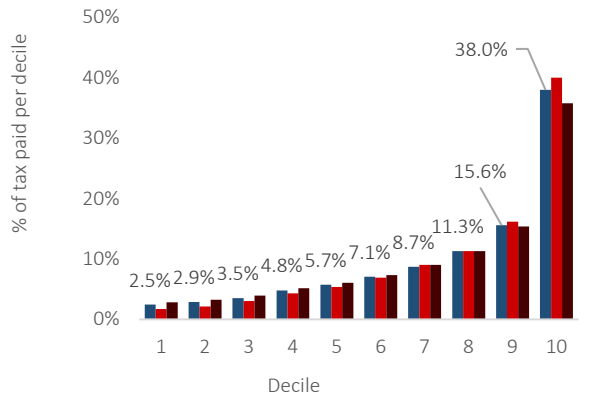
b) Indirect taxes:

In the previous version of the CEQ, the Quality of Life Survey (ECV) 2010 was used. Unlike the National Household Budget Survey (ENPH), the ECV expenses module does not include the product-by-product information on expenditures. Rather, the products were aggregated into groups. Likewise, the place of purchase question is not available in said survey. This limitation led to rural zones being considered an informal market in the previous version of the CEQ. In other words, people who lived in rural areas were considered not to be paying value-added tax. In ENPH, informality was defined based on the place of purchase.

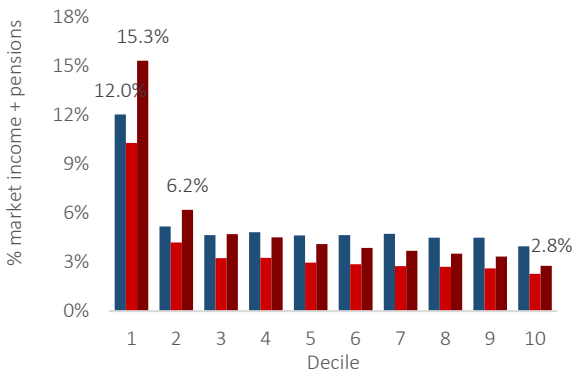
Additionally, in work done in previous years, the indirect effects of VAT were not considered. Figure IV-2 presents the results of progressivity in relative terms (panel A) and progressivity in absolute terms (panel B) of the value-added tax, for three scenarios. In the first scenario, we seek to replicate the methodology used previously, that is, defining informality according to the place of residence of the household and without considering the indirect effects. In the second, the place of purchase is considered for the definition of informality, and indirect effects are not included. Finally, the third case takes into account informality according to the place of purchase and includes the indirect effects of the tax.

FIGURE IV-2: PROGRESSIVITY OF VAT IN ABSOLUTE AND RELATIVE TERMS

Panel A. Progressivity in Relative Terms



Panel B. Progressivity in Absolute Terms



Source: World Bank Group staff estimates based on the 2017 ENPH
Note: The deciles were put together using market income + per-capita pensions

The results suggest that, when defining informality according to the place of purchase, progressivity in relative terms increases, that is, the distribution becomes more pro-poor, however, once indirect effects are included, these over-compensate for this " positive effect" ending in a similar or less pro-poor (or more regressive) distribution than when considering the case of informality in rural areas.

For progressivity in absolute terms, it is again observed that indirect effects are what leads to the lowest deciles seeing VAT pressure increasing in their total consumption. While, for the wealthiest deciles, the indirect effects compensate for the positive effect of informality, but it does not reach the levels of the assumption for rural areas.

BOX IV-1: THE USE OF RESCALING IN INDIRECT TAXES

In the literature on the study of the incidence of tax systems in the world, there has been much discussion about whether the approach that should be used is short-term or long-term. Here we try to explore the consequences of using a long-term perspective on value-added tax in Colombia. In performing this approximation, the effective VAT rate paid by households is used, calculated as a percentage of expenditures, and said percentage is applied to the income reported by the household. However, in the case of Colombia, such an approach causes the system to go from being regressive to progressive, and therefore it was decided not to consider said re-escalation.*

The ENPH contains both the expenditure and income information and following the recommendation of the CEQ manual on page 253 we multiply the household income by the effective rate of the indirect tax to find the value of the consumption tax paid per household. Formally,

$$Tax\ amount\ paid = \frac{\sum_{i=1}^{M}(\tau_i * \frac{p_i\ x_i}{1+\tau_i})}{\sum_{j=1}^{\Gamma}(e_j)}\ y^d$$

Where $\boldsymbol{y^d}$ refers to disposable income, $\boldsymbol{\tau_i}$ is the percentage of consumption tax of the good *i*. In this manner, by way of example, if a household reports spending of $200, for an income of $100, with the effective rate paid by this household being 5.3 percent, the total amount of tax payment that is allocated to this household is $5.3 instead of $10.6.

If we analyze the effect of rescaling in more detail, in the case of Colombia, we found that the implementation of said adjustment leads to changing the conclusions on the distributive effects of value-added tax (VAT). Table 1

presents per-capita market income plus pensions as a proportion of the per-capita monetary expenditure for each decile. For decile 1, this proportion is 24 percent. That is to say, households in decile 1 must take on debt to maintain their consumption patterns. However, the proportion in decile 10 is 185 percent, which represents that households spend approximately half of their income. At the time of rescaling, VAT payment is implicitly being imputed of approximately double of what would be paid by the households in the 10th decile according to their reported consumption patterns. Likewise, the households from decile 1 see their VAT payment reduced to a quarter of what was reported in the survey.

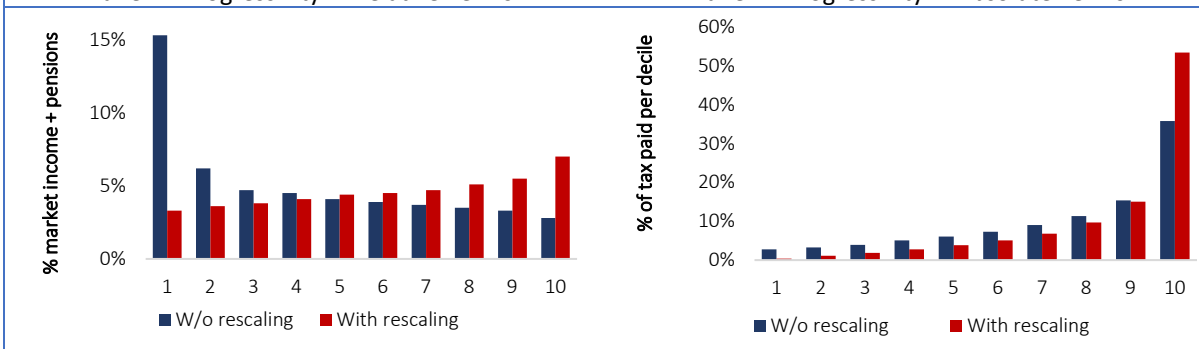
Table 1: Monetary expenditure and market income + average per-capita pensions per decile of income

Decile	Average monetary expenditure (per-capita)	Market income + pensions (per-capita)	Income as a proportion of monetary expenditure
1	157,142.20	38,086.95	0.24
2	177,522.20	108,903.50	0.61
3	212,845.50	171,886.50	0.81
4	257,530.70	235,362.50	0.91
5	298,831.50	306,337.70	1.03
6	349,712.80	392,755.80	1.12
7	422,133.40	506,056.90	1.20
8	503,352.80	664,992.10	1.32
9	663,107.70	952,224.20	1.44
10	1,441,124.00	2,661,722.00	1.85

Source: World Bank Group and staff estimates based on the 2017 ENPH
Note: The deciles were built using market income + per-capita pensions

Finally, Figure 1 presents the results of progressivity in relative (Panel A) and in absolute (Panel B) terms applying the rescaling and without doing so. On the one hand, the empirical evidence shows that the results for the case of Colombia do not seem to make much sense when performing this adjustment, the system goes from being regressive to progressive, on the other hand, as the implementation of said rescaling is still under discussion, the team decided not to include this adjustment in this version of the CEQ.

FIGURE 1: PROGRESSIVITY IN ABSOLUTE AND RELATIVE TERMS WITH AND WITHOUT RESCALING



Source: World Bank Group staff estimates based on the 2017 ENPH
Note: The deciles were built using per-capita market income + pensions
*The results presented in this paper are due to the short-term distributional effects of taxes and spending in Colombia. Along these lines, for example, in the case of tobacco taxes, only the short-term effects on household disposable income are considered, but not the possible redistributive effects that the measure can have on improvements in long-term health

c) Direct transfers

As for direct transfers, the previous CEQ considered the benefits delivered by the Más Familias en Acción program, transfers for the elderly delivered by the Colombia Mayor program, payments to families affected by the 2010-2011 Storm Season [locally, Ola Invernal] delivered through Colombia Humanitaria and the ICBF's Desayunos Infantiles con Amor [Children's Breakfasts with Love]. For each of them, LMR (2014) obtained the per-capita values reported by the program and allocated them to the families that reported being beneficiaries in the survey. This new version of the CEQ does not include the ICBF's Desayunos Infantiles con Amor program. This program granted nutritional supplementation to children between the ages of six months and five years. Instead, the current version considers transfers for early childhood care in the ICBF's care modalities.

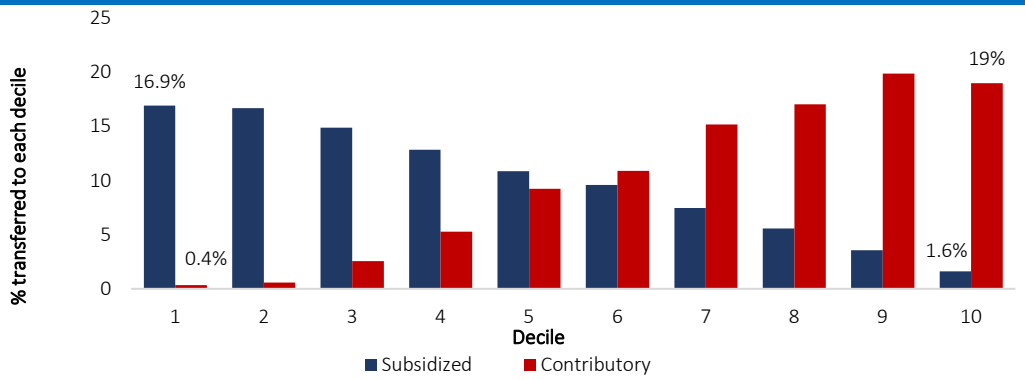
The current document also does not consider transfers from Colombia Humanitaria, since the entity disappeared once it finished its humanitarian aid and rehabilitation work in the first phases after the Storm Season [Ola Invernal] of 2010-2011. This CEQ continues to consider transfers from the Más Familias en Acción program and from the Colombia Mayor program; added to some programs such as Jóvenes en Acción that was created in 2012 as part of the redesign of MFA, the School Meals Program (PAE) of the Ministry of Education, unemployment benefit, and FEST, and transfers to victims that originated in Law 1448 of 2011 for the attention and reparations of this population.

d) Education and health care

Regarding education, the expenditures, LMR (2018) included in the analysis in-kind transfers in primary and secondary education, measured as the per-capita value transferred to the municipalities per student according to the level and the municipal typology. It is understood, therefore, that they only used the resources of the portion of the population serviced by the SGP for Education. The current CEQ also starts from the allocation by population served for each student defined in the SGP distribution document, but it also considers the additional resources that local administrations allocate to finance primary and secondary education. These additional resources that were considered in this version of the CEQ come to represent 50 percent of the value allocated through the SGP in entities such as Bogotá, 42 percent in Vichada, 32 percent in Medellín and Amazonas, 24 percent in Vaupés, and 17 percent in Valle del Cauca. Additionally, this version considers in-kind transfers for higher education that appear not to have been included in the previous CEQ document. Lastly, in this CEQ, the education benefits were rescaled so as not to overestimate their effect on inequality.

For health spending, LMR (2014) took the health insurance approach, so they included in the analysis of the monthly value of the UPC that is transferred to the subsidized health care system. The authors also considered public health resources for the provision of vaccination and preventive care and the cost of care to the poor unenrolled population when they go to health centers in case of emergency. This version of the CEQ also allocates the value of the monthly UPC transferred by the Ministry of Health for the subsidized health care system's subscribers and adds 68 percent of the value of the monthly UPC paid by each subscriber of the contributory health system and its beneficiaries, whose income is less than 10 smmlv. The latter makes sense upon considering that since 2012 the 8.5 percent contribution made by employers is no longer made, and since 2016, when the CREE was eliminated, the missing resources are paid with resources from the National General Budget. However, this may add progressivity to the analysis, since the solidarity component of the contributory health system is not considered. Also, as seen in Figure IV-3, while the total value of the UPC of the subsidized health care system is distributed mainly in the lowest deciles, the UPC value of the contributory health system is distributed in the highest.

FIGURE IV-3: DISTRIBUTION OF THE TOTAL VALUE OF THE UPC



Source: World Bank Group staff estimates based on EPNH 2017 and DIAN
Notes: The deciles were created using per-capita market income + pensions.
UPC values are already re-scaled.

The current version of the CEQ does not consider public health resources for vaccination and preventive care since the beneficiaries cannot be identified directly from the survey. Nor does it include resources for the poor, uninsured population. It is worth clarifying that we tried to include the budget for the attention of this population. In this manner, the total value spent for this item in the local administrations was calculated, and a per capita value was taken considering the numbers of the poor population not served by the Ministry of Health. However, inconsistent per capita values were obtained in some cases. For example, in Vaupés, the per capita value of this item was equivalent to 10.7 times the UPC, so the decision was made not to include a value that could overestimate the effects on inequality. Finally, following the methodological framework of the CEQ, health transfers were rescaled.

ii. The impact on inequality

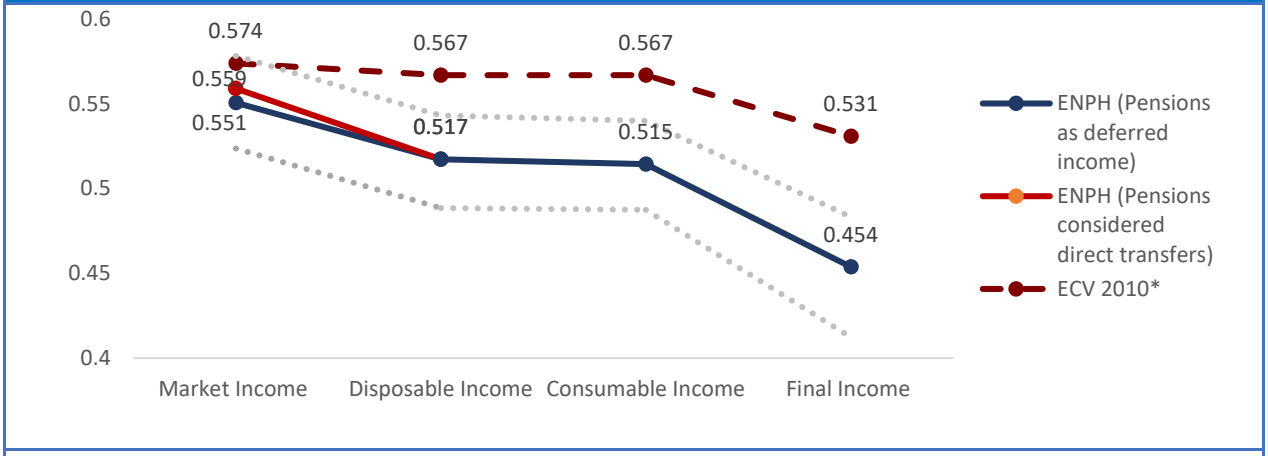
The combined effect of taxes and social spending helps to reduce inequality in Colombia substantially.[44] Figure IV-4 shows the changes in the Gini coefficient when different taxes and social spending are considered, using the income definitions of Figure III-1 for two CEQ Exercises. In the current effort, it is observed that before any government intervention, the Gini coefficient for market income was 0.551 when pensions are considered as a transfer and 0.559 when pensions are considered deferred income. By including direct transfers and subtracting direct taxes, along with contributions to the social security system, one arrives at disposable income, which has an associated Gini coefficient of 0.517. The net effect of indirect taxes and subsidies provided to households for utilities is neutral. While Gini decreases once these effects are considered, the change is not statistically significant. Ultimately, the final income has a Gini coefficient of 0.455. In other words, the transfers that the government provides in education and health services help to reduce inequality significantly. Upon considering all the effects of fiscal policy, the reduction in the Gini coefficient is 0.096 points when moving from market income considering pensions as deferred income, to final income, and 0.104 when pensions are considered a transfer.

When comparing the current results with those obtained in the previous year (ECV, 2010), it is observed that the taxes and expenses system in Colombia would become more redistributive.[45] Thus, while in the

[44] Fuel subsidies (gasoline and Diesel) are not included, due to lack of administrative information.
[45] Despite using the CEQ methodology in both exercises, these two exercises are not strictly comparable since the current method includes several improvements as explained in the subsection called methodological comparison. It is important that the reader bear in mind that the differences that are shown between methodologies are due to two reasons: the first of them the

past CEQ for Colombia, direct taxes and direct transfers slightly reduce inequality, while indirect taxes and subsidies appear to be neutral, and education and health spending has the most significant effect in terms of reducing inequality. In the current exercise, the effect of direct transfers and direct taxes seems to be higher, although not significant. The same goes for spending on education and health.

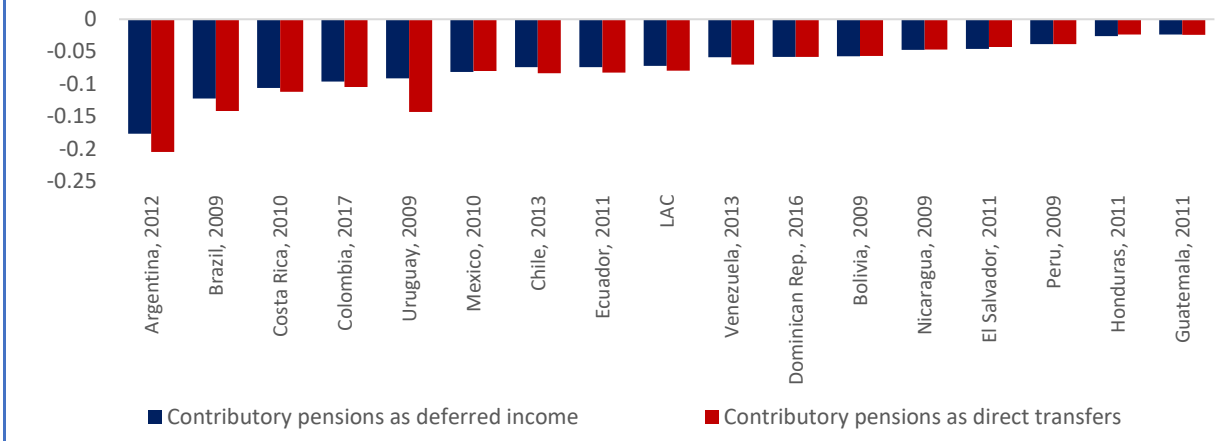
FIGURE IV-4: GINI COEFFICIENTS FOR COLOMBIA



(*) Lustig, Melendez, and Rodriguez-Castelán (2014)
Source: World Bank Group staff estimates based on ENPH

The redistributive effect of the tax system and social spending in Colombia is above the regional average (Figure IV-5). Argentina, Brazil, and Costa Rica are the only countries for which information is available that have a tax system and social spending that help reduce inequality to a greater extent than the Colombian system.

FIGURE IV- 5: REDUCTION IN INEQUALITY WHEN MOVING FROM MARKET INCOME TO FINAL INCOME

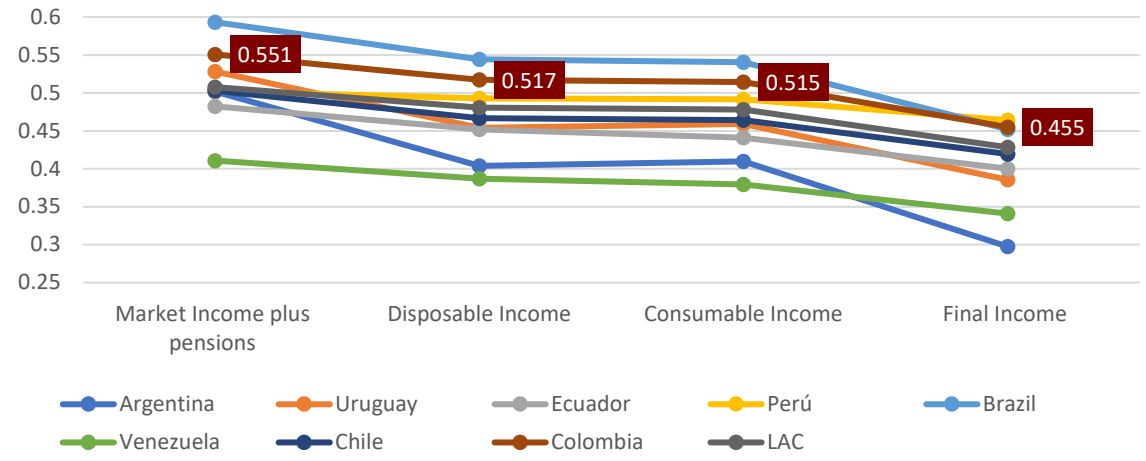


Source: The Impact of Taxes and Social Spending on Income Distribution and Poverty in Latin America. An Application of the Commitment to Equity Methodology (CEQ), 2017. Colombia World Bank group staff estimates using the 2017 ENPH
Note: The results for all countries other than Colombia were obtained by applying the old methodology of the CEQ, which among other things did not include indirect effects of indirect taxes, accounted for income in kind differently, while the results for Colombia were obtained by applying the new methodology of the CEQ.

methodological differences and the second of them to the differences in public policy. Given the unavailability of all information it is impossible to isolate these two effects.

In Colombia, as in the vast majority of countries in the region, indirect taxes plus subsidies tend to be equalizers. In other words, the Gini coefficient associated with consumable income, the income that considers subsidies and indirect taxes, is relatively lower than that observed for disposable income. However, these two coefficients are not statistically different (Figure IV-6). In the case of Colombia, the effect of indirect taxes plus subsidies is similar to the average for Latin American countries. Finally, after Argentina, Uruguay, and Brazil, Colombia is the country whose transfers in education and health services reduce inequality to a greater extent (Figure IV-6). In the case of Argentina, this last impact results in a 0.111 point drop in the Gini coefficient, while for Colombia, it is 0.06.

FIGURE IV-6: GINI COEFFICIENTS FOR LATIN AMERICAN COUNTRIES
(PENSIONS CONSIDERED DIRECT TRANSFERS)



Source: The Impact of Taxes and Social Spending on Income Distribution and Poverty in Latin America. An Application of the Commitment to Equity Methodology (CEQ), 2017. World Bank Group estimates for Colombia using the ENPH 2017

iii. The impact on poverty

In addition to the impact on inequality, which measures the relative position of households in the income distribution, it is important to measure the impacts on poverty, the results of which depend on the value of household income with respect to the poverty line defined. The results suggest that the combination of taxes paid by households, with transfers and subsidies,[46] would induce a poverty reduction in Colombia. However, none of the changes is statistically significant. That said, the percentage of people whose market income plus pensions were below the official poverty line, which is equivalent to US$ 5.4 dollars per day per person (2011 PPP), is 39.1 percent (Table IV-1), and once the transfers and subsidies received by the household are considered, and the taxes paid by the household are subtracted, the percentage of people below the poverty line decreases to 38.8 percent. However, as mentioned above, this change is not statistically significant.

When the international poverty lines of US$ 5.5 and US$ 3.2 per day per person (2011 PPP) are used, the poverty incidence decreases 0.3 and 2.6 percentage points respectively, although none of these changes is statistically significant. The direct transfers received by households explain most of this reduction. While the net effect of indirect taxes and subsidies increases poverty, this negative effect is outpaced by the

[46] It is important to note that this exercise did not include fuel subsidies (gasoline and diesel) due to lack of administrative information.

positive effect of direct transfers. In other words, the most vulnerable households are more than compensated by direct and indirect tax payments.

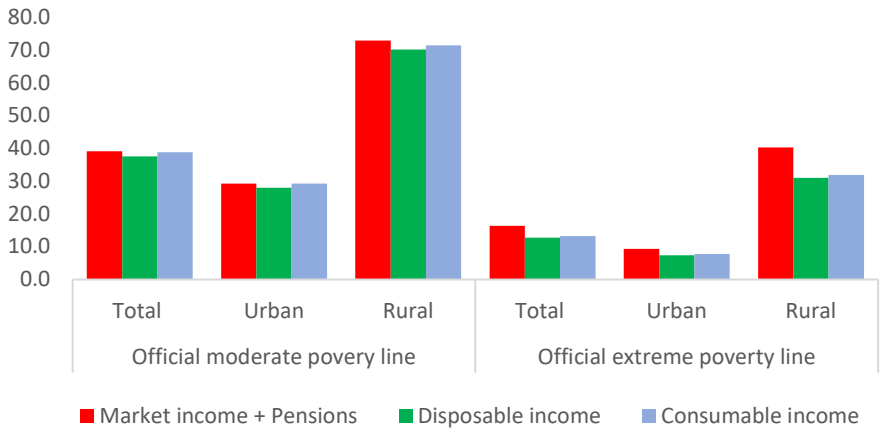
TABLE IV-1 CHANGES IN POVERTY LEVELS BY INCLUDING TAXES AND TRANSFERS

	Market entry + Pensions	Disposable income	Consumable income
	(1)	(2) = (1) - direct taxes - contributions to the S.S.S. + direct transfers	(3) = (2) - direct taxes + subsidies
Poverty incidence			
Official extreme poverty line (US $2.5 PPP per day)	16.4	12.8	13.3
	(0.024)	(0.019)	(0.018)
Official moderate poverty line (US $5.4 PPP per day)	39.1	37.6	38.8
	(0.043)	(0.042)	(0.042)
US $3.2 PPP per day	21.8	18.6	19.2
	(0.031)	(0.026)	(0.025)
US $5.5 PPP per day	40.3	38.8	40.0
	(0.044)	(0.043)	(0.043)
Poverty gap			
Official extreme poverty line (US $2.5 PPP per day)	7.8	5.4	5.7
Official moderate poverty line (US $5.4 PPP per day)	18.5	15.9	16.4
US $3.2 PPP per day	10.3	7.7	8.1
US $5.5 PPP per day	19.1	16.5	17.1

Source: World Bank Group and staff estimates based on ENPH 2017
Notes: The values in the parentheses correspond to the standard errors associated with the measure

The gap and incidence from poverty tend to decrease when moving from market income to consumable income (Table IV-1), but once again, these changes are not statistically significant. In other words, the fiscal system seems to induce an improvement in the levels of well-being of the poorest by decreasing the average distance to the poverty line. However, part of the positive effect is reversed when indirect taxes and subsidies are included. Given that households do not observe the benefit received by health and education services, this analysis does not include poverty calculations for final income.

FIGURE IV-7: INCIDENCE OF URBAN AND RURAL POVERTY



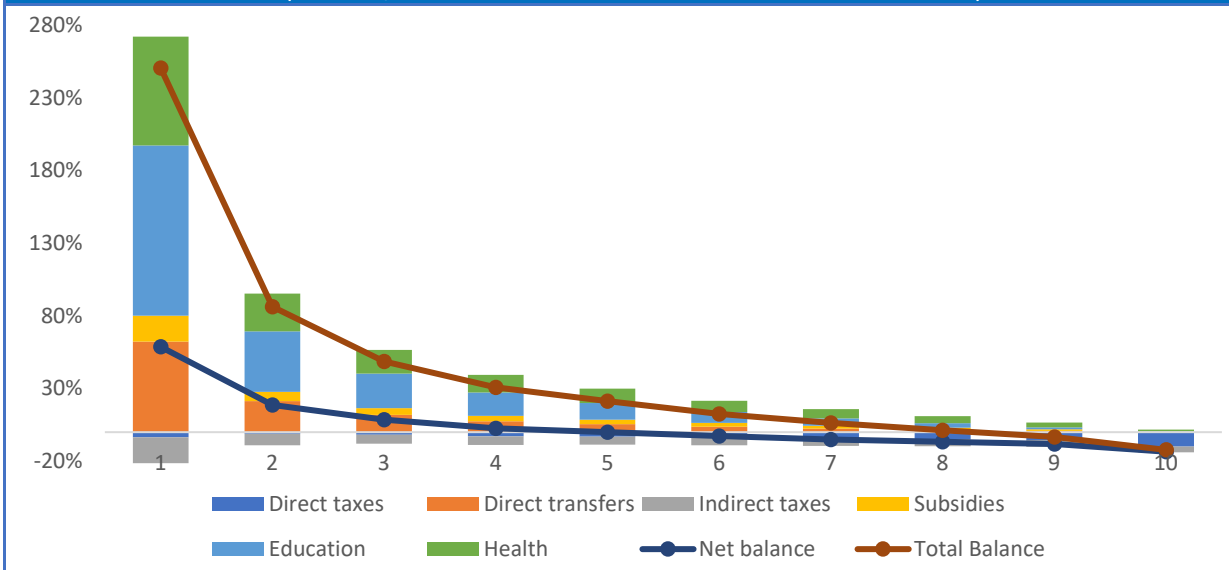
Source: World Bank Group staff estimates based on the 2017 ENPH

From the standpoint of urban and rural areas, it turns out that the tax system contributes significantly to the reduction of extreme poverty in rural areas (Figure IV-7). Thus, while urban areas see their extreme poverty levels drop by a little more than 3 percentage points, rural areas do so 3 times more, going from 40.3 to 31.9 percent. However, the decrease in poverty incidence is more moderate and not statistically significant when considering the moderate poverty line (Figure IV-7).

V. Progressivity and marginal contributions of taxes, transfers, and subsidies.

A relevant question for public policy is to determine what are the policies that contribute to the reduction of poverty and inequality. Figure V-1 presents the distribution for 2017 of the impacts of direct and indirect taxes, transfers, and subsidies of the Colombian system as a percentage of market income, including pensions. Benefits are seen to represent a greater proportion of the market income of households in the first five deciles. In other words, the net balance is positive for households up to the 5th decile. However, taxes paid as a percentage of market income exceed the monetary benefits received by households from the highest 50 percent of the distribution.

FIGURE V-1: DISTRIBUTIVE IMPACT OF THE TAX AND BENEFITS SYSTEM IN 2017
(BENEFITS/TAXES AS A PERCENTAGE OF MARKET INCOME + PENSIONS)



Note: The net balance of a household is calculated as the difference between consumable income and market income plus pensions and is equal to all transfers and subsidies received by the household minus taxes paid by the household.
Source: World Bank Group staff estimates based on ENPH 2017

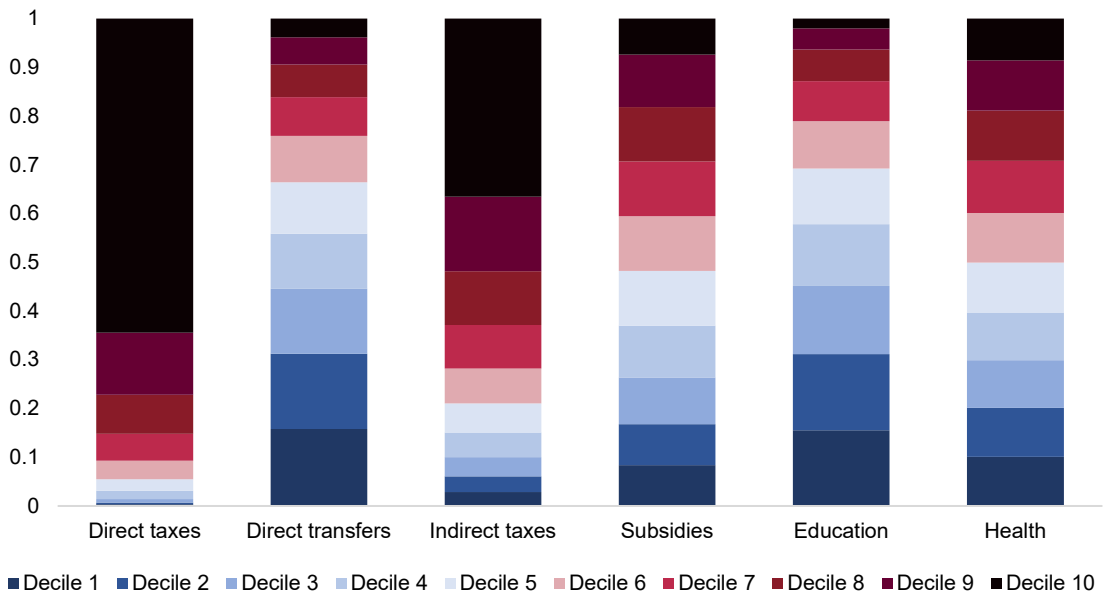
i. Taxes and social spending

A relevant question for public policy decision-making is whether each of the tax interventions and combinations thereof helps reduce inequality. The Kakwani indicator may be used to answer this question. If the Kakwani indicator is positive, then the intervention under consideration is progressive. In case the coefficient is negative, then it is possible to state that the policy is regressive and therefore contributes to increasing inequality. It is important to analyze each of the policies individually, since, by doing so in the aggregate, it may be possible that the positive effect of another compensates the negative effect of one policy. It should be noted that the progressivity or regressivity of a policy does not imply that it is good or

bad, since, for example, the collection of a regressive tax can be used to make transfers that benefit the poor to a greater extent and, therefore, the combination of these two policies helps to reduce inequality. In addition to the Kakwani coefficient, it is important to calculate the marginal contribution of each of the interventions to the reduction of inequality. The marginal contributions of a policy are calculated as the difference between the inequality index when it is in hand, and when the transfer nor the tax under consideration is not taken into account.

Another way to study the progressivity of the tax system is to look at the participation of each decile in each component of the system. The progressivity in absolute terms of direct and indirect taxes, direct transfers, and education spending is evident, given that, for example, 85 percent of direct taxes are paid by deciles 8, 9, and 10. While 55 percent of direct transfers are received by the bottom 40 percent of the distribution (Figure V-2). On the other hand, health spending seems to be a neutral policy, given that while households in the upper part of the distribution (deciles 5 to 10) receive 50 percent of transfers in kind for health; the transfers delivered to the deciles on the lower part of the distribution (decile 1 to 5) are also equivalent to 50 percent of the total health expenditure.

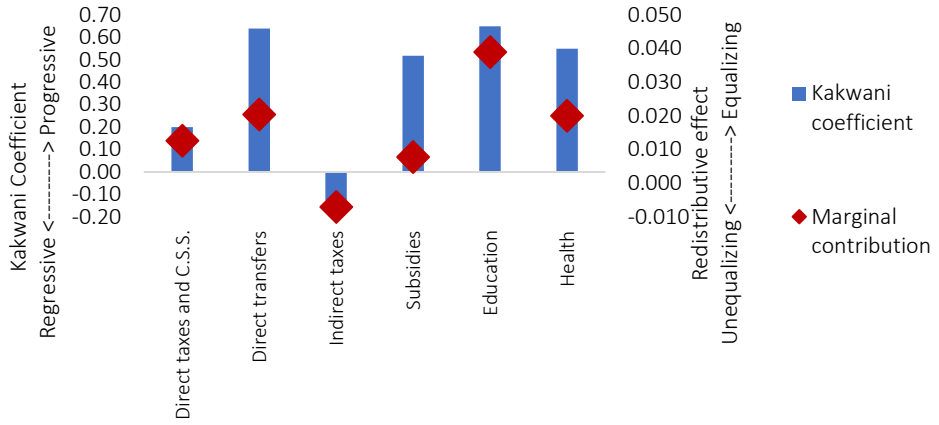
FIGURE V-2: **PROGRESSIVITY IN ABSOLUTE TERMS OF TAXES, TRANSFERS, AND SUBSIDIES**



Source: World Bank Group staff estimates based on ENPH 2017

Figure V-3 presents the general results of the tax system and spending in Colombia. As can be seen, except for indirect taxes, all other policies in Colombia are progressive and contribute to reducing inequality in the country. Annex A shows both the Kakwani coefficient for each of the taxes and transfers considered in this paper, as well as the marginal contributions for the reduction of inequality and poverty when pensions are considered a transfer. The results are presented in Annex B when pensions are considered deferred income. What follows from this section seeks to discuss the main results.

FIGURE V-3: PROGRESSIVITY OF TAXES AND TRANSFERS

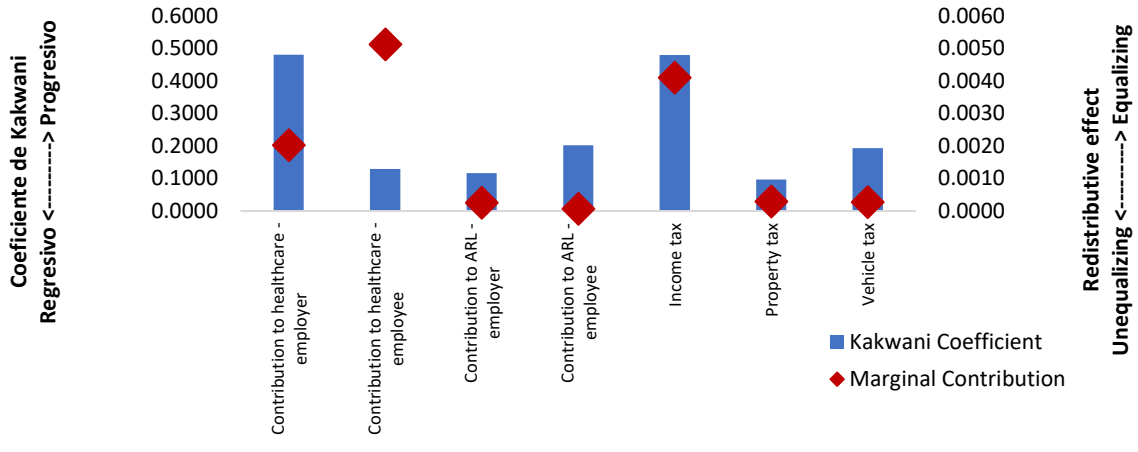


Source: World Bank Group and staff estimates based on ENPH 2017

a) Direct taxes and indirect taxes

The sum of all direct taxes and contributions to the social security system is progressive since the Kakwani coefficient associated with that value is positive (see Table 1 of Annex A). Furthermore, when each of the direct taxes and social security contributions is examined, it is observed that all direct taxes, as well as contributions, are progressive, as seen in Figure V-4, all the associated Kakwani coefficients are positive. Additionally, given that the marginal contribution coefficients are positive, it is possible to deduce that all direct taxes and all social security contributions help to reduce inequality. The income tax is more progressive and redistributive than the other direct taxes. As far as social security contributions are concerned, the most progressive contribution is made by employers to health care, and the most redistributive is the contribution to health care paid by employees.

FIGURE V-4: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF INDIRECT TAXES
(FROM MARKET INCOME + PENSIONS TO DISPOSABLE INCOME)

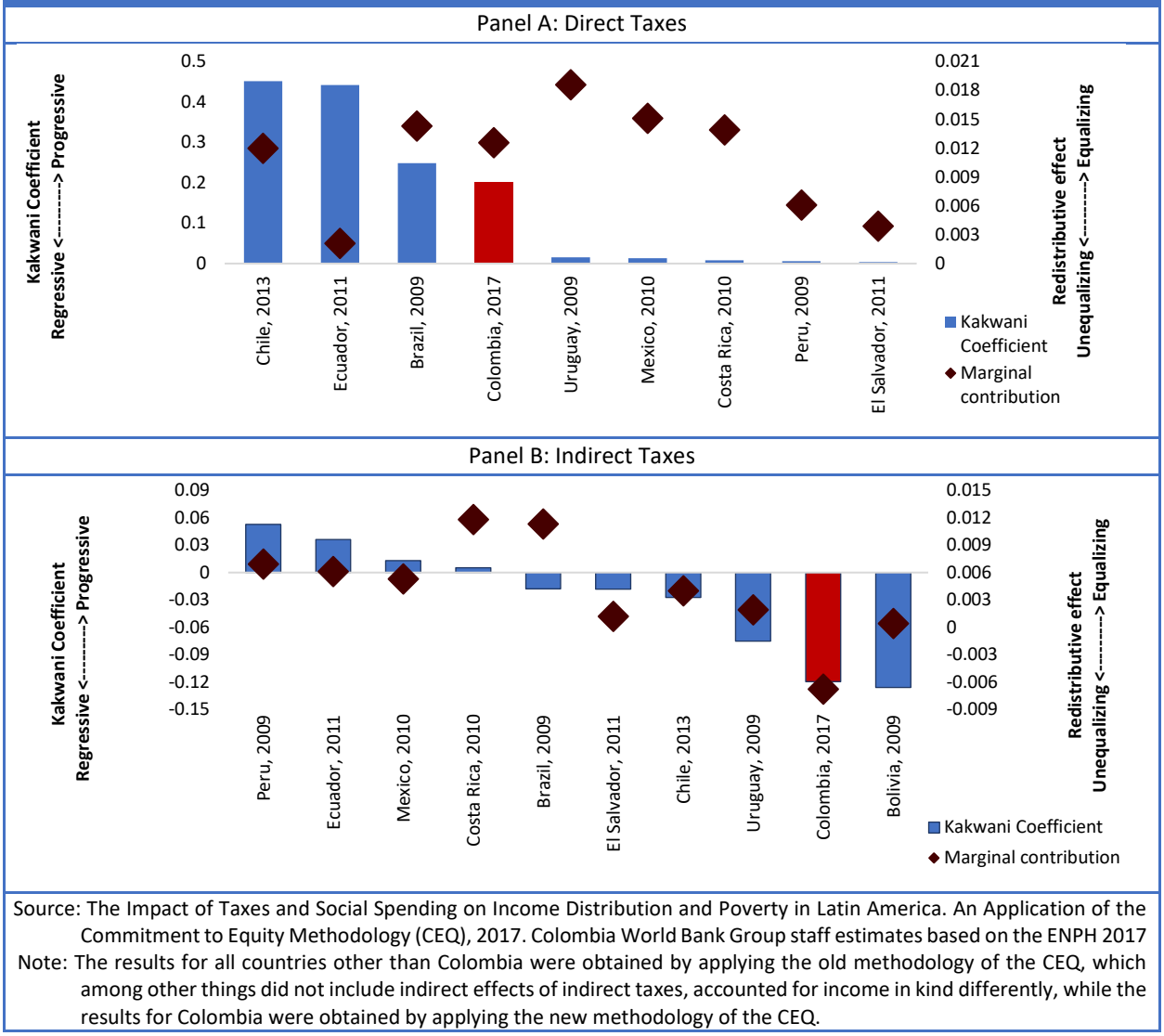


Source: World Bank Group and staff estimates based on ENPH 2017

However, direct taxes and contributions in Colombia are less progressive and redistributive than in some other countries in the region such as Chile, Ecuador, and Brazil (Figure V-5-Panel A). Additionally, direct taxes and social security contributions contribute to the increase in poverty. As shown in Table 1, Annex

A, the marginal contribution of direct taxes to poverty reduction is negative when considering a poverty line of 5.5 dollars per day PPP 2011. The results obtained suggest that there is a possibility for improvement in the Colombian tax system that allows increasing its progressivity and its redistributive effect.

FIGURE V-5: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF TAXES IN LATIN AMERICA



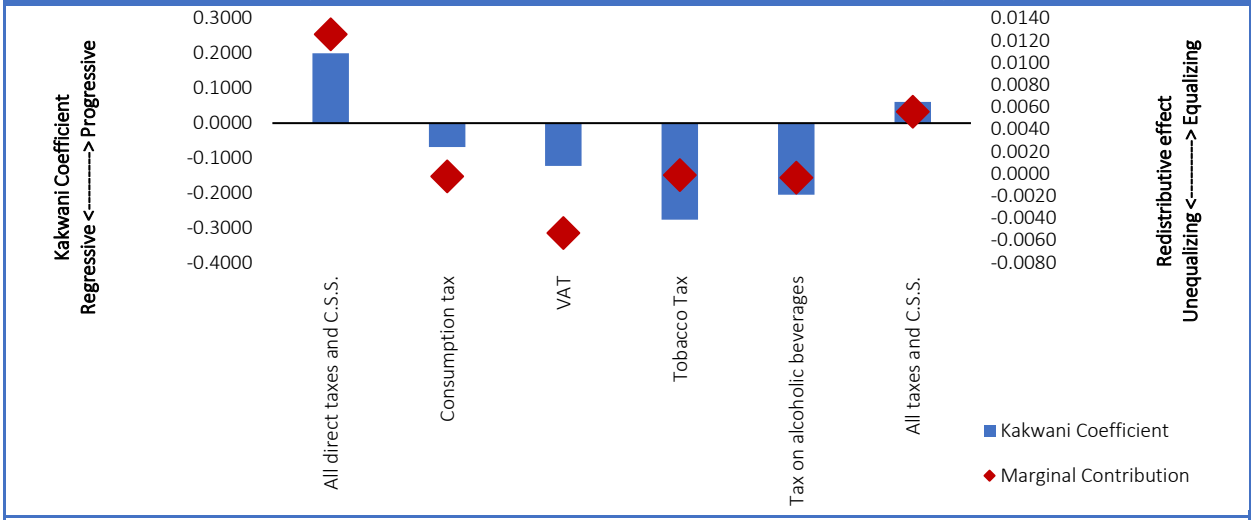
Source: The Impact of Taxes and Social Spending on Income Distribution and Poverty in Latin America. An Application of the Commitment to Equity Methodology (CEQ), 2017. Colombia World Bank Group staff estimates based on the ENPH 2017

Note: The results for all countries other than Colombia were obtained by applying the old methodology of the CEQ, which among other things did not include indirect effects of indirect taxes, accounted for income in kind differently, while the results for Colombia were obtained by applying the new methodology of the CEQ.

In contrast to the results of direct taxes, indirect taxes were found to be regressive and contribute to an increase in poverty and inequality. While it is true that regressive taxes may help reduce inequality, this is not the case for Colombia (Figure V-6). In particular, the VAT (value-added tax) implies a very large burden for low-income households, which means that the implementation of this tax increases inequality and poverty. Additionally, taxes on tobacco and alcoholic beverages are also regressive. Of the indirect taxes, the tobacco tax is the most regressive of all, but its impact on poverty and inequality is less than that of VAT. Within indirect taxes, the consumption tax is the least regressive tax and the one that has the least impact on increasing poverty and inequality (see table 1, Annex A).

When comparing the results of Colombia with other countries in the region, it turns out that Colombia is the second country, after Bolivia with the most regressive indirect taxes in the region and that additionally, indirect taxes in Colombia are the ones that most contribute to an increase in inequality throughout the region (Figure V-5- Panel B).

FIGURE V-6: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF INDIRECT TAXES (FROM MARKET INCOME + PENSIONS TO CONSUMABLE INCOME)



Source: World Bank Group staff estimates based on ENPH 2017

b) Direct transfers and subsidies

Total direct transfers, like the subsidies that households receive, are progressive and help reduce poverty. Direct transfers are progressive in relative and absolute terms since these not only represent a higher percentage of the income of the poorest, but a higher percentage of these is given to people from the lowest deciles. Thus, while decile 1 receives 16 percent of the total of these transfers, households in decile 10 receive 4 percent of these transfers (see Figure V-2). The expenditure on social programs made by the government represents 2.5 percent of GDP, and 56 percent of the benefits are delivered to the poorest 40 percent of the population. Most of the benefits of government social programs are targeted to urban areas; only 3.2 percent of total national transfers are delivered to households residing in rural zones.

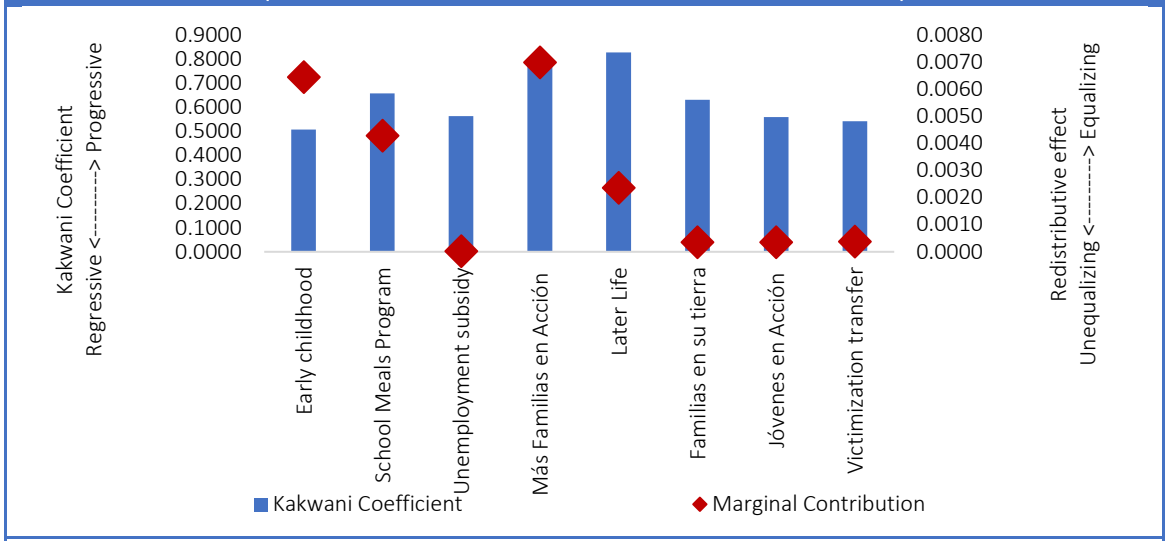
The subsidies referred to in this document are those received by households in the provision of utilities such as electricity, gas, water, sewage, and waste collection. These are progressive in relative terms. Thus, while subsidies represent 18 percent of the market income plus pensions of the poorest 10 percent of the population, this percentage only amounts to 0.25 percent for households in the richest decile. However, in absolute terms, only 8 percent of the total subsidies are given to the households of the lowest decile, and 7 percent of the total of these are delivered to the households of decile 10 (see Figure V-2).

Jointly, all direct transfers and subsidies in Colombia are progressive. However, their effect on reducing poverty and inequality is neutral.[47] The marginal contributions for the reduction of inequality and poverty vary depending on the size of the program and its progressivity, as well as the geographic location of the

[47] Although upon including transfers and subsidies, poverty and inequality tend to decrease, such reductions are not statistically significant.

household receiving the transfer or subsidy (urban-rural).[48] For example, the Más Familias en Acción (MFA) program, one of the programs with the greatest number of beneficiaries, is the one with the greatest impact on reducing inequality and poverty (see table 1 in Annex A), although this effect is concentrated in rural areas. Thus, while the coefficient of the contribution to the reduction of inequality is 0.004 for urban areas, it rises up to 0.019 for rural areas. Similarly, it is found that the contribution in the reduction of extreme poverty of this program is 0.0199 in rural areas, while in urban areas, it barely rises to 0.0032. On the other hand, transfers delivered under the Colombia Mayor program for the elderly are the most progressive as shown by the Kakwani coefficient (Figure V-7).

FIGURE V-7: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF DIRECT TRANSFERS (FROM MARKET INCOME + PENSIONS TO CONSUMABLE INCOME)



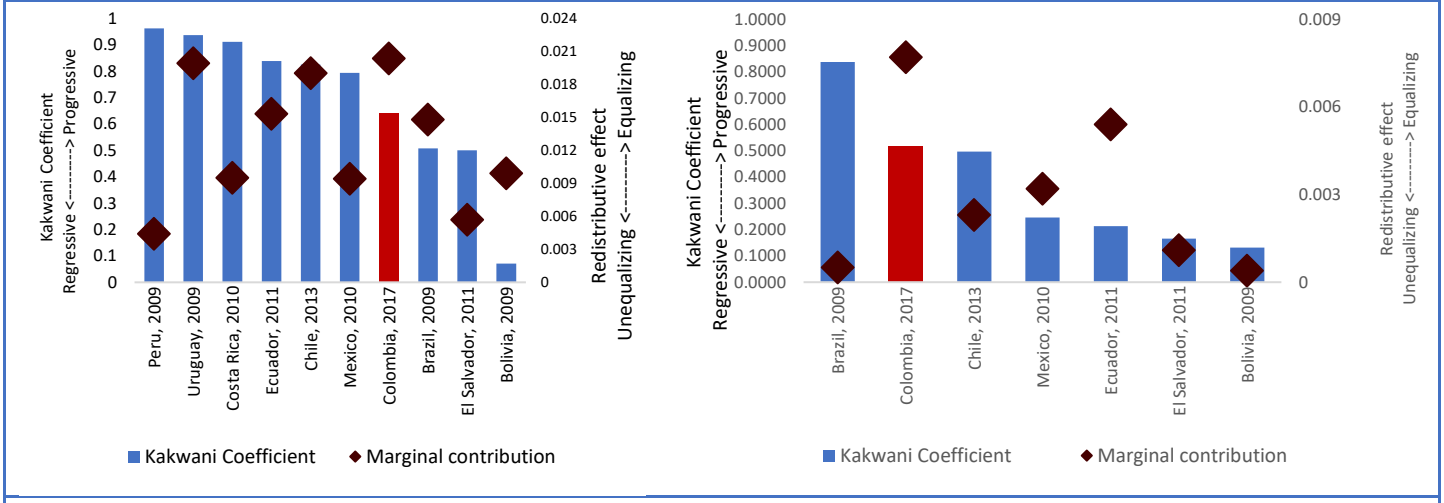
Source: World Bank Group staff estimates based on ENPH 2017

Subsidies for utilities, for their part, are progressive, as are the contributions made by households in strata 5 and 6. So, on the one hand, subsidies help to reduce inequality, while on the other, contributions redound to its increase (see table 1, Annex A). Finally, it merits noting that subsidies contribute to poverty reduction, given that the contribution coefficient for poverty reduction is positive, while, as expected, the contributions appear not to affect the reduction of poverty. (see table 1, annex A).

When comparing the distributional effects of direct transfers and subsidies in Colombia, with other countries in the region, it is found that, although direct transfers in Colombia are not as progressive as in other countries of the region, the social programs that provide direct transfers to Colombian households are the ones that most help to reduce inequality. As far as subsidies are concerned, it is observed that, in Colombia, subsidies are highly progressive, compared to the region, and contribute more to the reduction of inequality. However, this result must be read very carefully, given that the lack of information made it impossible to include fuel subsidies.

[48] The authors of this paper intend to produce a document in which the differences in the incidence of spending and taxes between urban-rural areas, and between different regions (departments) of the country are explored in greater detail.

FIGURE V-8: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF TRANSFERS AND SUBSIDIES IN LATIN AMERICA

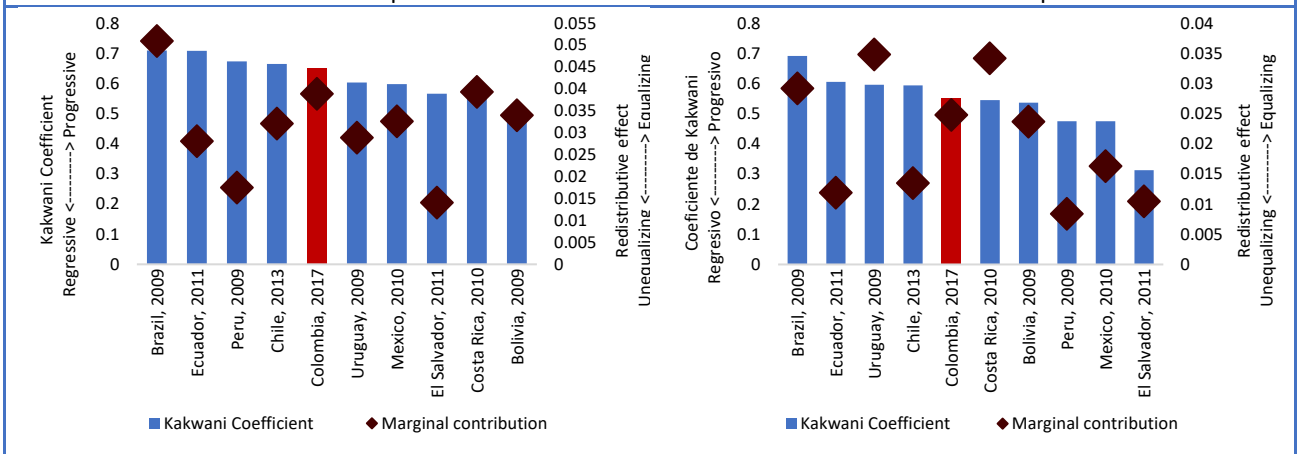


Source: The Impact of Taxes and Social Spending on Income Distribution and Poverty in Latin America. An Application of the Commitment to Equity Methodology (CEQ), 2017. Colombia World Bank Group staff estimates using the ENPH 2017

c) In-kind transfers: Education and health care

As regards transfers for health and education services, the results presented must be interpreted carefully given that in this analysis, the quality of the services provided was not taken into account. For the analysis, only the amount transferred per student in the case of education spending, and the amount transferred per user in the case of health expenditure were considered. That is, the analysis assumes that the benefit received is equal to the amount spent per student or person belonging to the health care system.

FIGURE V-9: PROGRESSIVITY AND REDISTRIBUTIVE EFFECT OF EXPENDITURE ON EDUCATION AND HEALTH IN LATIN AMERICA



Source: The Impact of Taxes and Social Spending on Income Distribution and Poverty in Latin America. An Application of the Commitment to Equity Methodology (CEQ), 2017. Colombia World Group staff estimates using the 2017 ENPH

The results show that education and health services are progressive and contribute to the reduction of inequality, having considered the preceding limitation in this document. Finally, as seen in Figure V-9, the progressivity of health spending and education spending in Colombia is just above that of the other

countries in the region. Additionally, it is important to note that there are differences between spending in urban areas and rural areas. While the population in rural areas only accounts for 22.6 percent of the population, 32.0 and 26.6 percent of education and health expenditures, respectively, are allocated to households that live in rural areas, where the people in the state of greatest vulnerability reside.

VI. Final thoughts and future lines of work

Despite the great advances made by Colombia in the area of poverty reduction, the levels of inequality are still very high. According to 2017 measurements, Colombia is the third most unequal country of the countries in Latin America and the Caribbean. While it seems that the combined effect of the tax system, together with social spending, helps reduce inequality, there are still efforts to be made. All direct taxes, direct transfers, and subsidies in Colombia are progressive, even more so than in other countries in the region. Additionally, direct transfers are pro-poor, that is, households in the lower part of the distribution receive a higher percentage of their total. On the other hand, indirect taxes are regressive and contribute to an increase in inequality.

It is important to point out that the Colombian tax system is regressive. This is because the progressivity of direct taxes does not compensate for the regressively of indirect taxes, in case of not considering the contributions to the social security system. Additionally, the marginal contribution of the tax system to the reduction of inequality in Colombia is not statistically significant. If contributions to the social security system are included, the tax system ends up being progressive.

In addition to contributing to the reduction of inequality, government interventions appear to help reduce poverty. However, these effects end up being statistically non-significant. When comparing poverty before and after taxes and transfers, it is found that the poverty incidence is lower once all taxes, transfers, and subsidies are considered. This phenomenon occurs because the increase in poverty generated by the effect of direct and indirect taxes turns out to be less than the reduction caused by transfers and subsidies. Additionally, the poorest 50 percent of Colombian households are net beneficiaries. That is, the benefits that households receive exceed the taxes paid by them.

This paper not only allows accounting for the total redistributive effect of fiscal policy but also for each of its components. Some interventions seem to be much more effective than others in reducing inequality. As an example, we can consider the following programs: Colombia Mayor, Jóvenes en Acción, Familias en su Tierra, and Unemployment Subsidies. While Colombia Mayor delivers an average transfer lower than that of the other programs, it achieves a greater reduction in inequality than the other three programs. Given that the total expenditure in these three programs is roughly half of the expenditure in the Colombia Mayor program, the contribution to the reduction of inequality would be expected to be around 50 percent of the one reached by Colombia Mayor. However, the sum of the contributions to the reduction of the inequality of these three programs totals around 33 percent. In this manner, some restructuring of these programs could be expected to achieve a greater reduction of inequality.

Finally, future lines of research include reviewing the calculation of standard errors for each of the estimates made, the inclusion of gasoline and diesel subsidies, and social programs that were not identifiable in the survey. A distribution adjustment considering the upper part of the income distribution not captured by the survey, as well as building a user-friendly tool that allows performing simulations of changes in fiscal policy and determining the effects of said changes, are also worthy future efforts. The simulations that will be carried out will be in line with policy changes announced by the national government, such as the elimination of subsidies in the electrical service for stratum 3, and all the policy changes considered in the National Development Plan "Pacto por Colombia, pacto por la equidad" ["Pact for Colombia, pact for equity"], which constitutes the roadmap of the current government.

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Annex A. Marginal contributions and reduction of inequality of the fiscal policy and social spending 2017 (pensions understood as deferred income)

TABLE 1: MARGINAL CONTRIBUTIONS AND REDUCTION OF INEQUALITY OF FISCAL POLICY AND SOCIAL SPENDING 2017 PENSIONS AS DEFERRED INCOME

	Size with respect to market income + pensions	Concentration coefficient	Kakwani coefficient	Marginal contributions	
				Redistributive effect	Poverty reduction effect
To disposable income					
Early childhood	1.5%	0.0008	0.5075	0.0064	0.0065
School Meals Program	0.7%	-0.1480	0.6564	0.0043	0.0048
Unemployment subsidy	0.0%	-0.0545	0.5629	0.0000	0.0000
Más Familias en Acción	0.9%	-0.2858	0.7942	0.0070	0.0102
Later Life	0.3%	-0.3182	0.8265	0.0024	0.0052
Familias en su tierra	0.1%	-0.1224	0.6308	0.0004	0.0006
Jóvenes en Acción	0.1%	-0.0508	0.5592	0.0004	0.0002
Victimization transfer	0.1%	-0.0329	0.5413	0.0004	0.0003
All direct transfers	**3.6%**	**-0.1310**	**0.6393**	**0.0204**	**0.0249**
Contribution to healthcare - employer	0.4%	0.9890	0.4807	0.0020	0.0000
Contribution to healthcare - employee	-4.2%	0.6374	0.1291	0.0051	-0.0009
Contribution to ARL - employer	-0.2%	0.6248	0.1164	0.0003	0.0000
Contribution to ARL - employee	0.0%	0.7103	0.2019	0.0001	0.0000
Income tax	-0.8%	0.9885	0.4801	0.0041	0.0000
Property tax	-0.3%	0.6050	0.0966	0.0003	-0.0003
Vehicle tax	-0.1%	0.7019	0.1935	0.0003	0.0000
All direct taxes	**-6.2%**	**0.7089**	**0.2005**	**0.0126**	**-0.0014**
To consumable income					
All direct transfers	**3.6%**	**-0.1310**	**0.6393**	**0.0204**	**0.0249**
All direct taxes and contributions	**-6.2%**	**0.7089**	**0.2005**	**0.0126**	**-0.0014**
Public utilities subsidy	1.5%	-0.0094	0.5178	0.0077	0.0074
All subsidies	**1.5%**	**-0.0094**	**0.5178**	**0.0077**	**0.0074**
Consumption tax	-0.3%	0.4396	-0.0687	-0.0002	-0.0003
VAT	-3.7%	0.3861	-0.1223	-0.0053	-0.0078
Tobacco Tax	0.0%	0.2315	-0.2769	-0.0001	-0.0001
Tax on alcoholic beverages	-0.2%	0.3028	-0.2056	-0.0004	-0.0007
Public utilities contributions	-0.1%	0.8307	0.3223	0.0003	0.0000
Indirect effects public utilities contributions	-0.4%	0.3382	-0.1702	-0.0008	-0.0011
All indirect taxes	**-4.8%**	**0.3887**	**-0.1196**	**-0.0068**	**-0.0100**
All taxes and contributions	**-11.0%**	**0.5696**	**0.0612**	**0.0056**	**-0.0114**
To final income					
All direct transfers	**3.6%**	**-0.1310**	**0.6393**	**0.0204**	**0.0249**
All direct taxes	**-6.2%**	**0.7089**	**0.2005**	**0.0126**	**-0.0014**
All subsidies	**1.5%**	**-0.0094**	**0.5178**	**0.0077**	**0.0074**
All indirect taxes	**-4.8%**	**0.3887**	**-0.1196**	**-0.0068**	**-0.0100**
In-kind transfers	**14.2%**	**-0.0322**	**0.5406**	**0.0623**	
Healthcare in kind	7.1%	-0.0440	0.5523	0.0248	
Education in kind	7.2%	-0.1413	0.6496	0.0389	

Source: World Bank Group staff estimates based on 2017 ENPH

Notes: (i) The original income considered for both the sensitivity analysis and the comparative analysis is market income plus pensions (ii) The redistributive effects refer to the difference between the Gini coefficient of market income and the concept of income that is being assessed. The changes are presented in Gini points. (iii) Marginal contributions refer to the difference between the Gini coefficient of the concept of income that is being assessed with and without the intervention considered. The marginal contributions presented are in Gini points. (iv) The calculations of the contributions to the reduction of the poverty incidence were made using a poverty line of 5.5 dollars per day PPP 2011, which is equivalent to a poverty line of 257,769.6 Colombian pesos per month.

Annex B. Marginal contributions and reduction of inequality of the fiscal policy and social spending 2017 (pensions understood as a transfer)

TABLE 1: MARGINAL CONTRIBUTIONS AND REDUCTION OF INEQUALITY OF FISCAL POLICY AND SOCIAL SPENDING 2017 (PENSIONS AS TRANSFERS)

	Size with respect to market income + pensions	Concentration coefficient	Kakwani coefficient	Marginal contributions	
				Redistributive effect	Poverty reduction effect
To disposable income					
Pensions for old age	8.7%	0.0458	0.4814	0.0082	0.0229
All pensions	**8.7%**	**0.0458**	**0.4814**	**0.0082**	**0.0229**
Early childhood	1.5%	0.0374	0.4899	0.0063	0.0071
School Meals Program	0.7%	-0.1093	0.6366	0.0042	0.0048
Unemployment subsidy	0.0%	-0.0466	0.5738	0.0000	0.0000
Más Familias en Acción	0.9%	-0.2481	0.7754	0.0069	0.0104
Later Life	0.3%	-0.2857	0.8130	0.0023	0.0053
Familias en su tierra	0.1%	-0.0866	0.6139	0.0004	0.0006
Jóvenes en Acción	0.1%	-0.0349	0.5622	0.0004	0.0002
Victimization transfer	0.1%	-0.0073	0.5345	0.0004	0.0003
All direct transfers excluding pensions	**3.6%**	**-0.0948**	**0.6220**	**0.0199**	**0.0258**
All direct transfers including pensions	**12.3%**	**0.0046**	**0.5227**	**0.0276**	**0.0477**
Contribution to healthcare - employer	-0.4%	0.9907	0.4634	0.0020	0.0000
Contribution to healthcare - employee	-4.2%	0.5133	-0.0139	-0.0015	-0.0054
Contribution to ARL - employer	-0.2%	0.6641	0.1368	0.0003	0.0000
Contribution to ARL - employee	0.0%	0.7336	0.2063	0.0001	0.0000
Pension contribution - employer	-5.1%	0.6632	0.1359	0.0068	-0.0001
Pension contribution - employee	-5.1%	0.6632	0.1359	0.0068	-0.0001
Income tax	-0.9%	0.9897	0.4624	0.0040	0.0000
Property tax	-0.3%	0.4554	-0.0719	-0.0003	-0.0008
Vehicle tax	-0.1%	0.6353	0.1080	0.0001	0.0000
All direct taxes	**-16.4%**	**0.6456**	**0.1183**	**0.0193**	**-0.0063**
To consumable income					
All direct transfers excluding pensions	**3.6%**	**-0.0948**	**0.6220**	**0.0199**	**0.0258**
All direct transfers including pensions	**12.3%**	**0.0046**	**0.5227**	**0.0276**	**0.0477**
All taxes and contributions	**-16.4%**	**0.6456**	**0.1183**	**0.0193**	**-0.0063**
Public utilities subsidy	1.5%	-0.0005	0.5277	0.0079	0.0080
All subsidies	1.5%	-0.0005	0.5277	0.0079	0.0080
Consumption tax	-0.3%	0.4209	-0.1063	-0.0004	-0.0004
VAT	-3.7%	0.3672	-0.1600	-0.0068	-0.0097
Tobacco Tax	0.0%	0.2206	-0.3067	-0.0001	-0.0001
Tax on alcoholic beverages	-0.2%	0.2907	-0.2365	-0.0004	-0.0007
Public utilities contributions	-0.1%	0.6962	0.1689	0.0001	0.0000
Indirect effects public utilities contributions	-0.4%	0.3081	-0.2191	-0.0010	-0.0013
All indirect taxes	-4.8%	0.3672	-0.1601	-0.0089	-0.0125
All taxes and contributions	-21.2%	0.5826	0.0553	0.0088	-0.0188
To final income					
All direct transfers excluding pensions	**3.6%**	**-0.0948**	**0.6220**	**0.0199**	**0.0258**
All direct transfers including pensions	**12.3%**	**0.0046**	**0.5227**	**0.0276**	**0.0477**
All direct taxes	**-16.4%**	**0.6456**	**0.1183**	**0.0193**	**-0.0063**
All subsidies	1.5%	-0.0005	0.5277	0.0079	0.0080
All indirect taxes	-4.8%	0.3672	-0.1601	-0.0089	-0.0125
In-kind transfers	14.3%	-0.0285	0.5558	0.0647	
Healthcare in kind	7.1%	0.0780	0.4301	0.0277	
Education in kind	7.2%	-0.1109	0.6381	0.0385	

Source: World Bank Group staff estimates based on 2017 ENPH

Notes: (i) The original income considered for the sensitivity analysis is market income, while it is market income plus pensions for the comparison analysis;(ii) The redistributive effects refer to the difference between the Gini coefficient of market income and the concept of income that is being assessed. The changes are presented in Gini points;(iii) Marginal contributions refer to the difference between the Gini coefficient of the concept of income that is being assessed with and without the intervention considered. The marginal contributions presented are in Gini points;(iv) The calculations of the contributions to the reduction of the poverty incidence were made using a poverty line of 5.5 dollars per day PPP 2011, which is equivalent to a poverty line of 257,769.6 Colombian pesos per month.