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JANUARY 2024
No. 307

Research papers

Fiscal Incidence and Public Spending

Public Policy Scenarios for Colombia

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Fiscal Incidence and Public Spending

Public Policy Scenarios for Colombia

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Resumen
En 2020, Colombia registró los niveles más altos de desigualdad y pobreza en la última década. Según el Departamento Administrativo Nacional de Estadística (DANE, 2020), la tasa de pobreza monetaria alcanzó el 42,5% y el índice de desigualdad GINI se situó en 0,544. El incremento de estos indicadores puede atribuirse a un peor desempeño del mercado laboral y a la pandemia del COVID-19. En este contexto, este análisis examina la situación de estos indicadores utilizando la metodología de incidencia fiscal desarrollada por el Commitment to Equity (CEQ), que permite identificar el efecto de la estructura fiscal y el gasto social en el país sobre la pobreza y la desigualdad.
Luego, a través de una herramienta para realizar micro-simulaciones, se proponen tres escenarios con el fin de identificar tendencias en políticas públicas y fiscales que podrían contribuir a reducir la pobreza y la desigualdad:

i) la simulación del entorno político tributario,
ii) las modificaciones en el gasto social,
iii) los efectos posibles de la reforma tributaria aprobada en 2022.

Los resultados de dichos ejercicios indicaron que, en el panorama político tributario y fiscal, la expansión del programa Colombia Mayor es el que presenta mejores resultados en términos de reducción de pobreza y desigualdad en el país.
Por último, según las estimaciones, los cambios incluidos en la reforma tributaria de 2022 no tendrían un impacto significativo en los indicadores de pobreza y desigualdad, sin conocer aún el destino del mayor recaudo tributario.

Palabras clave
Colombia, incidencia fiscal, gasto público, desigualdades, pobreza

Clasificación JEL
D31, H22, I38

Versión original
Español

Aceptado
Junio de 2023

Abstract
En 2020, la Colombie a enregistré des niveaux d'inégalité et de pauvreté les plus élevés de la dernière décennie. Selon le Département administratif national des statistiques (DANE, 2020), le taux de pauvreté monétaire a atteint 42,5 % et l'indice d'inégalité de GINI s'est établi à 0,544. L'augmentation de ces indicateurs peut être attribuée à de moins bonnes performances du marché du travail et à la pandémie du COVID-19. Dans ce contexte, cette analyse examine la situation de ces indicateurs en utilisant la méthodologie de l'incidence fiscale développée par le Commitment to Equity (CEQ), qui permet d'identifier l'effet de la structure fiscale et des dépenses sociales du pays sur la pauvreté et l'inégalité. Ensuite, à l'aide d'un outil de micro-simulation, trois scénarios sont proposés afin d'identifier les tendances des politiques publiques et fiscales qui pourraient contribuer à réduire la pauvreté et les inégalités :

i) la simulation de l'environnement fiscal politique,

ii) les changements dans les dépenses sociales,

iii) les effets possibles de la réforme fiscale approuvée en 2022.

Les résultats de ces exercices indiquent que, dans le paysage de la politique fiscale et budgétaire, le programme *Colombia Mayor* est celui qui présente les meilleurs résultats en termes de réduction de la pauvreté et de l'inégalité dans le pays. Enfin, selon les estimations, les changements inclus dans la réforme fiscale de 2022 n'auraient pas eu d"'impact significatif sur les indicateurs de pauvreté et d'inégalité, sans que l'on connaisse encore la destination des recettes fiscales accrues.

Keywords
Colombie, incidence fiscale, dépenses publiques, inégalités, pauvreté

Abstract
In 2020, Colombia recorded the highest levels of inequality and poverty in the last decade. According to the National Administrative Department of Statistics (DANE, 2020), the monetary poverty rate reached 42.5% and the GINI inequality index stood at 0.544. The increase in these indicators can be attributed to poorer labour market performance and the COVID-19 pandemic. In this context, this analysis examines these indicators using the fiscal incidence methodology developed by the Commitment to Equity Institute (CEQ), which makes it possible to identify the effect of tax structures and social spending in the country on poverty and inequality. Following this examination, a micro-simulation tool was used to propose three scenarios for identifying trends in public and fiscal policies with the potential to contribute to reducing poverty and inequality:

i) simulation of the tax policy environment,

ii) changes in social spending,

iii) possible effects of the tax reform approved in 2022.

The results of these exercises indicated that, in the tax and fiscal policy landscape, the expansion of the *Colombia Mayor* programme has had the best results in terms of reducing poverty and inequality in the country.
Finally, according to estimates, the changes brought in by the 2022 tax reform would not have a significant impact on poverty and inequality indicators, although the destination of the increased tax revenues is still not known.

Key words
Colombia, fiscal incidence, public spending, inequality, poverty

JEL Classification
D31, H22, I38

Original version
Spanish

Accepted
June 2023

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Introduction

In common with some other Latin American countries, prior to the COVID-19 pandemic, Colombia had achieved positive results in reducing poverty and inequality. For example, official statistics suggest that overall poverty declined by 6.1 percentage points between 2012 and 2018, from 40.8% to 34.7%, and that extreme poverty also fell, from 11.7% to 8.2%. Likewise, although Colombia is among the most unequal countries in the region, data from the National Administrative Department of Statistics (*Departamento Administra-tivo Nacional de Estadística* - DANE) suggest that the Gini index (which ranges from 0 to 1, in which 1 denotes overall inequality) fell by about 0.03 units from 0.539 in 2012 to 0.508 in 2017 (DANE, 2021). However, as a result of the pandemic, many people have lost their jobs or saw their incomes reduced due to lockdown and isolation measures that affected both aggregate supply and demand. Naturally, levels of poverty rose significantly and inequality increased to the levels of five years earlier. Indeed, according to the most recent Social Panorama report of the Economic Commission for Latin America and the Caribbean (Comisión Económica para América Latina y el Caribe - CEPAL), the country was the most unequal in Latin America (CEPAL, 2021).

The country's tax structure plays a fundamental role in the above, insofar as direct, indirect and in-kind transfers are transformed into support for the most vulnerable households, enabling them to meet their basic needs and to some extent balance these inequalities. Moreover, taking into account the fact that progressivity is one of the principles of the tax system; higher income tax payers should pay higher taxes to finance social spending. Accordingly, the tax reform, which came into effect in 2018, made some amendments to the Tax Statute, with the aim of increasing revenue collection and ensuring progressivity in the system.

A key element to understanding the context of this reform is the most recent presidential elections in the country and, with them, a change of government that has modified some aspects of national significance, including fiscal matters. Thus, during the first months of the incoming government, a new reform was debated and approved which, following consideration by the legislative bodies, modified the tax structure in various aspects including income tax for natural and legal persons, health taxes, and some environmental taxes.

By making these changes in the tax system, the elected government seeks to finance the strategic programmes and projects that will be defined in the different planning bodies.

In order to assess the incidence of the tax system on poverty and inequality, Lustig (2018) developed the Commit-ment to Equity (CEQ) methodology, a tool for the redistributive analysis of policy instruments on poverty and inequality. In this regard, household surveys can be used to assess the redistributive capacity of taxes and transfers (be they direct or indirect) in order to guide public policy in this area. Taking as a reference four types of income: market income plus pensions or pre-fiscal income, disposable income, consumable income and final income (whose description can be found in Figure 1), the aim is to measure poverty and inequality in each of these types, in order to evaluate the changes brought about by policy instruments. Understanding that the methodology establishes a sequentiality in these types of income, it makes it possible to identify, for example, the effect of direct and indirect taxes, and transfers, together with inkind transfers in health and education. This paper presents an analysis of the impact of the tax system on poverty and inequality levels in 2020, considering the effects of the tax reform implemented in 2018 and of the pandemic.

In addition, due to the approval of a new tax reform in 2022, a simulation is included on the possible incidence of the changes it introduces in the afore-mentioned taxes, in relation to poverty and inequality. The main source of information for these exercises is the National Household Budget Survey (*Encuesta Nacional de Presupuesto de los Hogares* - ENPH) conducted by the DANE in 2017. Consequently, these data were updated for the year 2020 using micro-simulations of the country's economic and labour outlook. In order to carry out this process, the 2020 Large Integrated Household Survey (*Gran Encuesta Integrada de Hogares* - GEIH) was used, which takes into account variables such as employment shares and average wages of the main economic sectors.

In addition, due to the importance of fiscal policy and social spending, the impacts of some selected tax measures are presented through a series of simulations that change parameters of the current structure of the system in an attempt to identify their possible effects. [1]

[1] During the elaboration of this work and at the moment, there is a discussion with some entities of the national government, which have found the tool useful, and with whom we have carried out multiple simulations. This document only mentions those that we consider to have the most significant impact on inequality.

The first scenario seeks to estimate the impacts on variables such as poverty, inequality and revenue collection by deciles, among others, by making changes in parameters of the tax structure such as: limited exempt income, tax thresholds, tax base, tax rates and occasional income. The second scenario seeks to estimate the effects on the same variables through changes in social policy such as, for example, the expansion of coverage and transfers from existing programmes. It is important to remember that the changes are a set of measures that, taken together, we consider could have an overall impact on inequalities, but do not allow for an analysis of the impact of each of the measures individually. Finally, the third scenario presents the possible effects of the changes included in the recently approved tax reform, which modifies the tax structure but not social spending. This paper, then, illustrates some scenarios that might guide fiscal policy in the coming years, taking into account their impact on the reduction of poverty and inequality and, in addition, an initial idea of the possible effects of recent changes in the tax structure.

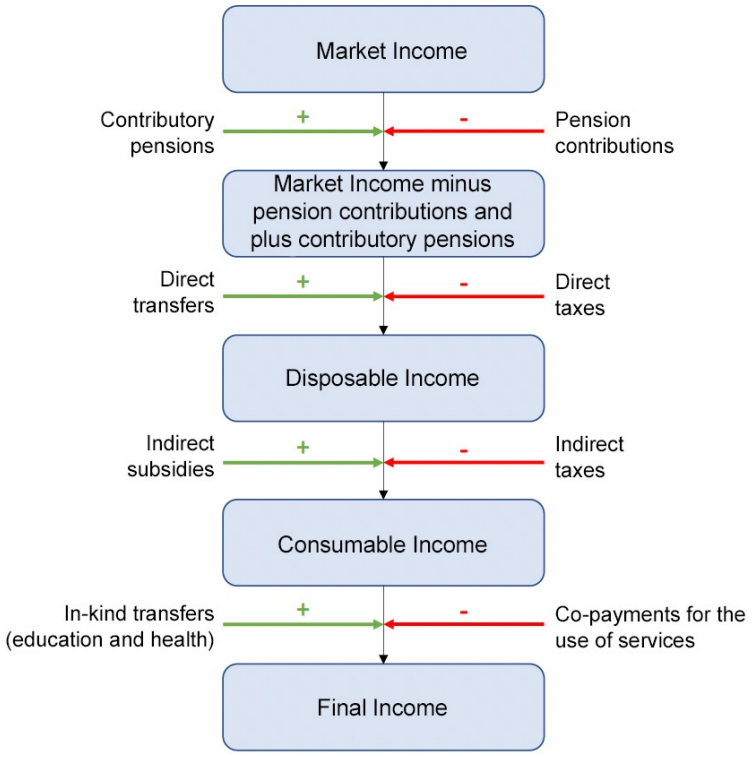
This report is composed of eight sections including this introduction. The second section presents a description of the CEQ methodology. The third and fourth sections provide a characterisation and description of the income distribution in Colombia, respectively, together with the main elements of the tax structure in terms of income tax. The fifth section presents some observations about the data structure used and the sixth section describes the results of the CEQ methodology for updating the ENPH data. Furthermore, these data are compared with the results of the paper prepared by Núñez et al. (2020) using 2017 data in order to identify changes between the two measurements. The seventh section presents the fiscal policy scenarios based on the updated methodology for 2020. Finally, the eighth and last section presents the conclusions.

1. Fiscal incidence analysis: the CEQ methodology

This section introduces the main features of the CEQ methodology, which is used to study the incidence of taxes and transfers on poverty and inequality within countries. It takes into account a range of variables including direct and indirect taxes, direct, indirect or in-kind transfers, co-payments for health and education services, among others. In this way, it is possible to establish five types of income, namely: market income, market income minus pension contributions and plus contributory pensions, disposable income, consumable income and final income. Given that the methodology establishes a sequentiality between the aforementioned types of income, it is possible, based on these types of income, to establish which fiscal instruments contribute to the reduction of these indicators.

Figure 1 provides a basic outline of the methodology. As can be seen, the tool starts with market income to which contributory pensions are added and from which pension contributions are subtracted, resulting in market income plus pensions. This concept constitutes the methodology's first element of analysis. Next, direct transfers are added, while direct taxes, such as income tax, are subtracted. In the Colombian case, the former correspond to programmes such as Familias en Acción, Colombia Mayor and pensions (which are understood as a government transfer). These operations lead to a figure for household disposable income, to which indirect subsidies are added and from which indirect taxes are subtracted. The former include some public services and stratification subsidies (which are connected), while the latter include value-added tax (VAT). This process produces a figure for consumable income. Finally, by adding in-kind transfers for health and education and subtracting co-payments for the use of these services, final income is obtained.

Figure 1. Outline of the CEQ methodology by type of income



Source: adapted from Lustig (2018)

It is important to mention that the methodology defines two options when including the amounts of contributory pensions, either as a deferred income of individuals or as a government transfer. This way of analysing the item is important, because it can modify the interpretation of the results for market income plus pensions. Therefore, it is important to clarify that, for the purpose of this paper, it is assumed that contributory pensions refers to the first case, i.e. that they are treated as deferred income.

2. Diagnosis of inequality in Colombia

Prior to presenting the results, the following two sections provide a diagnosis and characterisation of inequality and of the tax system in Colombia. First, the section describes the inequality situation in Colombia compared to other countries, before going on to examine the main characteristics of income distribution. This initial analysis allows the reader to understand the context and the in-depth factors that make up the picture of poverty and inequality in the country.

Firstly, poverty is a relevant issue for governments, as it is related to ensuring the population's access to basic services and improving its quality of life. In the Colombian case, a reduction in poverty, both overall and extreme, was observed between 2012 and 2018, from 40.8% to 34.7% for overall poverty and from 11.7% to 8.2% for extreme poverty (DANE, 2022). It is noted that the indicators for rural areas have decreased more rapidly than for urban areas by almost 10 percentage points in the former case and 5 for the latter over the same period of time. However, both indicators increased in 2019 and again in 2020 as a result of the COVID-19 pandemic. Nevertheless, in a context of economic recovery in the country, overall poverty and extreme poverty indicators fell in 2021, though they remain above pre-pandemic levels —that is, 39.3% for overall poverty and 12.2% for extreme poverty in 2021 (DANE, 2022).

A comparison of these indicators with other countries in the region shows that, according to World Bank figures (World Bank, 2022), Colombia is one of the countries with the highest levels of poverty. Using the World Bank poverty lines as a point of reference, in 2020 Colombia had the highest poverty rate of ten countries in the region[1] at the poverty line of US$2.15 (2017 PPP), with 9.4%, that could be categorised as in extreme poverty. Next there are Ecuador and Peru with 6.5% and 5.8%, respectively, while the lowest values are found in Uruguay with 0.2% and Argentina (urban) with 1.1%. Using the poverty line of US$6.85 (2017 PPP), similar results are observed, since Colombia continues to be one of the countries with the highest levels of poverty, at 42.4%, being surpassed only by Peru, with 42.7% in 2020. Uruguay again has the lowest values, with 7.2%, followed by Chile with 8%.

[1] Including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru and Uruguay.

Turning to the issue of inequality, the information published by the DANE shows that the behaviour of the Gini index has similarities with that of the poverty indicators, in that it decreased between 2012 and 2017 but increased from 2018 to 2020. Thus, according to the DANE, the Gini coefficient went from 0.539 in 2012 to 0.508 in 2017, reaching its maximum value of 0.544 in 2020, probably also as a result of the COVID-19 pandemic. From another point of view, urban areas have higher levels of inequality compared to rural areas. It is, indeed, the case that this coefficient has shown no major variations over the period of analysis. Finally, by 2021, a reduction was observed for this indicator, which reached 0.523 units nationally.

On the other hand, according to estimates by international and multilateral organisations, Colombia has high levels of inequality compared to other countries in the region, when measured by the Gini index. According to the World Bank (2022), in 2020 Colombia was the country with the highest value for this indicator, at 0.542, followed by Brazil with 0.489 and Ecuador with 0.473. The countries with the lowest Gini indices in the same year were Uruguay with 0.402 and Argentina with 0.423. Thus, according to these comparisons, Colombia is one of the countries with the highest levels of poverty and inequality in the region.

Different factors might explain this situation. This paper analyses two aspects: i) income distribution, which might provide an initial idea concerning the evolution of inequality in the country, and ii) the characteristics of the tax system, in particular income tax, which will be described in the following section. Accordingly, it can be said that the levels of inequality are reflected in the distribution of income among the population—or households— which, in this study, is presented in vigintiles, that is, in 20 equally sized groups defined according to household income. This allows some additional detail to be explored as the scale is reduced, and changes or differences between the groups can be observed.

Thus, Table 1 presents average market income expressed in Colombian pesos (COP) and in Tax Value Units (Unidades de Valor Tributario - UVT) for each of the distribution's vigintiles in 2020. It should be noted that UVTs, according to article 868 of Law 1111 of 2006, are a measure that allows the values of tax obligations to be adjusted. Table 1 shows notable differences between the first and last vigintiles, indicating large gaps and supporting the abovementioned inequality indices. For example, the differences between the first and the twentieth vigintiles are significant, in that the first receives approximately COP 4.9 million per year, while the twentieth receives more than COP 300 million (note that data comes from surveys, and therefore refers to pre-fiscal incomes). Indeed, when comparing the first two vigintiles of the population, the final column shows that the second earns 2.25 times more income than the first. This situation is also apparent in the last two vigintiles of the distribution,

as the twentieth receives more than twice as much (2.6 times) income than the nineteenth. In summary, this shows that the difference in annual market income between the poorest and the richest members of the population is enormous, a pattern that is even repeated between the two highest vigintiles, that show an average annual difference of COP 186 million.

Table 1. Average annual market income in COP and in UVTs by vigintiles of taxpayers (2020)

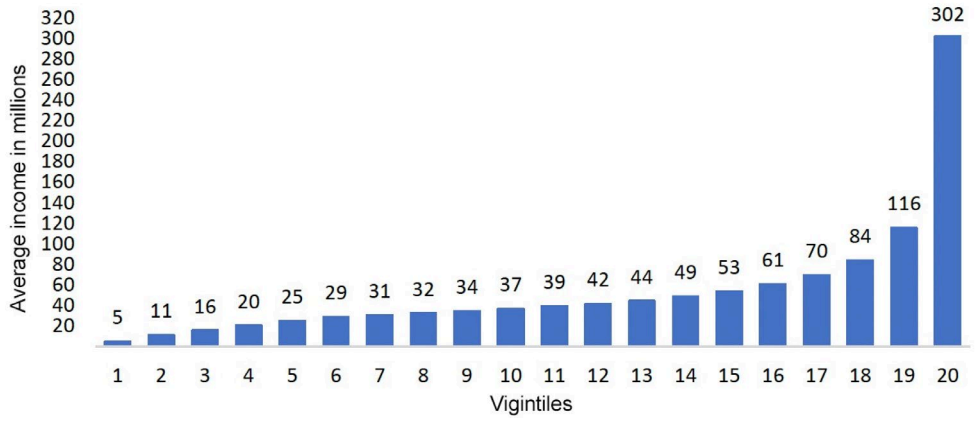
Vigintile	Average income (in COP)	Average income (in UVTs)	Share $(^{(n+1)}/_{n})$
1	4,914,296	138.01	-
2	11,069,272	310.87	2.25
3	15,620,433	438.69	1.41
4	20,372,751	572.16	1.30
5	24,794,270	696.33	1.22
6	28,737,149	807.06	1.16
7	30,687,955	861.85	1.07
8	32,486,996	912.38	1.06
9	34,239,070	961.58	1.05
10	36,583,154	1,027.41	1.07
11	39,237,497	1,101.96	1.07
12	41,704,893	1,171.26	1.06
13	44,309,337	1,244.40	1.06
14	48,696,238	1,367.60	1.10
15	53,498,728	1,502.48	1.10
16	60,544,344	1,700.35	1.13
17	69,581,750	1,954.16	1.15
18	83,875,120	2,355.58	1.21
19	115,674,169	3,248.64	1.38
20	301,915,370	8,479.10	2.61

Source: Compiled by the authors, based on the 2020 ENPH update.

Note: The values in the table are taken from the ENPH update after running the micro-simulations.

To illustrate this situation, Figure 2 shows the above information through a bar chart, which shows the income differences between the segments of the population in starker terms, demonstrating that the average income of the 20th vigintile is very high, even in comparison with the 19th, as mentioned above. It is clear, then, that the wealthiest 5% of the population receives around 60 times more average income than the poorest 5%. Thus, both Table 1 and Figure 2 confirm the current situation in terms of inequality in the country by showing very marked differences in income between the highest and lowest vigintiles of the population and even, as has been stressed, between the two highest segments (the 19th and 20th vigintiles).

Figure 2. Average annual market income levels by vigintile in 2020



Source: Compiled by the authors, based on the update of the ENPH to the year 2020.

Note: The values in the table correspond to the ENPH update after running the micro-simulations.

In summary, this section has shown that Colombia is a country with high rates of poverty and inequality compared to other Latin American countries. This was corroborated by analysing the average annual income of the population and observing the large gap between rich and poor. In this sense, tax policy, in particular income tax and VAT, as well as redistribution policies involving social spending (direct cash transfers as in the case of Familias en Acción, pensions and subsidies for public services, education and health), should be oriented towards reducing inequality gaps in the country, and ensuring that those with higher incomes are taxed accordingly.

3. Characterisation of selected Colombian taxes

Taking the above into account, fiscal policy is a fundamental tool for reducing levels of inequality within countries. In addition to guiding economic growth and development, it possesses tools that can be used to close the income gap among the population, reducing levels of both poverty and of inequality. One of these instruments is income tax, which, by definition, is a progressive tax insofar as it is levied more heavily on the richest. On the other hand, the collection of this tax and many others finances both the functioning of the state and social spending programmes, which contribute to the reduction of the indicators referred to above. Within the latter group, direct, indirect or in-kind transfers contribute to increasing the income of the most disadvantaged households, in order to close the gaps between population groups and to meeting people's basic needs.

Below, we present some characteristics of the structure of income tax according to the current regulations. First, it is important to bear in mind that the Colombian Tax Statute defines some exemptions and deductions for the calculation of income tax on overall income. For this reason, before describing the tax scheme, it is necessary first to determine the level of income on which tax is actually calculated. Table 2 shows these proportions based on the information on tax payers who are exempt from paying income tax for 2020.[2]

[2] To facilitate understanding, Table 2 shows the proportions for an average individual. However, the proportions are different for each quantile of 1,000. For this study, the calculation for each individual is different because a DIAN database was used in which taxpayers are divided into groups of 1,000 persons, so that the amount of exemptions and deductions was calculated as an average for each of these groups. This indicates a different practice from that followed in other CEQ models, in which the average of all taxpayers was used.

Table 2. Gross income, deductions and exemptions for the reporting of the schedular net earned income of an average individual

Earned income	
Gross income	1.00
Non-taxable income	(-) 0.09
Net income	0.91
Exempted earned income and attributable deductions	(-) 0.35
Exempted earned income and —limited— attributable deductions	(-) 0.32
Schedular net earned income	0.59

Source: Compiled by the authors, based on DIAN average data.

Assuming that an individual's gross income is COP 1.00, the proportions of selected deductions and exemptions for an average individual are shown, as mentioned above.To begin with, the first deductions correspond to non-taxable income, which is defined as income that is not likely to increase the taxpayer's assets. Under certain conditions, this group includes certain items of income such as shares, dividends and profits which should be included in the tax return. In addition, pension and health care contributions are also excluded for income tax purposes, as they are considered to be part of this set of income. In this example, the total for this income would be COP 0.09 and, therefore, net income for the average individual would be COP 0.91.

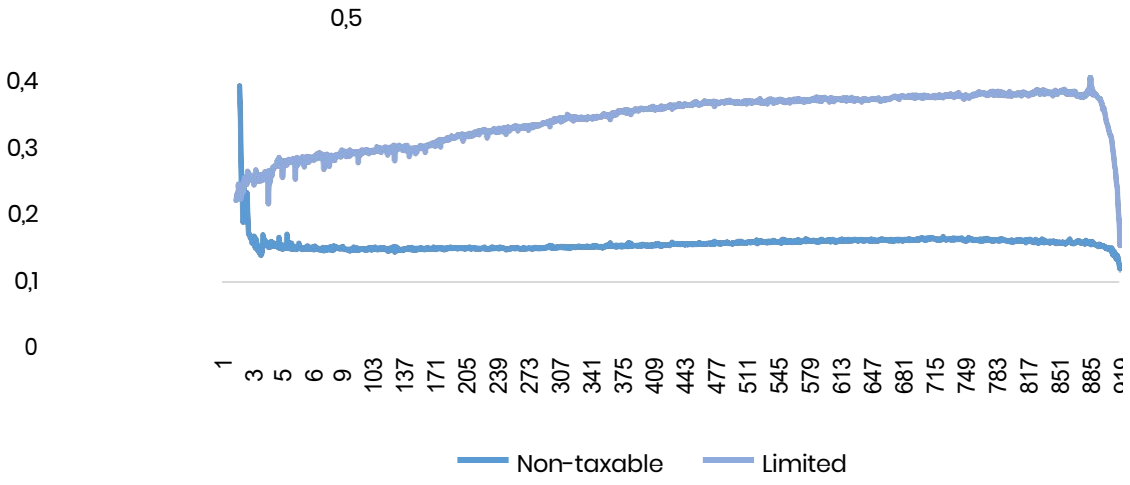
To this value, exempted earned income and the attributable deductions to which taxpayers are subject are applied, including, for example: contributions to savings and construction promotion accounts (also known as AFCs), and contractual voluntary savings accounts; this group includes amounts such as prepaid medical care, contributions to voluntary pension funds and AFCs, among other income. In our example, all these amounts are added together with the result that, on average, they correspond to 35% of gross income (COP 0.35), which should be deducted from the income tax return. However, according to the current regulations (before the 2022 Reform), these deductions are limited to 32% —the maximum percentage that can be deducted from the tax return filed. For this

reason, and taking into account the deductions for non-taxable income, the schedular net earned income would be COP 0.59 for an average individual, and it is on the basis of this value that the calculations for the payment of income tax are made.

It is, therefore, possible to affirm that these deductions and exemptions in the tax return mainly favour taxpayers with higher incomes. This is because this segment of the population is more likely to make additional payments to the health system through prepaid medicine contributions, for example. Moreover, given the difficulties people have in saving, especially in the first vigintiles, the possibilities of opening accounts in voluntary pension funds or of acquiring housing are higher for individuals who receive an adequate (higher) income or even those with some level of participation in the formal economy. In this sense, these deductions could be considered, to some extent, as regressive inasmuch as they benefit individuals with better circumstances and a higher income.

For a more detailed analysis, the study has used information from the DIAN, which provides data on the income distribution of taxpayers, divided into groups of one thousand people, and from which the proportion of non-taxable income and of limited exempt income were obtained, as shown in Figure 3. This figure shows that, in general, non-taxable income represents a small percentage of overall income since, with the exception of the first quantiles of a thousand people, in the illustrative example it does not exceed COP 0.1. However, limited incomes increase as they ascend the quantiles, but fall sharply as the highest quantiles are reached. The problem is that, in general, the richest people have unearned income that implies costs that must be discounted in the calculation. The study made these estimates by subtracting the average costs for each block of a thousand people drawn from the data published by the DIAN.

Figure 3. Distribution of non-taxable income and limited exempt income by quantiles of one thousand (2020)



Source: Compiled by the authors, based on the DIAN's figures for income distribution by quantiles of a thousand people.

Additionally, Table 3 sets out the overall structure (thresholds) of the declaration and payment of the general schedule for income tax, together with complementary information, such as rates and examples for analysis. It is important to note that the value of the UVT is the 2022 value and is intended to illustrate the effective rates for different incomes. However, the CEQ analysis does not use this reference value, but the one for 2020. As a result, the value of the UVT for 2022 was set at COP 38,004 by the resolution issued by the National Tax and Customs Authority (Dirección de Impuestos y Aduanas Nacionales - DIAN).

Firstly, the columns furthest to the left of the table show the income ranges expressed in UVTs, establishing the collection rates for each of them. For example, it is apparent from the table that the first range corresponds to individuals with incomes between 0 and 1,090 UVT during the immediately preceding year, with a collection rate of 0%, whereas taxpayers with incomes of 31,000 UVT upwards are taxed at a rate of 39%. On this point, it is important to note that the rate applied in each of the ranges is applied on the additional income UVTs with respect to the minimum of each of them. This means that, if an individual receives an income equivalent to 1,810 UVT, they will be in the third range and the rate will be applied on

810 UVT, which is the excess with respect to the minimum of this range. For this reason, it could be argued that the rates in the fourth column correspond to marginal rates.

According to the scheme, from the third income range upwards, tax payments include an additional amount in UVTs of 116 for taxpayers with incomes between 1,700 and 4,100, and more than 10,000 for the last income range.

Expressed in millions of COP, columns 5, 6 and 7 of the table present income according to the ranges described above. The minimum and maximum of each of the ranges is presented together with an example that can be assimilated to a midpoint of each of them. Thus, the first range, which has a marginal rate of 0%, is composed of individuals with incomes between COP 0.00 and COP 41.42 million, which would correspond to those below the 13th vigintile according to Table 1. Above this amount, marginal rates apply, starting —as mentioned above— at 19% for those between COP 41.42 million and COP 64.61 million. However, considering that income tax returns must be filed for taxpayers with incomes over 1,400 UVTs, no tax collection is associated to the range between 1,090 and this value.

The next columns present the amount of income tax for each of the ranges. Thus, tax collection would start with taxpayers with an income above 1,400 UVTs and would, according to the example, correspond to COP 1.63 million for a person with an income of COP 50 million per year. Accordingly, as taxpayers' annual income grows, the amount of tax increases so that, for example, in the penultimate range, it is close to COP 393.42 million.

Finally, an important element for the analysis corresponds to the effective tax collection rates, shown in the last columns of the table. Here it can be observed that, mainly in the first income ranges, the effective rates are far from the initial rates. For example, for the second range, the difference is almost 13% between the effective rate and the marginal rate for the maximum income (6.8% effective and 19% marginal). Even for the third range, the effective rate is almost half of the marginal rate for a person with an income of COP 100 million, who would actually be paying 14.3%. Lastly, for individuals with higher incomes, the effective and marginal rates are close to each other.

Table 3. Structure of the tax return and payment of income tax before the 2022 reform

Ranges in UVTs		**Rate**	**Add.** in UVTs	**Income** in millions of COP			**Taxes** in millions of COP			**Effective rates**		
Min.	**Max.**			**Min.**	**Ex.**	**Max.**	**Min.**	**Ex.**	**Max.**	**Min.**	**Ex.**	**Max.**
0	1,090	0%	0	-	COP 30	COP 41.42	-	-	-		0.0%	0.0%
1,090	1,700	19%	0	COP 41.42	COP 50	COP 64.61	-	COP 1.63	COP 4.40	0.0%	3.3%	6.8%
1,700	4,100	28%	116	COP 64.61	COP 100	COP 155.82	COP 4.41	COP 14.32	COP 29.95	6.8%	14.3%	19.2%
4,100	8,670	33%	788	COP 155.82	COP 200	COP 329.49	COP 29.95	COP 44.53	COP 87.26	19.2%	22.3%	26.5%
8,670	18,970	35%	2,296	COP 329.49	COP 500	COP 720.94	COP 87.26	COP 146.93	COP 224.26	26.5%	29.4%	31.1%
18,970	31,000	37%	5,901	COP 720.94	COP 1,000	COP 1,178.12	COP 224.26	COP 327.52	COP 393.42	31.1%	32.8%	33.4%
31,000	Upward	39%	10,352	COP 1,178.12	COP 2.000	COP 38.004.00	COP 393.42	COP 713.95	COP 14,755.51	33.4%	35.7%	38.8%

Source: Compiled by the authors, based on the Tax Statute of the DIAN.

In sum, with respect to income distribution and income tax, it is observed that, at present, income distribution in the country is highly unequal. As shown in Figure 2, the last vigintile has about 61 times the average income of the first, and even between the 19th and the 20th, there is more than a twofold difference in average income. Likewise, while income tax is a very important instrument, both to sustain the state and to pay for social programmes, there are some areas for improvement in its design. For example, tax returns are made (on average) on almost 59% of individuals' income, having deducted the amounts that are not taxed as income (non-taxable income), along with other deductions and exemptions, such as prepaid medical payments, contributions to voluntary pension funds and for the purchase of housing. In addition, the rates defined by the tax legislation differ from the effective rates, especially in the first income ranges.

Next, a description of the tax on dividends and shares is presented. This tax behaves in a similar way to income tax, as it also has ranges for the definition of the rate and the additional UVTs in cases it applies. It is important to remember that, during 2017, a change was made to the dividend schedules. Thus, there are

two types of sub-schedules, which correspond to those existing before and after 2017 and which refer to the second and first sub-schedule, respectively. In the case of the pre-2017 sub-schedule, the tax regulation established four ranges similar to those used for income tax, except that the last range corresponds to income of 4,100 UVTs upwards. Likewise, the rates and additional UVTs are the same as the previous one, starting at 19% for the second range and ending at 33% for the highest, as shown in Table 4. Turning to the post-2017 sub-schedules, only two ranges were established: one, from 0 to 300 UVTs, which does not pay taxes, and the other, from 300 UVTs upwards, whose rate is 10% with no additional UVT, as shown in Table 5. Therefore, there is a different threshold structure for the year 2017 in comparison with the year 2020.

Table 4. Structure of tax returns and payments for the tax on dividends and shares for the pre-2017 schedules

Ranges (in UVTs)		Rate	Additional (in UVTs)
Minimum	Maximum		
0	1,090	0%	0
1,090	1,700	19%	0
1,700	4,100	28%	116
4,100	upwards	33%	788

Source: Compiled by the authors, based on the Tax Statute prior to 2017.

Table 5. Structure of tax returns and payments for the tax on dividends and shares for the post-2017 schedules

Ranges (in UVTs)		Rate	Additional (in UVTs)
Minimum	Maximum		
0	300	0 %	0
300	upwards	10 %	0

Source: Compiled by the authors, based on the Tax Statute after 2017 and before the 2022 reform.

Finally, another aspect modified by the recent tax reform involved the rates applicable to occasional income. Before the reform, lotteries, raffles and betting were subject to a rate of 20%, which was raised to 35%. For other occasional incomes, the rate increased from 10% to 15%.

Taking the above description into account, sections 6 and 7, below, present the main results of the CEQ update for the year 2020, as well as the tax policy scenarios that were explored to analyse the effects that the changes in some of the parameters mentioned in this section might generate. The following section presents the data used in this analysis.

4. Data structure

Based on the above, this section presents the data used and the assumptions considered during the application of the CEQ methodology. It is important to highlight that, for the poverty and inequality estimates, three databases were used: the 2017 National Household Budget Survey (Encuesta Nacional de Presupuesto de los Hogares - ENPH, the 2020 Large Integrated Household Survey (Gran Encuesta Integrada de Hogares - GEIH), and the measurement of monetary poverty and inequality (MESEP, which is derived from the GEIH). These three databases were used to identify the characteristics of the households surveyed, as well as the amounts of income, subsidies, taxes and other variables relevant to the analysis.

The main source of information is the 2017 ENPH, which contains data on 291,590 individuals and 87,201 households. This survey is conducted approximately every 12 years, because of the complexity of the information collected. The data from this survey was updated using the 2020 GEIH. Therefore, the updated variables are part of the fiscal interventions of the CEQ, such as direct taxes, direct transfers, indirect subsidies, indirect taxes, in-kind transfers (education and health) and co-payments. For this purpose, we used a micro-simulation model with employment and average wage by economic sector as variables. By updating the 2017 employment and average income data by sector with the 2020 figures, the model replicates the official poverty and inequality outcomes for 2020. Therefore, the 2017 ENPH reflects the employment structure and the poverty and inequality levels of 2020. Thus, for each economic sector, employment is adjusted to the 2020 conditions by means of a probability model that adjusts new employment in each sector by changing the employment status (employment/unemployment) and updates the wages of people who remained employed. In the update, poverty and inequality are recalculated, resulting in a model that accurately predicts the new poverty and inequality observed in 2020.

The next source of information is the 2020 GEIH. According to DANE data, this survey covered 231,831 households and 756,063 individuals in 24 cities and metropolitan areas of the country. The survey is conducted every month and contains several modules related to housing structure, household composition, location, income

and other variables. For the processing of the survey, the following modules were grouped annually: i) general characteristics (individuals), ii) housing and households, iii) employed, iv) unemployed, v) inactive and vi) other income. The GEIH focuses mainly on the analysis of household income, including information on earned income (including wages, commissions, tips, bonuses), business income, pensions, dividends, income from rent, etc., but is not oriented towards the analysis of consumption.

The last source of information is the MESEP, which contains sections for households and individuals for 2020. This analysis is the result of the processing of the GEIH; therefore, the characteristics described above are also applicable in this case. This database provides information on per capita household income and poverty lines and, in particular, the lines for extreme and moderate poverty. It is important to note that the former corresponds to the value of a basic food basket, while the latter refers to the value of a basket that includes other basic goods in addition to food.

5. Results

This section presents the results concerning the baseline of this exercise of fiscal incidence. The results of the methodology and the policy scenarios were designed for each type of income, which means that poverty and inequality data are presented for market income plus contributory pensions, for disposable income, for consumable income, and for final income. This form of analysis makes it possible to identify the performance of these types of income when the different subsidies and taxes are added or subtracted, and to determine which of them might improve the distribution of income within households. Moreover, as mentioned above, given that the tax reform came into effect in 2018, the results shown below are compared with Núñez et al. (2020) to analyse changes in these levels.

Furthermore, before interpreting the poverty results, it should be noted that the Commitment to Equity (CEQ) methodology does not present them for the final income. Although in-kind transfers provided by the government in health and education are monetised and included in the methodology's calculations, these items are not taken into account in the poverty lines. For this reason, poverty results are not presented for the final income. However, they are included for the inequality indicators, as these types of in-kind transfers contribute to this variable.[3]

It is important to bear in mind that the baseline presented below introduces an innovation compared to the CEQs previously used in Colombia. In the past, non-taxable income and exemptions were calculated using the average reported by the DIAN, the value being applied to all individuals. However, now, with the information published by the DIAN, in which the population is grouped into a thousand equal parts after having sorted the total gross incomes, it is possible to use the value of each thousandth part (permilles) instead of the average. This makes it possible to obtain the percentage of non-taxable income and exemptions in the distribution of households divided into a thousand groups.

[3] For more information on this matter, consult the CEQ Handbook. It is recommended not to estimate poverty according to final income since poverty lines should be modified to take into account in-kind services, and because, strictly speaking, this is not an income but the monetisation of a free service provided by the government.

Therefore, poverty and inequality indicators differ when compared to those compiled using only the average. In this paper, the final baseline is presented using the averages of the permilles.

Thus, Table 6 shows the levels of poverty and extreme poverty measured by incidence (the percentage of the population whose per capita income in terms of the spending unit is below the line), gap (the difference between the income of each person classified as living in poverty and the value of the poverty line, weighted by the number of poor people), and severity (the differences between the per capita income of each poor person and the value of the poverty line are weighted to give greater importance to poor people who are further away from the mean, thus including the effect of income inequality on the the poor). According to these data, the level of poverty based on market income plus pensions is 43.4%, while extreme poverty is 16.6%, figures that coincide with official Colombian statistics. When transfers are added and direct taxes are subtracted, these values are reduced to 43.1% and 14.4%, respectively. This decrease derives from direct transfers, as these are higher than the taxes paid. On the other hand, in the case of consumable income the values increase to 44.6% and 15.4% for reasons contrary to the above, in that all households must pay VAT, but only some receive subsidies in public services, which are calculated according to the income stratum they inhabit. This information is also represented in Figures 4 and 5.

With respect to the gap and severity measurements, some different behaviours are observed with respect to the incidence measure. For example, in the case of the overall poverty gap, the same behaviour is observed, given that it decreases with the disposable income (20.9%) and increases with the consumable income (22.2%). However, for extreme poverty, the gap starts at 8%, increases to 8.6% for disposable income, and increases by more than one percentage point for consumable income, to 10%. Increases in levels of poverty for disposable income are also reflected in the poverty severity measurements. For overall poverty, it starts at 14%, increases to 15% for disposable income and rises to 17.1% for consumable income while, for extreme poverty, it starts at 5.2%, rises to 13.7% for disposable income and reaches 19.7% for consumable income. In particular, the increase in consumable income could be attributed to the fact that indirect taxes (i.e., VAT) generate increases in poverty, given that they are paid by all income groups.

Table 6. Poverty level measurements for three types of income in 2020

Measurement / Type of income	Market income plus pensions	Disposable income	Consumable income
Incidence of poverty			
Overall poverty	43.4%	43.1%	44.6%
Extreme poverty	16.6%	14.4%	15.4%
Poverty gap			
Overall poverty	21.6%	20.9%	22.2%
Extreme poverty	8.0%	8.6%	10.0%
Severity of poverty			
Overall poverty	14.0%	15%	17.1%
Extreme poverty	5.2%	13.7%	19.7%

Source: Compiled by the authors, based on the ENPH and the MESEP.

Note: For 2020, the overall poverty line was set at COP 354,031 and the extreme poverty line, at COP 161,099, equivalent to USD 266.58 (2017 PPP) and USD 121.3 (2017 PPP), respectively.

Figure 4. Incidence of poverty for three types of income in the baseline scenario (percent)

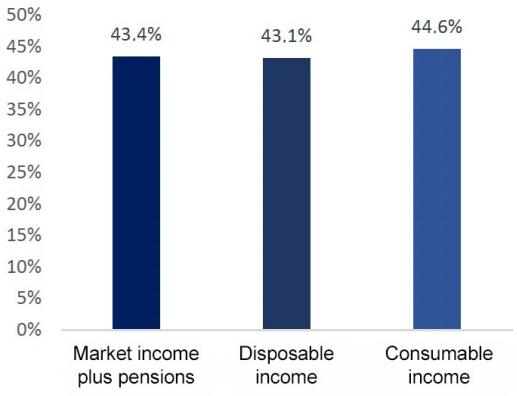
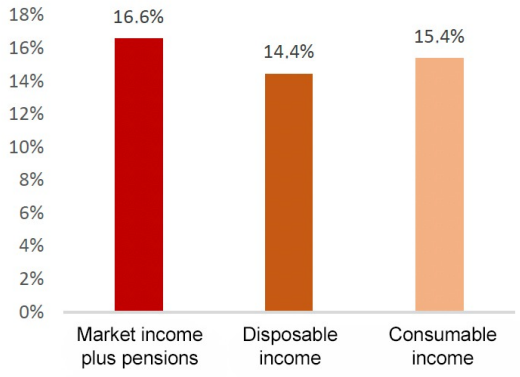


Figure 5. Incidence of extreme poverty for three types of income in the baseline scenario (percent)



Source: Compiled by the authors, based on the ENPH and the MESEP.

In order to compare the results presented in this paper, we take as a point of reference the previous work of Núñez, et al. (2020), so that the comparisons are between the 2017 results and the 2020 update of the ENPH. It is observed that, compared to the 2017 microdata, poverty indicators increased, both for incidence and for gap, for all three income levels in the Figure. Compared to the measurements made with the 2017 data (Table 7), the incidence of poverty increased by 4.3 percentage points (39.1% in 2017), while that of extreme poverty increased by about 0.2 percentage points (16.4% in 2017), taking market income plus pensions as reference. The poverty gap for the same income type increased by 0.2 percentage points for extreme poverty and by 3.1 percentage points for overall poverty. Finally, for consumable income, the incidence of overall poverty increased from 38.8% to 44.6% between 2017 and 2020, while extreme poverty increased from 13.3% to 15.4%. The same situation occurs with the poverty gap for consumable income, given that, for overall poverty, the increase was 5.8 percentage points (from 16.4% to 22.2%) while, for extreme poverty, it was 4.3 (from 5.7% to 10%). In the case of moderate poverty, the tax system leads to an increase in poverty as a result of the effects of indirect taxes (net of subsidies), as evidenced by the fact that the incidence is slightly higher for consumable income compared to pre-fiscal income.

Table 7. Poverty level measurements for three types of income in 2017

Measurement / Type of income	Market income plus pensions	Disposable income	Consumable income
Incidence of poverty			
Overall poverty	43.4%	43.1%	44.6%
Extreme poverty	16.6%	14.4%	15.4%
Poverty gap			
Overall poverty	21.6%	20.9%	22.2%
Extreme poverty	8.0%	8.6%	10.0%

Source: Núñez, et al. (2020)

In addition, as a further element of analysis, Figures 6 and 7 present the incidence of overall poverty and extreme poverty rates, respectively, by gender. In general, both figures show similar levels of incidence for men and women, though poverty among men is slightly higher than women. With regard to overall poverty, poverty levels are higher for men than for women, although the differences are approximately 0.2 percentage points for all types of income, except market income plus pensions (0.1 pp). At extreme poverty levels, equal values are found for disposable income. Consumable income has a difference of 0.1 pp. in favour of men and market income plus pensions is higher for women than for men (16.7% versus 16.5%).

Figure 6. Incidence of overall poverty by gender for three types of income (percent)

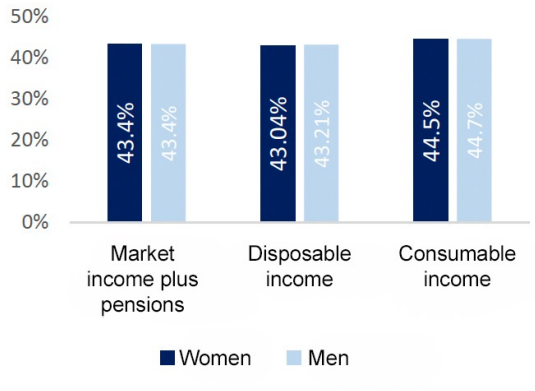
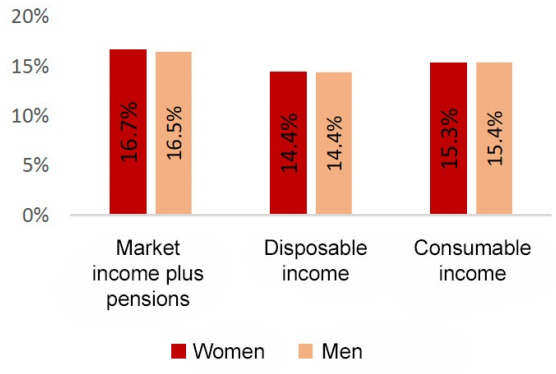


Figure 7. Incidence of extreme poverty by gender for three types of income (percent)



Source: Compiled by the authors, based on the ENPH and the MESEP.

On the other hand, it is also important to analyse the behaviour of inequality according to the survey for 2017 and 2020. Thus, Table 8 presents the values of the Gini index and the Palma ratio (calculated as the income share of the richest 10% divided by that of the poorest 40%) for the four types of income indicated above (therefore including the concept of final income). The data shows that the Gini index for market income plus pensions corresponds to 0.5963; for disposable income, it decreases by 0.0351 for a value of 0.5612; for consumable income, the index increases slightly to 0.5656; and, for final income, it falls to 0.5328. The Palma ratio performs similarly, starting at 6.6868 for market income plus pensions, decreasing to 5.2314 for disposable income, increasing to 5.3085 for consumable income, and ending at 4.1837 for final income. These data are presented in Figures 8 and 9. Finally, the Theil Index starts at a level of 0.7587 for market plus pension income, decreases to 0.6534 for disposable income, increases to 0.6651 for consumable income and decreases to 0.5920 for final income.

Table 8. Inequality level measurements for four types of income in 2020

Measurement/ Type of income	Market income plus pensions	Disposable income	Consumable income	Final income
Gini index	0.5963	0.5612	0.5656	0.5328
Theil's U	0.7587	0.6534	0.6651	0.5920
Palma	6.6868	5.2314	5.3085	4.1837

Source: Compiled by the authors, based on the ENPH and the MESEP.

Figure 8. Gini indices for four types of incomes

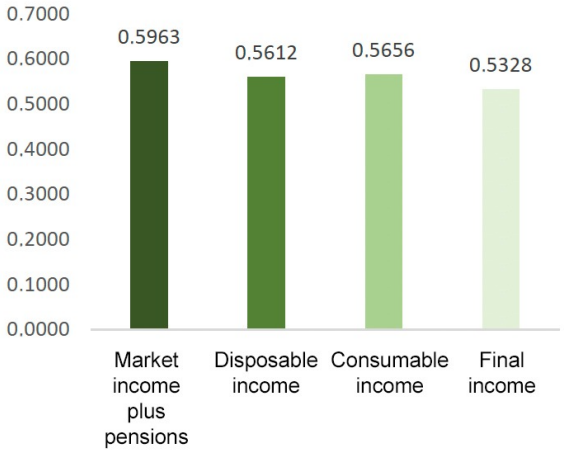
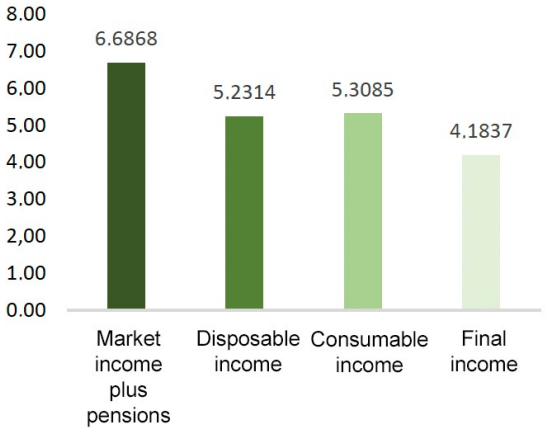


Figure 9. Palma indices for four types of incomes



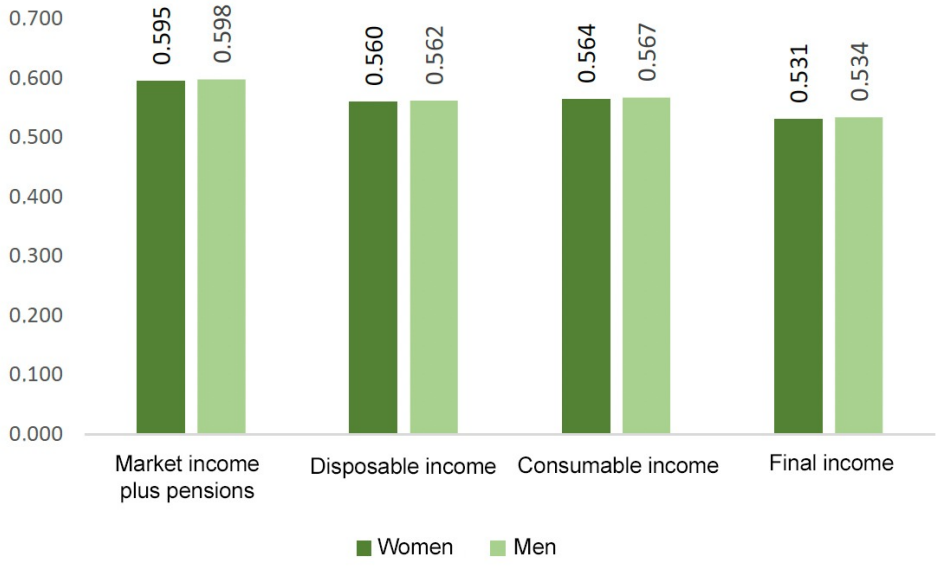
Source: Compiled by the authors, based on the ENPH and the Measurement of Monetary Poverty and Inequality.

Compared to the situation in the 2017 CEQ conducted by Núñez et al. (2020) (i.e., comparing the 2017 values with those in this paper), inequality levels also increased along with poverty levels, as described above. Taking the Gini coefficient as a point of reference, the level of inequality for market income plus pensions increased by around 0.04, rising from 0.559 to 0.5963 in the new measurement. Previously, inequality was at 0.517 and 0.515 for disposable and consumable income, respectively, while, in the new exercise, these values increased to 0.5612 and 0.5656

for the same incomes. Finally, given the availability of information, inequality measured with respect to total income increased by 0.077 from 0.455 (in 2017) to 0.532. Thus, it can be seen that, overall, both poverty and inequality levels increased, mainly due to the effects of the pandemic.

As with poverty calculations, Figure 10 illustrates the levels of inequality for income types by gender, as measured by the Gini coefficient, showing a behaviour very similar to that of poverty, in that inequality values are similar for men and women, although slightly higher for men. For example, in all cases, the differences are close to 0.003, the gap being 0.003 for final income and 0.002 for disposable income, these being the largest and the smallest differences, respectively.

Figure 10. Gini indices by gender for four types of income



Source: Compiled by the authors, based on the ENPH and the MESEP.

On the other hand, within the methodological framework employed, it is important to understand the ways in which the above results are reflected in aspects of fiscal policy. A change may be observed in some elements, such as tax amounts and tax collection proportions for the income segments of the population. Note, however, that, for the presentation of these results and for the simulations, the information is expressed in deciles, while in the diagnostic in Part 3 it was expressed in vigintiles.

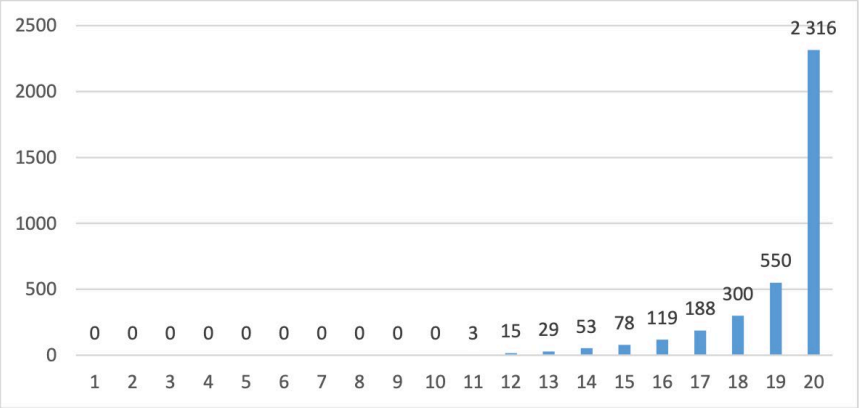
Taking the above into account, the first aspect of the analysis corresponds to the average amount of taxes for each of the vigintiles under review, presented in Table 9 and Figure 11. Firstly, the table shows the amounts in COP and in UVTs for each of the vigintiles, indicating that the payment of income tax starts in the 11th vigintile, at just over COP 110,000, equivalent to 3.15 UVTs. However, it is clear that the average number of UVTs for the highest vigintile of the distribution is very high compared to the other income ranges. For the richest 5%, for example, average tax corresponds to COP 82.4 million, which is equivalent to 2,316 UVTs, whereas for the immediately preceding segment it is about four times less, at just over COP 19.5 million (about 549 UVTs). Thus, this information suggests that a large part of the income tax collection corresponds to individuals in vigintile 20 and, to a lesser extent, to the rest, considering that tax is only collected from vigintile 11 upwards.

Table 9. Distribution of the amount of taxes by vigintiles, expressed in COP and in UVTs of the taxpayers

Vigintile	Average taxes (in COP)	Average taxes (in UVT)
1	COP 0	0.0
2	COP 0	0.0
3	COP 0	0.0
4	COP 0	0.0
5	COP 0	0.0
6	COP 0	0.0
7	COP 0	0.0
8	COP 0	0.0
9	COP 0	0.0
10	COP 0	0.0
11	COP 112,464	3.15
12	COP 549.762	15.43
13	COP 1,044,480	29.33
14	COP 1,877,932	52.74
15	COP 2,790,608	78.37
16	COP 4,222,181	118.57
17	COP 6,683,298	187.69
18	COP 10,686,541	300.12
19	COP 19,570,247	549.61
20	COP 82,466,770	2,316.02

Source: Compiled by the authors, based on the ENPH and the MESEP.

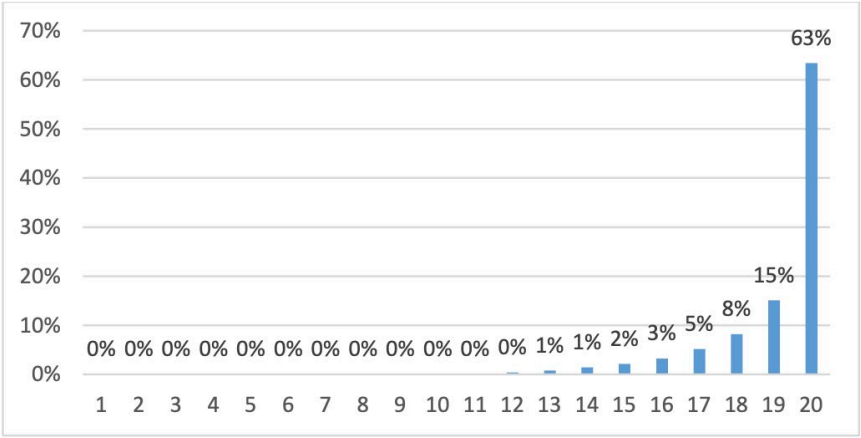
Figure 11. Distribution of the amount of taxes by vigintiles expressed in UVT



Source: Compiled by the authors, based on the ENPH and the MESEP.

On the other hand, to better illustrate the results for income tax collection, Figure 12 shows the proportions of overall income tax collection corresponding to each of the income distribution vigintiles. Reinforcing the idea presented above, it can be seen that income tax collection corresponds almost entirely to the highest income vigintile, with a percentage of 63%. Likewise, looking at the other income ranges, vigintile 19 would contribute 15% of the tax, while for the others this proportion would not exceed 10% of the total collected. In this sense, income tax collection is largely concentrated in the final decile, which is a very important characteristic of the structure of this instrument, insofar as the other deciles, even though they are among the highest, could contribute a greater proportion to the tax collection.

Figure 12. Proportions of tax collection by vigintiles of the baseline scenario in 2020



Source: Compiled by the authors, based on the ENPH and the MESEP.

Ultimately, the base scenario on which the comparisons of tax policy simulations and social spending will be made is built based on the previous elements of analysis.

Below, information on the distribution of taxes and transfers is presented, along with an analysis of their progressivity.

Thus, Figure 13 provides an overview of the distribution of the impacts of taxes and transfers, both direct and indirect, as a percentage of market income plus pensions and by deciles. According to this graph, the first six segments are those that receive the highest proportions of transfers. Among these, the most representative are health transfers, followed by direct transfers; the rest of the transfers of this type do not exceed 5%.

Direct transfers reach zero for the last deciles of the income distribution, as well as indirect and in-kind transfers such as health and education. Moreover, the first decile is the one with the highest percentage of direct and indirect taxes, which end up being compensated by the transfers its members receive and, therefore, the total balance (final income minus consumable income as a percentage of consumable income) is the highest of all deciles. Finally, with respect to the net balance, this was highest for the second decile, even above the first decile, a result that can be attributed to higher tax payments. It is important to bear in mind that in the exercise of comparing the situation between 2017 and 2020, there was a structural change in the tax system that affected the payment of taxes by natural persons, starting with returns filed from 2018 upwards. This reform implied modifications in the concepts related to non-taxable income, costs, expenses, deductions, exempt income, tax benefits and other aspects that are subtracted to obtain the net taxable income in each category.

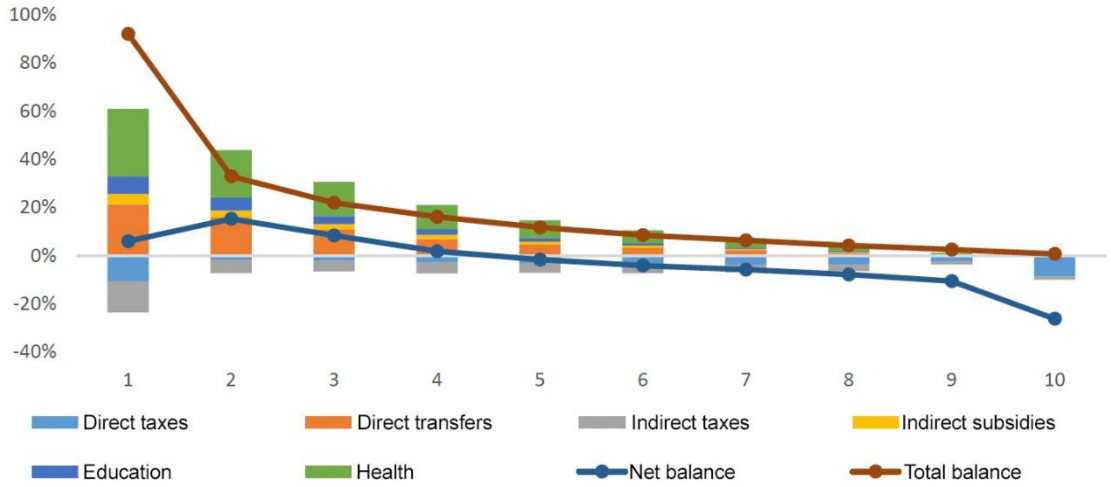
These changes have led to shifts in income distribution, modifying the share of taxes across deciles. In addition, the incomes of the first deciles have suffered a significant reduction due to the impacts of the pandemic, which has led to the fact that the few direct taxes that some members of these deciles pay may increase as a share of their income.

Importantly, these changes introduced by Law 1819 have altered the tax structure across the income distribution, adding to the many effects of the pandemic. These factors reflect unexpected changes in all deciles, highlighting the complexity of the situation and the need to consider these factors when analysing the results. However, it is important to bear in mind that the model used does not have the capacity to explain the detailed transmission mechanisms of the events occurring in each individual person. Instead, its main objective is to provide an estimate based on averages and large aggregates.

Since this is an analysis at the aggregate level, it seeks to understand general trends and average effects on the economy as a whole. This implies that the results obtained may not fully reflect the individual reality of each person or specific sector.

Therefore, these results have to be considered as a general approximation and, if necessary, they have to be supplemented with more detailed and specific analyses that take into account the particular circumstances of each individual or income decile. In any case, an understanding of the situation and the changes observed between the two periods requires that Figure 13 be analysed in combination with Figure 14, where relative values are combined with absolute values that show the real payments made by each income decile.

Figure 13. Change induced by transfers and taxes, 2020 (proportional to market income)

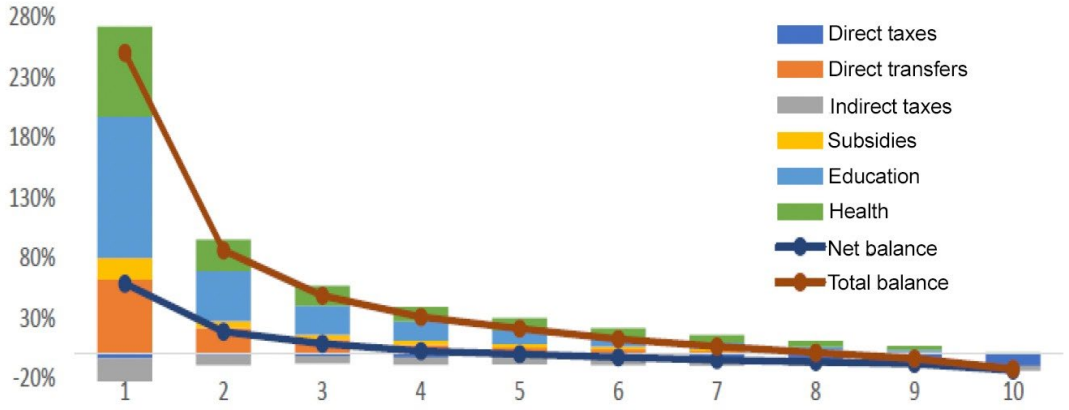


Source: Compiled by the authors, based on the ENPH and the MESEP.

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.

Compared to 2017, the percentage of market income plus pensions was higher for that year compared to the update presented in this document. Likewise, in the first deciles of the distribution, the main transfers corresponded to educational services, accounting for close to 100% of income. In addition, the total balance was close to 250%, indicating that the poorest households received more than three times their market income plus pensions from government aid. Now, in contrast to Figure 13, the net balance for the first decile in the 2017 survey was higher than for the second decile, a result that may suggest a reduction in the number of transfers to the poorest households, despite the new pandemic poverty alleviation measures. With respect to direct taxes, these may have fallen compared to the 2017 document, but the overall balance for households in the first decile was significantly reduced.

Figure 13 b. Distributive impact of the tax and benefits system in 2017

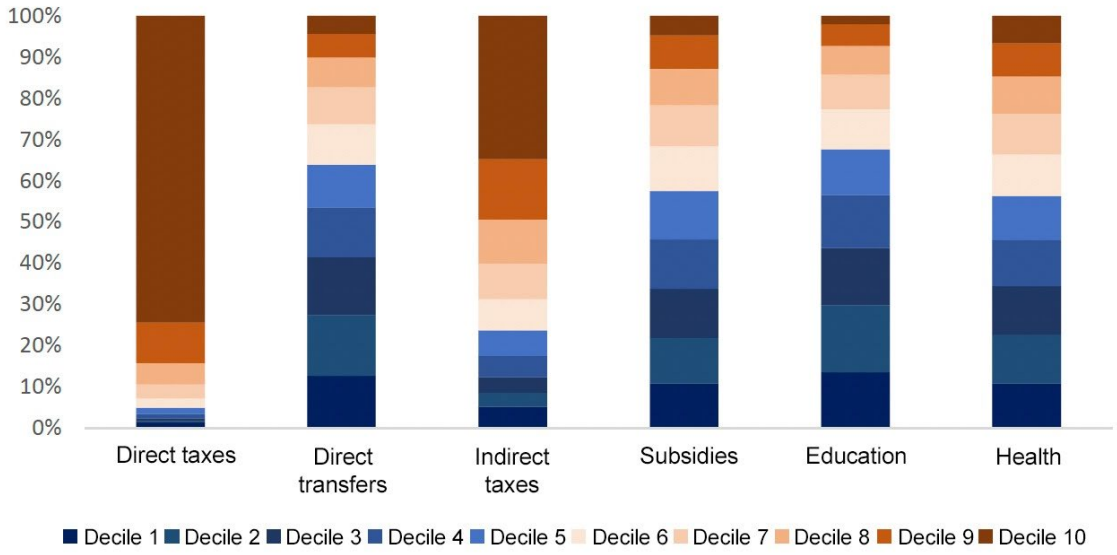


Source: Núñez et al. (2020)

Along the same lines, another way of analysing the progressivity of taxes is to study the share of each decile in the elements described in the previous Figure. Thus, it can be observed from Figure 14 that, with respect to direct taxes and transfers, the tax system is progressive, given that more than 90% of the taxes collected correspond to the last three deciles of the distribution, while more than 60% of the transfers go to the first five. However, with respect to indirect taxes and transfers, the situation is different, mainly in the case of taxes, as the first deciles pay a higher share of indirect than direct taxes, in the form of VAT, for example. For indirect transfers or subsidies, the shares are similar to those for direct transfers, with a slightly higher share of the latter for the first deciles. Finally, education and health

transfers benefit the first five deciles, which receive about 65% and 60% of the transfers in these services, respectively. It is the case, however, particularly for health, that the percentages for every decile are very similar (almost 11% of the total for each decile). Thus, this figure suggests that there is progressivity in the tax system to the extent that individuals with higher incomes pay more taxes, while those with lower incomes receive higher transfers.

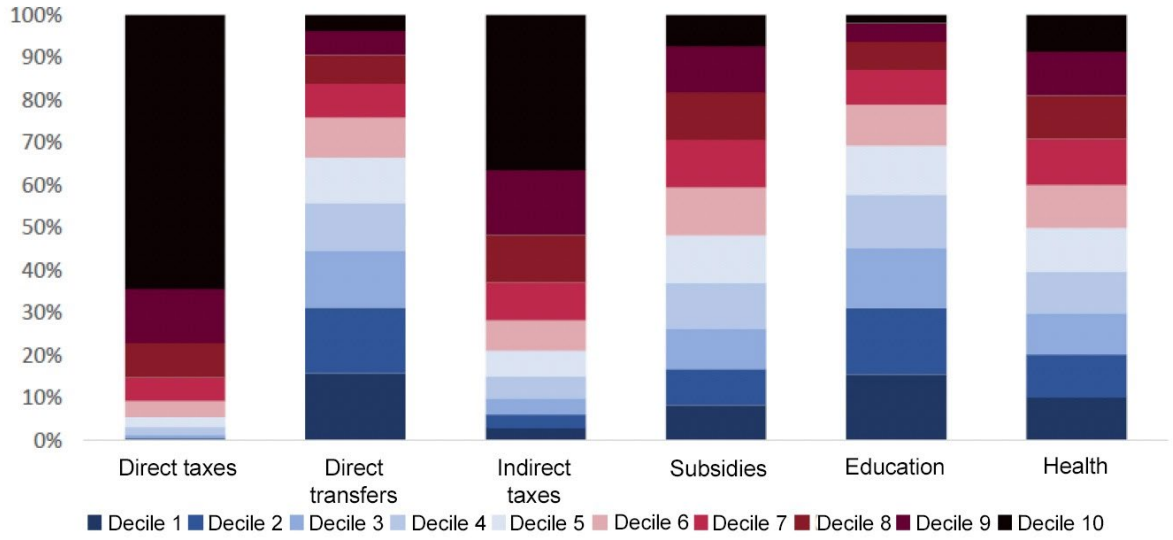
Figure 14. Progressivity of taxes, transfers and subsidies 2020



Source: Compiled by the authors, based on the ENPH and the MESEP.

Compared to the 2017 document, it is observed that the system has maintained its progressivity, as higher income households (deciles 8, 9 and 10) continue to pay about 85% of direct taxes. Even between 2017 and the preparation of this document, a growth in the share of these deciles is observed, increasing from 85% to 88% according to the updated data. A similar situation occurs with indirect taxes insofar as the percentages contributed by deciles 8, 9 and 10 did not change significantly. However, it is important to clarify that 70% of the population does not pay taxes. With respect to transfers and subsidies, there have been no major changes in the shares of deciles compared to the results for 2017. Thus, the percentages received by the poorest 40% of households remain close to 55% of total direct transfers, for example. Finally, for both measurements, it could be asserted that health spending is a neutral policy since in-kind transfers for these services are very similar between the first and the last five deciles of the income distribution.

Figure 15 b. Progressivity of taxes, transfers and subsidies for the year 2017



Source: Núñez, et al. (2020)

In summary, compared to the document produced using the 2017 data, the new estimates indicate that, in general terms, poverty and inequality worsened. Based on the incidence of poverty and extreme poverty, these percentages recorded an increase of almost 5% for the first indicator and 2% for the second, measured with reference to market income plus pensions. Likewise, for the inequality indicators, there was an increase in the Gini coefficient of almost 0.05 units between the two measurements, indicating greater inequality. However, with respect to the progressivity of indirect taxes and transfer payments, no major differences are found, though greater progressivity is observed in terms of direct taxes, as this value rose in 2020 from approximately 78% to 84%. Finally, there were no marked differences in the poverty and inequality indicators between men and women, although the indicators slightly favour the latter.

6. Public policy scenarios

Following the presentation of this diagnosis of poverty and inequality in Colombia, updated with 2020 data, this section presents a series of simulations using different public policy scenarios within the framework of the CEQ methodology. Three exercises are presented: i) the first relates to changes in tax policy and consists of modifying parameters in the tax base and the rates of some other taxes; ii) the second deals with changes in social spending that consist of expanding the coverage of some current programmes, and iii) the third relates to the potential impacts of the most recent tax reform approved in Colombia. Based on these scenarios, fiscal policy tools are proposed that might contribute to closing poverty and inequality gaps in the country.

It is also important to note that some of the scenarios presented in these subsections correspond to proposals made by the national government or, indeed, by analysts and tax experts. In this way, the incidence analysis of these cases allows for the identification of fiscal policy combinations that might potentially contribute to the reduction of poverty and inequality.

The simulations presented below provide an input for analysing the changes that might occur when reforms are made to the tax structure. They should, therefore, be taken into account in a context of economic recovery and strengthening of social programmes in the aftermath of the COVID-19 pandemic.

6.1 Changes in tax policy

As mentioned above, the first simulation deals with changes in tax policy through changes in the parameters of income tax and a few other taxes, such as those on dividends, capital gains and occasional income. The idea is to raise the highest level of revenue for the state by trying to reduce inequalities. This scenario proposes the following modifications: i) the reduction of the income tax base (from 1,400 to 300 UVTs), ii) a modification of the dividend taxation regime, involving an adjustment of the threshold from 1,090 to 500 UVTs, and setting the rate at 10% (previously 0%), and iii) an increase in the rate of occasional income tax from 10% to 20%. Thus, by increasing the tax base and the rate on dividends, an increase in the tax collection could be expected for the higher deciles of the distribution, although with respect to occasional income, the outcome might not initially be so clear.

Figures 16 and 17 show the effects of these changes on overall poverty and inequality for the types of income defined by the methodology. According to these figures, an increase of 0.0012 is observed for disposable income compared to the baseline. However, in terms of inequality levels, Figure 17 shows that there is a reduction of 0.33 units in the Palma ratio for disposable income, indicating a decrease in these indicators compared to the baseline. For the final income, the reduction corresponds to 0.27 units of the Palma ratio. Thus, it could be affirmed that this policy scenario could have positive effects on inequality reduction, even though it would increase poverty levels.

Figure 16. Incidence of overall poverty for three types of income according to the tax policy scenario

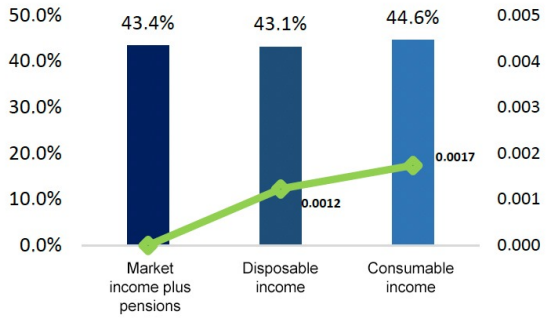
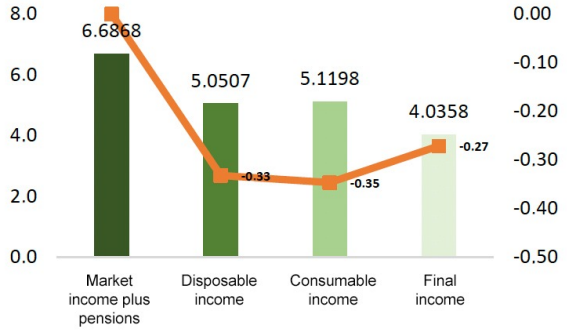


Figure 17. Palma ratios for four types of income according to the tax policy scenario



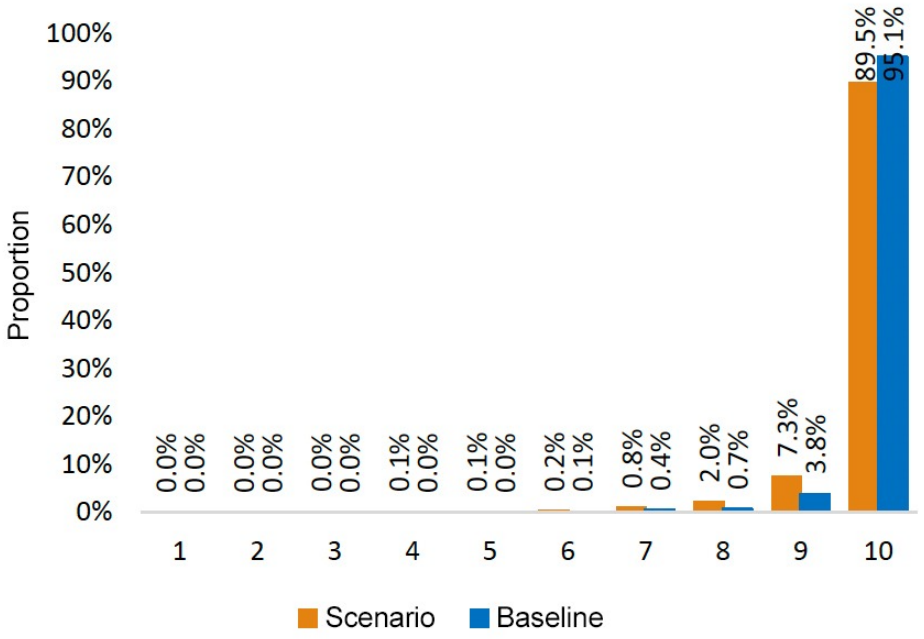
Source: Compiled by the authors, based on the ENPH and the MESEP.

Note: The left axis indicates the level of the observed indicator (incidence of poverty and Palma index) in the simulation, and the right axis corresponds to the difference between the simulation value and the baseline value.

On the other hand, Figure 18 shows the tax collection proportions for each decile in this scenario, compared to the baseline (before the 2022 reform). There is an increase in the percentage of tax collection for deciles 8 and 9, and a clearly reduced share in the overall proportion of tax collection in decile 10. For individuals with higher income levels, this value fell by about 6 percentage points, going from 95.1% to 89.5% between the baseline and this policy scenario. On the other hand, for deciles 8 and 9, there is an increase in the proportion from 0.7% to 2% (an increase of 1.3 pp) in the former, and from 3.8% to 7.3% in the latter (an increase of 3.5 pp). In addition, for the lowest deciles of the distribution, the changes are minimal,

although higher than 0%, as the simulation leads to a higher tax base. Thus, the proportions of tax collection in this scenario could be in line with the previous information, as other deciles of the distribution — which are still among the highest — contribute a higher percentage to the income tax.

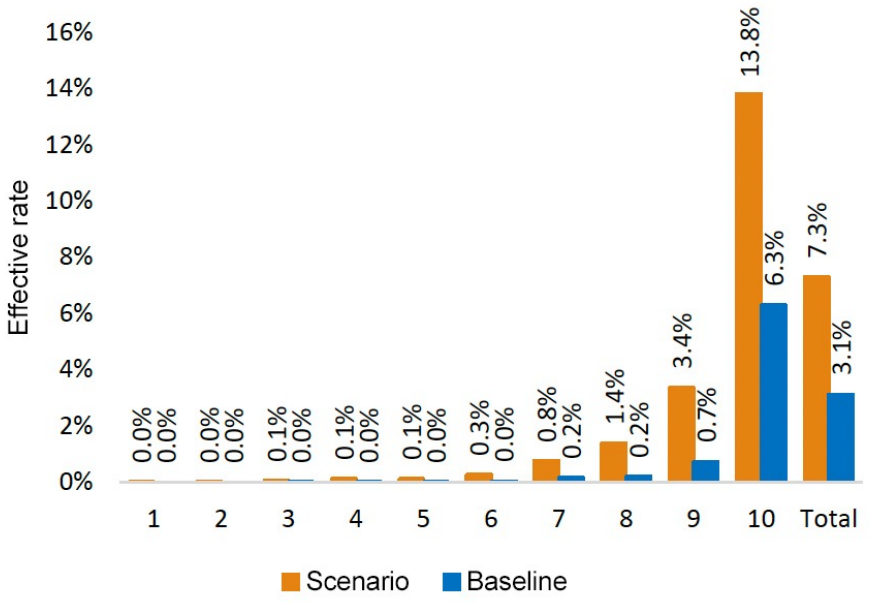
Figure 18. Proportions of tax collection by decile for the tax policy scenario



Source: The authors, based on the ENPH and the MESEP.

Finally, Figure 19 shows the effective tax collection rates for each of the deciles in this scenario. According to this graph, significant increases in effective rates are observed from decile 7 upwards, where the effective rate goes from 0.2% in the baseline to 0.8% in the scenario. In deciles 9 and 10, the increase was 2.7 percentage points (from 0.7% to 3.4%) and 7.5 percentage points (from 6.3% to 13.8%) respectively. For the rest of the deciles, almost imperceptible changes in the effective rates are observed. When analysing the information on the overall effective rate, understood as the percentage of income that each decile ends up paying, this increased from 3.1% in the baseline to 7.3% in this scenario.

Figure 19. Effective tax collection rates by decile for the tax policy scenario



Source: Compiled by the authors, based on the ENPH and the MESEP.

In sum, the increase in dividend and occasional income tax rates show interesting results for public policy discussion compared to the baseline, since the change in total revenue collection in this simulation would be 77.24%.4 Finally, the national average effective rate more than doubles with respect to the baseline as with other, mainly higher, deciles.

6.2 Changes in social spending

This section addresses the next simulation, which attempts to understand the public policy possibilities for reducing inequalities. It consists of making three changes to the structure of social spending. In this case, the modification that has been simulated concerns the coverage of the following programmes: i) solidarity income (ingreso solidario), ii) VAT refund and iii) the allocation of a universal

[4] Total revenue collection would be approximately 1.5 trillion COP using the CEQ model for the year 2020 with updated data from the ENPH.

pension for the elderly. The proposal consists of implementing the following modifications: i) to the solidarity income programme, by including more beneficiary households with a differentiated allocation of the transfer; ii) a proposal to implement a VAT refund in which 2 million households would receive a uniform sum of money; and iii) assigning a universal pension, which consists of selecting women over 60 and men over 65 who do not have a pension and assigning them an amount equivalent to the 2020 poverty line (about COP 332,000). One of the objectives is to estimate the possible effects on poverty and inequality by including both households in vulnerable conditions and older adults without pensions.

Given the above, it is important to specify the modifications to the solidarity income programme used in this simulation. The scenario involves increasing the programme's coverage by one million households (to include 4.1 million people compared to the current approximately 3.5 million) and a new allocation scheme. The scheme would involve a modification of the amounts paid to families by taking into account household size in the definition of the transfers, using the current categories of the System for the Selection of Potential Beneficiaries of Social Programmes (Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales - SISBEN). Taking into account recent adjustments to the system, which classifies households in extreme poverty in group "A" and those in moderate poverty in group "B", the new scheme would allocate an amount close to COP 90,000 per person in each household in the case of group A1, while it would be COP 70,000 in the case of group B7. For group C, made up of vulnerable households, the transfer would only be made if the household is made up of four or more people and would correspond to COP 55,000. The new allocation scheme is shown in Table 10.

Table 10. Proposal for a new scheme for the solidarity income programme

Household size / SISBEN category	Group A					Group B							C
	1	2	3	4	5	1	2	3	4	5	6	7	
1	90	87,5	85	82,5	80	77,5	76,25	75	73,75	72,5	71,25	70	N/A
2 or 3 members	180	175	170	165	160	155	152,5	150	147,5	145	142,5	140	N/A
4 or more members	360	350	340	330	320	310	305	300	295	290	285	280	55

Source: Compiled by the authors, based on the ENPH.

Note: Values in thousands of pesos

Taking into account the above characteristics, Figures 20 and 21 show the changes in poverty and extreme poverty levels resulting from the combination of the three changes in social spending policies mentioned above.

In relation to the first income type, it is estimated that poverty would decrease by 9.6% in disposable income, from 43% to 33.4%, whereas for extreme poverty, a reduction of 7.5% is estimated for the same level of income. These simulations indicate that changes in the three programmes produce more favourable scenarios in terms of poverty for the population.

These results highlight the importance of targeting programmes more precisely, as well as increasing the amounts allocated and directing efforts towards the older population. These actions would produce even better results in the reduction of poverty and extreme poverty.

Figure 20. Incidence of overall poverty for three types of income according to the social spending scenario

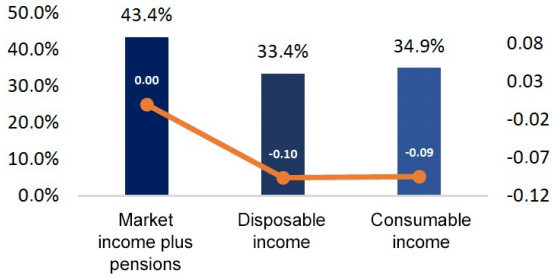
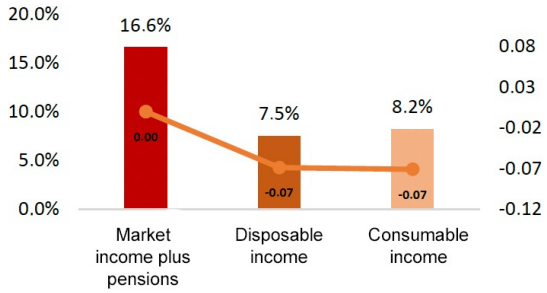


Figure 21. Incidence of extreme poverty for three types of income according to the social spending scenario



Source: Compiled by the authors, based on the ENPH.

The same behaviour is observed when the inequality figures are examined (see Figures 22 and 23). The Gini index fell by almost 0.05 units in all types of income compared with the baseline. Similarly, the reduction in the Palma ratio was 1.61 units for the disposable income, compared with the baseline. It can therefore be affirmed that this measure also has significant results in reducing inequality, given that all indicators decrease significantly when compared with those in the baseline.

Figure 22. Gini indices for four types of income according to the social spending scenario

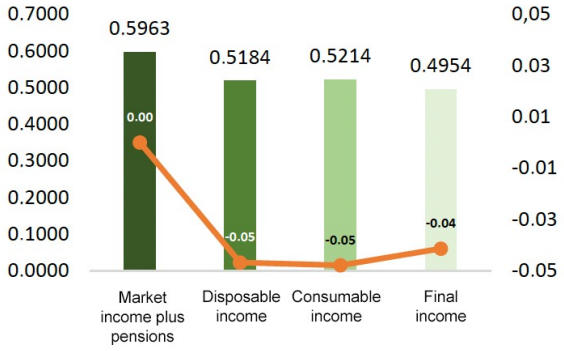
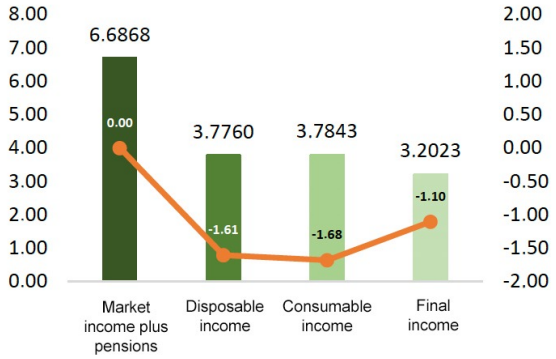


Figure 23. Palma indices for four types of income according to the social spending scenario



Source: Compiled by the authors, based on the ENPH.

Overall, the simulations of this scenario lead to good results in reducing poverty and inequality. For example, with regard to poverty, the measurements represent an additional impact of 4.5 and 1.8 percentage points on overall and extreme poverty respectively, while, taken together, the reduction was 10% and 7% when compared to the 2020 indicators. In this sense, a modification in the solidarity income scheme, together with an extension of the VAT refund and the provision of a universal pension, allow poverty and inequality to be reduced significantly by almost ten percentage points for the first variable and about 0.05 units for the second.

6.3 Changes contained in the tax reform

With the arrival in power of the new national government in Colombia in 2022, the tax reform proposal was submitted to the Congress of the Republic, and was approved by both the Senate and the House of Representatives in a matter of a few months. Although the initial proposal was modified during the different debates held in the legislative bodies, the main changes concerned income tax for natural and legal persons, taxation on occasional income and wealth, and other measures such as health taxes (on ultra-processed sugary drinks) and the carbon tax.

Continuing to use the tool developed for this analysis, this section aims to simulate the fiscal reform, while accompanying the government teams in the process. Thus, the aim is to use the tool to understand the possible impacts that the implementation of the reform would have on poverty and inequality in the country. The analysis will focus on the general income tax schedule, the tax on dividends and shares, and the tax on occasional income.

Taking the above into account, the first change proposed by the tax reform, with respect to income tax, corresponds to the reduction of the limit on the value of exemptions, from 5,040 to 1,340 UVTs. This change would represent a reduction in the threshold, from COP 191,540,000 to COP 50,250,000, with a UVT of COP 38,004 in 2022. Therefore, the reduction in the value of the exemptions is approximately 75%, so it is expected that schedular net earned income would rise, and with it the tax revenue.

In this regard, it is also important to note that the definition of the ranges that establish the tax rates remain unchanged, retaining the levels presented in Table 3. Thus, if income is between 0 and 1,090 UVTs after exemptions, the rate will be 0% and the taxpayer will have no additional UVT to pay, but if it is between 18,970 and 31,000 UVTs, the rate will be 37% plus an additional 5,901 UVTs. It is expected that this change in the exemption limit will increase revenue collection since — although the rates are not modified by the reform — schedular net taxable income would be higher.

Another of the changes defined in the tax reform involves modifications to the regime covering the taxation of dividends and shares. As mentioned above, this tax displays similar behaviour to income tax, since it also involves ranges for the definition of the rate, and additional UVTs in cases where this applies. However, the tax reform introduces some changes in this tax, defining the same ranges as for income tax but with modifications in the rates to be paid by recipients of dividends or shares. The reform creates seven ranges, which replace the four (or two) that existed before. These are defined in the same way as for income tax, but with 19 percentage points subtracted for each of the ranges. Therefore, payments of the tax would start from the third range, standing at between 1,700 and 4,100 UVTs, for which a rate of 9% plus 116 additional UVTs would apply, as shown in Table 10. Thus, it could be asserted that this change benefits the first ranges defined, since they

would have less tax to pay on shares or dividends, but it would affect the higher ranges when they are disaggregated, as they would pay a higher rate with higher additional UVTs.

Table 11. Modification to the structure of tax return and payment for the tax on dividends and shares under the tax reform

Ranges (in UVT)		Rate	Additional (in UVT)
Minimum	Maximum		
0	1,090	0%	0
1,090	1,700	0%	0
1,700	4,100	9%	116
4,100	8,670	14%	788
8,670	18,970	16%	2,296
18,970	31,000	18%	5,901
31,000	upwards	20%	10,352

Source: Compiled by the authors, based on the current Tax Statute.

Finally, the tax reform also establishes changes in the taxation of occasional income. These modifications, presented in Table 11, define two types of rates, differentiating between lotteries, raffles and betting on the one hand, and other occasional income on the other hand. As can be seen, the tax reform increases the rates of both taxes, by 15% in the case of lotteries, raffles and betting, and 10% for other occasional income. With respect to these modifications, two scenarios are created to estimate the incidence of the change in the rate of this tax. One of the scenarios includes the changes, while the other excludes them, in order to get an idea of the changes produced by an adjustment of this type compared to the alterations in income tax and the tax on dividends and shares.

Table 12. Modification and structure of the tax return and payment of the tax on occasional income before and after the tax reform

Tax	Before the reform	After the reform
Lotteries, raffles and betting	20%	35%
Other occasional income	10%	20%

Source: Compiled by the authors, based on the current Tax Statute.

In the light of the above, and having described the main changes implemented by the tax reform, the effects of this scenario on the poverty and inequality indicators described in the CEQ are presented below. Two scenarios are used for this purpose: one, which includes the changes in income tax and the tax on dividends and shares, and another, which includes these two changes plus the changes in occasional income taxation. The aim is to estimate the incidence of these taxes on poverty and inequality reduction and to identify the possible additional contribution of the tax on occasional income with respect to the other two. Moreover, unlike the two previous simulations, some further elements were also included, such as, for example, the progressivity of taxes and subsidies.

6.3.1 The impact of changes on income and dividend taxes

First, the results for both overall and extreme poverty are presented. Continuing with the presentation of the tax and fiscal policy scenarios, Figures 24 and 25 illustrate the changes in the types of income defined by the CEQ, i.e. market income plus pensions, disposable income and consumable income. With respect to overall poverty, the modifications to income tax proposed by the national government in the tax reform, when compared to the baseline (without the tax reform), do not generate changes in any of the types of income. Likewise, when looking at the figure on extreme poverty, the same behaviour is observed since, for these cases, the percentage change compared to the baseline is 0%. Thus, it is possible to affirm that, initially, the changes implemented in the tax reform do not affect poverty indicators when compared to the baseline.

Figure 24. Incidence of overall poverty for four types of income according to changes in income tax and in tax on dividends and shares

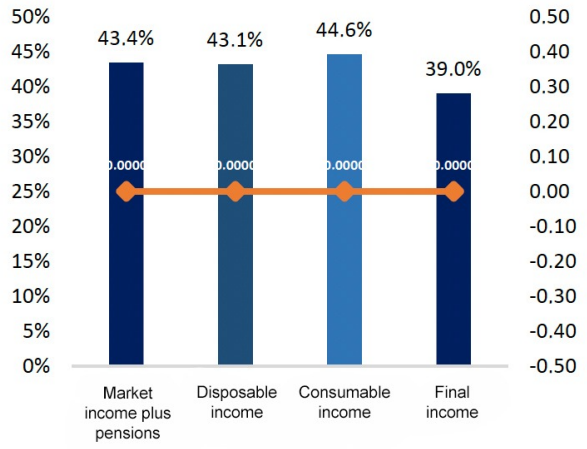
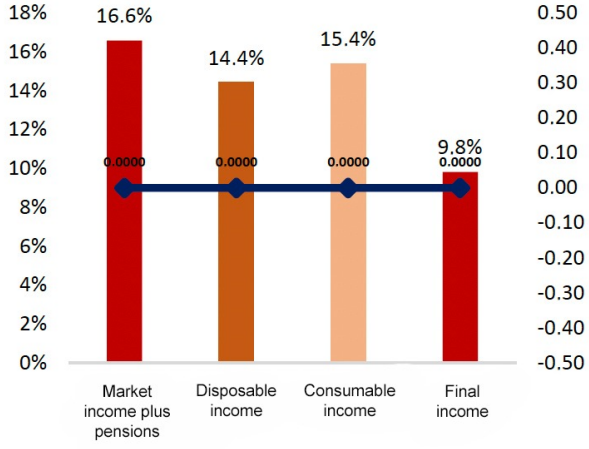


Figure 25. Incidence of extreme poverty for four types of income according to changes in income tax and in tax on dividends and shares



Source: Compiled by the authors, based on the ENPH.

Turning to the analysis of the results on inequality, Figures 26 and 27 show the levels and changes of income types for the Gini and Palma indicators, respectively. According to both figures, it may be affirmed that changes made by the tax reform on income tax lead to reductions in inequality, although these are more evident when measured by the Palma index. In the case of the Gini index, a reduction of 0.0018 units compared to the baseline is observed when the results are analysed for disposable income, so it might be thought that the changes in this indicator are not so evident. However, an analysis of the figure on the Palma index suggests it is possible to affirm that reductions that are more notable are found in inequality. For example, for disposable income, the reduction was 0.0364 units while, for consumable income, it fell by an additional 0.0017 units to 0.0381. The inequality values decrease with respect to the baseline by 0.0298 units for final income. Ultimately, based on these two indicators, the tax reform might reduce inequality levels, however, according to the more commonly used Gini index, these reductions are not notable. It is important to mention that the tax take will nevertheless be greater, and the way these resources are used could further impact inequality levels.

Figure 26. Gini index for four types of income according to changes in income tax and in tax on dividends and shares

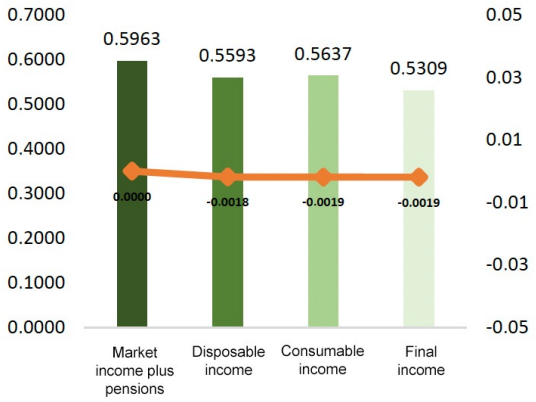
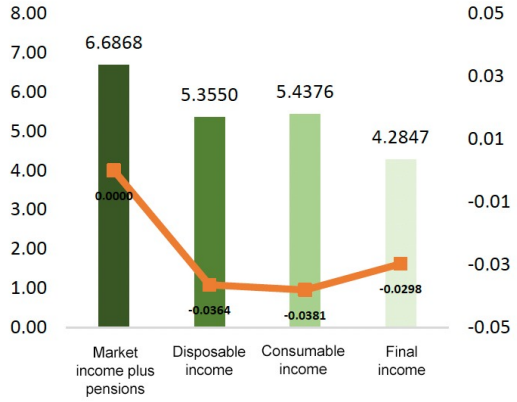


Figure 27. Palma ratio for four types of income according to changes in income tax and in tax on dividends and shares



Source: Compiled by the authors, based on the ENPH.

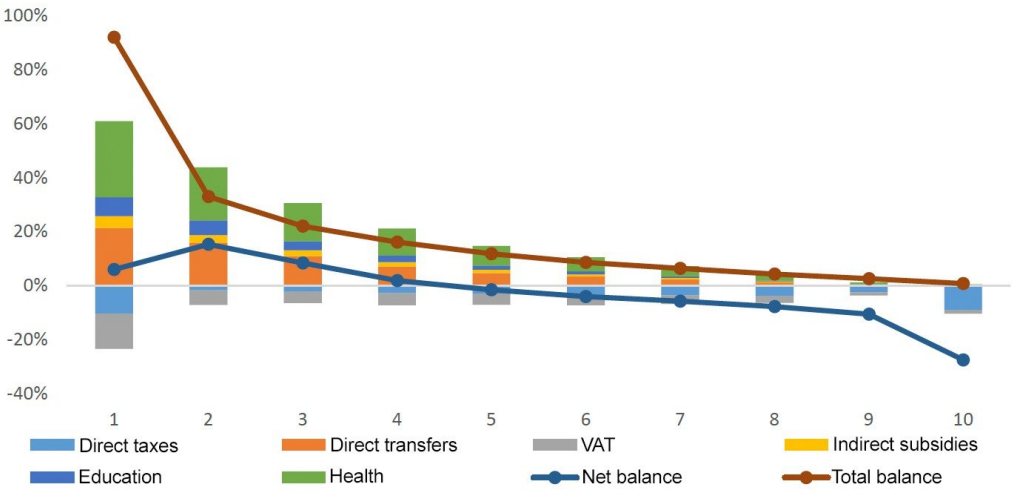
Similarly, as shown in the baseline, it is important to analyse the distribution of taxes and transfers along with the progressivity of the tax system. Thus, Figure 28 provides an overview of the redistributive impact of the system based on direct, indirect taxes, and transfers, as a percentage of market income plus pensions for each income decile. On the one hand, with respect to transfers, it can be seen that the highest percentages are found in the lower deciles of the income distribution and, in particular, in the first, which as a percentage of market income plus pensions, receives 28% in health transfers and 21% in indirect transfers as the highest values. On the other hand, with respect to taxes, deciles 1 and 10 pay the highest percentage of direct taxes as a proportion of market income plus pensions, at 10% and 9%, respectively.5 However, in the case of VAT, the first decile pays the highest percentage of this tax, at 13%.

Analysing both the total and net balance (represented by the lines in the Figure), it is observed that the latter rises in the second decile, even above the levels of the first (15% in the second compared to 6%). On the contrary, with respect to the total balance, this is higher in the first income decile, at 92%, decreasing to 1% in the last decile. Thus, in terms of the values of taxes and transfers, we observe that, initially,

[5] It is important to mention that as spending has not been modified in this simulation, these values do not change with respect to what is presented in Figure 13.

the tax system may be considered progressive on the transfer side, but the same cannot be said in the case of indirect taxes, since the highest VAT burden corresponds to the first decile.

Figure 28. Distributive impact of the tax and transfer system under the changes of the tax reform

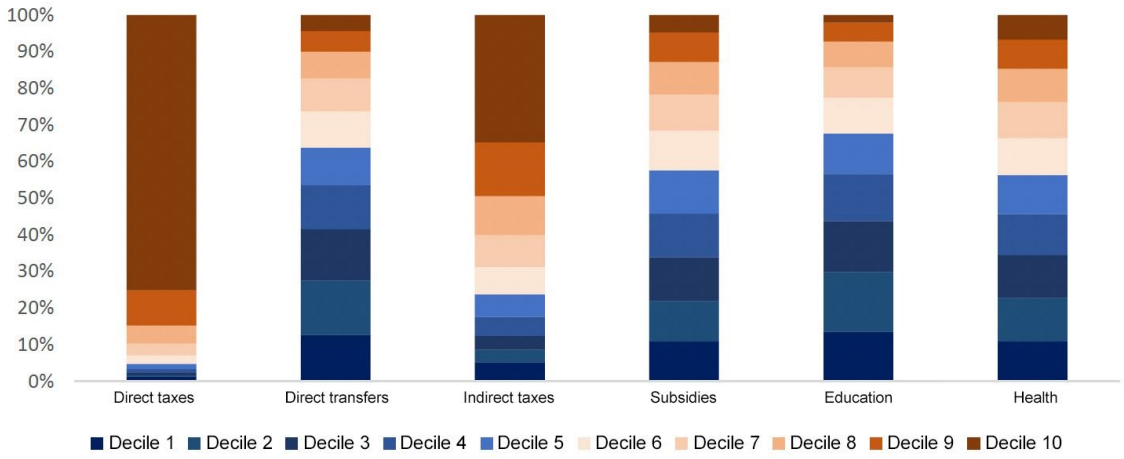


Source: Compiled by the authors, based on the ENPH.

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 the taxes it has paid.

As another way of analysing progressivity, Figure 29 presents the percentage in each decile that is dedicated to a range of items such as direct and indirect taxes, direct transfers and education and health co-payments. According to this graph, then, the top two deciles of the distribution pay about 83% of total direct taxes, a figure that would increase to 88% if the top three were included. With regard to indirect taxes, though, the same concentration is not observed, since the three highest deciles of the distribution account for only 60% of the total for this heading. However, when looking at direct transfers, subsidies and co-payments for health and education, similar proportions are observed among all income deciles, though—particularly in the case of direct transfers—it is observed that the second decile receives the largest share of this item, at 15% of the total, while the three highest deciles receive 4%, 6% and 7%, respectively.

Figure 29. Progressivity of taxes, transfers and subsidies under the changes of the tax reform



Source: Compiled by the authors, based on the ENPH.

In this sense, according to these last two figures, it might be asserted that the reformed tax system could also be characterised as progressive because it modifies the tax structure such that the higher deciles of the distribution pay a higher percentage of direct taxes and the lower deciles receive a higher amount of direct transfers. However, it is important to note that VAT is known to be a regressive tax that is paid at the same levels by all deciles of the distribution.

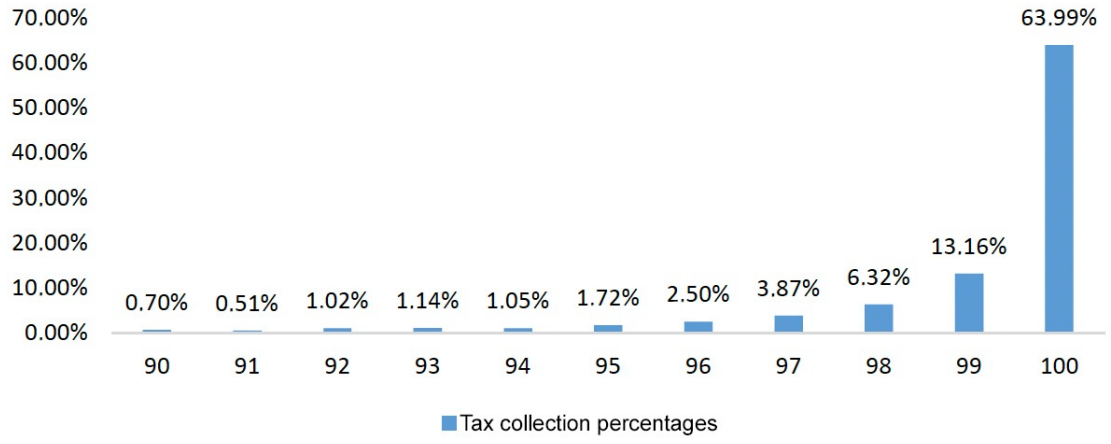
As an additional element of study, the analysis of income distribution was carried out down to the centile level for this paper. This was done in order to analyse the reason why, despite the reduction to the income tax exemption limit and increases at some levels to the tax on dividends and shares, the figures for poverty and inequality do not change significantly. Thus, Figure 30 illustrates the percentage of the tax collection for the 11 highest income distribution centiles. While it shows that these income levels are the highest contributors, the 100th percentile alone contributes almost 64% of the total revenue.

In this context, it is evident that the average disposable income of the last income centile stands at approximately COP 8.46 million per month. This suggests that, despite the reduction of tax exemptions and increase in tax rates, there is no significant change in inequality levels. In other words, individuals with higher incomes maintain a level of income such that they are largely unaffected by these

changes in the indicators and, therefore, income distribution does not change significantly, as it was argued that it would during discussion of the reform.

These findings underline the persistence of economic inequality in the country, with the top decile continuing to accumulate a considerably larger proportion of income compared to other deciles.

Figure 30. Tax collection percentages in the 11 highest percentiles of the distribution under the changes of the tax reform



Source: Compiled by the authors, based on the ENPH.

6.3.2 The impact of changes on income tax, tax on dividends, and tax on occasional income

Having explored the results of the impact of these changes on income tax, this section presents the changes in poverty and inequality compared to the baseline that result from the modifications made by the tax reform, including the effects of the changes in the taxation of occasional income. As noted in the second section, these correspond to a 15% increase in the rate on lotteries, raffles and betting and a 10% increase on other occasional income. The following figures show the new values for poverty and income distribution in the bars, while the lines represent the change induced by the 2022 tax reform, relative to the baseline presented in Section 6.

Accordingly, Figures 31 and 32 present the levels and changes compared to the baseline for overall and extreme poverty, including changes in the tax on occasional income. From the information these figures provide, it may be affirmed that, contrary to what might initially be assumed, a raising of the rates for this tax would actually imply an increase in poverty levels, even if the percentages of this change are low. For example, with respect to disposable income, an increase of 0.003% is observed compared to the baseline, while for consumable income, the increase is 0.004%, compared to the same baseline. Looking at the results for extreme poverty, a similar picture emerges: increases in poverty levels are also noted, although they are not as evident. For example, according to Figure 32, extreme poverty would increase by 0.003% for disposable income and 0.005% for consumable income. However, despite this, it could be argued that, by including the changes in the tax on occasional income, no major changes in poverty levels would occur.

Figure 31. Incidence of overall poverty for four types of income according to changes in the three taxes

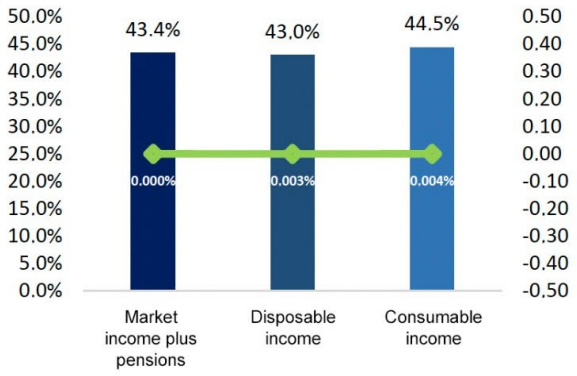
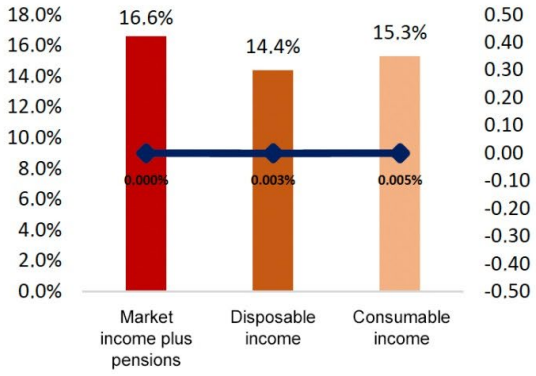


Figure 32. Incidence of extreme poverty for four types of income according to changes in the three taxes



Source: Compiled by the authors, based on the ENPH.

On the other hand, Figures 33 and 34 present the results of the estimations of the Gini and Palma inequality indicators for the different types of income. An analysis of these results shows a reduction in inequality levels for both measurements, although it is possible that these decreases are not significant.

For example, in the case of the Gini index, there is a decrease of 0.0016 units for disposable and consumable income, and of 0.0017 for final income. However, compared to the baseline scenario, the reduction is even smaller, at 0.0018 and 0.0019 respectively.

As for the Palma index, there are more noticeable reductions, though they are still not very pronounced. According to Figure 34, the decrease in inequality is 0.0383 units for disposable income, 0.04 for consumable income and 0.0314 for final income.

Figure 33. Gini index for four types of income according to changes in the three taxes

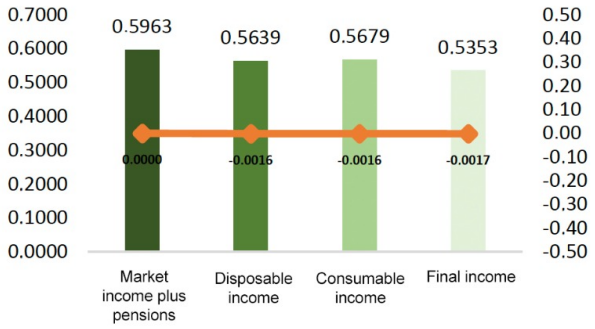
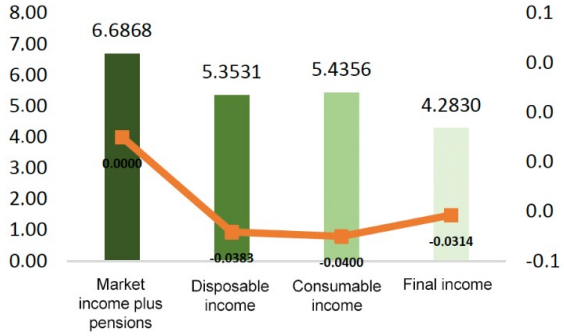


Figure 34. Palma index for four types of income according to changes in the three taxes



Source: Compiled by the authors, based on the ENPH.

As in the previous scenario, the tax and transfer distribution analyses are presented with the progressivity of the system. However, the figures and values that apply to this scenario are the same as in the previous case. For this reason, the conclusions and observations arrived at in that case apply to this scenario too.

To understand these changes better, we present Figure 35, which illustrates the percentage of the tax take for the 11 highest percentiles of the distribution. This information is useful in order to identify possible reasons why poverty and inequality levels are not significantly affected by the changes included in the tax reform.

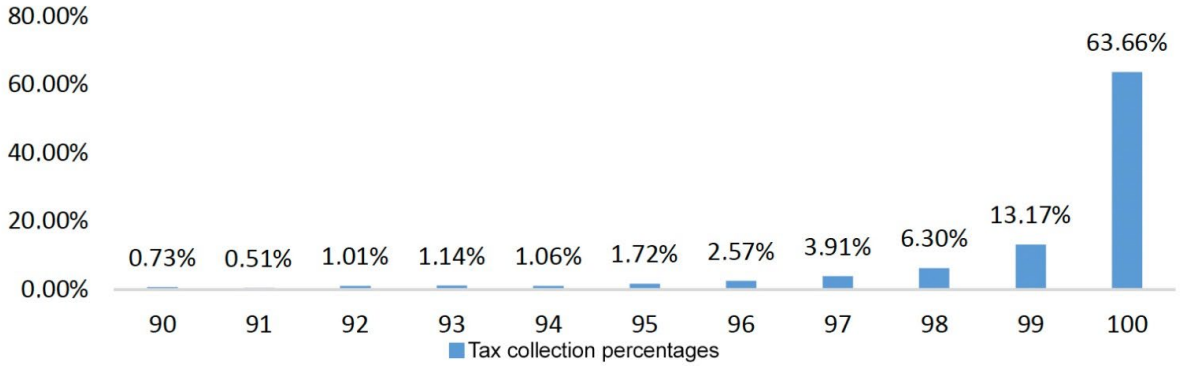
According to this graph, approximately 63% of the tax collection occurs in the highest income percentile, followed by the 99th percentile at 13.17%. It is important to note that the 100th percentile has an average income of COP 845 million. These data favour the idea that one of the reasons why poverty and inequality levels remain constant is because the incomes of the highest percentiles are not significantly affected by changes in the tax structure.

Although with the reform, the effective tax rate would increase for the richest, this increase is not significant enough to meaningfully reduce the sums they control as would be required in order to produce a reduction in inequality. Consequently, it may be concluded that changes in the tax structure would not significantly impact the incomes of the higher income sectors, thereby limiting their effectiveness in reducing inequalities and poverty levels.

In other words, although an increase in tax revenue is achieved as a result of the limitations imposed on exemptions, the existing income gap between the highest and the lowest quantiles of the population is so wide that the changes introduced by the tax reform do not produce significant social or redistributive change.

It is important to recognise that changing such a concentrated income distribution requires an increase in social spending, rather than simply raising taxes. Taxes serve to finance social spending, but on their own they cannot significantly change income distribution, especially given the initial state of human and physical capital, wealth and power that the richest segments of the population possess. It is naïve to think that a tax reform, however progressive it may be, can change the situation of decades and even centuries of income concentration, unless a radical change is made in the country's social programmes and the quality of social services, especially in the field of public education, is improved.

Figure 35. Tax collection percentages for the 11 highest percentiles of the distribution under the changes of the tax reform, including the tax on occasional income



Source: Compiled by the authors, based on the ENPH.

Finally, since this exercise includes changes in the three types of taxes, the tax collection proportions and effective tax rate for each of deciles of the income distribution are presented. First, Figure 36 shows the collection percentages for the deciles, comparing the tax reform and the baseline available from the 2020 CEQ exercise. From this data, it may be observed that there is an increase in the proportion of revenue collection in deciles 6 and 10 of the income distribution, for example from 0.1% to 0.2% in decile 6 and from 94.8% to 95.1% in decile 10. Thus, on the one hand, it could be asserted that higher income earners will have to pay higher levels of tax as their income increases, but under the new rules governing taxation on occasional income, the increase in decile 6 might suggest that the middle class would pay higher taxes on this kind of income.

Here it is important to note that the CEQ model, used to simulate income redistribution by way of the tax system and social spending, has certain limitations in its ability to reflect the reality of tax payments across the income distribution.

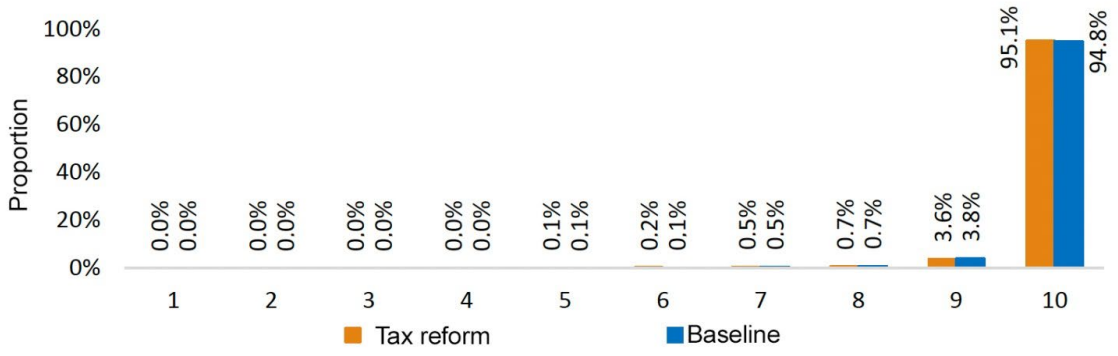
In the case of taxes, household surveys do not ask specifically about taxes paid, so conditions for taxpayers must be simulated. This can lead to seemingly inconsistent situations, such as people in the first income deciles completing tax returns that reflect their wealth but in fact never paying tax.

Simulations carried out according to the CEQ model are based on the terms of the Tax Statute. However, when these terms are included in surveys, discrepancies may arise between the simulated results and observed reality. It is important to understand that the CEQ is not designed to correct for inconsistencies in the surveys, but to provide an idea of the possible effects of changes in tax parameters and social spending.

It is essential to bear in mind that the results of the CEQ model provide an overview of trends and cannot be interpreted as an accurate prediction of what will happen with specific population groups. The model is unable to correct for inconsistencies present in the surveys, and these will persist during simulations.

Furthermore, it should be remembered that the surveys are not representative of a specific decile of the population. Caution should therefore be exercised when it comes to interpreting the results of the CEQ model and it should be understood that it provides an approximate view rather than an accurate representation of reality.

Figure 36. Proportions of tax collection by deciles distribution under the changes of the tax reform



Source: Compiled by the authors, based on the ENPH.

Finally, Figure 37 presents the effective tax rates, calculated as tax payments divided by market income, for each of the income deciles. The figure shows that an increase in effective rates can be observed for the two highest income deciles. In decile 10, the effective rate increased from 8.3% to 9.2%, while in decile 9, it went from 0.92% to 1.02%. These changes are a result of the modifications made in the tax reform, when compared to the baseline.

In addition, increases in the effective rates are recorded for deciles 6 and 7, from 0.09% to 0.12% and from 0.24% to 0.27%, respectively. Overall, the total effective rate increased from 4.15% in the baseline to 4.56% following implementation of the tax reform. The rest of the deciles saw some changes, but these were relatively small in comparison.

Finally, it is estimated that the implementation of the tax reform would result in a 9.97% increase in total revenue collection relative to market income, corresponding to approximately COP 2.67 trillion. These calculations demonstrate the impact that the reform would have on the tax take at national level.

Figure 37. Effective tax collection rates by decile under the changes of the tax reform

Source: Compiled by the authors, based on the ENPH.

7. Conclusions

Poverty and inequality are issues of great importance in public policy because of their impact on decision-making. Analysis of the progressivity of the tax system is fundamental to addressing these challenges, as it makes it possible to assess whether subsidies reach the most vulnerable households and whether taxes are paid by those with higher incomes. In this sense, the CEQ methodology is a useful tool that considers four types of income and calculates the levels of poverty and inequality at each stage.

In Colombia, an increase in poverty and inequality levels has been observed between 2017 and 2020, mainly due to the effects of the pandemic. Despite the implementation of the tax reform in 2018, no significant changes in the incidence of the tax system were observed. Therefore, policy simulations can provide a useful guide to fiscal decisions and help address these problems more effectively.

First, an analysis of the incidence of taxes and social spending in the year 2020 —considered as the baseline in this paper— was carried out. Under the existing spending and taxation conditions in that year, an increase in poverty from 43.4% to 44.6% was observed when market income was compared with consumable income (Figure 4). This increase can be partly explained by the regressive nature of VAT and the insufficient capacity of some social programmes to lift households out of poverty. However, thanks to social spending, there was a reduction in extreme poverty from 16.6% to 15.4%, although this is still considered a limited change compared to the fiscal effort dedicated to social programmes (Figure 5). In terms of inequality, important changes were observed, with a decrease of 6 basis points in the Gini index, from 0.596 to 0.533 (Figure 8), and a significant reduction in the Palma coefficient, from 6.67 to 4.18 (Figure 9).

The second exercise, carried out in collaboration with the DNP, was intended to simulate changes in targeting, increase coverage and improve the prioritisation of social spending. These results were surprising, since, by simulating the DNP's proposed changes to social programmes, a significant reduction in overall poverty was observed, from 43.4% to 34.9%. This would represent an extraordinary transformation for society (Figure 19). Similarly, extreme poverty would be halved

from 16.6% to 8.2%, constituting a significant impact on the country's greatest social problem (Figure 20). These changes would also have a powerful impact on income distribution, with a reduction of 10 base points in the Gini index, from 0.596 to 0.495 (Figure 21), and a significant drop in the Palma index, from 6.69 to 3.2 (Figure 22).

The last exercise involved a simulation of possible changes in poverty and income distribution resulting from the tax reform passed in 2022. However, the results suggest that this reform would not have a major impact on income distribution and poverty levels. For example, the Gini index would decrease only slightly, from 0.533 to 0.5305, in the case of final household income (Figure 25), while the Palma coefficient would decrease by only 0.03 units (Figure 26). These results may be partially explained by the fact that household surveys do not capture detailed information on the higher segments of the distribution, where the tax reform could have a greater impact on individuals. However, even taking this limitation into account, the results would fail to improve income distribution significantly, unless the targeting of social spending were improved and transfers increased to close the gap between the poorest households and the poverty line, as demonstrated in the social spending simulations. In addition, an improvement in the quality of social services is needed, especially in public education, where there is a large gap compared to private provision. This is a situation that limits access to higher education and, consequently, to jobs in the formal sector.

In sum, post-pandemic public policy should focus on recovering previous trends of poverty and inequality reduction, as the health crisis has affected the most vulnerable households in particular. Economic growth should be geared towards generating employment and strengthening social spending to help reduce inequality gaps in the country. Targeted measures and improvements in the quality of social services, especially in public education, are needed if the existing backlog is to be overcome and equal opportunities ensured.

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Legal deposit 1st quarter 2024
ISSN 2492 - 2846

Graphic design MeMo, Juliegilles, D. Cazeils
Layout Denise Perrin, AFD
Printed by the AFD reprography service

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