

---

# LECTURAS DE ECONOMÍA

---

Versión preliminar

## **Income and Wealth Mobility among the Wealthiest: The Case of Income Tax Filers in Colombia**

Alejandro Montoya Castaño , Luis Fernando Gamboa Niño and Luis Carlos Reyes

El presente artículo ha sido aprobado para ser publicado en Lecturas de Economía 104. Sin embargo, se trata de una versión preliminar, la cual está sujeta a cambios asociados al proceso editorial de la revista. Próximamente se contará con una versión definitiva.

# Income and Wealth Mobility among the Wealthiest: The Case of Income Tax Filers in Colombia<sup>1</sup>

Alejandro Montoya Castaño<sup>2</sup>, Luis Fernando Gamboa Niño<sup>3</sup> and Luis Carlos Reyes<sup>4</sup>

## Abstract

This article examines income and wealth mobility, as well as changes in income inequality in Colombia from 2014 to 2022, with particular emphasis on gender and taxation. Given that Colombia is characterized by one of the highest levels of income inequality globally, economic mobility emerges as a crucial issue for analysis. Our results suggest that there is a dual nature of economic mobility. On the one hand, there is significant income mobility, indicating that within less than a decade, individuals are likely to move from the bottom to the top income percentiles. On the other hand, this mobility does not effectively reduce income inequality or gender disparities. Specifically, income mobility is more pronounced among men, who experienced higher gains or milder losses and are overrepresented in the top income percentiles. Taxation appears to have a limited impact in mitigating income inequality, suggesting the need for further research in this area.

**JEL Classification:** D63, H24.

**Keywords:** Mobility, inequality, gender, individual tax-returns, Colombia, taxation.

## Movilidad de ingresos y riqueza entre los más ricos: el caso de los declarantes del impuesto sobre la renta en Colombia

## Resumen

Este artículo analiza la movilidad de ingresos y riqueza, así como los cambios en la desigualdad de ingresos en Colombia entre 2014 y 2022, con un enfoque en género y tributación. Colombia se caracteriza por tener uno de los niveles más altos de desigualdad de ingresos a nivel mundial, lo cual convierte a la movilidad económica en un tema crucial.

---

<sup>1</sup> This article was prepared while the authors were part of the Colombian Tax Agency DIAN. All errors and opinions are the responsibility of the authors and not DIAN's. The authors would like to acknowledge the valuable contributions and suggestions of Mónica Mogollón, and Edgar Benitez.

<sup>2</sup> Alejandro Montoya Castaño: Affiliated researcher at Universidad de Antioquia, Facultad de Ciencias Económicas, Grupo de Microeconomía Aplicada, Medellín, Antioquia. E-mail: [alejandro.montoyac@udea.edu.co](mailto:alejandro.montoyac@udea.edu.co)  
<https://orcid.org/0009-0002-0077-0454>

<sup>3</sup> Luis Fernando Gamboa Niño: Adjunct Professor at Pontificia Universidad Javeriana, Department of Economics, Bogotá, Colombia. E-mail: [luisgamboa@javeriana.edu.co](mailto:luisgamboa@javeriana.edu.co)  
<https://orcid.org/0000-0002-7273-7381>

<sup>4</sup> Luis Carlos Reyes: Associate Professor at Pontificia Universidad Javeriana, Department of Economics, Bogotá, Colombia. E-mail: [luiscarloreyes@javeriana.edu.co](mailto:luiscarloreyes@javeriana.edu.co)  
<https://orcid.org/0000-0003-4446-0044>

Nuestros resultados sugieren una naturaleza dual en la movilidad económica. Por un lado, existe una movilidad significativa de ingresos ya que en menos de una década es probable que las personas se desplacen desde los percentiles más bajos hasta los más altos de ingresos. Por otro lado, esta movilidad no está logrando reducir de manera efectiva la desigualdad de ingresos ni las brechas de género. La movilidad de ingresos es más pronunciada entre los hombres, quienes experimentaron mayores ganancias o menores pérdidas, y están sobrerrepresentados en los percentiles más altos de ingresos. La tributación parece tener un impacto limitado en la mitigación de estas desigualdades, lo que sugiere la necesidad de profundizar en las investigaciones en este ámbito.

**Palabras clave:** Movilidad, desigualdad, género, impuestos, Colombia.

### **Mobilité des revenus et de la richesse parmi les plus riches : le cas des déclarants de l'impôt sur le revenu en Colombie**

#### **Résumé**

Cet article analyse la mobilité des revenus et des richesses et l'évolution des inégalités de revenus en Colombie entre 2014 et 2022, en mettant l'accent sur le genre et la fiscalité. La Colombie se caractérise par l'un des niveaux d'inégalité de revenus les plus élevés au monde, ce qui fait de la mobilité économique une question cruciale.

Nos résultats suggèrent une double nature de la mobilité économique. D'une part, la mobilité des revenus est importante, les personnes étant susceptibles de passer du centile de revenu le plus bas au centile de revenu le plus élevé en moins de dix ans. D'autre part, cette mobilité ne réduit pas efficacement les inégalités de revenus et les écarts entre les hommes et les femmes. La mobilité des revenus est plus prononcée chez les hommes, qui ont connu des gains plus élevés ou des pertes plus faibles, et qui sont surreprésentés dans les centiles de revenus les plus élevés. La fiscalité semble avoir un impact limité sur l'atténuation de ces inégalités, ce qui suggère la nécessité de poursuivre les recherches dans ce domaine.

**Mots-clés :** Mobilité, inégalité, genre, fiscalité, Colombie.

<https://doi.org/10.17533/udea.le.n104a359194>

**Cómo citar / How to cite this item:** Montoya Castaño, A., Gamboa Niño, L. F., & Reyes, L. C. (2025). Income and Wealth Mobility among the Wealthiest: The Case of Income Tax Filers in Colombia. *Lecturas de Economía*, (104). <https://doi.org/10.17533/udea.le.n104a359194>

**-Introduction. -I. Methodology. – II. Results. -Conclusions. – Appendix -Ethics Statement. -References.**

**Introduction**

Wealth accumulation is highly unequal around the world (Piketty & Zucman, 2014), with countries such as Colombia consistently exhibiting elevated levels of economic inequality. According to the World Bank, Colombia displays the highest Gini Coefficient among all OECD member countries, with a value of 54.8 for 2022. High levels of inequality can lead to uneven access to high-quality education, health care, and childhood development for the most disadvantaged households. Further, there is inequality by gender and ethnicity. For example, women in Colombia are 1.7 times more likely to be unemployed than men, and Afro-Colombians are twice as likely to live in slums (World Bank, 2021).

Income inequality can also lead to an uneven accumulation of wealth, which households can use to cope with the effects of negative shocks or for investment, either in human capital or other types of investments (McKernan & Ratcliffe, 2009). High levels of income inequality give rise to adverse outcomes, particularly for women, who are more likely to be engaged in informal employment, limiting their access to social benefits and credit (de la Maisonneuve, 2017). Additionally, women tend to allocate a disproportionate amount of time to household activities. Therefore, income inequality affects social mobility, as access to education and employment opportunities become more limited. In this regard, Colombia exhibits low levels of upward social mobility in education, particularly among those from the most vulnerable backgrounds (García et al., 2015), with a significant correlation between a region's level of income inequality and social mobility (Galvis-Aponte & Meisel, 2014).

Changes in inequality occur when either low-income households experience higher income growth rates than the rest of the population, or when high-income households reduce their income disparity relative to the average, for example, due to tax policies. Most research on social mobility has focused on intergenerational mobility, which analyzes whether the wealth and income of younger generations can be explained by those of their parents. In fact, countries with high income inequality are characterized by low intergenerational mobility (Neidhofer, 2019). Nonetheless, intra-generational mobility, which studies changes in a person's wealth or income over time, has received less attention (Conley & Glauber, 2007; Meschede et al, 2016).

Intra-generational mobility is important for various reasons. Children of parents who experienced upward socioeconomic mobility are more likely to achieve higher levels of educational attainment compared to those whose parents did not undergo similar mobility (Plewis & Bartley, 2014). Nonetheless, children's educational attainment seems to be determined by parents' socioeconomic status rather than mobility. In this sense, the absence

of income mobility within the same generation can have consequences on human capital accumulation for the upcoming generations. Further, a high level of income inequality could be exacerbated by low levels of mobility in the future. Studies in countries with lower levels of inequality have found high levels of persistence or stickiness for the past century. For example, Jianakoplos and Menchik (1997) find that more than 60% of families in the United States remain in either the lowest or highest wealth quintiles after 15 years. Steckel and Krishnan (2006) find similar results when analyzing a 10-year lifespan. Thus, high levels of persistence in Colombia could only be tackled through more effective wealth and income redistribution.

To the best of our knowledge, this document represents the first attempt to measure whether the wealth accumulation and income gap are closing in a country with one of the highest levels of income inequality. For this purpose, we exploit income and wealth data from income tax filers to measure intra-generational mobility in Colombia between 2014 and 2022, with a focus on gender and taxation. We exclusively examine the personal income tax paid by individuals (or *Personas naturales*), not by firms (or *personas jurídicas*). This approach captures mobility by tracking changes in relative gross income or net wealth among individuals required to file tax returns. As a relative measure, it provides a partial view, as mobility may reflect actual gains or shifts driven by changes in others' positions. To offer a more comprehensive picture of income and wealth dynamics, we complement relative mobility (measured as changes in income or wealth percentiles over time) with absolute mobility indicators. Absolute mobility refers to monetary changes in constant prices between two or more periods (Genicot et al., 2024). One noteworthy aspect of the Colombian case is the frequent tax reforms aimed at making the system more progressive, without any gender distinctions.<sup>5</sup> In this sense, we analyze whether these changes in the tax system could have had any effect in reducing inequality between men and women.

In recent years, some studies have analyzed income mobility using tax information (Auten & Gee 2009; Auten et al. 2013; Larrimore et al. 2020; Splinter et al. 2009; Splinter, 2022). This study introduces important elements that were not considered previously. First, because Colombian tax filers must submit tax returns individually rather than as a family group, as in the United States, we can measure mobility by gender. This is particularly relevant in this context, as women account for 51.2% of the Colombian population according to the last census, yet they represent only 48.9% of tax filers, reflecting gender disparities in access to job opportunities. Second, we analyze mobility in terms of both income and wealth, as measured by personal assets, which include bank accounts, investments, properties, and vehicles, whereas most studies consider only one of the two measures. Finally, we examine whether income mobility is correlated with higher tax obligations. The latter provides information on the effectiveness of tax policies in reducing economic inequality. To the best of our knowledge, little is known about this topic in Colombia. Londoño (2012) notes that at the end of the last century and the first decade of the 2000s, mobility in Colombia was reduced, especially for the ultra-rich. We also contribute to the literature about mobility among the top income earners (see Federman et al., 2023; among others). Some studies that

---

<sup>5</sup> Colombia has undergone seven Tax Reforms since 2010 under three former presidents: Juan Manuel Santos (2010-2018), Iván Duque (2018-2022) and Gustavo Petro (2022-2026).

analyze social mobility rely on household surveys, which tend to underrepresent the wealthiest households. Because we use information from tax filers, our sample is skewed to the upper segment of the income and wealth distribution. It is important to mention that tax avoidance is one of the reasons for prudence, as there are financial incentives to reduce tax liabilities that do not distribute homogeneously across the income distribution.

We utilize data from income tax returns filed by individuals between 2014 and 2022, focusing on those tax filers who report information regularly and whose information is available at the end of the year and for 2014 or 2015. It should be noted that not all adults are required to file tax returns with the national authority unless they meet at least one of the following criteria: gross income (or purchases or bank transactions) of at least 1,400 UVT (Units of Tax Value), which for 2022 was around 53 million pesos (USD \$ 39,500 PPP in 2022), or gross wealth of at least 4,500 UVT (\$160 million COP or USD\$ 119,000 in PPP). PPP values were converted using OECD values at a rate of 1,346,577. Overall, Colombians must earn approximately four or more minimum wages to be eligible for submitting a tax return. According to Colombia's National Statistics Office (DANE), approximately 13% of working adults in 2022 earned more than two minimum wages. In Colombia, of the over 23 million workers, fewer than 5 million filed tax returns in 2022. Thus, our sample comprises the top 20% (or fewer than 20%) wealthiest individuals in the country, and those with relatively stable sources of income, as they file tax returns for most of the period of analysis.

It is also important to note that the analysis is based on gross income and net wealth (i.e., total assets minus liabilities). A key consideration in this context is the potential regressivity embedded in tax compliance and enforcement mechanisms. Individuals in the upper segments of the income and wealth distribution may benefit from a wider range of allowable deductions and greater access to specialized tax advisors, accountants, and legal professionals, which may facilitate tax optimization strategies. However, this has no bearing on the calculation of gross income, which is computed before any deductions are applied and thus remains unaffected by differential access to tax planning resources.

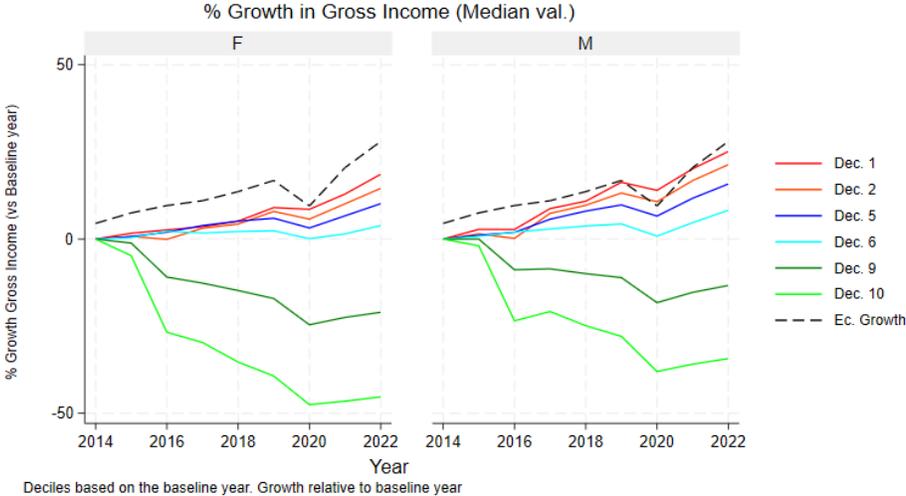
To provide a clearer picture of recent patterns in the country, we show income growth for a subset of deciles based on gross income, as well as the growth rate of the Colombian economy during 2014-2022 (see Figure 1). We choose six gross income deciles from the extremes (deciles 1, 2, 9, 10) and middle (deciles 5 and 6) of the income distribution to highlight the differences. It can be observed that gross income has grown at rates similar to the national economy for the lowest deciles, whereas higher-income tax filers seem to have experienced declines in income. This result provides a first approximation of mobility, which suggests that the gap between the deciles analyzed is narrowing. However, men exhibit higher growth rates than women, limiting gender mobility. In the following sections, we explore economic mobility in detail, its connection with inequality (as measured by Gini indexes), gender disparities, and taxes. We provide a general characterization of mobility by focusing on the top of income distribution, serving as a foundation for future research.

This analysis is not free of drawbacks. We only have information from the right side of the income distribution. Similarly, we do not have access to information about households, such

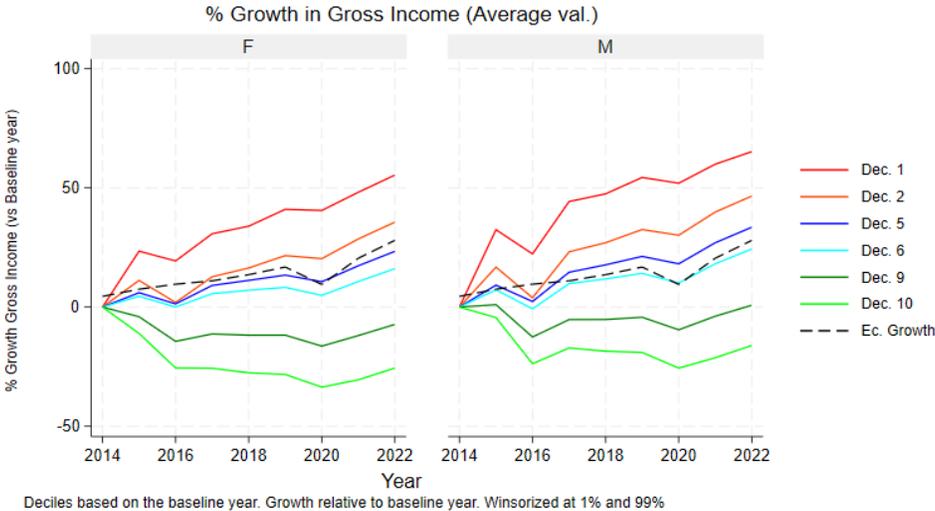
as household composition, access to subsidies or other economic benefits, among other variables. The absence of data about human capital and age limits our ability to determine which population group's mobility responds more slowly to events such as tax reforms or the COVID-19 pandemic. Thus, research in this field is still at an early stage.

**Figure 1.** Gross Income growth by year and gender, relative to the baseline year and the cumulative GDP growth.

A. Median Values



B. Average Values



Source: Own elaboration based on data from Income tax returns available at the 210- tax form. DIAN

## I. Methodology

In line with the primary objective of this study, namely, the analysis of economic mobility over a short time horizon, we restrict our empirical strategy to administrative tax records corresponding to individual taxpayers for whom longitudinal tracking is feasible from 2014 to 2022. The income tax datasets provided by the Colombian National Tax and Customs Directorate (DIAN) are structured into three categories: individuals (identified by personal identification numbers), legal entities (identified by tax identification numbers, NIT), and taxpayers under the SIMPLE regime (which includes both individuals and legal entities). This analysis is based exclusively on the dataset pertaining to individual taxpayers. Consequently, any variation in allowable deductions across time arises exclusively from legislative changes within the same tax regime, rather than from transitions between regimes.

We restrict our sample to tax filers who submitted their income tax forms for 2014-2022 (year-end) in at least 7 of the 9 years analyzed. We allow the initial year to vary between these two years to have a larger sample. All monetary values are expressed in Tax Value Units (UVT). The UVT for a given year is updated annually using the variation in the consumer price index for medium household incomes (Medium class) calculated by the National Statistics Office (DANE) over the 12 months prior to October 1 of the taxable year.

We first split the sample into deciles for the initial and final years using gross income and liquid assets. Gross income is calculated as the sum of five sources of income: labor, non-labor, capital, pensions, and fees. Liquid assets refer to the value of all assets owned by tax filers (housing, vehicles, bank accounts, investments, etc.) after subtracting all debts. Figures A1 and A2 of the **¡Error! No se encuentra el origen de la referencia.** show that the cut-offs for each decile remain relatively unchanged between our reduced sample and the full sample of tax filers. According to the availability of information across the different years, we only include 28% of the total tax filers that remain in the Tax records over the period (Table 1).

*Table 1. Sample selection (2014 - 2022)*

	<b>Obs.</b>	<b>Percentage of tax filers</b>
<b>Total unique tax filers</b>	6 700 371	100%
Information for 2022	5 503 927	82.1%
Information for 2014/2015	2 480 622	37.0%
At least 7 observations	2 105 730	31.4%
Information about gender	6 524 678	97.4%
<b>Final Sample (all conditions)</b>	1 880 721	28.1%

*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

We estimate both absolute and relative mobility using the income and wealth deciles calculated for the baseline year (either 2014 or 2015) as the reference point. In the case of

relative mobility, we use transition matrices and the Shorrocks index (SI) to assess whether individuals experienced changes in deciles between the final and baseline years. Percentiles are calculated for the whole population, but the estimations are disaggregated by gender. The Shorrocks Index ranges between 0 (no mobility) and 1 (complete mobility), with TM as the transition matrix, and it is defined as:

$$SI = \frac{\text{rank}(TM) - \text{trace}(TM)}{\text{rank}(TM) - 1} \quad (1)$$

Absolute mobility is estimated by comparing changes between the end and baseline years in income and wealth (in UVTs), averaged by each decile at the baseline year. We include other mobility metrics, such as the number of tax filers who experienced increases in both wealth and income, and changes in the values of the Gini and Theil indices. These calculations allow us to answer questions such as: a) are income and wealth gaps narrowing, and if so, in which segments of the distribution? b) Are gender disparities becoming less pronounced?<sup>6</sup> c) Overall, is inequality decreasing in the country?

We then analyze whether upward mobility (moving to a higher percentile) entails a higher tax burden; in other words, whether wealth and income gains are subject to proportionate taxation and whether this outcome varies by gender.

## II. Results

An initial analysis reveals that women are disproportionately represented in the lower income deciles and underrepresented in the upper deciles. For instance, in 2014, women comprised 67% of the first decile, while their share in the top decile was less than 30% (Table 2). Nonetheless, it is important to highlight that, in 2022, the proportion of women decreased in the first two deciles but increased in the subsequent ones. Increases in women’s participation in the top 2 deciles are close to 5 percentage points. There is also a greater concentration of both income and wealth among the top deciles. The top decile held 39.2% of total income, 29.3% of total wealth, and accounted for 64.6% of total taxes collected in 2014. For 2022, these percentages increased to 53.3%, 35.6%, and 77.1% respectively. The second highest decile saw moderate increases in wealth and income participation, alongside a decline in tax participation, whereas the remaining deciles experienced only reductions in these percentages. In absolute terms, the statistics show decreases in income (in UVT) for all deciles with increases in wealth (except for the top decile). Although these values do not reveal economic mobility, as the percentiles vary by year, they provide some insights into potential changes in inequality. Note also that we include individuals who filed a tax form for various reasons, including reported income, transactions, or wealth above the cutoffs. For

---

<sup>6</sup> From figures A5 to A6 we provide additional details regarding the sample composition by gender. Women represent approximately 38% of tax filers who submitted returns based on income. However, they account for around 47% of tax filers whose returns were filed due to net wealth (Figure A5 or the Appendix). Figure A6 further explores gender-based differences in gross income and tax burden by decile, revealing that men in the highest decile (10) control over 30% of the total gross income and bear more than 50% of the total tax burden.

this reason, the bottom income deciles have median incomes significantly below the cutoff for filing a tax form (1,400 UVT) but report median wealth close to the 9<sup>th</sup> percentile.

*Table 2. Descriptive statistics for the base year and final year*

Gro up	2014						2022					
	Income		Wealth		Ta xes	Wo men	Income		Wealth		Tax es	Wo men
	<i>UVT</i>	%	<i>UVT</i>	%	%	%	<i>UVT</i>	%	<i>UVT</i>	%	%	%
1	541.7	1.2	6996.7	8.2	0.1	67.0	263.1	0.5	7578.1	6.6	0.4	60.0
2	1194.1	3.3	6898.8	9.5	0.3	59.0	772.3	1.3	7931.4	5.3	0.1	57.7
3	1540.3	4.3	2512.0	5.2	0.3	51.8	1105.1	1.8	7850.7	5.0	0.2	55.0
4	1781.2	5.0	2704.9	5.4	0.6	49.0	1377.9	2.1	7007.0	4.6	0.2	52.1
5	2070.3	6.0	3019.9	6.0	1.1	48.3	1633.6	2.7	5852.5	4.5	0.3	49.9
6	2429.4	7.1	3633.7	7.1	2.3	47.2	1930.8	4.4	5172.4	5.7	0.7	50.2
7	2933.9	8.6	4293.3	7.7	4.6	44.7	2308.7	6.8	5275.1	7.4	2.0	49.6
8	3640.9	10.6	5133.6	9.0	7.9	42.9	2915.1	10.5	5812.0	10.4	5.0	47.9
9	4892.3	14.8	7074.4	12.7	18.1	38.5	3973.1	16.7	7293.1	14.9	14.0	43.8
10	9426.5	39.2	13343.6	29.3	64.6	29.6	7629.6	53.3	13187.6	35.6	77.1	34.7

*Notes:* The left-hand column ‘Group’ denotes the deciles based on gross income for each year. Columns in UVT (units of taxable value) summarize median values for each decile. Columns “%” show the percentage relative to the total. Finally, the “women” column shows the percentage of women in each decile. As a reference point, 47.4% and 47.8 of the sample are women in 2014 and 2022, respectively.

*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

In the following subsections, we first present findings on relative and absolute mobility and subsequently analyze the link between mobility and inequality and its connection to taxation.

The estimated mobility is skewed to the right. Since the sample exclusively comprises individuals who consistently file tax returns, upward mobility is more likely to be observed. Some individuals do not file a tax return due to job losses, in which case their income is substantially reduced. Those who exit (do not file a tax return in the following year) and enter (did not file a tax return in the previous year) the sample are more likely to be found in the bottom deciles (see figures A1 and A2 of the **¡Error! No se encuentra el origen de la referencia.**). In this sense, for the bottom deciles, the sample analyzed does not include a significant percentage of those who left the sample and who could have experienced downward mobility. For the top deciles, the percentage who enter or exit the sample is low, allowing us to obtain a more accurate picture of mobility. Nonetheless, we show that the cutoffs for each decile do not change significantly when comparing the entire population of tax filers to our reduced sample (see Figure A3 in the Appendix), suggesting that our conclusions capture general trends that apply to the entire population.

### ***A. Relative mobility***

The existence of relative mobility is summarized in Figure 2. Among tax filers in the top income decile in 2014/15, only 39.9% of women remained in the same decile in 2022, compared to 49.7% of men. According to this figure, there appears to be upward income mobility, particularly among the lowest deciles, and this mobility occurs more frequently among men. While these estimations do not show confidence intervals, the point averages suggest that, for all income deciles, men are more likely to move to a higher decile in 2022.<sup>7</sup> On the other hand, women are less likely to move downward in terms of liquid assets. Unlike income, assets exhibit greater stickiness. For example, more than 71% of both men and women who were classified in the top decile of assets in 2014 remained in the same decile in 2022 (Figure 2.b). Figure A4 of the Appendix shows a more detailed picture of mobility. The estimation of the Shorrocks- Prais index between 2014 and 2022 for our database is about 0.725, with a standard error of (0.001)<sup>8</sup>. This value falls within the range of index estimations conducted in the US. It is somewhat similar to Bradbury's (2016) for the period 2001 to 2011 (0.713), higher than Carroll and Chen's (2016) using panel data between 1968 and 2013 (0.55), and lower than Akee et al. (2017), with an estimated mobility ranging from 0.89 to 0.95 for several ethnic groups during 2000 to 2014.

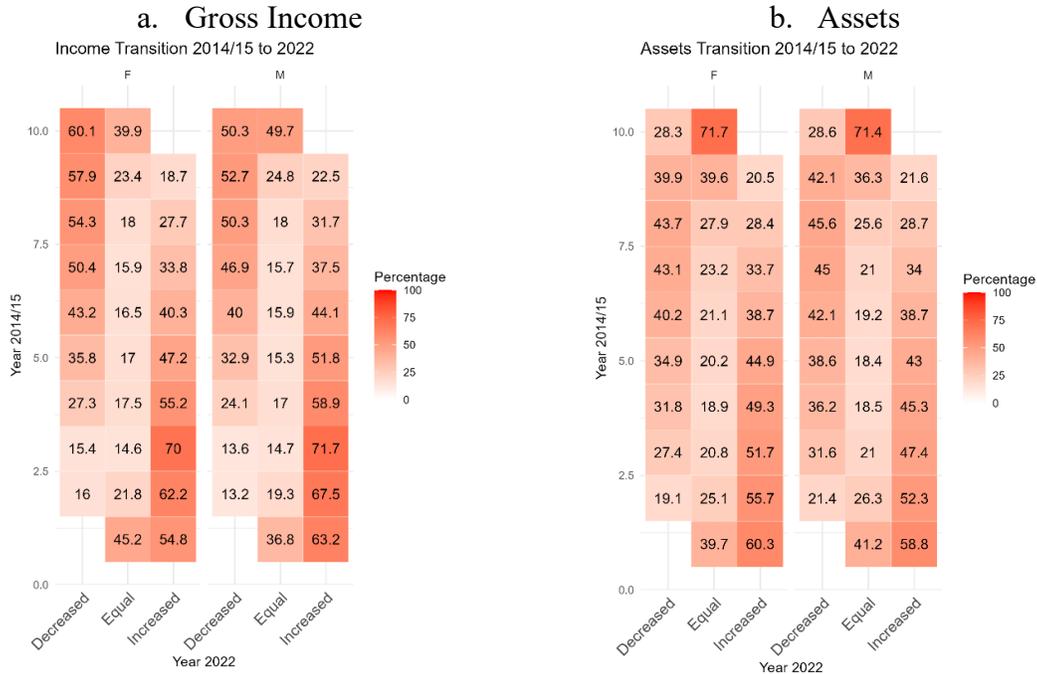
As a complementary exercise, we explore gradual income mobility in this context. For this purpose, we conducted two types of exercises. First, we examine the percentage of tax filers based on their baseline income decile (in 2014/15) who fall into each income decile in the subsequent years. For clarity, we present these transitions at two-year intervals. Second, we perform pooled regressions in which the income decile in each year is regressed against the previous year's decile, a gender dummy, and year fixed effects. The results indicate that income mobility occurs at a gradual pace. Specifically, the further a year is from the baseline, the higher (lower) the proportion of tax filers from the bottom (top) decile who move (remain) into higher deciles. Additionally, the previous year's decile is a strong predictor of the current year's decile, with a coefficient of 0.793. These results are presented in Figure A7 of the Appendix. We anticipate that wealth mobility would exhibit even more gradual transitions.

---

<sup>7</sup> We also conducted estimations using 2019 as the final year. This is because 2022 is a COVID 19 post-pandemic year, which could have affected deciles in different manners. Our estimations do not show significant differences in the main results, meaning that the results cannot be attributed to the pandemic. We can provide these estimations upon request.

<sup>8</sup> This estimation was carried out using the *igmobil* command available at Stata and written by Savegnago (2016). We used five groups, instead of the ten groups used along the document, to estimate relative mobility.

**Figure 2. Transition matrices by deciles of gross income (assets) at the baseline year and gender**



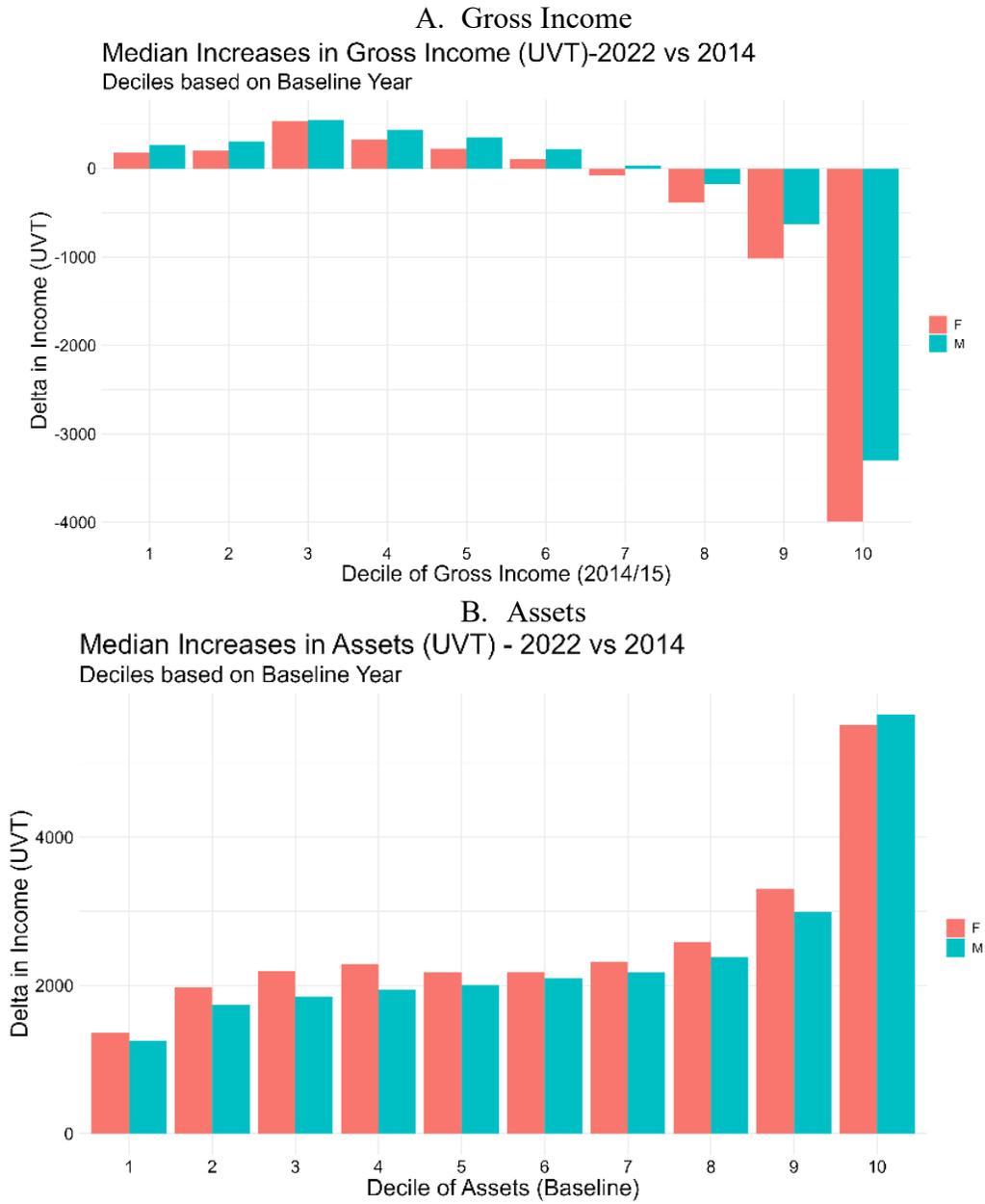
*Note:* This figure shows the percentage of each decile corresponding to each event (decreased, remained equal, increased) and their relative position by gender and economic variable (gross income or assets) using F-210 income tax returns.

*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

### **B. Absolute mobility**

Given the evidence of relative mobility in both income and wealth, we examine the magnitude of this mobility and identify the percentiles that experience the greatest benefits. To account for potential outliers, we utilize median values in the analysis. Figure 3. shows that, in terms of income, mobility is mostly explained by large decreases in the top income deciles, with moderate increases in the other deciles. These increases are usually larger for men, and at the top deciles, men have milder decreases. For example, the top decile experienced decreases of around 4,000 UVT for women (approx. 12.7 annual minimum wages) and 3,250 UVT for men (10.3 annual minimum wages). The third decile had the largest increase, with approximately 500 UVT (1.6 annual minimum wages). In terms of assets, the results point to increases in inequality: the larger the growth (in UVT), the higher the decile. The median tax filers in the tenth decile increased their wealth by around 7,000 UVT (22 annual minimum wages) over less than 10 years, almost twice as much as in the ninth decile. Asset accumulation is usually higher for women, except for the top decile.

**Figure 3.** Changes in gross income (assets) by deciles based on the baseline year and gender (median values)



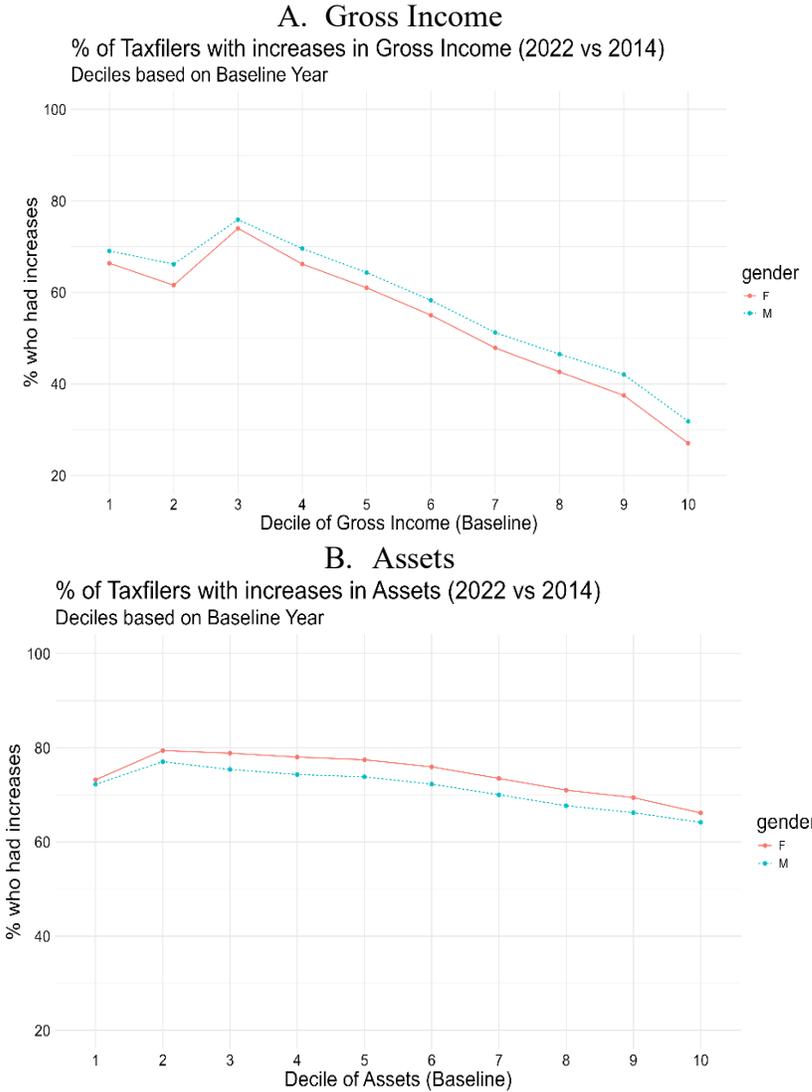
Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

We also calculate the percentage of tax filers who experienced positive changes (increases) in income or assets by decile at the baseline year (Figure 4). Therefore, an increase is defined as any positive difference in the analyzed variables (income or assets) between the end year (2022) and the baseline year (2014/15).

Since these differences are measured in UVT, increases reflect higher-paid jobs or promotions, as wages usually increase with inflation. Overall, tax filers in the bottom deciles

were more likely to experience income increases, reaching the highest value of 76% for decile 3. Only around 30% of tax filers in the top decile experienced income increases. Regarding assets, between 60% and 80% of tax filers obtained increases in assets in all deciles.

**Figure 4.** Tax filers who experienced increases in gross income (assets) by decile at the baseline year and gender (Percentage)



Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

**C. How is mobility affecting inequality?**

Ideally, greater economic mobility should be accompanied by simultaneous reductions in both income and wealth inequality. It is important to note that the mobility measured in the previous sections is calculated as the difference in income (or assets) between the final and baseline years, while keeping the deciles unchanged. On the contrary, the Gini index is calculated yearly, and the deciles change with the same frequency (Table 3). In this sense,

our results point to a feasible scenario of upward mobility alongside increases in inequality. The Gini and Theil indices show upward trends, indicating increments in both within- and between-group inequality. In other words, while a tax filer's relative position in 2014 in terms of wealth or income is not necessarily held in 2024, as mobility statistics show, the gap between those who are placed at the bottom and top of the distribution seems to be widening every year. This result is of particular concern, as the sample analyzed encompasses the wealthiest individuals in the country. This means that if this trend persists, economic inequality will further escalate.

*Table 3. Inequality measures over gross income*

		<b>Gini Coefficient</b>							
Decile	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>1</b>	0.263	0.271	0.556	0.264	0.272	0.286	0.297	0.300	0.305
<b>2</b>	0.059	0.062	0.172	0.091	0.094	0.089	0.091	0.088	0.088
<b>3</b>	0.025	0.025	0.071	0.041	0.046	0.045	0.049	0.049	0.050
<b>4</b>	0.024	0.023	0.041	0.026	0.027	0.028	0.033	0.033	0.035
<b>5</b>	0.026	0.025	0.038	0.026	0.026	0.027	0.027	0.028	0.029
<b>6</b>	0.028	0.027	0.038	0.028	0.028	0.028	0.029	0.029	0.031
<b>7</b>	0.034	0.034	0.032	0.031	0.030	0.030	0.030	0.030	0.031
<b>8</b>	0.037	0.038	0.037	0.039	0.039	0.040	0.040	0.042	0.044
<b>9</b>	0.070	0.069	0.064	0.065	0.064	0.065	0.064	0.067	0.069
<b>10</b>	0.354	0.357	0.376	0.348	0.357	0.362	0.366	0.381	0.408
<b>Total</b>	0.463	0.464	0.513	0.467	0.473	0.478	0.481	0.495	0.515
		<b>Entropy (a=1)</b>							
<b>within</b>	0.15	0.14	0.19	0.13	0.15	0.15	0.15	0.17	0.22
<b>between</b>	0.37	0.37	0.44	0.37	0.38	0.39	0.39	0.42	0.46
<b>total</b>	0.52	0.51	0.64	0.50	0.53	0.53	0.54	0.59	0.67
<b>%withi</b>									
<b>n</b>	28.9%	27.7%	30.5%	26.2%	27.7%	27.3%	27.7%	29.1%	32.1%

*Note:* Inequality indexes are obtained using gross incomes available at the F-210 income tax form, DIAN.

*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

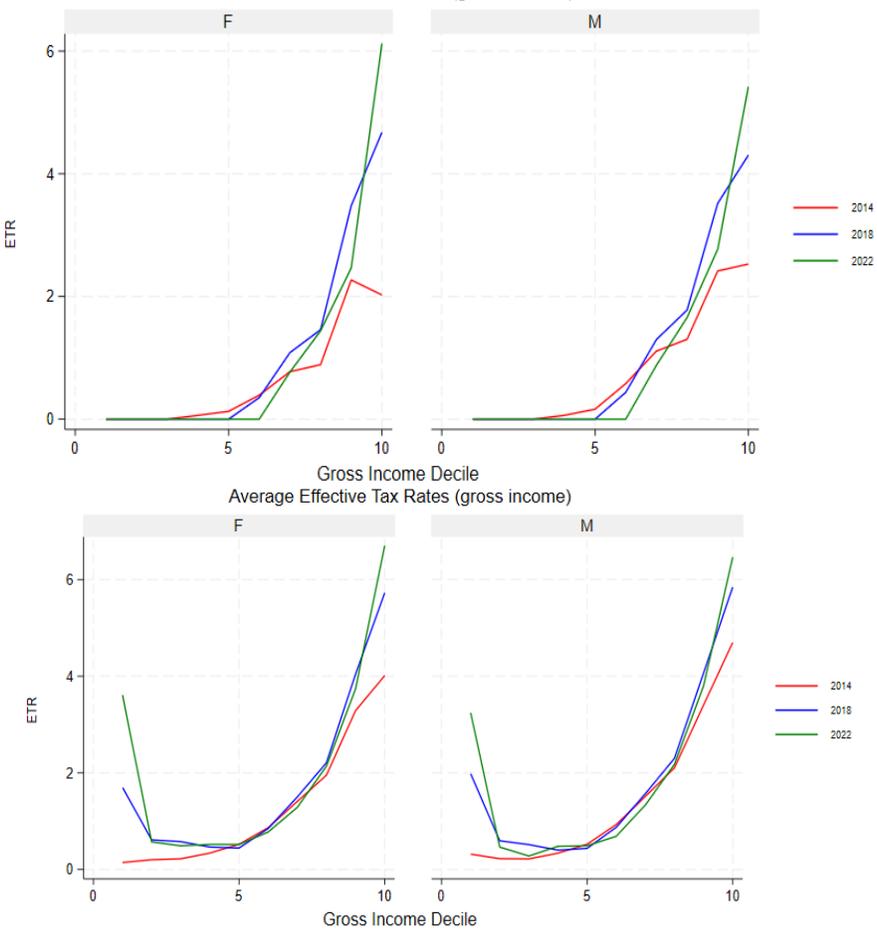
#### ***D. To what extent do taxes contribute to the reduction of inequality?***

A progressive tax scheme is a key mechanism for reducing inequality. However, our data does not allow us to directly estimate the impact of taxation on economic inequalities due to the diverse allocation of public spending (e.g., public goods, in-kind subsidies). Instead, we offer a preliminary analysis by providing a broad description of the progressivity of income

taxes during this period. The aim of this section is to encourage further research on the role of taxation in income and wealth inequalities<sup>9</sup>.

Figure 5 summarizes the effective tax rates (ETR) for each year and decile, calculated as the ratio of total taxes to gross incomes. The data show that effective tax rates are positive only for deciles 4 and above, with increasing rates observed thereafter. Notably, the richest taxpayers (decile 10) have increased their contributions over the period, possibly due to improvements in third-party information and changes in the tax code, among other factors beyond the scope of this document. However, deciles 5 to 9 exhibited higher rates in 2018 compared to 2022. Additionally, ETRs are higher for women than for men at the top income levels, suggesting that men might be receiving income with higher legal tax deductions than women. Overall, these results indicate that the current taxation system may have limited effects on reducing inequalities, both in general and by gender. Nonetheless, further research is needed to evaluate the clear effects of taxation on income inequality.

**Figure 5. Effective tax rates by income decile, gender, and year**

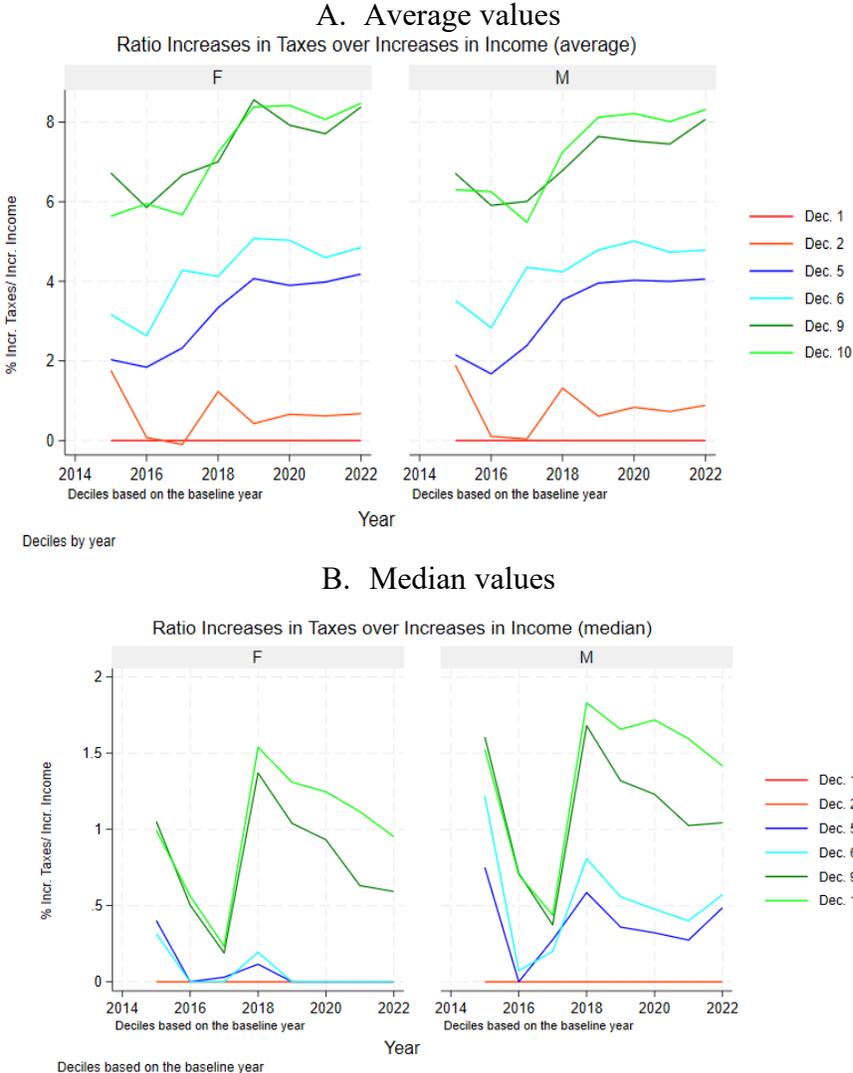


Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

<sup>9</sup> Note that because our analysis is based on deciles, it is not possible to find a correspondence between statutory tax rates and income deciles. Our focus is to offer some insights about whether taxation could be helping at reducing income inequalities that can guide other researchers.

Finally, we analyze the behavior of the ratio changes in collected taxes over changes in gross income, aggregated by decile (see *Figure 6*, panels A and B). We find that changes in this ratio are higher in the upper deciles relative to the lower deciles, which points to progressivity in taxation. However, this behavior does not apply to the whole distribution, as taxpayers in the 10<sup>th</sup> decile have a lower ratio than those in the 9<sup>th</sup> decile. This behavior occurs both in women and men (*Figure 6*, Panel B).

**Figure 6.** Relationship between increases in taxes relative to income increases, by deciles of income (calculated by year) and gender



Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

## Conclusions

This study analyzes economic mobility within the upper-income distribution in Colombia from 2014 to 2022, utilizing tax return data. The analysis focuses on the wealthiest individuals, defined as those in the 80th percentile and above. Additionally, we explore the relationship between this mobility and shifts in economic inequality, as well as the role of taxation in mitigating such disparities.

Our results reveal a dual nature of economic mobility. On the positive side, there is significant income mobility, indicating that over a span of less than ten years, individuals can move from the lower to the upper percentiles. This mobility is not only relative: those in the lower percentiles are more likely to see real income increases (adjusted by inflation), while those in the upper percentiles are more likely to experience real income losses. However, this mobility does not mitigate income inequality in the country. Moreover, income mobility is more pronounced among men, who experience higher gains or milder losses and are overrepresented in the top percentiles. Consequently, income mobility does not reduce inequality among the wealthiest individuals, nor does it contribute to reducing gender inequality.

Regarding wealth, as measured by individual assets (including bank accounts), economic mobility is more limited and highly sticky at the top of the distribution. The top percentiles experienced the highest increases in assets (in real terms). Taxation appears to have a very mild impact on reducing inequality, as effective tax rates decreased for most income deciles except the top one between 2018 and 2022. Additionally, the ratio of tax increases to income increases is not progressive across all deciles, with women at the top of the income distribution facing higher effective tax rates than men in the same position. Overall, while taxation seems to have a minimal effect on reducing inequality, its impact on income inequality requires further investigation.

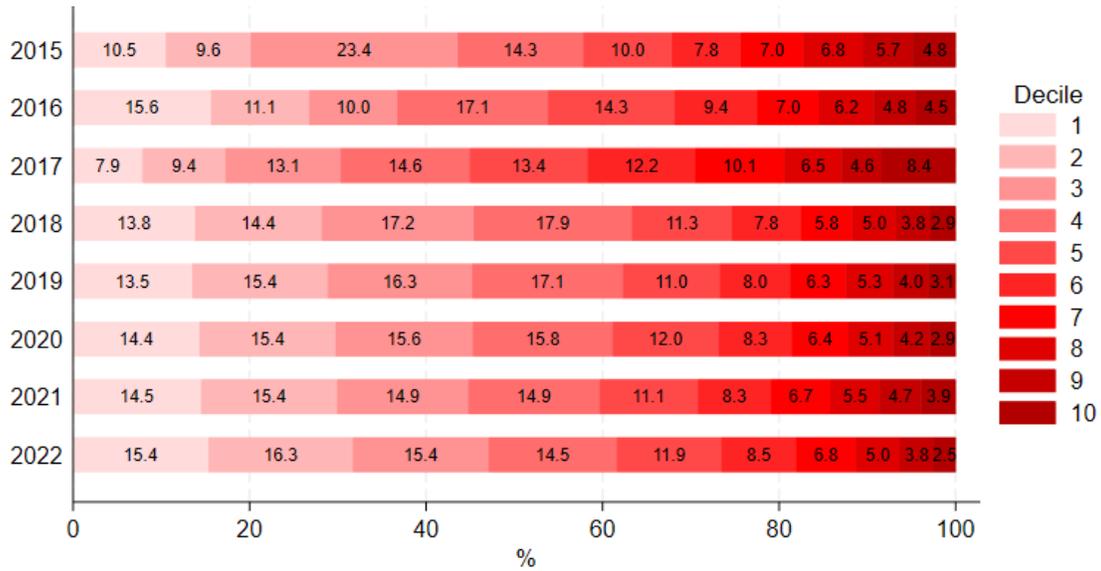
There are many avenues for extending this study. One is the analysis of the determinants of upward and downward mobility. With the inclusion of variables such as education, household information, or age, it might be possible to address questions related to whether parents experience upward mobility at a faster or slower pace than childless individuals, whether this mobility differs between mothers and fathers and by the number of children, or whether younger generations are more likely to experience upward mobility than older generations who are still employed. Additionally, it is possible to compare how the Colombian tax system contributes to reducing wealth inequality relative to other countries with similar characteristics and identify which aspects need to be strengthened to fulfill this purpose. Further, various government entities are collaborating on the construction of a database that calculates disposable income (including taxes and other benefits) for households in Colombia. The inclusion of disposable income can refine the estimations by using the income that households can actually spend.

## Appendix

### *Probability of entering or leaving the sample by year and percentile*

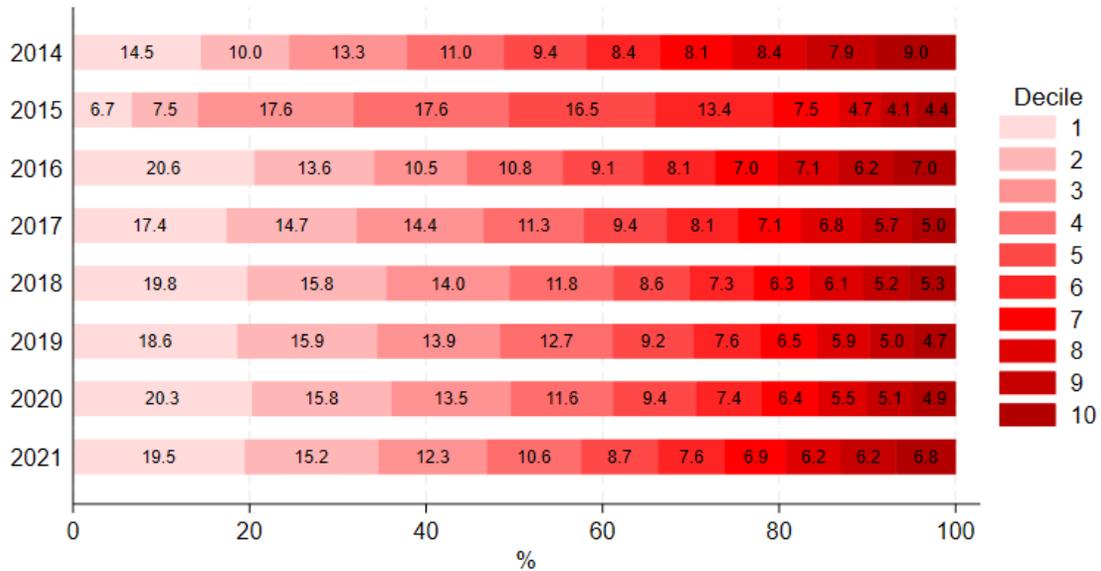
The mobility analyzed is probably skewed to the upper end of the distribution. Tax filers in the lowest percentiles are more likely to exit the sample (not file a tax form in the following year). Similarly, new tax filers (those who did not file a tax form in the previous year) are more commonly found in the lowest percentiles. Keeping a sample of tax filers who regularly file a tax form can reduce income volatility

**Figure A1.** *Percentage of new tax filers (not in previous years)*



*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

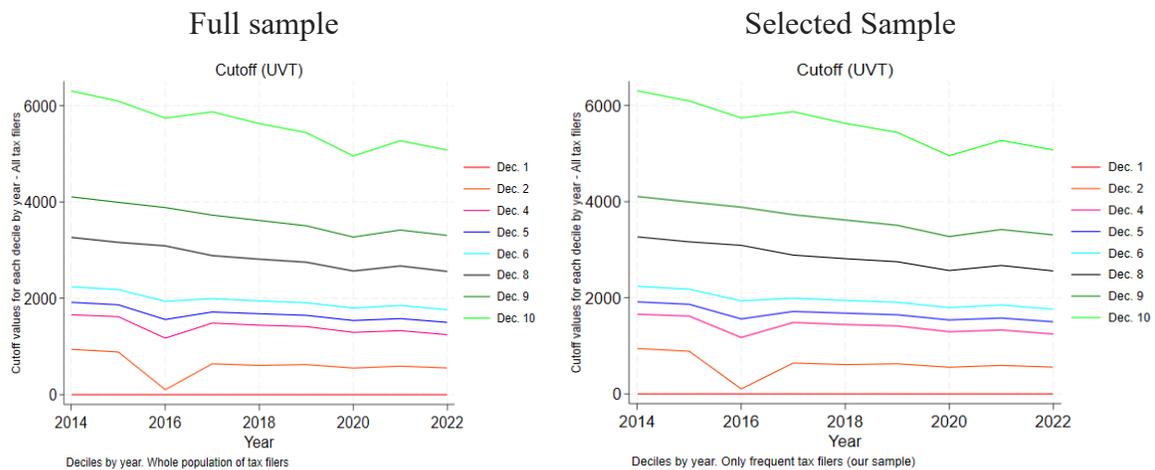
**Figure A2.** Percentage of tax filers who leave the sample (not in next year)



Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

**Figure A3.** Differences between the selected and the full sample (with all tax filers).  
Overall, the selected sample resembles the full sample

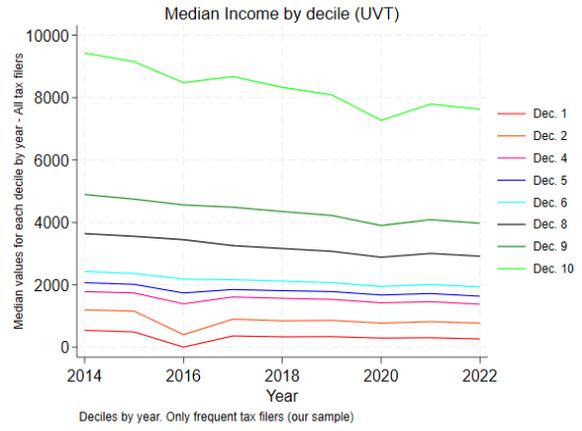
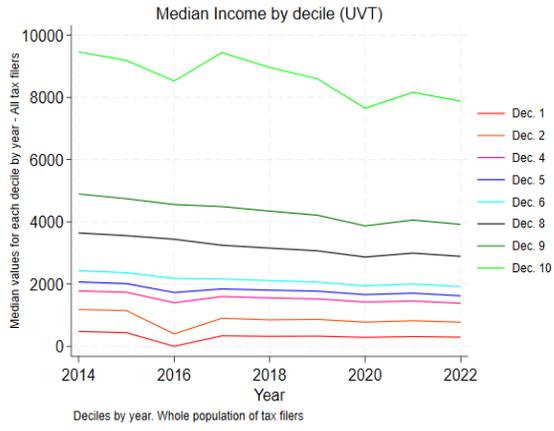
**a) Cut-off for each decile**



**b) Median Income**

Full sample

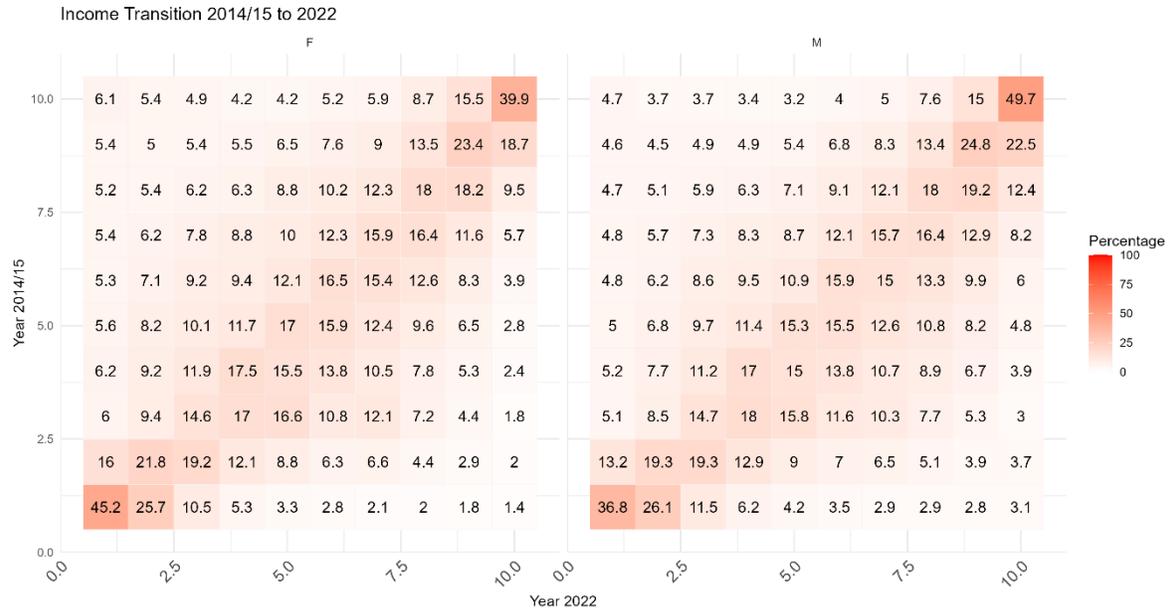
Selected Sample



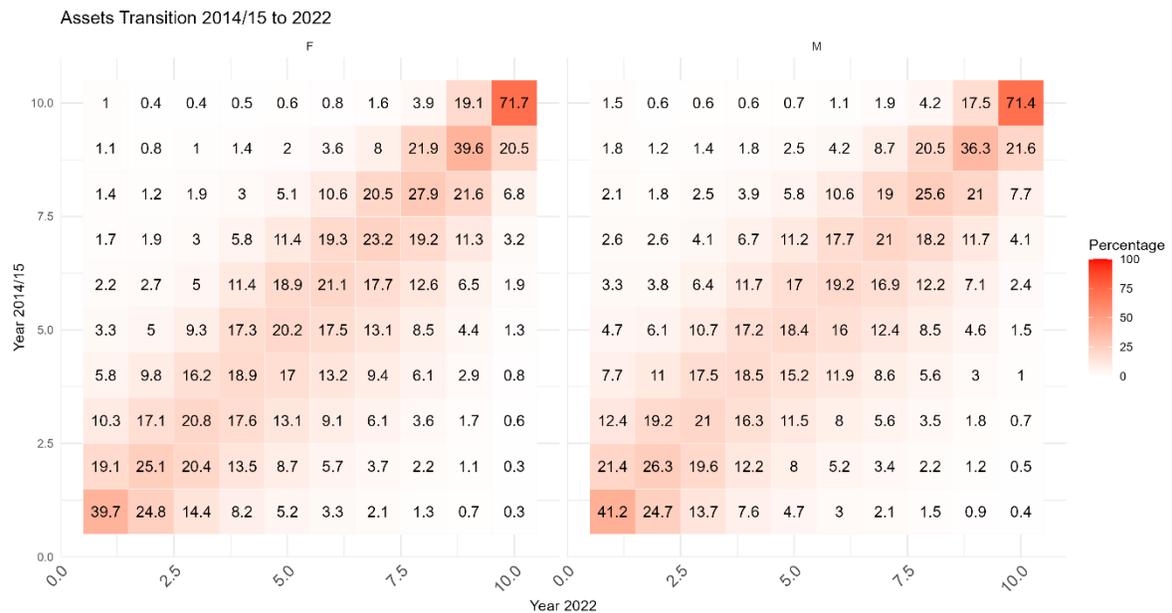
Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

**Figure A4. Complete transition matrices by deciles of gross income (assets) at the baseline year and gender**

**A. Gross Income**

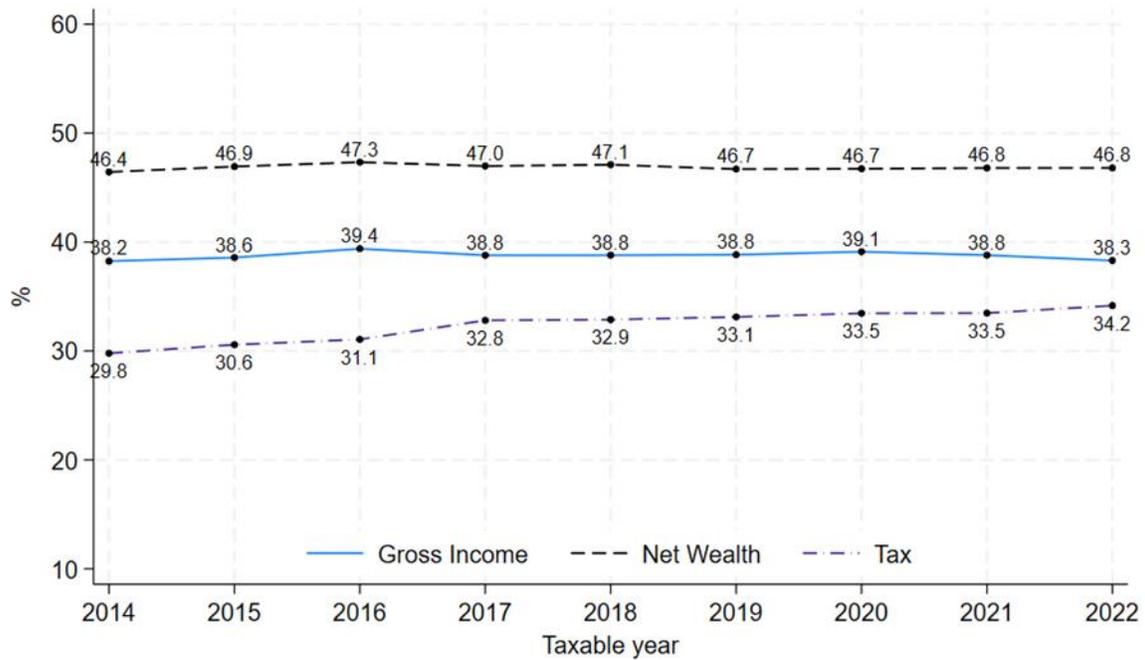


**B. Assets**



Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

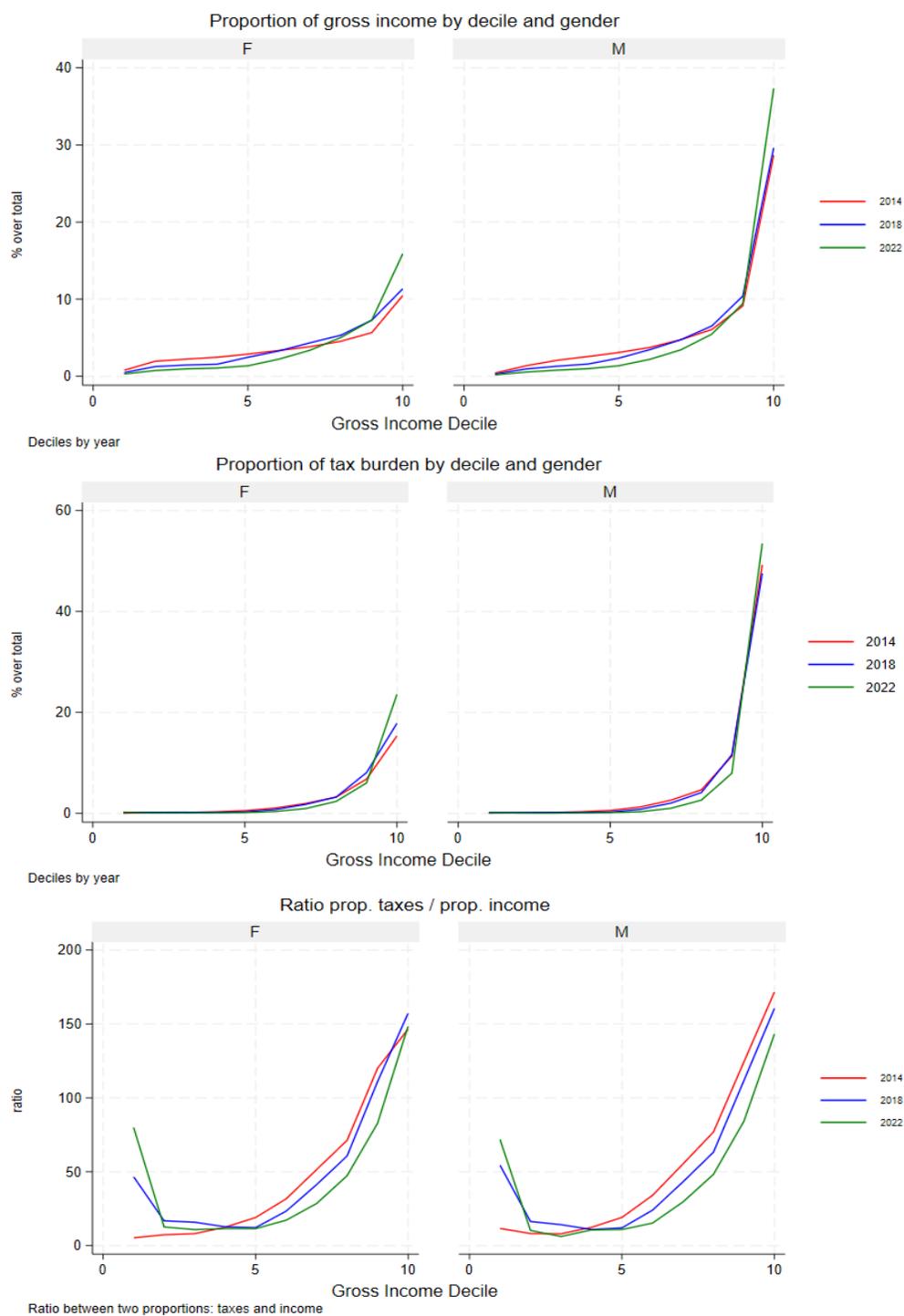
**Figure A5.** *Percentage of women filing taxes by year*



*Note:* Estimations using a sample of taxpayers with at least 7 years of reporting income tax.

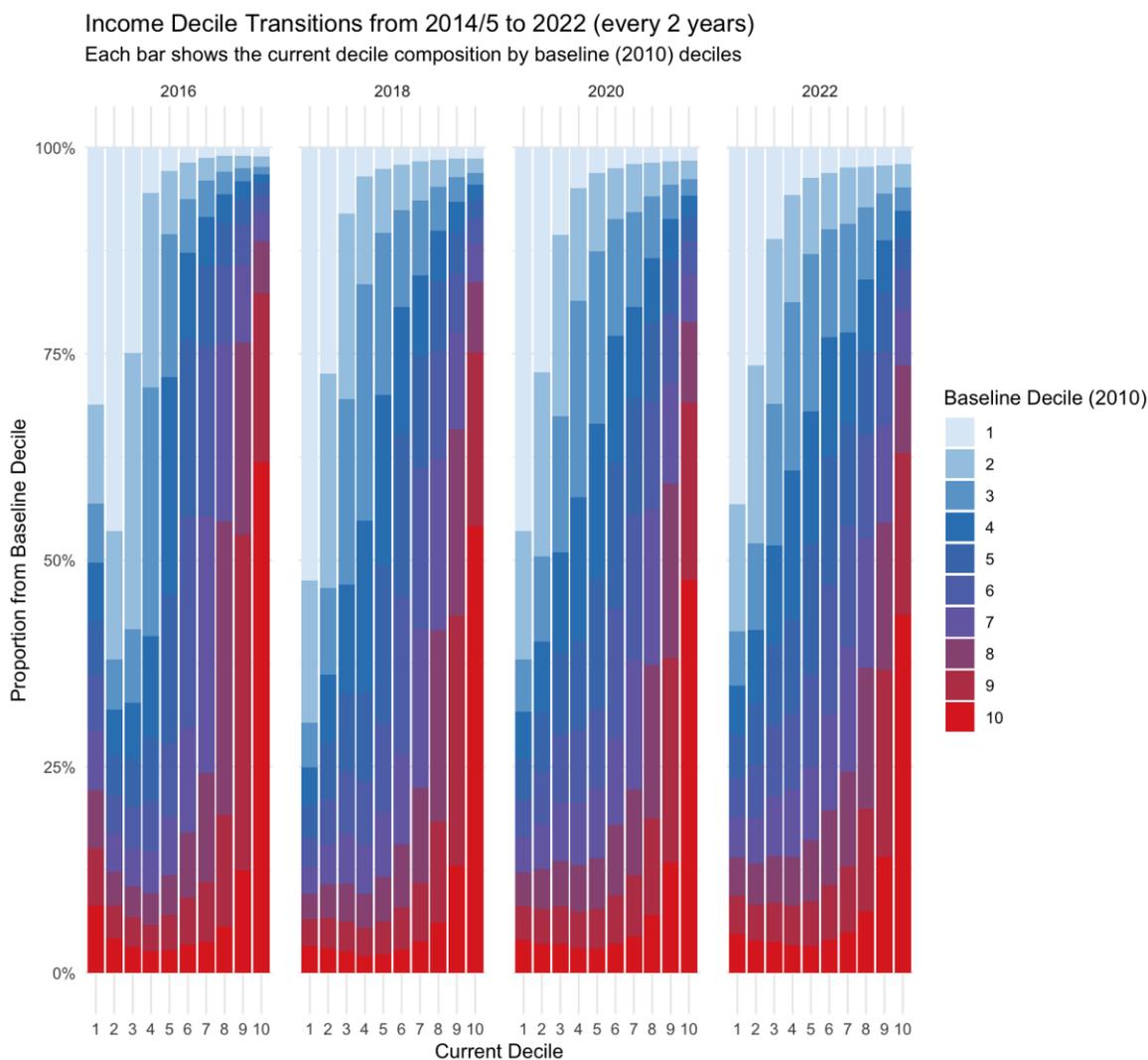
*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

**Figure A6.** *Proportion (relative to the total amount per year) of gross income and taxes, by gender and percentile*



Source: Own elaboration based on Income Tax returns available at the 210-tax form DIAN

**Figure A7. Income decile transitions: summary of two-year intervals**



*Note:* The goal of this exercise is to show that changes in mobility are gradual. Thus, we can see that compared to the baseline years (20014/15), the further a year is from the baseline year, the higher (lower) the percentage of individuals from the bottom (top) baseline decile in the upper deciles. We complement this analysis with pooled regressions in which the deciles in each year are regressed against the decile in the previous year, a gender dummy, and a year dummy variable. The errors are clustered at the individual level. We repeat this exercise by including only the even years. The high value (and statistically significant at 1% level) associated with the coefficient of the lagged decile is 0.793, including all years ( $R^2 = 0.636$ , and more than 14 million observations) and 0.697 ( $R^2 = 0.492$ , and more than 6.8 million observations) every two years.

*Source:* Own elaboration based on Income Tax returns available at the 210-tax form DIAN

## Ethics Statement

This research article did not work with a person or groups of people to generate the data used in the methodology; therefore, it did not require the endorsement of an Ethics Committee for its realization.

## References

- Akee, R., Jones, M. R., & Porter, S. R. (2017). *Adding Insult to Injury: Racial Disparity in an Era of Increasing Income Inequality* [Working Paper No. CARRA-WP- 2017-01]. the United States Census Bureau. <https://www.census.gov/library/working-papers/2017/adrm/carra-wp-2017-01.html>
- Auten, G., & Gee, G. (2009). Income Mobility in the United States: New Evidence from Income Tax Data. *National tax journal*, 62(2), 301-328. <https://ideas.repec.org/a/ntj/journl/v62y2009i2p301-28.html>
- Auten, G., Gee, G., & Turner, N. (2013). New Perspectives on Income Mobility and Inequality. *National Tax Journal*, 66(4), 893-912. <https://www.jstor.org/stable/24370049>
- Bradbury, K. (2016). *Levels and Trends in the Income Mobility of US families, 1977– 2012* [Federal Reserve Bank of Boston Working Papers. No. 16-8]. Federal Reserve Bank of Boston. <https://www.bostonfed.org/publications/research-department-working-paper/2016/levels-and-trends-in-the-income-mobility-of-us-families-1977-2012.aspx>
- Carroll, D. R., & Chen, A. (2016, 20 June). *Income Inequality Matters, But Mobility Is Just as Important* [Economic Commentary]. Federal Reserve Bank of Cleveland. <https://doi.org/10.26509/frbc-ec-201606>
- Conley, D., & Glauber, R. (2007). Family Background, Race, and Labor Market Inequality. *The Annals of the American Academy of Political and Social Science*, 609(1), 134-152. <https://ideas.repec.org/a/sae/annname/v609y2007i1p134-152.html>
- de la Maisonneuve, C. (2017). *Towards More Inclusive Growth in Colombia* [OECD Economics Department Working Papers, No. 1423]. OECD <https://doi.org/10.1787/334902e0-en>
- Federman, S., Sarid, A., & Yaish, M. (2023). The Intragenerational Mobility of The Top Income Earners during Financial Crises, a Story of a Cohort. *Advances in Life Course Research*, 58, 100565. <https://doi.org/10.1016/j.alcr.2023.100565>
- García, S., Rodríguez, C., Sánchez, F., & Bedoya, J. G. (2015). *La lotería de la cuna: La movilidad social a través de la educación en los municipios de Colombia* [Documentos CEDE, No. 13816]. Universidad de los Andes. <https://ideas.repec.org/p/col/000089/013816.html>
- Galvis–Aponte, L. A & Meisel, A. (2014). Aspectos regionales de la movilidad social y la igualdad de oportunidades en Colombia. Documentos de Trabajo Sobre Economía Regional y Urbana; No. 196. [https://www.banrep.gov.co/sites/default/files/publicaciones/archivos/dtser\\_196.pdf](https://www.banrep.gov.co/sites/default/files/publicaciones/archivos/dtser_196.pdf)

- Genicot, G., Ray, D., & Concha-Arriagada, C. (2024). *Upward Mobility in Developing Countries* (NBER Working Paper No. w32391). National Bureau of Economic Research. <https://www.nber.org/papers/w32391>
- Jianakoplos, N. A., & Menchik, P. L. (1997). Wealth mobility. *Review of Economics and Statistics*, 79(1), 18-31. [https://econpapers.repec.org/article/tprrstat/v\\_3a79\\_3ay\\_3a1997\\_3ai\\_3a1\\_3ap\\_3a18-31.htm](https://econpapers.repec.org/article/tprrstat/v_3a79_3ay_3a1997_3ai_3a1_3ap_3a18-31.htm)
- Larrimore, J., Mortenson, J., & Splinter, D. (2020). *Presence and persistence of poverty in US tax data* [NBERN Working Paper No. c14440]. National Bureau of Economic Research. [https://www.nber.org/system/files/working\\_papers/w26966/w26966.pdf](https://www.nber.org/system/files/working_papers/w26966/w26966.pdf)
- Londoño, J. (2012). *Income and Wealth At the Top in Colombia: An Exploration of Tax Records 1993-2010* (Public Policy and Development Master Dissertation). Paris School of Economics, <http://piketty.pse.ens.fr/files/LondonoVelez2012MasterThesis.pdf>
- McKernan, S. M., & Ratcliffe, C. E. (2009). Asset Building for Today's Stability and Tomorrow's Security. *New England Community Developments*, (2). [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2205912](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2205912)
- Meschede, T., Thomas, H., Mann, A., Stagg, A., & Shapiro, T. (2016). Wealth Mobility of Families Raising Children in the Twenty-First Century. *Race and Social Problems*, 8, 77-92. <https://doi.org/10.1007/s12552-016-9161-1>
- Neidhöfer, G. (2019). Intergenerational Mobility and the Rise and Fall of Inequality: Lessons from Latin America. *The Journal of Economic Inequality*, 17(4), 499-520. <https://doi.org/10.1007/s10888-019-09415-9>
- Nguyen, C. V., & Nguyen, L. T. (2020). Intra-generational and Intergenerational Social Mobility: Evidence from Vietnam. *Journal of Asian and African Studies*, 55(3), 370-397. <https://doi.org/10.1177/0021909619876320>
- Savegnago, M. (2016). igmobil: A command for intergenerational mobility analysis in Stata. *The Stata Journal*, 16(2), 386-402. <https://ideas.repec.org/a/tsj/stataj/y16y2016i2p386-402.html>
- Steckel, R. H., & Krishnan, J. (2006). The Wealth Mobility of Men and Women During the 1960s and 1970s. *Review of Income and Wealth*, 52(2), 189-212. <https://ideas.repec.org/a/bla/revinw/v52y2006i2p189-212.html>
- Piketty, T., & Zucman, G. (2014). Capital is Back: Wealth-income Ratios in Rich Countries 1700–2010. *The Quarterly Journal of Economics*, 129(3), 1255-1310. <https://doi.org/10.1093/qje/qju018>
- Plewis, I., & Bartley, M. (2014). Intra-generational Social Mobility and Educational Qualifications. *Research in Social Stratification and Mobility*, 36, 1-11. <https://doi.org/10.1016/j.rssm.2013.10.001>
- Splinter, D. (2022). Income Mobility and Inequality: Adult-Level Measures from the Us Tax Data Since 1979. *Review of Income and Wealth*, 68(4), 906-921. <https://doi.org/10.1111/roiw.12501>
- Splinter, D., Diamond, J., & Bryant, V. (2009). Income Volatility and Mobility: US Income Tax Data, 1999-2007. In *Proceedings. Annual Conference on Taxation and Minutes*

*of the Annual Meeting of the National Tax Association* (Vol. 102, pp. 1-10). National Tax Association. <https://www.jstor.org/stable/prancotamamnta.102>  
World Bank. (2021). *Building an Equitable Society in Colombia*. World Bank.