

Income and Wealth at the Top in Colombia: An Exploration of Tax Records 1993–2010*

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Abstract

This work presents new series on top shares of income and wealth from 1993 to 2010 in Colombia using individual tax returns and National Accounts data, and confirms that Colombia is one of the most unequal countries in the world. Income is highly concentrated at the top, with the top 1 per cent of the distribution accounting for 20.5 per cent of total income in 2010. The evolution of income inequality has followed a U-shaped pattern in past decades. Since 2003, top shares of income have surged, and most of the changes are concentrated among the ultra rich. Income taxation does little to reduce these income disparities. The findings complement other measures of income concentration such as the Gini coefficient. Income mobility at the top of the distribution is limited but has increased in recent years, especially at the very top. Wealth inequality follows a very similar U-shape pattern, with the crisis period of 1999–2002 as the inflexion point. Finally, the increase in top shares of wealth since 2002 has been concentrated among the bottom of the top percentile.

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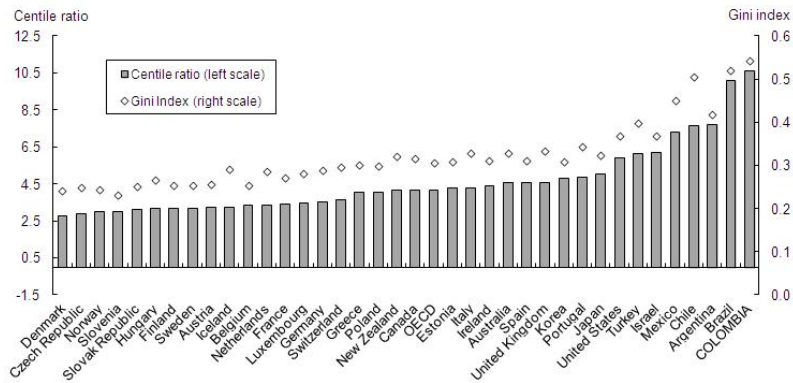
1 Introduction

There has been a notable revival of interest in the study of the distribution of top incomes using income tax data. Beginning with the research by Thomas Piketty of the long-run distribution of top incomes in France (2001; 2007), a succession of studies constructing top income share times series over the long run has appeared for more than twenty countries.¹

We analyse the evolution of income and wealth concentration in Colombia between 1993 and 2010 using tax statistics and administrative records on individual income. This study is strictly linked to the studies gathered in Atkinson & Piketty (2007, 2010), where series for shares of income accruing to upper income groups have been constructed for Australia, Canada, China, Denmark, Finland, France, Germany, India, Indonesia, Ireland, Italy, Japan, Mauritius, the Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Tanzania, the United Kingdom, and the United States.² Only one study has hitherto analysed a Latin American country, namely Argentina (Alvaredo, 2010). We propose to start filling this gap by analysing the Colombian experience. As such, this work constitutes an effort to analyse the evolution of income and wealth concentration in a developing economy that is part of a region known to have the highest disparities in the world. Moreover, the case of Colombia is interesting and worth studying on several additional grounds.

First, Colombia has traditionally been identified as having one of the highest Gini coefficients in Latin America, a region with extremely high income concentration (see Ferreira & Ravallion, 2008, and Figure 1). The region's high inequality is mainly a reflection of the disproportionate income of individuals at the top of the distribution (Szekely & Hilgert, 1999). To the extent that the overwhelming majority of the literature uses household survey data, which significantly underestimate income concentration, a reassessment of the evolution of income distribution in Colombia using income tax is in order.

Figure 1: Centile Ratio and Gini Index in Selected Countries



Notes: The figure reports the gap between the 10th and the 90th centile and the Gini index in the late 2000s, using household disposable equivalised income. Data for France and Ireland refer to the mid-2000s instead of the late 2000s. Data for Argentina, Colombia and Mexico refer to 2010, and data for Brazil and Chile refer to 2009. OECD average includes Chile and Mexico.

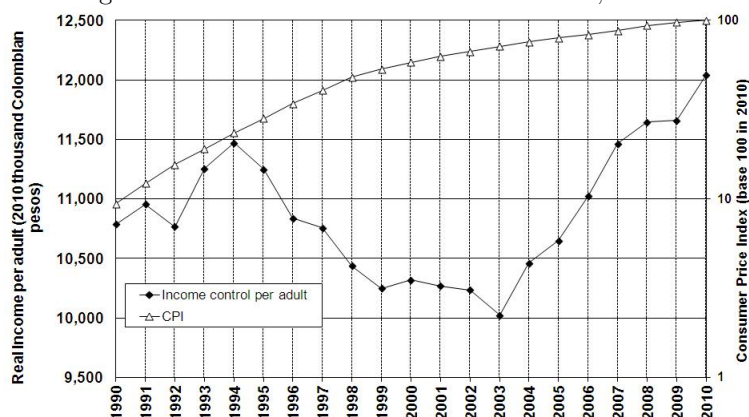
Source: OECD Income Distribution and Poverty, OECD Social Expenditure Statistics (database), and SEDLAC (CEDLAS and The World Bank) for Latin American countries (including Chile and Mexico).

¹ The World Top Incomes Database provides on-line access to all the existent series. See <http://gmond.parisschoolofeconomics.eu/topincomes>.

² See Atkinson *et al.* (2011), Atkinson & Leigh (2007a), Saez & Veall (2005), Piketty & Qian (2009), Kleven & Schultz (2011), Jantti *et al.* (2010), Piketty (2007), Dell (2007), Banerjee & Piketty (2010), Leigh & van der Eng (2009), Nolan (2007), Alvaredo & Pisano (2010), Moriguchi & Saez (2008), Atkinson (2011b), Salverda & Atkinson (2007), Atkinson & Leigh (2007b), Aaberge & Atkinson (2010), Alvaredo (2009), Atkinson (2010), Alvaredo & Atkinson (n.d.), Alvaredo & Saez (2009), Roine & Waldenstrom (2008), Dell *et al.* (2007), Atkinson (2011a), Atkinson (2005), and Piketty & Saez (2007).

Second, from an economic point of view, Colombia has experienced dramatic changes over the last two decades. In the beginning of the 1990s, Colombia embarked on a process of market liberalisation in the context of the Washington Consensus, and enjoyed increases in income until 1994 (see Figure 2). In 1996–1997 the country suffered a recession, and later plunged into the most severe economic recession in modern history (Sanchez *et al.*, 2007), the income per adult dropping persistently until 2003. The economy recovered that year, and was followed by an economic boom in the mid-2000s that was only temporarily interrupted by the global economic crisis in 2008–2009 (see Figure 2). Yet while growth succeeded in pushing millions out of poverty, it may have had only mediocre effects on income distribution. Indeed, economic growth these years was boosted in part by a highly capital-intensive commodity boom, whose benefits are unlikely to trickle down to the middle and bottom sections of the income distribution, thus accentuating income disparities. Hence, it is important to analyse income concentration during the growth and recession years in order to re-assess the link between economic development and income distribution.

Figure 2: Average Real Income and Consumer Price Index, Colombia 1990–2010



Notes: Figure reports the average real income per adult (aged 20 and above), expressed in real 2010 thousand Colombian pesos. CPI is equal to 100 in 2010. 1 US Dollar \approx 2,000 Colombian pesos (2010 prices). Source: Table C.5.

Third, Colombia has undergone important changes in the political arena since the 1990s. The 1991 Political Constitution established progressiveness as a key foundation of the Colombian tax system (Article 363), and social public spending as a priority over other forms of public spending (Article 350). Consequently, the central government expenditures increased significantly, doubling from an average of 9.8 per cent of GDP between 1981 and 1991, to 17.6 per cent between 1992 and 2007, peaking at 21.5 per cent in 2007.³ Thus, Colombia was the only Latin American country in which the pro-market economic policies of the early 1990s were not accompanied by the objective of reducing the role of the State; on the contrary, the aim was to strengthen it (Olivera *et al.*, 2010). The present study can shed light on the extent to which these well-intentioned political efforts seeking to reduce the flagrant income disparities in Colombia actually translated into real impacts on the distribution of income.

Finally, there are very few studies on the evolution of income and wealth inequality in Colombia from a historical perspective.⁴ Moreover, previous research has been exclusively based on household survey data, which have two main limitations. First, official household surveys in Colombia are exclusively concerned with income and earnings and, to this day, they provide

³ Note however that, despite these improvements, public spending as a share of GDP in Colombia remains far below OECD averages.

⁴ Regarding income inequality, Londoño (1995) constitutes a notable exception. Using national accounts and household surveys for 1936–1940, 1953, 1963–1967, 1971, 1978 and 1988, the author compiles complete, consistent, and comparable information on income distribution in the twentieth century. Specifically, he shows that, during this period, the evolution of the Gini coefficient fluctuated significantly: inequality increased ostensibly between the thirties and sixties, peaking in 1967, and decreased in the following two decades.

virtually no information on household wealth. Indeed, the precariousness of data explains why inequality of wealth in Colombia remains largely unexplored.⁵ Second, household survey micro-data are all but ideal for studying top shares (Alvaredo, 2011; Burkhauser *et al.*, 2012; Szekely & Hilgert, 1999). First, the rich are usually missing from household surveys, either for sampling reasons or because they refuse to cooperate with the time-consuming task of completing or answering to a long form. Second, because extreme observations are normally regarded as data “contamination”, the rich may be intentionally excluded so as to minimise bias problems generated by the outliers. Finally, household survey data present severe under-reporting at the top of the distribution. This is both because the richest individuals usually have diversified portfolios with income flows that are not easy to value, and because they are more reluctant to disclose their assets and wealth. Given that these issues are considerably less significant in tax statistics, tax data are preferred over household surveys in studying income and wealth at the top. An exploration of the extent to which tax data in Colombia shed light on income and wealth inequality is thus of considerable interest.

However, the use of tax statistics is not without drawbacks. First, since only a fraction of the population files a tax return, studies using tax data are restricted to measuring top shares, which are silent about changes in the lower and middle part of the distribution. This implies that the series may follow different patterns than broader measures of inequality, such as the Gini coefficient. We examine this issue in Section 4.4, comparing income concentration using tax data and household surveys in Colombia. Second, previous studies using tax data have been largely concerned with gross income *before* taxes and transfers, i.e. they do not account for the potential redistributive impact of fiscal policy. Luckily, however, our data do include the amount of income tax levied on individuals, allowing us to examine the redistributive impact of income taxation. Third, estimates may be biased due to tax avoidance and tax evasion. Indeed, tax filers have a financial incentive to present their affairs in a way that reduces tax liabilities, the incentive being particularly strong for the rich. These elements, which are common to all countries, become critical in the developing world.⁶ In Colombia, a country until recently plagued by high insecurity, the rich and wealthy may be particularly dissuaded from disclosing their fortunes to authorities, lest the information revealed fall into the wrong hands. Indeed, anecdotal evidence suggests that, during the intense political violence of the 1990s, leaked personal tax returns were used by criminal groups to target victims and kidnap for ransom. Yet despite their shortcomings, and because alternative sources such as household surveys are not problem-free either, results using income tax data can still be informative and remain a unique and useful source to describe the upper part of the Lorenz curve, i.e., top shares.

Recent literature suggests that the share of total income going to top income groups has risen dramatically in the last decades in many countries (Atkinson *et al.*, 2011), and Colombia may not be an exception. There are a number of reasons why studying rises in top income shares is important. First, top income groups have an impact on resources and growth, and top income shares can affect overall inequality (typically measured by the Gini coefficient), both at the national and the global level (Atkinson, 2007a). Given that the increase in the Gini recorded in Colombia between 1992 and 2010 was of the order of 8 percentage points (see Table 6, column 3), what is happening at the top is potentially important as an explanation. Furthermore, increases in top shares matter from a political economy perspective. To the extent that people are sensible to fairness appreciations and income distribution in society, a high degree of income inequality may trigger compensating redistributive taxation policies.⁷

This study obtains five main empirical results. First, income in Colombia is highly concentrated at the top, as the top 1 per cent of the income distribution accounts for over 20 per cent of

⁵ This phenomenon is not exclusive to the Colombian case nor to the developing world. In fact, very few developed countries have examined long-term evolution of top wealth shares for similar data constraints.

⁶ Latin America in general is thought to have a low tax morale compared to developed countries: they are almost three times more likely to justify tax evasion (20 per cent versus 7 per cent in OECD countries) and only 34 per cent of respondents in the region consider tax evasion always wrong compared to an average of 62 per cent in OECD countries (Daude & Melguizo, 2010).

⁷ This observation has been empirically validated in both developed and developing economies. In Colombia, Londoño (2011) shows that individuals who believe socio-economic outcomes are unfair are associated with a higher demand for state intervention for redistributive matters.

total income in 2010. Income inequality has followed a U-shaped evolution in the past decades; the recessionary years in the mid-1990s, followed by one of the most severe economic crises in Colombian history, dwarfed the income share of the top 1 per cent. Since 2003, high economic growth has contributed to a surge in top income shares, especially among the ultra-rich. Second, income taxation does little to reduce the high levels of inequality in Colombia. Third, despite substantial inter-period variation, mobility in Colombia is very reduced, especially for the ultra-rich. Finally, we exploit the fact that income tax data include information on personal net worth to study the evolution of wealth concentration, and find that wealth inequality follows a very similar U-shape pattern, with the crisis period of 1999–2002 as the inflexion point.

The rest of this work is organised as follows. Section 2 describes the data and methodology. Section 3 presents the context, describing the structure of tax revenue and the personal income tax in Colombia. Section 4 presents the findings on top income shares. Section 5 presents results on wealth concentration. Section 6 concludes. Details about the data sources, methods, adjustments, and computations are presented in Appendices A–H.

2 Data and Methodology

To our knowledge, there have been no official income tax statistics publications over the last three decades in Colombia. The estimates provided by this study thus come from personal income tax return statistics, in the form of panel micro-data and tabulations, compiled especially for us by the tax agency (henceforth DIAN) and that cover the period of 1993 to 2010. They constitute a rich and unique data source, including information on individuals’ wages and self-employment income, rents and capital income, interests and financial returns, business income, irregular income, allowances, deductions, exemptions, and taxes paid on regular and irregular income, among others.⁸ Moreover, because of presumptive income taxation based on net worth, income tax returns include information on filers’ gross wealth, liabilities, and net worth.⁹ This enables us to estimate top income shares as well as top wealth shares in Colombia.

The micro-data are separated into two datasets. The first dataset spans over the years of 1993–2006, and the second covers the years of 2006–2010. The 1993–2006 micro-data is an unbalanced panel that includes the universe of tax filers for 1993–2003. In 2004, the income statement was separated between individuals required to keep accounting ledgers (tax form 110) and those not required (tax form 210). The micro-data include the latter but exclude the former for 2004–2006. In contrast, the 2006–2010 micro-data is a balanced panel that includes, for both types of filers, those that filed an income tax return every year between 2006–2010. Such individuals represent between 50 and 60 per cent of the total number of tax filers these years.

The fact that the 2006–2010 micro-data is a balanced panel poses an empirical challenge due to non-random attrition, since individuals who cease to file a tax return for one or more years are generally located at the left of the distribution, as their income and wealth are very close to the filing thresholds. To overcome this issue, we combine the tabulations that have been compiled for us by DIAN covering 1992–2010 and which represent the entire pool of tax filers in Colombia. These tabulations report, by ranges of gross income, the total number of tax filers in each bracket and most of the variables included in the tax returns for each year. We organise individuals in the 2006–2010 balanced panel by levels of gross income so as to reproduce the 1992–2010 tax tabulations. We then compute the ratio number of filers in tabulations/micro-data by ranges of gross income, and apply those ratios to individuals in the balanced panel. In other words, we weigh

⁸ The Colombian income tax consists of a tax on regular income, plus a tax on irregular income called *Impuesto a las Ganancias Ocasionales*. Both taxes follow the same progressive tax schedule shown in Table 3. The tax on irregular income includes taxes on some capital gains such as fixed assets (e.g. residential property owned for over two years) and financial assets (e.g. shares owned for over two years), as well as inheritances and gifts. See Section 3.2.1 for a description.

⁹ In Colombia, a rebuttable presumption exists, stipulating that taxable regular income is not to be less than 3 per cent of net worth (Law 1111/2006). In the past, this rate has been equal to 6 per cent in 1992, 5 per cent in 1993, 4 per cent in 1994 (Decree 1653/1991), and it was later set to 5 per cent (Law 223/1995), and finally 6 per cent (Law 633/2000) before the Uribe II tax reform reduced it to 3 per cent in 2006.

each filer in the 2006–2010 balanced panel —*a fortiori* a non-attritor— by the total number of tax filers in his income bracket that year. Insofar as this weighting procedure awards a greater weight to individuals in the bottom brackets (i.e. those who are most likely to attrite since their income is close to the filing thresholds), it enables us to control for non-random attrition, that is, for the fact that individuals in the bottom income brackets are most likely to be under-represented in our balanced panel.¹⁰

2.1 Top Incomes

There are several methodological problems when estimating top income shares. The first is the need to relate the number of persons to a control total to define how many tax filers represent a given fractile such as the top percentile. The Colombian income tax is individually based and has never allowed joint filing for married couples. Consequently, the number of tax units (i.e. the number of individuals had everyone been required to file) is approximated by the adult population defined as all residents aged 20 and above from the national census, and the top percentile share will measure the share of total income accruing to the top percentile of adult individuals.¹¹

Due to rampant informality rates and high filing thresholds, the number of tax filers is extremely low in Colombia. Official statistics report that around 50 per cent of the working population is informal (DANE, 2012).¹² Moreover, an exceptionally high filing threshold, whose nominal values are updated annually, excludes the majority of tax units from filing an income tax return.¹³ Figure 3 shows that, on average, only 2.4 per cent of tax units were required to file an income tax return in 1993–2010.

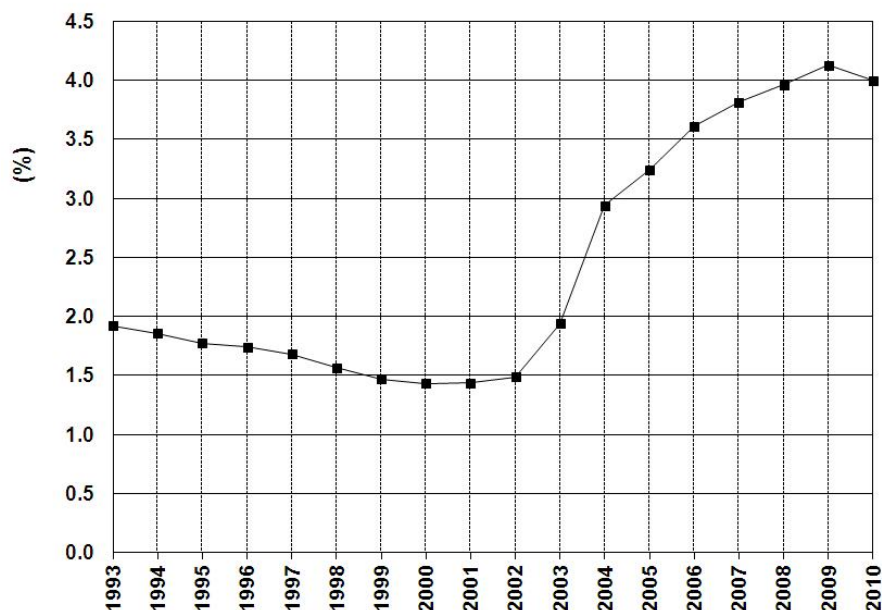
¹⁰ We corroborate the robustness of this weighing-by-bracket procedure in Section D.1.1 in the Appendix.

¹¹ Note that, in establishing this threshold, we are implicitly assuming that the number of individuals aged less than 20 years old with enough income to file a tax return is negligible.

¹² Following ILO standards, informal employment is defined by the number of workers in a firm (less than 5), excluding self-employees and employees working for the public sector.

¹³ Note, however, that a small number of tax returns does not systematically mean that only a few individuals contribute to the personal income tax. In Colombia, if an individual is not required to file a personal income tax return, then the withholding rates operate as a final tax. Unfortunately, the tax agency in Colombia does not produce statistics on these individuals, and thus it is not possible to include them in our analysis. In theory, it is possible that a significant number of people contribute *via* withholding. However, the generosity of the tax reliefs, which also apply to the withholding regime (see Section 3.2.1), and the largeness of the first exempted bracket (see Section 3.2.2), both limit the revenue-collecting capacity of the income withholding tax in Colombia.

Figure 3: The Proportion of Tax Returns in Colombia, 1993–2010



Source: Author's computations using tax returns data (see Table C.5, col. (4)).

Between 1993 and 2003, the Colombian legislation included two filing requirements regarding gross income and gross wealth, which varied across the three types of tax filers featured in the tax code, namely wage earners, self-employed workers, and others.¹⁴ For these years, the filing threshold for self-employed and employees represented 8.3–12.1 times the average income, reducing the proportion of tax returns to a low 1.7 per cent (see Table A.3 in the Appendix). The 2003 tax reform launched by Uribe I reduced the filing threshold for gross wealth and gross income. Wage earners' income threshold, for instance, dropped from 14 to roughly 8 times the mean income per adult this year. In 2004, an additional innovation in tax collection by the same administration further reduced these thresholds and introduced three more criteria regarding consumption and expenditures. As average income flourished thanks to be economic boom in the mid-2000s (more so than inflation), the proportion of tax files doubled in 2003–2010.¹⁵ Yet despite this increase, the current proportion of tax units remains extremely low compared to developed countries and even developing countries like Argentina and India (see [Alvaredo, 2010](#); [Banerjee & Piketty, 2010](#)). For this reason, our analysis is necessarily restricted to the very high end of the income income distribution. That is, we estimate the income share only *within* the top percentile.

A second issue concerns the definition of income. As mentioned before, since 2004 personal income statements have been separated into tax form 110, for filers required to keep accountancy books (*e.g.* shopkeepers and other individuals whose profession is related to commercial activities), and tax form 210, for filers not required to keep accountancy books (*e.g.* wage earners and those with a liberal profession). Each tax form reports different sources of income, and different items

¹⁴ For filing purposes, individuals are categorised by source of income. Specifically, the norm indicates that an individual is considered a wage earner (self-employed) if she is not responsible for the sales tax and at least 80 per cent of her gross income comes from payments arising from a work relationship or a legal and set relationship (fees, commissions, and services which have been withdrawn at the source, respectively). If less than 80 per cent of an individual's total gross income comes from such sources, or if the individual does not have the bills to prove so, then she is considered a "low-income" tax filer. We will refer to these individuals simply as "others". Note that the terms wage earner and employees are used interchangeably, as are the terms independent worker and self-employed.

¹⁵ Today, individuals satisfying at least one of five conditions are required to file an income tax return (i.e. income, wealth, credit card purchases, consumption, and bank deposits or financial investments). The current filing conditions are summarised in Table A.2 in the Appendix.

considered costs or deductibles. For instance, tax form 210 reports wages, self-employment income, interests and financial returns, and ‘other’ income as possible sources of income, while tax form 110 reports gross operational income, gross non-operational income, and interests and financial returns, respectively. In addition, tax form 110 reports costs with greater detail, separating sales costs, administrative working expenses, and sales working expenses, while tax form 210 does not.

For both types of tax filers, total ‘gross income’ includes costs incurred to obtain that income. For this reason, it is important to refine the definition of income so as to approximate an ‘actual income’. We do this by defining income separately for individuals required and not required to keep accountancy books. For the former, income is defined as total gross regular income, minus one-sixth of ‘other costs and deductions’ (following the tax form definition), plus net taxable and non-taxable irregular income. For the latter, income is defined as total gross regular income, minus refunds, rebates and discounts on sales, minus total costs, minus administrative operational expenses, minus operational sales expenses, minus one-sixth of ‘other deductions’ (following the tax form definition), plus net taxable and non-taxable irregular income.¹⁶ Thus, this definition of income includes all income items reported on personal tax returns (*e.g.* wages, self-employment, rents and capital income, unincorporated business income, interests and financial returns, and irregular income), and it is before personal income taxes and personal payroll taxes but after the deduction of employers’ payroll taxes and corporate income taxes.¹⁷ Regrettably, the 1993–2006 micro-data do not include most of the variables required to define income as we do above. For instance, irregular income, ‘other’ costs and deductions, and sales costs are not included in the data. To define our income variable for these years, we organise individuals by level of gross income so as to reproduce the 1992–2010 tax tabulations with the 2006–2010 micro-data, including a column with our newly-defined income. We do this separately for individuals required and not required to keep accountancy books. We then compute the ratio income/gross income by ranges of gross income from the tax tabulations, and apply the weighted average of those ratios to incomes from the 1993–2006 micro-data.¹⁸

Once our income has been defined, we study income concentration and calculate income shares per top group. To do this, we must divide the income amounts accruing to each fractile by an estimate of total personal income. The objective here is to relate the amounts recorded in the tax data (numerator of the top share) to a comparable control total for the full population (denominator of the top share). Ideally, this would be defined as total personal income reported on tax returns had everybody been required to file a tax return. However, because only a fraction of individuals file a tax return in Colombia, this total income denominator cannot be estimated using tax statistics and rather needs to be estimated using National Accounts. We approximate the ideal income denominator as the sum of households’ primary incomes and social benefits other than in-kind social transfers, but net of (1) employers’ actual social contributions, (2) imputed social contribution, (3) imputed property income of insurance policyholders, (4) imputed rentals for owner occupied housing, and (5) fixed capital consumption, which we have set at 5 per cent of gross values. This procedure generates a reference income of about 65 per cent of GDP.¹⁹

To get a sense of the orders of magnitude, we report in Table 1 the thresholds, the average income level in each fractile, along with the number of tax units in each fractile. In 2010, there were over 28.1 million tax units in Colombia. Based on national accounts statistics, the average income of those 28.1 million tax units was around \$12 million pesos (PPP US\$9,152). To belong to the top percentile (P99), which includes about 281 thousand units, one needed to make more than \$101 million pesos (PPP US\$76,982). The average income of the bottom half of the top percentile

¹⁶ Note that, in subtracting one-sixth of ‘other costs and deductions’ and ‘other deductions’ in our definition of income (for tax forms 210 and 110, respectively), we are assuming that only this portion represents costs incurred to obtain that income. We examine the sensitivity of our results in Section 4.1, and re-compute top shares using different definitions of income.

¹⁷ Wages and labour income include salaries, bonuses, severance payments, travel allowances, business expenses, pension payouts, etcetera. Rents and capital income includes dividends and participations, the net value of rent, the sale of fixed assets in possession for under two years, and indemnities that are not work-related. Irregular income includes capital gains in fixed assets (*e.g.* residential property owned for more than two years) and financial assets (*e.g.* shares owned for more than two years), as well as inheritances and gifts, and lotteries and games.

¹⁸ Details regarding this computation are offered in Section D.1.1 in the Appendix.

¹⁹ This computation is explained in greater detail in Section C.1 in the Appendix, and calculations are presented in Table C.5.

(fractile P99–99.5, about 140 thousand units) was roughly \$126 million (PPP US\$96,066). To belong to the top 0.001 per cent (about 281 units), one needed to make more than \$4.8 billion pesos (PPP US\$3.6 million), and the average income above that threshold was more than \$12.6 billion pesos (PPP US\$9.6 million). In order to put these numbers in a global perspective, one can note that Colombia’s 2010 P99.9 threshold (PPP US\$307,607) is below U.S. 2010 P99 threshold (US\$352,055, see [Piketty & Saez, 2007](#)) and that Colombia’s P99.99 threshold is well below U.S. 2010 P99.9 threshold (US\$1,492,175). In fact, the average American in the top 0.01 per cent is ten times as rich as his Colombian counterpart (US\$23,846,950 versus PPP US\$2,420,586). Interestingly, top incomes in Colombia are roughly comparable to those in Spain, despite the fact that the average income is one-third of its size (2010 PPP US\$25,553 in 2009, see [Alvaredo & Saez, 2009](#)). Indeed, Spain’s 2009 P99.9 threshold is only 16 per cent higher than Colombia’s in 2010 (2010 PPP US\$358,556 and PPP US\$307,607, respectively), and the average income of the top 0.01 per cent is only 27 per cent higher (2010 PPP US\$3,081,558 versus 2010 PPP US\$2,420,586, respectively).²⁰ To put it bluntly, although Spain is on average much richer than Colombia, the super-rich in Colombia are roughly comparable to their Spanish counterparts.

Table 1: Thresholds and Average Incomes in Top Income Groups Within the Top Percentile in Colombia, 2010

| Threshold | Income threshold | | | Fractiles | Number of tax units | Average income | | |
|-----------|------------------|------------------------------|-------------|-----------------|---------------------|----------------|------------------------------|-------------|
| | pesos ('000s) | US\$ (market ex-change rate) | US\$ (PPP) | | | pesos ('000s) | US\$ (market ex-change rate) | US\$ (PPP) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| P99 | \$101,293 | \$50,647 | \$76,982 | Full Population | 28,104,576 | \$12,042 | \$6,021 | \$9,152 |
| P99.5 | \$160,930 | \$80,465 | \$122,305 | Top 1–0.5% | 140,523 | \$126,403 | \$63,202 | \$96,066 |
| P99.9 | \$404,750 | \$202,375 | \$307,607 | Top 0.5–0.1% | 112,418 | \$235,831 | \$117,915 | \$179,229 |
| P99.95 | \$590,534 | \$295,267 | \$448,801 | Top 0.1–0.05% | 14,052 | \$482,015 | \$241,008 | \$366,328 |
| P99.99 | \$1,343,255 | \$671,627 | \$1,020,863 | Top 0.05–0.01% | 11,242 | \$818,529 | \$409,264 | \$622,075 |
| P99.999 | \$4,792,947 | \$2,396,474 | \$3,642,602 | Top 0.01–0.001% | 2,529 | \$2,137,123 | \$1,068,562 | \$1,624,197 |
| | | | | Top 0.001% | 281 | \$12,616,031 | \$6,308,015 | \$9,588,084 |

Notes: Amounts expressed in 2010 Colombian pesos. PPP US\$1 \approx 2,000 Colombian pesos market exchange rate, and PPP US\$1 \approx 1,316 Colombian pesos.

Source: Tables C.5 and D.12, row 2010.

2.2 Top Wealth

Similar issues relate to the examination of wealth concentration using tax data. As mentioned before, Colombia has presumptive income taxation based on net worth, and therefore income tax returns include information on filers’ gross wealth, liabilities, and net worth. We use the same measure of total control population as we do for estimating top income shares. However, given the very high filing thresholds of the income tax, our analysis is again limited to the top 1 per cent of the distribution. Although small in size, we will see that this top group nevertheless holds a substantial fraction of total net worth in the economy. Moreover, because there is heterogeneity between the bottom and upper half of the top percentile, we also analyse smaller groups within the top 1 per cent. In particular, we study the top 0.5 per cent, the top 0.1 per cent, the top 0.05 per cent, the top 0.01 per cent, the top 0.001 per cent, and intermediate groups like the top 1–0.5 per cent (which denotes the bottom half of the top 1 per cent), the top 0.5–0.1, etcetera.

We define wealth as net worth, that is, all assets (gross wealth) minus liabilities as they appear on the income tax return. The concept of wealth used for tax purposes is very broad and includes all assets (tangible assets such as land, buildings, residences, furniture, vehicles, jewellery, business assets, machinery, oil wells and mines, and intangible assets such as stocks, bonds, cash, savings in private funds) net of liabilities. Because this variable is present in both datasets for all

²⁰ Note that values for both Spain and U.S. include capital gains.

years, our definition of wealth is much more readily obtainable than that of income for the entire period of 1993–2010.

However, wealth reported on the tax return will likely under-estimate top wealth shares for several reasons. First, it includes voluntary but excludes mandatory pension rights. Second, future labour income and human wealth are obviously not included in the tax statistics. Third, real estate wealth is generally not reported according to its market value but rather to its fiscal cost or its registry value for real estate tax purposes, which can be significantly inferior. Recent estimates calculate that, in Bogota, the cadastral value is around 60–80 per cent of market value (CDB, 2011), but this percentage can fall significantly for other cities.²¹ In an effort to account for this fact, net worth is re-computed assuming that tangible assets represent 70 per cent of total wealth and that cadastral values are 50 per cent of market values.²² Yet in spite of this, and for the aforementioned reasons, our measure of wealth and our top wealth shares are likely subject to considerable underestimation. An additional caveat is that the data available does not allow to decompose reported wealth into different sources nor to display the composition by gender, age, etcetera.

Finally, accounting for total wealth to estimate wealth shares is not a straightforward task either. Unlike some developed countries, National Accounts in Colombia do not report personal wealth estimates. Therefore an alternative, albeit less-than-ideal, wealth denominator must be computed using the data available. We present the evolution of wealth concentration using the Harrod-Domar-Solow formula with demographic growth.²³ According to this formula, the long-run aggregate wealth-income ratio β^* converges to the household savings rate s over the sum of the per capital national income growth rate g plus the demographic growth rate n , such that:

$$\beta^* = \frac{s}{g + n} \quad (2.1)$$

Table C.6 in the Appendix displays the values for s , g and n for 1993–2010, obtained from the National Accounts and official statistics provided by DANE. The wealth-income ratio β^* for 1993–2010 is thus equal to:

$$\beta^* = \frac{s}{g + n} = \frac{10.11}{1.91 + 1.39} \approx 306\% \quad (2.2)$$

It is important to note that this value of β^* is significantly lower than that of developed countries. Specifically, it represents half of France’s wealth-to-income ratio and one-third of Spain’s (see [Alvaredo & Saez, 2009](#); [Piketty, 2010](#)). We thus approximate total wealth as 3.06 times the value of our income denominator used to calculate top income shares.

An alternative wealth denominator exploits household financial accounts offered by the Central Bank, available for the period of 1996–2009.²⁴ The scant literature on wealth in Colombia suggests that household financial wealth has significantly increased in the last decade. While in 1997, financial wealth was 7.4 per cent of national income, this share increased significantly in the following decade; in 2009, financial wealth was 35.4 per cent the value of national income (see Table C.6 in the Appendix). Similarly, financial wealth as a share of total wealth (as defined above) reached a nadir of 1.9 per cent in 1997, and increased continuously from then until 2009.

²¹ Law 223/1995 established that the cadastral value must be at least 40 per cent of the market value. This was abolished by Law 863/2003. It was then re-instated and the percentage was increased to 60 by Law 1450/2011.

²² Section D.1.2 in the Appendix further describes these assumptions and contrasts scenarios under different assumptions.

²³ The Harrod-Domar-Solow formula is a pure accounting equation which necessarily holds in steady-state, regardless of the production function or the savings model. The formula $\beta^* = s/g$, where demographic growth is assumed to be fixed, was first derived by [Harrod \(1939\)](#) and [Domar \(1947\)](#). [Solow \(1956\)](#) provided the derivation of the formula with a production function $Y = F(K, L)$ involving capital-labour substitution. If population N_t grows at rate $n > 0$ (or $n < 0$), then g must simply be replaced by $g + n$. Because Colombia is a developing country with an expanding population size, it is important to account for demographic growth in the Harrod-Domar-Solow formula as we do here.

²⁴ Household financial wealth is defined as the sum of currency holdings, bank deposits, shares, bonds and capital participations, financial derivatives, insurance and pension funds reserves, and receivables, minus liabilities.

In 2009, financial wealth was 18.2 per cent of total wealth. Because of this extraordinary change in the composition of household wealth, we choose to employ the first measure of total wealth as our wealth denominator, that is, computing total wealth as a multiple of our income control.

To get a more concrete sense of the size of net worth by fractiles, Table 2 displays the results we obtain for 2010. As for top incomes, there were over 28.1 million tax units in Colombia. Based on the computation we have described above, the average wealth of those 28.1 million tax units was around \$36.9 million pesos (PPP US\$28,035). To belong to the top percentile (P99), which includes about 281 thousand units, net worth needed to be more than \$626.6 million pesos (PPP US\$476,177). The average wealth of the bottom half of the top percentile (fractile P99–99.5, about 140 thousand units) was around \$776.3 million (PPP US\$590,006). To belong to the top 0.001 per cent (about 281 units), net worth needed to be more than \$26.3 billion pesos (PPP US\$20.0 million), and the average wealth above that threshold was more than \$50.0 billion pesos (PPP US\$38.0 million). To put these numbers in a global perspective, one can note that, as far as wealth is concerned, Colombia lags far behind developed countries. For instance, the average wealth of fractile P99–99.5 is less than one-eighth of the counterpart in Spain in 2007 (2010 PPP US\$3,759,067, see [Alvaredo & Saez, 2009](#)). Thus, while top incomes in Colombia are comparable to the rich in Spain, their fortunes pale in comparison.²⁵

Table 2: Thresholds and Average Net Worth in Top Wealth Groups Within the Top Percentile in Colombia, 2010

| Threshold | Wealth threshold | | | Fractiles | Number of tax units | Average Wealth | | |
|-----------|------------------|------------------------------|--------------|------------------|---------------------|----------------|------------------------------|--------------|
| | pesos ('000s) | US\$ (market ex-change rate) | US\$ (PPP) | | | pesos ('000s) | US\$ (market ex-change rate) | US\$ (PPP) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | | | | Full Population | 28,104,576 | \$36,888 | \$18,444 | \$28,035 |
| P99 | \$626,555 | \$313,278 | \$476,177 | Top 1-0.5% | 140,523 | \$776,332 | \$388,166 | \$590,006 |
| P99.5 | \$989,181 | \$494,590 | \$751,770 | Top 0.5-0.1% | 112,418 | \$1,437,312 | \$718,656 | \$1,092,346 |
| P99.9 | \$2,496,443 | \$1,248,222 | \$1,897,277 | Top 0.1-0.05% | 14,052 | \$2,966,777 | \$1,483,389 | \$2,254,727 |
| P99.95 | \$3,600,627 | \$1,800,314 | \$2,736,448 | Top 0.05-0.01% | 11,242 | \$4,850,235 | \$2,425,117 | \$3,686,140 |
| P99.99 | \$7,740,533 | \$3,870,267 | \$5,882,745 | Top 0.01%-0.001% | 2,529 | \$12,173,579 | \$6,086,789 | \$9,251,824 |
| P99.999 | \$26,349,811 | \$13,174,905 | \$20,025,649 | Top 0.001% | 281 | \$50,019,274 | \$25,009,637 | \$38,014,256 |

Notes: Amounts expressed in 2010 Colombian pesos. PPP US\$1 \approx 2,000 Colombian pesos market exchange rate, and PPP US\$1 \approx 1,316 Colombian pesos.

Source: Tables C.6 and D.19, row 2010.

3 Context

3.1 The Structure of Tax Revenue

Tax revenues as a proportion of national income and GDP have been on the rise in Colombia in the last two decades (see Figure 4). Tax revenues including social security contributions have almost doubled from 10.0 per cent of national income in 1990 to 19.3 per cent in 2009.²⁶ The size

²⁵ This phenomenon may be characteristic of the developing world, where incomes have surged with economic growth but are yet to accumulate into fortunes over time. Alternatively, it may also suggest that wealth in Colombia is grossly undervalued or under-reported in tax records, a possibility we return to later on.

²⁶ These values incorporate the consolidated revenues of the territorial entities (departments and municipalities), including the real estate tax; the industry and commerce tax; tobacco, beer and liquor taxes; and other sub-national taxes which are neither collected nor administered by DIAN, the tax agency that centralises and administers taxes in Colombia. Specifically, DIAN administers the income tax, the value-added tax, the international trade taxes, the stamp tax, the financial transactions tax, and the wealth tax. Together, these taxes constitute around three-quarters of total tax revenue. Table A.1 in the Appendix presents the structure of tax revenues collected by DIAN from 1990 to 2011, as a percentage of national government tax receipts (Panel A) and as percentage of GDP (Panel B).

of this increase has been the second-largest in Latin America, after Argentina. Yet despite the improvement, the Colombian tax-to-GDP ratio of 17.4 per cent remains below the Latin American average of 19.2 per cent in 2009. Indeed, Colombia stands below Brazil (32.6 per cent), Argentina (31.4 per cent), Uruguay (22.5 per cent), Costa Rica (20.9 per cent), and Chile (18.4 per cent). Furthermore, Colombia lags far behind OECD countries (33.8 per cent in 2009). Thus, the low tax collection in Colombia is likely to be a first limit to adequate redistribution on the expenditure side (Goni *et al.*, 2011).

The rise in tax collection has gone hand in hand with significant changes in the tax structure. To understand the structure of the tax system in Colombia, it is useful to aggregate the different taxes into the following four categories: taxes on income and profits (6 per cent of national income in 2009), social security contributions (2.2 per cent), taxes on property (1.6 per cent), and taxes on goods and services (8.8 per cent).

Taxes on income and profits are levied both on individuals and corporations in Colombia, yet the bulk of the income tax is levied on the latter (22 per cent versus 78 per cent, respectively). The share of the income tax has doubled from less than 3 per cent of national income in 1990 to 6 per cent in 2009, mainly thanks to increases in the corporate side. In 2009, the personal income tax accounted for less than 7 per cent of total tax revenue, or 1.32 per cent of national income. The corporate tax revenue accounted for a larger share, namely almost 25 per cent of total tax revenue, or 4.7 per cent of national income.²⁷ As is the general case in Latin America, the fact that such a large portion of the income tax is levied on firms weakens the capacity of the personal income tax to reach its objectives (Cetrangolo & Gomez-Sabaini, 2007).

Social security contributions have increased in the past two decades. Law 100/1993 effected fundamental changes in the social security system in Colombia, and the size of social security contributions as a share of total tax revenue tripled between 1990 and 1995 from 7.9 per cent (i.e. 0.8 per cent of national income) to 23.7 per cent (i.e. 3.3 per cent of national income). They have since fallen to 11.7 per cent of tax revenues and 2.2 per cent of national income.

Taxes on property include recurrent taxes on immovable property, recurrent taxes on net wealth, and taxes on financial transactions. The first form of property tax is the real estate tax. It is levied by local authorities and its contribution has grown steadily in the period studied. On the other hand, the financial transactions tax is levied by the central government.²⁸ In 2009, it represented 0.67 per cent of national income, and 3.53 per cent of total tax revenues. Finally, the tax on net wealth is a much more recent phenomenon. Its contribution to total tax revenues has doubled from 0.75 per cent in 2006 to 1.48 per cent in 2007, and it peaked at 3.72 per cent in 2008. In 2009 it stood at 2.29 per cent of total tax revenue, that is, 0.43 per cent of national income.

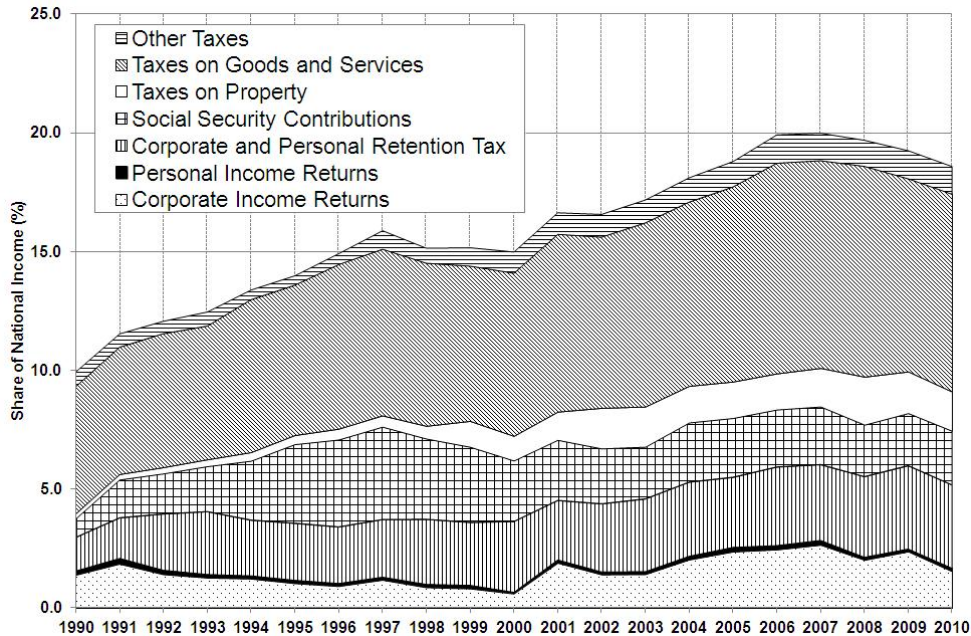
As a counterpart of a lower share of direct taxes, general taxes on goods and services represent a significant share of total tax revenues. In 2009, this category accounted for 42.8 per cent of total tax collection and 8.8 per cent of national income. The value-added tax is the most important tax in this category. Its contribution to total tax revenues increased between 1990 and 2006, after a series of reforms sought to broaden its tax base by increasing tax rates and reducing tax avoidance and evasion. Indeed, as a share of total tax receipts, the VAT jumped from a 22.6 per cent in 1990 to 30.8 per cent in 2006. As a percentage of national income, it increased from 2.6 per cent in 1990 to 5.5 per cent in 2009. This boost in VAT compensated the diminishing role of customs and import duties, which fell from 12.1 per cent of total tax revenues in 1990 to 4.5 per cent in 2009 as a result of the market liberalisation process in the early 1990s. Finally, Colombia

²⁷ These estimates are only approximative, as statistics provided by DIAN do not disaggregate income withholding taxes between individuals and firms (see Jorratt, 2010).

²⁸ The financial transactions tax was initially introduced by the Conservative Pastrana administration as a temporary tax of 0.2 per cent to finance the financial sector rescue operations in the midst of the 1998 economic crisis. However, the transitory nature of the tax was abolished by Law 633/2000, which transformed it into a permanent tax and increased its rate to 0.3 per cent. The tax rate was increased “temporarily” again to 0.4 per cent by Uribe I’s Law 863/2003, yet this increase was made permanent by Law 1111/2006. Despite these efforts to increase tax revenues, the share of the financial transaction tax fell from 5.05 per cent in 2006 to 4.59 per cent in 2010. Moreover, the tax has been accused of promoting financial disintermediation and of being readily avoided by taxpayers. Consequently, Law 1430/2010 of the Santos administration established a calendar to gradually dismount the tax by 2018.

levies additional taxes on specific goods and services. Excises on petrol, tobacco, beer, and liquor represented a high 15.7 per cent of total tax revenues in 1990 (1.56 per cent of national income), but their contribution has fallen significantly over the years. In 2009, they represented only 4.4 per cent of total tax revenues, and 0.8 per cent of national income.

Figure 4: Tax Structure in Colombia as Share of National Income, 1990–2009



Notes: National income has been computed as net of a 5 per cent capital depreciation rate. ‘Other’ taxes include the stamp tax and some sub-national taxes.

Source: OECD/ECLAC/CIAT (2011) based on official statistics.

3.2 The Personal Income Tax

As mentioned before, the last two decades have witnessed a significant rise in tax revenues in Colombia. However, and in spite of the remarkable income gains since 2003 displayed in Figure 2, the *personal* income tax has surprisingly remained stable over time. This phenomenon can be explained by two main factors. First, generous tax reliefs have played an important role in shrinking the tax burden and eroding the tax base. Moreover, a very large initial exempted bracket excludes the overwhelming majority of Colombians from contributing to the personal income tax. The next sections discuss these issues, respectively.

3.2.1 The Erosion of the Tax Base

Changes in tax legislation occur extremely frequently in Colombia. Since the structural reform of 1986, the tax code has undergone reforms in 1990, 1992, 1995, 1998, 2000, 2002, 2003, 2006, and 2010.²⁹ As a result, the tax code is dense and complex. Moreover, it includes a large number of tax reliefs that significantly erode the tax base and benefit the rich disproportionately (see for instance Figures 12, 13, and 15 in Section 4.3).³⁰ The rest of this section highlights some of the changes in tax reliefs that are of particular distributional interest.

²⁹ These reforms, however, have not been structural, but rather piecemeal or revenue-producing quick fixes (see Olivera *et al.*, 2010).

³⁰ The number of income tax reliefs has increased considerably in the past decade, jumping from 66 in 2000 to 99 in 2011. 19 of the 99 income tax reliefs benefit individuals exclusively and 48 pertain to individuals as well as corporations (Moller, 2012b).

Tax reliefs for the tax on regular income are classified by the central tax agency into four main categories, namely allowances (*ingreso no constitutivo de renta, INCR*), deductions (*costos y deducciones*), exemptions (*renta exenta*), and credits (*descuentos tributarios*).³¹ Taxable regular income is obtained in the following manner:

Total gross revenue
minus allowances
equals net revenue
minus deductions
equals net income
minus exemptions
equals taxable regular income

The main allowances include the following: (1) mandatory pension contributions, and voluntary contributions under 30 per cent of labour income³²; (2) long-term savings to promote construction³³; (3) some capital gains, such as profits derived from stock transfers, untaxed capitalisations for partners or shareholders, the inflationary component of financial gains and returns from mutual investment and securities funds³⁴, participations and dividends that have been taxed at the firm level, and profits derived from the liquidation of companies; (4) employers' contributions to severance funds; (5) some profits from transactions of residential properties purchased before 1987³⁵; (6) insurance compensations for damages; (7) for employees earning below 2010 \$7.6 million (PPP US\$5,785), payments under 2010 \$1 million pesos (PPP US\$765) made to third parties for food provision; (8) donations to political parties, movements, and campaigns received by individuals; and other smaller items³⁶.

Total costs and deductions differ across types of filers. For employees earning less than 4,600 CPI-adjusted "UVT" values (2010 \$113 million pesos or PPP US\$98,800), deductions include up to 15 per cent of taxable labour income in voluntary healthcare contributions and education expenses, or mortgage interest payments for residential housing below 1,200 UVT (2010 \$30 million pesos or PPP US\$22,800).^{37,38} For self-employed workers, deductions include some self-employment income, mortgage interest payments for residential housing under 1,200 UVT, and up to 2,500

³¹ Note, however, that the data available does not allow identifying nor measuring the different items in each category. Recent efforts to estimate the fiscal cost of separate items are found in Moller (2012b), Yori *et al.* (2012) and Jorratt (2010).

³² The allowance on voluntary pension contributions has existed since 1998 (Law 488/1998). The contribution must remain in the pension fund for at least five years, unless the amount withdrawn is used for housing purchases (Law 1111/2006).

³³ The AFC tax relief, or *Ahorro para el Fomento a la Construcción*, was created by Law 488/1998. It cannot exceed 30 per cent of wages or self-employment income, and it must remain in the fund for at least five years.

³⁴ The allowance on profits derived from stock transfers was established by Law 49/1990, and that on the inflationary component of financial gains and returns by Law 223/1995. The percentages are established annually by the central government.

³⁵ The percentage considered non-taxable was contingent on the year the residence was purchased. Law 788/2002 established a progressive elimination of this tax allowance starting in 2003. Note that if the property has been in possession for more than two years, it not taxed as regular income but as irregular income. Since the tax base for the tax on irregular income is entirely independent from the tax base on regular income, this creates incentives for tax planning regarding the timing of property sale.

³⁶ These include rewards; awards in national and international competitions (limited to 70 per cent of income in 2003, and fully eliminated for 2004 onwards); democratisation processes (the Pastrana 2000 reform established this deduction when more than 10 percent of a company's shares has been offered to the public. Uribe I limited this to 70 per cent of profits, and later abolished it); calf being born and transferred within a fiscal year (reduced to 70 percent by Law 788/2002, and abolished by Law 863/2003); compensations for destruction or renovation of farming and for control of plagues; shared possessions; location and housing premia negotiated before 1995 (Law 223/1995); incentives for rural capitalisation (Law 788/2002); and subsidies and aids received from the programme *Agro Ingreso Seguro*

³⁷ The CPI-adjusted Unidad de Valor Tributario (UVT) replaced nominal values in the tax code (Law 1111/2006). In 2010, 1 UVT was equivalent to \$24,555 Colombian pesos, or approximately PPP US\$19.

³⁸ This was created by Law 6/1992, and it includes the wage earner, the spouse, and up to two children. Note that mandatory contributions to healthcare on behalf of the wage earner are *not* subject to this 15 percent restriction, and are instead fully deducted from the personal income tax. Public servants living abroad also benefit from this deduction.

UVT (2010 \$61.4 million pesos) of contributions to severance funds under one-twelfth of annual taxable income.³⁹ For all types of filers, additional costs and deductions include the following: (1) mandatory healthcare contributions; (2) investments in real productive fixed assets⁴⁰; (3) charitable donations under 30 per cent of the taxpayer's net rent; (4) other tax payments, such as payroll taxes and 25 per cent of the financial transactions tax⁴¹; and additional smaller items.⁴²

Exemptions include the following: (1) 25 per cent of wages, up to 2010 \$70,718,400 pesos (2010 PPP US\$53,745)⁴³; (2) pension payouts up to 2010 \$294 million pesos (PPP US\$223,438)⁴⁴; (3) severance payments for employees earning below 2010 \$8.6 million pesos (PPP US\$6,536)⁴⁵; (4) compensations for occupational hazards, illnesses, and motherhood; and other smaller items.⁴⁶ Note that the extremely generous exemption made on wages represents up to six times the average income per adult. Insofar as it benefits wage earners disproportionately, it fosters horizontal inequality among tax filers. Moreover, the fact that it applies as a percentage rather than as a fixed value favours higher-income individuals below the cap.

On the other hand, taxable irregular income is obtained in the following manner:

Total irregular revenue
minus costs
minus allowances and deductions
equals taxable irregular income

'Irregular' income includes (1) inheritances, legacies, and donations; (2) lotteries, prizes, and bets; (3) profits derived from the sale of fixed assets in possession for more than two years; and (4) profits derived from the liquidation of companies that have existed for more than two years.⁴⁷ Allowances and exemptions include (1) for the spouse and heirs, the initial 1,200 UVT (2010 \$29,466,000 pesos or PPP US\$22,394) of the value received; (2) for donations and inheritances received by individuals other than the spouse or heirs, 20 per cent of the value received, up to 1,200 UVT; and (3) prizes in equestrian and canine competitions under 410 UVT (2010 \$10 million pesos or PPP US\$7,651).

³⁹ Deductibles are capped at 50 per cent of their income, unless adequate receipts and proofs of payment are shown.

⁴⁰ In 2003, Law 863/2003 created this tax stimulus to promote investment. Specifically, it established that 30 per cent of the value of investments in real productive fixed assets be deducted from taxable income for the years 2004, 2005, and 2006. In this period, this tax relief for individuals represented 0.06–0.09 per cent of GDP (Yori *et al.*, 2012). Law 1111/2006 made this policy permanent and increased the share of investment in fixed assets that can be deducted to 40 per cent for 2007–09, representing 0.09–0.11 per cent of GDP. It was reduced for 2010 by Law 1370/2009 to 30 per cent, decreasing its share in GDP to 0.08 per cent. Finally, the scepticism regarding the effectiveness of the measure in promoting investment (see Galindo & Melendez, 2012) and the urge to broaden the taxable base led the Santos administration to abolish this tax relief for 2011 through Law 1430/2010.

⁴¹ Law 1430/2010 abolished this deduction for 2011 and 2012, and set it to 50 per cent in 2013.

⁴² These include up to 200 per cent of wages and social benefits received by widows and orphans that support the household of members of the armed forces killed in combat, spouses of members that are kidnapped or have disappeared, and former members of the armed forces that have suffered a handicap to war.

⁴³ Created in 1995 by the Liberal Samper administration, it was initially established as an exemption on 30 per cent of wages (Law 223/1995). Uribe I reduced this percentage to 25 per cent and capped it starting 2003 (Law 788/2002). This nominal cap was updated annually between 2003 before Law 1111/2006 set it to 2,880 UVT per year.

⁴⁴ This includes retirement pension payouts (if the beneficiary has over 55 years of age and the contribution has remained in the fund for at least 5 years), invalidity benefits, old age pensions, survivor benefits, and occupational hazards pensions payouts. Before Law 223/1995, this cap of 12,000 UVT did not exist, and thus *all* pension payouts were exempted.

⁴⁵ This cap of 350 UVT pertains to the average monthly wage in the last 6 months. If the amount exceeds this limit, the exemption is determined in accordance to the bracket of monthly wage.

⁴⁶ These include funeral charges; death insurances, and compensations for the death of members of the armed forces and the police; Congressmen's public relations expenses, equivalent to 50 per cent of their wages (introduced by Law 788/1998, this exemption was abolished in 2001); 50 per cent of judges' and public prosecutors' wages for public relation expenses (this percentage falls to 25 for some judges); less than 50 per cent of university vice-chancellors' and professors' wages for public relation expenses; and the amount that exceeds the basic wage for officials and sub-officials of the armed forces and the police, and certain officials in the air force.

⁴⁷ If the asset has been in possession for *less* than two years, or if the company has not been in existence for so long, the income is considered 'regular'.

Finally, recent tax policies have further contributed to erode the tax base. To promote formalisation among small firms, the Santos administration abolished the corporate income tax of 33 per cent for newly-created firms under the simplified *Sociedad por Acción Simplificada* (SAS) regime during their first two years, and reduced the rate for three more years thereafter (Law 1429/2010).⁴⁸ In all, the policy gave preferential corporate income tax rates during a total of five years: corporate income tax rate would be equal to 0 per cent ($0\% \times 33\%$) in the first two years, 8.25 per cent ($25\% \times 33\%$) in the third year, 16.5 per cent ($50\% \times 33\%$) in the fourth year, and 24.75 per cent ($75\% \times 33\%$) in the fifth year. This policy change significantly eroded the income tax base. Further, it distorted incentives among tax filers, who may have shifted their income from the personal to the corporate tax base to exploit these tax reliefs. The effect of this policy change will be discussed in Section 4.1.

3.2.2 A Large Initial Exempted Bracket

How has the tax schedule in Colombia evolved over the years? Throughout the period of 1993–2010, the personal income tax in Colombia has had a progressive rate schedule consisting in four marginal tax rates, which have changed considerably over the years, as illustrated in Table 3. In 1992, to deal with acute insecurity in a conflict-stricken Colombia, the Liberal Gaviria administration imposed a surcharge equal to 25 per cent of the income tax (Article 17, Law 6/1992). This surcharge took the form of a “forced investment” in bonds for social development and internal security, and was levied on tax-payers with income above \$7 million pesos (i.e. fivefold the average income) and/or wealth above \$30 million pesos (base 1991).⁴⁹ In 1995, the Liberal Samper administration increased the statutory marginal rates to 20, 29, and 35 per cent (Law 223/1995). Later, Uribe I’s Law 788/2002 and Law 863/2003 imposed a surcharge of 5 per cent of the income tax for 2003 and 10 per cent for 2004–06, whose additional revenue would help finance the war against illegal armed groups.⁵⁰ Since 2006, however, the marginal rates have slowly been reduced. Law 1111/2006 of the Uribe II administration lowered the rates to 19, 28, and 34 per cent for 2007, and further shrunk the top marginal tax rate to 33 per cent from 2008 onwards.

The most noteworthy feature of the Colombian personal income tax schedule is the extremely large initial bracket that is taxed at 0 per cent. In 2010, taxable income under \$26,764,951 pesos (2010 PPP US\$20,341) was levied at a rate of 0 per cent. For wage earners that benefit only from the standard minimum tax reliefs (*e.g.* mandatory pension and healthcare contributions, and 25 per cent of wages), this meant that those earning up to \$39,799,182 pesos (2010 PPP US\$30,247) do not make *any* contribution to the personal income tax.⁵¹ This exempted bracket constitutes more than thrice the mean income per adult. It is the highest in Latin America, representing three times the regional average. Most importantly, it excludes 92 per cent of wage earners (Avila & Cruz, 2011) from contributing to the tax. The personal income tax in Colombia is thus an elite tax.

⁴⁸ Law 1429/2010 also gave similar preferential tax rates for payroll taxes as well as for the industry and commerce tax.

⁴⁹ Wage earners and self-employed workers were exempted from this surcharge tax if in 1991 their total gross income was below \$21 million pesos and their wealth was below \$30 million pesos.

⁵⁰ A wealth tax was also created to finance heightened defence expenditures under Uribe’s “Democratic Security” policy. See Section 5, and Section A.2 in the Appendix.

⁵¹ Since the exempted bracket and the aforementioned tax reliefs also apply to the withholding regime, this exemption also includes wage earners that are withheld and that do not file a tax return. Note, however, that self-employees may face different tax rates than those depicted in Table 3. In 2010, the tax code featured four different withholding rates, two regarding fees and commissions and two regarding services. Self-employees not required to file an income tax return had their fees and commissions withheld at a rate of 10 per cent, or at 11 per cent if the sum received was greater than 3,300 UVT, or 2010 \$81,031,500 pesos (Article 90 of Law 174/1994). Services were withheld at a rate of 6 per cent for individuals not required to file an income tax return, and at 4 per cent for those required (Article 45 of Law 633/2000). Insofar as these rules concerned the majority of low-income self-employed workers who could not file a tax return, the self-employed were penalised by being levied at higher effective marginal rates than wage earners (see Moller, 2012a, and Figure 11). To mitigate this distortion, in 2010 and 2011 the Santos government lowered the withholding rates for the self-employed whose annual sum of service contracts stands below 300 UVT per month, or \$7,366,500 in 2010. Although this change potentially benefits the majority of the self-employed, who can now face the same tax schedule as wage earners, the policy has been received with some scepticism regarding its effectiveness.

Table 3: Schedule of Personal Tax on Regular and Irregular Income: Colombia 1993–2010
(amounts in current Colombian pesos)

| | 0% | 17% | 25% | 30% |
|------|-----------|-----------------------|---------------------------|---------------------------|
| 1993 | 0 | 4,986,447 | 7,479,670 | 19,945,787 |
| 1994 | 0 | 6,087,454 | 9,131,181 | 24,349,817 |
| 1995 | 0 | 7,445,565 | 11,168,348 | 29,782,261 |
| | 0% | 20% | 29% | 35% |
| 1996 | 0 | 8,992,754 | 13,489,131 | 35,971,015 |
| 1997 | 0 | 10,611,449 | 15,917,174 | 42,445,797 |
| 1998 | 0 | 12,309,281 | 18,463,922 | 49,237,125 |
| 1999 | 0 | 14,410,476 | 21,615,713 | 57,641,902 |
| 2000 | 0 | 15,759,296 | 23,638,944 | 63,037,184 |
| 2001 | 0 | 17,171,329 | 25,756,993 | 68,685,316 |
| 2002 | 0 | 18,558,772 | 27,838,159 | 74,235,089 |
| | 0% | 20% + 2% = 22% | 29% + 2.9% = 31.9% | 35% + 3.5% = 38.5% |
| 2003 | 0 | 19,672,299 | 29,500,001 | 78,700,000 |
| 2004 | 0 | 20,400,001 | 32,400,001 | 78,000,001 |
| 2005 | 0 | 21,644,001 | 34,376,001 | 82,758,001 |
| 2006 | 0 | 22,742,001 | 36,119,001 | 86,954,001 |
| | 0% | 19% | 28% | 34% |
| 2007 | 0 | 22,861,661 | 35,655,801 | 85,993,401 |
| | 0% | 19% | 28% | 33% |
| 2008 | 0 | 24,038,861 | 37,491,801 | 90,421,401 |
| 2009 | 0 | 25,901,671 | 40,397,101 | 97,428,301 |
| 2010 | 0 | 26,764,951 | 41,743,501 | 100,675,501 |

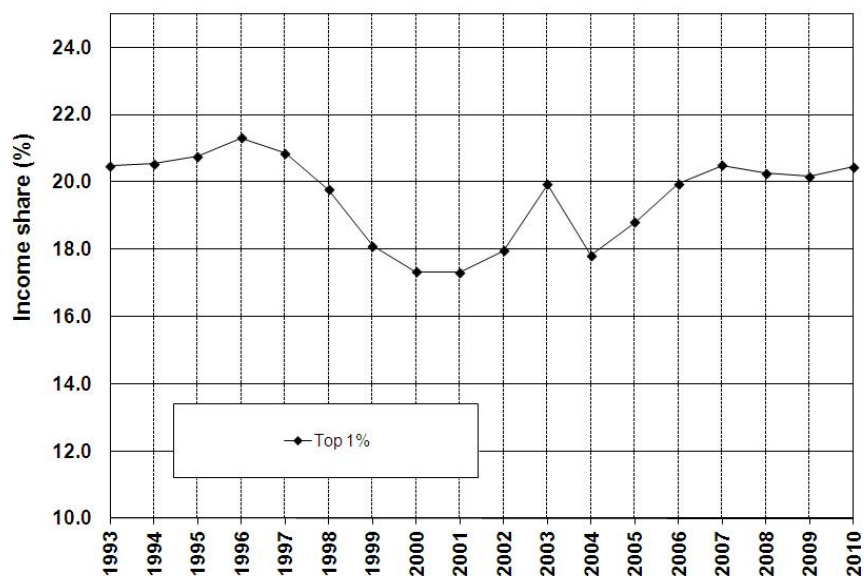
Note: The table reads as follows. In 2010, taxable incomes in the range [0-26,764,951] face a marginal tax rate of 0%; taxable incomes in the range [26,764,951-41,743,501] face a marginal tax rate of 19%; and so on.
Source: DIAN – SGAO – Estudios Económicos.

4 Top Incomes

4.1 Trends in Top Income Shares

Figure 5 depicts the evolution of the income share accruing to the top percentile in Colombia from 1993 to 2010. Income inequality roughly follows a U-shaped pattern over the period. The top percentile accounted for 20.5 per cent of total income in 1993, placing Colombia at one of the highest levels of income concentration in the world. Income concentration fell persistently for the rest of the decade, reaching its nadir in 2000–2001, where the top percentile accounted for 17.3 per cent of total income. The income share of the top percentile recovered since 2004, and income concentration has been persistently on the rise. In 2010, the top percentile accounted for 20.5 per cent of total income, precisely the same share as in 1993. To put it bluntly, despite years of strong economic growth, income in Colombia is as unequally distributed in 2010 as back in the early 1990s.

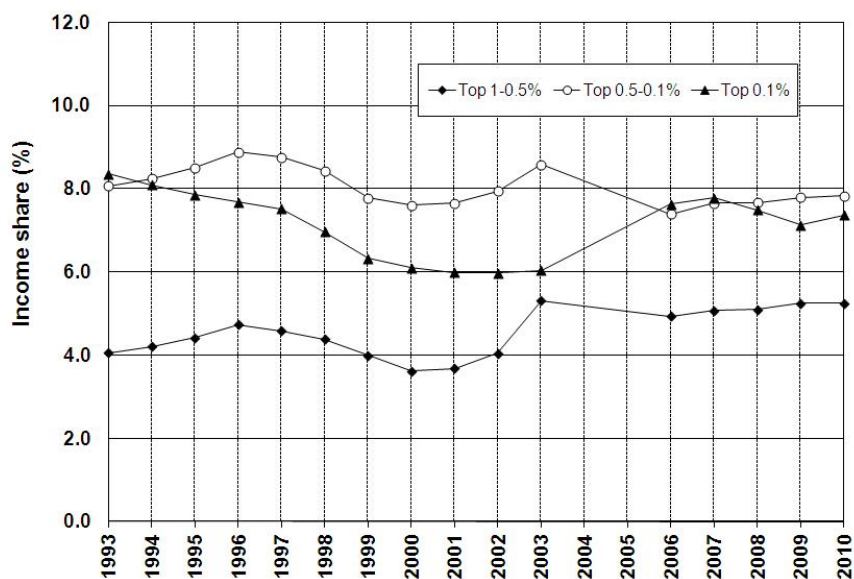
Figure 5: The Top 1% Income Share in Colombia, 1993–2010



Source: Table D.11, col. (1).

Figure 6 decomposes the top percentile into three sub-groups: the top 1–0.5 per cent, the top 0.5–0.1 per cent, and the top 0.1 per cent. The top 1–0.5 per cent and top 0.5–0.1 per cent groups present a similar pattern: income shares increased in 1993–1996, dropped during the recession years of 1996–2001, recovered in 2002–2003, and since then have remained relatively stable. The post-crisis recovery in 2003 for the top 1–0.5 per cent group is particularly intriguing, especially when compared to the top 0.1 per cent group. In fact, the income share of the ultra-rich was severely affected throughout the period of 1993–2003, falling from over 8 per cent to 6 per cent of total income. Partial recovery was achieved only until the mid-2000s, just before the outburst of the global financial crisis in 2007. Indeed, the income share of the top 0.1 per cent fell in 2008 and 2009 from 7.8 to 7.1 per cent, but mildly recovered in 2010. In other words, the average income of the top 0.1 per cent of the income distribution was about 84 times larger than the average income of the entire population in 1993. The difference fell to less than 60 times larger than the average income in the early 2000s, but has risen again to 75–78 times larger in recent years.

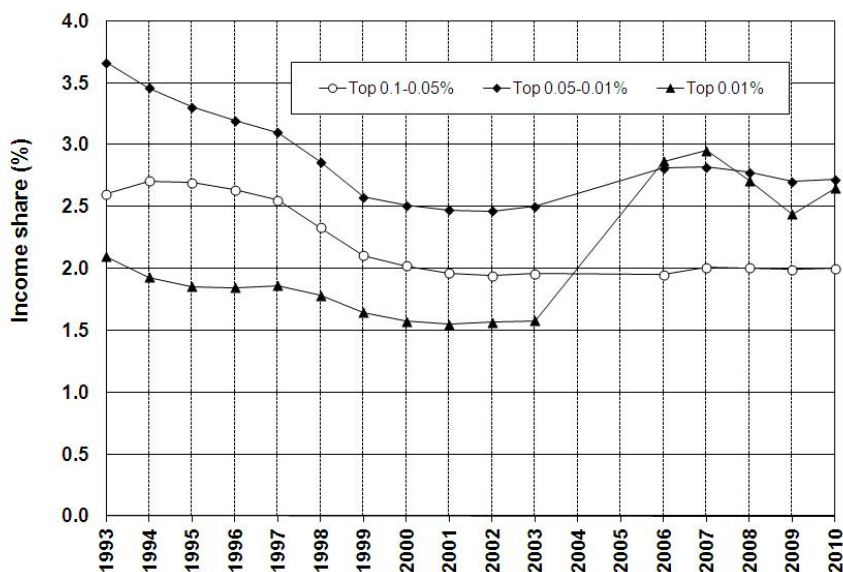
Figure 6: The Top 1–0.5%, Top 0.5–0.1%, and Top 0.1% Income Share in Colombia, 1993–2010



Source: Table D.11, cols. (3), (7), and (8).

To cast further light on what is happening at the very top of the income distribution, Figure 7 further decomposes the ultra-rich 0.1 per cent into three sub-groups: the top 0.1–0.05 per cent, the top 0.05–0.01 per cent, and the top 0.01 per cent. Intriguingly, the low-growth 1990s and the following crisis years did not translate into a significant income share loss for the richest individuals in Colombia: the top 0.01 per cent accounted for roughly 1.5–2 per cent of total income in 1993–2003. The high-growth period of the mid-2000s benefited the ultra-rich disproportionately, as the top 0.01 per cent share doubled from 1.5 to 3 per cent in 2003–2006. Only did the recent financial crisis harm the ultra-rich in Colombia. The top 0.1–0.05 per cent and top 0.05–0.01 per cent, on the other hand, did feel the shocks of the recessions more pronouncedly. In fact, the share of both groups have barely recovered since 2003, and the share of the top 0.1–0.05 per cent have stagnated at 2 per cent.

Figure 7: The Top 0.1–0.05%, Top 0.05–0.01%, and Top 0.01% Income Share in Colombia, 1993–2010

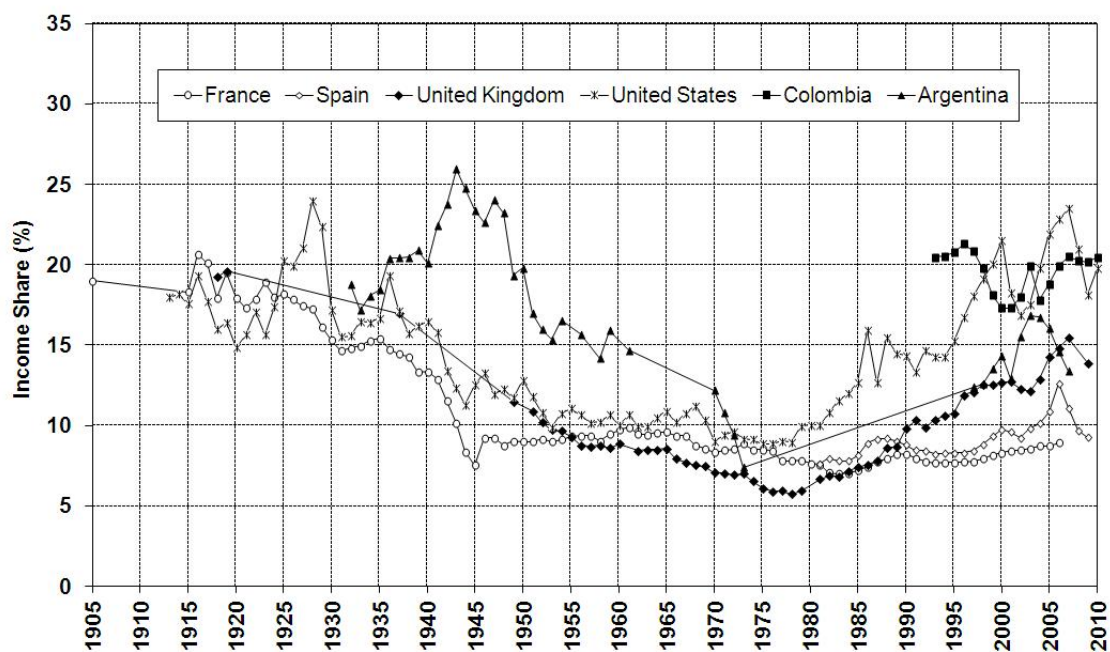


Source: Table D.11, cols. (5), (9), and (10).

In sum, income inequality in Colombia appears to be strongly linked to growth. The rise in average income that coincided with the market-oriented liberalisation in the early 1990s was largely captured by the bottom fractiles of the top 1 per cent, and by 1996 the top percentile accounted for 21.3 per cent of total income. The following years of recession withered the incomes of all but the ultra-rich in Colombia, who managed to weather the harsh economic conditions of the decade. The subsequent 2002–2003 recovery benefited once again the top 1–0.1 per cent. The commodity boom — a capital-intensive activity — has benefited the ultra-rich in Colombia disproportionately. Indeed, the rise in income concentration appears to have been led by gains at the very top of the distribution. In other words, the evolution of top income shares reflects the behaviour in the income shares of the ultra-rich.

How do income disparities in Colombia fare compared to other countries? Figure 8 contrasts the income share of the top 1 per cent in Colombia with that of OECD countries like France, Spain, the United Kingdom and the United States. It is striking to see that income concentration in Colombia is extremely high compared to these developed countries. In fact, the share of the top per cent in 2010 is even higher in Colombia than in the United States, a country where the rise in top shares has recently attracted substantial public attention (especially when taking into account capital gains, as illustrated in Figure 9). Specifically, the income share of the top percentile is roughly 1.1–1.6 times as large in Colombia as in the United States or the United Kingdom, and 2.1–2.3 times as large as in Spain and France. Moreover, income inequality in Colombia is greater than in Argentina, the only other Latin American country for which top shares estimates are available. In fact, among the twenty-five countries where top income shares have been computed, Colombia presents the highest level of income concentration. This confirms what the evidence from household surveys has suggested, namely, that income disparities in Colombia are likely among the highest in the world.

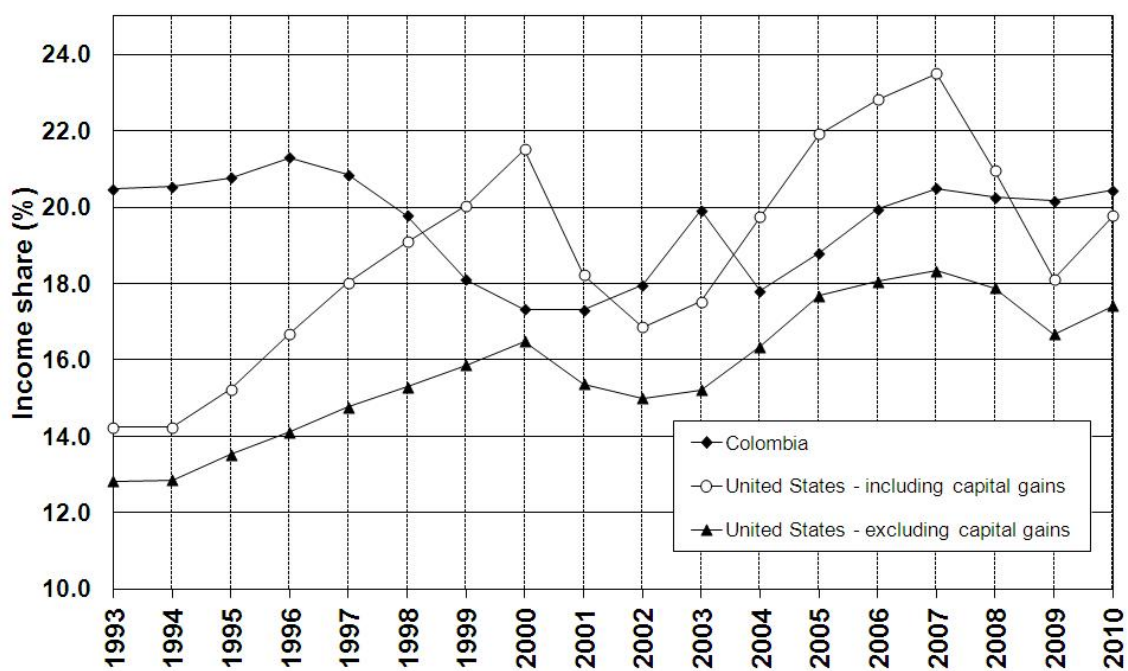
Figure 8: Top 1% Shares in Selected Countries, 1905–2010



Notes: For Spain and United States, estimates include capital gains. For Argentina estimates do not include most capital gains, and statistics exclude tax payers with wage income only.

Sources: Table D.11 for Colombia, Alvarado (2010) for Argentina, Piketty (2007) for France, Alvarado & Saez (2009) for Spain, Atkinson (2007b) for United Kingdom, and Piketty & Saez (2007) for United States. All series are taken from the World Top Incomes Database.

Figure 9: Top 1% Shares in Colombia and the United States, 1993–2010



Sources: Table D.11 for Colombia, and Piketty & Saez (2007) for United States. Series taken from the World Top Incomes Database.

In estimating top incomes, a series of caveats are in order. First, the prevalence of tax evasion can potentially bias our estimations of top income shares *in levels*. Moreover, changes in tax evasion over time can hamper our analysis of the *evolution* of income concentration. Indeed, it is precisely for these reasons that economists are often sceptic towards using tax data to construct top income share series. In a developing country such as Colombia, these doubts may appear justified. However, there are a number of reasons to believe this is not true. First, in our period of study, Colombia did not experience sizeable tax cuts. Rather, the changes in the top marginal tax rate have been moderate, and thus the incentive of the top groups to evade the income tax may have remained fairly constant over time. In contrast, the surge in top income shares in the last decade has been significant. Interestingly, the greatest rise in top incomes, occurring in 2003–2006, coincides with the period where the top marginal tax rate peaked in our period of study. Thus, the rise in top income shares in the 2000s seems to reflect real economic change, rather than pure fiscal manipulation.

Second, our measure of income concentration for 2010 may be affected by a policy change that took place in Colombia that year. As mentioned before, the Santos administration’s Law 1429/2010 awarded preferential corporate income tax rates to newly-created firms under the SAS regime. In doing so, the policy may have inadvertently distorted tax-filing incentives, triggering a behavioural response from tax filers. Seeking to take advantage of this newly-created difference between the personal and corporate tax rates, some high-income recipients may have resorted to shifting their income from the personal to the corporate tax base. Indeed, anecdotal evidence suggests that individuals have created ‘fictitious’, uni-personal firms under the simplified corporate regime, reporting their income as such to reduce their tax liabilities.⁵² This implies that *reported* personal income will decline, while *actual* personal income may not be affected. From a policy perspective, this issue stresses the need to reinterpret both the efficiency and distributional consequences of such a change in the tax structure (see Gordon & Slemrod, 2000). From an empirical point of view, it hampers estimations of income concentration using tax data, as high personal incomes are not being reported in personal tax returns. To make matters worse, if such shifting behaviour were large enough to virtually exonerate individuals from filing a personal income tax return, then our balanced panel would no longer include these individuals for the period of 2006–2010. Our weighing-by-bracket procedure is unable to shed light on this possibility. To examine this possibility, we re-estimated income shares using the tabulations and the Pareto interpolation method, and we find there is no decrease in top shares for 2010. If anything, the policy-induced income shifting should only slightly affect our calculations for 2010, and it does not affect our long-term estimates of income concentration.

Finally, and perhaps most importantly, it is in all likelihood possible that our results are subject to a severe under-estimation on account of the pervasiveness of the underground economy in Colombia. In particular, income derived from illegal drug trade may elude our estimates of top incomes. Indeed, cocaine trafficking flourished in the late 1980s, and by the 1990s it had percolated through Colombia’s political, economic, and social life. The corruptive power of narco-trafficking is thought to remain as evident today as in the past, currently constituting the main financial source of criminal organisations and illegal armed groups. Recent estimations calculate that this illegal activity represents roughly 2.3 per cent of GDP today (Gaviria & Mejía, 2011). Since tax data are unable to represent the largeness of the illegal economy, reported income shares are severely under-valued. This is a serious limitation and it demands reading our results with caution. Yet in spite of this, the main qualitative result remains valid: even in spite of this under-estimation, Colombia has one of the highest records of income concentration in the world. It is natural thus to wonder the extent to which the taxation policy redistributes income in Colombia. But before doing so, we must first understand the composition of top incomes by source, as labour and capital income play an important role in taxation policy.

⁵² Interviews by DIAN Director Juan Ricardo Ortega, published in *El Espectador* newspaper as “Sociedades evasoras” (April 1, 2012), and “Tras la reforma perfecta” (March 13, 2012).

4.2 The Composition of Top Incomes

The previous section hinted at the fact that tax units within the top percentile form a very heterogeneous group. Table 4 decomposes sub-groups within the top percentile into occupations, as registered by tax filers in the income tax return in 2010. Half the individuals in the top 1–0.5 per cent report themselves as employees and self-employed workers, while less than one-tenth report themselves as rentiers. This pattern is reversed for the richest individuals: almost 60 per cent of the top 0.001 per cent are rentiers and less than 12 per cent are employees or self-employed workers.⁵³ Table 4 thus illustrates the importance of dividing the top percentile into smaller fractiles in our analysis of top incomes.

Table 4: Shares of each Occupation Within the Top 1%, Colombia 2010

| Fractiles | Employees (1) | Rentiers (2) | Real estate (3) | Construction (4) | Other (5) |
|---------------|------------------|-----------------|--------------------|---------------------|--------------|
| P99-99.5 | 48.13 | 9.71 | 9.94 | 1.39 | 30.83 |
| P99.5-99.9 | 39.90 | 10.49 | 9.26 | 1.60 | 38.75 |
| P99.9-99.95 | 26.68 | 14.63 | 9.12 | 2.44 | 47.13 |
| P99.95-99.99 | 19.72 | 20.60 | 8.77 | 2.72 | 48.19 |
| P99.99-99.999 | 14.45 | 33.00 | 8.32 | 2.65 | 41.58 |
| P99.999-100 | 11.42 | 57.09 | 4.33 | 3.15 | 24.02 |

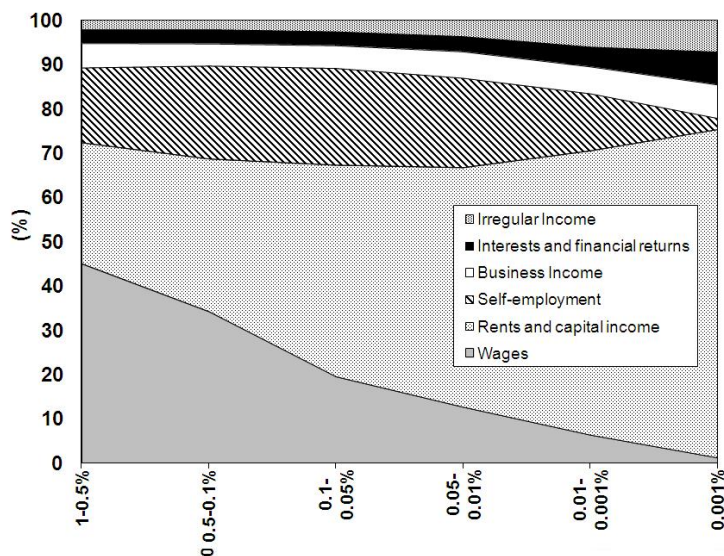
Notes: These figures are based on a balanced panel. Results may vary slightly when considering the total filing population. The classification used here corresponds to the occupation registered by tax filers in the income tax return, following DIAN Resolution 00432 of 2008. “Employees” include both wage earners and self-employed workers.
Sources: Author’s calculation using tax returns data.

Figure 10 displays the composition of income across top groups for 2010. The income of the bottom half of the top percentile (100 per cent), as with other top groups, can be decomposed into wages (45.1 per cent), self-employment (17.0 per cent), rents and other capital income (27.3 per cent), interests and financial returns (3.0 per cent), business income (5.5 per cent) and irregular income (2.1 per cent). As has been suggested, the composition of income varies substantially by income level within the top percentile. For instance, the share of wages drops with rank, constituting only 1.2 per cent of the income of the top 0.001 per cent group. Self-employment income also falls with rank, representing only 2.6 per cent of total income of the top 0.001 per cent group. In contrast, rents and other capital income make up the largest share of total income among the ultra-rich, as these individuals live off large fortunes.⁵⁴

⁵³ It is worth noting that the real estate and construction sectors account for a significant fraction of the richest individuals in Colombia. In fact, almost one-tenth of individuals in the top 1–0.5 per cent work in real estate, and over 3 per cent of the top 0.001 per cent work in construction.

⁵⁴ To a lesser extent, interests and financial returns, business income, and irregular income are also more important among the richest individuals.

Figure 10: Composition of Top Incomes by Income Source in Colombia, 2010



Source: Table D.16.

4.3 Taxation of Top Incomes

The high pre-tax inequality shown in Section 4.1 naturally raises the question of the role of taxation in top incomes. In a nutshell, the redistributive capacity of income taxes depends on the legal definition of the tax base and the progressiveness of the tax schedule. From the discussions in Sections 3.2.1 and 3.2.2, we can suspect that the substantial erosion of the tax base, coupled with the exclusion of the majority of Colombians from the tax, will be detrimental to this end. Indeed, in spite of the fact that top incomes face top marginal tax rates comparable to OECD countries (see Figure A.1 in the Appendix for a comparison of top marginal tax rates in Colombia versus OECD countries, and Table G.24 in the Appendix for a computation of the marginal tax rates accruing to top incomes), these two factors drastically lower the effective average tax rates for top incomes.⁵⁵

To illustrate this last point, Figure 11 plots the effective average income tax rate in Colombia between 1993 and 2010, separating by fractiles within the top percentile of the income distribution. The figure reveals that this rate has been extremely modest, remaining below 6 per cent throughout the period. After fluctuating around 2–4 per cent in the 1990s and early 2000s, the Uribe I tax reform that abolished many tax reliefs (Law 863/2003) increased the effective average tax rate of most fractiles within the top percentile to 4–6 per cent.⁵⁶ Only the top 0.01 per cent was not affected by the reform and, in fact, the effective average tax rate *decreased* for this group.⁵⁷ In any case, an effective average tax rate of 3–6 per cent is extremely low by international standards, and explains the limited revenue collection of the personal income tax in Colombia. From a distributional perspective, it hints once again at the severely restricted redistributive capacity of the income tax, and its virtual inability to correct for the income disparities that have so pervasively

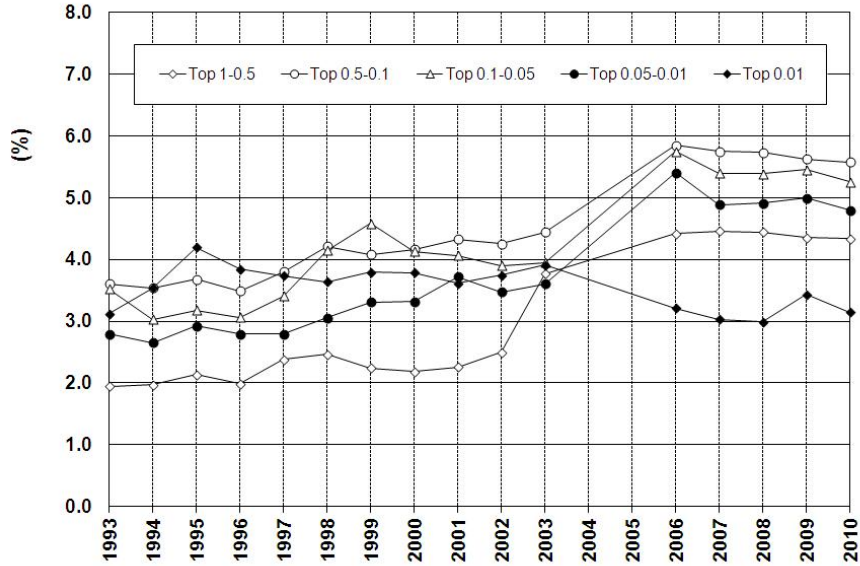
⁵⁵ The statutory marginal tax rate in Colombia was relatively low compared to OECD countries before the tax cuts of the late 1980s. Since then, Colombia's rates have fluctuated around the OECD average. See Figure A.1 in the Appendix for a comparison of top marginal statutory tax rates between Colombia and OECD countries.

⁵⁶ Figure 11 also shows that the effective average tax rate jumped in 1995, especially for the top 0.05–0.01 per cent and top 0.01 per cent groups. A likely explanation is found in the fact that, this year, the wealth amnesty awarded in the Samper tax reform (Law 223/1995) boosted reported wealth among tax filers, and especially among the richest individuals. Due to presumptive income taxation on net worth in Colombia, the rise in reported wealth may have had an effect on the amount of tax levied. Section 5.1 discusses the impact of the amnesty on reported wealth.

⁵⁷ Note, however, that this result is contingent upon the definition of income.

subsisted in Colombia. The rest of this section delves deeper into this issue to shed light on the extent to, and form in which, the rich have benefited from tax reliefs in recent years.

Figure 11: Effective Average Income Tax Rates in Colombia, 1993–2010

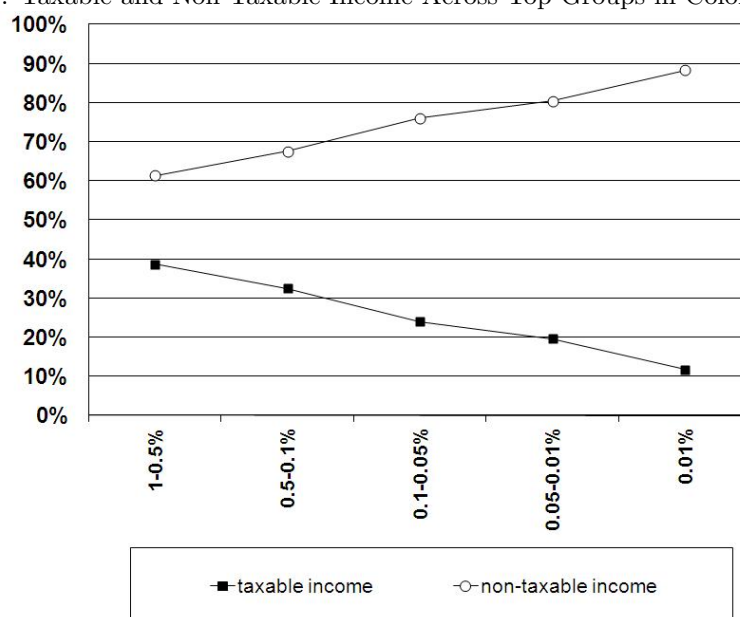


Notes: Income tax includes taxes on regular and irregular income, as well as the tax on remittances.
Source: Table F.20.

Figure 12 compares income that is treated as taxable and as non-taxable by the tax norm for different sub-groups within the top percentile in 2010. Less than 40 per cent of the income of the top 1–0.5 per cent is treated as taxable while the bulk is not. Paradoxically, the percentage of income considered non-taxable *increases* with rank, the ultra-rich having roughly one-tenth of their income considered taxable by the norm.⁵⁸

⁵⁸ For other years, see Table F.21 in the Appendix.

Figure 12: Taxable and Non-Taxable Income Across Top Groups in Colombia, 2010



Notes: Taxable income includes taxable regular and irregular income. Non-taxable income includes deductions on fixed assets, exempted regular and irregular income, 'other' non-taxable income, five-sixths of 'other' costs and deductions (tax form 210), and five-sixths of 'other' deductions (tax form 110).
Source: Table F.21.

Figure 13 casts further light on the tax reliefs used by the rich to reduce their tax liabilities. Non-taxable income in 2010 is decomposed into the three concepts included in the tax code, namely 'other' non-taxable income, deductions, and exemptions.⁵⁹ Exemptions on regular and irregular income fall with rank. This is not surprising, as most of the items included in this category are capped by law. For instance, the 25-per-cent wage exemption is capped at 2010 \$70,718,400 pesos (PPP US\$53,745), and the exemption made on pension payouts is limited to 2010 \$294,660,000 pesos (PPP US\$223,438). Similarly, exemptions on irregular income have an upper limit too, as inheritances and donations are capped at 2010 \$29,466,000 pesos (PPP US\$22,394).

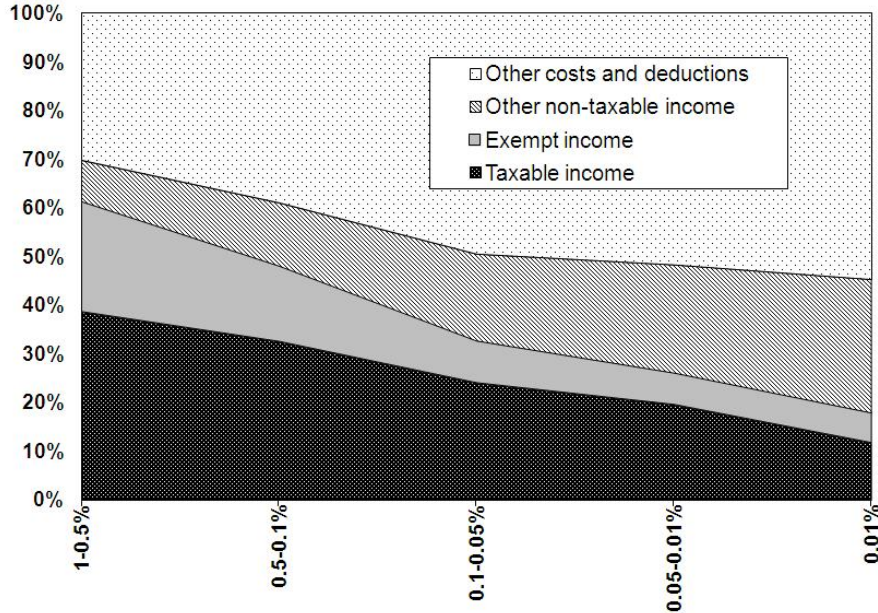
'Other' costs and deductions, on the contrary, increase with income, especially for the richest individuals, who deduct almost half of their income in this manner. Upper limits to deductibles can explain why the share of deducted income increases only slightly initially. However, the ultra-rich resort to deductibles that are *not* capped, such as investments in real productive fixed assets, which were deductible until 2010 (we return to this later). Note that donations to political campaigns and movements are deducted as long as they constitute less than 30 per cent of net revenue. Since 2010 was a year of presidential and parliamentary elections in Colombia, this deduction may have been used by high-income earners to reduce their tax liability.

Finally, 'other' income treated as non-taxable increases significantly with rank, as allowances of this sort are generally not subject to upper limits. For instance, voluntary pension contributions and long-term savings to promote construction are considered non-taxable as long as they are under 30 per cent of labour income. Hence, the fact that this rule applies as a percentage rather than as a fixed value favours the richest individuals, who make use of this legal figure to reduce their tax liabilities. Most importantly, the rich benefit disproportionately from the allowance given to capital income. Indeed, profits derived from stock transfers, dividends, and untaxed capitalisations for share-holders are all treated as non-taxable to avoid double taxation. Since the share of capital income increases with rank, this allowance benefits the rich disproportionately. Moreover, it is

⁵⁹ In the tax code, these are referred to as *ingresos no constitutivos de renta; costos y deducciones* for tax code 210, and 'otros costos' plus 'otras deducciones' for tax form 110; and *renta exenta*. See Section 3.2.1 for a description of the items included in each one.

important to note that, because of the progressive rate schedule, the rich end up benefiting the most from the aforementioned allowances.

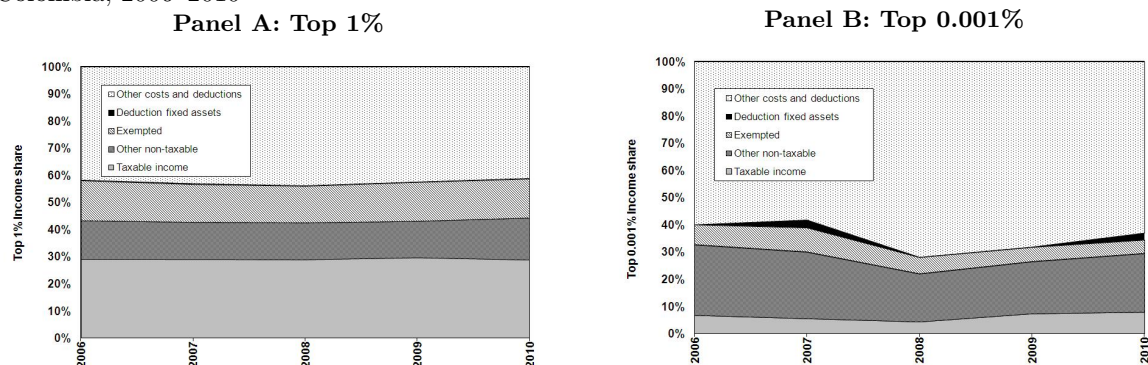
Figure 13: Composition of Taxable and Non-Taxable Income across Top Groups in Colombia, 2010



Notes: The figure displays taxable income, deductions, exemptions, and allowances as a share of total income. Taxable income includes taxable regular and irregular income. Non-taxable income includes deductions on fixed assets, exempted regular and irregular income, 'other' non-taxable income, five-sixths of 'other' costs and deductions (tax form 210), and five-sixths of 'other' deductions (tax form 110).
Source: Table F.21.

How have these tax reliefs evolved in recent years? Figure 14 compares taxable and non-taxable income for the top 1 per cent and top 0.001 per cent groups, from 2006 to 2010. The contrast between the two top groups is striking. The income composition of the top percentile did not change between 2006 and 2010, whereas that of the top 0.001 per cent was subject to quite some variation over the years. In particular, the ultra-rich benefited from the deduction on investment in fixed assets, especially in 2007 and 2010. These two years coincide with policy changes in this domain. In 2007, Law 1111/2006 increased the share of investment in fixed assets to be deductible to 40 per cent, while in 2010 this share was reduced to 30 per cent (Law 1370/2009). The notable increase in these two years might thus represent a behavioural response from tax payers to reduce their tax liabilities.

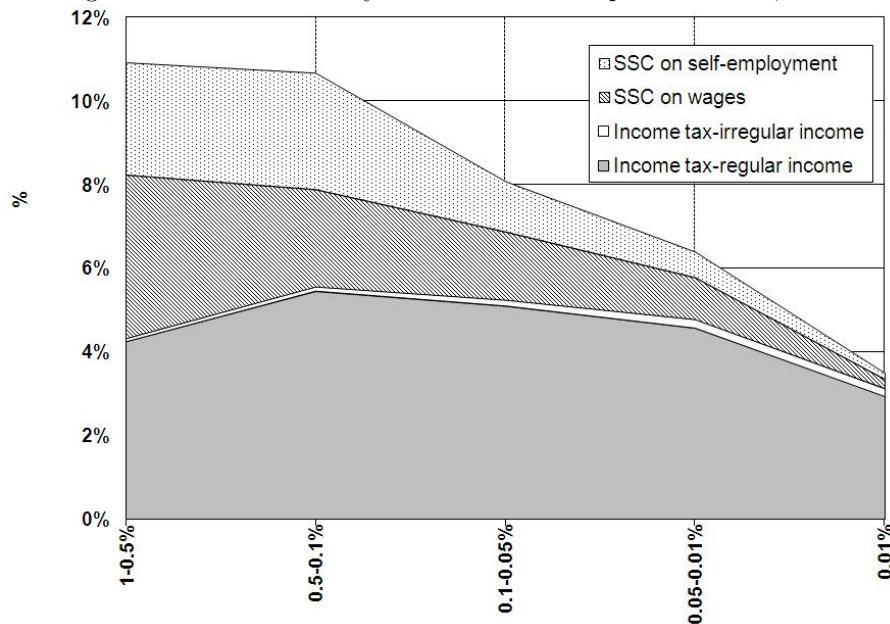
Figure 14: Composition of Taxable and Non-Taxable Income: Top 1% versus Top 0.001% in Colombia, 2006–2010



Notes: Taxable income includes taxable regular and irregular income. Non-taxable income includes deductions on fixed assets, exempted regular and irregular income, 'other' non-taxable income, five-sixths of 'other' costs and deductions (tax form 210), and five-sixths of 'other' deductions (tax form 110). Source: Table F.21.

Given these large tax reliefs, how much taxes do the rich actually pay? Figure 15 presents the average effective tax rates of income and payroll taxes for different fractiles within the top percentile of the distribution in 2010. The income tax paid by individuals is shown separately for regular and irregular income, and social security contributions are shown separately for employees and self-employed workers.⁶⁰

Figure 15: Income and Payroll Taxes at the Top in Colombia, 2010



Notes: Taxes on dividends and wealth are not included. Source: Table F.22.

The concavity in Figure 15 illustrates the lack of progressivity in the Colombian tax system at the top of the income distribution. The effective tax rates fall with income; the richest individuals

⁶⁰ Unlike the taxes paid on regular and irregular income, income tax returns does not precise the value of social security contributions effectively paid by employees and self-employed workers. We must thus approximate this amount based on the tax code and a number of hypotheses, which are described in Appendix F.

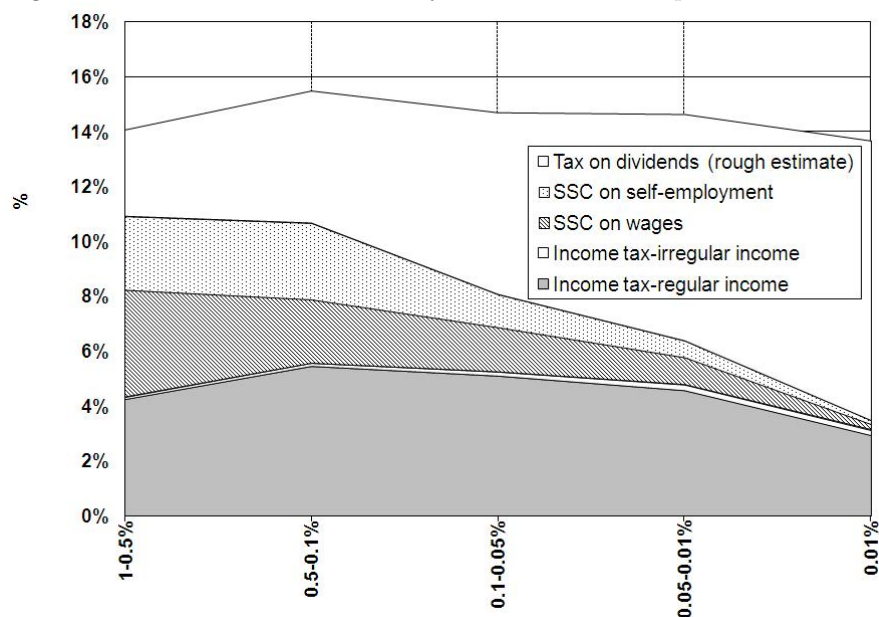
pay 3.2 per cent of their income in income and payroll taxes, while the bottom half of the top percentile pays roughly 11 per cent.⁶¹ This phenomenon is explained by several factors. First, as mentioned previously, the rich benefit disproportionately from income tax reliefs and their taxable income is extremely low, especially for the richest individuals. Second, as in other countries, the contribution base for payroll taxes has a cap and mandatory healthcare and pension contributions only apply to earned income, which falls with rank (see Figure 10).⁶² Together, these factors explain why the lowest-ranking individuals end up paying higher effective rates than richest. Indeed, social security contributions are trivial for the ultra-rich, amounting to only 0.3 per cent of their income. This phenomenon is not exclusive to a particular year of extraordinary circumstances; the lack of progressivity at the top is a feature that is deeply embedded in the tax system in Colombia.

Notwithstanding, it is possible that our series underestimates the actual amount of income tax effectively paid by the rich. As mentioned before, participations and dividends that have been taxed at the firm level are considered non-taxable at the individual level. Individuals report dividends and participations received, which are *de facto* net of the income tax on dividends that has been paid by firms. In reality, it is possible that a fraction of this tax is transferred by the firms to the shareholders. Since dividends and participations make up a important share of total income for the rich, the rich may end up paying more taxes than what has been hitherto estimated. As an illustration, Figure 16 presents a rough estimate of the dividend taxes paid by the rich, supposing firms transferred *all* of the dividend tax to individuals. As expected, the sum of income taxes paid by the top percentile increases significantly, especially for the ultra-rich. In this scenario, individuals in the top 1 per cent pay around 14 per cent of their income in taxes, and this share does not increase with rank. Thus, even assuming that individuals *de facto* pay dividend taxes that are *de jure* levied at the firm level, the lack of progressivity at the top is evident once again: the top 0.01 per cent pay less taxes than the top 1–0.5 per cent. However, a lack of adequate information concerning the sum of dividends received by individuals suggests that these results must be interpreted with caution.

⁶¹ Colombia is not the only country where the top end of the income distribution end up paying relatively less tax than the rest. For instance, Landais *et al.* (2011) present similar results in France.

⁶² These caps have been removed or increased in many OECD countries since the mid-1990s. In 2003, a reform in Colombia increased the cap from 20 to 25 minimum wages (Law 797/2003). This cap represents 2010 \$12,875,000 pesos, or PPP US\$9,785 per month. Although an improvement, our findings suggest that today this cap is not high enough. Moreover, the indexation made on the minimum wage creates perverse effects in the labour market (Mondragon-Velez *et al.*, 2010; Santamaria *et al.*, 2009).

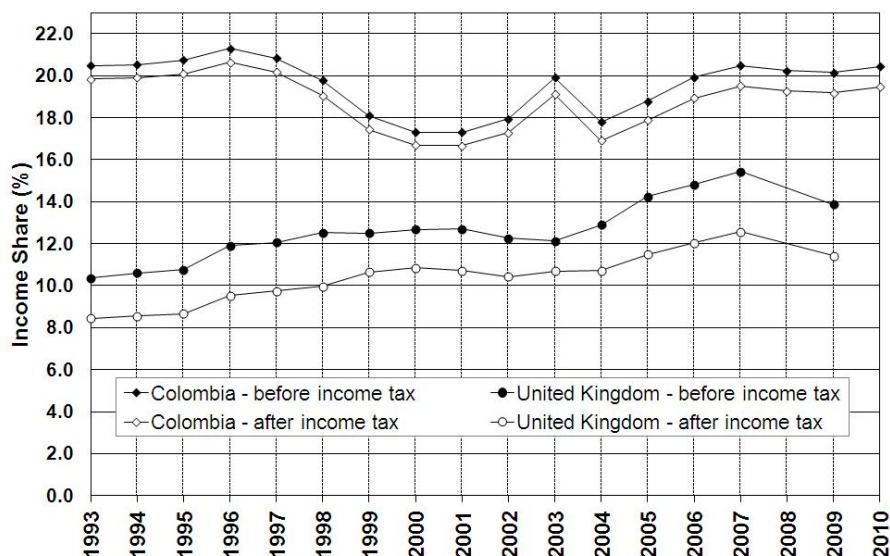
Figure 16: Income, Dividend and Payroll Taxes at the Top in Colombia, 2010



Notes: Taxes on wealth are not included.
Source: Table F.22.

The findings presented above raise serious questions regarding the redistributive capacity of taxation in Colombia. Indeed, Figure 17 displays the effect of income taxation on top income shares. Pre-tax and post-tax income shares of the top 1 per cent are compared for the United Kingdom and Colombia in 1993–2010 (note that, due to re-ranking, these are not necessarily the same individuals). The contrast between the two countries is striking. On average, the income tax reduces income concentration by 17.5 per cent in the United Kingdom, compared to a mere 4 per cent in Colombia. For Colombia, the gap between the two curves was barely 3.5 per cent in 1993–2003, and it increased to 4.9 per cent in 2004–2010 after the tax reforms of 2002, 2003 and 2006. Yet despite this improvement, the fact is that in Colombia the income tax does little to reduce top income shares. Even after income taxes, Colombia remains with one of the highest levels of income concentration in the world.

Figure 17: Top 1% Before and After Income Tax: Colombia vs. UK



Notes: For United Kingdom, income share-net of income tax relates to adults. The income tax in Colombia includes taxes on regular and irregular income, and on remittances, but excludes all possible dividend taxes paid at the individual level. Sources: Tables D.11 col. (1), and D.13 col. (1), for Colombia. Atkinson (2007b) for United Kingdom, series taken from the World Top Incomes Database.

4.4 Household Surveys versus Tax Data

To our knowledge, the present work constitutes the first effort in calculating top income shares using tax data in Colombia. Past studies on income inequality in Colombia have generally used household surveys to compute indices of income disparities, most frequently the Gini coefficient. Insofar as changes in top income shares are capable of significantly impacting changes in overall inequality (Alvaredo, 2011; Atkinson, 2007a), it is important to understand the extent to which tax data sheds light on an aspect of income inequality that is not as well grasped by household surveys, namely, the top income shares.

Following developments in the literature of top incomes (Atkinson & Piketty, 2007, 2010), a number of researchers have addressed the differences in the ability of the tax data and household survey data to represent income inequality. Recent work has tried to reconcile the evidence using the two sources (see Alvaredo, 2011; Burkhauser *et al.*, 2012, for instance), concluding that the rich are usually missing from household surveys for (i) sampling reasons, (ii) low response rates (*e.g.* refusing to cooperate with the time-consuming task of completing a long form), or (iii) ex-post elimination of extreme values to minimise bias. When they there *are* included in surveys, severe under-reporting may arise because (i) the richest individuals usually have diversified portfolios with income flows that are difficult to value, and (ii) they are more reluctant to disclose their assets and wealth. Furthermore, additional differences arise because, for instance, the population coverage, the unit of observation, the sample size, and the motivation of respondents in providing information may differ significantly between tax data and household survey data. Thus, in studying income concentration in Colombia, a series of questions arise: how useful are household surveys to study top shares in Colombia? To what extent can tax data complement household survey data in examining income inequality in Colombia?

To answer the first question, Table 5 compares statistics of the top percentile in Colombia using tax data and household survey data for the years of 1992, 1996, and 1999–2010. Note that, to render the two series more comparable, results for tax data are computed using net-of-tax

income.⁶³

Table 5: Comparison of Top 1%, Colombia 1992–2010

| Year | Number of individuals | | Total Income ('000,000,000s) | | P99 ('000s) | | Income Share (%) | | Average Income ('000s) | |
|--------|-----------------------|---------|------------------------------|---------|-------------|---------|------------------|---------|------------------------|----------|
| | Survey (1) | Tax (2) | Survey (3) | Tax (4) | Survey (5) | Tax (6) | Survey (7) | Tax (8) | Survey (9) | Tax (10) |
| 1992/3 | 47,424 | 194,408 | 8,691 | 42,671 | 14,000 | 11,199 | 9.45 | 19.85 | 17,321 | 42,586 |
| 1996 | 146,591 | 198,906 | 76,569 | 78,604 | 84,000 | 21,700 | 32.49 | 20.65 | 169,717 | 76,536 |
| 1999 | 148,363 | 203,316 | 78,675 | 94,316 | 39,200 | 25,309 | 12.31 | 17.45 | 65,268 | 95,313 |
| 2000 | 149,051 | 207,739 | 78,958 | 110,815 | 41,580 | 25,006 | 13.21 | 16.70 | 69,987 | 100,309 |
| 2001 | 140,877 | 212,087 | 75,713 | 123,124 | 40,510 | 27,219 | 12.57 | 16.67 | 67,558 | 107,635 |
| 2002 | 143,422 | 216,465 | 90,175 | 138,228 | 43,006 | 31,188 | 16.74 | 17.30 | 105,276 | 118,336 |
| 2003 | 146,577 | 220,884 | 87,742 | 151,491 | 42,134 | 51,429 | 11.80 | 19.11 | 70,657 | 137,189 |
| 2004 | 157,552 | 225,396 | 104,687 | 163,762 | 49,000 | 57,961 | 13.72 | 16.91 | 91,150 | 134,150 |
| 2005 | 173,977 | 230,086 | 129,662 | 175,304 | 56,239 | 64,493 | 13.14 | 17.88 | 97,923 | 151,664 |
| 2006 | 198,446 | 234,688 | 165,830 | 197,652 | 68,600 | 71,025 | 16.40 | 18.95 | 137,069 | 173,534 |
| 2007 | 215,027 | 239,379 | 194,519 | 215,582 | 70,181 | 79,483 | 15.17 | 19.51 | 137,266 | 196,141 |
| 2008 | 198,034 | 244,205 | 207,000 | 237,332 | 70,250 | 86,356 | 13.77 | 19.28 | 143,967 | 210,649 |
| 2009 | 208,601 | 249,131 | 221,385 | 265,822 | 75,339 | 93,112 | 13.94 | 19.19 | 147,985 | 218,708 |
| 2010 | 222,626 | 254,095 | 246,520 | 294,821 | 76,819 | 97,645 | 13.53 | 19.48 | 149,777 | 234,537 |

Notes: 1992/3 represents 1992 for household survey data and 1993 for tax data. 1992 survey is of urban coverage, the remainder are of national coverage. ENH-FT: 1992, 1996, 1999 and 2000. ECH: 2001–2005. GEIH: 2006–2010. Tax statistics are computed using 1993–2006 and 2006–2010 micro-data, linked using Pareto interpolations from tabulations provided by DIAN. Income in the surveys is market after tax income, and only after personal income tax in tax data. All values are current Colombian pesos. Annual values in household surveys are obtained multiplying monthly values by 14. Total income corresponds to total household income reported in each survey, and to adjusted household income using National Accounts for tax data.

Sources: SEDLAC (CEDLAS and The World Bank) for household survey data, and Tables C.5, D.13 and D.14 for tax data.

Columns (1) and (2) in Table 5 compare the number of individuals that make up the top percentile in survey and tax data, respectively. Excluding the year of 1992 (whose survey is restricted to urban areas), the number of individuals in the top percentile group in survey data is roughly 66–90 per cent of that in tax data. This difference stems from the fact that the top 1 per cent in survey data excludes individuals with income equal to zero, while this exclusion has not been made in tax data. Future work must correct for this discrepancy to render the two sources more comparable.

Columns (3) and (4) in Table 5 present the income denominator to estimate top shares in survey and tax data, respectively. The differences stem mainly from the fact that total income in survey data measures total household income reported in each survey, expanded to the entire economy (which, for 1992, is limited to the urban economy), whereas total income in tax data is computed using National Accounts. Thus, the two sources of information measure different concepts and are not strictly comparable. For instance, National Accounts track money and better capture large transactions than surveys, which instead follow people (see [Alvaredo, 2010](#); [Deaton, 2005](#)). Indeed, total income in the surveys represents between 57 and 97 per cent of total income in the tax data. Since 2006, year in which the new GEIH survey was launched, this difference has shrunk to 85 per cent.

Columns (5) and (6) in Table 5 compare the minimum income needed to belong to the top percentile in survey and tax data, respectively. Interestingly, until 2002, the income needed to belong to the top 1 per cent is greater in the survey data than in the tax data: excluding 1996—in most estimations an outlier—the threshold is 31 per cent lower in tax data than in survey data. This otherwise counter-intuitive difference is explained by the fact that the household survey considers the top 1 per cent as all individuals with positive income (see Section H in the Appendix), whereas this is not the case in tax data. Since 2003, however, this pattern is reversed: the threshold is on average 18 per cent higher in tax data than in survey data.

Columns (7) and (8) in Table 5 compare the income share of the top percentile in household surveys and tax data, respectively. The differences between the two sources of data are significant:

⁶³ Differences regarding the population coverage, periodicity, total population control, definition of income, and total income control, are canvassed in Section H in the Appendix.

excluding 1996, the income share of the top percentile using household surveys is roughly 75 per cent of that using tax data. Underestimating top shares by roughly 25 per cent, household surveys would place Colombia at levels roughly similar to pre-tax shares in the United Kingdom. Yet, we have seen that inequality is considerably greater in Colombia than in the United Kingdom, and that this gap widens when analysing shares net of income tax (Figure 17).

Why are top incomes being so largely underestimated in household surveys? Columns (9) and (10) in Table 5 compare the average income of the top percentile in household surveys and tax data, respectively. Again excluding 1996, the average income of the top percentile in household surveys is only two-thirds the value obtained using tax data. This difference, common in most countries, suggests that surveys suffer from severe under-reporting at the top and therefore underestimate top shares.⁶⁴

To what extent can tax data complement household survey data in examining income inequality in Colombia? As previously mentioned, changes in the top income shares are capable of significantly impacting on changes in overall inequality (Atkinson, 2007a). Since household survey data are usually affected by under-reporting at the top, it is possible to improve survey-based Gini coefficients by incorporating top income shares estimates coming from tax data. Specifically, Alvaredo (2011) proves that, when a very top group of the income distribution is infinitesimal in numbers, but owns a finite share S of total income, the Gini coefficient G can be approximated by

$$G^*(1 - S) + S \quad (4.1)$$

where G^* is the Gini coefficient for the rest of the population. When the top group is small but not infinitesimal, the formula given in Equation 4.1 becomes

$$G = \frac{\beta - 1}{\beta + 1}PS + G^*(1 - P)(1 - S) + S - P \quad (4.2)$$

where β is the inverted-Pareto coefficient.⁶⁵

Given the under-representation of top incomes in household survey data, revealed in Table 5, it is empirically useful to improve survey-based Gini coefficients in Colombia by applying these formulas. Table 6 displays the tax-based top 1 per cent and top 0.1 per cent net-of-tax income shares and the household survey-based Gini coefficient G^* between 1992 and 2010. We follow Alvaredo (2011) and compute G both considering Equations 4.1 and 4.2, under the hypothetical case that the top 1 per cent and the top 0.1 per cent are not represented in the surveys.⁶⁶

We obtain three main results. First, and as expected, G is several percentage points above G^* . Assuming the top group is infinitesimal in numbers, G is 5.5–15.1 per cent larger than survey-based G^* (columns 4 and 5 versus column 3). Assuming the top group is small but finite, G is 5.2–12.7 per cent larger than survey-based G^* (columns 7 and 8 versus column 3). Second, this divergence in *levels* disappears in *changes*: for both G and G^* , inequality rose in the first half of 1990s, dropped in the midst of the end-of-millennium crisis, rose with the economic boom in the first half of the 2000s, fell with the recent financial turmoil, and has steadily increased again ever since. Finally, the discrepancy between formulas 4.1 and 4.2 is larger, the larger the group considered. For instance, when the top group is considered infinitesimal, G “corrected” with the top 1 per cent income share (column 4) is 15.1 per cent higher than survey-based G^* , while G “corrected” with the top 0.1 per cent income share (column 5) is only 5.5 per cent higher than G^* .

⁶⁴ The data do not allow to examine the precise reasons for this under-reporting of high incomes, i.e. if it is due to sampling, low response rates, etcetera.

⁶⁵ This procedure assumes that the distribution at the top takes the Pareto form, with Pareto coefficient α , or inverted-Pareto coefficient $\beta = \frac{\alpha}{\alpha - 1}$. See Section D.1.1 in the Appendix for a brief description of Pareto interpolations.

⁶⁶ Note that, in doing so, we are assuming that top individuals are completely ignored by the household survey, and we directly consider G^* the result arising from the whole survey sample. The comparison between tax data and household income surveys presented in Table 5 gives ground to this exclusion assumption in surveys, especially for the top 0.1 per cent.

We conclude that, in under-representing top incomes, household surveys under-estimate income inequality, and Colombia is not an exception. Insofar as survey-based indicators like the Gini coefficient do not adequately record what is happening at the top of the income distribution, “correcting” such estimations using tax-based results offers an interesting alternative. However, future work is required to further investigate this issue in the Colombian case, enhancing the comparability between the two sources of data.

Table 6: Top Income Shares and Gini Coefficients in Colombia, 1992–2010

| Year | Top 1% income share from tax data (%) | Top 0.1% income share from tax data (%) | Gini coeff G^* | Case A: Top group considered infinitesimal | | Case B: Top group considered small but not infinitesimal | | |
|--------|---------------------------------------|---|------------------|--|--|--|--|--|
| | | | | Gini coeff corrected with top 1% share | Gini coeff corrected with top 0.1% share | Inverted Pareto coeff β | Gini coeff corrected with top 1% share | Gini coeff corrected with top 0.1% share |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1992/3 | 19.85 | 8.12 | 47.65 | 58.04 | 51.90 | 2.57 | 56.75 | 51.76 |
| 1996 | 20.65 | 7.45 | 64.93 | 72.17 | 67.54 | 2.26 | 70.74 | 67.39 |
| 1999 | 17.45 | 6.11 | 52.53 | 60.81 | 55.43 | 2.19 | 59.44 | 55.28 |
| 2000 | 16.70 | 5.91 | 55.11 | 62.60 | 57.76 | 2.22 | 61.21 | 57.61 |
| 2001 | 16.67 | 5.79 | 53.65 | 61.38 | 56.34 | 2.18 | 59.99 | 56.19 |
| 2002 | 17.30 | 5.78 | 56.22 | 63.80 | 58.75 | 2.10 | 62.39 | 58.60 |
| 2003 | 19.11 | 5.85 | 52.00 | 61.18 | 54.81 | 1.94 | 59.82 | 54.66 |
| 2004 | 16.91 | | 53.86 | 61.66 | | | | |
| 2005 | 17.88 | | 53.83 | 62.08 | | | | |
| 2006 | 18.95 | 7.28 | 60.40 | 67.90 | 63.28 | 2.41 | 66.49 | 63.13 |
| 2007 | 19.51 | 7.46 | 58.95 | 66.96 | 62.02 | 2.39 | 65.57 | 61.86 |
| 2008 | 19.28 | 7.18 | 54.04 | 62.90 | 57.34 | 2.33 | 61.54 | 57.19 |
| 2009 | 19.19 | 6.81 | 54.43 | 63.18 | 57.54 | 2.22 | 61.81 | 57.39 |
| 2010 | 19.48 | 7.06 | 55.35 | 64.05 | 58.50 | 2.27 | 62.68 | 58.35 |

Notes: 1992/3 represents 1992 for household survey data and 1993 for tax data. G^* denotes the Gini coefficient of individual income based on household surveys. The 1992 survey is of urban coverage, and the rest are national. ENH-FT: 1992, 1996, 1999 and 2000. ECH: 2001-2005. GEIH: 2006-2010. For 1992, the urban household survey is taken as representative of Colombia. Only income recipients with positive income were considered in survey Gini G^* , whereas this is not the case using tax data. Tax statistics are computed using 1993-2003 and 2006-2010 micro-data, linked using Pareto interpolations from tabulations provided by DIAN. Income in tax data is net of personal income taxes. The β coefficients reported in column (6) are computed using the top income share series in $\beta = 1/[\log(S1\%/S0.1\%)/\log(10)]$ where the $Sx\%$ is the income share of the top $x\%$. This is equivalent to $\beta = \alpha/(\alpha - 1)$, with Pareto coefficient $\alpha = 1/[1 - \log(S1\%/S0.1\%)/\log(10)]$. Following Equation 4.1, and using the Gini coefficient G^* for the bottom 99% for 1992 (column 3), and the tax-based top 1% net-of-tax income share (column 1), the corrected Gini coefficient G in column (4) is computed as $100 * (0.4765 * (1 - 0.1985) + 0.1985) = 58.04$. Following Equation 4.2, and using the inverted-Pareto coefficient (column 6), the Gini coefficient G^* for the bottom 99% for 1992 (column 3) and the tax-based top 1% income share (column 1), the corrected Gini coefficient G in column (7) is computed as $100 * ((2.57 - 1)/(2.57 + 1) * 0.01 * 0.1985 + 0.4765 * 0.99 * (1 - 0.1985) + 0.1985 - 0.01) = 56.75$. *Sources:* Top shares in columns (1) and (2) are taken from Table D.13. Gini coefficient G^* in column (3) from SEDLAC (CEDLAS and The World Bank).

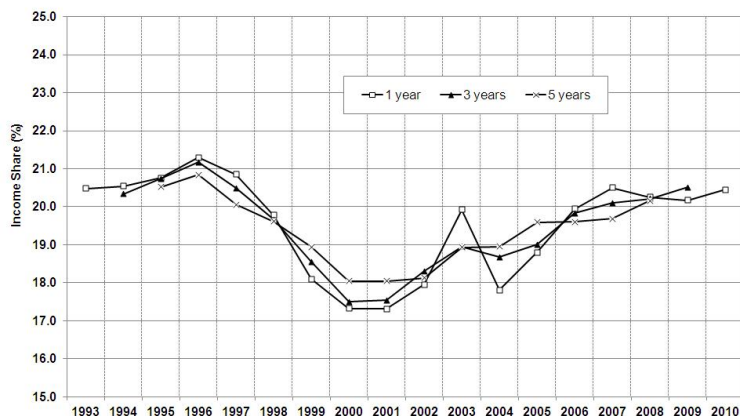
4.5 Mobility Among the Rich

All of our evidence so far has been based on a snapshot, or a series of snapshots, of the income distribution in Colombia. In practice, however, people who have high income one year may have lower income the next and vice-versa. Thus, if the increased snapshot income concentration that we have documented in Colombia since 2003 has been associated with a substantial increase in income mobility, then the permanent inequality has not necessarily changed much. Luckily, we can examine this issue using panel tax micro-data. The use of panel data means that the analysis tracks changes in the incomes of the same individual tax filers over the years rather than comparing cross-sections at different points in time. Moreover, the use of tax return data generally provides more accurate measures of income and results in less attrition bias compared to most survey data, especially when focusing on the very top of the distribution (Auten & Gee, 2009).

Has the evolution of top incomes been accompanied by a similar pattern in mobility for the high-income groups? Using 1993–2006 and 2006–2010 longitudinal tax return micro-data, we explore this issue in several ways. First, following Saez & Veall (2005), we recompute top income

shares based on average income over three or five years instead of a single year for 1993–2010. If the fall in top incomes were relatively transitory, we would expect to see less concentration when incomes are measured over a longer time period. Figure 18, panel A, plots the top percentile income share using one-, three- and five-year centred averages. The three curves match almost perfectly for the period of 1993–2003, suggesting that income mobility did not change significantly between 1993 and 2003. Between 2003 and 2010, however, there is some variation, suggesting mobility may have increased during these years.

Figure 18: Mobility of Top 1% in Colombia, Centered Averages over Various Years



Source: Author's calculations based on tax returns data.

Notwithstanding, the results presented above do not inform about the possibility of upward social mobility nor about mobility *within* top groups. Thus, to provide a more nuanced picture of the different dimensions of income mobility, we examine alternative measures used in the literature related to both relative and absolute income mobility. On the one hand, *relative* income mobility refers to individuals trading relative positions in the income distribution between an initial and a terminal period of time. On the other hand, *absolute* income mobility informs about which groups benefited or lost from economic growth and by how much, studying income and not rank movements across the initial income distribution. We report relative mobility using transition matrices, and absolute mobility using non-anonymous growth incidence curves (henceforth na-GIC). Because of the different growth patterns between 1993 and 2010, we decompose the panel into three periods of study: 1993–1998 (i.e. “pre-crisis” period), 1998–2003 (i.e. “crisis” period), and 2006–2010 (i.e. “high growth” period).

To evaluate *relative* income mobility, a transition matrix is useful to represent the movement of individuals into and out of the top groups. The advantage of using a transition matrix is that it can nicely summarise mobility at various points of the distribution, which is harder to gauge from a single index or graph such as Figure 18 above. Following Auten & Gee (2009), Tables 7 and 8 display the movement of individuals into and out of top groups relative to the total filing population and the panel population, respectively. In other words, for individuals in each top group in the initial period (i.e. 1993, 1998 and 2006), the transition matrix shows the percentage that ends up in each top group in the terminal period (i.e. 1998, 2003 and 2010, respectively).⁶⁷

Table 7 presents relative income mobility between 1993 and 2003 (Panel C) and decomposes

⁶⁷ There are a series of important caveats to consider. As explained in Auten & Gee (2009), some of the observed income mobility is due to life cycle effects, as newly entering young tax filers initially have low incomes which increase rapidly. For this reason, a study of income mobility would ideally exclude tax filers under age 25. Regrettably, however, the tax data available in Colombia do not provide information for individual characteristics such as age. Yet to the extent that filers in Colombia are *de facto* relatively rich or wealthy due to the extremely high filing thresholds, this limitation is not as relevant in the Colombian case.

the period into two sub-periods: 1993–1998 (Panel A), and 1998–2003 (Panel B).⁶⁸ Results using tax data support what previous studies using other sources of data have affirmed, that is, that Colombia is a highly immobile society. Over one-half of individuals in the top 1–0.5 per cent kept their place in the social ladder after a decade, and one-fifth of the 200 richest individuals in 1993 remained in this group. Also, it is evident that, relative to the total filing population, there is less mobility in the top (above P99.999) and bottom (below P99) than in the middle of the distribution. Unsurprisingly, mobility is greater in the long-term (i.e. 10 years) than in the medium-term (i.e. 5 years).

Table 7: Mobility Relative to Total Filing Population

| Panel A: 1993–1998 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 1993 Income | 1998 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 31.8 | 14.4 | 4.6 | 4.6 | 0.4 | 0.3 | 0.1 | 0.0 |
| 1–0.5 | 17.0 | 29.1 | 14.0 | 14.0 | 0.9 | 0.6 | 0.1 | 0.0 |
| 0.5–0.1 | 9.8 | 19.9 | 35.1 | 35.1 | 4.1 | 2.2 | 0.3 | 0.0 |
| 0.1–0.05 | 7.1 | 9.4 | 31.4 | 31.4 | 15.4 | 11.0 | 1.5 | 0.1 |
| 0.05–0.01 | 6.1 | 7.3 | 18.7 | 18.7 | 14.5 | 25.6 | 6.1 | 0.3 |
| 0.01–0.001 | 5.3 | 5.6 | 11.5 | 11.5 | 5.1 | 20.0 | 29.7 | 4.2 |
| Top 0.001 | 2.5 | 7.0 | 6.5 | 6.5 | 4.5 | 11.1 | 20.1 | 33.7 |

| Panel B: 1998–2003 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 1998 Income | 2003 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 51.8 | 5.6 | 3.1 | 3.1 | 0.3 | 0.2 | 0.0 | 0.0 |
| 1–0.5 | 39.7 | 19.5 | 9.5 | 9.5 | 0.7 | 0.4 | 0.1 | 0.0 |
| 0.5–0.1 | 18.3 | 19.2 | 34.0 | 34.0 | 3.7 | 1.9 | 0.2 | 0.0 |
| 0.1–0.05 | 12.1 | 7.5 | 29.7 | 29.7 | 16.0 | 12.3 | 1.4 | 0.1 |
| 0.05–0.01 | 11.2 | 5.4 | 17.4 | 17.4 | 12.1 | 28.0 | 7.2 | 0.2 |
| 0.01–0.001 | 9.0 | 4.3 | 9.9 | 9.9 | 5.4 | 21.7 | 30.8 | 4.2 |
| Top 0.001 | 13.6 | 4.1 | 11.3 | 11.3 | 4.1 | 8.6 | 12.7 | 36.7 |

| Panel C: 1993–2003 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 1993 Income | 2003 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 28.6 | 5.5 | 3.5 | 3.5 | 0.4 | 0.3 | 0.1 | 0.0 |
| 1–0.5 | 44.0 | 50.7 | 8.6 | 8.6 | 0.8 | 0.6 | 0.1 | 0.0 |
| 0.5–0.1 | 20.4 | 14.4 | 20.6 | 20.6 | 2.8 | 1.9 | 0.3 | 0.0 |
| 0.1–0.05 | 16.6 | 9.2 | 22.7 | 22.7 | 7.1 | 7.2 | 1.4 | 0.1 |
| 0.05–0.01 | 15.0 | 7.6 | 18.0 | 18.0 | 7.8 | 13.5 | 4.6 | 0.4 |
| 0.01–0.001 | 13.1 | 5.8 | 13.0 | 13.0 | 5.4 | 14.8 | 15.9 | 3.0 |
| Top 0.001 | 7.5 | 4.5 | 8.5 | 8.5 | 2.5 | 14.6 | 14.6 | 21.6 |

Notes: In Panel A, each cell entry indicates the percentage of total tax filers in each quantile in 1993 that are in a given quantile in 1998. In Panel B, each cell entry indicates the percentage of total tax filers in each quantile in 1998 that are in a given quantile in 2003. In Panel C, each cell entry indicates the percentage of total tax filers in each quantile in 1993 that are in a given quantile in 2003. Note that, due to attrition, rows do not add to 100 per cent.
Source: Author’s calculations based on tax returns data.

Table 8 presents income mobility relative to the panel population for three periods: 1993–1998 (Panel A), 1998–2003 (Panel B), and 2006–2010 (Panel C).⁶⁹ Panel A shows that 40 per cent (38.3 = 100 - 61.7) of those who ranked below the top 1 per cent in 1993 became part of this top group in 1998. In other words, two-fifths of the top 1 per cent in 1998 represent new entrants,

⁶⁸ Note that, because our 2006–2010 panel dataset is a balanced panel, we are not able to compute mobility relative to the total filing population for this period, but only mobility relative to the panel population (see Table 8).

⁶⁹ Note that the greater immobility of the bottom group in Table 8 than in Table 7 is not surprising, given that the only way to enter that group in the former are tax filers whose incomes have fallen.

i.e. individuals that did not rank as highly in 1993. This suggests that there was some churning among individuals below the top 1 per cent, with upward mobility during this period. Upward mobility is also evident in other top groups. For instance, over one-fourth of those in the top 1–0.5 ($25.2 = 100 - 27.5 - 47.2$) increased in rank, and one-third of this group in 1998 was composed of individuals that were below the top 1 per cent five years before. Notwithstanding, the results point to immobility at the very top of the distribution among the ultra-rich. Table 8 Panel B reveals a high downward mobility during the crisis period of 1998–2003, as most individuals either remained in their top group or fell in rank: 56.7 per cent of individuals in the top 1–0.5 in 1998 ranked below the top 1 five years later, and 84.4 per cent of those ranking below the top 1 per cent remained there. Interestingly, some of the ultra rich were particularly hurt by the crisis: almost 60 per cent of those in the top 0.01–0.001 per cent ($59.3 = 100 - 36.1 - 4.9$) and top 0.001 per cent ($59.7 = 100 - 40.3$) in 1998 had fallen in rank by 2003. In fact, 14.9 per cent of the ultra-rich were so badly hurt by the crisis, that they fell out of the top percentile of the income distribution. Notwithstanding, the general picture portrayed in Panels A and B hints at the fact that the very high incomes of many of the highest-income tax filers are not always transitory. However, Panel C reminds us that there is considerable inter-period variation. Somewhat surprisingly, the high growth period of 2006–2010 does not present a high level of churning, except at the very top of the distribution. Only 20 per cent ($20.3 = 100 - 43.2 - 36.4$) of the top 1–0.5 in 2006 gained in rank by 2010. The ultra-rich, in contrast, experienced significant downward relative mobility, as almost three-fourths of individuals fell in rank ($72.4 = 100 - 27.6$). It thus seems that the high-growth period of 2006–2010 created a new class of ultra-rich in Colombia.

Table 8: Mobility Relative to the Panel Population

| Panel A: 1993–1998 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 1993 Income | 1998 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 61.7 | 27.9 | 8.9 | 0.8 | 0.6 | 0.1 | 0.0 | 0.0 |
| 1–0.5 | 27.5 | 47.2 | 22.7 | 1.5 | 0.9 | 0.1 | 0.0 | 0.0 |
| 0.5–0.1 | 13.7 | 27.9 | 49.1 | 5.8 | 3.1 | 0.4 | 0.0 | 0.0 |
| 0.1–0.05 | 9.4 | 12.3 | 41.4 | 20.3 | 14.5 | 2.0 | 0.1 | 0.1 |
| 0.05–0.01 | 7.8 | 9.3 | 23.8 | 18.4 | 32.6 | 7.8 | 0.4 | 0.4 |
| 0.01–0.001 | 6.5 | 6.9 | 14.1 | 6.3 | 24.6 | 36.4 | 5.2 | 5.2 |
| Top 0.001 | 2.9 | 8.2 | 7.6 | 5.3 | 12.9 | 23.5 | 39.4 | 39.4 |

| Panel B: 1998–2003 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 1998 Income | 2003 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 84.8 | 9.2 | 5.1 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 |
| 1–0.5 | 56.7 | 27.9 | 13.7 | 1.0 | 0.6 | 0.1 | 0.0 | 0.0 |
| 0.5–0.1 | 23.7 | 24.9 | 43.9 | 4.8 | 2.4 | 0.3 | 0.0 | 0.0 |
| 0.1–0.05 | 15.3 | 9.5 | 37.5 | 20.3 | 15.6 | 1.8 | 0.1 | 0.1 |
| 0.05–0.01 | 13.7 | 6.6 | 21.3 | 14.9 | 34.4 | 8.8 | 0.3 | 0.3 |
| 0.01–0.001 | 10.6 | 5.1 | 11.6 | 6.4 | 25.5 | 36.1 | 4.9 | 4.9 |
| Top 0.001 | 14.9 | 4.5 | 12.4 | 4.5 | 9.5 | 13.9 | 40.3 | 40.3 |

| Panel C: 2006–2010 | | | | | | | | |
|--------------------------------------|----------------------|---------|-------|-------------|--------------|---------------|----------------|-----------|
| Quantile distribution by 2006 Income | 2010 Income Quantile | | | | | | | |
| | Below Top 1 | Top 0.5 | 1–0.5 | Top 0.5–0.1 | Top 0.1–0.05 | Top 0.05–0.01 | Top 0.01–0.001 | Top 0.001 |
| Below 1 | 88.7 | 7.2 | 3.5 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 |
| 1–0.5 | 43.2 | 36.4 | 18.4 | 1.2 | 0.6 | 0.1 | 0.0 | 0.0 |
| 0.5–0.1 | 23.9 | 20.6 | 46.4 | 5.6 | 3.0 | 0.5 | 0.0 | 0.0 |
| 0.1–0.05 | 17.1 | 8.2 | 35.5 | 21.1 | 15.8 | 2.1 | 0.2 | 0.2 |
| 0.05–0.01 | 14.3 | 6.1 | 21.5 | 15.3 | 33.6 | 8.5 | 0.7 | 0.7 |
| 0.01–0.001 | 12.9 | 5.0 | 12.2 | 7.8 | 25.4 | 31.7 | 5.0 | 5.0 |
| Top 0.001 | 14.1 | 4.2 | 9.4 | 5.7 | 15.1 | 24.0 | 27.6 | 27.6 |

Notes: In Panel A, each cell entry indicates the percentage of panel tax filers in each quantile in 1993 that are in a given quantile in 1998. In Panel B, each cell entry indicates the percentage of panel tax filers in each quantile in 1998 that are in a given quantile in 2003. In Panel C, each cell entry indicates the percentage of panel tax filers in each quantile in 2006 that are in a given quantile in 2010.

Source: Author's calculations based on tax returns data.

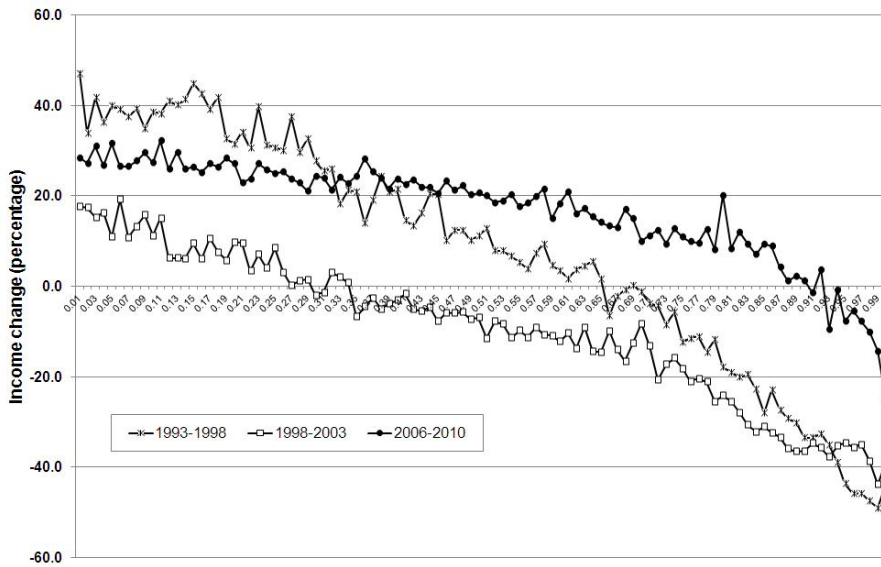
The simplicity of the transition matrices presented in Tables 7 and 8 has some limitations, however. For starters, it hides mobility among smaller quantiles of the distribution. Indeed, some tax filers may have crossed a top group threshold by barely moving up or down, while others' income could have changed a lot more without necessarily moving to another top group (*e.g.* within the top 1–0.5 per cent). Further, and most importantly, the transition matrix is silent about *absolute* income mobility. Instead, one would like to know which groups benefited or lost and by how much, studying income movements across the initial income distribution to examine the distributional incidence of growth. Thus, an alternative perspective of mobility consists in studying income movements across smaller quantiles (*e.g.* P99–99.01, P99.01–99.02, . . . , P99.99–100), using the initial distribution as reference. This approach associates to every quantile in the initial distribution the mean income growth of all individual units in that quantile, and it is graphically represented in the so-called non-anonymous growth incidence curve.

In na-GIC, individuals in the top 1 per cent are ranked in ascending order according to their initial quantile $p(y_t)$, which depends on income y_t . The quantile-specific mean income growth rate from t to $t + 1$, $g_{t+1}(p(y))$, is thus given by:

$$g_{t+1}(p(y_t)) = \frac{y_{t+1}(p(y_t))}{y_t(p(y_t))} - 1 \quad (4.3)$$

Figure 19 plots Equation 4.3 for three periods: 1993–1998 (i.e. “pre-crisis” period), 1998–2003 (i.e. “crisis” period), and 2006–2010 (i.e. “high growth” period). The three curves depict very different growth patterns. First, individuals that ranked in P99–99.3 in 1993 enjoyed an income growth of more than 20 per cent over the 5-year period. This positive change falls with initial rank, as individuals in P99.65–99.66 experience no income gain while those above P99.7 suffered income losses. Second, and as expected after an economic crisis, most sub-groups within the top percentile in 1998 underwent negative income gains five years later. The ultra-rich were most hurt by the crisis, the magnitude of the income loss reaching 40 per cent for those in the very top fractiles. Third, the high-growth period between 2006 and 2010 translated into income gains for almost all individuals in the top 1 per cent of the distribution. Only the ultra-rich (i.e. top 0.05 per cent) suffered negative income growth. The findings depicted in Figure 19 can also be interpreted as comparing “progressive” growth rates across periods. Measured as percentage changes, the period of 1993–1998 would seem to have been the most progressive period in the last two decades in Colombia. Indeed, the downward diagonal shape of the curve indicates that the “poorest” individuals gained while the richest lost relative to their initial income.

Figure 19: Non-Anonymous GIC, Colombia 1993–1998, 1998–2003, and 2006–2010



Notes: Individuals in the top percentile of adult population over age 20 are ranked by income, and ranking is divided into bins of 0.01 per cent. The first bin on the left corresponds to P99–99.01, and the last bin on the right to P99.99–100.
Source: Author’s calculations based on tax returns data.

How do the quantiles in the initial period compare to those in the final period? An interesting extension to the previous analysis consists in contrasting non-anonymous GIC with their respective anonymous (standard) GIC. Like na-GIC, GIC plot the mean income growth rate of real income in a population against income quantiles.⁷⁰ But unlike na-GIC, GIC are anonymous in that they compare the income of individuals who are not necessarily in the same initial position.⁷¹ Unlike na-GIC in Equation 4.3, which keep the statistical units constant, GIC re-rank individuals into

⁷⁰ Another way of thinking about GIC is decomposing Table D.12 into 100 bins and computing income growth for each period.

⁷¹ Formally, GIC plot the mean income y growth rate of growth of the p th quantile of the distribution between t and $t + 1$, as defined by: $g_{t+1}(p) = \frac{y_{t+1}(p)}{y_t(p)} - 1$.

quantiles without controlling for their composition, thus ignoring the issue of income mobility.⁷² Hence, comparing na-GIC and GIC for the same period sheds some light on this issue. If the na-GIC and GIC result to be very different, it suggests there is a significant degree of “re-ranking” of individuals, i.e. there is churning at the top of the distribution.

Figure 20 plots na-GIC versus GIC for the periods of 1993–1998 (Panel A), 1998–2003 (Panel B), and 2006–2010 (Panel C). In Panel A, the discrepancy between the two curves is striking. The GIC shows that, excluding the ultra-rich, most sub-groups within the top 1 per cent in 1998 were just as rich as in 1993. The income loss was significant only for the richest fractiles, who lost up to 25 per cent of their income during this period. In contrast, the na-GIC curve shows that individuals ranking in P99–P99.65 in 1993 enjoyed income accruals, while the richest 0.4 per cent suffered income losses. Unlike the “progressive” downward-sloping curve shown in Figure 19, the horizontal slope of the GIC would indicate that growth in 1993–1998 did not contribute to equalising the distribution of income at the top. The difference between the two curves suggests that there was significant churning at within the top percentile of the distribution, as we intuited before. Panel B plots the curves for the period of 1998–2003. While almost all individuals in top 1 per cent were negatively affected by the crisis (na-GIC), the top 1–0.5 was on average richer in 2003 than in 1998 (GIC). P99.5–99.6 was as rich in 2003 as five years prior, and only the top 0.25 per cent was less rich after the crisis. These results suggest that the crisis resulted in a significant re-ranking of individuals at the very top of the distribution, due to significant income losses for some of the ultra-rich. The period of 2006–2010 in Panel C shows considerable income gains across the top 1 per cent of the distribution both conditional and unconditional on initial income. The top 1 per cent was richer in 2010 than in 2006, and individuals that ranked in the top 1 per cent in 2006 were also richer in 2010. Only the ultra rich that ranked in the top 0.1 in 2006 suffered income losses. This implies there has been a re-ranking of individuals at the very top of the distribution, as suggested before in Table 8, Panel C.

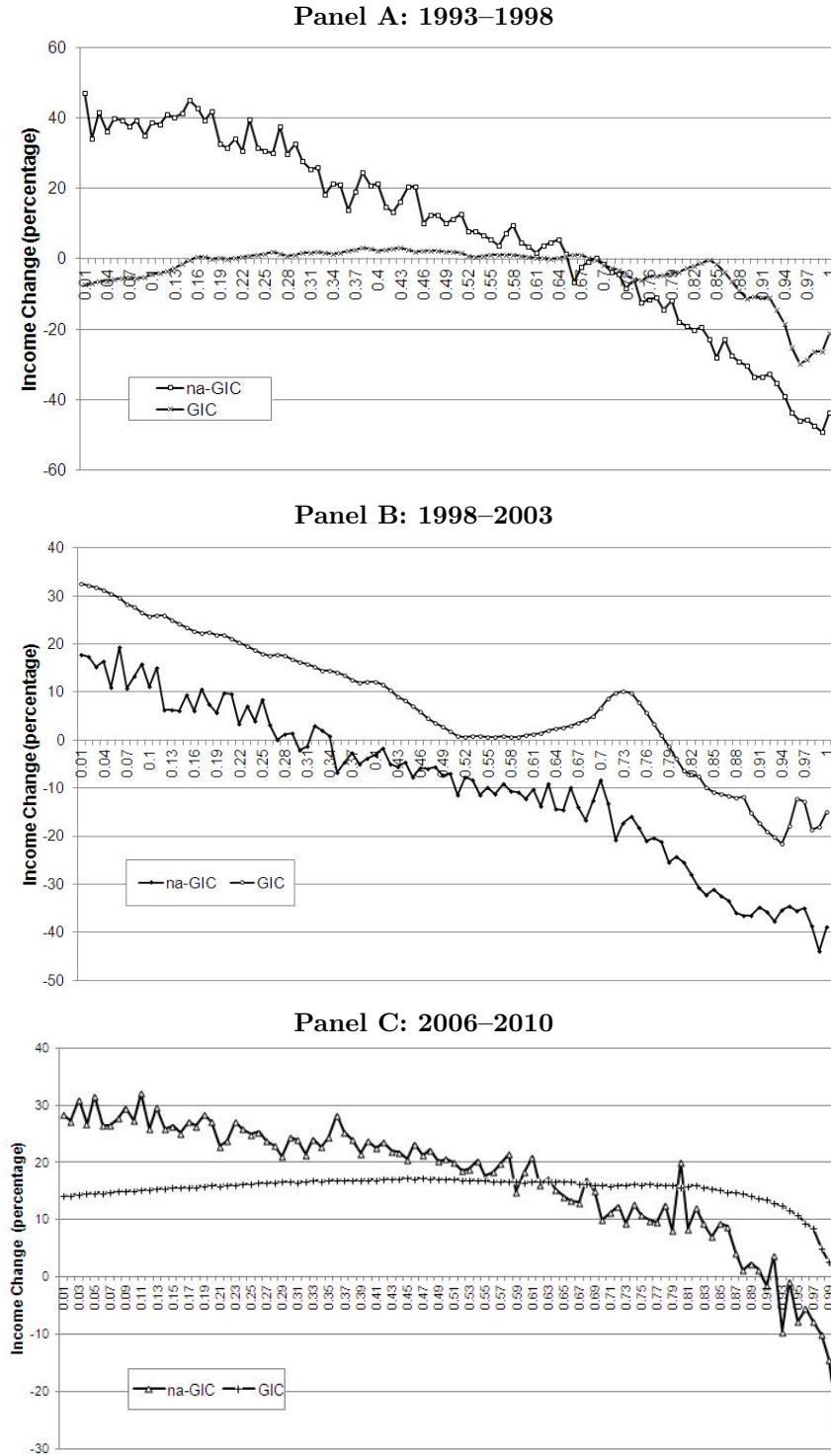
How can we reconcile the evidence here presented? First, the period of 1993–1998 presents some income mobility, both measured in relative terms by the transition matrix and in absolute terms by the na-GIC. There was upward relative mobility, as an important share of the top percentile in 1998 was not part of this group five years before. Further, there was upward mobility across the bottom half of the top 1 per cent: they enjoyed income accruals that also made them gain in rank. The top 0.5–0.1 per cent, however, suffered significant income losses that, given the income gains of the bottom half, made them fall in rank: over two-fifths of the top 0.5–0.1 per cent fell in rank from 1993 to 1998. In contrast, despite the severe income loss of the ultra rich, they appear to have kept their rank in the social ladder. This finding helps in understanding why income concentration fell in 1993–1998, as individuals at the extreme end of the distribution were severely affected in these years. Second, the crisis period particularly affected the richest individuals in Colombia, and there was substantial downward absolute and relative income mobility within the top percentile. Excluding the top 1–0.7 per cent, most individuals suffered income losses during the crisis. In fact, 15 per cent of the ultra-rich (i.e. top 0.001) were so badly hit by the crisis, that they virtually disappeared from the top percentile group. Moreover, the upper half of the top percentile was less rich in 2003 than in 1998, while the bottom half was richer, suggesting a re-ranking of individuals at the very top.

Finally, the high-growth period of 2006–2010 is illustrative of the differences in income mobility measured in absolute and relative terms. In absolute terms, there was substantial positive income mobility, as individuals in P99–99.9 benefited from the high-growth period and enjoyed positive income gains. Only those above P99.9 suffered income losses, presumably as a result of the global financial crisis that hit Colombia in 2008–2009. Nevertheless, the entire top percentile was on average richer in 2010 than in 2006. In this climate of generally upward absolute mobility, relative mobility was surprisingly not as responsive: 89 per cent of individuals below the top percentile in 2006 remained there in 2010. Only the richest individuals experienced relative mobility, and it was significantly negative: most individuals above P99.9 dropped in rank. In particular, almost three-fourths of the top 0.001 per cent fell in rank during this period. This significant relative

⁷² The implications of comparing na-GIC and GIC is well canvassed in Bourguignon (2011). Also, see Jenkins & van Kerm (2006), van Kerm (2009), and Grimm (2007).

mobility at the very top of the distribution contrasts with the other periods, where the ultra-rich tended to maintain their high ranks.

Figure 20: Re-Ranking of Individuals at the Top



Note: The figures above compare anonymous (standard) growth incidence curves and non-anonymous growth incidence curves for three periods: 1993–1998, 1998–2003, and 2006–2010 using tax micro-data. Individuals are ranked by income, and the top percentile of the distribution is divided into 100 bins, i.e. 0.01 per cent per bin.

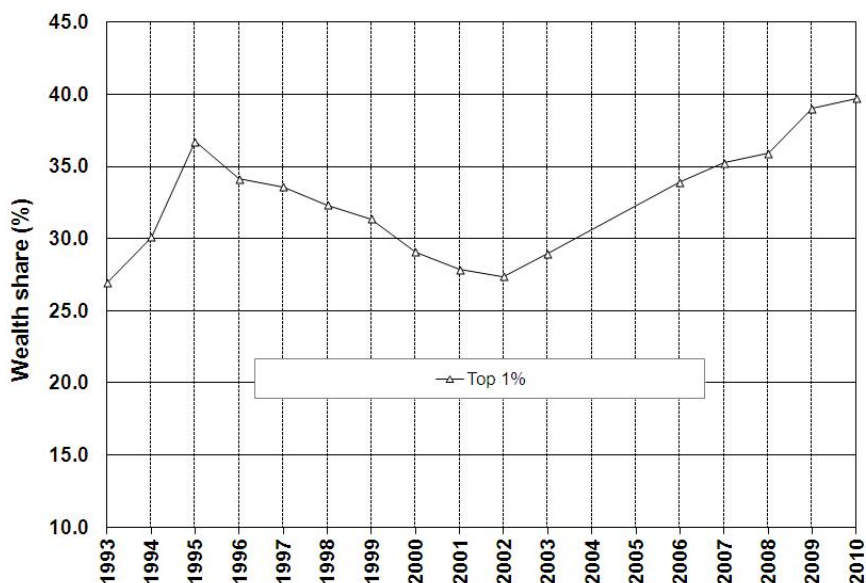
5 Top Wealth

According to the 2012 *Forbes* rich list, the fortune of Colombia's richest man alive, Luis Carlos Sarmiento, was worth US\$12.4 billion. Sarmiento ranked 64 on the list of the world's wealthiest individuals, and was followed by the Santo Domingo empire of US\$9.5 billion (rank 97), and by Woods Staton with US\$1.7 billion (rank 764), in the list of the wealthiest Colombians in the world. Yet surprisingly, and to our knowledge, there are no studies examining wealth for other individuals in Colombia. Moreover, there are no estimates of wealth concentration, let alone of its evolution.⁷³ Such is precisely the gap this section seeks to fill.

Colombia is an exception in that income tax micro-data include information about tax filers' gross and net wealth. Because wealth is thought to be more unequally distributed than income, it is interesting to study the extent to which tax data inform about wealth concentration in this developing country. As previously mentioned, tax data present a considerable advantage over household survey data, which have a tendency to under-report at both tails of the distribution, thereby underestimating inequality. In the case of wealth, this problem is likely to pose a serious constraint, given the presumably highly skewed distribution.

Figure 21 depicts the wealth share of the top percentile in Colombia from 1993 to 2010. Fractiles are defined relative to the adult population over 20 years of age in Colombia (as for top incomes) ranked according to net worth (gross wealth minus liabilities). The results show that wealth inequality follows a U-shaped pattern, consistent with the top income shares series. Wealth concentration appears to have peaked in 1995, with the top 1 per cent accounting for almost 37 per cent of total wealth. The wealth share of this group fell considerably after 1995, reaching its nadir in 2002. Like for top incomes, the economic crisis in the late 1990s seems to have withered the fortunes of the top wealth groups in Colombia. The top 1 per cent recovered in the first years of 2000s, and wealth concentration has been persistently on the rise ever since.

Figure 21: Wealth Shares of Top 1 Per Cent, Colombia 1993–2010



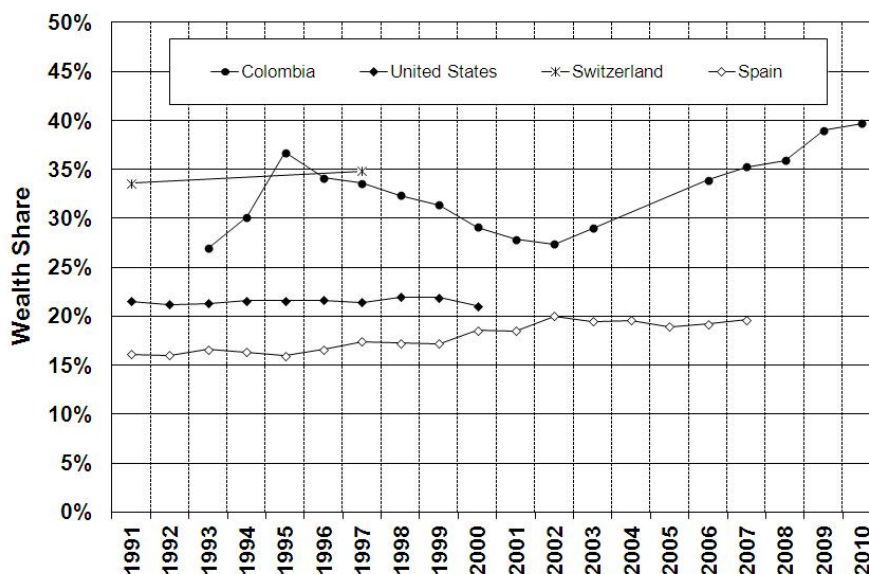
Source: Author's computations using tax returns data (see Table D.17, col. (1)).

In 2010, the top 1 per cent accounted for almost 40 per cent of total wealth. This approxima-

⁷³ While excluding wealth defined in a broad manner, previous work has focused on specific dimensions of wealth, notably land. For instance, [Ibañez & Muñoz \(2010\)](#) show that there is persistent land concentration in Colombia and that the land Gini coefficient, at a whopping 0.86 in 2010, is one of the highest in the world.

tive estimation suggests that wealth in Colombia, as for many countries, is even more concentrated than income. Figure 22 compares Colombia with other countries where similar estimations using tax data have been made. Wealth is more concentrated in Colombia than in OECD countries like Spain or the United States, where the top 1 per cent accounts for 16–22 per cent of total wealth. Interestingly, wealth concentration in Colombia appears to be lower than in Switzerland for some years, where the top 1 per cent accounts for almost 35 per cent of total wealth. Yet severe under-reporting of wealth (as will be discussed later) and the uncertainty surrounding the wealth denominator are serious limitations and the results must be read with caution.

Figure 22: The Top 1 Per Cent Wealth Share in Selected Countries

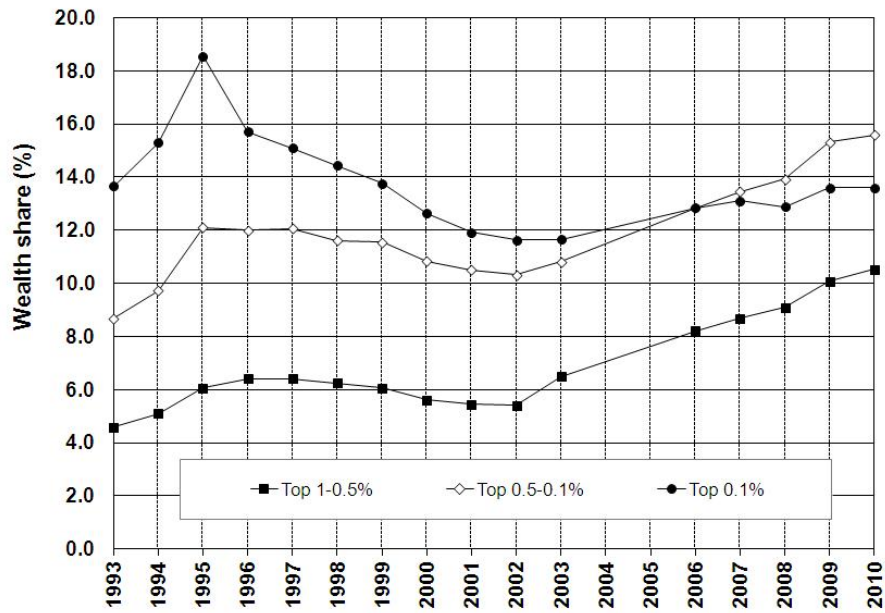


Note: US wealth shares are based on individual adults while Swiss shares based on the family level. Spain includes in real estate.

Source: Table D.17, col. (1) for Colombia, [Alvaredo & Saez \(2009\)](#) for Spain, [Dell et al. \(2007\)](#) for Switzerland, and [Kopczuk & Saez \(2004\)](#) for the United States.

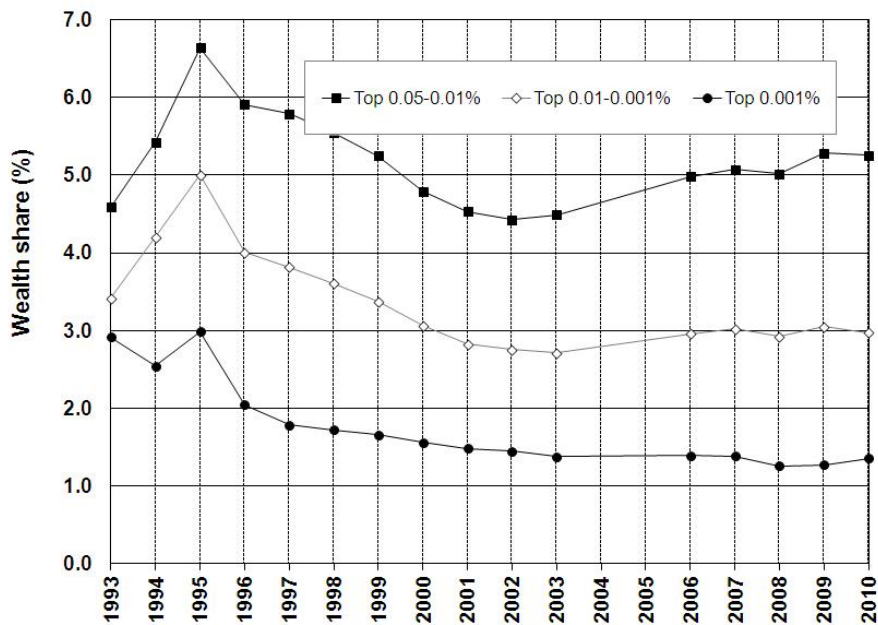
How have the wealth shares of other top groups evolved between 1993 and 2010? We decomposed the top percentile into three sub-groups: the top 1–0.5 per cent, the top 0.5–0.1 per cent, and the top 0.1 per cent, as illustrated in Figure 23. There is considerable heterogeneity in the evolution of wealth shares across these sub-groups within the top percentile. Wealth shares peaked in 1995, and fell consistently in 1995–2002 for all sub-groups. Yet this common trend dissolved in 2002. In 2002–2010, the share of the top 1–0.5 per cent and top 0.5–0.1 per cent increased (even doubling for the former), while the share of the top 0.1 per cent has stabilised around 13 per cent. Since 2006, the wealth share of the top 1–0.5 per cent has surpassed that of the top 0.1 per cent. Thus, and in contrast to what is happening with top incomes, top wealth shares in Colombia have increased mainly due to accruals in the top 1–0.1 per cent. To further study wealth concentration at the very top, Figure 24 depicts the wealth shares of the highest-ranking individuals, decomposing the top 0.05 per cent into three sub-groups: the top 0.05–0.01 per cent, the top 0.01–0.001 per cent and the top 0.001 per cent. Unlike the top 1 per cent in Figure 21 and the other sub-groups in Figure 23, the share of the wealthiest individuals remained stable since 2002, and it has even *declined* for the ultra-wealthy top 0.001 per cent.

Figure 23: Wealth Shares of Top 1–0.5, Top 0.5–0.1 and Top 0.1 Per Cent, Colombia 1993–2010



Source: Author's computations using tax returns data (see Table D.17).

Figure 24: Wealth Shares of Top 0.05–0.01, Top 0.01–0.001 and Top 0.001 Per Cent, Colombia 1993–2010

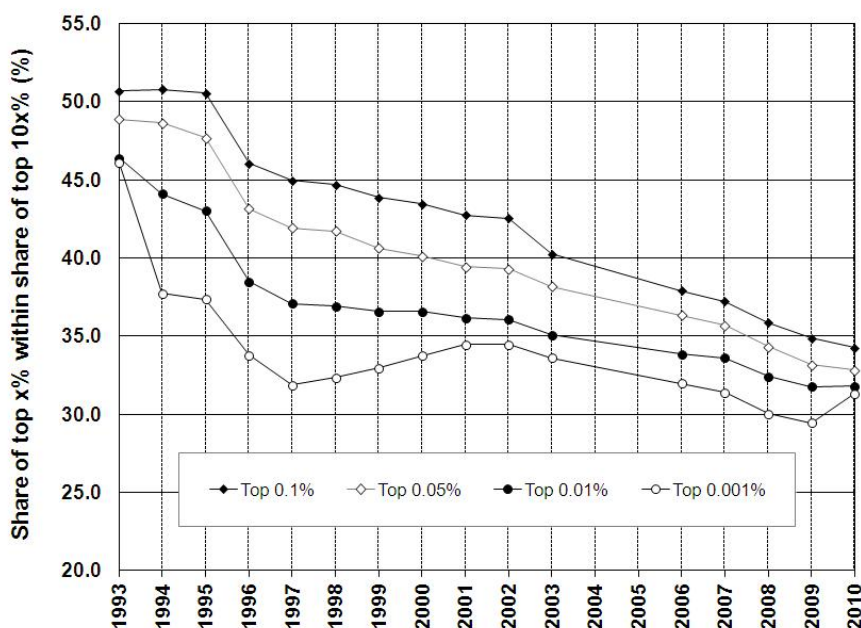


Source: Author's computations using tax returns data (see Table D.17).

However, the presented estimations depend on the definition of the wealth denominator.

The uncertainties surrounding this wealth denominator can be avoided if we look at the *shape* of the upper part of the distribution, as represented by the shares within shares. Figure 25 shows the share of the top 0.1 per cent within the total wealth of the top 1 per cent, as well as that of the top 0.01 per cent within the top 0.1 per cent, the top 0.001 within the top 0.01, and the top 0.05 within the top 0.5 per cent. The shares within shares shows the same drop from 45–55 per cent in 1993 to 30–35 per cent in 2010. It is interesting to note that the share of the wealthiest individuals (i.e. the top 0.001 per cent) dropped significantly more than the other groups from 1993 to 1994. It was constant between 1994 and 1995, suggesting that the ultra-wealthy increased their reported wealth as much as the 0.01 per cent group in relative terms. After a decline from 1995 to 1997, the share of the top 0.001 within the top 0.01 group has steadily risen, peaking in 2002. Since then, it has followed a pattern of a decreasing share similar to other top groups.⁷⁴

Figure 25: Shares Within Shares of Top Wealth Groups, 1993–2010



Source: Table D.18.

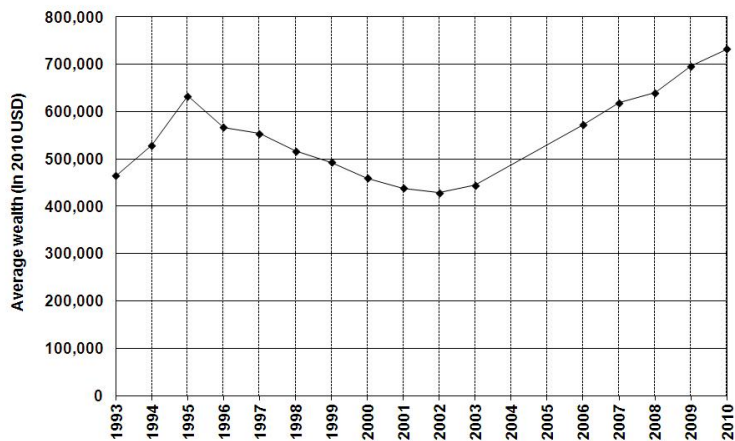
The evolution of the average wealth of the top 1 per cent, illustrated in Figure 26, presents a pattern similar to its wealth share: average wealth jumped in 1995 but fell sharply thereafter, reaching a nadir in 2002. Indeed, the 1990s decade, tainted by recessions and economic turmoil, dwarfed the fortunes of the top 1 per cent. In 2000, for instance, an individual in the top 1 per cent had on average only 2000 PPP US\$557,730, that is, around one-sixth the value of his American counterpart (2000 US\$3,392,000, see [Kopczuk & Saez, 2004](#)). Yet full recovery has been achieved in the past decade; in 2010, the average income of the top 1 per cent had surged to \$1.5 billion pesos (US\$733 thousand), representing an increase of over 70 per cent in a period of only 8 years.

It is interesting to note that top wealth in Colombia considerably lags that of developed countries. For instance, the average wealth of the top 1 per cent is less than one-fifth of Spain's in 2007 (2010 PPP US \$1,113,404 versus PPP US\$6,031,981 respectively, see [Alvaredo & Saez, 2009](#)). The comparison with Spain is intriguing because, while top *incomes* are comparable between the two, the *fortunes* of the wealthiest Colombians are only a fraction of those in Spain. This phenomenon may be characteristic of the developing world, where the incomes that have flourished

⁷⁴ Further, the fact that the share of the top x per cent within that of the top 10x per cent is similar for the different values of x in Figure 25 indicates that the distribution is close to Pareto in form ([Atkinson, 2010](#)).

thanks to economic growth have not yet translated into accumulated fortunes. Alternatively, it may also suggest that wealth in Colombia is grossly undervalued or under-reported in tax records, a possibility we return to in the next section.

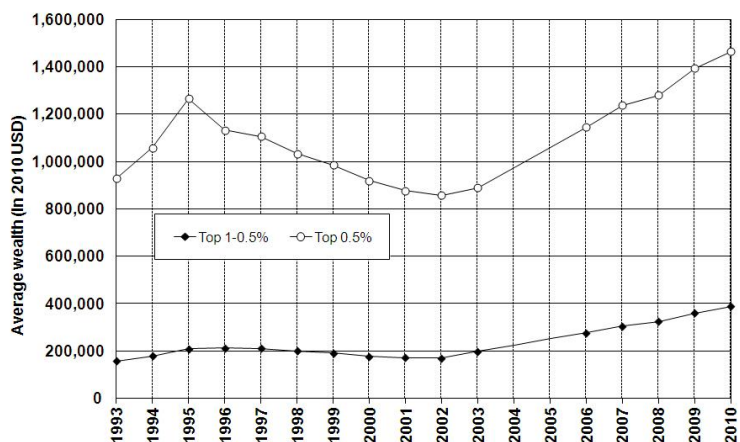
Figure 26: Average Wealth of Top 1 Per Cent, Colombia 1993–2010



Notes: In 2010, the market exchange rate was 1 US Dollar \approx 2,000 Colombian pesos.
Source: Table D.19, col. (1).

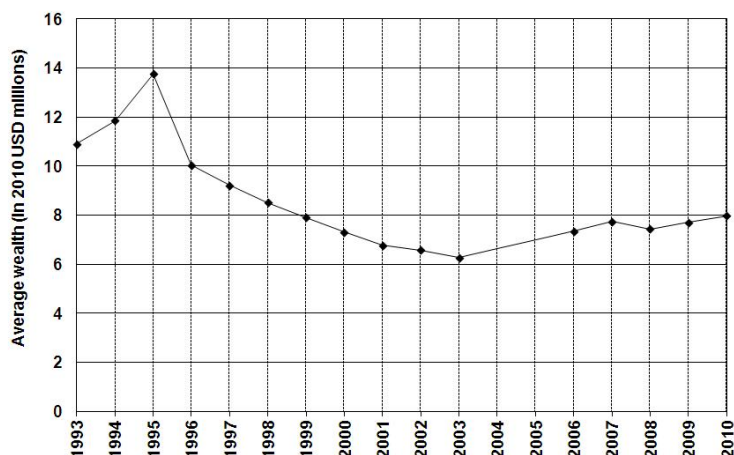
As with top wealth shares, the evolution of average wealth also varies significantly across sub-groups within the top percentile. As Figures 27 and 28 illustrate, the decline in the period of 1995–2002 was much more pronounced for the ultra-wealthy, as the top 0.01 per cent saw their fortunes shrink by over one-half. Moreover, the increase since 2002 has been more pronounced for the top 1–0.5 per cent and top 0.5 per cent groups than for the top 0.01 per cent: the average fortune of an individual in the top 1–0.5 per cent has more than doubled in recent years, while an individual in the top 0.01 per cent has barely enjoyed an increase in the same period. Section 5.1 seeks to interpret these trends in the light of significant policy changes that took place during this period.

Figure 27: Average Wealth of Top 1–0.5 and Top 0.5 Per Cent, Colombia 1993–2010



Notes: In 2010, the market exchange rate was 1 US Dollar \approx 2,000 Colombian pesos.
Source: Table D.19, cols. (2) and (7).

Figure 28: Average Wealth of Top 0.01 Per Cent, Colombia 1993–2010



Notes: In 2010, the market exchange rate was 1 US Dollar \approx 2,000 Colombian pesos.
 Source: Table D.19, col. (5).

5.1 Interpreting the Trends

How can we interpret the fact that the largest fortunes did not recover since the fall of the 1990s, while smaller fortunes recovered perfectly well? We argue that changes in tax policy across the period of study help in understanding both the common trend and the differences across top groups. In particular, a wealth amnesty in 1995 and the introduction of a wealth tax in 2002 are important factors to understand wealth concentration in this country.

First, the jump in reported wealth in 1995 is likely a result of a change in *reported* wealth rather than of *actual* wealth. This year, the Samper administration established a highly controversial wealth amnesty, allowing individuals who had filed a tax return in 1993 and 1994 to disclose and legalise their previously-undeclared wealth without facing any legal sanction, tax nor interest (Law 223/1995). Constituting what has likely been the greatest wealth amnesty in Colombian history, there was much debate on whether it condoned money laundering and legalising wealth derived from narco-trafficking, smuggling, and other illegal activities that were particularly pervasive in Nineties Colombia.⁷⁵ Intriguingly, the wealth amnesty disproportionately benefited the wealthiest individuals in Colombia, as made evident in Figure 27. Moreover, the remarkable increase that year highlights the difficulty in using tax data to examine wealth concentration. The fact that there is such an evident jump in reported wealth that year illustrates both the largeness of the shadow economy in Colombia, and the acutely limited capacity of tax data to represent it. The under-reporting of wealth that is so evident in the graphs suggests that our calculations of wealth concentration are thus at best highly conservative. Indeed, it is in all likelihood possible that wealth in Colombia is even more concentrated than what is disclosed by the tax data.

Second, and as mentioned previously, there is considerable heterogeneity across sub-groups within the top 1 per cent. Excluding the ultra-wealthy (i.e. the top 0.01 and top 0.001 per cent), wealth concentration has risen steadily since 2002. Interestingly, this coincides with the year the wealth tax was re-established in Colombia. Eliminated in 1992 by Law 6/1992 during the Liberal Gaviria administration, the wealth tax was reincorporated by Uribe I in 2002. Denouncing an emergency safety crisis due to extreme violence inflicted by illegal armed groups, Uribe declared an *estado de conmoción* that enabled him to take extraordinary legislative measures to boost

⁷⁵ See for instance Eduardo Laverde Toscano, (1995, December 19). “Amnistía patrimonial fue un gol olímpico”, El Tiempo. Available at: <http://www.eltiempo.com/archivo/documento/MAM-487129> (accessed 1 August 2012).

revenue to finance heightened military spending (Decree 1837/2002).⁷⁶ Subsequently, Decrees 1838 and 1885 introduced a wealth tax dubbed “special tax for Democratic Security”, in reference to Uribe’s security policy. Its rate was established at 1.2 per cent of net wealth for all individuals with gross wealth above \$169.5 million pesos (base 2002).

In Colombia, it is often said that no tax is more permanent than a transitory one. The exigencies of war against illegal armed groups, coupled with the need to sustain the expensive Democratic Security policy, led the Uribe I government to ensure that the “special” tax be extended for the following years. Net worth above \$3 billion Colombian pesos (base 2004) was levied at 0.3 per cent for 2004–06 (Law 863/2003). This high threshold meant that the wealth tax fell on top fortunes only.⁷⁷ After Uribe’s re-election, the wealth tax was extended by Law 1111/2006 for 2007–10, and its rate was raised to 1.2 per cent for net worth above \$3 billion pesos (base 2006). This meant that only some individuals, again in the top 0.01 cent, were subject to this tax.

Thus, the fact that only the wealthiest individuals have been subject to the wealth tax in Colombia may help in explaining the heterogeneity in the evolution of wealth shares across top groups since 2002. Indeed, as Figure 23 illustrates, the share of the top 1–0.5 per cent (i.e. those that were *not* subject to the wealth tax) sky-rocketed between 2002 and 2010, while the share of the top 0.01–0.001 per cent (i.e. those that *were*) has stabilised. In fact, the share of the top 0.001 per cent has *decreased* since 2002. In all likelihood, the progressive tax schedule created by recent reforms will affect the share of the top 0.1 and 0.05 in the years to come.⁷⁸

Note, however, that although policy factors might explain the evolution in reported wealth in Colombia, we cannot prove empirically that these factors had the decisive role we attribute to them. For instance, the evidence presented does not allow for a causal interpretation of the introduction of wealth taxation on the reduction in wealth shares at the very top of the distribution, especially given the relatively short period of study. In our view, the primary contribution of this work is to provide new and homogeneous series on wealth concentration in a developing country like Colombia using tax statistics. We are aware that our estimates are contingent upon the wealth denominator used and the pervasiveness of tax evasion and under-reporting of wealth. The following section discusses these last issues.

5.2 Potential Sources of Bias

The most obvious potential source of bias is tax evasion. A closely related problem is the undervaluation of assets reported on the tax return. These two issues can bias our results if they evolve over time. There are two factors that could potentially influence tax evasion and undervaluation.

First, because the wealth tax was introduced in the early 2000s, it is possible that this new taxation created perverse incentives for tax evasion. If this were the case, then our evolution of top wealth shares would reflect responses in tax legislation rather than *real* changes in wealth concentration. However, there are reasons to believe this is not the case. First, while the tax rate

⁷⁶ “*The adoption of temporary yet effective extraordinary measures is non-postponable to give Colombians their individual and collective security and to respond to the unprecedented challenge posed by criminal groups . . . every individual must make a significant tax effort to enable the State to ensure public security in vast parts of its territory*” (Decree 1837/2002, our translation).

⁷⁷ Since 2004, income tax filers must file a separate return for the wealth tax. We did not have access to this data and, because the income tax returns does not provide information on taxable wealth, allowances and exemptions, it is impossible to determine wealth tax liabilities. Therefore, our interpretation is limited to those individuals that could *potentially* be subject to the wealth tax, given tax legislation.

⁷⁸ In 2009, the wealth tax schedule was rendered progressive by Law 1370/2009, with a marginal rate of 2.4 per cent for taxable wealth between \$3–5 billion pesos, and of 4.8 per cent for taxable wealth above \$5 billion pesos for 2011. The following year, the Santos administration reduced the filing thresholds to \$1 billion pesos, and introduced two additional marginal rates: 1 per cent for taxable wealth between \$1–2 billion pesos and 1.4 per cent for wealth between \$2–3 billion pesos. Finally, and allegedly to cover expenses to palliate the disastrous effects of the 2010 extreme weather conditions, Santos imposed a surcharge of 25 per cent on tax payers covered in Law 1370/2009. This set the previous marginal rates to 3 per cent for taxable wealth between \$3–5 billion pesos and 6 per cent for wealth above \$5 billion pesos (base 2011) to be paid between 2011 and 2014. The effects of this progressive wealth taxation on wealth concentration are not reflected in our data, which only cover the period of 1993–2010.

varied significantly in the last decade, the top wealth shares of those potentially contributing to the wealth tax have shown a rather consistent downward trend, suggesting that reported wealth does not reflect behavioural responses to taxation. Further, wealth was not taxed between 1993 and 2002 (except for 1997, 1999 and 2000, where a forced investment of 0.5–0.6 per cent was imposed on top fortunes, see Section A.2 in the Appendix), and yet the shares of top wealth decline significantly across this period, which is contrary to one would expect if this explanation were valid.

Second, it is possible that the value of wealth was under-reported for security purposes. Indeed, the high rates of murder and kidnapping that afflicted Colombia in the 1990s may have dissuaded tax filers from revealing their personal wealth to authorities, lest the value of their fortunes be leaked to criminal groups. Therefore, the drop in wealth shares in the 1990s may reflect a conscious response in the filing behaviour to avoid persecution from illegal armed groups, rather than a real change in wealth inequality. However, if this were the case, one would expect that the improved security conditions in the Uribe I and Uribe II administrations would reflect on lesser incentives for under-reporting and thus higher wealth shares. As it has been shown, this has not been the case: the wealth shares of the very top groups have remained constant and the wealth averages have increased since 2002.

Third, our results using tax data may be miscalculated due to several factors. First, real estate wealth and most tangible assets are reported at their fiscal value, which is grossly inferior to their market value. Indeed, cadastres have historically been only a fraction of market values, and recent efforts to remedy this situation have shed some light on this issue. Regrettably, the tax data do not inform about the fraction of wealth that represents real estate wealth, because of the considerable variation in wealth composition in the last decades (Lopez & Salamanca, 2009), it is very difficult to adequately correct for this. Our efforts in re-computing net worth, while partially achieving to account for this fact, may not be entirely successful in doing so. Finally, anecdotal evidence suggests that fortunes held abroad continue to elude tax returns. Scarcity of data thwart efforts to account for this, and more information on the magnitude of this phenomenon in Colombia is needed.

In all, the results presented in this section are not intended to be definitive but rather to provide a point of departure on the important question of wealth concentration, about which very little is known in Colombia, primarily because of data limitations. The results of this first exploration highlight the need for better data on wealth on both a macro and micro level, that is, national wealth as well as household wealth and its composition. Progress should be made in household surveys, and a first step would be to include wealth or proxies thereof in the questionnaires. The combination of different data sources on wealth motivates examining wealth concentration and the evolution of wealth inequality in future research.

6 Concluding Remarks

This work constitutes a first effort in estimating top incomes and top wealth shares in Colombia based on individual tax returns and National Accounts data. These data are used to assess income and wealth concentration, their change over time, and the redistributive role of the tax system. They are also used to inform the nature of the income and wealth of the rich.

Our results suggest that income distribution in Colombia is highly concentrated at the top. We show that income concentration has followed a U-shaped evolution in the past decades. The recessionary period of the mid-1990s, followed by one of the most severe economic crises in Colombian history, dwarfed top income shares. Since 2003, high economic growth has contributed to a surge in top income shares, especially among the ultra-rich (i.e. the top 0.01 per cent). Colombia currently stands as one of the most unequal countries in the world, as the top 1 per cent accounts for over one-fifth of total income. Our findings question the role of income taxation. We argue that the substantial erosion of the tax base, coupled with an extremely large initial exempted bracket by international standards, limit the revenue-collecting capacity of the income tax and diminish its redistributive impact. This explains why the after-tax income inequality is almost as high as inequality before income taxes. Further, we exploit panel micro-data to cast

light on income mobility at the top of the distribution. Despite substantial inter-period variation, our results suggest that income mobility in Colombia is very limited, especially for the ultra-rich.

Income tax statistics also provide information on personal net worth. In the past, the scarcity of data has limited research on wealth inequality in Colombia, and for this very lack of information we must resort to estimating top wealth shares under a series of hypotheses. We find that wealth is more concentrated than income, and that wealth inequality follows a very similar U-shape pattern, with the crisis period of 1999–2002 as the inflexion point. Wealth concentration appears to have systematically increased since 2002, especially due to higher wealth reported the bottom of the top 1 per cent.

Our findings, however, must be interpreted with caution. Regrettably, as tax returns tabulations and micro-data are only available since 1993, it is not feasible to provide an account of the long-run evolution of top shares. Despite this, and notwithstanding the shortcomings of the available data (not the least being the pervasiveness of the shadow economy), this work has sought to show that tax records combined with National Accounts are illustrative in the study of the evolution of income and wealth inequality, and that they provide intriguing insights that elude the existent survey data. We hope that the findings show the need to exploit tax micro-data in Colombia, that they contribute to the debate on potential policy reforms to reduce income inequality, and that they motivate future research (and better data) that focuses on the rich and wealthy.

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Appendices

A The Income and Wealth Taxes in Colombia

The DIAN is the tax agency that centralises and administers taxes in Colombia. Table A.1 presents the structure of tax revenues collected by DIAN from 1990 to 2011, as a percentage of national government tax receipts (Panel A) and as percentage of GDP (Panel B).

Table A.1: Structure of Tax Revenues. Colombia 1990–2011

| Panel A. Taxes as Percentage of National Government Tax Receipts | | | | | | | |
|--|----------------------------------|---------------------|-------------------------------|---------------------|--------------------------------------|-------------------------|--------------|
| Year | Income and Complements [1] | Total VAT [2] | International Trade [3] | Stamp Tax [4] | Financial Transactions Tax [5] | DS and Wealth [6] | Other [7] |
| 1990 | 41,69 | 31,63 | 24,97 | 1,71 | 0,00 | 0,00 | 0,00 |
| 1991 | 50,85 | 32,59 | 15,09 | 1,47 | 0,00 | 0,00 | 0,00 |
| 1992 | 51,38 | 37,70 | 9,38 | 1,55 | 0,00 | 0,00 | 0,00 |
| 1993 | 45,10 | 43,99 | 10,61 | 0,30 | 0,00 | 0,00 | 0,00 |
| 1994 | 42,67 | 44,71 | 11,14 | 1,31 | 0,00 | 0,00 | 0,17 |
| 1995 | 42,69 | 44,78 | 10,74 | 1,59 | 0,00 | 0,00 | 0,20 |
| 1996 | 39,81 | 49,50 | 8,91 | 1,46 | 0,00 | 0,00 | 0,31 |
| 1997 | 41,24 | 45,84 | 10,19 | 1,75 | 0,00 | 0,00 | 0,98 |
| 1998 | 40,35 | 46,03 | 11,43 | 2,11 | 0,00 | 0,00 | 0,08 |
| 1999 | 40,77 | 43,01 | 8,75 | 2,05 | 5,36 | 0,00 | 0,06 |
| 2000 | 39,01 | 44,22 | 9,13 | 2,09 | 5,37 | 0,00 | 0,18 |
| 2001 | 41,26 | 42,12 | 9,06 | 1,69 | 5,78 | 0,00 | 0,09 |
| 2002 | 39,41 | 41,51 | 7,80 | 1,58 | 5,11 | 4,54 | 0,05 |
| 2003 | 38,85 | 43,60 | 7,08 | 1,58 | 5,02 | 3,80 | 0,06 |
| 2004 | 42,14 | 42,72 | 6,29 | 1,52 | 5,91 | 1,20 | 0,23 |
| 2005 | 42,53 | 42,35 | 6,90 | 1,54 | 5,51 | 1,09 | 0,08 |
| 2006 | 42,44 | 42,97 | 6,99 | 1,50 | 5,05 | 1,02 | 0,04 |
| 2007 | 41,07 | 43,41 | 7,05 | 1,43 | 4,96 | 2,05 | 0,03 |
| 2008 | 39,78 | 42,62 | 6,61 | 1,21 | 4,77 | 4,95 | 0,05 |
| 2009 | 44,54 | 40,70 | 6,00 | 0,94 | 4,53 | 3,25 | 0,04 |
| 2010 | 40,06 | 44,68 | 6,93 | 0,51 | 4,59 | 3,18 | 0,04 |
| 2011 | 40,22 | 43,51 | 5,07 | 0,14 | 5,86 | 5,14 | 0,07 |
| Panel B. National Government Tax Receipts as % of GDP | | | | | | | |
| 1990 | 3,42 | 2,60 | 2,05 | 0,14 | 0,00 | 0,00 | 0,00 |
| 1991 | 4,53 | 2,90 | 1,34 | 0,13 | 0,00 | 0,00 | 0,00 |
| 1992 | 4,65 | 3,41 | 0,85 | 0,14 | 0,00 | 0,00 | 0,00 |
| 1993 | 4,44 | 4,33 | 1,04 | 0,03 | 0,00 | 0,00 | 0,00 |
| 1994 | 4,16 | 4,36 | 1,09 | 0,13 | 0,00 | 0,00 | 0,02 |
| 1995 | 4,13 | 4,33 | 1,04 | 0,15 | 0,00 | 0,00 | 0,02 |
| 1996 | 4,02 | 5,00 | 0,90 | 0,15 | 0,00 | 0,00 | 0,03 |
| 1997 | 4,50 | 5,00 | 1,11 | 0,19 | 0,00 | 0,00 | 0,11 |
| 1998 | 4,31 | 4,92 | 1,22 | 0,23 | 0,00 | 0,00 | 0,01 |
| 1999 | 4,42 | 4,66 | 0,95 | 0,22 | 0,58 | 0,00 | 0,01 |
| 2000 | 3,61 | 4,09 | 0,85 | 0,19 | 0,50 | 0,00 | 0,02 |
| 2001 | 4,54 | 4,64 | 1,00 | 0,19 | 0,64 | 0,00 | 0,01 |
| 2002 | 4,43 | 4,66 | 0,88 | 0,18 | 0,57 | 0,51 | 0,01 |
| 2003 | 4,61 | 5,17 | 0,84 | 0,19 | 0,60 | 0,45 | 0,01 |
| 2004 | 5,18 | 5,26 | 0,77 | 0,19 | 0,73 | 0,15 | 0,03 |
| 2005 | 5,45 | 5,43 | 0,88 | 0,20 | 0,71 | 0,14 | 0,01 |
| 2006 | 5,84 | 5,91 | 0,96 | 0,21 | 0,70 | 0,14 | 0,01 |
| 2007 | 5,74 | 6,07 | 0,98 | 0,20 | 0,69 | 0,29 | 0,00 |
| 2008 | 5,54 | 5,94 | 0,92 | 0,17 | 0,67 | 0,69 | 0,01 |
| 2009 | 6,04 | 5,52 | 0,81 | 0,13 | 0,61 | 0,44 | 0,01 |
| 2010 | 5,13 | 5,72 | 0,89 | 0,07 | 0,59 | 0,41 | 0,01 |
| 2011 | 5,76 | 6,23 | 0,73 | 0,02 | 0,84 | 0,74 | 0,01 |

Notes: DS corresponds to Uribe's "Democratic Security" special tax. The table excludes taxes not administered by the DIAN, including oil and fuel taxes, payroll taxes, cinema tax, tourism tax, airport and port taxes, notarial tax, tobacco, beer and liquor taxes, industry and commerce tax, real estate tax, and hotel taxes.

Source: DIAN – SGAO – Estudios Económicos.

A.1 The Income Tax

This section draws extensively from Sanchez & Espinosa (2005), Gonzalez & Calderon (2002), and Perry & Cardenas (1986). The income tax is one of the main sources of public revenue in Colombia. Created in 1918 by the Suárez administration's Law 56, it was consolidated in 1922 as a proportional tax on labour

and capital income. In 1927, Law 64 introduced progressivity into the income tax system and was one of the first efforts in creating the modern tax system in the country.⁷⁹ In 1930, the Kemmerer mission created the DIAN, the Colombian tax agency, to centralise tax recollection. Additional efforts to centralise the tax administration and enhance the control of the system were embodied the following year in Law 81, which introduced the withholding tax on internal public debt interests to combat tax evasion, and increased the marginal income tax rates. It also introduced the corporate income tax.

In seeking to reduce income inequality, in 1935 Liberal López Pumarejo administration's Law 78 increased the top marginal tax rate once again, from 8 to 17 per cent. It also created a progressive tax on "excess profits", that is, on profits exceeding an annual rate of 12 per cent. Moreover, the reform created tax incentives to foster growth in specific agricultural industries in the economy, and it simplified the filing procedure to reduce tax evasion. Thanks to these reforms, by 1942 the income tax had become the main source of tax revenue in Colombia.

Although the Thirties reforms had succeeded in rendering the the income tax progressive, the system allowed for tax evasion and avoidance, especially from high-income taxpayers. Indeed, the Lauchlin Currie mission, which analysed the tax system in the Fifties, concluded that middle-income taxpayers were being taxed more heavily than high-income ones, and that the system did not create enough incentives for private investment. The military government of Rojas Pinilla sought to correct this through a drastic income tax reform in 1953. The reform created a 10-per cent tax on dividends, and increased the corporate income tax rate while rendering it progressive.

In the Sixties, and following instructions made by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), the income tax rates were reduced and a series of tax exemptions and allowances for basic industries were created to stimulate private investment. Law 81 of 1960 established presumptive income taxes on rural land as well as a tax on capital gains. Guillermo León Valencia's Law 21 and Decree 3190 of 1963 created a 2-year surtax of 20 per cent on the income tax and a withholding tax on all sources of taxable income. A range of anti-tax evasion instruments were put in place in 1966 and 1967 by the Lleras Restrepo administration, as well as a limit on tax deductions. Withholding regimes were reformed, with a withholding tax of up to 10 per cent on employment income. Law 38 of 1969 created labour taxes (Olivera *et al.*, 2010).

In the beginning of the Seventies, the Conservative Pastrana Borrero administration issued Laws 4,5, and 6 of 1973. These changes increased personal income tax exemptions, especially in the farming sector, and introduced a presumptive tax regime in the farming sector. Corporate income tax rates were modified to 4 per cent on the first \$ 60,000 and 6 per cent on the excess. Liberal López Michelsen significantly reformed the income tax system in the second half of the decade. Decrees 2053 and 2247, special decree and Law 23 of 1974 eliminated most tax incentives, replaced personal income tax exemptions with tax credits, and raised the top marginal income tax rate to an unprecedented 56 per cent. To avoid inflation-related distortions in the tax incidence, partial correction for inflation was introduced.⁸⁰ The tax reforms also established a general minimum presumptive income tax such that no taxpayer received an taxable rent below 8 per cent of net wealth. Also, the income tax regimes were unified (both for personal and corporate income taxes) and the corporate income tax was extended to all state enterprises, including those providing public services. A capital gains tax was introduced (although an amnesty on this tax was introduced later by Law 54 of 1977), and the inheritance tax was modified. A second tax reform by the same administration took place in 1977, establishing an additional tax credit for all firms and increasing income tax exemptions and credits for many state companies. By the end of the decade, the Liberal Turbay administration modified the capital gains tax, reduced the top marginal rate of the capital gains tax, and exempted this tax for reinvested profits (Law 20 of 1979).

In the early Eighties, the Conservative Betancur administration reformed the system of tax exemptions offered to the corporate sector, and reduced both the top marginal personal income tax rate (from 56 to 49 per cent) and the corporate income tax rate. The tax exemptions in the personal income tax further reduced the tax base. Decree 3803 of 1982 established more controls in the tax payment system, and Law 9 of 1983 strengthened the minimum presumptive income tax regime while adjusting for inflation.

The Liberal Barco administration's Law 75 of 1986, and Decrees 2503 and 2540 of 1987, greatly simplified the income tax procedure. The number of marginal personal income tax rates shrunk to four and all marginal rates were reduced. In particular, the top marginal tax rate was set to 30 per cent. These

⁷⁹ This law also established the tax base (*renta líquida*) as the gross income minus the tax allowances, which included production costs and interest payments. Contingent on this definition of income, the marginal tax rate varied between 1 and 8 per cent.

⁸⁰ Subsequent reforms to correctly adjust for the high inflation levels were required by the end of the administration (e.g. Law 54 of 1977).

changes exempted 90 per cent of wage earners from the personal income tax (Sanchez & Espinosa, 2005). As for the corporate income tax, the 1986 reform unified all rates to 30 percent. It also eliminated the existent double taxation by establishing dividends received by shareholders as non-taxable income if they had paid the corporate income tax. The inflationary component of financial returns were also deemed non-taxable. Investment and equity funds were required to file an income tax return. Organisations such as the *Cajas de Compensación Familiar*, mutual investment funds, retirement and disability pensions funds, were taxed at a special rate of 20 per cent.⁸¹ Law 75 also reestablished taxation of Ecopetrol, the largest and primary petroleum company in Colombia. Compensations for occupational hazards and illnesses; compensations implying motherhood protection; funeral charges; severance pays and severance interests for wage earners whose income is below a threshold were all declared to be exempted from the income tax. Retirement pensions, invalidity benefits, and old age pensions were also exempted below a threshold, as were public relation expenses for some government officials, judges, members of the armed forces, and others. The reform also eliminated the filing requirement for wage earners under certain conditions.

Law 49 of 1990 by the Liberal Gaviria administration reduced the number of taxpayers required file an income statement, by establishing filing thresholds for independent workers. Investment funds were excluded from the income tax. Foreign investment was levied at a reduced rate, that fell from 20 per cent in 1990 to 12 percent in 1996. Law 6 of 1992 increased the tax base by including government commercial and industrial firms in the income tax statement, as well as mixed-economy businesses, public funds, and financial cooperatives. Income tax rates for both individuals and corporations were increased by 25 per cent, allegedly to finance social development and internal security in the form of government bonds. Thus, the top marginal income tax rates stood at 37.5 during this period. Corporate income tax incentives were introduced, as well as personal income tax allowances for healthcare and education expenditures. Finally, the wealth tax accruing to income taxpayers was eliminated.

The Liberal Samper administration's Law 223 of 1995 eliminated the special contribution of 25 per cent in the income tax and reduced its rate to 35 per cent for 1996–2002. It introduced a personal income tax exemption of 30 per cent of wage earners' taxable rent. It also strengthened the minimum presumptive income tax regime. Donations to political parties and movements, as well as housing premiums, were deemed non-taxable. Personal enterprise was henceforth considered a limited liability company. Capital losses were deducted against the capital gains tax. To stimulate private investment, it created a special "tax stability" regime. Later, the administration's Law 383 and Decree 81 of 1997 created tax incentives for foreign investment and academic research, as well as measures to reduce tax evasion.

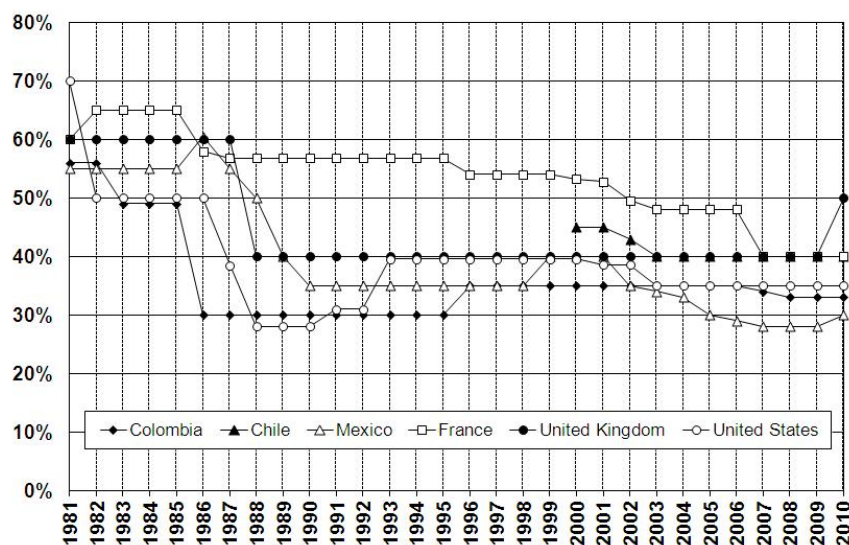
The Conservative Andrés Pastrana administration issued Law 488 of 1998, which created new tax reliefs, such as contributions to pension funds, long-term savings to promote construction (AFC), and public representation for Congressmen. It also created a new system of public bonds called *Bonos de paz*. Law 633 of 2000 included new taxpayers such as Fogafin and Fogacoop, while exempting some of their taxable income.

Article 29 of the Uribe I administration's Law 788 of 2002 created a down payment surtax of 5 per cent for both the personal and the corporate income tax, increasing the latter to 36.75 per cent for 2003. It also reduced wage earners' exempted rent from 30 to 25 per cent, while creating new tax exemptions for specific activities (e.g. rural capitalisation). Later, the administration's Law 863 of 2003 changed the filing thresholds and criteria, and modified the aforementioned surcharge to 10 per cent between 2004 and 2006, rising the corporate tax rate to 38.5 per cent. It also created a deduction of 30 per cent of investments made in real productive fixed assets for 2004–06. Law 1111 of 2006 made this policy permanent and increased the share of investment in fixed assets that can be deducted to 40 per cent for 2007–09. This law also reduced the income tax rates from 35 per cent in 2006 to 34 per cent in 2007 and 33 per cent in 2008. It also eliminated the dividend tax on non-residents. To boost employment and promote investment, Uribe I's Law 1004 of 2005 created an income tax rate equal to 15 for firms established in free-trade zones.

The Santos administration's Law 1370 of 2009 reduced the deduction for investment in fixed assets to 30 per cent for 2010, and later eliminated it in 2010 for the fiscal year of 2011.

⁸¹ The *Cajas de Compensación Familiar* are institutions part of the Social Security System that provide services such as healthcare, tourism, recreation, sports, education, and credit.

Figure A.1: Statutory Top Marginal Tax Rates in Selected Countries, 1981–2010



Source: OECD Tax Database for OECD countries and DIAN-SGAO-Estudios Económicos for Colombia.

The Corporate Income Tax

The corporate income tax consists of a unique tax rate that, since 1989, has been equivalent to the top marginal personal income tax rate. The fact that the personal and corporate rates have evolved identically over time suggests that, unlike other countries, in Colombia there is limited incentives for income shifting between the personal and corporate systems. Only recently have tax policies affected this equivalence between the two, namely Law 1429/2010 which awarded preferential rates to newly-created SAS, as explained below.

Between 1993 and 1995, it stood at 30 per cent. In these years, the Liberal Gaviria administration's Law 6/1992 established a "forced investment" in bonds for social development and internal security, or *Bonos para Desarrollo Social y Seguridad Interna*, equal to 25 percent of the income tax for some taxpayers. These firms were thus levied at a rate of 37.5 per cent. The rate was set to 35 per cent for 1996–2002 by the Liberal Samper administration. Law 788/2002 increased the corporate tax rate to 36.75 per cent by establishing a down payment surtax of 5 per cent for 2003. The following year, Law 863/2003 increased it to 10 per cent, rising the marginal tax rate to 38.5 per cent for 2004–06. Law 1111/2006 lowered the rate to 34 per cent in 2007 and 33 per cent for 2008–2010.

In addition to this ordinary tax rate, the legislation includes a special regime for charities, non-profit corporations and associations, mutual investment funds and trade unions, and different forms of organisations that earmark part of their surplus to finance formal education. Under this special regime, the tax rate has been 20 per cent since 1992. Lastly, the Uribe I administration sought to stimulate investment and boost employment by reducing the tax rate for users of free-trade areas, or *zonas francas*.⁸² Law 1004/2005 set this rate to 15 per cent and it was applied between 2007 and 2010.⁸³

To promote formalisation among small firms, the Santos administration abolished the corporate income tax of 33 per cent for newly-created firms under the SAS regime during their first two years, and reduced the rate for three more years thereafter (Law 1429/2010). In all, the policy gave preferential corporate income tax rates during a total of five years: corporate income tax rate would be equal to 0 per cent (0% × 33%) in the first two years, 8.25 per cent (25% × 33%) in the third year, 16.5 per cent

⁸² Yet this excludes commercial users in free-tax areas, who are subject to the normal income tax rate.

⁸³ Law 223/1995 created a special "tax stability" regime to stimulate private investment. Firms signing such a contract with the state would accept to face a marginal tax rate 2 percentage points above the current tax rate for ten years. If a new tax were to be created or if the income tax rate were to increase, such changes would not apply to firms under this regime. If, on the contrary, the income tax rate were to decrease, the firms would thence face the new tax rate augmented in 2 percentage points.

($50\% \times 33\%$) in the fourth year, and 24.75 per cent ($75\% \times 33\%$) in the fifth year. Anecdotal evidence suggests that this policy has distorted incentives among tax filers, who shift their income from the personal to the corporate tax base to exploit these tax reliefs.

Table A.2: Filing Requirements for Personal Income Tax, 2010

| Requirement | Other | Wage earner | Self-employed |
|---|--|---|---|
| Type of income | Ordinary and extraordinary from an industrial or commercial activity and rentier capital | Cash or in-kind, direct or indirect, from a work or legal relation | Fees, commissions and services |
| Income excluded from the base to compute filing requirement | NA | Disposal of fixed assets, and income pertaining to lotteries, games, and the like | NA |
| Income threshold | Gross income of 1,400 UVT | Total income of 4,073 UVT | Total income of 3,300 UVT |
| Proportionality | NA | 80 of gross income from work or legal relation | 80 of gross income from fees, commissions, and services |
| Obligation to bill | NA | NA | Income duly billed |
| Withholding | NA | NA | Yes |
| Gross wealth in last day of fiscal year | Below 4,500 UVT | Below 4,500 UVT | Below 4,500 UVT |
| Credit card purchases | Below 2,800 UVT | Below 2,800 UVT | Below 2,800 UVT |
| Consumption and purchases in fiscal year | Below 2,800 UVT | Below 2,800 UVT | Below 2,800 UVT |
| Bank deposits and financial investments in fiscal year | Below 4,500 UVT | Below 4,500 UVT | Below 4,500 UVT |

Notes: The income threshold for wage earners was increased from 3,300 UVT to 4,073 UVT in 2010.

Source: Colombian tax code and Gerencie.com.

Table A.3: Tax Filing Thresholds. Personal Income Tax, Colombia 1991–2010

| | Income criteria | | | | Wealth criteria | | Expenditure criteria | | | | |
|------|-----------------|------|---------------|-----|-----------------|-----|---|------|-------------|------|-------------------|
| | Employees | | Self-employee | | Gross Wealth | | Bank deposits and financial investments | | | | |
| | \$ pesos | (m) | \$ pesos | (m) | \$ pesos | (m) | \$ pesos | (m) | \$ pesos | (m) | Total expenditure |
| 1991 | 12,000,000 | 8.9 | 8,000,000 | 6.0 | 3,000,000 | 2.2 | 15,000,000 | 11.2 | | | |
| 1992 | 20,300,000 | 12.1 | 13,500,000 | 8.1 | 5,100,000 | 3.0 | 39,000,000 | 23.3 | | | |
| 1993 | 25,600,000 | 11.9 | 17,000,000 | 7.9 | 6,400,000 | 3.0 | 49,200,000 | 22.9 | | | |
| 1994 | 31,200,000 | 11.6 | 20,800,000 | 7.7 | 7,800,000 | 2.9 | 60,100,000 | 22.4 | | | |
| 1995 | 38,200,000 | 12.0 | 25,400,000 | 8.0 | 9,500,000 | 3.0 | 73,500,000 | 23.1 | | | |
| 1996 | 46,100,000 | 12.4 | 30,700,000 | 8.3 | 11,500,000 | 3.1 | 88,800,000 | 24.0 | | | |
| 1997 | 54,400,000 | 12.5 | 36,300,000 | 8.3 | 13,600,000 | 3.1 | 104,700,000 | 24.0 | | | |
| 1998 | 63,100,000 | 12.6 | 42,100,000 | 8.4 | 15,800,000 | 3.1 | 121,500,000 | 24.2 | | | |
| 1999 | 73,900,000 | 13.5 | 49,300,000 | 9.0 | 18,500,000 | 3.4 | 142,200,000 | 26.0 | | | |
| 2000 | 80,800,000 | 13.4 | 53,900,000 | 9.0 | 20,200,000 | 3.4 | 155,500,000 | 25.9 | | | |
| 2001 | 88,000,000 | 13.6 | 58,700,000 | 9.1 | 22,000,000 | 3.4 | 169,500,000 | 26.3 | | | |
| 2002 | 95,100,000 | 13.9 | 63,400,000 | 9.3 | 23,800,000 | 3.5 | 183,200,000 | 26.8 | | | |
| 2003 | 60,000,000 | 8.4 | 60,000,000 | 8.4 | 23,800,000 | 3.3 | 150,000,000 | 20.9 | | | |
| 2004 | 60,000,000 | 7.6 | 60,000,000 | 7.6 | 25,000,000 | 3.2 | 80,000,000 | 10.1 | 80,000,000 | 10.1 | 50,000,000 |
| 2005 | 63,660,000 | 7.5 | 63,660,000 | 7.5 | 26,525,000 | 3.1 | 84,880,000 | 10.0 | 84,880,000 | 10.0 | 53,050,000 |
| 2006 | 66,888,000 | 7.3 | 66,888,000 | 7.3 | 27,870,000 | 3.0 | 89,183,000 | 9.7 | 89,183,000 | 9.7 | 55,740,000 |
| 2007 | 69,214,200 | 6.9 | 69,214,200 | 6.9 | 29,363,600 | 2.9 | 94,383,000 | 9.4 | 94,383,000 | 9.4 | 58,727,200 |
| 2008 | 72,778,200 | 6.7 | 72,778,200 | 6.7 | 30,875,600 | 2.8 | 99,243,000 | 9.1 | 99,243,000 | 9.1 | 61,751,200 |
| 2009 | 78,417,900 | 6.9 | 78,417,900 | 6.9 | 33,268,200 | 2.9 | 106,933,500 | 9.4 | 106,933,500 | 9.4 | 66,536,400 |
| 2010 | 100,012,515 | 8.3 | 81,031,500 | 6.7 | 34,377,000 | 2.9 | 110,497,500 | 9.2 | 110,497,500 | 9.2 | 68,754,000 |

Notes: Amounts expressed in current Colombian pesos. '(m)' expresses values as multiples of average income.

For filing purposes, individuals are categorised by source of income. An individual is considered an employee if she is not responsible for the sales tax and receives at least 80 percent of her gross income as wages. An individual is considered a self-employee if she receives at least 80 per cent of her gross income as fees, commissions, and payment for services taxed at the source. If less than 80 per cent of an individual's total gross income comes from such sources (or if the individual does not have the receipts to prove so), then she is considered a "low-income taxpayer" (in the table referred to as 'Other income recipients').

The table reads as follow: in 2010, an individual was obliged to file for the income tax if (i) she was an employee with at least \$100,012,515 in gross income; or (ii) she was a self-employee with at least \$81,031,500 in gross income; or (iii) she was a 'low-income' individual with at least \$34,377,000 in gross income; or (iv) her gross wealth was at least \$110,497,500; or (v) she had bank deposits and financial investments for at least \$110,497,500; or (vi) her expenditure through credit cards was at least \$68,754,000; or (vii) her total expenditure was at least \$68,754,000.

Sources: Table C.5 for average income, and Decree 2064/1992, Decree 2511/1993, Decree 2798/1994, Decree 2321/1995, Decree 2300/1996, Decree 3049/1997, Decree 3020/1998, Decree 2587/1999, Decree 2588/1999, Decree 2661/2000, Decree 2794/2001, Decree 3257/2002, Law 863/2003, Decree 4344/2004, Decree 44715/2005, Law 1111/2006.

A.2 The Wealth Tax

Since its creation in 1935 by the Liberal López Pumarejo, wealth taxation has been a regular instrument used by the state to raise additional revenue and finance defence spending. Almost 60 years after its creation, the wealth tax on individuals it was repealed the Gaviria administration (Law 6/1992). However, the exigencies of war against the drugs cartels and illegal armed groups led the following governments to tax wealth again, this time in the form of forced investment bonds, namely the “Security Bond” by the Samper administration of 0.5% of net worth (Law 345/1996) and the “Solidarity Bond for Peace” of 0.6% by the Pastrana administration (Law 487/1998).

The wealth tax was reincorporated by Uribe I in 2002. Denouncing an emergency safety crisis due to extreme violence inflicted by illegal armed groups, Uribe declared an *Estado de Conmoción* that enabled him to take extraordinary legislative measures to finance the heightened military spending (Decree 1837 of 2002). Subsequently, Decrees 1838 and 1885 introduced the tax dubbed “special tax for Democratic Security”, in reference to Uribe’s security policy. Its rate was established at 1.2 per cent of net wealth for all individuals with gross wealth above \$169.5 million pesos (base 2002). It exempted the net wealth value of shares possessed in national firms, and the value of voluntary pension rights.

The need to sustain the expensive Democratic Security policy led the Uribe I government to ensure that the “special” tax be extended for the period of 2004–2006. Net worth above \$3 billion pesos (base 2004) was levied at 0.3 per cent for these years (Article 17 of Law 863/2003). A new exemption was introduced for the first \$200 million pesos (base 2003) of the residence value. After Uribe’s re-election in 2006, the wealth tax was extended by Law 1111/2006 for 2007–10, and its rate was raised to 1.2 per cent for net worth *in 2007* above \$3 billion pesos. This meant that individuals whose net worth in 2007 was above \$3 billion pesos would have to contribute to the wealth tax in 2007, 2008, 2009, and 2010, regardless of the fluctuations that their net worth may possibly have across the following years. The tax exemption for the value of primary housing was raised to \$220 million pesos.

Table A.4 displays the evolution of the wealth taxation rates between 1997 and 2010.

Table A.4: Schedule of Taxes on Wealth in Colombia, 1993–2010

| Year | Rates | |
|-----------|-----------|---------------|
| | 0% | 0.5% |
| 1997 | 0 | 150,000,000 |
| | 0% | 0.6% |
| 1999–2000 | 0 | 210,000,000 |
| | 0% | 1.2% |
| 2002 | 0 | 169,500,000 |
| | 0% | 0.3% |
| 2004 | 0 | 3,000,000,000 |
| 2005 | 0 | 3,183,000,000 |
| 2006 | 0 | 3,344,378,000 |
| | 0% | 1.2% |
| 2007–2010 | 0 | 3,000,000,000 |

Notes: For 1999–2000, individuals with net worth above \$150 million pesos in 1998 were taxed in 1999 and 2000 (Law 487/1998). For 2007–2010, individuals with net worth above \$3 billion pesos in 2007 must pay the wealth tax in 2007, 2008, 2009 and 2010 (Law 1111/2006).

Source: Law 345/1996, Law 487/1998, Decree 1838/2002, Law 863/2003, Decree 4344/2004, and Law 1111/2006.

In 2009, the wealth tax schedule was rendered progressive by Law 1370/2009, with a marginal rate of 2.4 per cent for taxable wealth between \$3–5 billion pesos, and of 4.8 per cent for taxable wealth above \$5 billion pesos for the tax year of 2011. The exemption on the value of residence was raised to \$319,215,000 pesos, and a new exemption was created for the net wealth value of (a) the fixed assets of public enterprises for water and sewer to improve the environment; (b) real estate of public enterprises for mass transportation; (c) land bank holdings of regional public companies for priority housing; and (d) social contributions made by partners.

The following year, the Santos administration issued Law 1430/2010 that reduced the filing thresholds to \$1 billion pesos and introduced two additional marginal rates: 1 per cent for taxable wealth between \$1–2 billion pesos and 1.4 per cent for wealth between \$2–3 billion pesos. Moreover, and allegedly to cover

expenses to palliate the disastrous effects of the 2010 extreme weather conditions, Santos imposed a surcharge of 25 per cent on taxpayers covered in 2009's Law 1370/2009. This set the previous marginal rates to 3 per cent for taxable wealth between \$3–5 billion pesos and 6 per cent for wealth above \$5 billion pesos (base 2011) to be paid between 2011 and 2014.

The concept of wealth used for tax purposes is very broad and includes all assets (tangible assets such as land, buildings, residences, furniture, vehicles, jewellery, business assets, machinery, oil wells and mines, and intangible assets such as stocks, bonds, cash, savings in private funds) net of liabilities. Wealth reported on the tax return includes voluntary but excludes mandatory pension rights. Exemptions included: (a) the net wealth value of shares possessed in national firms; and (b) the value of voluntary pension rights.

B Data Sources for Colombia

B.1 Tax Statistics

To our knowledge, there has been no official income tax statistics publications over the last three decades in Colombia. Our tax statistics consists of panel micro-data and tabulations that have been made available by the DIAN especially for us.

The micro-data are divided into two sets. The first includes information from 1993–2006 and represents the entire pool of tax filers for 1993–2003. In 2004, the income statement was separated between individuals who are required to keep accounting ledgers (tax form 110) and those who are not (tax form 210). Our micro-data include the latter and exclude the former for 2004–2006. However, both types of income tax filers are included in our second set of micro-data for the period 2006–2010, which is a balanced panel including individuals that filed a tax return annually for this period.

Complementary information is provided by tabulations based on personal income tax returns, which represent the entire pool of tax filers in Colombia for 1992–2010. These tabulations report, by ranges of gross income, the number of tax filers in each bracket ranked by gross income, net income, and taxable income. They include most of the variables in the tax returns for each year, such as gross wealth; liabilities; wages and labour income; honoraries, fees and services; interests and financial returns; 'other' income; gross operational income; gross non-operational income; total gross income; discounts, rebates, and refunds; allowances; sales costs; 'other' costs; total costs; administrative working expenses; sales working expenses; deduction on investments in fixed assets; 'other' deductions; total deductions; exemptions; taxable income; tax discounts; regular income tax liabilities; and total tax.

B.2 Total Number of Individuals and Tax Units

The population size is obtained from DANE's reported *Series de población 1985–2020*. This series is computed using national censuses and it is adjusted regularly according to new information available. It is obtained using census interpolation methods, adjusting data to the 1985, 1993 and 2005 censuses. Moreover, the series offers population size by gender and age groups. We compute total tax units as all individuals aged 20 and above, and present results in Table C.5.

C Income and Wealth Denominators

The objective is to relate the amounts recorded in the tax data (numerator of the top share) to a comparable control total for the full population (denominator of the top share).

C.1 Income Denominator

As described in Atkinson (2007a, p. 90), the control total for income can be defined in two different ways. One can start from the national accounts figures for total personal income and subtract items towards a definition closer to taxable income, or one can start from the income tax statistics and add the incomes of those tax units not covered. Given the limited coverage of the personal income tax in Colombia, this study follows the first approach. Additionally, the national accounts approach offers more likelihood of comparability with the estimates for other countries.

We start from the National Accounts base year 2005, and work backwards as follows⁸⁴:

Control total for income =
Balance of households' primary incomes
+ Social benefits other than social transfers in kind
– Employers' actual social contributions
– Imputed social contributions
– Attributed property income of insurance policyholders
– Imputed rentals for owner occupied housing
– Fixed capital consumption

This income definition is therefore before personal income taxes and personal payroll taxes but after employers' payroll taxes and corporate income taxes. This procedure generates a reference income of around 65 per cent of GDP. Results are presented in Table C.5.

⁸⁴ Colombian national accounts do not provide the information of fixed capital consumption for households, which has then been set at 5 per cent of gross values. For the years 1994-2000, we linked each of the series above backwards using the National Accounts base year 1994. Finally, for the years before 1994, when national accounts are provided at less detailed level, we linked the control total for income backwards following the households' disposable income plus taxes on income and wealth paid by households (base year 1975).

Table C.5: Reference Totals for Population, Income, and Inflation, Colombia 1990-2010

| | Population and Tax Units | | | | Total Income | | | | Inflation | | |
|------|--------------------------|--|---|---------|--|---|---|------------------------------------|--|--|---|
| | Population (‘000s) | Tax Units adults 20+ yo (‘000s) | Number of tax re- turns (‘000s) | (3)/(2) | Total income (th. mil- lion pesos) | Total income (current th. mil- lion pe- sos) | GDP (current th. mil- lion pe- sos) | Total income over GDP (%) | Average income (thousand pesos) | Average income (2010 US dol- lars) | Legislated monthly Min. wage x 14 (th. 2010 Pesos) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 1990 | 34,130 | 18,521 | | 199,817 | 18,782 | 28,651 | 65.55 | 10,789 | 5,394 | | 9.40 |
| 1991 | 34,831 | 18,987 | | 207,990 | 25,488 | 37,117 | 68.67 | 10,954 | 5,477 | | 12.25 |
| 1992 | 35,521 | 19,441 | 418 | 209,350 | 32,587 | 47,371 | 68.79 | 10,769 | 5,384 | | 15.57 |
| 1993 | 36,207 | 19,891 | 382 | 223,890 | 42,671 | 62,324 | 68.47 | 11,256 | 5,628 | 5,987 | 19.06 |
| 1994 | 36,854 | 20,332 | 378 | 233,251 | 54,612 | 80,520 | 67.82 | 11,472 | 5,736 | 5,902 | 23.41 |
| 1995 | 37,472 | 20,774 | 369 | 233,684 | 66,145 | 100,678 | 65.70 | 11,249 | 5,624 | 5,883 | 28.31 |
| 1996 | 38,068 | 21,209 | 370 | 229,889 | 78,604 | 120,079 | 65.46 | 10,839 | 5,420 | 5,819 | 34.19 |
| 1997 | 38,636 | 21,646 | 364 | 232,838 | 94,316 | 145,113 | 64.99 | 10,756 | 5,378 | 5,945 | 40.51 |
| 1998 | 39,184 | 22,088 | 346 | 230,515 | 110,815 | 167,500 | 66.16 | 10,436 | 5,218 | 5,936 | 48.07 |
| 1999 | 39,731 | 22,540 | 331 | 231,003 | 123,124 | 180,713 | 68.13 | 10,249 | 5,124 | 6,211 | 53.30 |
| 2000 | 40,296 | 23,009 | 330 | 237,435 | 138,228 | 208,531 | 66.29 | 10,319 | 5,160 | 6,255 | 58.22 |
| 2001 | 40,814 | 23,469 | 337 | 241,019 | 151,491 | 225,851 | 67.08 | 10,270 | 5,135 | 6,370 | 62.85 |
| 2002 | 41,329 | 23,938 | 356 | 244,981 | 163,762 | 245,323 | 66.75 | 10,234 | 5,117 | 6,472 | 66.85 |
| 2003 | 41,849 | 24,421 | 474 | 244,794 | 175,304 | 272,345 | 64.37 | 10,024 | 5,012 | 6,490 | 71.61 |
| 2004 | 42,368 | 24,913 | 732 | 260,615 | 197,652 | 307,762 | 64.22 | 10,461 | 5,230 | 6,609 | 75.84 |
| 2005 | 42,889 | 25,409 | 824 | 270,589 | 215,582 | 340,156 | 63.38 | 10,649 | 5,325 | 6,704 | 79.67 |
| 2006 | 43,406 | 25,914 | 936 | 285,626 | 237,332 | 383,898 | 61.82 | 11,022 | 5,511 | 6,874 | 83.09 |
| 2007 | 43,927 | 26,438 | 1,008 | 303,108 | 265,822 | 431,072 | 61.67 | 11,465 | 5,733 | 6,923 | 87.70 |
| 2008 | 44,451 | 26,979 | 1,069 | 314,191 | 294,821 | 481,037 | 61.29 | 11,646 | 5,823 | 6,885 | 93.84 |
| 2009 | 44,979 | 27,536 | 1,136 | 321,038 | 313,906 | 508,532 | 61.73 | 11,659 | 5,829 | 7,115 | 97.78 |
| 2010 | 45,510 | 28,105 | 1,124 | 338,437 | 338,437 | 548,273 | 61.73 | 12,042 | 6,021 | 7,210 | 100.00 |

C.2 Wealth Denominator

National accounts in Colombia do not report personal wealth estimates. Therefore an alternative, albeit less-than-ideal, wealth denominator must be computed using the data available. We present the evolution of wealth concentration using the Harrod-Domar-Solow formula with demographic growth. According to this, the long-run aggregate wealth-income ratio β^* converges to the household savings rate s over the sum of the growth rate g plus the demographic growth rate n , such that:

$$\beta^* = \frac{s}{g + n} \tag{C.1}$$

Table C.6 presents the aggregate worth, national income, savings rate and demographic growth rate in Colombia between 1993 and 2010. It results that the mean housing savings rate in the period of 1993–2010 is 10.11 per cent, the mean per capita national income growth rate is 1.91 per cent, and the demographic growth is 1.39 per cent. Hence, the wealth-income ratio β^* is equal to the following:

$$\beta^* = \frac{s}{g + n} = \frac{10.11}{1.91 + 1.39} \approx 306\% \tag{C.2}$$

We approximate aggregate wealth by taking $\beta^* \approx 306\%$, and we compute total wealth as a multiple of our income denominator.

Table C.6 expresses financial wealth as a share of income and as a share of financial wealth.

Table C.6: Aggregate Worth, National Income, Savings and Demographic Growth in Colombia, 1992-2010

| Year | Financial wealth (th. million 2010 pesos) (1) | National income (th. million 2010 pesos) (2) | Fin. wealth as share of income (%) (3) | Total wealth (th. million 2010 pesos) (4) | Fin. wealth as share of tot. wealth (%) (5) | Disposable Income (th. million 2010 pesos) (6) | Gross savings (th. million 2010 pesos) (7) | Savings rate (%) (8) | Demographic growth (%) (9) | National income growth (%) (10) |
|------|---|--|---|---|--|--|--|----------------------------|----------------------------------|---------------------------------------|
| 1992 | | 297,603 | | 641,300 | | 250,335 | 38,979 | 15.57 | 1.98 | (0.62) |
| 1993 | | 321,144 | | 685,841 | | 267,664 | 38,150 | 14.25 | 1.93 | 5.86 |
| 1994 | | 341,504 | | 714,515 | | 278,821 | 36,404 | 13.06 | 1.79 | 4.47 |
| 1995 | | 353,451 | | 715,843 | | 283,183 | 30,850 | 10.89 | 1.68 | 1.79 |
| 1996 | 25,865 | 347,541 | 7.44 | 704,217 | 3.67 | 275,331 | 26,188 | 9.51 | 1.59 | (3.21) |
| 1997 | 13,279 | 354,124 | 3.75 | 713,249 | 1.86 | 275,747 | 22,171 | 8.04 | 1.49 | 0.40 |
| 1998 | 14,126 | 345,963 | 4.08 | 706,135 | 2.00 | 270,881 | 20,964 | 7.74 | 1.42 | (3.67) |
| 1999 | 24,033 | 336,422 | 7.14 | 707,629 | 3.40 | 264,135 | 27,795 | 10.52 | 1.39 | (4.09) |
| 2000 | 42,160 | 352,247 | 11.97 | 727,334 | 5.80 | 271,251 | 26,661 | 9.83 | 1.42 | 3.24 |
| 2001 | 51,557 | 354,835 | 14.53 | 738,312 | 6.98 | 274,100 | 25,733 | 9.39 | 1.29 | (0.54) |
| 2002 | 60,321 | 362,961 | 16.62 | 750,450 | 8.04 | 277,075 | 27,521 | 9.93 | 1.26 | 1.01 |
| 2003 | 73,766 | 375,080 | 19.67 | 749,877 | 9.84 | 279,996 | 24,275 | 8.67 | 1.26 | 2.05 |
| 2004 | 82,048 | 397,298 | 20.65 | 798,340 | 10.28 | 295,421 | 30,811 | 10.43 | 1.24 | 4.62 |
| 2005 | 92,797 | 416,285 | 22.29 | 828,893 | 11.20 | 305,574 | 33,077 | 10.82 | 1.23 | 3.51 |
| 2006 | 110,821 | 449,218 | 24.67 | 874,955 | 12.67 | 322,014 | 30,244 | 9.39 | 1.21 | 6.62 |
| 2007 | 126,584 | 477,078 | 26.53 | 928,509 | 13.63 | 340,953 | 31,191 | 9.15 | 1.20 | 4.94 |
| 2008 | 148,037 | 495,558 | 29.87 | 962,458 | 15.38 | 350,230 | 35,254 | 10.07 | 1.19 | 2.65 |
| 2009 | 178,448 | 504,401 | 35.38 | 983,432 | 18.15 | 349,077 | 36,120 | 10.35 | 1.19 | 0.59 |
| 2010 | | 531,739 | | 1,036,731 | | 365,763 | 36,207 | 9.90 | 1.18 | 4.19 |

Notes: Financial wealth is obtained from Banco de la República. Gross national income, disposable income and gross savings are obtained from national accounts. Demographic growth rate is obtained from DANE based on population censuses. Total wealth is computed as a multiple of total income control, and savings rate is computed as gross household savings over household disposable income.

Table C.7: Reference Totals for Population, Wealth, and Inflation, Colombia 1990-2010

| Population (‘000s) | Population and Tax Units | | Total Income and Wealth | | | | | | | Inflation | | | | | | | | |
|-----------------------|--|---|-------------------------|--|---------|---|-----------|--|--------|---|--------|--|-----|---|------|--|------|-----------------------|
| | Tax Units adults 20+ yo (‘000s) | Number of tax re- turns (‘000s) | (3)/(2) | Total income (th. mil- lion 2010 Pesos) | (5) | Total income (current th. million Pesos) | (6) | Total wealth (th. mil- lion 2010 Pesos) | (7) | Total wealth (current th. million Pesos) | (8) | Average wealth (thousand 2010 Pesos) | (9) | Average wealth (current th. Pesos) | (10) | Average wealth (2010 US dol- lars) | (11) | CPI (2010 base) |
| 1990 | 34,130 | 18,521 | | 199,817 | 18,782 | 612,097 | 57,534 | 33,048 | 3,106 | 16,524 | 9.40 | | | | | | | |
| 1991 | 34,831 | 18,987 | | 207,990 | 25,488 | 637,133 | 78,077 | 33,556 | 4,112 | 16,778 | 12.25 | | | | | | | |
| 1992 | 35,521 | 19,441 | 418 | 209,350 | 32,587 | 641,300 | 99,825 | 32,987 | 5,135 | 16,494 | 15.57 | | | | | | | |
| 1993 | 36,207 | 19,891 | 382 | 223,890 | 42,671 | 685,841 | 130,713 | 34,481 | 6,572 | 17,240 | 19.06 | | | | | | | |
| 1994 | 36,854 | 20,332 | 378 | 233,251 | 54,612 | 714,515 | 167,292 | 35,143 | 8,228 | 17,572 | 23.41 | | | | | | | |
| 1995 | 37,472 | 20,774 | 369 | 233,684 | 66,145 | 715,843 | 202,621 | 34,459 | 9,754 | 17,229 | 28.31 | | | | | | | |
| 1996 | 38,068 | 21,209 | 370 | 229,889 | 78,604 | 704,217 | 240,788 | 33,204 | 11,353 | 16,602 | 34.19 | | | | | | | |
| 1997 | 38,636 | 21,646 | 364 | 232,838 | 94,316 | 713,249 | 288,917 | 32,950 | 13,347 | 16,475 | 40.51 | | | | | | | |
| 1998 | 39,184 | 22,088 | 346 | 230,515 | 110,815 | 706,135 | 339,458 | 31,969 | 15,368 | 15,984 | 48.07 | | | | | | | |
| 1999 | 39,731 | 22,540 | 331 | 231,003 | 123,124 | 707,629 | 377,166 | 31,395 | 16,733 | 15,697 | 53.30 | | | | | | | |
| 2000 | 40,296 | 23,009 | 330 | 237,435 | 138,228 | 727,334 | 423,432 | 31,611 | 18,403 | 15,806 | 58.22 | | | | | | | |
| 2001 | 40,814 | 23,469 | 337 | 241,019 | 151,491 | 738,312 | 464,061 | 31,459 | 19,774 | 15,730 | 62.85 | | | | | | | |
| 2002 | 41,329 | 23,938 | 356 | 244,981 | 163,762 | 750,450 | 501,649 | 31,350 | 20,956 | 15,675 | 66.85 | | | | | | | |
| 2003 | 41,849 | 24,421 | 474 | 244,794 | 175,304 | 749,877 | 537,006 | 30,707 | 21,990 | 15,353 | 71.61 | | | | | | | |
| 2004 | 42,368 | 24,913 | 732 | 260,615 | 197,652 | 798,340 | 605,466 | 32,045 | 24,303 | 16,022 | 75.84 | | | | | | | |
| 2005 | 42,889 | 25,409 | 824 | 270,589 | 215,582 | 828,893 | 660,389 | 32,621 | 25,990 | 16,311 | 79.67 | | | | | | | |
| 2006 | 43,406 | 25,914 | 936 | 285,626 | 237,332 | 874,955 | 727,017 | 33,764 | 28,055 | 16,882 | 83.09 | | | | | | | |
| 2007 | 43,927 | 26,438 | 1,008 | 303,108 | 265,822 | 928,509 | 814,291 | 35,121 | 30,801 | 17,560 | 87.70 | | | | | | | |
| 2008 | 44,451 | 26,979 | 1,069 | 314,191 | 294,821 | 962,458 | 903,123 | 35,674 | 33,475 | 17,837 | 93.84 | | | | | | | |
| 2009 | 44,979 | 27,536 | 1,136 | 321,038 | 313,906 | 983,432 | 961,585 | 35,715 | 34,921 | 17,857 | 97.78 | | | | | | | |
| 2010 | 45,510 | 28,105 | 1,124 | 338,437 | 338,437 | 1,036,731 | 1,036,731 | 36,888 | 36,888 | 18,444 | 100.00 | | | | | | | |

Notes: Total wealth is computed as a multiple of total income control, following the Harrod-Domar-Solow formula with demographic growth and Table C.6.

D Estimating Top Shares

We computed top income and wealth shares using the micro-data from the panel of income tax returns for the periods of 1993–2006 and 2006–2010. The first panel includes the universe of income tax returns for 1993–2003, while the second is a balanced panel that includes only those who have filed an income tax return consecutively from 2006 to 2010, inclusive. Further, we combine the tabulations that have been compiled for us by DIAN covering 1992–2010 and which represent the entire pool of tax filers in Colombia.

We corroborate the robustness of the weighing-by-bracket procedure for top income shares and top wealth shares in Tables D.8 and D.9, respectively. We exploit the fact that individuals not required to keep accountancy books in 2006 are included in both our datasets, and we compare results using different samples. Note that the 1993–2006 micro-data include only individuals *not* required to keep accountancy books in 2006, while the 2006–2010 micro-data include *both* individuals required and those not required to keep accountancy books. First, we present estimations using only individuals *not* required to keep accountancy books from the 1993–2006 micro-data (sample A) and compare them to the 2006–2010 micro-data (sample B). Second, we take individuals *not* required to keep accountancy books from the 1993–2006 micro-data and include individuals required to keep accountancy books from the 2006–2010 dataset (sample C), and compare results using both types of filers from the 2006–2010 dataset (sample D).

Table D.8 shows that the weighing-by-bracket procedure does not affect results significantly for income shares, validating the robustness of our estimations of top income shares. Indeed, given that gross income is a good proxy for our definition of income (especially for filers not required to keep accountancy books), the weighing-by-bracket procedure is adequate.

Table D.8: Robustness Checks of Weighing Procedure — Top Incomes, Colombia 2006

| Sample | Top 1 | Top 0.5 | Top 0.1 | Top 0.05 | Top 0.01 | Top 0.001 | Top 1-0.5 | Top 0.5- 0.1 | Top 0.1- 0.05 | Top 0.05- 0.01 | Top 0.01- 0.001 |
|--------|------------|------------|------------|-------------|-------------|--------------|--------------|--------------------|---------------------|----------------------|-----------------------|
| | (%) (1) | (%) (2) | (%) (3) | (%) (4) | (%) (5) | (%) (6) | (%) (7) | (%) (8) | (%) (9) | (%) (10) | (%) (11) |
| A | 18.53 | 14.06 | 7.21 | 5.40 | 2.79 | 1.15 | 4.47 | 6.85 | 1.81 | 2.62 | 1.64 |
| B | 19.26 | 14.51 | 7.37 | 5.49 | 2.77 | 1.11 | 4.75 | 7.14 | 1.88 | 2.72 | 1.66 |
| C | 19.24 | 14.58 | 7.47 | 5.59 | 2.88 | 1.19 | 4.66 | 7.11 | 1.87 | 2.71 | 1.69 |
| D | 19.94 | 15.01 | 7.62 | 5.67 | 2.86 | 1.15 | 4.93 | 7.38 | 1.95 | 2.81 | 1.72 |

Notes: Sample A consists of filers not required to keep accountancy books in the 1993–2006 micro-data. Sample B consists of filers not required to keep accountancy books in the weighted 2006–2010 micro-data. Sample C is equal to sample A, plus individuals required to keep accountancy books from the weighted 2006–2010 micro-data. Sample D is equal to sample B, plus individuals required to keep accountancy books from the weighted 2006–2010 micro-data.
Source: Author's calculations using tax data.

Table D.9 presents the robustness of the weighing-by-bracket procedure for top wealth shares. It results that the weighing procedure used for the 2006–2010 micro-data slightly inflates top wealth shares. This is explained by the fact that our weights are based on the 1992–2010 tabulations, which are ranked by gross income and not by gross wealth. Insofar as some individuals have very low levels of gross income, but file an income tax return due to high wealth, the weighing procedure awards them a disproportionate weight that artificially boosts their level of wealth. Thus, our estimations of top wealth shares in *levels* may be slightly overestimated for 2006–2010. Fortunately, however, insofar as the weights do not vary substantially from year to year, the weighing procedure will not bias our analysis of the *change* of top wealth shares. That is, we can be confident that the evolution of top wealth shares for 2006–2010 are not biased by the weighing procedure.

Table D.9: Robustness Checks of Weighing Procedure — Top Wealth, Colombia 2006

| Sample | Top 1 | Top 0.5 | Top 0.1 | Top 0.05 | Top 0.01 | Top 0.001 | Top 1-0.5 | Top 0.5- 0.1 | Top 0.1- 0.05 | Top 0.05- 0.01 | Top 0.01- 0.001 |
|--------|------------|------------|------------|-------------|-------------|--------------|--------------|--------------------|---------------------|----------------------|-----------------------|
| | (%) (1) | (%) (2) | (%) (3) | (%) (4) | (%) (5) | (%) (6) | (%) (7) | (%) (8) | (%) (9) | (%) (10) | (%) (11) |
| A | 21.97 | 16.72 | 8.47 | 6.19 | 2.88 | 0.95 | 5.26 | 8.25 | 2.28 | 3.31 | 1.93 |
| B | 25.54 | 19.39 | 9.75 | 7.10 | 3.28 | 1.06 | 6.15 | 9.64 | 2.66 | 3.82 | 2.22 |
| C | 25.17 | 19.12 | 9.63 | 7.02 | 3.28 | 1.07 | 6.05 | 9.49 | 2.60 | 3.75 | 2.21 |
| D | 28.48 | 21.58 | 10.80 | 7.84 | 3.65 | 1.17 | 6.89 | 10.79 | 2.95 | 4.19 | 2.49 |

Notes: Sample A consists of filers not required to keep accountancy books in the 1993–2006 micro-data. Sample B consists of filers not required to keep accountancy books in the weighted 2006–2010 micro-data. Sample C is equal to sample A, plus individuals required to keep accountancy books from the weighted 2006–2010 micro-data. Sample D is equal to sample B, plus individuals required to keep accountancy books from the weighted 2006–2010 micro-data.

Source: Author’s calculations using tax data.

D.1 Definitions

D.1.1 The Definition of Income

The definition of income varies for individuals required to keep accountancy books and those who are not. For the former, income is defined as total gross regular income, minus one-sixth of ‘other costs and deductions’ (following the tax form definition), plus net taxable and non-taxable irregular income. For the latter, income is defined as total gross regular income, minus refunds, rebates and discounts on sales, minus total costs, minus administrative operational expenses, minus operational sales expenses, minus one-sixth of ‘other deductions’ (following the tax form definition), plus net taxable and non-taxable irregular income.

Regrettably, the 1993–2006 micro-data do not include most of the variables required to define income as we do above. We compute our income variable for these years, in the following way. We organise individuals by level of gross income so as to reproduce the tax tabulations with the 2006–2010 micro-data, including a column for our newly-defined income. Second, for each bracket b in the tabulations, we compute the ratio of our income definition over total gross income, D_b . Third, we calculate the simple arithmetic mean of D_b^t for the period of 2006–2010, \bar{D}_b^t by each type t of filer, and then calculate the weighted average for the entire filing population by bracket, y_b .⁸⁵ Finally, recreating the tabulations using the 1993–2006 micro-data, we multiply gross income by y_b for each bracket to obtain an approximate measure of our definition of income. Note that in doing so, we are assuming that the share of shopkeepers p , and that the ratios \bar{D}_b^t for each type t of filers, all remain constant throughout the period.

The 1992–2010 tabulations were used to link the results obtained from the 1993–2006 and 2006–2010 micro-datasets. First, D_b^t was used to approximate a measure of income per bracket b and by type t of filer for the years of 2004 and 2005, missing in the 1993–2006 and 2006–2010 datasets.⁸⁶ Second, applying simple Pareto interpolations, we calculate income shares using these tabulations and the same definition of income described above for the entire period of 1993–2010. Third, the variation of the income share produced by the Pareto interpolation was used to link the 1993–2006 and 2006–2010 results. Finally, an upscale factor, equal to the ratio of the estimate produced by the 2006–2010 micro-data and the Pareto interpolation for the year of 2006, was computed backwards to recompute estimations for the years of 1993–2003. Note that due to high measurement error, the series could only be linked for the top 1 per cent.

It is possible that our estimations of income shares are slightly affected due to the definition of income we have described in Section 2.1. To analyse the sensitivity of our results to alternative definitions of income, we compare the income share of the top percentile using different definitions in Table D.10. First, we include ‘other costs and deductions’ (tax form 210) and ‘other deductions’ (tax form 110) completely, assuming that none of the items included represent costs incurred to obtain that income (column B). Second, we subtract the deduction for investments in fixed assets (column C). Third, we exclude the allowance on ‘non-taxable income’, or *ingreso no constitutivo de renta* in the tax code (column D). Fourth,

⁸⁵ This is the equivalent as computing $y_b = p(\bar{D}_b^t) + (1 - p)(\bar{D}_b^t)$, where p stands for the probability that the filer be required to keep an accountancy book, and $1 - p$ the probability that she is not required.

⁸⁶ As has been mentioned before, the 1993–2006 dataset only contained the universe of tax filers between 1993 and 2003. In 2004–2006, it included only individuals not required to keep accountancy books.

we exclude net taxable and non taxable irregular income to focus exclusively on regular income (column E). Fifth, we assume that one-half of ‘other costs and deductions’ (tax code 210) and ‘other deductions’ (tax code 110) are costs necessary to obtain income (column F). Finally, we assume that all items included in ‘other costs and deductions’ (tax code 210) and ‘other deductions’ (tax code 110) are costs incurred to obtain that income, and exclude all items from the benchmark definition of income (column G). The result of comparing these alternative definitions of income suggest that the evolution of top income shares is not affected by our definition of income. That is, although the *level* of income inequality may be slightly affected by our choice of income, the *change* in income concentration is not. We can thus trust that our analysis of the evolution of top income shares reflects *real* changes in income disparities in Colombia.

Table D.10: Top 1% Income Share Under Different Definitions of Income. Colombia 2006–2010

| | A | B | C | D | E | F | G |
|------|-------|-------|-------|-------|-------|-------|-------|
| | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| 2006 | 19.94 | 21.61 | 19.86 | 17.31 | 19.40 | 16.69 | 12.51 |
| 2007 | 20.49 | 22.27 | 20.40 | 17.88 | 19.96 | 17.05 | 12.65 |
| 2008 | 20.25 | 22.04 | 20.19 | 17.71 | 19.89 | 16.79 | 12.36 |
| 2009 | 20.17 | 21.89 | 20.10 | 17.65 | 19.72 | 16.83 | 12.62 |
| 2010 | 20.45 | 22.14 | 20.36 | 17.51 | 19.93 | 17.16 | 13.02 |

Notes: Column A. Benchmark definition of income: for individuals not required to keep accountancy books (tax form 210), income is defined as total gross regular income, minus one-sixth of ‘other costs and deductions’, plus net taxable and non-taxable irregular income. For individuals required to keep accountancy books (tax form 110), income is defined as total gross regular income, minus refunds, rebates and discounts on sales, minus total costs, minus administrative operational expenses, minus operational sales expenses, minus one-sixth of ‘other deductions’ (following the tax form definition), plus net taxable and non-taxable irregular income.

Income definition A assumes that one-sixth of ‘other costs and deductions’ and ‘other deductions’ are costs incurred to obtain that income.

Column B. Income is equal to A plus all ‘other costs and deductions’ and ‘other deductions’, i.e. it assumes all items included in these categories are in fact related to income.

Column C. Income is equal to A minus the deduction for investments in fixed assets.

Column D. Income is equal to A minus non taxable income.

Column E. Income is equal to A but excluding net taxable and non taxable irregular income.

Column F. Income is equal to A, but excluding one-half of ‘other costs and deductions’ and ‘other deductions’, i.e. assuming half of the items included do not pertain to income.

Column G. Income is equal to A, but excluding all ‘other costs and deductions’ and ‘other deductions’, i.e. assuming that all of the items included do not pertain to income.

Source: Author’s calculations based on tax returns data.

Pareto Interpolation

Tabulations compiled for us by DIAN cover the years of 1992–2010 and represent the entire pool of tax filers in Colombia. Because the intervals do not generally coincide with the percentage groups of the population concerned by this study, it is necessary to interpolate to arrive at values for summary statistics such as the shares of total income. A number of studies have concluded that the Pareto approximation works remarkably well for estimating top income shares. The Pareto law for top incomes is given by the following (cumulative) distribution function $F(y)$ for income y :

$$1 - F(y) = (k/y)^\alpha \quad (k > 0, \alpha > 1) \quad (\text{D.1})$$

where k and α are given parameters, and α is called the Pareto parameter of the distribution. The corresponding density function is given by $f(y) = \frac{\alpha k^\alpha}{y^{(1+\alpha)}}$. The key property of Pareto distributions is that the ratio of average income $y^*(y)$ of individuals with income above y to y is always exactly proportional to y :

$$y^*(y) = \frac{\int_{z>y} z f(z) dz}{\int_{z>y} f(z) dz} = \frac{\int_{z>y} dz/z^\alpha}{\int_{z>y} dz/z^{1+\alpha}} = \frac{\alpha}{\alpha - 1} y \quad (\text{D.2})$$

i.e. the ratio $\frac{y^*(y)}{y}$ does not depend on the income threshold y :

$$\frac{y^*(y)}{y} = \frac{\alpha}{\alpha - 1}$$

Since the coefficient of proportionality, β , is given by $\beta = \frac{\alpha}{\alpha - 1}$, it is straightforward to see that $\frac{y^*(y)}{y} = \beta$. Intuitively, a higher β —also called the inverted Pareto coefficient— means a fatter upper

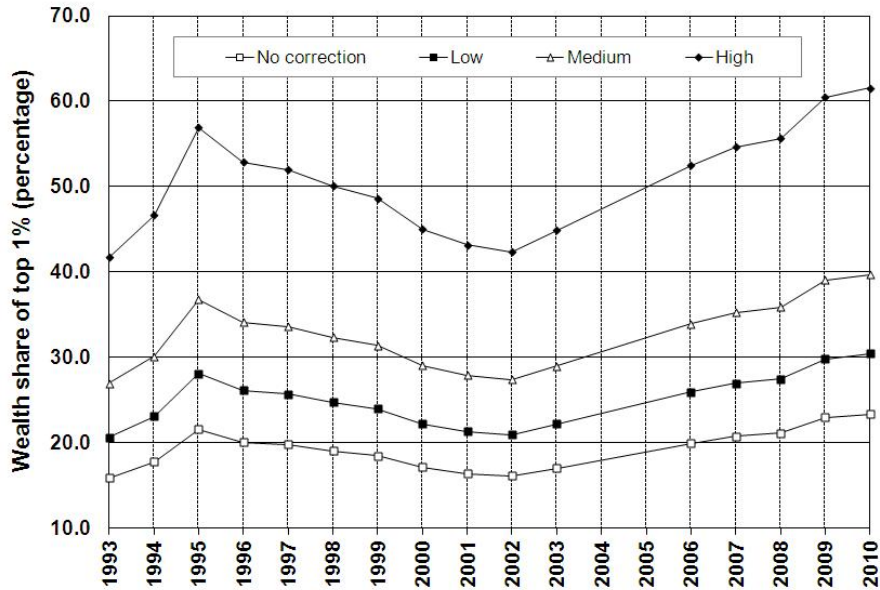
tail of the distribution.⁸⁷ Thus, a higher β coefficient generally implies a larger top income shares and higher income inequality. Analysing the historical evolution of top income shares in twenty-two countries, [Atkinson *et al.* \(2011\)](#) find that β coefficients typically vary between 1.5 (low inequality) and 3 (high inequality), the top 1 per cent income shares around 5–10 per cent in the former case and 15–20 per cent in the latter.

D.1.2 The Definition of Wealth

The wealth definition we employ is the same as the one used for tax purposes, and that is available for all years in our 1993–2006 and 2006–2010 micro-data sets. It is equal to all assets (gross wealth) less all liabilities as they appear on the income tax return. The concept of wealth used for tax purposes is very broad and includes all assets (tangible assets such as land, buildings, residences, furniture, vehicles, jewellery, business assets, machinery, oil wells and mines, and intangible assets such as stocks, bonds, cash, savings in private funds) net of liabilities. It is important to note that wealth reported on the tax return includes voluntary but excludes mandatory pension rights. Future labour income and human wealth are not included in the tax statistics.

However, wealth declared in tax returns in Colombia is severely underestimated, as tangible assets are reported at their fiscal value, which is grossly inferior to their market value. To correct for this, wealth is re-estimated under different scenarios, as illustrated in Figure D.2. Tangible assets are assumed to represent 70 per cent of total wealth, and cadastral values are assumed to be (1) 30 per cent (“high”); (2) 50 per cent (“medium”); and (3) 70 per cent (“low”) of market values. Based on the fact that cadastral values have been required by law to be between 40 and 60 per cent of market values, this paper takes the medium scenario as baseline and computes wealth shares accordingly.

Figure D.2: Wealth Share of Top 1%: Contrasting Assumptions on the Cadastral Value of Tangible Assets, Colombia 1993–2010



Notes: The figure displays wealth shares under different scenarios. Tangible assets are assumed to represent 70 per cent of total wealth, and cadastral values are assumed to be (1) 30 per cent (“high”); (2) 50 per cent (“medium”); and (3) 70 per cent (“low”) of market values.

Source: Author’s calculations using tax data.

⁸⁷ Note that there exists a one-to-one, monotonically decreasing relationship between the α and the β coefficients, i.e. $\beta = \alpha/(\alpha - 1)$ and $\alpha = \beta/(\beta - 1)$.

D.2 Top Shares

D.2.1 Top Income Shares

Table D.11: Top Income Shares, Colombia 1993–2010

| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 1- 0.5% | Top 0.5- 0.1% | Top 0.1- 0.05% | Top 0.05- 0.01% | Top 0.01- 0.001% |
|------|-----------|-------------|-------------|--------------|--------------|---------------|-------------------|---------------------|----------------------|-----------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 1993 | 20.48 | 16.43 | 8.36 | 5.76 | 2.09 | 0.46 | 4.05 | 8.07 | 2.60 | 3.66 | 1.64 |
| 1994 | 20.54 | 16.34 | 8.09 | 5.39 | 1.93 | 0.40 | 4.20 | 8.25 | 2.71 | 3.46 | 1.53 |
| 1995 | 20.76 | 16.35 | 7.85 | 5.16 | 1.85 | 0.41 | 4.41 | 8.50 | 2.69 | 3.30 | 1.44 |
| 1996 | 21.30 | 16.56 | 7.67 | 5.04 | 1.85 | 0.47 | 4.74 | 8.89 | 2.63 | 3.19 | 1.38 |
| 1997 | 20.85 | 16.27 | 7.51 | 4.96 | 1.86 | 0.51 | 4.58 | 8.76 | 2.55 | 3.10 | 1.36 |
| 1998 | 19.77 | 15.40 | 6.97 | 4.64 | 1.78 | 0.52 | 4.38 | 8.43 | 2.33 | 2.86 | 1.26 |
| 1999 | 18.10 | 14.10 | 6.32 | 4.22 | 1.64 | 0.50 | 4.00 | 7.78 | 2.10 | 2.58 | 1.15 |
| 2000 | 17.32 | 13.70 | 6.10 | 4.09 | 1.57 | 0.47 | 3.62 | 7.60 | 2.02 | 2.51 | 1.11 |
| 2001 | 17.31 | 13.64 | 5.99 | 4.02 | 1.55 | 0.48 | 3.68 | 7.65 | 1.96 | 2.47 | 1.07 |
| 2002 | 17.96 | 13.91 | 5.97 | 4.03 | 1.57 | 0.52 | 4.05 | 7.94 | 1.94 | 2.46 | 1.05 |
| 2003 | 19.92 | 14.61 | 6.03 | 4.08 | 1.58 | 0.52 | 5.30 | 8.58 | 1.96 | 2.50 | 1.06 |
| 2004 | 17.80 | | | | | | | | | | |
| 2005 | 18.80 | | | | | | | | | | |
| 2006 | 19.94 | 15.01 | 7.62 | 5.67 | 2.86 | 1.15 | 4.93 | 7.38 | 1.95 | 2.81 | 1.72 |
| 2007 | 20.49 | 15.43 | 7.78 | 5.77 | 2.95 | 1.21 | 5.07 | 7.65 | 2.01 | 2.82 | 1.74 |
| 2008 | 20.25 | 15.16 | 7.49 | 5.49 | 2.71 | 1.02 | 5.09 | 7.67 | 2.01 | 2.78 | 1.69 |
| 2009 | 20.17 | 14.92 | 7.13 | 5.14 | 2.44 | 0.88 | 5.24 | 7.80 | 1.99 | 2.70 | 1.56 |
| 2010 | 20.45 | 15.20 | 7.37 | 5.36 | 2.64 | 1.05 | 5.25 | 7.83 | 2.00 | 2.72 | 1.60 |

Source: Author's calculations based on tax returns data.

Table D.12: Average Income of Top Groups and Thresholds, Colombia 1993–2010

| Year | Panel A. In 2010 Colombian Pesos (thousand) | | | | | | | | | | | Panel B. In 2010 US Dollars | | | | | | | | | | | |
|------|---|----------|----------|-----------|-----------|------------|----------|----------|-----------|-----------|------------|-----------------------------|----------|-----------|-----------|------------|-----------|----------|-----------|-----------|------------|------|--|
| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | |
| 1993 | 230,512 | 369,780 | 940,536 | 1,295,779 | 2,357,322 | 5,155,611 | 91,244 | 227,091 | 583,292 | 1,030,394 | 2,046,401 | 59,778 | 121,001 | 437,261 | 719,338 | 1,339,673 | 3,055,851 | | | | | | |
| 1994 | 235,623 | 374,848 | 928,267 | 1,235,780 | 2,211,483 | 4,575,034 | 96,398 | 236,403 | 620,753 | 991,854 | 1,948,866 | 59,962 | 128,270 | 445,134 | 693,857 | 1,358,345 | 2,773,787 | | | | | | |
| 1995 | 233,552 | 367,828 | 883,127 | 1,160,345 | 2,083,984 | 4,619,739 | 99,276 | 239,003 | 605,908 | 929,435 | 1,802,233 | 61,386 | 129,582 | 463,626 | 676,167 | 1,282,169 | 2,533,038 | | | | | | |
| 1996 | 230,854 | 358,995 | 831,698 | 1,092,426 | 2,000,631 | 5,058,221 | 102,713 | 240,819 | 570,970 | 865,375 | 1,660,898 | 64,508 | 132,713 | 446,254 | 621,027 | 1,183,869 | 2,389,033 | | | | | | |
| 1997 | 224,281 | 349,992 | 807,712 | 1,067,061 | 1,852,839 | 5,452,980 | 98,571 | 235,562 | 548,362 | 833,117 | 1,619,490 | 61,169 | 129,759 | 421,155 | 585,690 | 1,109,382 | 2,335,843 | | | | | | |
| 1998 | 206,360 | 321,330 | 727,260 | 968,339 | 1,808,125 | 5,469,865 | 91,390 | 219,848 | 486,181 | 745,892 | 1,456,821 | 55,367 | 123,169 | 388,477 | 511,069 | 1,024,423 | 2,390,809 | | | | | | |
| 1999 | 185,494 | 289,048 | 648,230 | 865,205 | 1,685,004 | 5,078,892 | 81,940 | 199,252 | 431,255 | 660,256 | 1,307,905 | 48,503 | 112,517 | 343,573 | 455,144 | 909,675 | 2,112,837 | | | | | | |
| 2000 | 178,705 | 282,757 | 629,848 | 843,178 | 1,624,712 | 4,839,577 | 74,653 | 195,984 | 416,518 | 647,795 | 1,227,504 | 43,811 | 105,196 | 334,138 | 438,164 | 888,793 | 2,079,080 | | | | | | |
| 2001 | 177,806 | 280,068 | 614,734 | 826,155 | 1,591,328 | 4,906,464 | 75,544 | 196,401 | 403,314 | 634,861 | 1,222,979 | 43,995 | 107,115 | 325,542 | 424,060 | 857,645 | 2,014,915 | | | | | | |
| 2002 | 183,755 | 284,663 | 610,842 | 824,707 | 1,602,786 | 5,307,582 | 82,847 | 203,118 | 396,978 | 630,187 | 1,191,142 | 47,646 | 117,079 | 325,442 | 421,634 | 845,452 | 1,895,884 | | | | | | |
| 2003 | 199,671 | 293,001 | 604,810 | 817,271 | 1,580,073 | 5,220,327 | 106,341 | 215,049 | 392,350 | 626,570 | 1,175,601 | 73,588 | 124,501 | 324,005 | 438,093 | 826,713 | 1,901,168 | | | | | | |
| 2004 | 186,255 | | | | | | | | | | | 78,649 | | | | | | | | | | | |
| 2005 | 200,197 | | | | | | | | | | | 83,709 | | | | | | | | | | | |
| 2006 | 219,767 | 330,804 | 840,157 | 1,250,527 | 3,157,631 | 12,646,527 | 108,731 | 203,466 | 429,787 | 773,751 | 2,103,309 | 88,769 | 137,412 | 356,200 | 536,509 | 1,316,380 | 5,117,607 | | | | | | |
| 2007 | 234,973 | 353,770 | 891,919 | 1,323,053 | 3,382,314 | 13,864,922 | 116,176 | 219,232 | 460,784 | 808,238 | 2,217,580 | 94,203 | 147,808 | 383,783 | 570,290 | 1,346,454 | 5,526,192 | | | | | | |
| 2008 | 235,883 | 353,198 | 872,624 | 1,278,179 | 3,156,037 | 11,920,018 | 118,568 | 223,342 | 467,068 | 808,714 | 2,182,262 | 95,600 | 151,241 | 389,228 | 574,346 | 1,332,573 | 5,125,745 | | | | | | |
| 2009 | 235,106 | 347,936 | 830,763 | 1,197,711 | 2,841,088 | 10,213,877 | 122,275 | 227,229 | 463,816 | 786,867 | 2,021,889 | 98,664 | 155,293 | 390,589 | 567,750 | 1,279,498 | 4,681,815 | | | | | | |
| 2010 | 246,226 | 366,049 | 886,920 | 1,291,826 | 3,185,014 | 12,616,031 | 126,403 | 235,831 | 482,015 | 818,529 | 2,137,123 | 101,293 | 160,930 | 404,750 | 590,534 | 1,343,255 | 4,792,947 | | | | | | |
| 1993 | 115,256 | 184,890 | 470,268 | 647,890 | 1,178,661 | 2,577,805 | 45,622 | 113,545 | 292,646 | 515,197 | 1,023,200 | 29,889 | 60,500 | 218,631 | 359,669 | 669,836 | 1,527,926 | | | | | | |
| 1994 | 117,811 | 187,424 | 464,133 | 617,890 | 1,105,742 | 2,287,517 | 48,199 | 118,246 | 310,377 | 495,927 | 974,433 | 29,981 | 64,135 | 222,567 | 346,928 | 679,173 | 1,386,893 | | | | | | |
| 1995 | 116,776 | 183,914 | 441,563 | 580,172 | 1,041,992 | 2,309,869 | 49,638 | 119,502 | 302,954 | 464,718 | 901,116 | 30,693 | 64,791 | 231,813 | 338,083 | 641,085 | 1,266,519 | | | | | | |
| 1996 | 115,427 | 179,498 | 415,849 | 546,213 | 1,000,315 | 2,529,110 | 51,356 | 120,410 | 285,485 | 432,688 | 830,449 | 32,254 | 66,356 | 223,127 | 310,513 | 591,934 | 1,194,516 | | | | | | |
| 1997 | 112,141 | 174,996 | 403,856 | 533,531 | 1,001,419 | 2,726,490 | 49,285 | 117,781 | 274,182 | 416,558 | 809,745 | 30,585 | 64,879 | 210,578 | 292,845 | 554,691 | 1,167,921 | | | | | | |
| 1998 | 103,180 | 160,665 | 363,630 | 484,169 | 929,063 | 2,734,932 | 45,695 | 109,924 | 243,090 | 372,946 | 728,410 | 27,683 | 61,585 | 194,239 | 255,535 | 512,211 | 1,195,405 | | | | | | |
| 1999 | 92,747 | 144,524 | 324,115 | 432,603 | 842,502 | 2,539,446 | 40,970 | 99,626 | 215,628 | 330,128 | 653,953 | 24,251 | 56,258 | 171,786 | 227,572 | 454,838 | 1,056,419 | | | | | | |
| 2000 | 89,352 | 141,378 | 314,924 | 421,589 | 812,356 | 2,419,789 | 37,326 | 97,992 | 208,259 | 323,898 | 633,752 | 21,906 | 52,598 | 167,069 | 219,082 | 444,397 | 1,039,540 | | | | | | |
| 2001 | 88,903 | 140,034 | 307,367 | 413,077 | 795,664 | 2,453,232 | 37,772 | 98,200 | 201,657 | 317,431 | 611,490 | 21,997 | 53,557 | 162,771 | 212,030 | 428,823 | 1,007,458 | | | | | | |
| 2002 | 91,878 | 142,332 | 305,421 | 412,353 | 801,393 | 2,653,791 | 41,424 | 101,559 | 198,489 | 315,093 | 595,571 | 23,823 | 58,540 | 162,721 | 210,817 | 422,726 | 947,942 | | | | | | |
| 2003 | 99,836 | 146,501 | 302,405 | 408,635 | 790,037 | 2,610,163 | 53,171 | 107,524 | 196,175 | 313,285 | 587,800 | 36,794 | 62,250 | 162,002 | 219,046 | 413,357 | 950,584 | | | | | | |
| 2004 | 93,128 | | | | | | | | | | | 39,324 | | | | | | | | | | | |
| 2005 | 100,099 | | | | | | | | | | | 41,854 | | | | | | | | | | | |
| 2006 | 109,884 | 165,402 | 420,079 | 625,263 | 1,578,815 | 6,323,264 | 54,365 | 101,733 | 214,894 | 386,875 | 1,051,654 | 44,385 | 68,706 | 178,100 | 268,255 | 658,190 | 2,558,803 | | | | | | |
| 2007 | 117,486 | 176,885 | 445,959 | 661,527 | 1,691,157 | 6,932,461 | 58,088 | 109,616 | 230,392 | 404,119 | 1,108,790 | 47,102 | 73,904 | 191,891 | 285,145 | 673,227 | 2,763,096 | | | | | | |
| 2008 | 117,942 | 176,599 | 436,312 | 639,089 | 1,578,019 | 5,960,009 | 59,284 | 111,671 | 233,534 | 404,357 | 1,091,131 | 47,800 | 75,621 | 194,614 | 287,173 | 666,287 | 2,562,873 | | | | | | |
| 2009 | 117,553 | 173,968 | 415,382 | 598,855 | 1,420,544 | 5,106,938 | 61,138 | 113,615 | 231,908 | 393,433 | 1,010,944 | 49,332 | 77,647 | 195,295 | 283,875 | 639,749 | 2,340,908 | | | | | | |
| 2010 | 123,113 | 183,024 | 443,460 | 645,913 | 1,592,507 | 6,308,015 | 63,202 | 117,915 | 241,008 | 409,264 | 1,068,562 | 50,647 | 80,465 | 202,375 | 295,267 | 671,627 | 2,396,474 | | | | | | |

Notes: P99 denotes the income threshold to belong to the top 1% of tax units; Top 1% is the average income of the top 1%; Top 1–0.5% denotes the average income in the bottom half of the top percentile. Fractiles are defined by income. 1 US Dollar \approx 2,000 Colombian pesos.
Source: Author's calculation using tax returns data.

From the totals for gross income are subtracted the amounts for total income tax included in the micro-data. These figures are thus net of taxes on (i) regular income; (ii) irregular income; and (iii) remittances.

Table D.13: Top Income Shares Net of Income Tax, Colombia 1993–2010

| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 1- 0.5% | Top 0.5- 0.1% | Top 0.1- 0.05% | Top 0.05- 0.01% | Top 0.01- 0.001% |
|------|-----------|-------------|-------------|--------------|--------------|---------------|-------------------|---------------------|----------------------|-----------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 1993 | 19.85 | 15.88 | 8.12 | 5.60 | 2.03 | 0.44 | 3.97 | 7.76 | 2.52 | 3.57 | 1.59 |
| 1994 | 19.92 | 15.81 | 7.86 | 5.23 | 1.86 | 0.38 | 4.11 | 7.95 | 2.62 | 3.37 | 1.48 |
| 1995 | 20.09 | 15.78 | 7.60 | 4.99 | 1.78 | 0.39 | 4.31 | 8.18 | 2.61 | 3.22 | 1.39 |
| 1996 | 20.65 | 16.01 | 7.45 | 4.89 | 1.78 | 0.44 | 4.64 | 8.57 | 2.56 | 3.11 | 1.33 |
| 1997 | 20.17 | 15.70 | 7.29 | 4.82 | 1.80 | 0.49 | 4.47 | 8.41 | 2.47 | 3.02 | 1.31 |
| 1998 | 19.06 | 14.79 | 6.75 | 4.50 | 1.72 | 0.50 | 4.26 | 8.04 | 2.25 | 2.78 | 1.22 |
| 1999 | 17.45 | 13.54 | 6.11 | 4.09 | 1.59 | 0.47 | 3.90 | 7.43 | 2.02 | 2.50 | 1.11 |
| 2000 | 16.70 | 13.16 | 5.91 | 3.96 | 1.52 | 0.45 | 3.53 | 7.25 | 1.95 | 2.44 | 1.07 |
| 2001 | 16.67 | 13.09 | 5.79 | 3.90 | 1.50 | 0.46 | 3.59 | 7.29 | 1.90 | 2.40 | 1.04 |
| 2002 | 17.30 | 13.35 | 5.78 | 3.90 | 1.51 | 0.50 | 3.94 | 7.58 | 1.88 | 2.39 | 1.02 |
| 2003 | 19.11 | 14.02 | 5.85 | 3.95 | 1.52 | 0.50 | 5.09 | 8.17 | 1.90 | 2.42 | 1.02 |
| 2004 | 16.91 | | | | | | | | | | |
| 2005 | 17.88 | | | | | | | | | | |
| 2006 | 18.95 | 14.24 | 7.28 | 5.44 | 2.78 | 1.12 | 4.71 | 6.96 | 1.84 | 2.66 | 1.66 |
| 2007 | 19.51 | 14.67 | 7.46 | 5.55 | 2.87 | 1.19 | 4.84 | 7.21 | 1.90 | 2.69 | 1.68 |
| 2008 | 19.28 | 14.42 | 7.18 | 5.28 | 2.64 | 1.01 | 4.86 | 7.23 | 1.90 | 2.65 | 1.62 |
| 2009 | 19.19 | 14.17 | 6.81 | 4.93 | 2.36 | 0.86 | 5.01 | 7.36 | 1.88 | 2.57 | 1.50 |
| 2010 | 19.48 | 14.46 | 7.06 | 5.16 | 2.57 | 1.03 | 5.02 | 7.40 | 1.90 | 2.59 | 1.54 |

Source: Author's calculations based on tax returns data.

Table D.14: Current Average Net-of-Tax Income of Top Groups and Thresholds, Colombia 1993–2010

| Year | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 0.1-0.05% | Top 0.05-0.01% | Top 0.01-0.001% | P99 | P99.5 | P99.9 | P99.95 | P99.99 | P99.999 | | |
|------|---------|----------|----------|-----------|-----------|------------|---------------|----------------|-----------------|---------|-----------|--------|---------|---------|---------|-----------|-----------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
| 1993 | 42,586 | 68,131 | 174,115 | 240,304 | 435,942 | 944,612 | 17,040 | 16,654 | 5,396 | 7,656 | 379,424 | 11,199 | 22,527 | 80,060 | 132,337 | 249,034 | 565,087 |
| 1994 | 53,511 | 84,930 | 211,046 | 281,157 | 500,423 | 1,022,517 | 11,046 | 21,360 | 7,047 | 9,054 | 442,413 | 13,784 | 29,314 | 100,529 | 159,034 | 307,233 | 626,910 |
| 1995 | 63,980 | 100,495 | 242,088 | 318,059 | 566,480 | 1,232,001 | 13,732 | 26,038 | 8,306 | 10,238 | 492,533 | 17,070 | 35,534 | 125,955 | 186,351 | 352,138 | 687,598 |
| 1996 | 76,536 | 118,689 | 275,983 | 362,236 | 659,280 | 1,647,663 | 17,191 | 31,746 | 9,486 | 11,519 | 549,459 | 21,700 | 44,139 | 148,226 | 207,415 | 393,085 | 790,513 |
| 1997 | 87,876 | 136,808 | 317,429 | 419,956 | 784,325 | 2,116,086 | 19,472 | 36,661 | 10,745 | 13,155 | 636,352 | 24,281 | 51,023 | 163,558 | 232,184 | 438,867 | 919,097 |
| 1998 | 95,613 | 148,443 | 338,637 | 451,647 | 863,863 | 2,520,571 | 21,392 | 40,358 | 11,281 | 13,944 | 679,785 | 26,038 | 57,334 | 177,018 | 239,935 | 473,104 | 1,086,675 |
| 1999 | 95,313 | 147,971 | 333,809 | 447,267 | 868,032 | 2,591,835 | 21,327 | 40,605 | 11,018 | 13,683 | 676,498 | 25,309 | 58,205 | 170,027 | 236,796 | 464,161 | 1,019,594 |
| 2000 | 100,309 | 158,151 | 355,057 | 475,744 | 912,953 | 2,685,409 | 21,233 | 43,570 | 11,719 | 14,658 | 716,013 | 25,006 | 59,463 | 186,764 | 247,781 | 503,075 | 1,162,933 |
| 2001 | 107,635 | 168,934 | 373,994 | 502,933 | 966,439 | 2,961,754 | 23,168 | 47,068 | 12,253 | 15,482 | 744,737 | 27,219 | 65,247 | 196,536 | 259,404 | 524,207 | 1,231,408 |
| 2002 | 118,336 | 182,717 | 395,261 | 533,531 | 1,035,102 | 3,406,754 | 26,977 | 51,832 | 12,850 | 16,326 | 771,585 | 31,188 | 75,095 | 208,172 | 271,732 | 549,765 | 1,238,601 |
| 2003 | 137,189 | 201,245 | 419,713 | 566,642 | 1,092,638 | 3,602,490 | 36,566 | 58,651 | 13,639 | 17,406 | 813,765 | 51,429 | 86,286 | 225,171 | 301,604 | 574,260 | 1,312,048 |
| 2004 | 134,150 | | | | | | | | | | 57,961 | | | | | | |
| 2005 | 151,664 | | | | | | | | | | 64,493 | | | | | | |
| 2006 | 173,534 | 260,780 | 666,923 | 997,026 | 2,546,190 | 10,279,897 | 86,288 | 159,245 | 336,820 | 609,735 | 1,686,890 | 71,025 | 108,136 | 278,694 | 420,626 | 1,041,413 | 4,151,531 |
| 2007 | 196,141 | 295,009 | 749,865 | 1,117,044 | 2,882,989 | 11,976,603 | 97,273 | 181,296 | 382,686 | 675,557 | 1,872,587 | 79,483 | 122,808 | 317,766 | 475,803 | 1,135,121 | 4,792,700 |
| 2008 | 210,649 | 315,051 | 784,752 | 1,154,513 | 2,879,547 | 11,044,047 | 106,247 | 197,626 | 414,990 | 723,255 | 1,972,380 | 86,356 | 134,534 | 345,205 | 511,608 | 1,190,752 | 4,683,047 |
| 2009 | 218,708 | 323,121 | 776,548 | 1,123,616 | 2,689,564 | 9,832,766 | 114,295 | 209,765 | 429,480 | 732,130 | 1,895,875 | 93,112 | 144,188 | 360,600 | 527,139 | 1,192,527 | 4,379,200 |
| 2010 | 234,537 | 348,265 | 850,074 | 1,243,159 | 3,091,289 | 12,398,635 | 120,808 | 222,813 | 456,988 | 781,127 | 2,057,139 | 97,645 | 152,741 | 383,513 | 563,136 | 1,291,893 | 4,568,873 |

Notes: P99 denotes the income threshold to belong to the top 1% of tax units; Top 1% is the average income of the top 1%; Top 1–0.5% denotes the average income in the bottom half of the top percentile. Fractiles are defined by net-of-tax income.

Source: Author's calculation using tax returns data.

Table D.15: Average Net-of-Tax Income of Top Groups and Thresholds, Colombia 1993-2010

| Year | Panel A. In 2010 Colombian Pesos (thousand) | | | | | | | | | | | Panel B. In 2010 US Dollars | | | | | | | | | | |
|------|---|----------|----------|-----------|-----------|------------|----------|----------|-----------|-----------|------------|-----------------------------|---------|---------|---------|-----------|-----------|--|--|--|--|--|
| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | P99 | P99.5 | P99.9 | P99.95 | P99.99 | P99.999 | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | | | | | |
| 1993 | 223,444 | 357,478 | 913,569 | 1,260,862 | 2,287,363 | 4,956,318 | 89,410 | 87,382 | 28,314 | 40,169 | 1,990,812 | 58,758 | 118,199 | 420,071 | 694,365 | 1,306,666 | 2,964,976 | | | | | |
| 1994 | 228,550 | 362,740 | 901,391 | 1,200,839 | 2,137,336 | 4,367,232 | 47,180 | 91,231 | 30,097 | 38,669 | 1,889,570 | 58,870 | 125,202 | 429,364 | 679,244 | 1,312,209 | 2,677,570 | | | | | |
| 1995 | 226,035 | 355,038 | 855,274 | 1,123,672 | 2,001,323 | 4,352,548 | 48,516 | 91,992 | 29,344 | 36,170 | 1,740,075 | 60,306 | 125,539 | 444,987 | 658,359 | 1,244,071 | 2,429,222 | | | | | |
| 1996 | 223,839 | 347,122 | 807,147 | 1,059,406 | 1,928,149 | 4,818,804 | 50,278 | 92,846 | 27,744 | 33,689 | 1,606,965 | 63,466 | 129,091 | 433,506 | 606,611 | 1,149,627 | 2,311,958 | | | | | |
| 1997 | 216,939 | 337,737 | 783,636 | 1,036,745 | 1,936,264 | 5,223,983 | 48,071 | 90,505 | 26,526 | 32,475 | 1,570,962 | 59,943 | 125,960 | 403,777 | 573,193 | 1,083,430 | 2,268,976 | | | | | |
| 1998 | 198,894 | 308,788 | 704,427 | 939,508 | 1,796,995 | 5,243,253 | 44,500 | 83,951 | 23,467 | 29,005 | 1,414,077 | 54,165 | 119,264 | 368,231 | 499,110 | 984,143 | 2,260,486 | | | | | |
| 1999 | 178,823 | 277,619 | 626,285 | 839,152 | 1,628,580 | 4,862,738 | 40,014 | 76,181 | 20,671 | 25,672 | 1,269,229 | 47,485 | 109,204 | 319,001 | 444,270 | 870,848 | 1,912,937 | | | | | |
| 2000 | 172,301 | 271,657 | 609,886 | 817,191 | 1,568,188 | 4,612,756 | 36,473 | 74,840 | 20,129 | 25,178 | 1,229,903 | 42,952 | 102,140 | 320,807 | 425,615 | 864,137 | 1,997,583 | | | | | |
| 2001 | 171,245 | 268,771 | 595,016 | 800,157 | 1,537,585 | 4,712,092 | 36,859 | 74,884 | 19,494 | 24,632 | 1,184,862 | 43,305 | 103,806 | 312,684 | 412,707 | 834,003 | 1,959,145 | | | | | |
| 2002 | 177,026 | 273,338 | 591,296 | 798,143 | 1,548,475 | 5,096,380 | 40,357 | 77,540 | 19,222 | 24,422 | 1,154,263 | 46,656 | 112,340 | 311,419 | 406,501 | 822,428 | 1,852,903 | | | | | |
| 2003 | 191,571 | 281,019 | 586,089 | 791,261 | 1,525,763 | 5,030,529 | 51,061 | 81,901 | 19,046 | 24,305 | 1,136,344 | 71,815 | 120,490 | 314,430 | 421,161 | 801,898 | 1,832,149 | | | | | |
| 2004 | 176,884 | | | | | | | | | | | 76,425 | | | | | | | | | | |
| 2005 | 190,362 | | | | | | | | | | 80,949 | | | | | | | | | | | |
| 2006 | 208,846 | 313,846 | 802,633 | 1,199,907 | 3,064,306 | 12,371,718 | 103,847 | 191,649 | 405,359 | 733,807 | 2,030,149 | 85,477 | 130,140 | 335,404 | 506,218 | 1,253,327 | 4,996,312 | | | | | |
| 2007 | 223,653 | 336,389 | 855,045 | 1,273,727 | 3,287,374 | 13,656,511 | 110,917 | 206,725 | 436,364 | 770,315 | 2,135,247 | 90,632 | 140,034 | 362,338 | 542,541 | 1,294,340 | 5,464,952 | | | | | |
| 2008 | 224,489 | 335,750 | 836,310 | 1,230,365 | 3,068,733 | 11,769,641 | 113,227 | 210,610 | 442,255 | 770,772 | 2,101,965 | 92,029 | 143,373 | 367,885 | 545,221 | 1,268,985 | 4,990,723 | | | | | |
| 2009 | 223,677 | 330,463 | 794,192 | 1,149,145 | 2,750,671 | 10,056,166 | 116,892 | 214,530 | 439,238 | 748,764 | 1,938,949 | 95,227 | 147,464 | 368,793 | 539,116 | 1,219,622 | 4,478,696 | | | | | |
| 2010 | 234,537 | 348,265 | 850,074 | 1,243,159 | 3,091,289 | 12,398,635 | 120,808 | 222,813 | 456,988 | 781,127 | 2,057,139 | 97,645 | 152,741 | 383,513 | 563,136 | 1,291,893 | 4,568,873 | | | | | |
| 1993 | 111,722 | 178,739 | 456,784 | 630,431 | 1,143,681 | 2,478,159 | 44,705 | 43,691 | 14,157 | 20,085 | 995,406 | 29,379 | 59,100 | 210,035 | 347,183 | 653,333 | 1,482,488 | | | | | |
| 1994 | 114,275 | 181,370 | 450,695 | 600,419 | 1,068,668 | 2,183,616 | 23,590 | 45,615 | 15,049 | 19,334 | 944,785 | 29,435 | 62,601 | 214,682 | 339,622 | 656,104 | 1,338,785 | | | | | |
| 1995 | 113,017 | 177,519 | 427,637 | 561,836 | 1,000,661 | 2,176,274 | 24,258 | 45,996 | 14,672 | 18,085 | 870,038 | 30,153 | 62,770 | 222,494 | 329,180 | 622,036 | 1,214,611 | | | | | |
| 1996 | 111,919 | 173,561 | 403,573 | 529,703 | 964,074 | 2,409,402 | 25,139 | 46,423 | 13,872 | 16,844 | 803,482 | 31,733 | 64,545 | 216,753 | 303,306 | 574,813 | 1,155,979 | | | | | |
| 1997 | 108,470 | 168,869 | 391,818 | 518,373 | 968,132 | 2,611,991 | 24,035 | 45,252 | 13,263 | 16,237 | 785,481 | 29,971 | 62,980 | 201,888 | 286,596 | 541,715 | 1,134,488 | | | | | |
| 1998 | 99,447 | 154,394 | 352,213 | 469,754 | 898,498 | 2,621,626 | 22,250 | 41,976 | 11,734 | 14,503 | 707,039 | 27,082 | 59,632 | 184,115 | 249,555 | 492,071 | 1,130,243 | | | | | |
| 1999 | 89,412 | 138,810 | 313,142 | 419,576 | 814,290 | 2,431,369 | 20,007 | 38,091 | 10,335 | 12,836 | 634,615 | 23,743 | 54,602 | 159,501 | 222,135 | 435,424 | 956,468 | | | | | |
| 2000 | 86,151 | 135,829 | 304,943 | 408,596 | 784,094 | 2,306,378 | 18,236 | 37,420 | 10,065 | 12,589 | 614,952 | 21,476 | 51,070 | 160,403 | 212,808 | 432,068 | 998,791 | | | | | |
| 2001 | 85,622 | 134,385 | 297,508 | 400,078 | 768,792 | 2,356,046 | 18,430 | 37,442 | 9,747 | 12,316 | 592,431 | 21,653 | 51,903 | 156,342 | 206,353 | 417,001 | 979,573 | | | | | |
| 2002 | 88,513 | 136,669 | 295,648 | 399,071 | 774,237 | 2,548,190 | 20,179 | 38,770 | 9,611 | 12,211 | 577,131 | 23,328 | 56,171 | 155,709 | 203,251 | 411,214 | 926,451 | | | | | |
| 2003 | 95,785 | 140,510 | 293,044 | 395,630 | 762,881 | 2,515,265 | 25,531 | 40,950 | 9,523 | 12,153 | 568,172 | 35,908 | 60,245 | 157,215 | 210,581 | 400,949 | 916,074 | | | | | |
| 2004 | 88,442 | | | | | | | | | | | 38,212 | | | | | | | | | | |
| 2005 | 95,181 | | | | | | | | | | 40,474 | | | | | | | | | | | |
| 2006 | 104,423 | 156,923 | 401,316 | 599,953 | 1,532,153 | 6,185,859 | 51,923 | 95,824 | 202,679 | 366,904 | 1,015,074 | 42,739 | 65,070 | 167,702 | 253,109 | 626,663 | 2,498,156 | | | | | |
| 2007 | 111,827 | 168,195 | 427,523 | 636,863 | 1,643,687 | 6,828,255 | 55,459 | 103,363 | 218,182 | 385,158 | 1,067,624 | 45,316 | 70,017 | 181,169 | 271,271 | 647,170 | 2,732,476 | | | | | |
| 2008 | 112,244 | 167,875 | 418,155 | 615,182 | 1,534,367 | 5,884,821 | 56,614 | 105,305 | 221,128 | 385,386 | 1,050,983 | 46,015 | 71,686 | 183,942 | 272,610 | 634,492 | 2,495,362 | | | | | |
| 2009 | 111,839 | 165,231 | 397,096 | 574,573 | 1,375,335 | 5,028,083 | 58,446 | 107,265 | 219,619 | 374,382 | 969,471 | 47,614 | 73,732 | 184,397 | 269,558 | 609,811 | 2,239,348 | | | | | |
| 2010 | 117,268 | 174,133 | 425,037 | 621,580 | 1,545,644 | 6,199,318 | 60,404 | 111,407 | 228,494 | 390,563 | 1,028,569 | 48,823 | 76,370 | 191,756 | 281,568 | 645,946 | 2,284,437 | | | | | |

Notes: P99 denotes the income threshold to belong to the top 1% of tax units; Top 1% is the average income of the top 1%; Top 1-0.5% denotes the average income in the bottom half of the top percentile. Fractiles are defined by net-of-tax income. 1 US Dollar \approx 2,000 Colombian pesos.
 Source: Author's calculation using tax returns data.

Table D.16: Composition of Income: Income Sources, Colombia 2006–2010

| | Top 1% | | | | | Top 0.5% | | | | | | |
|------|--------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 29.7 | 17.3 | 42.2 | 2.7 | 5.0 | 3.1 | 23.6 | 17.4 | 47.9 | 2.8 | 4.9 | 3.4 |
| 2007 | 27.7 | 18.1 | 42.4 | 3.1 | 5.8 | 3.0 | 21.9 | 18.4 | 47.6 | 3.2 | 5.7 | 3.3 |
| 2008 | 28.3 | 18.1 | 42.3 | 3.5 | 5.6 | 2.1 | 22.5 | 18.5 | 47.7 | 3.6 | 5.5 | 2.2 |
| 2009 | 29.3 | 18.6 | 40.8 | 3.7 | 5.1 | 2.5 | 23.6 | 19.2 | 45.8 | 3.8 | 5.0 | 2.7 |
| 2010 | 28.6 | 18.4 | 41.2 | 3.5 | 5.5 | 2.9 | 23.0 | 18.8 | 45.9 | 3.6 | 5.5 | 3.2 |

| | Top 0.1% | | | | | Top 0.05% | | | | | | |
|------|----------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 12.2 | 14.7 | 60.7 | 3.0 | 4.8 | 4.5 | 9.3 | 12.7 | 65.0 | 3.1 | 4.9 | 5.2 |
| 2007 | 10.8 | 15.8 | 59.7 | 3.5 | 5.9 | 4.3 | 8.2 | 13.6 | 63.6 | 3.7 | 6.0 | 4.9 |
| 2008 | 11.3 | 16.0 | 60.6 | 4.0 | 5.6 | 2.6 | 8.6 | 13.9 | 64.9 | 4.2 | 5.5 | 2.8 |
| 2009 | 11.9 | 17.4 | 58.0 | 4.1 | 5.0 | 3.6 | 9.1 | 15.5 | 62.2 | 4.2 | 5.0 | 4.0 |
| 2010 | 11.5 | 16.5 | 57.6 | 4.1 | 6.0 | 4.3 | 8.5 | 14.5 | 61.2 | 4.5 | 6.3 | 5.0 |

| | Top 0.01% | | | | | Top 0.001% | | | | | | |
|------|-----------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 5.1 | 7.1 | 73.1 | 3.2 | 4.8 | 6.8 | 3.5 | 0.4 | 80.0 | 3.6 | 4.2 | 8.3 |
| 2007 | 4.4 | 7.5 | 70.3 | 4.4 | 6.5 | 6.8 | 1.8 | 1.6 | 75.6 | 6.0 | 6.8 | 8.3 |
| 2008 | 4.8 | 8.7 | 72.7 | 4.8 | 5.6 | 3.3 | 3.5 | 1.6 | 81.9 | 6.7 | 3.0 | 3.3 |
| 2009 | 5.1 | 10.5 | 70.5 | 4.2 | 4.6 | 5.1 | 1.3 | 3.2 | 80.8 | 4.2 | 3.3 | 7.1 |
| 2010 | 4.3 | 8.7 | 68.3 | 5.7 | 6.7 | 6.4 | 1.2 | 2.6 | 74.2 | 7.5 | 7.6 | 7.0 |

| | Top 1-0.5% | | | | | Top 0.5-0.1% | | | | | | |
|------|------------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 48.9 | 16.7 | 24.3 | 2.6 | 5.3 | 2.1 | 35.7 | 20.3 | 34.0 | 2.6 | 5.0 | 2.3 |
| 2007 | 46.0 | 17.1 | 26.0 | 2.9 | 6.0 | 2.1 | 33.5 | 21.2 | 34.7 | 2.8 | 5.5 | 2.2 |
| 2008 | 46.3 | 16.9 | 25.8 | 3.3 | 5.8 | 1.9 | 33.9 | 21.1 | 34.5 | 3.2 | 5.5 | 1.8 |
| 2009 | 46.0 | 16.9 | 26.0 | 3.6 | 5.4 | 2.1 | 34.6 | 20.8 | 34.1 | 3.6 | 4.9 | 1.9 |
| 2010 | 45.1 | 17.0 | 27.3 | 3.0 | 5.5 | 2.1 | 34.2 | 21.1 | 34.5 | 3.2 | 5.0 | 2.1 |

Source: Author's calculations based on tax data.

(continues)

(continued)

| | Top 1–0.5% | | | | | Top 0.5–0.1% | | | | | | |
|------|------------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 48.9 | 16.7 | 24.3 | 2.6 | 5.3 | 2.1 | 35.7 | 20.3 | 34.0 | 2.6 | 5.0 | 2.3 |
| 2007 | 46.0 | 17.1 | 26.0 | 2.9 | 6.0 | 2.1 | 33.5 | 21.2 | 34.7 | 2.8 | 5.5 | 2.2 |
| 2008 | 46.3 | 16.9 | 25.8 | 3.3 | 5.8 | 1.9 | 33.9 | 21.1 | 34.5 | 3.2 | 5.5 | 1.8 |
| 2009 | 46.0 | 16.9 | 26.0 | 3.6 | 5.4 | 2.1 | 34.6 | 20.8 | 34.1 | 3.6 | 4.9 | 1.9 |
| 2010 | 45.1 | 17.0 | 27.3 | 3.0 | 5.5 | 2.1 | 34.2 | 21.1 | 34.5 | 3.2 | 5.0 | 2.1 |

| | Top 0.1–0.05% | | | | | Top 0.05–0.01% | | | | | | |
|------|---------------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|-------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 21.1 | 20.7 | 48.3 | 2.7 | 4.6 | 2.6 | 13.5 | 18.5 | 56.6 | 2.9 | 5.0 | 3.5 |
| 2007 | 18.4 | 22.1 | 48.5 | 2.9 | 5.4 | 2.7 | 12.2 | 20.0 | 56.5 | 2.9 | 5.5 | 2.9 |
| 2008 | 18.7 | 21.6 | 48.6 | 3.6 | 5.7 | 1.8 | 12.4 | 19.1 | 57.2 | 3.6 | 5.5 | 2.4 |
| 2009 | 19.5 | 22.5 | 47.1 | 3.7 | 4.9 | 2.3 | 12.7 | 20.1 | 54.6 | 4.2 | 5.4 | 3.1 |
| 2010 | 19.5 | 21.9 | 47.8 | 3.1 | 5.1 | 2.6 | 12.7 | 20.3 | 54.1 | 3.4 | 6.0 | 3.6 |

| | Top 0.01–0.001% | | | | | |
|------|-----------------|-----------------|--------------------------------|-------------------------------------|-----------------|------------------|
| | Wages | Self-employment | Rents and other capital income | Interest and other financial income | Business income | Irregular income |
| 2006 | 6.2 | 11.7 | 68.3 | 2.9 | 5.1 | 5.8 |
| 2007 | 6.3 | 11.8 | 66.6 | 3.3 | 6.4 | 5.7 |
| 2008 | 5.7 | 13.2 | 67.0 | 3.6 | 7.1 | 3.3 |
| 2009 | 7.3 | 14.7 | 64.4 | 4.2 | 5.4 | 4.0 |
| 2010 | 6.4 | 12.9 | 64.2 | 4.5 | 6.1 | 5.9 |

Source: Author's calculations based on tax data.

D.2.2 Top Wealth Shares

Table D.17: Top Wealth Shares, Colombia 1993–2010

| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 1- 0.5% | Top 0.5- 0.1% | Top 0.1- 0.05% | Top 0.05- 0.01% | Top 0.01- 0.001% |
|------|-----------|-------------|-------------|--------------|--------------|---------------|-------------------|---------------------|----------------------|-----------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 1993 | 26.93 | 22.34 | 13.65 | 10.92 | 6.33 | 2.92 | 4.59 | 8.69 | 2.73 | 4.59 | 3.41 |
| 1994 | 30.11 | 25.01 | 15.29 | 12.17 | 6.75 | 2.55 | 5.10 | 9.72 | 3.12 | 5.42 | 4.20 |
| 1995 | 36.71 | 30.66 | 18.56 | 14.63 | 7.99 | 2.98 | 6.05 | 12.10 | 3.93 | 6.64 | 5.00 |
| 1996 | 34.12 | 27.71 | 15.72 | 11.96 | 6.05 | 2.05 | 6.42 | 11.99 | 3.75 | 5.91 | 4.01 |
| 1997 | 33.58 | 27.17 | 15.10 | 11.39 | 5.60 | 1.78 | 6.40 | 12.07 | 3.71 | 5.79 | 3.81 |
| 1998 | 32.31 | 26.06 | 14.44 | 10.88 | 5.33 | 1.73 | 6.25 | 11.62 | 3.57 | 5.54 | 3.61 |
| 1999 | 31.37 | 25.31 | 13.77 | 10.29 | 5.04 | 1.66 | 6.06 | 11.54 | 3.48 | 5.25 | 3.38 |
| 2000 | 29.08 | 23.46 | 12.64 | 9.42 | 4.62 | 1.56 | 5.61 | 10.83 | 3.22 | 4.79 | 3.06 |
| 2001 | 27.86 | 22.42 | 11.91 | 8.84 | 4.31 | 1.49 | 5.45 | 10.50 | 3.07 | 4.53 | 2.83 |
| 2002 | 27.36 | 21.96 | 11.64 | 8.63 | 4.20 | 1.45 | 5.40 | 10.32 | 3.01 | 4.43 | 2.75 |
| 2003 | 28.97 | 22.48 | 11.66 | 8.58 | 4.09 | 1.37 | 6.48 | 10.82 | 3.08 | 4.49 | 2.72 |
| 2004 | | | | | | | | | | | |
| 2005 | | | | | | | | | | | |
| 2006 | 33.90 | 25.69 | 12.85 | 9.33 | 4.35 | 1.39 | 8.21 | 12.84 | 3.52 | 4.98 | 2.96 |
| 2007 | 35.24 | 26.56 | 13.11 | 9.48 | 4.41 | 1.38 | 8.67 | 13.45 | 3.63 | 5.07 | 3.02 |
| 2008 | 35.89 | 26.79 | 12.87 | 9.19 | 4.18 | 1.25 | 9.10 | 13.92 | 3.68 | 5.02 | 2.92 |
| 2009 | 39.00 | 28.93 | 13.61 | 9.60 | 4.32 | 1.27 | 10.07 | 15.33 | 4.01 | 5.28 | 3.05 |
| 2010 | 39.72 | 29.19 | 13.61 | 9.59 | 4.33 | 1.36 | 10.52 | 15.59 | 4.02 | 5.26 | 2.97 |

Notes: Total wealth is computed as a multiple of total income control, following the Harrod-Domar-Solow formula with demographic growth and Table C.6. Wealth has been re-computed to take account of the difference between cadastral and market values.

Source: Author's calculations based on tax returns data.

Table D.18: Shares Within Shares, Colombia 1993–2010

| Year | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% |
|------|----------|-----------|-----------|------------|
| | (1) | (2) | (3) | (4) |
| 1993 | 50.69 | 48.87 | 46.38 | 46.07 |
| 1994 | 50.78 | 48.65 | 44.11 | 37.73 |
| 1995 | 50.55 | 47.70 | 43.03 | 37.36 |
| 1996 | 46.06 | 43.17 | 38.50 | 33.80 |
| 1997 | 44.97 | 41.92 | 37.08 | 31.88 |
| 1998 | 44.71 | 41.73 | 36.92 | 32.35 |
| 1999 | 43.89 | 40.64 | 36.59 | 32.97 |
| 2000 | 43.46 | 40.14 | 36.60 | 33.76 |
| 2001 | 42.76 | 39.44 | 36.18 | 34.46 |
| 2002 | 42.55 | 39.30 | 36.08 | 34.47 |
| 2003 | 40.26 | 38.17 | 35.07 | 33.60 |
| 2004 | | | | |
| 2005 | | | | |
| 2006 | 37.91 | 36.33 | 33.85 | 31.97 |
| 2007 | 37.21 | 35.69 | 33.62 | 31.39 |
| 2008 | 35.87 | 34.32 | 32.43 | 30.05 |
| 2009 | 34.89 | 33.19 | 31.76 | 29.44 |
| 2010 | 34.26 | 32.84 | 31.79 | 31.34 |

Source: Author's calculations based on tax returns data.

Table D.19 presents the evolution of the average net wealth in Colombia for the top groups, as well as their thresholds from 1993 to 2010, in Colombian pesos and in US dollars.

Table D.19: Average Wealth of Top Groups and Thresholds, Colombia 1993-2010

| | | Panel A. In 2010 Colombian Pesos (millions) | | | | | | | | | | | | | | | | |
|------|-------|---|----------|----------|-----------|------------|-----------|----------|----------|--------|----------|-----------|------------|-----------|----------|----------|--------|------|
| | | Top 1% | Top 0.5% | Top 0.1% | Top 0.01% | Top 0.001% | Top 0.05% | Top 0.1% | Top 0.5% | Top 1% | Top 0.1% | Top 0.01% | Top 0.001% | Top 0.05% | Top 0.1% | Top 0.5% | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
| 1993 | 929 | 1,857 | 4,707 | 7,529 | 21,831 | 100,582 | 317 | 749 | 1,884 | 3,954 | 13,081 | 215 | 449 | 1,499 | 2,457 | 7,625 | 33,272 | |
| 1994 | 1,058 | 2,116 | 5,374 | 8,553 | 23,706 | 89,445 | 358 | 854 | 2,195 | 4,765 | 16,401 | 245 | 505 | 1,729 | 2,895 | 9,467 | 40,866 | |
| 1995 | 1,265 | 2,530 | 6,395 | 10,080 | 27,516 | 102,810 | 417 | 1,043 | 2,710 | 5,721 | 19,150 | 279 | 597 | 2,147 | 3,560 | 10,799 | 47,896 | |
| 1996 | 1,133 | 2,266 | 5,218 | 7,943 | 20,091 | 67,908 | 426 | 995 | 2,493 | 4,906 | 14,779 | 291 | 603 | 1,998 | 3,212 | 8,867 | 33,808 | |
| 1997 | 1,106 | 2,213 | 4,975 | 7,507 | 18,449 | 58,815 | 422 | 994 | 2,444 | 4,771 | 13,964 | 284 | 599 | 1,966 | 3,138 | 8,409 | 31,218 | |
| 1998 | 1,033 | 2,066 | 4,618 | 6,953 | 17,049 | 55,154 | 400 | 928 | 2,282 | 4,429 | 12,815 | 259 | 573 | 1,844 | 2,922 | 7,754 | 28,113 | |
| 1999 | 985 | 1,970 | 4,322 | 6,458 | 15,814 | 52,143 | 381 | 906 | 2,186 | 4,119 | 11,778 | 234 | 558 | 1,774 | 2,777 | 7,077 | 27,097 | |
| 2000 | 919 | 1,838 | 3,994 | 5,954 | 14,617 | 49,348 | 355 | 856 | 2,034 | 3,788 | 10,759 | 207 | 527 | 1,659 | 2,565 | 6,497 | 25,279 | |
| 2001 | 877 | 1,753 | 3,748 | 5,562 | 13,562 | 46,738 | 343 | 826 | 1,934 | 3,562 | 9,876 | 197 | 508 | 1,588 | 2,426 | 6,018 | 23,910 | |
| 2002 | 858 | 1,716 | 3,649 | 5,411 | 13,169 | 45,393 | 339 | 809 | 1,888 | 3,472 | 9,588 | 203 | 494 | 1,548 | 2,370 | 5,866 | 22,643 | |
| 2003 | 890 | 1,779 | 3,581 | 5,270 | 12,558 | 42,198 | 398 | 831 | 1,891 | 3,448 | 9,264 | 207 | 527 | 1,659 | 2,565 | 6,497 | 25,279 | |
| 2004 | 975 | 1,949 | 3,833 | 5,614 | 13,267 | 43,779 | 450 | 915 | 2,052 | 3,701 | 9,876 | 290 | 525 | 1,554 | 2,363 | 5,822 | 21,596 | |
| 2005 | 1,060 | 2,119 | 4,086 | 5,959 | 13,976 | 45,360 | 502 | 1,000 | 2,213 | 3,955 | 10,488 | 446 | 709 | 1,967 | 2,959 | 6,475 | 24,872 | |
| 2006 | 1,145 | 2,289 | 4,339 | 6,303 | 14,685 | 46,941 | 554 | 1,084 | 2,375 | 4,208 | 11,100 | 446 | 709 | 1,967 | 2,959 | 6,475 | 24,872 | |
| 2007 | 1,238 | 2,475 | 4,605 | 6,658 | 15,484 | 48,603 | 609 | 1,181 | 2,552 | 4,452 | 11,804 | 492 | 778 | 2,121 | 3,152 | 7,137 | 26,048 | |
| 2008 | 1,280 | 2,561 | 4,593 | 6,560 | 14,897 | 44,768 | 649 | 1,241 | 2,626 | 4,476 | 11,578 | 526 | 826 | 2,192 | 3,235 | 7,155 | 25,066 | |
| 2009 | 1,393 | 2,786 | 4,860 | 6,859 | 15,433 | 45,440 | 719 | 1,368 | 2,861 | 4,715 | 12,099 | 582 | 916 | 2,402 | 3,490 | 7,479 | 26,320 | |
| 2010 | 1,465 | 2,930 | 5,019 | 7,072 | 15,958 | 50,019 | 776 | 1,437 | 2,967 | 4,850 | 12,174 | 627 | 989 | 2,496 | 3,601 | 7,741 | 26,350 | |

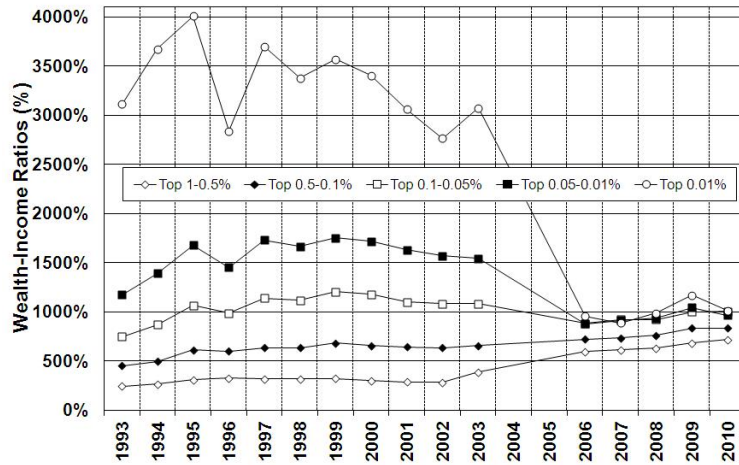
| | | Panel B. In US Dollars (thousands) | | | | | | | | | | | | | | | | |
|------|-----|------------------------------------|----------|----------|-----------|------------|-----------|----------|----------|--------|----------|-----------|------------|-----------|----------|----------|--------|------|
| | | Top 1% | Top 0.5% | Top 0.1% | Top 0.01% | Top 0.001% | Top 0.05% | Top 0.1% | Top 0.5% | Top 1% | Top 0.1% | Top 0.01% | Top 0.001% | Top 0.05% | Top 0.1% | Top 0.5% | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
| 1993 | 464 | 929 | 2,353 | 3,765 | 10,915 | 50,291 | 158 | 375 | 942 | 1,977 | 6,540 | 108 | 224 | 749 | 1,228 | 3,813 | 16,636 | |
| 1994 | 529 | 1,058 | 2,687 | 4,276 | 11,853 | 44,722 | 179 | 427 | 1,097 | 2,382 | 8,201 | 122 | 253 | 865 | 1,447 | 4,733 | 20,433 | |
| 1995 | 633 | 1,265 | 3,197 | 5,040 | 13,758 | 51,405 | 208 | 521 | 1,355 | 2,861 | 9,575 | 140 | 299 | 1,073 | 1,780 | 5,400 | 23,948 | |
| 1996 | 567 | 1,133 | 2,609 | 3,971 | 10,046 | 33,954 | 213 | 498 | 1,247 | 2,453 | 7,389 | 145 | 301 | 999 | 1,606 | 4,434 | 16,904 | |
| 1997 | 553 | 1,106 | 2,488 | 3,753 | 9,224 | 29,408 | 211 | 497 | 1,222 | 2,385 | 6,982 | 142 | 300 | 983 | 1,569 | 4,204 | 15,609 | |
| 1998 | 516 | 1,033 | 2,309 | 3,477 | 8,524 | 27,577 | 200 | 464 | 1,141 | 2,215 | 6,407 | 129 | 287 | 922 | 1,461 | 3,877 | 14,057 | |
| 1999 | 492 | 985 | 2,161 | 3,229 | 7,907 | 26,072 | 190 | 453 | 1,093 | 2,060 | 5,889 | 117 | 279 | 887 | 1,388 | 3,538 | 13,548 | |
| 2000 | 460 | 919 | 1,997 | 2,977 | 7,309 | 24,674 | 177 | 428 | 1,017 | 1,894 | 5,379 | 104 | 263 | 830 | 1,282 | 3,248 | 12,639 | |
| 2001 | 438 | 877 | 1,874 | 2,781 | 6,781 | 23,369 | 171 | 413 | 967 | 1,781 | 4,938 | 98 | 254 | 794 | 1,213 | 3,009 | 11,955 | |
| 2002 | 429 | 858 | 1,825 | 2,706 | 6,584 | 22,697 | 169 | 404 | 944 | 1,736 | 4,794 | 101 | 247 | 774 | 1,185 | 2,933 | 11,322 | |
| 2003 | 445 | 890 | 1,790 | 2,635 | 6,279 | 21,099 | 199 | 415 | 946 | 1,724 | 4,632 | 145 | 262 | 777 | 1,182 | 2,911 | 10,798 | |
| 2004 | 487 | 975 | 1,917 | 2,807 | 6,633 | 21,890 | 225 | 458 | 1,026 | 1,851 | 4,938 | 145 | 262 | 777 | 1,182 | 2,911 | 10,798 | |
| 2005 | 530 | 1,060 | 2,043 | 2,979 | 6,988 | 22,680 | 251 | 500 | 1,107 | 1,977 | 5,244 | 145 | 262 | 777 | 1,182 | 2,911 | 10,798 | |
| 2006 | 572 | 1,145 | 2,169 | 3,151 | 7,342 | 23,471 | 277 | 542 | 1,187 | 2,104 | 5,550 | 223 | 355 | 984 | 1,480 | 3,238 | 12,436 | |
| 2007 | 619 | 1,238 | 2,303 | 3,329 | 7,742 | 24,302 | 305 | 590 | 1,276 | 2,226 | 5,920 | 246 | 389 | 1,060 | 1,576 | 3,568 | 13,024 | |
| 2008 | 640 | 1,280 | 2,296 | 3,280 | 7,448 | 22,384 | 325 | 621 | 1,313 | 2,238 | 5,789 | 263 | 413 | 1,096 | 1,617 | 3,577 | 12,533 | |
| 2009 | 696 | 1,393 | 2,430 | 3,429 | 7,717 | 22,720 | 360 | 684 | 1,430 | 2,358 | 6,050 | 291 | 458 | 1,201 | 1,745 | 3,739 | 13,160 | |
| 2010 | 733 | 1,465 | 2,510 | 3,536 | 7,979 | 25,010 | 388 | 719 | 1,483 | 2,425 | 6,087 | 313 | 495 | 1,248 | 1,800 | 3,870 | 13,175 | |

Notes: P99 denotes the wealth threshold required to belong to the top 1% of tax units; Top 1% is the average net worth of the top 1%; Top 1-0.5% denotes the average net worth in the bottom half of the top percentile. Fractiles are defined by net worth. 1 US Dollar \approx 2,000 Colombian pesos. Net worth has been re-computed to take account of the fact that cadastral values are only a fraction of market values.

Source: Author's calculations based on tax returns data.

Figure D.3 computes wealth-income ratios for top groups in Colombia between 1993 and 2010. The extremely high ratios for the top groups are expected if the very wealthy individuals derive most of their income out of capital. However, the findings are somewhat disturbing insofar as there seems to exist two distinct patterns for the wealthiest individuals: the nineties and the mid-2000s. While for 2006-2010 the wealth-income ratios are stable around 500-1000% (and similar for all top groups), in the nineties they are extremely high and very volatile. An adequate interpretation of these results is not a straightforward task, and points to the limitations of the data available. It is possible that the very high-growth period of 2003-2010 benefited the wealthiest individuals disproportionately, dwarfing the wealth-income share of this group. However, the magnitude of this decrease, coupled with the fact that the magnificent drop is restricted to the top 0.01 per cent group, casts considerable doubt on this explanation.

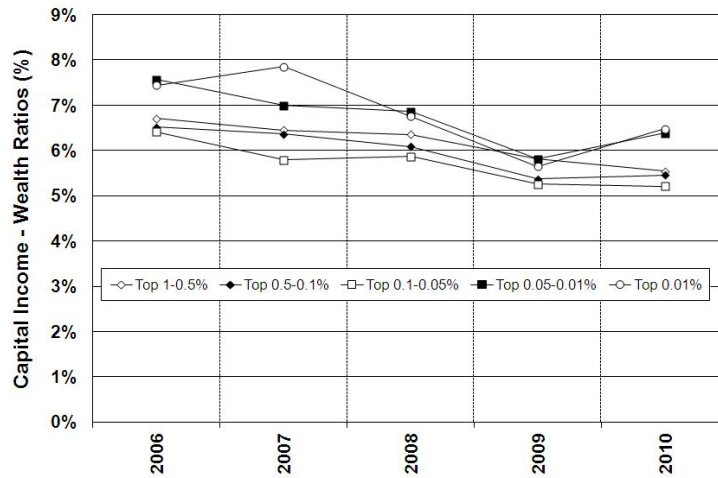
Figure D.3: Wealth-Income Ratios in Colombia, 1993-2010



Notes: Net worth has been recomputed to account for the fact that tangible assets are reported at cadastral values, which are only a share of market values.
Sources: Author's calculations using tax data.

Figure D.4 computes capital income-wealth ratios for top groups in Colombia between 2006 and 2010.

Figure D.4: Capital Income-Wealth Ratios in Colombia, 2006-2010



Notes: Net worth has been recomputed to account for the fact that tangible assets are reported at cadastral values, which are only a share of market values.
Sources: Author's calculations using tax data.

E The Issue of Tax Avoidance and Evasion

Economists are often sceptic towards using tax data to construct top income share series, especially due to a high prevalence of tax avoidance and tax evasion. In a developing country such as Colombia, these doubts may appear justified. Surprisingly, however, only a handful of studies estimate personal income tax evasion in Colombia (see [Avendaño, 2005](#); [Perry & Cardenas, 1986](#); [Steiner & Soto, 1998](#), and references therein). In fact, no recent estimates are available. We briefly summarise the findings of previous studies examining personal income tax evasion in Colombia.

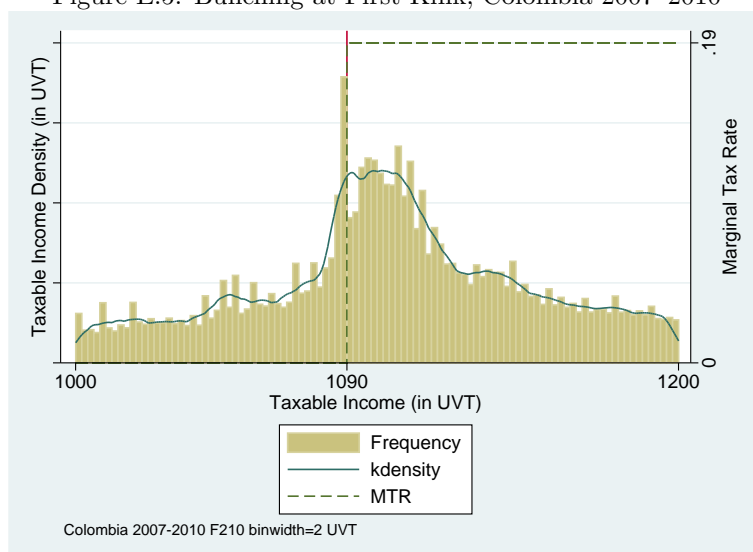
Using National Accounts, [Steiner & Soto \(1998\)](#) estimate that personal income tax evasion increased from 37 per cent in 1989 to 52 per cent in 1991. It remained close to that level until 1993. It then fell sharply, reaching 24.2 per cent in 1995. According to these authors, policy initiatives introduced in the 1990s were effective in facilitating tax compliance. More recently, [Avendaño \(2005\)](#) finds that personal income tax evasion decreased between 1970 and 1999. By the end of the 1990s, it reached 25 per cent, a level that remains relatively high. In tackling tax evasion, several reforms established the reduction of tax evasion as a main priority. However, estimations of personal income tax evasion using national accounts are inadequate, given the progressive nature of the Colombian tax schedule. For this reason, direct methods using household surveys are preferred, for they allow applying different tax rates to different groups of individuals. This method consists in calculating the personal income tax that each surveyed individual should pay according to her annualised declared income. Finally, an alternative method consists in auditing a sample of taxpayers. However, these studies are lacking in Colombia.

As for legal tax avoidance, a branch of the empirical literature on taxation has focused on bunching, that is, the behavioural response of taxable income at kink points. Most of the literature is based on developed economies —although [Kleven & Waseem \(2012\)](#) is a noteworthy exception—, notably the United States (see [Saez, 2010](#)) and recently in some Nordic countries (see [Bastani & Selin, 2012](#); [Chetty *et al.*, 2011](#); [le Maire & Schjerning, 2012](#)). To our knowledge, no study has hitherto examined the evidence of bunching at the kink points of the Colombian tax schedule.

Yet there are strong reasons to study bunching in Colombia. First, tax filers have severe incentives to bunch. The literature has shown that large kinks generate disproportionately stronger bunching responses than small kinks, consistent with the hypothesis that tax filers pay more attention to large changes than to small ones ([Saez *et al.*, 2012](#)). In Colombia, after the initial exempted bracket, tax liability starts and tax payers are levied at 19 per cent. Second, there is a large number of ways to reduce tax liabilities *via* items deemed ‘non-taxable’, exempted or deducted from the income tax (see [Section 3.2.1](#)).

We find evidence of bunching at the threshold of the tax bracket where tax liability starts and the marginal rate jumps from 0 to 19 per cent. Like [Saez \(2010\)](#), we cannot find any bunching evidence for the second kink point, even when restricting the sample to more responsive sub-groups such as those reporting self-employment income. Moreover, we find only mild bunching evidence for the top kink point ([Figures E.6 and E.9](#)). A likely explanation for this is the fact that the first kink point of the income tax schedule is the income level where tax liability starts, and hence is more visible on tax tables than kink points at higher income levels ([Saez, 2010](#)).

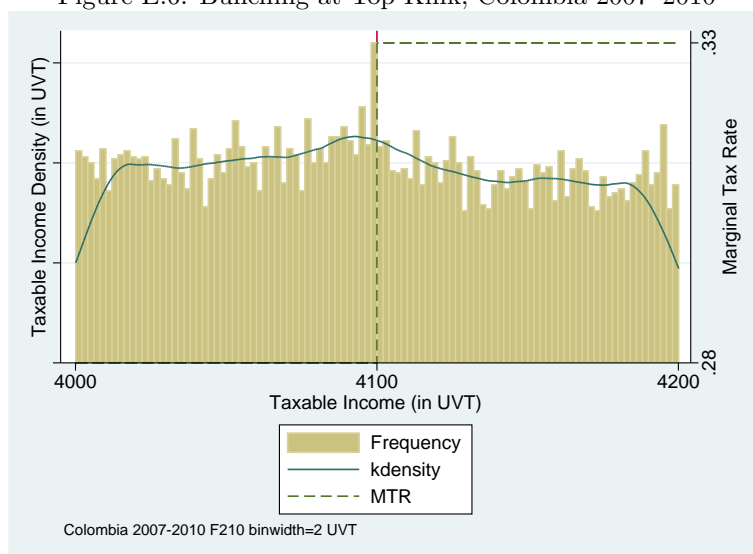
Figure E.5: Bunching at First Kink, Colombia 2007–2010



Notes: The figure displays the histogram of taxable regular income. The data include the years 2007–2010. The marginal tax rate schedule is displayed by the dashed line, and the kernel density of taxable regular income is plotted by the solid line. The sample is restricted to filers not required to keep accountancy books. Taxable regular income has been converted to CPI-adjusted “UVT” values. Bandwidth is 2 UVT in all estimations. In 2010, 2 UVT \approx \$49,100 pesos \approx US\$25. *Source:* Author’s calculations using tax data.

Figure E.5 displays the frequency distributions of taxable regular income for individuals not required to keep accountancy books (tax form 210), expressed in UVT and aggregating years 2007–2010. The marginal tax rate schedule is displayed in a dashed line, and the kernel density of taxable income is plotted in a solid line. In all years, the kink point is at 1090 UVT (2010 \$26,764,950 pesos, or roughly US\$13,382), as depicted by the vertical line. The density peaks just before the kink point, providing compelling evidence that the change in marginal tax rates produces a behavioural response of reported taxable regular income. A potential objection is that individuals may not systematically file tax returns if their taxable income is below 1090 UVT, as filing thresholds in Colombia are extremely high. Figure E.5, however, shows that there is no missing density just below the kink point.

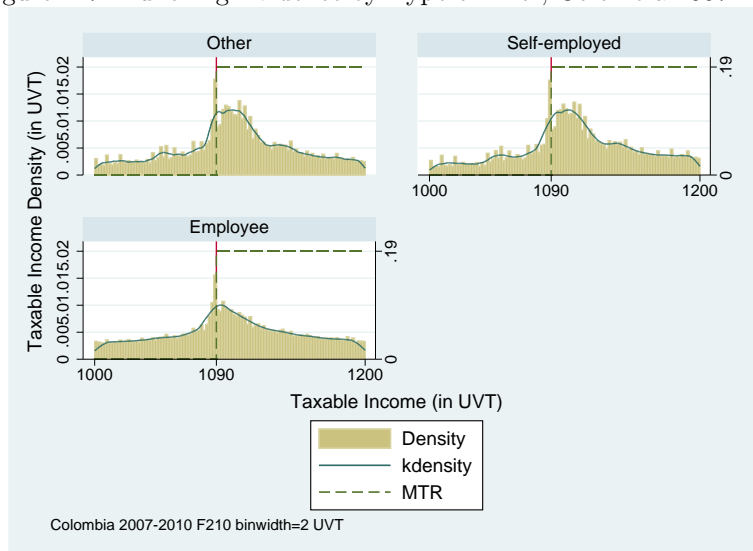
Figure E.6: Bunching at Top Kink, Colombia 2007–2010



Notes: The figure displays the histogram of taxable regular income. The data include the years 2007–2010. The marginal tax rate schedule is displayed by the dashed line, and the kernel density of taxable regular income is plotted by the solid line. The sample is restricted to filers not required to keep accountancy books. Taxable regular income has been converted to CPI-adjusted “UVT” values. Bandwidth is 2 UVT in all estimations. In 2010, 2 UVT \approx \$49,100 pesos \approx US\$25.
Source: Author’s calculations using tax data.

Figure E.7 compares bunching at the first kink point for the three types of filers in the Colombian tax code, namely wage earners, self-employed workers and ‘other’ tax filers (see Section 2.1 for a description of how types of filers are defined). Unlike in previous studies, in Colombia there is bunching evidence among all types of filers, notably including employees.

Figure E.7: Bunching Evidence by Type of Filer, Colombia 2007–2010



Notes: The figure displays the histogram of taxable regular income, decomposed for wage earned, self-employed, and ‘other’ tax filers, following the Colombian tax code. The data include the years 2007–2010. The marginal tax rate schedule is displayed by the dashed line, and the kernel density of taxable regular income is plotted by the solid line. The sample is restricted to filers not required to keep accountancy books. Taxable regular income has been converted to CPI-adjusted “UVT” values. Bandwidth is 2 UVT in all estimations. In 2010, 2 UVT \approx \$49,100 pesos \approx US\$25.
Source: Author’s calculations using tax data.

Recently, the empirical literature on bunching has sought to construct measures of the excess mass

of tax filers at the kink by locally comparing the mass of individuals at the kink point with the mass of individuals at the same taxable income level in the absence of a kink, i.e. the counterfactual distribution. The key methodological challenge here is to remove the influence of the kink from the observed income distribution to obtain this counterfactual distribution. We use the refined estimation procedure proposed by [Chetty *et al.* \(2011\)](#), estimating the counterfactual distribution using non-parametric methods. Specifically, the counterfactual distribution is estimated by fitting a polynomial to the taxable income distribution, omitting an income band surrounding the kink and then adjusting the mass of the counterfactual distribution so that it integrates to one.

Our estimation procedure, which draws on [Chetty *et al.* \(2011\)](#) and [Bastani & Selin \(2012\)](#), proceeds as follows. First, we pool data from 2007 to 2010 and express taxable income in CPI-adjusted values, or UVT. Second, a ‘wide bunching window’ around the kink point is specified and taxable regular income is re-defined in terms of the absolute distance to the kink point. This window specifies the sample to be used in estimating bunching and the counterfactual distribution. The data is then collapsed into bins of width 2 UVT, where 2 UVT is a CPI-adjusted value equal to 2010 \$49,100 \approx 2010 US\$25. Each bin j is represented by an income level Z_j , defined as the mean absolute income distance between the observations falling within income bin j and the kink point. In other words, Z_j is the distance between bin j and the kink point (measured in steps of 2 UVT). Visual inspection of the histogram for Z_j guides the selection of a bandwidth R and the associated ‘small bunching window’, $[-R, R]$. Provided that choosing R too small (large) will underestimate (overestimate) bunching, this window should ideally be chosen so as to capture *exactly* those individuals bunching. The number of individuals in income bin j is given by the non-parametric regression:

$$C_j = \omega(Z_j, R) + \mu_j \tag{E.1}$$

where ω is a polynomial in Z_j *excluding* the data near the kink (as measured by R) and μ_j accounts for the error in the polynomial fit. In our estimations we use the same iterative procedure as in [Chetty *et al.* \(2011\)](#), but unlike them, our calculation overestimates bunching because it does not account for the fact that individuals at the kink point come from points to the right of the kink. That is, it does not satisfy the constraint that the area under the counterfactual must equal the area under the empirical distribution. Further work must overcome this important limitation by increasing the mass of the counterfactual distribution to the right of the kink upward until it satisfies the integration constraint.

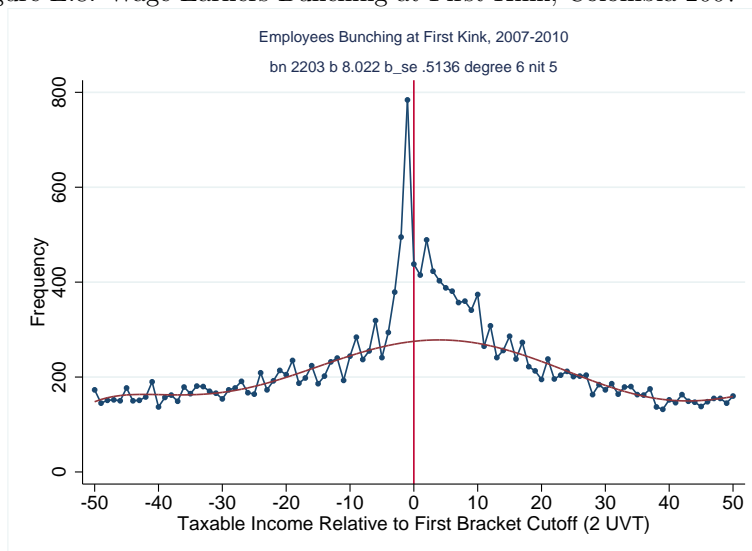
Denote \hat{C}_j the predicted values from regression E.1. Bunching, quantified by the excess mass of tax filers at the kink point or b , is estimated as the number of tax filers at the kink point, \hat{B} , relative to the average height of the counterfactual distribution in the band $[-R, R]$:

$$\hat{b} = \frac{\hat{B}}{\sum_{j=-R}^R \frac{\hat{C}_j}{R+1}} \tag{E.2}$$

In the figures below, the histogram is displayed in a series of dots, and the solid line plots the polynomial fitted to the taxable regular income distribution, excluding bins in the ‘small bunching window’. We report estimates of the excess mass \hat{b} in each figure, and standard errors are calculated using a parametric bootstrap procedure.

Figure E.8 shows that there is a spike in the otherwise smooth income distribution around the first kink, where the marginal rate jumps from 0 to 19 per cent. The predicted (albeit overestimated) excess mass is equal to a high 8.0.

Figure E.8: Wage Earners Bunching at First Kink, Colombia 2007–2010

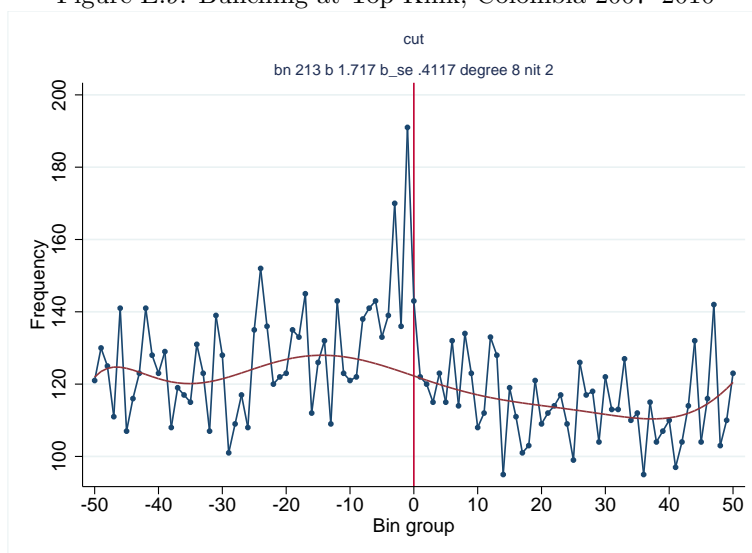


Notes: Wage earner is defined as an individual whose wages represent at least 99 per cent of total gross income. Taxable regular income has been converted to UVT. Bandwidth is 2 UVT in all estimations. In 2010, 2 UVT \approx \$49,100 pesos \approx US\$25.

Source: Author's calculations using tax data and Stata code used by [Chetty et al. \(2011\)](#).

In contrast, Figure E.9 shows that there is very little bunching around the top kink. The excess mass is equal to 1.7, and this low value may be overestimated due to the reasons explained above. This result is rather encouraging for our analysis of top incomes. Indeed, almost all individuals in the top groups are located in the top bracket, being subject to the top marginal tax rate (see Table G.24). The fact that they do not bunch suggests that they are less able to manipulate their *reported* income, and thus that our estimations are not terribly biased due to manipulation by tax filers.

Figure E.9: Bunching at Top Kink, Colombia 2007–2010



Notes: Taxable regular income has been converted to UVT. Bandwidth is 2 UVT in all estimations. In 2010, 2 UVT \approx \$49,100 pesos \approx US\$25.

Source: Author's calculations using tax data and Stata code used by [Chetty et al. \(2011\)](#).

F Estimating Tax Incidence

To estimate taxes and social security contributions paid by top groups, we use the panel micro-data from 2006 to 2010. This dataset provides detailed information on the income tax that was effectively paid by individuals, as well as on income tax of regular and irregular income. However, it does not include the social security contributions paid by employees and self-employees. We must thus compute our own estimations of social security contributions based on the tax code and a number of hypotheses we explain below. Because of the uncertainty surrounding social security contributions of self-employees, we disaggregate by type of filer and present estimations for wage earners and self-employees separately.

For social security purposes, individuals required to keep accounting ledgers for the personal income tax are treated as self-employed. Their income has been defined as gross operational and non-operational income, minus sales refunds, rebates and discounts, minus total costs. Individuals not required to keep accounting ledgers for the personal income tax can be self-employed or not. The self-employed have been defined as all those whose wages are zero and whose total gross income consists at least 80 per cent in fees, commissions, and services. The contribution base for self-employees constitutes 40 per cent of their income, and cannot be smaller than the minimum wage or greater than 25 times the minimum wage. Indeed, like other countries, social security contributions are capped. In 2010, this cap was equal to 25 minimum wages (Law 797 of 2003, and Decree 510 of 2003). Moreover, self-employed workers must contribute to social security both as employee and employer, the total rate of which was 12.5 per cent and 16 per cent for pensions in 2010 (see Table F.23 for the evolution of these rates between 1992 and 2012). In addition, self-employed workers can make voluntary occupational hasards payments. We have assumed they make no such contributions.

Workers that are not self-employed receive income either via wages or via fees, commissions and services. The contribution base for wages is 100 per cent, or 70 per cent if the wage earner receives an "integral" salary (i.e. one that includes bonuses, severance payments, etcetera). Employer and employee can decide on an "integral" salary only if the salary is greater than 10 times the minimum wage. We have assumed that all wages 10 times greater than the minimum are "integral". The contribution base cannot be smaller than the minimum wage nor greater than 25 times the minimum wage. If the individual receives fees, commissions and services in addition to salary, then the sum of both contribution bases cannot exceed 25 minimum wages. The payroll tax rate was 4 per cent for healthcare, and 4 per cent for pensions in 2010. In addition, individuals earning salaries above 4 minimum wages must contribute to the solidarity pension fund (*Fondo de Solidaridad Pensional*, or FSP), the rate of which varies between 1 per cent and 2 per cent and increases with wage.

Table F.20: Effective Average Tax Rate of Top Groups, Colombia 1993–2010

| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 1- 0.5% | Top 0.5- 0.1% | Top 0.1- 0.05% | Top 0.05- 0.01% | Top 0.01- 0.001% |
|------|-----------|-------------|-------------|--------------|--------------|---------------|-------------------|---------------------|----------------------|-----------------------|------------------------|
| | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| 1993 | 3.07 | 3.35 | 3.10 | 2.91 | 3.12 | 3.92 | 1.94 | 3.60 | 3.52 | 2.79 | 2.90 |
| 1994 | 3.00 | 3.26 | 2.99 | 2.97 | 3.54 | 4.78 | 1.97 | 3.54 | 3.03 | 2.65 | 3.22 |
| 1995 | 3.21 | 3.50 | 3.31 | 3.38 | 4.19 | 5.98 | 2.13 | 3.68 | 3.17 | 2.92 | 3.68 |
| 1996 | 3.03 | 3.32 | 3.14 | 3.17 | 3.84 | 4.93 | 1.99 | 3.48 | 3.06 | 2.79 | 3.47 |
| 1997 | 3.28 | 3.54 | 3.24 | 3.15 | 3.74 | 4.36 | 2.38 | 3.80 | 3.41 | 2.79 | 3.50 |
| 1998 | 3.60 | 3.92 | 3.57 | 3.28 | 3.64 | 4.13 | 2.47 | 4.21 | 4.14 | 3.05 | 3.43 |
| 1999 | 3.59 | 3.98 | 3.85 | 3.49 | 3.79 | 4.22 | 2.24 | 4.08 | 4.58 | 3.30 | 3.60 |
| 2000 | 3.59 | 3.96 | 3.70 | 3.50 | 3.79 | 4.70 | 2.18 | 4.16 | 4.13 | 3.31 | 3.40 |
| 2001 | 3.70 | 4.09 | 3.80 | 3.67 | 3.61 | 4.24 | 2.26 | 4.32 | 4.06 | 3.72 | 3.33 |
| 2002 | 3.67 | 4.01 | 3.68 | 3.58 | 3.74 | 4.01 | 2.50 | 4.25 | 3.90 | 3.47 | 3.61 |
| 2003 | 4.07 | 4.18 | 3.80 | 3.72 | 3.91 | 3.64 | 3.76 | 4.44 | 3.95 | 3.61 | 4.04 |
| 2004 | | | | | | | | | | | |
| 2005 | | | | | | | | | | | |
| 2006 | 5.04 | 5.25 | 4.67 | 4.29 | 3.21 | 2.08 | 4.41 | 5.84 | 5.75 | 5.40 | 3.96 |
| 2007 | 4.88 | 5.02 | 4.31 | 3.93 | 3.03 | 1.65 | 4.46 | 5.74 | 5.39 | 4.88 | 3.98 |
| 2008 | 4.89 | 5.04 | 4.34 | 3.96 | 2.99 | 1.31 | 4.44 | 5.73 | 5.38 | 4.91 | 4.01 |
| 2009 | 4.92 | 5.12 | 4.58 | 4.25 | 3.43 | 1.65 | 4.35 | 5.62 | 5.45 | 4.99 | 4.43 |
| 2010 | 4.80 | 4.97 | 4.32 | 3.98 | 3.14 | 1.78 | 4.34 | 5.57 | 5.26 | 4.79 | 4.03 |

Source: Author's calculations based on tax returns data.

Table F.21: Income Composition of Top Groups: Taxable and Non-Taxable Income. Colombia, 2006-2010

| | Top 1% | | | | | | Top 0.5% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 14.1 | 0.4 | 41.6 | 14.7 | 27.6 | 1.5 | 16.3 | 0.5 | 46.1 | 11.9 | 23.8 | 1.4 |
| 2007 | 13.6 | 0.5 | 42.9 | 13.9 | 27.7 | 1.3 | 15.6 | 0.6 | 47.5 | 11.1 | 24.1 | 1.2 |
| 2008 | 13.5 | 0.4 | 43.7 | 13.5 | 27.8 | 1.1 | 15.2 | 0.4 | 48.5 | 10.4 | 24.4 | 1.0 |
| 2009 | 13.4 | 0.4 | 42.3 | 14.3 | 28.3 | 1.3 | 15.3 | 0.4 | 46.7 | 11.3 | 25.1 | 1.2 |
| 2010 | 15.4 | 0.4 | 41.0 | 14.4 | 27.4 | 1.4 | 17.8 | 0.5 | 44.8 | 11.5 | 24.2 | 1.3 |

| | Top 0.1% | | | | | | Top 0.05% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 21.2 | 0.5 | 54.0 | 7.1 | 16.0 | 1.4 | 23.0 | 0.4 | 55.2 | 6.4 | 13.5 | 1.4 |
| 2007 | 19.7 | 0.8 | 55.3 | 6.9 | 16.2 | 1.1 | 21.4 | 0.9 | 56.3 | 6.5 | 13.8 | 1.0 |
| 2008 | 18.6 | 0.4 | 57.6 | 5.8 | 16.7 | 0.8 | 19.9 | 0.4 | 59.5 | 5.1 | 14.3 | 0.8 |
| 2009 | 19.0 | 0.5 | 55.2 | 6.4 | 17.8 | 1.2 | 20.4 | 0.5 | 56.8 | 5.6 | 15.4 | 1.3 |
| 2010 | 22.9 | 0.8 | 51.4 | 7.0 | 16.7 | 1.3 | 24.8 | 0.9 | 52.2 | 6.4 | 14.3 | 1.3 |

| | Top 0.01% | | | | | | Top 0.001% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 26.0 | 0.4 | 56.7 | 6.7 | 8.7 | 1.5 | 26.0 | 0.1 | 60.0 | 7.2 | 4.7 | 2.0 |
| 2007 | 24.1 | 1.4 | 56.7 | 7.4 | 9.4 | 1.0 | 24.5 | 2.9 | 58.2 | 8.8 | 5.1 | 0.4 |
| 2008 | 21.6 | 0.3 | 62.8 | 5.0 | 9.7 | 0.7 | 17.7 | 0.1 | 72.0 | 5.9 | 3.5 | 0.8 |
| 2009 | 22.4 | 0.5 | 59.2 | 5.1 | 11.2 | 1.6 | 19.2 | 0.1 | 68.2 | 5.2 | 4.7 | 2.6 |
| 2010 | 27.4 | 1.3 | 53.3 | 6.2 | 10.1 | 1.6 | 21.6 | 2.6 | 63.0 | 4.8 | 5.0 | 2.9 |

Source: Author's calculations based on tax data.

(continues)

(continued)

| | Top 1–0.5% | | | | | | Top 0.5–0.1% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 7.4 | 0.3 | 27.9 | 23.5 | 39.2 | 1.6 | 11.3 | 0.5 | 38.0 | 16.8 | 31.9 | 1.4 |
| 2007 | 7.7 | 0.3 | 29.0 | 22.6 | 38.8 | 1.6 | 11.3 | 0.4 | 39.5 | 15.2 | 32.1 | 1.4 |
| 2008 | 8.3 | 0.3 | 29.4 | 22.6 | 37.8 | 1.5 | 11.9 | 0.4 | 39.6 | 15.0 | 31.9 | 1.2 |
| 2009 | 7.9 | 0.3 | 29.6 | 23.0 | 37.5 | 1.6 | 11.9 | 0.3 | 39.0 | 15.7 | 31.8 | 1.2 |
| 2010 | 8.5 | 0.2 | 30.0 | 22.7 | 36.9 | 1.7 | 13.0 | 0.3 | 38.6 | 15.6 | 31.2 | 1.3 |

| | Top 0.1–0.05% | | | | | | Top 0.05–0.01% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 15.7 | 0.6 | 50.4 | 9.1 | 23.1 | 1.2 | 20.0 | 0.5 | 53.7 | 6.1 | 18.4 | 1.3 |
| 2007 | 14.8 | 0.5 | 52.3 | 8.1 | 23.1 | 1.3 | 18.6 | 0.4 | 55.9 | 5.6 | 18.5 | 1.0 |
| 2008 | 15.1 | 0.5 | 52.4 | 7.7 | 23.3 | 0.9 | 18.3 | 0.5 | 56.3 | 5.1 | 18.9 | 0.9 |
| 2009 | 15.2 | 0.4 | 51.1 | 8.4 | 23.8 | 1.0 | 18.6 | 0.5 | 54.6 | 6.0 | 19.2 | 1.1 |
| 2010 | 17.8 | 0.4 | 49.1 | 8.7 | 23.0 | 1.1 | 22.2 | 0.5 | 51.1 | 6.6 | 18.5 | 1.1 |

| | Top 0.01–0.001% | | | | | |
|------|-----------------------------|--|----------------------------|----------------|---------|-----------|
| | Non taxable income | | | Taxable income | | |
| | Items not considered income | Deduction for investment in fixed assets | Other costs and deductions | Exempt income | regular | irregular |
| 2006 | 26.0 | 0.6 | 54.6 | 6.4 | 11.4 | 1.1 |
| 2007 | 23.9 | 0.3 | 55.6 | 6.4 | 12.5 | 1.4 |
| 2008 | 23.9 | 0.4 | 57.2 | 4.4 | 13.4 | 0.6 |
| 2009 | 24.2 | 0.6 | 54.2 | 5.1 | 14.9 | 1.0 |
| 2010 | 31.2 | 0.5 | 47.0 | 7.2 | 13.5 | 0.7 |

Source: Author's calculations based on tax data.

Table F.22: Taxes and Social Security Contributions Paid by Top Groups. Average Effective Rates, Colombia 2006-2010

| | Top 1% | | | | | | | | | | Top 0.5% | | | | | | | | | |
|------|--------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | |
| 2006 | 2.2 | 2.0 | 2.0 | 4.4 | 0.2 | 4.6 | 8.8 | 1.6 | 1.7 | 4.6 | 0.2 | 4.8 | 8.1 | 1.6 | 1.7 | 4.6 | 0.2 | 4.8 | 8.1 | |
| 2007 | 2.1 | 2.1 | 2.1 | 4.7 | 0.1 | 4.9 | 9.1 | 1.7 | 1.6 | 4.8 | 0.2 | 5.0 | 8.4 | 1.7 | 1.6 | 4.8 | 0.2 | 5.0 | 8.4 | |
| 2008 | 2.2 | 2.1 | 2.1 | 4.8 | 0.1 | 4.9 | 9.1 | 1.7 | 1.7 | 4.9 | 0.1 | 5.0 | 8.4 | 1.7 | 1.7 | 4.9 | 0.1 | 5.0 | 8.4 | |
| 2009 | 2.3 | 2.0 | 2.0 | 4.8 | 0.1 | 4.9 | 9.2 | 1.7 | 1.8 | 5.0 | 0.2 | 5.1 | 8.6 | 1.7 | 1.8 | 5.0 | 0.2 | 5.1 | 8.6 | |
| 2010 | 2.2 | 2.0 | 2.0 | 4.7 | 0.1 | 4.8 | 9.0 | 1.6 | 1.7 | 4.8 | 0.1 | 5.0 | 8.3 | 1.6 | 1.7 | 4.8 | 0.1 | 5.0 | 8.3 | |

| | Top 0.1% | | | | | | | | | | Top 0.05% | | | | | | | | | |
|------|--------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | |
| 2006 | 0.8 | 0.6 | 0.6 | 4.0 | 0.3 | 4.3 | 5.7 | 0.5 | 0.3 | 3.6 | 0.3 | 3.9 | 4.8 | 0.5 | 0.3 | 3.6 | 0.3 | 3.9 | 4.8 | |
| 2007 | 0.9 | 0.5 | 0.5 | 4.1 | 0.2 | 4.3 | 5.7 | 0.6 | 0.3 | 3.7 | 0.2 | 3.9 | 4.8 | 0.6 | 0.3 | 3.7 | 0.2 | 3.9 | 4.8 | |
| 2008 | 0.9 | 0.6 | 0.6 | 4.2 | 0.2 | 4.3 | 5.8 | 0.6 | 0.3 | 3.8 | 0.2 | 4.0 | 4.9 | 0.6 | 0.3 | 3.8 | 0.2 | 4.0 | 4.9 | |
| 2009 | 0.9 | 0.6 | 0.6 | 4.4 | 0.2 | 4.6 | 6.2 | 0.6 | 0.4 | 4.0 | 0.2 | 4.3 | 5.3 | 0.6 | 0.4 | 4.0 | 0.2 | 4.3 | 5.3 | |
| 2010 | 0.9 | 0.6 | 0.6 | 4.1 | 0.2 | 4.3 | 5.8 | 0.6 | 0.4 | 3.8 | 0.2 | 4.0 | 5.0 | 0.6 | 0.4 | 3.8 | 0.2 | 4.0 | 5.0 | |

| | Top 0.01% | | | | | | | | | | | | |
|------|--------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes |
| 2006 | 0.2 | 0.1 | 0.1 | 2.6 | 0.3 | 2.9 | 3.2 | 0.0 | 0.0 | 1.5 | 0.4 | 1.9 | 2.0 |
| 2007 | 0.2 | 0.1 | 0.1 | 2.8 | 0.2 | 3.0 | 3.3 | 0.0 | 0.0 | 1.5 | 0.1 | 1.6 | 1.7 |
| 2008 | 0.2 | 0.1 | 0.1 | 2.8 | 0.2 | 3.0 | 3.3 | 0.0 | 0.0 | 1.5 | 0.3 | 1.3 | 1.4 |
| 2009 | 0.2 | 0.2 | 0.2 | 3.2 | 0.2 | 3.4 | 3.8 | 0.0 | 0.0 | 1.4 | 0.2 | 1.6 | 1.7 |
| 2010 | 0.2 | 0.1 | 0.1 | 3.0 | 0.2 | 3.1 | 3.5 | 0.0 | 0.0 | 1.6 | 0.2 | 1.8 | 1.9 |

Source: Author's calculations based on tax statistics.

(continues)

(continued)

| | Top 1–0.5% | | | | | | | | | | Top 0.5–0.1% | | | | | | | | | |
|------|--------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | |
| 2006 | 3.9 | 2.8 | 3.9 | 0.1 | 0.1 | 4.0 | 10.8 | 2.4 | 2.8 | 5.2 | 0.1 | 5.3 | 10.6 | 2.4 | 2.8 | 5.2 | 0.1 | 5.3 | 10.6 | |
| 2007 | 3.4 | 3.6 | 4.4 | 0.1 | 0.1 | 4.5 | 11.4 | 2.6 | 2.7 | 5.6 | 0.1 | 5.7 | 11.0 | 2.6 | 2.7 | 5.6 | 0.1 | 5.7 | 11.0 | |
| 2008 | 3.6 | 3.2 | 4.4 | 0.1 | 0.1 | 4.4 | 11.3 | 2.5 | 2.7 | 5.6 | 0.1 | 5.7 | 10.9 | 2.5 | 2.7 | 5.6 | 0.1 | 5.7 | 10.9 | |
| 2009 | 4.0 | 2.7 | 4.3 | 0.1 | 0.1 | 4.3 | 11.0 | 2.3 | 2.8 | 5.5 | 0.1 | 5.6 | 10.8 | 2.3 | 2.8 | 5.5 | 0.1 | 5.6 | 10.8 | |
| 2010 | 3.9 | 2.7 | 4.3 | 0.1 | 0.1 | 4.3 | 10.9 | 2.3 | 2.8 | 5.5 | 0.1 | 5.6 | 10.7 | 2.3 | 2.8 | 5.5 | 0.1 | 5.6 | 10.7 | |

| | Top 0.1–0.05% | | | | | | | | | | Top 0.05–0.01% | | | | | | | | | |
|------|---------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | |
| 2006 | 1.7 | 1.2 | 5.1 | 0.2 | 0.2 | 5.3 | 8.1 | 0.9 | 0.6 | 4.6 | 0.3 | 4.9 | 6.4 | 0.9 | 0.6 | 4.6 | 0.3 | 4.9 | 6.4 | |
| 2007 | 1.8 | 1.1 | 5.2 | 0.2 | 0.2 | 5.4 | 8.3 | 1.0 | 0.6 | 4.7 | 0.2 | 4.9 | 6.4 | 1.0 | 0.6 | 4.7 | 0.2 | 4.9 | 6.4 | |
| 2008 | 1.7 | 1.1 | 5.2 | 0.1 | 0.1 | 5.4 | 8.2 | 0.9 | 0.6 | 4.7 | 0.2 | 4.9 | 6.4 | 0.9 | 0.6 | 4.7 | 0.2 | 4.9 | 6.4 | |
| 2009 | 1.7 | 1.2 | 5.3 | 0.2 | 0.2 | 5.4 | 8.4 | 1.0 | 0.6 | 4.8 | 0.2 | 5.0 | 6.6 | 1.0 | 0.6 | 4.8 | 0.2 | 5.0 | 6.6 | |
| 2010 | 1.6 | 1.2 | 5.1 | 0.1 | 0.1 | 5.3 | 8.1 | 1.0 | 0.6 | 4.6 | 0.2 | 4.8 | 6.4 | 1.0 | 0.6 | 4.6 | 0.2 | 4.8 | 6.4 | |

| | Top 0.01–0.001% | | | | | | | | | | | |
|------|-----------------|--------------|------------------------|---------------------------|-----------------------------|------------------|--------------------|--------------|------------------------|---------------------------|-----------------------------|------------------|
| | SSC on wages | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax | Total income taxes | SSC on wages | SSC on self-employment | Income tax-regular income | Income tax-irregular income | Total income tax |
| 2006 | 0.3 | 0.2 | 3.3 | 0.3 | 0.3 | 3.6 | 4.1 | 0.3 | 0.2 | 3.6 | 0.3 | 4.1 |
| 2007 | 0.3 | 0.2 | 3.6 | 0.3 | 0.3 | 4.0 | 4.5 | 0.3 | 0.2 | 4.0 | 0.3 | 4.5 |
| 2008 | 0.3 | 0.2 | 3.9 | 0.1 | 0.1 | 4.0 | 4.5 | 0.3 | 0.2 | 4.0 | 0.1 | 4.5 |
| 2009 | 0.3 | 0.2 | 4.2 | 0.2 | 0.2 | 4.4 | 5.0 | 0.3 | 0.2 | 4.4 | 0.2 | 5.0 |
| 2010 | 0.3 | 0.2 | 3.9 | 0.2 | 0.2 | 4.0 | 4.6 | 0.3 | 0.2 | 4.0 | 0.2 | 4.6 |

Source: Author's calculations based on tax statistics.

Table F.23: Social Security Contributions, Colombia 1992–2010

| Total | Healthcare, Pension and Professional Risks | | | | | | | | | | |
|-------|--|----------|----------|----------|---------|-------------|----------|------|------|------|------|
| | Healthcare | | | | | Parafiscals | | | | | |
| | employer | employee | Subtotal | employer | Pension | employer | Risks | CCF | ICBF | SENA | |
| 1992 | 4.67% | 2.33% | 6.5% | 4.33% | 2.17% | 4.0% | employer | 4.0% | 3.0% | 2.0% | 9.0% |
| 1993 | 4.67% | 2.33% | 8.0% | 5.33% | 2.67% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1994 | 5.3% | 2.7% | 11.5% | 8.6% | 2.9% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1995 | 8.0% | 4.0% | 12.5% | 9.4% | 3.1% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1996 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1997 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1998 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 1999 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2000 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2001 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2002 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2003 | 8.0% | 4.0% | 13.5% | 10.1% | 3.4% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2004 | 8.0% | 4.0% | 14.5% | 10.9% | 3.6% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2005 | 8.0% | 4.0% | 15.0% | 11.3% | 3.8% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2006 | 8.0% | 4.0% | 15.5% | 11.6% | 3.9% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2007 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2008 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2009 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2010 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2011 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |
| 2012 | 8.5% | 4.0% | 16.0% | 12.0% | 4.0% | 4.0% | employee | 4.0% | 3.0% | 2.0% | 9.0% |

(continued)

Notes: For employees, the contribution base is 100 per cent of the wage, or 70 per cent if the wage earner receives an “integral” salary (i.e. one that includes bonuses, severance payments, etcetera). Employer and employee can decide on an “integral” salary only if the salary is greater than 10 times the minimum wage. There is a minimum cap equal to 1 minimum wage (SMLMV) and a maximum cap equal to 20 minimum wages (1993–2003) or 25 minimum wages (2003–2010). For self-employees, the social security base is 40% of gross revenues, with the same minimum and maximum caps. Self-employees must cover both the employer’s and the employee’s part to healthcare and pension contributions, but they are not required to contribute to professional risks. The contribution base for the *parafiscals* is 70% of gross wage, and it is paid entirely by the employer. Self-employees are not required to pay *parafiscals*. The minimum wage is the SMLMV: *Salario mínimo legal mensual vigente*.
Sources: Santamaria *et al.* (2009), Mondragon-Velez *et al.* (2010), tax codes.

(continued)

| Other charges on: | | | | | | |
|-------------------|----------------------------|-----------------|----------|----------------------------|---|---|
| | Bonus (Prima de servicios) | Christmas bonus | Holidays | Unemployment contributions | Interests on unemployment contributions | Unemployment contribution for unjustified dismissal |
| | employer | employer | employer | employer | employer | employer |
| 1992 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1993 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1994 | 8.33% | 8.33% | 4.17% | 8.30% | 1.00% | 4.17% |
| 1995 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1996 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1997 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1998 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 1999 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2000 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2001 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2002 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2003 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2004 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2005 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2006 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2007 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2008 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2009 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2010 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2011 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |
| 2012 | 8.33% | 8.33% | 4.17% | 8.33% | 1.00% | 4.17% |

Fondo de Solidaridad PENSIONAL

| employee | | | | |
|--|--------------------|---------------------|-------|--|
| Earnings expressed as multiple of minimum wage | <i>Solidaridad</i> | <i>Subsistencia</i> | Total | |
| up to 2002 | | | | |
| 0-4 | 0.00% | 0.00% | 0.00% | |
| 4-16 | 0.50% | 0.50% | 1.00% | |
| since 2003 | | | | |
| 0-4 | 0.00% | 0.00% | 0.00% | |
| 4-16 | 0.50% | 0.50% | 1.00% | |
| 16-17 | 0.50% | 0.70% | 1.20% | |
| 17-18 | 0.50% | 0.90% | 1.40% | |
| 18-19 | 0.50% | 1.10% | 1.60% | |
| 19-20 | 0.50% | 1.30% | 1.80% | |
| > 20 | 0.50% | 1.50% | 2.00% | |

Professional risks

| employer | | |
|------------|-------------------|-------------------|
| Risk class | Min. contribution | Max. contribution |
| 1 | 0.348% | 0.696% |
| 2 | 0.435% | 1.653% |
| 3 | 0.783% | 4.089% |
| 4 | 1.740% | 6.060% |
| 5 | 3.219% | 8.700% |

Notes: Other non-wage labour costs not included in the table are work uniform and transport subsidies mandated by law for low-income employees.

Sources: Santamaria *et al.* (2009), Mondragon-Velez *et al.* (2010), tax codes.

To roughly estimate the amount of dividend tax transferred from firms to individuals, the amount of dividend received is approximated as 75 per cent of 'other' non-taxable income, and the tax is calculated as that amount multiplied by $\frac{\sigma}{1-\sigma}$, where σ is the tax rate applied to dividends, or the corporate income tax rate.

G Computing Marginal Tax Rates

Marginal tax rates t^* for top percentiles displayed in Table G.24 were computed using the balanced panel of individual income tax returns 2006–2010. First, marginal tax rates for the personal tax on regular, t_{1i} , and on irregular income, t_{2i} , were computed for each individual i as a function of taxable regular income, a_i and taxable irregular income b_i , respectively, following the tax schedule displayed in Table 3. Second, official individual marginal tax rates, t_{3i} were computed as follows:

$$t_{3i} = \frac{a_i}{a_i + b_i} * t_{1i} + \frac{b_i}{a_i + b_i} * t_{2i} \quad (\text{G.1})$$

Third, to create marginal tax rates for each top group, t_G , we must correct for non-random attrition by weighing a_i and b_i (see Section D.1.1). The weighted sum of individual taxable sources, k_i , is given by $k_i = w_i(a_i + b_i)$. Fourth, individual rates relative to the top group were created, such that:

$$t_G = \frac{k_i}{K_G} * t_{3i} \quad (\text{G.2})$$

where $K_G = \sum k_i$ in each top group G . The result was then collapsed by top group for each year, to create t^* . Table G.24 presents the result of this exercise.

Table G.24: Weighted Marginal Tax Rate of Top Groups, Colombia 2006–2010

| | Top 1% | Top 0.5% | Top 0.1% | Top 0.05% | Top 0.01% | Top 0.001% | Top 1- 0.5% | Top 0.5- 0.1% | Top 0.1- 0.05% | Top 0.05- 0.01% | Top 0.01- 0.001% |
|------|-----------|-------------|-------------|--------------|--------------|---------------|-------------------|---------------------|----------------------|-----------------------|------------------------|
| | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| 2006 | 28.1 | 30.0 | 32.7 | 33.2 | 32.8 | 34.7 | 24.5 | 28.5 | 31.7 | 32.8 | 33.8 |
| 2007 | 28.2 | 30.0 | 32.0 | 32.5 | 32.0 | 33.7 | 24.7 | 28.9 | 31.2 | 32.0 | 33.1 |
| 2008 | 27.9 | 29.6 | 31.3 | 31.7 | 31.4 | 32.6 | 24.7 | 28.7 | 30.7 | 31.4 | 32.3 |
| 2009 | 27.8 | 29.5 | 31.3 | 31.7 | 31.3 | 32.7 | 24.6 | 28.6 | 30.7 | 31.3 | 32.3 |
| 2010 | 27.9 | 29.5 | 31.3 | 31.7 | 31.3 | 32.8 | 24.6 | 28.6 | 30.6 | 31.3 | 32.3 |

Source: Author’s calculations based on tax returns data.

H Comparison Between Tax Data and Household Surveys

Survey statistics were provided by SEDLAC (CEDLAS and The World Bank), based on official household survey data from DANE. The available survey changes across years. For 1992, 1996, 1999 and 2000, the results correspond to ENH-FT. For 2001–2005, the result corresponds to ECH. The years of 2006–2010 correspond to GEIH. Tax data, on the other hand, was provided by DIAN, consisting in two panels that cover the years of 1993–2006 and 2006–2010. Results using tax data are obtained from Tables C.5, D.13, and D.14. Because we do not have tax data for the year of 1992, we compare household survey data with 1993 tax data for this year.

Regarding the population coverage, tax data are national for the entire period. Among household surveys, only the ENH-FT survey for 1992 is based on urban areas, while the rest of the surveys are of national coverage.

Concerning the periodicity, tax data correspond to annual values, whereas survey data provide monthly values. Annual survey values are computed by up-scaling the available income by a factor of fourteen. This is based on the reasonable assumption—typically made by household surveys in the developing world—that all income corresponds to wages, and that annual wages include both the mandatory bonus (*prima de servicio*), and the Christmas bonus (see Table F.23). Note that the timing of the survey varies only slightly across years. For 1992, 1996, 1999 and 2000, the results correspond to the month of September. For 2001–2010, the results correspond to the third quarter term (except 2006, which is August-October).

The number of individuals that make up the top 1 per cent differs between tax data and household survey data. In the former, the top percentile pertains to the adult population defined as all residents

aged 20 and above. In the latter, the top percentile is based on individuals with positive income, including those aged 10 and over.

As for the definition of income, the survey data assumes that all income is market after-tax income, and does not impute incomes for owned dwelling, etcetera. Like with tax data, estimates are based on individual income. Individuals with inconsistent answers, such as employed workers with missing main labour income or employed workers with missing values in all sources of income, were excluded from the computations. Thus, the income of the top 1 percentile is defined as the 1 per cent of individuals with highest positive income. In contrast, our tax data do not exclude inconsistent answers. To provide a closer comparison with the definition of income used in survey data, we define income *net of the income tax*. In Colombia, this implies treating income net of taxes on regular and irregular income, and on remittances. Note that we do not account for other taxes, such as payroll taxes.

Regarding the income denominator, in tax data the total income control is obtained using National Accounts, as explained in Section C.1 in the Appendix. In household surveys, total income is computed as total income in the survey, or the sum of all individuals with positive incomes, transformed to annual values and expanded to the entire economy. Note that because the survey in 1992 covers urban areas only, the total income will not be representative of the national economy but rather of the urban economy.