



HIGH INCOMES AND PERSONAL TAXATION IN A DEVELOPING ECONOMY: COLOMBIA 1993-2010

Facundo Alvaredo and Juliana Londoño Vélez

COMMITMENT TO EQUITY



HIGH INCOMES AND PERSONAL TAXATION IN A DEVELOPING ECONOMY: COLOMBIA 1993-2010

Facundo Alvaredo

Nuffield/EMod-Oxford, Paris School of Economics, Conicet

Juliana Londoño Vélez

Paris School of Economics, Ministry of Finance and Public Credit, Colombia¹

CEQ Working Paper No. 12

MARCH 19, 2013

ABSTRACT

We present series of the shares of income accruing to the top groups of the distribution in Colombia between 1993 and 2010, based on individual income tax data. We obtain four main empirical results. First, income in Colombia is highly concentrated, the top 1% of the income distribution accounting for over 20% of total income in 2010. This is at the highest level of inequality in any recent year in the entire WTID sample. Second, high-income individuals in Colombia are, in essence, rentiers and capital owners. Third, while households' surveys show that inequality has been decreasing since 2006, tax-based results offer a different picture, where concentration at the top has remained stable; when survey based Gini coefficients are adjusted to take into account higher incomes reported to tax files, inequality levels are higher, and the recent reduction in inequality is less pronounced. Fourth, income taxation does little to reduce the high levels of inequality.

Keywords: income distribution, inequality, personal income tax, Latin America

JEL Codes: D31, H24, O54

¹ We are particularly grateful to Anthony B. Atkinson, Isabelle Joumard, María Ana Lugo, Nora Lustig, and Thomas Piketty for valuable comments and suggestions. The income tax data were obtained thanks to a collaborative project between DIAN and OECD. Juan Ricardo Ortega, Pastor Sierra, Natasha Avendaño, Natalia Aristizábal, Javier Ávila, and Sebastián Nieto answered to our numerous questions regarding the income tax administration. Leonardo Gasparini kindly provided results based on household surveys from SEDLAC. Carlos Chaparro helped considerably in understanding the Colombian tax code. We acknowledge financial support from ESRC, CIPR and INET. Facundo Alvaredo: alvaredo@gmail.com; Juliana Londoño Vélez: j.londonovelez@gmail.com.

1. INTRODUCTION

There has been much recent interest in falling income inequality in Latin America over the past decade. Scholars have been trying to understand such decline in a region historically characterised by high, persistent inequality (Lustig and López Calva, 2010). However, little has been said about the very top of the distribution. To the extent that the overwhelming majority of the literature uses households survey data, which underestimate income concentration, a reassessment of the evolution of income distribution is in order. In this paper we study the shares of top incomes in Colombia between 1993 and 2010 using tax data. The case of Colombia is worth studying on several grounds.

First, Colombia is the first country in Latin America to provide micro-data from the personal income tax for a relatively long period of time (1993-2010).² These data allow for a detailed analysis of high incomes, including the years for which surveys indicate a decline in inequality. They also provide the necessary information to accurately determine the average tax rates effectively paid by top income recipients. This is a first-order concern in a continent marked by regressive tax systems.

Second, Colombia has traditionally been identified as having one of the highest Gini coefficients in Latin America (Ferreira and Ravallion, 2008). In the beginning of the 1990s, the country embarked on a process of market liberalization in the context of the Washington Consensus, and experienced positive growth until 1994. Between 1994 and 2003, it plunged into the most severe economic recession in the last century, the income per adult dropping by 13% (see Figure 1). This was followed by an economic boom in the mid-2000s that was only temporarily interrupted by the global economic crisis in 2008–2009. Hence, it is important to re-assess the link between growth and distribution.

Third, Colombia has undergone key changes in the political arena since the 1990s. The 1991 constitution established progressiveness as the foundation of the tax system (article 363). As a result, all the subsequent tax reforms have been presented as serving such principle. This study can shed some light on the extent to which these well-intentioned political efforts actually translated into real impacts on the distribution through the tax system.

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. Second, estimates may be biased due to tax avoidance and tax evasion. These elements, which are common to all countries, become critical in the developing world. In Colombia, until recently plagued by high insecurity, the rich and wealthy may be particularly dissuaded from disclosing their fortunes and incomes 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.

² There are few studies on the evolution of income inequality in Colombia from a historical perspective; Londoño (1995) is an exception, as well as Londoño Vélez' master thesis (2012), which started the work with the databases used in this paper.

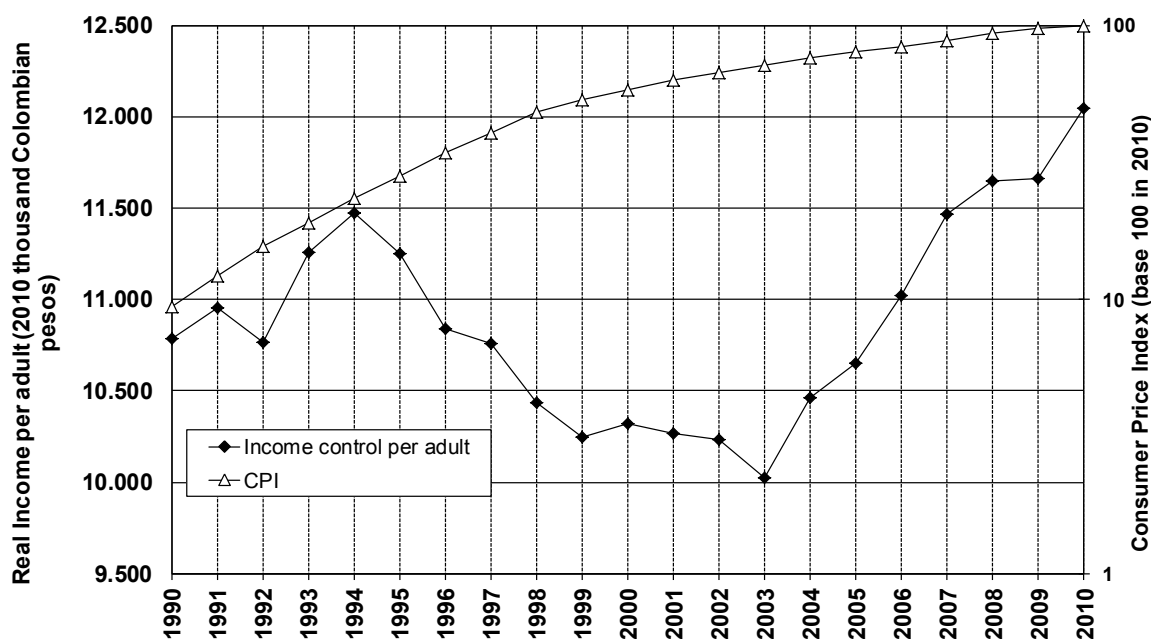


FIGURE 1

Average Real Income and Consumer Price Index in Colombia, 1990-2010

Source: Table A1.

Notes: Figure reports the average real income per adult (aged 20 and above), expressed in real 2010 thousand Colombian Peso; CPI index is equal to 100 in 2010.

1 USD ≈ 2,000 Colombian Pesos (2010 prices)

This study obtains four main empirical results. First, income in Colombia is highly concentrated, as the top 1% of the income distribution accounts for 20.4% of total gross income in 2010. Top income shares are at the highest level in any recent year in the entire WTID sample, except for the US, which has overtaken Colombia for several years in the late 1990s and the 2000s. The net-of-tax top 1% share is 20.1% in 2010, which can be compared with the figure from the household survey: 13.5%.

Second, high-income individuals in Colombia are, in essence, rentiers and capital owners. This feature differs from the pattern found in several developed countries in recent decades, where it has been shown that the large increase in the share of income going to the top groups has been mainly due to spectacular increases in executive compensation and high salaries, and to a lesser extent to a partial restoration of capital incomes. While the working rich have joined capital owners at the top of the income hierarchy in the United States and other English-speaking countries, Colombia remains a more traditional society where the top income recipients are still the owners of the capital stock.

Third, while households' surveys show that inequality measured by the Gini coefficient went down when 2006 and 2010 are compared, tax-based results offer a different picture, in which concentration at the top has remained stable over the same period. When survey based Gini coefficients are adjusted to take into account top incomes reported in tax files, inequality levels are higher than previously measured, and the recent reduction in inequality is less pronounced.

Fourth, personal taxation does little to reduce inequality. The income tax burden is very low at the upper end of the income distribution, due to a multiplicity of legal tax reliefs, even without considering the effects of evasion.

These results are not a novelty from the qualitative point of view, in the light of the well-known high inequality levels and distortive tax systems in Latin America. However, they challenge the general scepticism regarding the use of tax data from developing countries to study inequality. Our estimates should be regarded as a lower bound, to take into account the effects of evasion and under reporting. Nevertheless, they show that incomes reported to tax authorities can be a valuable source of information, under certain conditions that require a case-by-case analysis. In Colombia, the average income tax rate effectively paid by the top 1% (7-8%) is so modest by OECD standards that the incentives to hide income could be much more limited than previously thought. The supportive evidence is given by the estimated levels of top shares. Our results also indicate that when high incomes are properly taken into account, optimism about declining inequality in Latin America should be somewhat dampened.

The rest of the paper is organized as follows. Section 2 describes the data and methodology. Section 3 presents the findings on top income shares. Section 4 discusses the comparison with households' survey-based inequality estimates. Section 5 describes the main features of the personal income tax in Colombia, and analyses the outcomes of the taxation of top incomes. Section 6 concludes. Details about the data sources, methods, computations and adjustments are presented in the appendix.

2. DATA AND METHODS

To our knowledge, there have been no official publications providing personal income tax statistics (as the ones used in this paper) over the last three decades in Colombia. Our basic raw data sources are two panels of micro-data and a set of tabulations compiled especially for us by the DIAN, the Colombian tax administration. They cover, with varying degree of detail, the years from 1993 to 2010. In particular,

- a. Balanced panel of micro-data 2006-2010, with information from all the boxes of the tax file for those individuals who filed a return every year between 2006 and 2010 (60-70% of the universe of tax returns).
- b. Unbalanced panel of micro-data 1993-2006, with information from the most relevant boxes of the tax files for the universe of tax filers.
- c. Tabulations, from 1992 to 2010, based on the universe of tax filers, and which report, by ranges of gross income, the total number of tax filers in each bracket and key variables of the tax returns.

They constitute a rich and unique data source, including information on wages and self-employment income, rents, business income and capital income allowances, deductions, and taxes. The fact that the 2006–2010 micro-data (source a) is a balanced panel poses an empirical challenge due to non-random attrition. To overcome this issue, we combine the panel and the tabulations as explained in more detail in the appendix.

i Population control

There are several methodological problems when estimating top income shares from tax records. A more or

less standard methodology has been established, combining tax data with external sources for the reference population and total income (Atkinson and Piketty 2007, 2010).

Concerning the population control, there is the need to relate the number of individuals to a control total to define how many tax filers represent a given fractile, such as the top percentile. The Colombian income tax is based on the individual; 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 years old and above.

Due to high informality rates and the high filing thresholds, the number of tax filers is rather low. On average, only 2.5% of adults were required to file an income tax return in 1993–2010. In this respect, two issues are worth mentioning. First, the number of tax assessments has doubled, from around 2% of adults in 1993, to 4% in 2010, thanks to the rapid growth of incomes since the mid-2000s and, most importantly, to the reduction in thresholds established by the 2003 reform. Second, the total number of income-taxpayers is higher than the number of tax filers, because most taxpayers (e.g. those receiving only wages and self-employment income below the reporting thresholds) are not allowed to file a return, but are anyway subject to the tax withheld at the source.³ Unfortunately, the available statistics (both microdata and tabulations) exclude those who pay but do not file, and there even seems to be no precise information about the total number of taxpayers. The DIAN estimates that around 5 million individuals (18% of adults) were subject to the income tax in 2010, out of which 1.1 million (4% of adults) filed a tax return (see Table A1 in appendix).

A large initial exempted bracket. One of the noteworthy features of the Colombian personal income tax is the large initial bracket that goes untaxed (in 2010, taxable income under \$26,764,951 pesos or PPP US\$ 20,341). For wage earners that benefit only from the standard minimum tax reliefs (mandatory pension and healthcare contributions, and 25% of wages), this means that those earning up to 2010 \$39,799,182 pesos gross (PPP US\$30,247) do not pay the tax. This threshold is 3.5 times the mean income per adult, and corresponds to the tiny minority of taxpayers who do not make recourse to any of many additional tax reliefs. It is the highest in Latin America, representing three times the regional average. Most importantly, it excludes 92% of wage earners (Avila and Cruz 2011) from contributing to the tax.

ii Income control

A second issue concerns the control total for income. We approximate the total income control 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 contributions, (3) imputed property income of insurance policyholders, (4) imputed rentals for owner occupied housing, and (5) fixed capital consumption (set at 5% of gross values). This procedure generates a reference gross income of about 65% of GDP, which is similar to other studies in Atkinson and Piketty (2007, 2010). The results are presented in **Table A1** in appendix.

iii The definition of income

In the case of Colombia, further complications arise when defining individuals' incomes from the information reported to tax assessments. At this stage it is necessary to point out that the tax-file definition of 'gross

³ This fact does not affect our estimates because those taxpayers who are not allowed to file an income tax return do not belong to the top 1% group.

income' includes costs incurred to obtain it, which we would like to subtract to reach our preferred definition. Unfortunately the tax file does not provide strict information of such expenses; the relevant variable, 'costs and deductions,' includes a variety of items, many of which seem to be exaggeratedly used to legally reduce the tax liability, instead of reflecting real costs. Salaries and fees paid for services, office space rental costs, medical and education expenses, taxes, financial fees, interest, are therein reported jointly with donations, expenses incurred abroad, investments, etc. Additionally, in many cases, self-employees are allowed to deduct between 50% and 90% of their gross income as costs without further justification.

Consequently, as an ad hoc correction, we have defined our

income = 'gross income (as in the tax form)' minus 1/6 of 'costs and deductions.'

This definition probably underestimates the true income derived from wages and salaries, because workers have much more limited access to legal deductions, and overestimate the true income derived from some other activities. In any case, taking gross incomes (as defined in the tax form) without consideration of any costs and deductions would increase our estimates of the top 1% income share by some 2 percentage points (not 2%) on average. This means that, in 2010, the figure would go up from 20.4% to 22.1%.⁴

Two additional clarifications are in order. First, this definition of income includes all income items reported in the personal tax returns (wages and salaries, self-employment, rents and capital income, (among which interest and dividends), unincorporated business income, and irregular income (long term capital gains, inheritances, donations)), and it is before personal income taxes and employee payroll taxes but after employers' payroll taxes and corporate income taxes. Second, gross business income for taxpayers involved in retail and other commercial activities, and who are required to keep accountancy books, has been defined as gross revenue, minus refunds, rebates and discounts on sales, minus sales costs, minus administrative operational expenses, minus operational sales expenses.⁵

Table 1. Thresholds and average incomes in top groups within the top percentile, Colombia 2010

Thresholds	Income threshold US\$ (market exchange rate)			Income Groups	Number of tax units	Average income US\$ (market exchange rate)		
	(pesos '000s)	(3)	US\$ (PPP)			(pesos '000s)	(8)	US\$ (PPP)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Full Population	28.104.576	\$12.042	\$6.021	\$9.152
P99	\$101.293	\$50.647	\$76.982	Top 1-0.5%	140.523	\$126.403	\$63.202	\$96.066
P99.5	\$160.930	\$80.465	\$122.305	Top 0.5-0.1%	112.418	\$235.831	\$117.915	\$179.229
P99.9	\$404.750	\$202.375	\$307.607	Top 0.1-0.05%	14.052	\$482.015	\$241.008	\$366.328
P99.95	\$590.534	\$295.267	\$448.801	Top 0.05-0.01%	11.242	\$818.529	\$409.264	\$622.075
P99.99	\$1.343.255	\$671.627	\$1.020.863	Top 0.01%-0.001%	2.529	\$2.137.123	\$1.068.562	\$1.624.197
P99.999	\$4.792.947	\$2.396.474	\$3.642.602	Top 0.001%	281	\$12.616.031	\$6.308.015	\$9.588.084

Note: In 2010, US\$1 = \$2000 pesos market exchange rate, and PPP US\$1 = \$1,316 pesos

⁴ Note that, in subtracting one-sixth of 'costs and deductions' (specifically, 'other costs and deductions' in tax form 2010 and 'other deductions' in tax form 110) in our definition of income, we are assuming that only this portion represents costs incurred. We examine the sensitivity of our results in Table A11 in appendix.

⁵ Up to 2003 there was only one tax form. 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 main activity is related to retail and other commercial ventures), and tax form 210, for filers not required to keep accountancy books (e.g. wage earners, self-employees, capital income recipients).

3. TOP INCOME SHARES

i Preview of magnitudes

To get a sense of the orders of magnitude, we report in Table 1 the thresholds and the average incomes in each fractile in 2010. There were 28.1 million adults, and mean income was COP (Colombian Pesos) 12 million (PPP US\$ 9,152). To belong to the top 1% (P99), an income of at least COP 101 million (PPP US\$ 76,982) was required. The average income of the top 0.001% group was COP 12.6 billion pesos (PPP US\$ 9.6 million).

In order to put these numbers in global perspective, Figure 2 shows incomes at different percentiles in Colombia, Spain and the US in PPP US\$ in 2010. Colombia's P99.9 is close to but lower than the P99 in the US; Colombia's P99.99 is about one tenth of the US counterpart. Interestingly, top percentiles in Colombia are comparable to those in Spain (which could be taken as a European average), despite the fact that the average income is one-half. In fact, the higher one climbs in the ladder, the closer incomes in Colombia are to those in Spain.

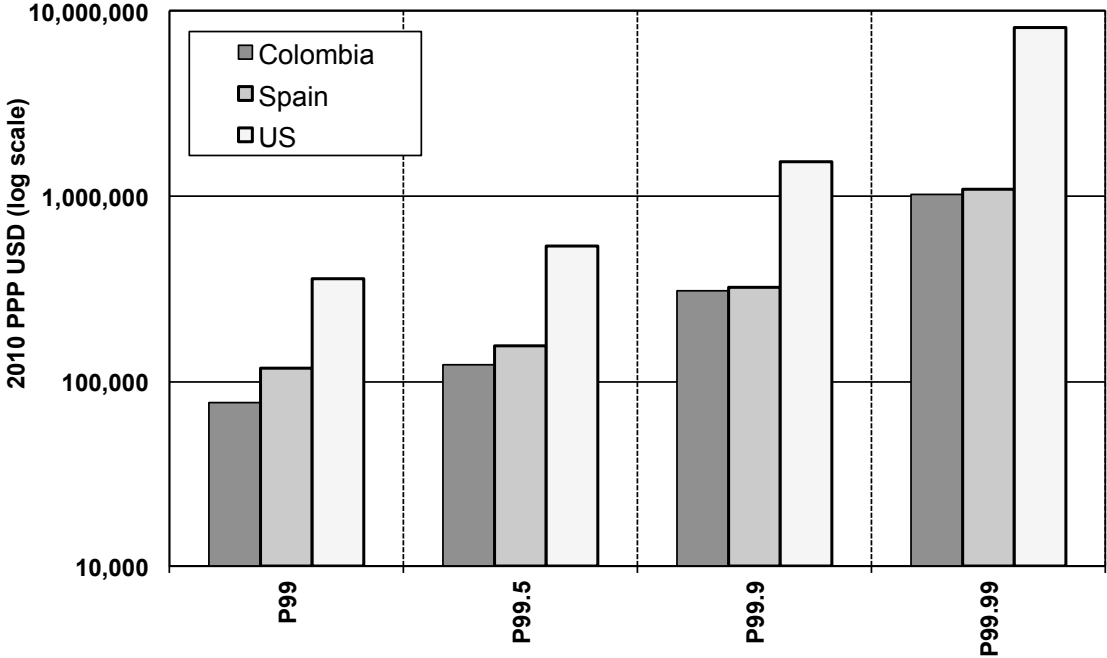


FIGURE 2
Incomes at different percentiles in Colombia, Spain and US in PPP US Dollars in 2010

Notes: Estimates for Spain and US include capital gains.
Sources: The World Top Incomes Database and authors' estimates.

ii Trends in top income shares

Figure 3 depicts the evolution of the income share accruing to the top 1% in Colombia from 1993 to 2010. The top percentile accounted for 20.5% of total income in 1993, placing Colombia at one of the highest levels of income concentration in the WTID. Concentration fell modestly for the rest of the decade, reaching 17.3% in 2000. 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 20.4% of total income, regaining the same level of 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.

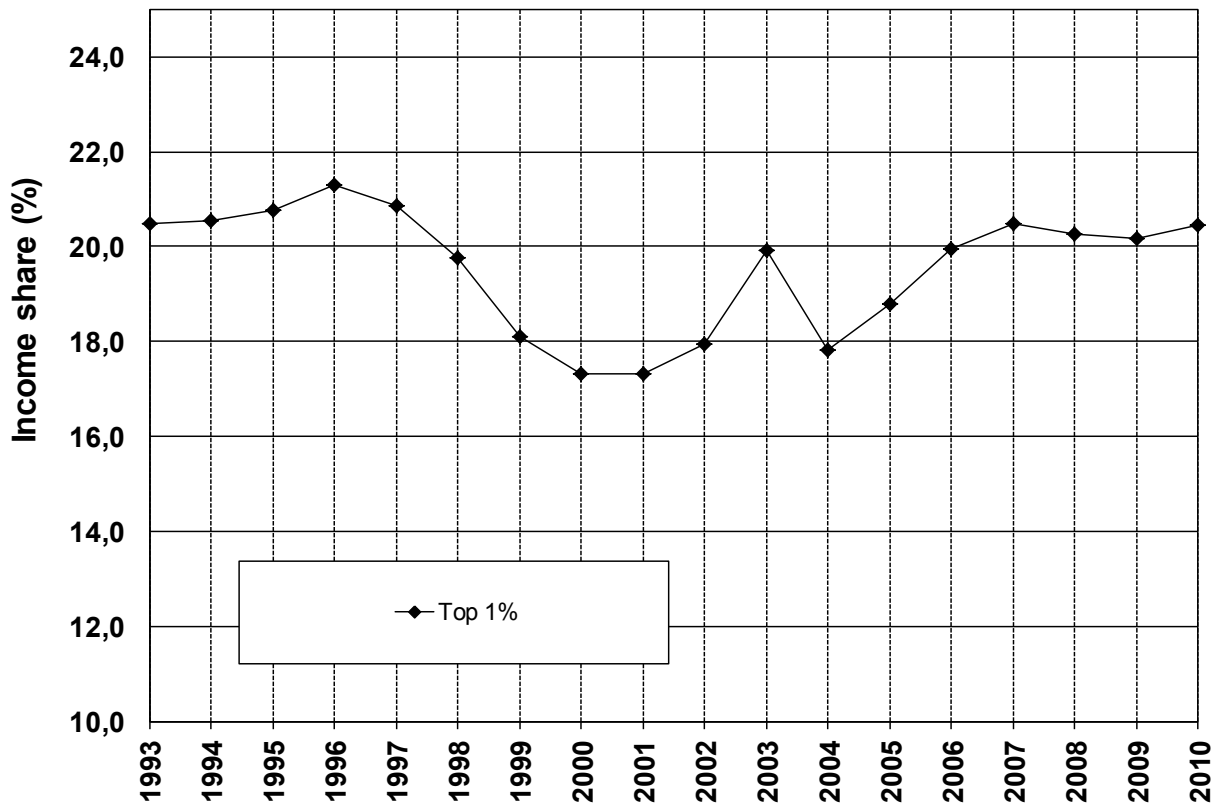


FIGURE 3
Top 1% income share in Colombia, 1993-2010

Source: Table A4.

Figure 4 decomposes the top percentile into three sub-groups: the top 1–0.5%, the top 0.5–0.1%, and the top 0.1%. The top 1–0.5% and top 0.5–0.1% groups present a similar pattern with modest fluctuations: 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 income share of the top 0.1% was negatively affected throughout the period of 1993–2003, falling from over 8% to 6%. Partial recovery was achieved only until the

mid-2000s, just before the outburst of the global financial crisis in 2007. The average income of the top 0.1% of the income distribution was about 85 times larger than the average income of the entire population in 1993. The difference fell to less than 60 times in the early 2000s, but has risen again to 75–80 times in recent years.

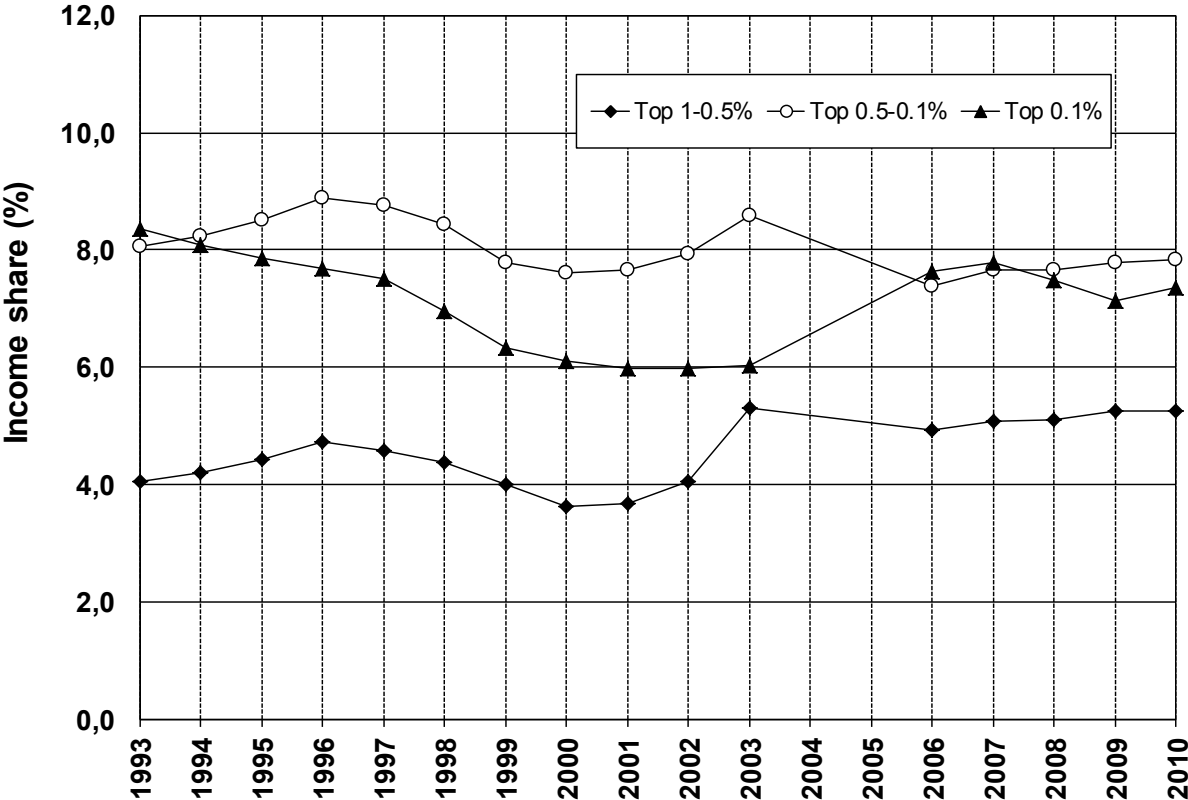


FIGURE 4
Top income shares in Colombia, 1993-2010

Source: Table A4.

To cast further light on what has been happening at the very top of the distribution, Figure 5 decomposes the top 0.1% into three sub-groups: the top 0.1–0.05%, the top 0.05–0.01%, and the top 0.01%. The low-growth 1990s and the following crisis years did not translate into a significant income share loss for the richest individuals: the top 0.01 % accounted for roughly 1.5–2% of total income in 1993–2003. The high-growth period of the mid-2000s benefited the ultra-rich disproportionately, as the top 0.01% share doubled from 1.5 to 3% in 2003–2006. Only did the recent financial crisis harm the ultra-rich.

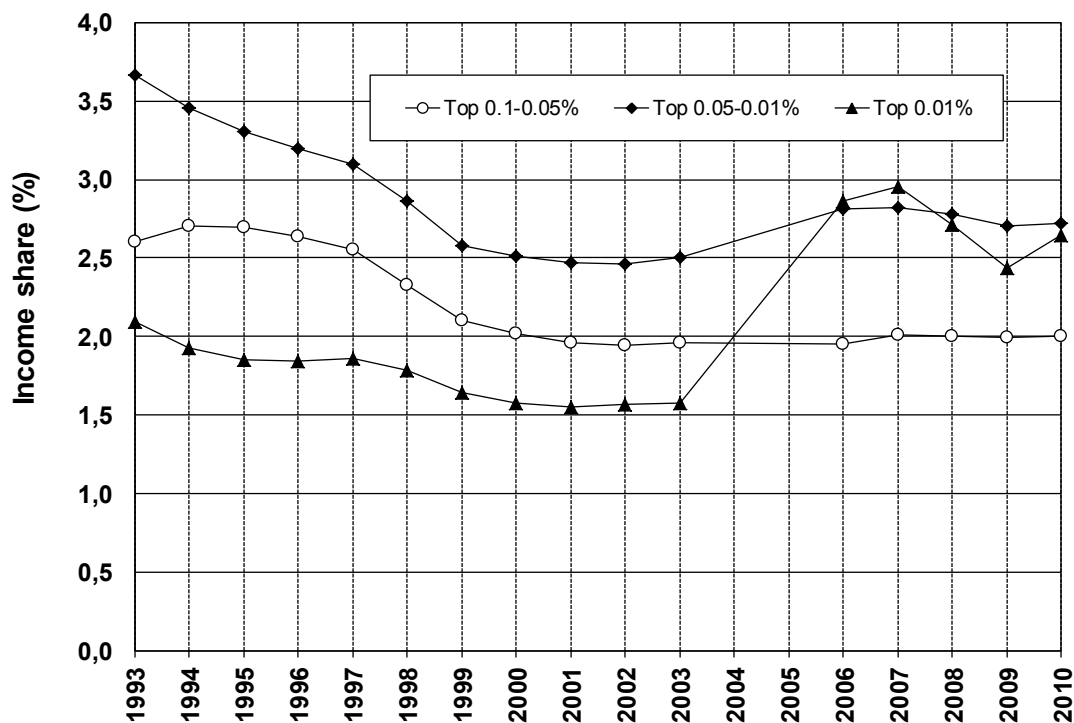


FIGURE 5
Top income shares in Colombia, 1993-2010

Source: Table A4.

iii The composition of incomes in top groups

Table 2 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% report themselves as employees or self-employees, while less than one-tenth report themselves as capital owners. This pattern is reversed for the richest individuals: almost 60% of the top 0.001% are capital owners and less than 12% are employees or self-employees. The classification is somewhat fuzzy, but illustrates the importance of dividing the top percentile into smaller fractiles in our analysis of top incomes: even small groups as the top 1% (280 thousand individuals) can be very heterogeneous regarding the composition of income. This is a key feature to take into account when designing economic policy, given that earnings and capital incomes follow different rules.

Figure 6 displays the composition of income across top groups for 2010. The income of the bottom half of the top percentile (top 1-0.5%), can be decomposed into wages (45.1%), self-employment income (17.0%), rents and other capital income (30.3%), business income (5.5%) and irregular income (2.1%). As has been suggested, the composition of income varies substantially with incomes within the top percentile. The share of wages drops with rank, constituting only 1.2% of the income of the top 0.001% group. Self-employment income also falls with rank, representing only 2.6% of total income of the top 0.001% group. In contrast, rents and other capital income make up the largest share of the very top of the distribution.

Table 2. Shares of each occupation within the top 1% in 2010

Fractiles	Employees (2)	Capital owners (3)	Real Estate (4)	Construction (5)	Other (6)
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 the balanced panel (a). The classification used here corresponds to the occupation registered by tax filers in the income tax return, following DIAN directives. “Employees” include both wage earners and self-employed workers.

Sources: Author’s calculation using tax returns data.

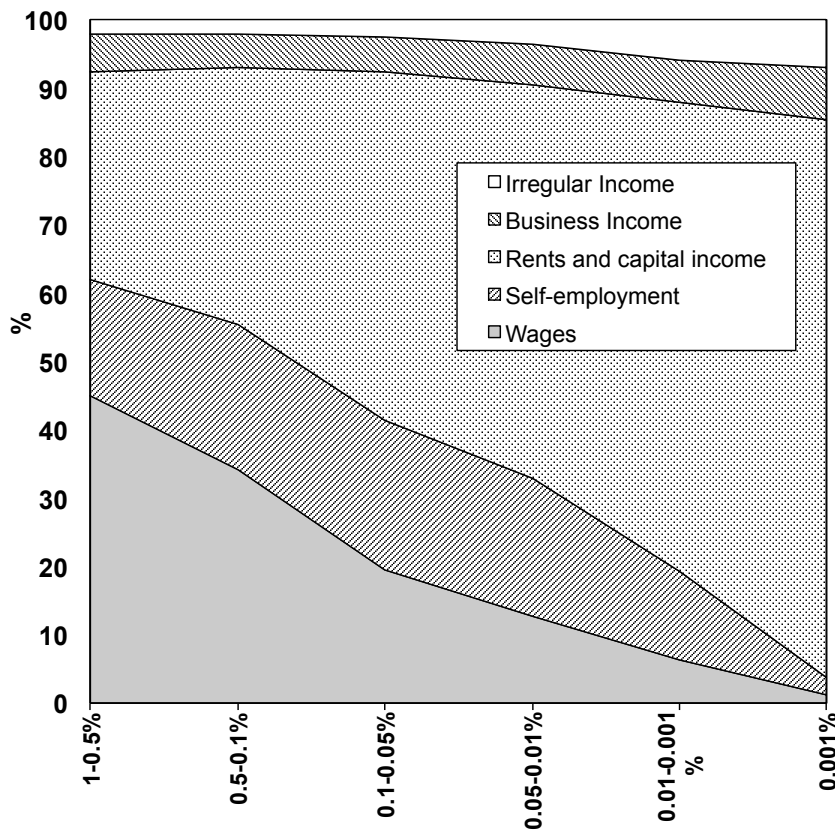


FIGURE 6
Composition of top incomes by source in Colombia, 2010

Source: Table A6.

Consequently, very high-income individuals in Colombia are, in essence, rentiers; most of their income comes in form of returns to capital and rents. This feature differs from the pattern found in several developed countries in recent decades, where it has been shown that the large increase in the share of income going to the top groups has been mainly due to spectacular increases in executive compensation and high salaries, and to a lesser extent to a partial restoration of capital incomes. While the working rich have joined capital owners at the top of the income hierarchy in the United States and other English-speaking countries, Colombia remains a more traditional society where the top income recipients are still the owners of the capital stock.

iv International comparisons

How do income disparities in Colombia fare compared to other countries? Figure 7 contrasts the income share of the top 1% in Colombia with those of Argentina, Japan, Spain, Sweden, and the United States. Income concentration in Colombia is ostensibly high. Specifically, in 2010, the income share of the top percentile is twice as large in Colombia as in Japan or Spain, and three times as large as in Sweden. Moreover, it is higher in Colombia than in Argentina, the only other Latin American country for which estimates are available at the time of writing this paper. Colombia is at the highest level in any recent year in the entire WTID sample, except for the United States, which has overtaken Colombia for several years in the late 1990s and the 2000s, when taking into account capital gains, as illustrated in Figure 8.

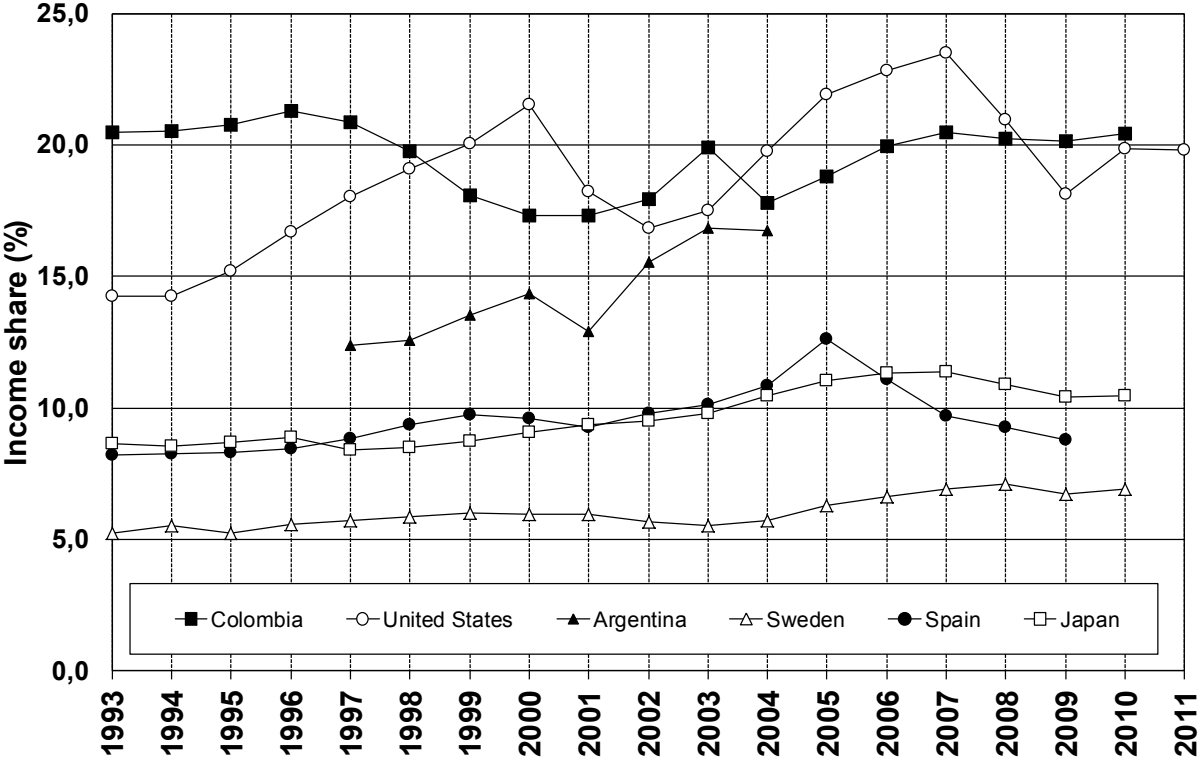


FIGURE 7

Top 1% income shares in Colombia, Argentina, Japan, Spain, Sweden and US, 1993-2011

Notes: Estimates for Japan, Spain, Sweden and US include capital gains.
Sources: The World Top Incomes Database and authors' estimates.

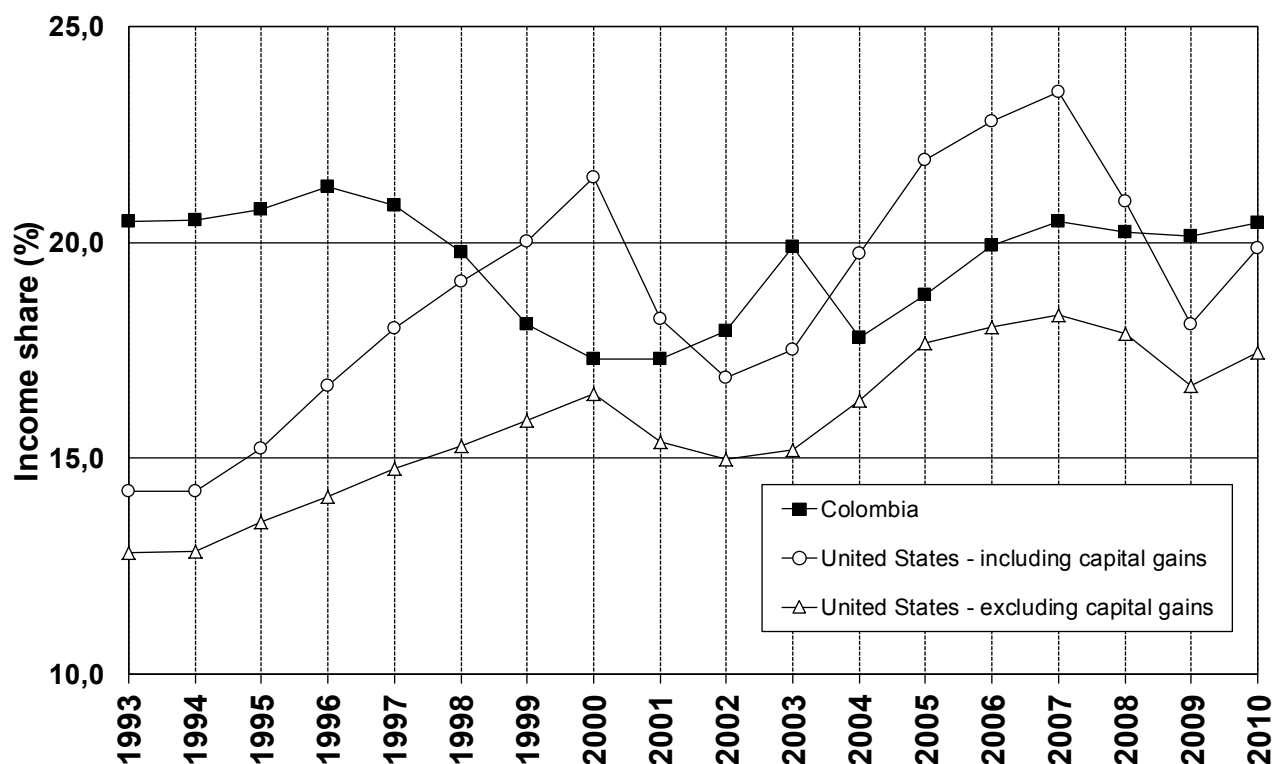


FIGURE 8

Top 1% income share in Colombia and the United States, 1993-2010

Sources: The World Top Incomes Database and authors' estimates.

Notes: Series for Colombia include capital gains partially.

v Caveats

In estimating top incomes, a series of caveats are in order. First, the prevalence of tax evasion certainly affects the levels of our estimates. 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 skeptic towards using tax data to construct top income share series. In a developing country such as Colombia, these doubts appear justified. However, there are a number of reasons that reduce the effects of such problems. First, in our period of study, Colombia did not either experience sizeable tax cuts or legal changes in the definition of allowances and deductions that could have triggered evident behavioral responses affecting the reporting of incomes. 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. Interestingly, the greatest rise in top incomes, occurring in 2003–2006, coincides with the period where the top marginal tax rate peaked. Thus, the dynamics of top income shares in the 2000s seems to reflect real economic changes. We do find evidence of bunching at the first kink point where tax liability starts and the marginal tax rate jumps from 0% to 19% (see Appendix D for a discussion).

Second, top shares in 2010 may be affected by a policy change that took place that year. The Santos administration's Law 1429/2010 awarded preferential corporate income tax rates to newly-created firms under the *Sociedad por Acción Simplificada* (SAS) regime. In doing so, the policy may have distorted tax-filing incentives, triggering a behavioral 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', one-person firms under the simplified corporate regime, to reduce their tax liabilities.⁶ This implies that reported personal income would 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 (Gordon and 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.

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 eludes tax statistics when not going through some form of money laundering. 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 organizations, illegal armed groups and political parties. Recent estimations calculate that this illegal activity represents roughly 2.3% of GDP today (Gaviria and Mejía 2011). Since tax data are unable to represent the largeness of the illegal economy, reported income shares are under-valued. This is a serious limitation and demands reading our results, in this dimension, as closer to a lower bound.⁷ Yet in spite of this, the main qualitative result remains valid: even in spite of a certain degree of under-estimation, Colombia has one of the highest records of income concentration.

4. HOUSEHOLD SURVEYS VERSUS TAX DATA

Past studies on income inequality in Colombia have been based on household surveys. Insofar as changes in top income shares are capable of significantly impacting changes in overall inequality, 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 surveys, namely, the upper end of the distribution. The rich are usually missing from the surveys for sampling reasons, low response rates (e.g. refusing to cooperate with the time-consuming task of completing a long form), or ex-post elimination of extreme values to minimize bias. When they are included in surveys, severe under-reporting may arise because high-income individuals usually have diversified portfolios with income flows that are difficult to value; they are also more reluctant to disclose their incomes and wealth. Their responses are even top coded by statistics offices. Thus, in studying income concentration in Colombia,

⁶ This anecdotal evidence comes from interviews with DIAN Director Juan Ricardo Ortega, published in *El Espectador* as "Sociedades evasoras" (April 1, 2012), and "Tras la reforma perfecta" (March 13, 2012).

⁷ Our income control is based on national accounts and, therefore, it is supposed to take into account, at least partially, the flows of income generated in the black economy.

a series of questions arise: how useful are household surveys to study top shares? To what extent can tax data complement household survey data in examining income inequality?

To answer the first question, Table 3 compares statistics of the top percentile from tax data and household surveys for years 2007–2010. Columns 1 and 2 display the number of individuals. It is readily apparent that the comparison does not come from a perfect match: our population control (adults aged 20 and over) is larger than the survey’s. Our income control is also higher, even when, to render both series more comparable, we take here the control net of taxes on income and wealth paid by households and net of social security contributions paid by workers (columns 3 and 4). The differences stem mainly from the fact that total income in surveys measures the reported household income expanded to the entire economy, while our total income is computed using national accounts, which track money and better capture large transactions than surveys, which instead follow people (Deaton 2005). However, mean incomes (columns 5 and 6) are remarkably similar.

Table 3. Comparison of top 1% income share in household surveys and tax data, Colombia 2007-2010

Year	Number of individuals in top 1%		Total Income (in th. millions)		Average income in economy (in thousands)		P99 (in thousands)		Top 1% Income Share (%)		Top 1% average Income (in thousands)	
	Survey	Tax data	Survey	Tax data	Survey	Tax data	Survey	Tax data	Survey	Tax data	Survey	Tax data
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(9)	(10)	(11)	(12)
2007	215.027	264.375	194.519	250.439	9.046	9.473	70.181	74.220	15,2	19,9	137.266	188.201
2008	198.034	269.790	207.000	276.600	10.453	10.252	70.250	80.820	13,8	19,7	143.967	202.120
2009	208.601	275.358	221.385	292.795	10.613	10.633	75.339	87.020	13,9	19,7	147.985	209.677
2010	222.626	281.046	246.520	315.074	11.073	11.211	76.819	91.263	13,5	20,1	149.777	225.053

Note: GEIH: 2006-2010. Tax statistics are computed using 2006-2010 micro-data provided by DIAN. Income in tax data is net of personal income taxes and social security contributions. All values are nominal 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 minus personal income and wealth taxes and social security contributions.

Source: Tax statistics: authors' computations; households surveys: SEDLAC.

Columns 7 and 8 give the P99 values. Columns 9 and 10 provide the share of the top 1% group. Tax-based estimates are 30 to 50% higher than survey-based results. In 2010, the survey-based top 1% share, 13.5%, should be compared with the tax-based share, 20.1%. The differences are not only in levels, but also in changes: while the survey-based top 1% share decreases between 2007 and 2010, the tax-based figure is more stable (or even increasing).

A number of researchers have addressed the differences in the ability of tax data and household survey data to represent income inequality, trying to reconcile the evidence using the two sources (Alvaredo 2011; Burkhauser et al. 2012). The fact that tax statistics (or, in general, registry data) can provide, under certain conditions, valuable information to improve survey-based estimates has been recently the focus of a EU-SILC conference.⁸ The United States and EU countries do combine both sources with different methods and at different degrees. In the case of France, for example, the Gini coefficient goes up from 0.39 in 2007 to 0.44 in 2008; a non-trivial fraction of such increase should be attributed to better-captured disposable incomes from registers in 2008 (Burrigand 2012).

⁸ Workshop on the use of registers in the context of EU-SILC (Vienna, 5 December 2012) and 2012 International Conference on Comparative Statistics on Income and Living Conditions (Vienna, 6-7 December, 2012).

We are working on a research project to properly combine survey and tax data to provide a better picture of the level and evolution of inequality in a number of Latin American countries. For the moment, using the survey-based Gini coefficient for the bottom 99% G^* , and the tax-based top 1% income share S , we follow Atkinson (2007) and Alvaredo (2011), and re-estimate the Gini coefficient G as

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

where β is the tax-based inverted-Pareto coefficient and P is the top group considered ($P=0.01$ for the top 1%).⁹

Table 4. Top income shares and Gini coefficient in Colombia, 2007-2010

Year	Top 1% net-of-tax income share from tax data (%)	Gini coeff G	Gini coeff G* (bottom 99%)	Inverted Pareto coefficient β	Gini coeff G corrected with tax-based top 1% share
	(1)	(2)	(3)	(4)	(5)
2007	19,9	59,0	53,3	2,47	61,2
2008	19,7	54,0	48,4	2,40	57,2
2009	19,7	54,4	48,7	2,28	57,5
2010	20,1	55,4	50,0	2,33	58,7

Note: G denotes the survey-based Gini coefficient of individual income. G^* denotes the survey-based Gini coefficient of the bottom 99% of income recipients. GEIH: 2007-2010. Only income recipients with positive income were considered. Income in tax data is net of personal income taxes and social security contributions. The β coefficients reported in column (4) are computed using the top income share series as $\beta = 1/[\log(S1\%/S0.1\%)/\log(10)]$ where the $Sx\%$ is the income share of the top $x\%$. The corrected Gini coefficient G in column (5) is computed as (for 2010) $100*((2.33-1)/(2.33+1)*0.01*0.201+0.50*0.99*(1-0.201)+0.201-0.01) = 58.7$

Given the comparability issues mentioned above, the results, displayed in Table 4, are just a rough approximation, but help illustrate the main point. First, and as expected, G ‘corrected’ by tax records is several percentage points above the survey-based G . In 2010, the difference between the survey-based top 1% income share (13.5%) and the tax-based top 1% income share (20.1%) translates into a ‘corrected’ Gini of 58.7, to be compared with the Gini for the bottom 99%, 50.0, and the survey-based Gini, 55.4. Second, once the Gini coefficient is “corrected” to take into account the higher incomes reported to the income tax, the fall

⁹ Survey-based estimates have been kindly provided by the SEDLAC team directed by Leonardo Gasparini.

in inequality between 2007 and 2010 turns out to be smaller than shown in the survey, due to the little variability in top shares.

Ongoing work further investigates this issue, enhancing the comparability between the two sources. Only recently have surveys in Colombia been made publicly available.

5. THE TAXATION OF HIGH INCOMES AND THE EROSION OF THE TAX BASE

The high pre-tax inequality shown in Section 3 naturally raises the question of the role of taxation. The redistributive capacity of income taxes depends on the legal definition of the tax base and the progressiveness of the tax schedule. A substantial legal erosion of the tax base would be detrimental to this end, notwithstanding the fact that top incomes face statutory top marginal tax rates comparable to OECD countries, as shown in Figure 9.¹⁰ Indeed, generous tax reliefs have played an important role in shrinking the tax burden and eroding the tax base.

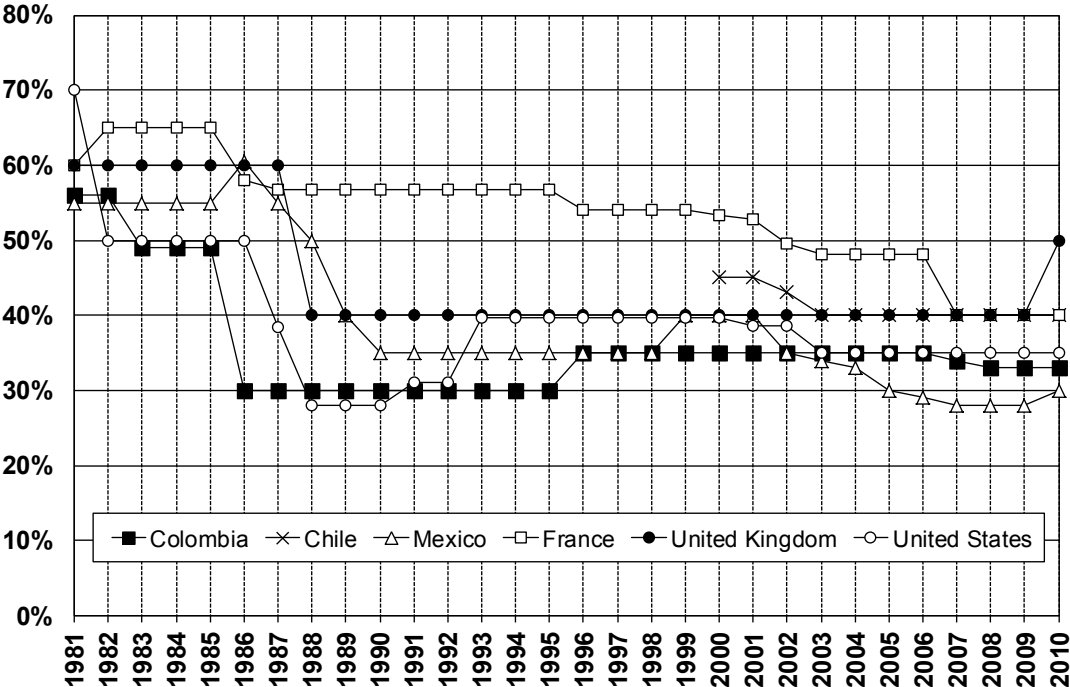


FIGURE 9
Statutory top marginal tax rate in selected countries

Source: OECD Tax Database (www.oecd.org/ctp/taxdatabase) for OECD countries and DIAN for Colombia

¹⁰ The statutory top marginal tax rate in Colombia (available from Table A9 in appendix) was relatively low compared to OECD countries before the tax cuts of the late 1980s. Since then, its rates have fluctuated around the OECD average. See Table A12 in the appendix for a computation of the marginal tax rates accruing to top incomes, and section E in appendix for a description.

To illustrate this point, Figure 10 compares taxable and non-taxable income for different sub-groups within the top percentile in 2010.¹¹ Panel A reflects strictly the situation under the personal income tax: less than 40% of the income of the top 1–0.5% is treated as taxable while the bulk is not. The percentage of non-taxable income increases with rank, the ultra-rich having only one-tenth of their income considered taxable.

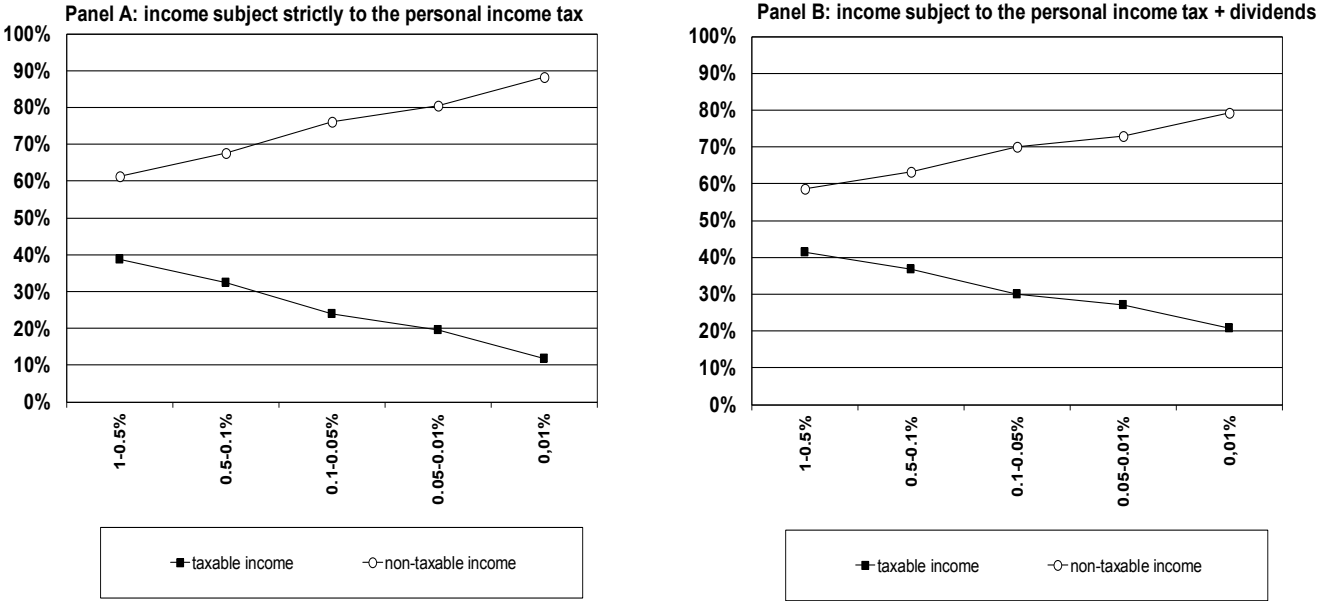


FIGURE 10
Income composition of top groups: taxable and non taxable income in Colombia, 2010

Source: Table A7.
Notes: Panel B assumes that 33% of income reported as "ingresos no constitutivos de renta" come from taxed dividends.

Panel A in Figure 10 underestimates the fraction of income effectively taxed, because dividends that have been taxed at the corporation level are considered non-taxable at the individual level to avoid double taxation. Individuals must report dividends, which are *de facto* net of the tax already paid by firms. The problem here is that there is no precise information on their amount: dividends are reported in the same box of the tax form together with non-taxable capital gains, insurance payments, donations to political parties (which can be received directly by the politicians), employer and employee contributions to pension funds, etc. Panel B of Figure 10 assumes that 33% of all amounts reported in such box are dividends, whose tax is ultimately born by the taxpayer. Even under this assumption the general picture does not change much: on average, around 60% of reported incomes are treated as non-taxable, under a variety of forms

A large number of tax reliefs have significantly eroded the tax base and benefited top incomes disproportionately. Tax reliefs are classified into three main categories, (i) allowances (*ingresos no constitutivo de renta*), (ii) costs and deductions (*costos y deducciones*), and (iii) exempted income (*renta exenta*).¹²

¹¹ The situation is similar in the remaining years of our sample.
¹² In parenthesis we provide the denomination of the variable in the tax form in Spanish.

Taxable *regular* income is equal to:

Total gross income
minus allowances
minus costs and deductions
minus exempted income

We provide a comprehensive list of these reliefs in Appendix C. We mention here those which, in particular, significantly erode the tax base.

Allowances include (1) payments into savings accounts (not only mortgage interest) up to 30% of income with the goal of purchasing real estate— this may produce distortions in the saving-investment decisions, and implies an easy way out from the tax; (2) voluntary contributions to pension funds up to 30% of income, which are linked to non taxable payouts; (3) a fraction of capital incomes and capital gains, including gains from stocks transfers, untaxed capitalizations for partners or shareholders, and profits derived from the liquidation of companies; (4) unlimited donations to political parties and political campaigns received by candidates (the donation is not taxable for the donee).

Under *costs and deductions* taxpayers can deduct investments in real productive fixed assets,¹³ other investments, charitable donations up to 30% of net income, expenses incurred abroad, expenses in education and health.

Exempted income includes: (1) 25% of wages, up to PPP US\$ 53,745 in 2010; and (2) pension payouts up to 2010 PPP US\$ 223,438 in 2010. The high exemption granted on wages represents up to six times the average income per adult. The fact that it applies as a percentage rather than as a fixed value favors higher-income individuals below the cap.

Avila and Cruz (2011) determine that, in the extreme case of a worker benefitting from the maximum of all the tax reliefs available for labor income, he would need a monthly salary at least equal to 14 minimum wages to start paying some tax. In annual terms, this is PPP US\$ 76,500, while in 2010, our estimated P99 is PPP US\$ 96,066.

Finally, recent tax changes have further contributed to erode the tax base. To promote formalization among small firms, the Santos administration abolished the corporate income tax of 33% for newly-created firms under the simplified *Sociedad por Acción Simplificada* (SAS) regime during their first two years, and reduced the rate for three additional years thereafter.¹⁴ This policy change may have eroded the income tax base. Further, it distorts 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 was discussed in Section 3.

Figure 11 casts further light on the tax reliefs used to reduce tax liabilities. Exemptions fall with rank, given that most of them are capped. Allowances and ‘costs and deductions,’ on the contrary, increase with income, especially for the richest individuals, who deduct over 80% of their income in this manner. Indeed, the ultra-rich resort to tax reliefs that are not capped, such as investments in fixed assets (deductible until 2010).

¹³ Created in 2003 to promote investment, this tax stimulus was abolished for 2011 onwards.

¹⁴ The policy gave preferential corporate income tax rates during a total of five years: corporate income tax rate would be equal to 0 % (0% × 33%) in the first two years, 8.25 % (25% × 33%) in the third year, 16.5 % (50% × 33%) in the fourth year, and 24.75 % (75% × 33%) in the fifth year (Law 1429/2010).

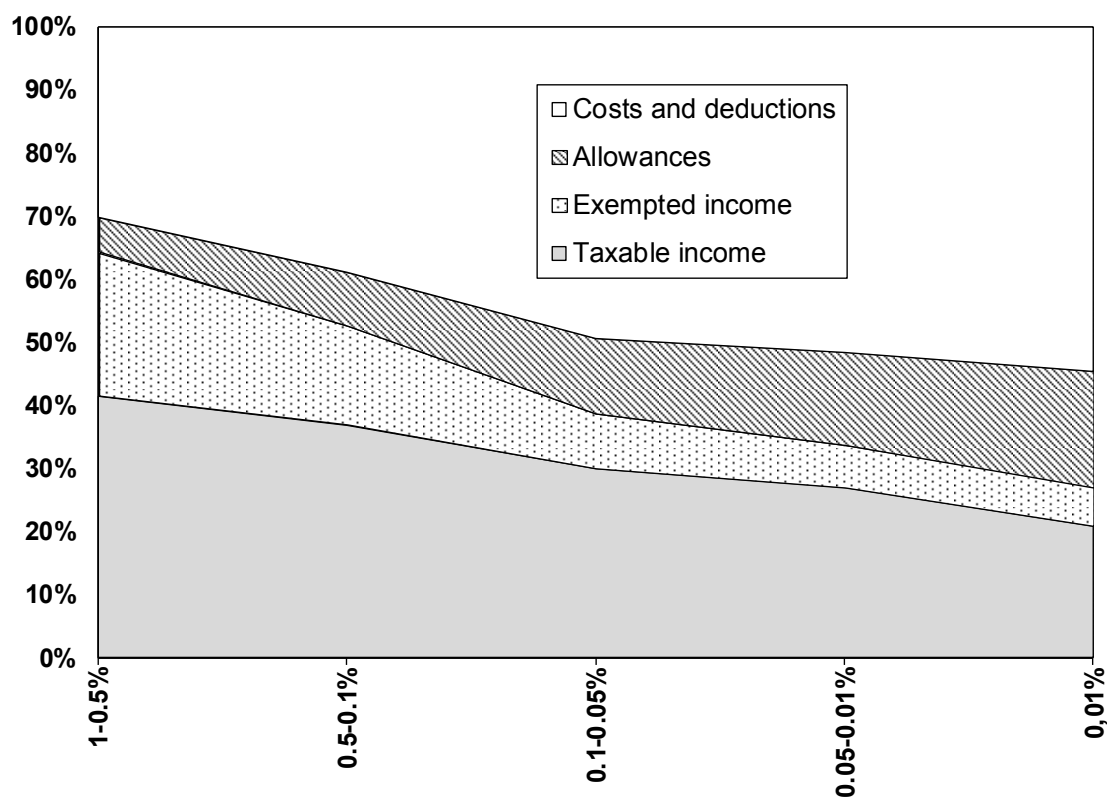


FIGURE 11
Taxable and non taxable income across top groups in Colombia, 2010

Source: Table A7.

Notes: Panel B assumes that 33% of income reported as "ingresos no constitutivos de renta" come from taxed dividends.

How have these tax reliefs evolved in recent years? Figure 12 decomposes the top 1% and the top 0.01% share in taxable, non-taxable income and costs and deductions between 2006 and 2010. The income composition has not changed much.

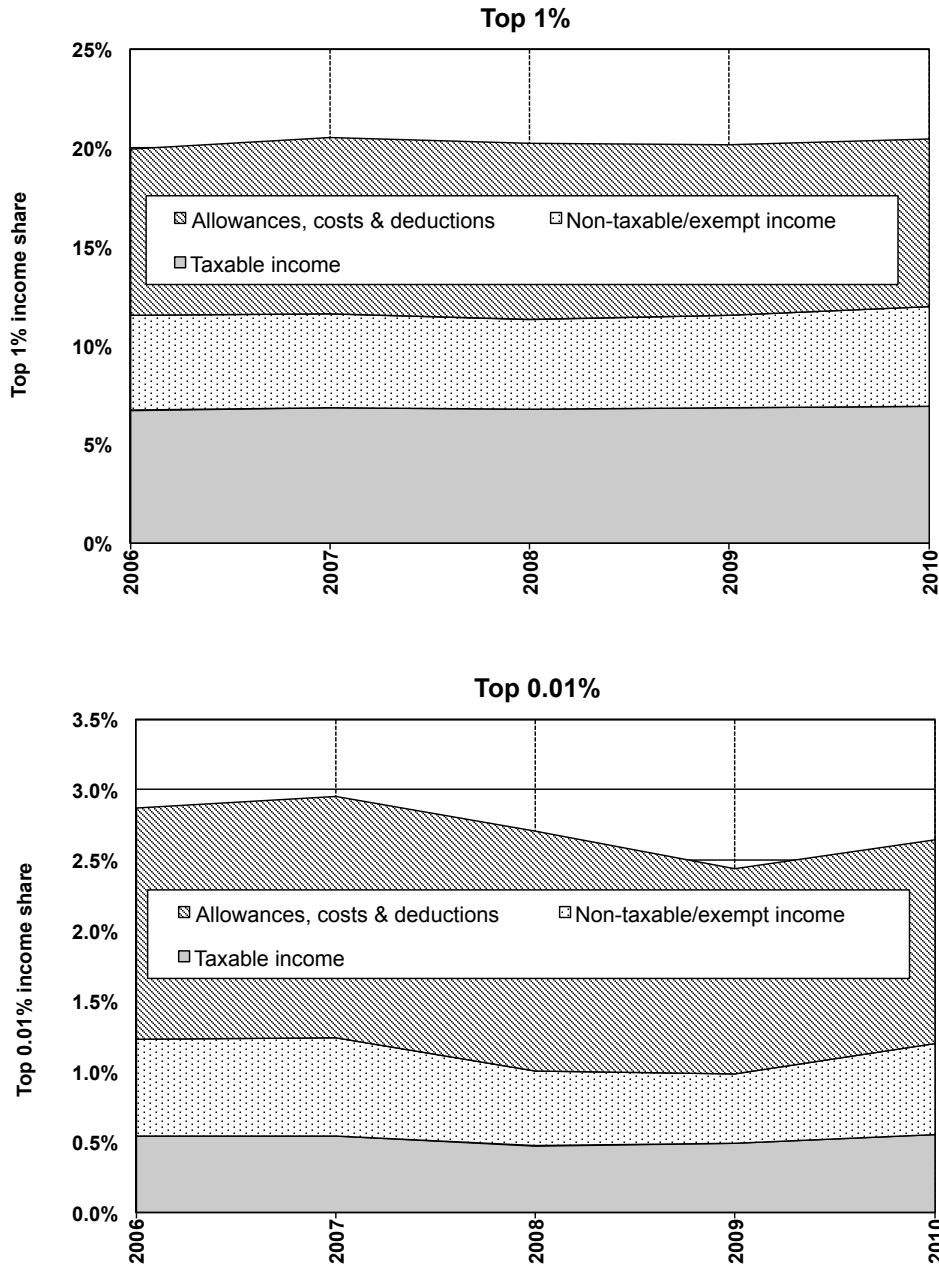


FIGURE 12

Top 1% and top 0.01% share composition: taxable and non taxable income. Colombia 2006-2010

Source: Table A4 and Table A7.

Notes: The figures assume that 33% of income reported as "ingresos no constitutivos de renta" come from taxed dividends.

Given these large tax reliefs, how much do the rich actually pay? Figure 13 presents the average tax rates of income tax and social security contributions for different fractiles within the top percentile in 2010 as percentage of income. 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-employees. As above, Panel A excludes the tax on dividends paid at the corporation level, while Panel B includes them. The concavity in both plots of Figure 13 illustrates the lack of progressivity in the Colombian tax system among those who pay tax at the upper end of the distribution. The average tax rates fall with income; the bottom half of the top percentile pays roughly 12% of their income in income and payroll taxes, while this percentage falls to 8 for the top 0.01%.

Six issues are worth mentioning. First, Colombia is not the only country where very high incomes end up paying relatively less tax than the rest. While, in many EU countries, the low-income groups pay the highest marginal tax rates as a result of means-tested social assistance benefits, the public debate has been recently re-kindled by a few wealthy businesspersons around the world openly acknowledging that they face lower tax rates than the typical middle-income household. This is just the expression of the lower (when compared to taxes on labor income) or inexistent taxes on capital incomes and capital gains, which have been justified on many grounds, from optimality results derived in theoretical models, to fear of capital flight or tax competition. The remarkable fact about Colombia is the extreme modesty of the tax rate at the very top.

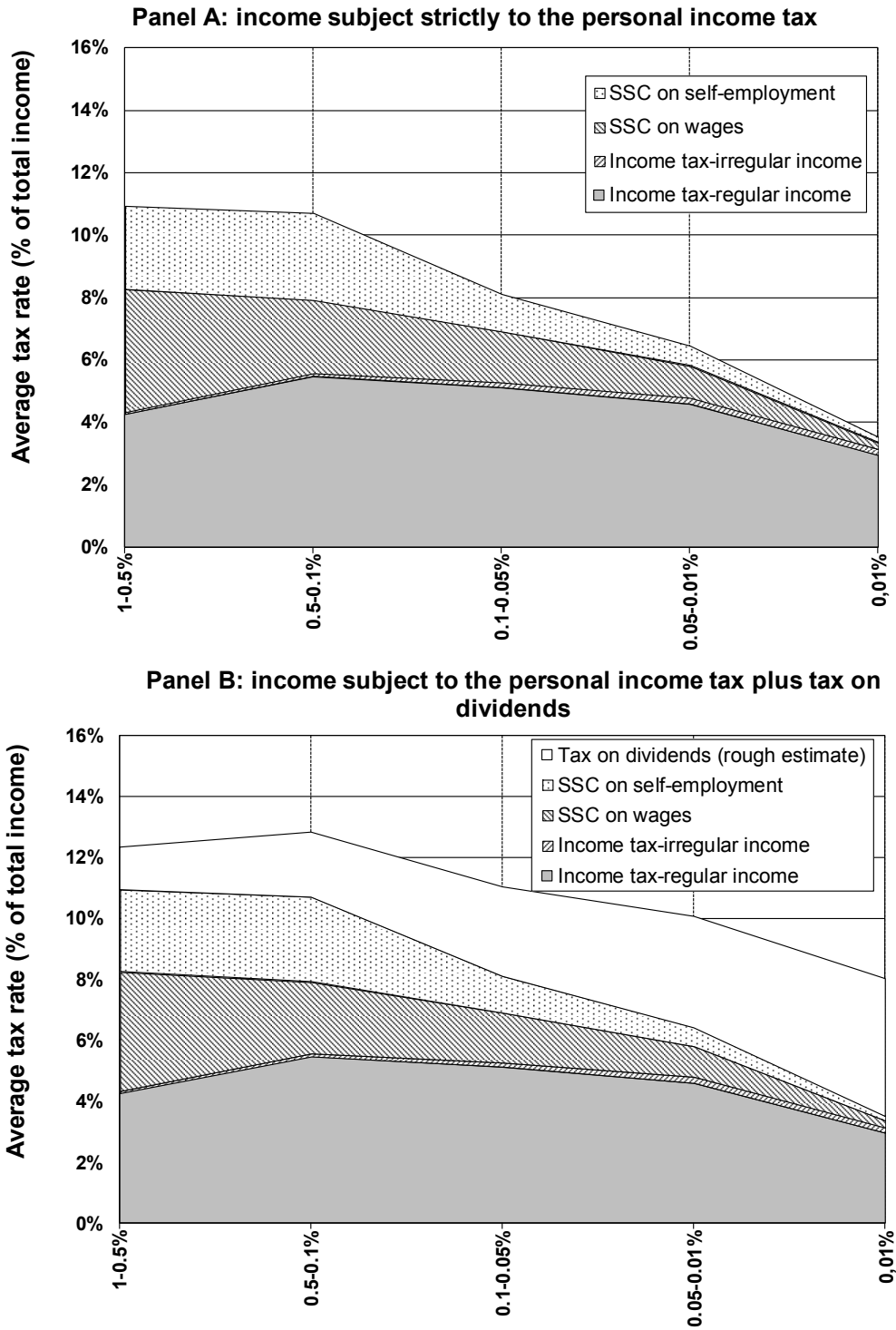
Second, as in many other countries, the base for social security contributions is capped, and only applies to earned income, which falls with rank (Figure 6). Indeed, social security contributions are trivial for the ultra-rich, amounting to only 0.3% of their income. This is certainly regressive.

Third, as mentioned above, even under a progressive statutory tax schedule comparable to OECD averages, the nature of the tax reliefs make the tax regressive; however, it should be remembered that the majority of people at the bottom 80% of the distribution does not pay income taxes at all (but are subject to social security contributions if employees or self-employees).

Fourth, results in Panel B of Figure 13 depend on our assumption that 33% of income reported as “*ingresos no constitutivos de renta*” are taxed dividends. Were this percentage larger, or were it increasing with income, the resulting average tax rates would also be higher at the very top. E.g. if dividends were 75% instead of 33%, the average tax rate for the top 0.01% would be 14% instead of 8%, resulting in an almost flat average tax rate for all individuals in the top 1% group.

Five, ‘irregular’ income (donations, capital gains, and inheritance) is subject to the tax schedule independently from regular income, that is, regular taxable income is not added to irregular taxable income to determine the corresponding statutory marginal tax rate.¹⁵ Given the large initial exempted bracket, irregular incomes end up paying very little tax.

¹⁵ 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, the very top income recipients can resort to tax reliefs that are not capped, such as investments in real productive fixed assets (which were deductible until 2010), and unlimited donations to political campaigns and movements received by individuals.¹⁶ Most importantly, the rich benefit disproportionately from the allowance given to capital income. Indeed, profits derived from stock transfers, dividends, and untaxed capitalizations 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, because of the progressive rate schedule, the rich end up benefiting the most from the aforementioned allowances.

These findings raise serious concerns regarding the redistributive capacity of personal taxation in Colombia, a situation that the current tax reform changes only slightly.

6. FINAL REMARKS

This work constitutes an effort to estimating top incomes shares in Colombia based on individual tax returns and national accounts. These data are used to assess income concentration and its change over time. Our results confirm, quantitatively, that income in Colombia is highly concentrated at the top. 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 top shares are almost as high as before taxes.

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. A current project seeks to investigate the availability of statistics covering the years before 1993. Despite this, and notwithstanding the shortcomings of the available data (not the least the pervasiveness of the shadow economy), this work has sought to show that tax records combined with national accounts are, under certain circumstances, illustrative in the study of the evolution of income inequality, and that they provide insights that elude the existent survey data.

Changes in tax legislation have occurred extremely frequently in Colombia. Since the structural reform of 1986, the tax code has undergone multiple modifications that have rendered the tax code particularly dense and complex, implying an administrative burden that does not seem justified for its outcome.¹⁷ The most recent tax reform was passed in December 2012, supposedly with the aim of increasing progressivity, and thus respecting the principles expressed in the constitution. However, changes are extremely moderate. Complexity and administrative costs have increased even more, benefiting those who can afford financial and accountancy services.¹⁸ Given the observed differences between statutory and effective tax rates, it will be necessary to conduct an evaluation of the reform as soon as data are made available for income year 2012.

We hope that our results will encourage the Ministry of Finance and the tax authority of Colombia to provide open access to income tax data on a regular basis in the near future.

¹⁶ 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.

¹⁷ Tax reforms took place in 1990, 1992, 1995, 1998, 2000, 2002, 2003, 2006, 2010, and 2012.

¹⁸ On the positive side, the reform introduced voluntary personal income tax filing. This is expected to benefit those self-employees (mostly lower income individuals) who hitherto were not allowed to file a tax return to claim reimbursements, and were thus penalized by the withholding system (Moller, 2012). The reform gave much relevance to this, which in any case represented a necessary by minor correction.

APPENDIX

A. DATA SOURCES FOR COLOMBIA

A.1 Tax Statistics

To our knowledge, there have been no official publications providing personal income tax statistics (as the ones used in this paper) over the last three decades in Colombia. Our basic raw data sources are two panels of micro-data and two sets of tabulations that have been made available by the DIAN especially for us. In particular,

- a. Balanced panel of micro-data 2006-2010, which provides information on all the boxes of the individual tax file for those individuals who filed a return every year between 2006 and 2010 (60-70% of the universe of tax returns).
- b. Unbalanced panel of micro-data 1993-2006, which provides information on a subset of the boxes of the individual tax files for the universe of tax filers. Since 2004, the income statement is different for those 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.
- c. Tabulations 1992-2010, based on the universe of tax filers, which report, by ranges of gross income, the total number of tax filers in each range, and most of the key variables of the tax returns (gross income, net income, and taxable income, gross wealth; liabilities; wages and salaries; self-employment income; interests and other financial income; ‘other’ income; deductions; exemptions; taxable income; tax discounts; regular income; tax liabilities; and total tax.

A.2 Population control

The income tax is individually based. Consequently we compute total tax units as all individuals in the population aged 20 and over. The data are obtained from DANE-Series de Población 1985–2020. We present results in Table A1, columns [1] and [2].

A.3 Income control

As described in Atkinson (2007, 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, series in current prices, and work backwards as follows:

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

Up to 2011, Colombian national accounts do not provide the information of fixed capital consumption for households, which has then been set at 5% 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).

This procedure generates a reference income of around 60–65% of GDP. Results are presented in Table A1, column [5].

B. ESTIMATING TOP SHARES

We computed top income shares by combining the micro-data from the panels (a) and (b) of income tax returns for the periods 1993–2006 and 2006–2010, and the tabulations (c).

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 panel (b) includes the latter but exclude the former for 2004–2006. In contrast, panel (a) is a balanced panel that includes, for both types of filers, those that filed an income tax return every year between 2006 and 2010. Such individuals represent between 60 and 70% of the total number of tax filers these years.

2006–2010. The fact that panel (a) is a balanced panel poses an empirical challenge due to non-random attrition. Additionally, if mobility at the top is high, panel (a) may miss high-income individuals who did not file for one or more years. To overcome this issue, we combined the tabulations (c) with the panel (a). Using panel (a) we reproduced the tabulations (c) by ranges of gross income. We then computed the ratio [number of filers in tabulations/micro-data] by ranges of gross income, and apply those ratios as weights to individuals in the balanced panel. In other words, we weighed 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 larger 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.

We corroborate the robustness of the weighing-by-bracket procedure for top income shares in Table A10. We exploit the fact that individuals not required to keep accountancy books in 2006 are included in both our datasets (a) and (b), 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 A10 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.

B.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 organize 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, $\overline{D_b^t}$ by each type t of filer, and then calculate the weighted average for the entire filing population by bracket, y_b .¹⁹ 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 $\overline{D_b^t}$ 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. 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 re-compute estimations for the years of 1993–2003. Note that due to high measurement error, the series could only be linked for the top 1%.

It is possible that our estimations of income shares are slightly affected due to the definition of income we have described in Section 2. To analyze the sensitivity of our results to alternative definitions of income, we

¹⁹ This is the equivalent as computing $y_b = p \left(\overline{D_b^t} \right) + (1 - p) \overline{D_b^t}$ 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.

compare the income share of the top percentile using different definitions in Table A11. 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’ (column D). Fourth, 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 suggests 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.

C. PERSONAL INCOME TAX EXPENDITURES IN COLOMBIA

For regular income, there are the following tax reliefs:

(i) Allowances. The main allowances include: (1) payments into savings accounts (and not only mortgage interest) up to 30% of income with the goal of purchasing real estate— this may produce distortions in the savings and investments decisions, and implies an easy way out from the tax; (2) mandatory pension contributions and voluntary contributions up to 30% of labor income; (3) a fraction of capital incomes and capital gains, including gains from stocks transfers, untaxed capitalizations for partners or shareholders, the inflationary component of financial gains and returns from mutual investment and securities funds, dividends already subject to the corporation tax, and profits derived from the liquidation of companies; (4) employers’ contributions to severance funds; (5) a fraction of gains from transactions of residential properties purchased before 1987; (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) for alimony; (8) unlimited donations to political parties and campaigns received by individuals.

(ii) Costs and deductions. Total costs and deductions differ across types of filers. For employees earning less than 2010 \$113 million pesos (PPP US\$ 98,800), deductions include up to 15% of taxable labor income in voluntary healthcare contributions and education expenses, or mortgage interest payments for residential housing below 2010 \$30 million pesos (PPP US\$22,800). For self-employed workers, deductions include some self-employment income, mortgage interest payments for residential housing below 2010 \$30 million pesos (PPP US\$22,800), and up to 2,500 UVT (2010 \$61.4 million pesos) of contributions to severance funds under one-twelfth of annual taxable income.²⁰ For all types of filers, additional costs and deductions include: (1) mandatory healthcare contributions; (2) investments in real productive fixed assets²¹; (3) charitable donations

²⁰ Deductibles are capped at 50 percent of their income, unless adequate receipts and proofs of payment are shown.

²¹ Created in 2003 to promote investment, this tax stimulus was abolished for 2011 onwards.

under 30% of the taxpayer's net income; (4) other tax payments, such as payroll taxes and 25% of the financial transactions tax; and additional smaller items.

(iii) Exempted income. Exemptions include: (1) 25% of wages, up to 2010 \$70,718,400 pesos (PPP US\$ 53,745); (2) pension payouts up to 2010 \$294 million pesos (PPP US\$ 223,438); (3) severance payments for employees earning below 2010 \$8.6 million pesos (PPP US\$ 6,536); and (4) compensations for occupational hazards, illnesses, and motherhood. It is worth noting that the extremely high exemption granted 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 favors higher-income individuals below the cap.

For irregular income, allowances and exemptions include: (1) for the spouse and heirs, the initial 2010 \$29,466,000 pesos (PPP US\$22,394) of the value received; (2) for donations and inheritances received by individuals other than the spouse or heirs, 20% of the value received, up to 2010 \$29,466,000 pesos (PPP US\$22,394); and (3) prizes in equestrian and canine competitions under 2010 \$10 million pesos (PPP US\$7,651).

D. THE ISSUE OF TAX AVOIDANCE IN COLOMBIA

A branch of the empirical literature on taxation has focused on bunching, that is, the behavioral response of taxable income at kink points. Most of the literature is based on developed economies— notably the United States (Saez 2010) and recently in some Nordic countries (Bastani and Selin 2012; Chetty et al. 2011; le Maire and Schjerning 2012).²²

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 at a rate of 19%. Second, there is a large number of ways to reduce tax liabilities via items deemed 'non-taxable', exempted or deducted from the income tax.

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%. 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 (Figure A1 Panel B and Figure A4). 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 A1, Panel A 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

²² Kleven and Waseem (2012) study on Pakistan is an exception.

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 2010 PPP US\$20,341), 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 behavioral 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 A1 Panel A, however, shows that there is no missing density just below the kink point.

Figure A2 compares bunching at the first kink point for three types of filers in the Colombian tax code, namely wage earners, self-employed workers and ‘other’ tax filers. Unlike in previous studies, in Colombia there is bunching evidence among all types of filers, notably including employees.

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 and 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 or around 2010 PPP US\$37. 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:

$$C_j = w(Z_j, R) + \mu_i \tag{2}$$

where w is a polynomial in Z_j excluding the data near the kink (as measured by R) and μ_i 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 above. 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 $[-R, R]$:

$$\hat{b} = \frac{\hat{B}}{\sum_{j=-R}^R \hat{C}_j} \quad (3)$$

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 A3 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%. The predicted (albeit overestimated) excess mass is equal to a high 8.0.

In contrast, Figure A4 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. 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.

E. COMPUTING MARGINAL TAX RATES

Marginal tax rates t^* for top percentiles displayed in Table A.12 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. Second, official individual marginal tax rates, t_{3i} were computed as follows:

$$t_{3i} = \frac{a_i}{a_i + b_i} * t_{1i} + \frac{b_i}{a_i + b_i} * t_{2i} \quad (4)$$

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 . 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:

$$t_G = \frac{k_i}{K_G} * t_{3i} \quad (5)$$

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 A12 presents the result of this exercise.

F. TABLES AND FIGURES

TABLE A1. Reference totals for population, income, and inflation. Colombia, 1990-2010

	Population and Tax Units				Total Income						Inflation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Population (‘000s)	Tax Units adults 20+ yo (‘000s)	Number of tax returns (‘000s)	(3)/(2) (%)	Total income (th. million 2010 Pesos)	Total income (current th. million Pesos)	GDP (current th. million Pesos)	Total income over GDP (%)	Average income (thousand 2010 Pesos)	Average income (2010 US Dollars)	Legislated monthly Min. wage x 14 (th. 2010 Pesos)	CPI (2010 base)
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	2,15	209.350	32.587	47.371	68,79	10.769	5.384		15,57
1993	36.207	19.891	382	1,92	223.890	42.671	62.324	68,47	11.256	5.628	5.987	19,06
1994	36.854	20.332	378	1,86	233.251	54.612	80.520	67,82	11.472	5.736	5.902	23,41
1995	37.472	20.774	369	1,78	233.684	66.145	100.678	65,70	11.249	5.624	5.883	28,31
1996	38.068	21.209	370	1,74	229.889	78.604	120.079	65,46	10.839	5.420	5.819	34,19
1997	38.636	21.646	364	1,68	232.838	94.316	145.113	64,99	10.756	5.378	5.945	40,51
1998	39.184	22.088	346	1,57	230.515	110.815	167.500	66,16	10.436	5.218	5.936	48,07
1999	39.731	22.540	331	1,47	231.003	123.124	180.713	68,13	10.249	5.124	6.211	53,30
2000	40.296	23.009	330	1,43	237.435	138.228	208.531	66,29	10.319	5.160	6.255	58,22
2001	40.814	23.469	337	1,44	241.019	151.491	225.851	67,08	10.270	5.135	6.370	62,85
2002	41.329	23.938	356	1,49	244.981	163.762	245.323	66,75	10.234	5.117	6.472	66,85
2003	41.849	24.421	474	1,94	244.794	175.304	272.345	64,37	10.024	5.012	6.490	71,61
2004	42.368	24.913	732	2,94	260.615	197.652	307.762	64,22	10.461	5.230	6.609	75,84
2005	42.889	25.409	824	3,24	270.589	215.582	340.156	63,38	10.649	5.325	6.704	79,67
2006	43.406	25.914	936	3,61	285.626	237.332	383.898	61,82	11.022	5.511	6.874	83,09
2007	43.927	26.438	1.008	3,81	303.108	265.822	431.072	61,67	11.465	5.733	6.923	87,70
2008	44.451	26.979	1.069	3,96	314.191	294.821	481.037	61,29	11.646	5.823	6.885	93,84
2009	44.979	27.536	1.136	4,13	321.038	313.906	508.532	61,73	11.659	5.829	7.115	97,78
2010	45.510	28.105	1.124	4,00	338.437	338.437	548.273	61,73	12.042	6.021	7.210	100,00

Table A2. Tax filing thresholds. Personal income tax, Colombia 1991-2010

Table A2. Tax filing thresholds. Personal income tax, Colombia 1991-2010														
Income criteria							Wealth criteria			Expenditure criteria				
Employees		Gross Income Self-employee		Other income recipients			Gross Wealth		Total value of bank deposits or financial investments		Credit card expenditure		Total expenditure	
expressed as multiple of average income		expressed as multiple of average income		expressed as multiple of average income			expressed as multiple of average income		expressed as multiple of average income		expressed as multiple of average income		expressed as multiple of average income	
Colombian \$		Colombian \$		Colombian \$		Colombian \$		Colombian \$		Colombian \$		Colombian \$		Colombian \$
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	6,3	50.000.000	6,3
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	6,3	53.050.000	6,3
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	6,1	55.740.000	6,1
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	5,8	58.727.200	5,8
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	5,7	61.751.200	5,7
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	5,8	66.536.400	5,8
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	5,7	68.754.000	5,7

Sources: Ley 49 de 1990; Decreto 2064 de 1992; Decreto 2511 de 1993; Decreto 2798 de 1994; Decreto 2321 de 1995; Decreto 2300 de 1996; Decreto 3049 de 1997; Decreto 3020 de 1998; Decreto 2587 de 1999; Decreto 2588 de 1999; Decreto 2661 de 2000; 2002: Ley 49 de 1990, Decreto 2794 de 2001; 2003: Ley 788 de 2002, Decreto 3257 de 2002; 2004: Ley 788 de 2002, Ley 863 de 2003; 2005: Ley 788 de 2002, Decreto 4344 de 2004, Decreto 44715 de 2005; Art 51 de Ley 1111 de 2006.

Notes: 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.

Table A3. Social security contributions. Colombia, 1992-2012

	Parafiscales										Other charges on:						
	Healthcare			Pension			Professional risks	CCF	ICBF	SENA	Total	Bonus (Prima de servicios)	Christmas bonus	Holidays	Unemployment contributions	Interests on unemployment contributions	Unemployment contribution for unjustified dismissal
	Total	employer	employee	employer	employee	employee	employer	employer	employer	employer	Total	employer	employer	employer	employer	employer	employer
1992	7,0%	4,67%	2,33%	4,33%	2,17%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1993	7,0%	4,67%	2,33%	5,33%	2,67%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1994	8,0%	5,3%	2,7%	8,6%	2,9%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,30%	1,00%	4,17%	
1995	12,0%	8,0%	4,0%	9,4%	3,1%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1996	12,0%	8,0%	4,0%	10,1%	3,4%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1997	12,0%	8,0%	4,0%	10,1%	3,4%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1998	12,0%	8,0%	4,0%	10,1%	3,4%	Employees	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
1999	12,0%	8,0%	4,0%	10,1%	3,4%	pay an	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2000	12,0%	8,0%	4,0%	10,1%	3,4%	additional	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2001	12,0%	8,0%	4,0%	10,1%	3,4%	contribution	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2002	12,0%	8,0%	4,0%	10,1%	3,4%	variable with	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2003	12,0%	8,0%	4,0%	10,1%	3,4%	earnings.	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2004	12,0%	8,0%	4,0%	10,9%	3,6%	See below	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2005	12,0%	8,0%	4,0%	11,3%	3,8%	sub-table	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2006	12,0%	8,0%	4,0%	11,6%	3,9%	Fondo de	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2007	12,5%	8,5%	4,0%	12,0%	4,0%	Solidaridad	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2008	12,5%	8,5%	4,0%	12,0%	4,0%	Pensional.	4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2009	12,5%	8,5%	4,0%	12,0%	4,0%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2010	12,5%	8,5%	4,0%	12,0%	4,0%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2011	12,5%	8,5%	4,0%	12,0%	4,0%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	
2012	12,5%	8,5%	4,0%	12,0%	4,0%		4,0%	3,0%	2,0%	9,0%	8,33%	8,33%	4,17%	8,33%	1,00%	4,17%	

Fondo de Solidaridad Pensional			
employee			
Earnings	Solidaridad	Subsistencia	Total
expressed as multiple of minimum wage			
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:

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

ICBF: Instituto Colombiano de Bienestar Familiar. CCF: Cajas de Compensación Familiar. SENA: Servicio Nacional de Aprendizaje.

The minimum wage is the SMLMV: *Salario mínimo legal mensual vigente*.

Sources: Mondragon-Velez et al. (2010), Santamaria et al. (2007), tax codes.

Table A4. 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	20,5	16,4	8,4	5,8	2,1	0,5	4,1	8,1	2,6	3,7	1,6
1994	20,5	16,3	8,1	5,4	1,9	0,4	4,2	8,2	2,7	3,5	1,5
1995	20,8	16,3	7,9	5,2	1,9	0,4	4,4	8,5	2,7	3,3	1,4
1996	21,3	16,6	7,7	5,0	1,8	0,5	4,7	8,9	2,6	3,2	1,4
1997	20,9	16,3	7,5	5,0	1,9	0,5	4,6	8,8	2,5	3,1	1,4
1998	19,8	15,4	7,0	4,6	1,8	0,5	4,4	8,4	2,3	2,9	1,3
1999	18,1	14,1	6,3	4,2	1,6	0,5	4,0	7,8	2,1	2,6	1,1
2000	17,3	13,7	6,1	4,1	1,6	0,5	3,6	7,6	2,0	2,5	1,1
2001	17,3	13,6	6,0	4,0	1,5	0,5	3,7	7,6	2,0	2,5	1,1
2002	18,0	13,9	6,0	4,0	1,6	0,5	4,0	7,9	1,9	2,5	1,0
2003	19,9	14,6	6,0	4,1	1,6	0,5	5,3	8,6	2,0	2,5	1,1
2004	17,8										
2005	18,8										
2006	19,9	15,0	7,6	5,7	2,9	1,1	4,9	7,4	1,9	2,8	1,7
2007	20,5	15,4	7,8	5,8	3,0	1,2	5,1	7,6	2,0	2,8	1,7
2008	20,3	15,2	7,5	5,5	2,7	1,0	5,1	7,7	2,0	2,8	1,7
2009	20,2	14,9	7,1	5,1	2,4	0,9	5,2	7,8	2,0	2,7	1,6
2010	20,4	15,2	7,4	5,4	2,6	1,0	5,2	7,8	2,0	2,7	1,6

Table A5. Incomes at the top. Colombia 1993-2010

A. In 2010 Colombian Pesos (thousand)																	
Year	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%	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	230.512	369.780	940.536	1.295.779	2.357.322	5.155.611	91.244	227.091	585.292	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	236.493	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	2.002.839	5.452.980	98.571	235.562	548.363	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	1.858.125	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	1.267.504	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

B. In 2010 US Dollars																	
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

Table A6. Composition of income: income sources. Colombia 2006-2010

	Top 1%						Top 0.5%						Top 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	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	12,2	14,7	60,7	3,0	4,8	4,5
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	10,8	15,8	59,7	3,5	5,9	4,3
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	11,3	16,0	60,6	4,0	5,6	2,6
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	11,9	17,4	58,0	4,1	5,0	3,6
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	11,5	16,5	57,6	4,1	6,0	4,3

	Top 0.05%						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	Wages	Self-employment	Rents and other capital income	Interest and other financial income	Business income	Irregular income
2006	9,3	12,7	65,0	3,1	4,9	5,2	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	8,2	13,6	63,6	3,7	6,0	4,9	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	8,6	13,9	64,9	4,2	5,5	2,8	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	9,1	15,5	62,2	4,2	5,0	4,0	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	8,5	14,5	61,2	4,5	6,3	5,0	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%						Top 0.1-0.05%						Top 0.05-0.01%						Top 0.01-0.001%					
	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	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	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	21,1	20,7	48,3	2,7	4,6	2,6	13,5	18,5	56,6	2,9	5,0	3,5	6,2	11,7	68,3	2,9	5,1	5,8
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	18,4	22,1	48,5	2,9	5,4	2,7	12,2	20,0	56,5	2,9	5,5	2,9	6,3	11,8	66,6	3,3	6,4	5,7
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	18,7	21,6	48,6	3,6	5,7	1,8	12,4	19,1	57,2	3,6	5,5	2,4	5,7	13,2	67,0	3,6	7,1	3,3
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	19,5	22,5	47,1	3,7	4,9	2,3	12,7	20,1	54,6	4,2	5,4	3,1	7,3	14,7	64,4	4,2	5,4	4,0
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	19,5	21,9	47,8	3,1	5,1	2,6	12,7	20,3	54,1	3,4	6,0	3,6	6,4	12,9	64,2	4,5	6,1	5,9

Notes: The table reads as follows. In 2006, the income of the top 1% group (100%) can be decomposed into wages (29.7%), self-employment income (17.3%), rents and other capital income (42.2%), interest and other financial income (2.7%), business income (5%) and irregular income (3.1%).

Table A7. Income composition of top groups: taxable and non-taxable income. Colombia 2006-2010

	Top 1%						Top 0.5%						Top 0.1%					
	Non taxable income			Taxable income			Non taxable income			Taxable income			Non taxable income			Taxable income		
	Allowances	Deduction for investment in fixed assets	Other costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Other costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Other costs and deductions	Exempt income	regular	irregular
2006	9,4	0,4	41,6	14,7	32,3	1,5	10,9	0,5	46,1	11,9	29,3	1,4	14,1	0,5	54,0	7,1	23,0	1,4
2007	9,1	0,5	42,9	13,9	32,3	1,3	10,4	0,6	47,5	11,1	29,3	1,2	13,2	0,8	55,3	6,9	22,8	1,1
2008	9,0	0,4	43,7	13,5	32,3	1,1	10,2	0,4	48,5	10,4	29,5	1,0	12,4	0,4	57,6	5,8	22,9	0,8
2009	8,9	0,4	42,3	14,3	32,8	1,3	10,2	0,4	46,7	11,3	30,2	1,2	12,6	0,5	55,2	6,4	24,1	1,2
2010	10,3	0,4	41,0	14,4	32,6	1,4	11,9	0,5	44,8	11,5	30,1	1,3	15,3	0,8	51,4	7,0	24,3	1,3

	Top 0.05%						Top 0.01%						Top 0.001%					
	Non taxable income			Taxable income			Non taxable income			Taxable income			Non taxable income			Taxable income		
	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular
2006	15,4	0,4	55,2	6,4	21,2	1,4	17,3	0,4	56,7	6,7	17,4	1,5	17,3	0,1	60,0	7,2	13,4	2,0
2007	14,3	0,9	56,3	6,5	21,0	1,0	16,1	1,4	56,7	7,4	17,5	1,0	16,3	2,9	58,2	8,8	13,3	0,4
2008	13,3	0,4	59,5	5,1	21,0	0,8	14,4	0,3	62,8	5,0	16,9	0,7	11,8	0,1	72,0	5,9	9,4	0,8
2009	13,6	0,5	56,8	5,6	22,2	1,3	14,9	0,5	59,2	5,1	18,7	1,6	12,8	0,1	68,2	5,2	11,1	2,6
2010	16,5	0,9	52,2	6,4	22,6	1,3	18,3	1,3	53,3	6,2	19,2	1,6	14,4	2,6	63,0	4,8	12,2	2,9

	Top 1-0.5%						Top 0.5-0.1%						Top 0.1-0.05%						Top 0.05-0.01%						Top 0.01-0.001%					
	Non taxable income			Taxable income			Non taxable income			Taxable income			Non taxable income			Taxable income			Non taxable income			Taxable income			Non taxable income			Taxable income		
	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular	Allowances	Deduction for investment in fixed assets	Costs and deductions	Exempt income	regular	irregular
2006	5,0	0,3	27,9	23,5	41,7	1,6	7,6	0,5	38,0	16,8	35,7	1,4	10,5	0,6	50,4	9,1	28,3	1,2	13,4	0,5	53,7	6,1	25,0	1,3	17,3	0,6	54,6	6,4	20,0	1,1
2007	5,1	0,3	29,0	22,6	41,3	1,6	7,6	0,4	39,5	15,2	35,9	1,4	9,8	0,5	52,3	8,1	28,0	1,3	12,4	0,4	55,9	5,6	24,7	1,0	15,9	0,3	55,6	6,4	20,4	1,4
2008	5,5	0,3	29,4	22,6	40,6	1,5	8,0	0,4	39,6	15,0	35,9	1,2	10,1	0,5	52,4	7,7	28,3	0,9	12,2	0,5	56,3	5,1	25,0	0,9	16,0	0,4	57,2	4,4	21,4	0,6
2009	5,3	0,3	29,6	23,0	40,1	1,6	8,0	0,3	39,0	15,7	35,8	1,2	10,2	0,4	51,1	8,4	28,9	1,0	12,4	0,5	54,6	6,0	25,4	1,1	16,1	0,6	54,2	5,1	22,9	1,0
2010	5,7	0,2	30,0	22,7	39,7	1,7	8,7	0,3	38,6	15,6	35,5	1,3	11,9	0,4	49,1	8,7	28,9	1,1	14,8	0,5	51,1	6,6	25,9	1,1	20,8	0,5	47,0	7,2	23,8	0,7

Notes: The table reads as follows. In 2006, the income of the top 1% group (100%) was divided into allowances ('ingresos no constitutivos de renta') (9.4%), deductions for investments in fixed assets (0.4%), costs and deductions (41.6%), exempt income (14.7%), regular taxable income (32.3%) and irregular taxable income (1.5%). We assume that 33% of income reported as 'ingresos no constitutivos de renta' come from taxed dividends, which are added to taxable regular income.

Table A8. Taxes and social security contributions paid by top groups. Average effective rates. Colombia 2006-2010

	Top 1%							Top 0.5%							Top 0.1%						
	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes
	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e
2006	2,2	2,0	4,4	0,2	2,9	7,5	11,7	1,6	1,7	4,6	0,2	3,4	8,2	11,5	0,8	0,6	4,0	0,3	4,4	8,7	10,1
2007	2,1	2,1	4,7	0,1	2,3	7,2	11,5	1,7	1,6	4,8	0,2	2,7	7,7	11,0	0,9	0,5	4,1	0,2	3,4	7,7	9,1
2008	2,2	2,1	4,8	0,1	2,2	7,1	11,3	1,7	1,7	4,9	0,1	2,5	7,5	10,9	0,9	0,6	4,2	0,2	3,1	7,4	8,8
2009	2,3	2,0	4,8	0,1	2,2	7,1	11,4	1,7	1,8	5,0	0,2	2,5	7,6	11,1	0,9	0,6	4,4	0,2	3,1	7,7	9,3
2010	2,2	2,0	4,7	0,1	2,5	7,3	11,5	1,6	1,7	4,8	0,1	2,9	7,9	11,3	0,9	0,6	4,1	0,2	3,8	8,1	9,6

	Top 0.05%							Top 0.01%							Top 0.001%						
	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes
	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e
2006	0,5	0,3	3,6	0,3	4,8	8,7	9,6	0,2	0,1	2,6	0,3	5,4	8,3	8,6	0,0	0,0	1,5	0,4	5,3	7,3	7,3
2007	0,6	0,3	3,7	0,2	3,7	7,6	8,5	0,2	0,1	2,8	0,2	4,2	7,2	7,5	0,0	0,0	1,5	0,1	4,3	5,9	6,0
2008	0,6	0,3	3,8	0,2	3,3	7,2	8,1	0,2	0,1	2,8	0,2	3,5	6,5	6,9	0,0	0,0	1,1	0,3	2,9	4,2	4,3
2009	0,6	0,4	4,0	0,2	3,3	7,6	8,6	0,2	0,2	3,2	0,2	3,7	7,1	7,5	0,0	0,0	1,4	0,2	3,1	4,8	4,9
2010	0,6	0,4	3,8	0,2	4,1	8,1	9,0	0,2	0,1	3,0	0,2	4,5	7,7	8,0	0,0	0,0	1,6	0,2	3,6	5,3	5,4

	Top 1-10.5%							Top 0.5-0.1%							Top 0.1-0.05%							Top 0.05-0.01%							Top 0.01-0.001%						
	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes	SSC on wages	SSC on self-employment	Income tax-regular income	Income tax-irregular income	Tax on dividends	Total income tax	Total SSC and income taxes							
	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e	a	b	c	d	e	c+d+e	a+b+c+d+e							
2006	3,9	2,8	3,9	0,1	1,6	5,6	12,3	2,4	2,8	5,2	0,1	2,4	7,7	13,0	1,7	1,2	5,1	0,2	3,3	8,5	11,4	0,9	0,6	4,6	0,3	4,2	9,1	10,6							
2007	3,4	3,6	4,4	0,1	1,3	5,8	12,7	2,6	2,7	5,6	0,1	1,9	7,7	13,0	1,8	1,1	5,2	0,2	2,5	7,9	10,8	1,0	0,6	4,7	0,2	3,2	8,1	9,6							
2008	3,6	3,2	4,4	0,1	1,4	5,8	12,6	2,5	2,7	5,6	0,1	2,0	7,7	12,9	1,7	1,1	5,2	0,1	2,5	7,9	10,7	0,9	0,6	4,7	0,2	3,0	7,9	9,4							
2009	4,0	2,7	4,3	0,1	1,3	5,7	12,3	2,3	2,8	5,5	0,1	2,0	7,6	12,7	1,7	1,2	5,3	0,2	2,5	8,0	10,9	1,0	0,6	4,8	0,2	3,1	8,0	9,7							
2010	3,9	2,7	4,3	0,1	1,4	5,7	12,3	2,3	2,8	5,5	0,1	2,1	7,7	12,8	1,6	1,2	5,1	0,1	2,9	8,2	11,0	1,0	0,6	4,6	0,2	3,7	8,4	10,1							

Notes: Taxes on dividends assume the standard tax rate on dividends (withheld by companies) applied to 33% of "ingresos no constitutivos de renta."

Table A9. Personal Income Tax Schedule: income brackets and rates

	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

Source: DIAN - SGAO - Estudios Económicos

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.

Table A10. Robustness check of top income shares in 2006

Sample	Top 1% (%) (1)	Top 0.5% (%) (2)	Top 0.1% (%) (3)	Top 0.05% (%) (4)	Top 0.01% (%) (5)	Top 0.001% (%) (6)	Top 1-0.5% (%) (7)	Top 0.5-0.1% (%) (8)	Top 0.1-0.05% (%) (9)	Top 0.05-0.01% (%) (10)	Top 0.01-0.001% (%) (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 A11. Top 1% income share under different definitions of income. Colombia 2006-2010

	a-preferred (%)	b (%)	c (%)	d (%)	e (%)	f (%)	g (%)
2006	19,9	21,6	19,9	17,3	19,4	16,7	12,5
2007	20,5	22,3	20,4	17,9	20,0	17,0	12,6
2008	20,3	22,0	20,2	17,7	19,9	16,8	12,4
2009	20,2	21,9	20,1	17,6	19,7	16,8	12,6
2010	20,4	22,1	20,4	17,5	19,9	17,2	13,0

Notes:

Column a. For individuals not obliged to keep accountancy books: income = taxable income, plus exempt income, plus deductions for investments in fixed assets, plus 5/6 of 'other costs and deductions' (tax form definition), plus other non-taxable income, plus net taxable and non taxable irregular income.

For individuals obliged to keep accountancy books: income = taxable income, plus exempt income, plus deductions for investment in fixed income, plus 5/6 of 'other deductions' (tax form definition), plus other non-taxable income, plus net taxable and non taxable irregular income.

Income definition (a) assumes that one-sixth of 'other costs and deductions' (individuals not obliged to keep accountancy books) and 'other deductions' (individuals obliged to keep accountancy books) are costs incurred to obtain income.

Column b. Income is equal to (a) but includes 'other costs and deductions' (tax form 210) and 'other deductions' (tax form 110) completely.

Column c. Income is equal to (a) minus the deduction for investments in fixed assets.

Column d. Income is equal to (a) minus 'ingresos no constitutivos de renta.'

Column e. Income is equal to (a) but excluding net taxable and non taxable irregular income.

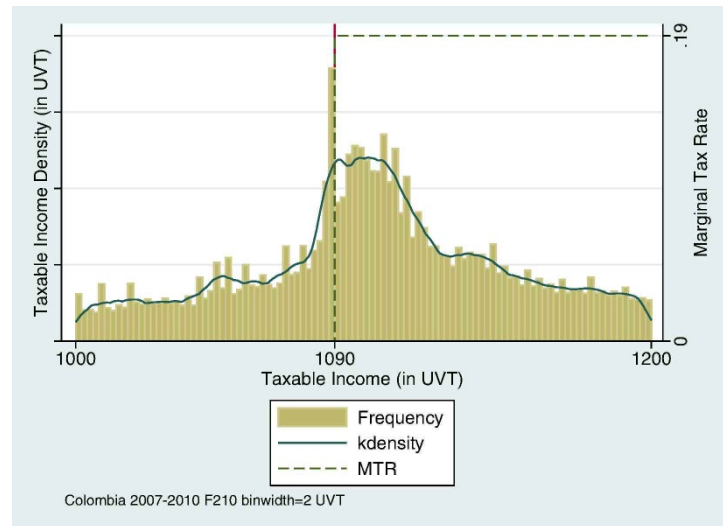
Column f. Income is equal to (a) plus 1/2 of 'other costs and deductions' (individuals not obliged to keep accountancy books) and 'other deductions' (individuals obliged to keep accountancy books). Thus, income definition (f) includes in total 1/2 of these costs and deductions.

Column g. Income is equal to (a) but excludes 'other costs and deductions' (tax form 210) and 'other deductions' (tax form 110) completely.

Table A12. 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

Panel A - Bunching at first kink



Panel B - Bunching at top kink

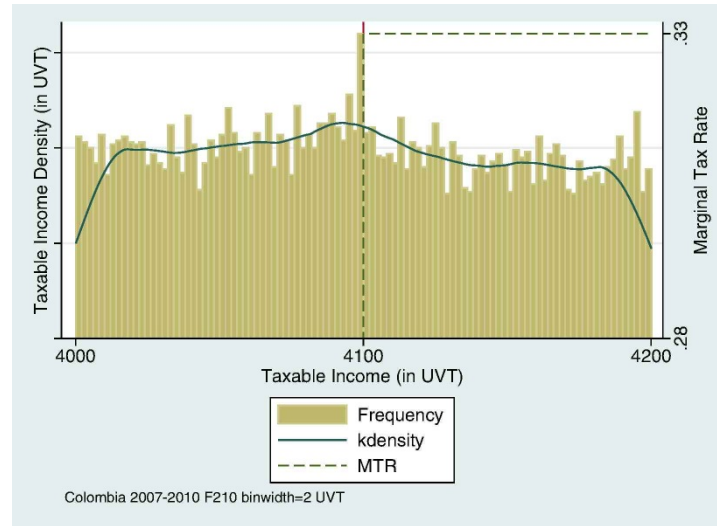


FIGURE A1

Bunching at first and top kink in Colombia

Notes: The figures displays the histogram of taxable regular income. The data include the years 2007-2010. The statutory marginal tax rate 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 is equal to \$49,100 pesos, or US\$25. Source: Author's calculations using tax data.

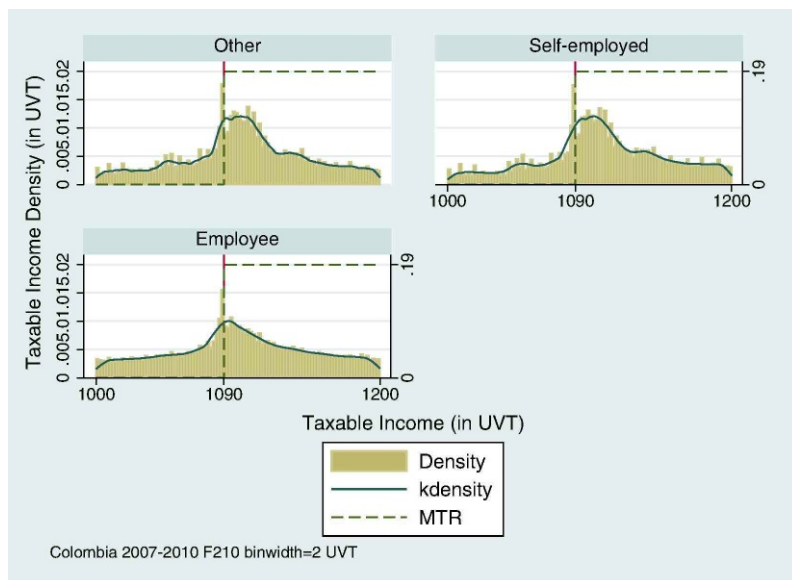


FIGURE A2

Bunching: evidence by type of tax filer in Colombia

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 or \$49,100 pesos, around US\$25.

Source: Author's calculations using tax data.

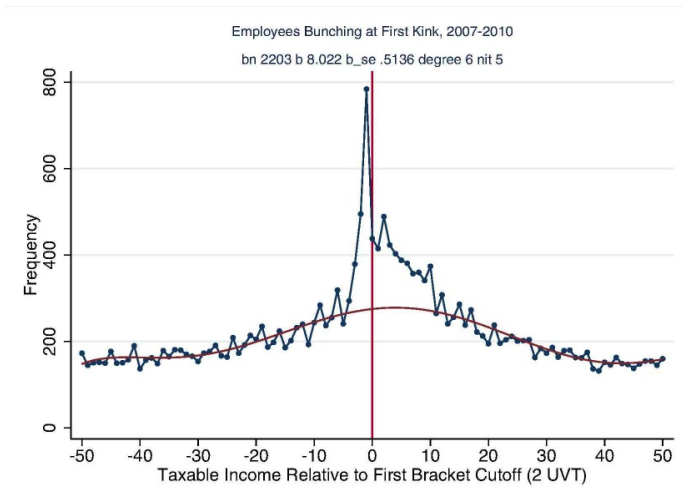


FIGURE A3

Wage earners: bunching at first kink, Colombia

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 is \$49,100 pesos, or approximately USD 25.

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

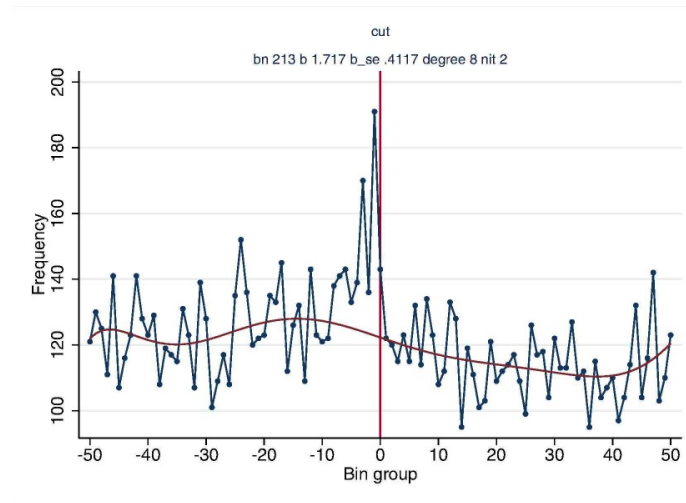


FIGURE A4

Bunching at the top kink, all types of taxpayers, Colombia

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

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

REFERENCES

- Alvaredo, F. 2009. Top incomes and earnings in Portugal 1936-2005. *Explorations in economic history*, 46, pp. 404-417.
- Alvaredo, F. 2010. The Rich in Argentina over the Twentieth Century, 1932-2004, in A. B. Atkinson and T. Piketty (eds.) *Top Incomes: A Global Perspective*, Oxford: Oxford University Press, chapter 10, pp. 253-298.
- Alvaredo, F. 2011. A note on the relationship between top income shares and the Gini coefficient. *Economic Letters*, 110, 274-277.
- Atkinson, A.B. 2007. *Top incomes over the Twentieth century: A contrast between European and English speaking countries*. Oxford University Press. Chap. *Measuring Top Incomes: Methodological Issues*.
- Atkinson, A.B., and Piketty, T. 2007. *Top incomes over the Twentieth century: A contrast between European and English speaking countries*. Oxford University Press.
- Atkinson, A.B., and Piketty, T. 2010. *Top incomes: A Global Perspective*. Oxford University Press.
- Avila, J., and Cruz, A. 2011. Analisis del impuesto sobre la renta para asalariados. DIAN Subdirección de Gestión de Análisis Operacional, Cuaderno de Trabajo 042, June.
- Bastani, S., and Selin, H. 2012. Bunching and non-bunching at kink points of the Swedish tax schedule. Mimeo.
- Burkhauser, R., Feng, S., Jenkins, S.P., and Larrimore, J. 2012. Recent trends in top income shares in the United States: Reconciling estimates from March CPS and IRS tax return data. *The Review of Economics and Statistics*, XCIV(2).
- Burricand, C. 2012. Register use in income measurement: Transition from survey data to registers in France, paper prepared as part of Net-SILC2 and presented in 2012 EU-SILC International Conference Workshop, Vienna, 5 December 2012.
- Chetty, R., Friedman, J.N., Olsen, T., and Pistaferri, L. 2011. Adjustment costs, firm responses, and Micro vs. Macro labor supply elasticities: Evidence from Danish tax records. *The Quarterly Journal of Economics*, 126, 749-804.
- Deaton, A. 2005. Measuring poverty in a growing world (or measuring growth in a poor world). *Review of Economics and Statistics*, 87(1), 1-19.
- Ferreira, F.H.G., and Ravallion, M. (2008). *Global Poverty and Inequality : A Review of the Evidence*. World Bank Policy Research Working Paper 4623.
- Gaviria, A., and Mejía, D. 2011. *Políticas Antidroga en Colombia: Exitos, Fracasos y Extravíos*. Bogota, Colombia: University of Los Andes.

- Gordon, R.H., and Slemrod, J. 2000. Does Atlas Shrug? The Economic Consequences of Taxing the Rich. Cambridge, MA.: Harvard University Press. Chap. Are “real” responses to taxes simply income shifting between corporate and personal tax bases?
- Kleven, H., and Schultz, E.A. 2011. Estimating taxable income responses using Danish tax reforms. Mimeo.
- Kleven, H. Jacobsen, and Waseem, M. 2012. Behavioral responses to notches: Evidence from Pakistani tax records. Mimeo.
- le Maire, D., and Schjerning, B. 2012. Tax bunching, income shifting and self-employment. EPRU Working Paper Series.
- Londoño, J.L. 1995. Distribucion del ingreso y desarrollo economico: Colombia en el Siglo XX. Tercer Mundo Editores.
- Londoño Vélez, J. 2012. Income and Wealth at the Top in Colombia: An Exploration of Tax Records 1993-2010, Paris School of Economics Master Thesis.
- Lustig, N. and López Calva, L. F. 2010. Declining inequality in Latin America: A decade of progress?, Brookings/UNDP.
- Moller, L.C. 2012. Fiscal policy in Colombia: Tapping its potential for a more equitable society. IDB Working Paper Series 67623.
- OECD. 2013. *OECD Economic Surveys Colombia*, Paris: OECD Publishing.
- Olivera, M., Pachon, M., and Perry, G. 2010. The political economy of fiscal reform: The case of Colombia, 1986-2006. IDB Working Paper Series No. 181.
- Piketty, T. 2001. *Les hauts revenus en France au XXe siècle: Inégalités et redistributions 1901-1998*. Grasset.
- Piketty, T. 2003. “Income Inequality in France, 1901–1998.” *Journal of Political Economy*, 111(5), pp. 1004–42.
- Piketty, T., and Saez, E. 2007. Top Incomes over the Twentieth Century: A Contrast Between Continental Europe and English-Speaking Countries. Oxford University Press. Chap. Income and Wage Inequality in the United States 1913-2002.
- Saez, E. 2010. Do taxpayers bunch at kinked points? *American Economic Journal: Economic Policy*, 2(3), 180-212.
- Saez, E., Slemrod, J., and Giertz, S.H. 2012. The elasticity of taxable income with respect to marginal tax rates: A critical review. *Journal of Economic Literature*, 50(1), 3-50.
- Sanchez, F., Fernandez, A., and Armenta, A. 2007. *Economía Colombiana en el Siglo XX: Un Analisis Cuantitativo*. Fondo de Cultura Economica. Chap. Historia monetaria de Colombia en el Siglo XX: Grandes tendencias y episodios relevantes, pp. 313-383.
- Szekely, M., and Hilgert, M. 1999. What's behind the inequality we measure: An investigation using Latin American data. Inter-American Development Bank Working Paper No. 409.

CEQ WORKING PAPER SERIES

- [“Commitment to Equity Assessment \(CEQ\): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook,”](#) by Nora Lustig and Sean Higgins, *CEQ Working Paper No. 1*, July 2011; revised January 2013.
- [“Commitment to Equity: Diagnostic Questionnaire,”](#) by Nora Lustig, *CEQ Working Paper No. 2*, 2010; revised August 2012.
- [“The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia, Brazil, Mexico and Peru: A Synthesis of Results,”](#) by Nora Lustig, George Gray Molina, Sean Higgins, Miguel Jaramillo, Wilson Jiménez, Veronica Paz, Claudiney Pereira, Carola Pessino, John Scott, and Ernesto Yáñez, *CEQ Working Paper No. 3*, August 2012.
- [“Fiscal Incidence, Fiscal Mobility and the Poor: A New Approach,”](#) by Nora Lustig and Sean Higgins, *CEQ Working Paper No. 4*, September 2012.
- [“Social Spending and Income Redistribution in Argentina in the 2000s: the Rising Role of Noncontributory Pensions,”](#) by Nora Lustig and Carola Pessino, *CEQ Working Paper No. 5*, January 2013.
- [“Explaining Low Redistributive Impact in Bolivia,”](#) by Verónica Paz Arauco, George Gray Molina, Wilson Jiménez Pozo, and Ernesto Yáñez Aguilar, *CEQ Working Paper No. 6*, January 2013.
- [“The Effects of Brazil’s High Taxation and Social Spending on the Distribution of Household Income,”](#) by Sean Higgins and Claudiney Pereira, *CEQ Working Paper No.7*, January 2013.
- [“Redistributive Impact and Efficiency of Mexico’s Fiscal System,”](#) by John Scott, *CEQ Working Paper No. 8*, January 2013.
- [“The Incidence of Social Spending and Taxes in Peru,”](#) by Miguel Jaramillo Baanante, *CEQ Working Paper No. 9*, January 2013.
- [“Social Spending, Taxes, and Income Redistribution in Uruguay,”](#) by Marisa Bucheli, Nora Lustig, Máximo Rossi and Florencia Amábile, *CEQ Working Paper No. 10*, January 2013.
- [“Social Spending, Taxes and Income Redistribution in Paraguay,”](#) Sean Higgins, Nora Lustig, Julio Ramirez, Billy Swanson, *CEQ Working Paper No. 11*, February 2013.
- [“High Incomes and Personal Taxation in a Developing Economy: Colombia 1993-2010,”](#) by Facundo Alvaredo and Juliana Londoño Vélez, *CEQ Working Paper No. 12*, March 2013.
- [“The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay: An Overview,”](#) Nora Lustig, Carola Pessino and John Scott, *CEQ Working Paper No. 13*, April 2013.
- “Measuring Impoverishment: An Overlooked Dimension of Fiscal Incidence,” by Sean Higgins and Nora Lustig, *CEQ Working Paper No. 14*, April 2013
- “Tax Reform in Latin America: A long term assessment,” by Vito Tanzi, *CEQ Working Paper No. 15*, April 2013



WHAT IS CEQ?

Led by Nora Lustig (Tulane University) and Peter Hakim (Inter-American Dialogue), the Commitment to Equity (CEQ) project is designed to analyze the impact of taxes and social spending on inequality and poverty, and to provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies. CEQ/Latin America is a joint project of the Inter-American Dialogue (IAD) and Tulane University's Center for Inter-American Policy and Research (CIPR) and Department of Economics. The project has received financial support from the Canadian International Development Agency (CIDA), the Development Bank of Latin America (CAF), the General Electric Foundation, the Inter-American Development Bank (IADB), the International Fund for Agricultural Development (IFAD), the Norwegian Ministry of Foreign Affairs, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean (UNDP/RBLAC), and the World Bank. <http://commitmenttoequity.org>



**COMMITMENT
TO EQUITY**

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