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Abstract

This paper presents a historical series of Chilean top income shares over a period of almost half a century, mostly using data from tax statistics and national accounts. We distinguish between *adjusted* (1990-2015) and *unadjusted* (1964-2015) series. The latter only includes personal income, while the former includes the imputation of corporate *undistributed profits*, which results in higher inequality levels. Unadjusted estimates follow a decreasing trend over the course of the 1960s, followed by an inverted U-shape that reaches a peak during the dictatorship (1980s). By contrast, the adjusted series contradicts the evidence based on survey data, according to which inequality has fallen constantly over the past 25 years. Rather, it changes direction, increasing from around the year 2000. Finally, Chile ranks as one of the most unequal countries among both OECD and Latin American countries over the whole period of study.

JEL Codes: D31, N36, H24

Keywords: Inequality, Top incomes, Tax data, Chile, Historical trends

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Introduction

Following seminal papers by Piketty (2001) and Piketty and Saez (2003), extensive progress has been made by top incomes literature over the past two decades in the field of economic inequality. Papers addressing more than 40 countries have used tax data to explore the evolution of income concentration within the richest 10%, 1%, 0.1% and 0.01% of the population relative to total personal income.[1]. These works have successfully demonstrated that, provided the necessary precautions are taken, tax data can reveal a previously invisible section of the distribution, allowing the examination of a larger part of that distribution and extending farther back in time than any survey statistic. Indeed, the true value of tax statistics is to focus on small groups of people who concentrate substantial parts of total income, and whose evolution is likely to influence overall inequality trends (Alvaredo, Atkinson, Piketty, et al., 2013).

However, in developing countries there is still scant evidence of top income shares based on tax data. This paper contributes to filling this gap by adding Chile to the Top Incomes literature, making use of tax statistics to shed light on long-term inequality in the developing world. Chile is an interesting case for various reasons. Although ranked among the most unequal OECD countries (OECD, 2015), Chile has been considered one of the stronger states in Latin America in terms of state capacity, corruption levels and the effectiveness of tax policy. However, the country still has a low level of redistribution, and fiscal policy has limited capacity to reduce extremely high market inequalities (OECD, 2015).

Our estimates are comparable to those of other Latin American countries with similar data, such as Argentina, Brazil, Colombia and Uruguay, but also to other countries included in the World Inequality Database (WID). Although previous attempts have been made to introduce tax statistics into the study of Chile's inequality, these are either not fully comparable with the existing literature, as in López, Figueroa, and Gutiérrez (2013/2016), or use precise data but cover a period too brief to make trend interpretations, as in Fairfield and Jorratt De Luis (2016). Both studies have strongly highlighted the local relevance of *undistributed profits*, which likely have a biasing impact via local incentives to retain corporate profits. In fact, we distinguish between *unadjusted* fiscal series for the period 1964-2015, which only includes personal income, and *adjusted* series, which includes the imputation of undistributed profits for the shorter period of 1990-2015.

Our findings indicate that income concentration remains relatively high in both series throughout the whole observable period. Unadjusted top shares globally decrease during the early years (1964-1973). They then increase during the dictatorship years for which we have data (1973-1981), and finally decrease from 1990 onwards. The shorter adjusted series only covers the recent democratic period (1990-2015). The key characteristic of the latter

[1]See the works assembled in the World Inequality Database: `http://www.WID.world`

is to include the imputation of undistributed profits to individuals based on distributive information from Fairfield and Jorratt De Luis (2016). Compared to unadjusted estimates for the same period, this series not only shows an increase in the level of inequality, but also a change in trend. Indeed, the top 1% share is higher by 4 to 10 percentage points, depending on the year, and the decreasing trend that is observed after 1990 is reversed around the year 2000. This latter finding is especially relevant because it contradicts the prevailing consensus, based on survey data, according to which local inequality has been decreasing over the past two decades (Appendix A.1). Furthermore, when comparing the top 1% share, Chile ranks among the most unequal Latin American and developed countries over most of the period. In addition, we show that survey data estimates of top income concentration are generally lower and more volatile than fiscal income-based measures.

It should be noted that our tabulated income tax data has one major limitation in that it only includes total income, and lacks information on income composition by type (e.g., wages, pensions, interest, dividends). Fairfield and Jorratt De Luis (2016) suggest that tax evasion is mostly driven by dividends and the income of independent (self-employed) workers. However, as we cannot distinguish different kinds of income, we are unable to adjust for the tax evasion that is associated with each. These limitations likely bias the estimates downward, and we therefore consider our results strictly as a conservative indication of the level of income concentration.

This paper is organized as follows. Section 1 presents a review of previous attempts to calculate top shares in Chile. Section 2 discusses the structure of our data along with methodological issues, such as the interpolation method and the construction of totals for both population and income. Section 3 presents and analyzes resulting estimates of both adjusted and unadjusted top shares, and offers a dynamic analysis of the distribution of income growth. Section 4 compares our results with estimates of top income shares using the CASEN Survey, and presents international comparisons. Section 5 discusses trend robustness. Finally, we offer conclusions.

1 Literature

The first attempt to study Chilean top incomes was made by Sanhueza and Mayer (2011).[2] Although they used the *Universidad de Chile*'s employment survey (EOD) and not tax data, the authors were able to study the evolution of top incomes over a period of more than fifty years. They show the top 10% of the population with a poorly-defined inverted U-shape over the 1957-2007 period, increasing sharply during the military dictatorship

[2]This section refers exclusively to the top incomes literature that is dedicated to the case of Chile. For a review of the findings of international top incomes literature please refer to Atkinson, Piketty, and Saez (2011) and Alvaredo, Atkinson, Piketty, et al. (2013)

(1973-1990), peaking in 1988, and finally decreasing to 2007. The trend described by the top 1% is considerably more erratic, most likely as a consequence of the low representative power of survey data concerning top earners.

Subsequently, López, Figueroa, and Gutiérrez (2013) study the topic using publicly available tabulations of income declarations provided by the Chilean tax agency for the 2004-2010 period. They focus their attention mainly on the issue of undistributed profits as being a specific concern for Chile. They argue that there are strong institutional incentives for retaining profits artificially, at least during the 2000s. Moreover, the income definition that is used in the tax statistics only includes an insignificant share of capital gains, which is the tool generally used to deal with this matter in the literature. Thus, they cleverly combine information from other papers to impute the whole value of corporate retained profits to the distribution of personal income. Their estimates are magnified by this procedure (nearly 30% of total income for the top 1%).[3]

Fairfield and Jorratt De Luis (2016) access micro data on income tax declarations for two specific years (2004 and 2009). They combine it with corporate tax data to track individual property and impute corporate accrued profits to their owners, following the same logic as López, Figueroa, and Gutiérrez (2013). They are able to accurately impute 80% of firms' accrued profits to their owners, with almost 30% of the latter being foreigners and thus not included in their estimates. The remaining 20% of firms, whose owners are not identified, are then imputed to the distribution. They provide various estimates according to the different assumptions that are made during imputation of the remaining part of accrued profits, and to whether or not they adjust for tax evasion. To implement this latter adjustment, they proportionally scale the revenue of both independent work and distributed profits, using aggregates from national accounts as a benchmark. Their results – all adjustments included – are stable over the period and reach similar levels to those obtained by López, Figueroa, and Gutiérrez (2013).

As we can see, previous research in the area does not provide sufficient estimates for a study of long-run top income trends. Nonetheless, they serve as useful benchmarks. Their work identifying Chilean institutional specificities also contributes with some initial guidance.

[3]López, Figueroa, and Gutiérrez (2016) applied more or less the same data treatment to an extended timespan (2004-2013). However, this time they used fundamental accrued capital gains (Gutiérrez, López, and Figueroa, 2015), taking into account the costs that enterprise owners would have to bear if they decided to materialize the amounts that authors are imputing to them.

2 Tax Data, Definitions and Methodological Issues

2.1 Income Definitions and Data

2.1.1 Fiscal Income

The definition of income we use as the numerator of top income shares can be broadly described as including all types of revenue that is declared by resident individuals to tax authorities. In principle, this is a rather broad definition, as both taxed and untaxed incomes should be declared, unless the law suspends it explicitly.[4] More precisely, it corresponds to what is referred to in the Chilean tax system as the *base imponible* of personal income tax, which is the pre-tax revenue that is used to estimate marginal tax rates. Table 1 describes the general concepts that are included in this definition. It includes income from both dependent and independent work, both being net of social security contributions.[5] Independent workers and the self-employed report income net of costs incurred to obtain it. All types of pension, public or private, are also included. As is common in the literature, distributed profits (e.g., dividends and withdrawals), interest and rental income are also included.

Table 1: General Income Definition in Tax Data

	Included	Deducted
Labor income	Wages, Pensions	Contributions (Mandatory)
Mixed income	Independent Work, Self-Employment	Contributions (Non-Mandatory), Costs
Capital Income	Rents, Distributed Profits, Interest, Capital Gains	Capital Losses

Note: Major deductions and allowances, which are not included, are listed in greater detail in Section 3.1 and in Appendix A.2 .

Furthermore, net realized capital gains are theoretically included in the definition presented in Table 1. According to Atkinson, Piketty, and Saez (2011) the inclusion of realized capital gains is generally used as a tool to indirectly assess the contribution

[4] In practice, however, the enforcement of declarations for tax-exempt revenue is generally a difficult task for the tax agency, as bank secrecy obstructs access to proper external sources of information in some cases (Fairfield and Jorratt De Luis, 2016).

[5] Although the ideal in literature is to use a definition of pre-tax income *before* deductions, the income we observe is *after* deductions and we are unable to make adjustments in order to impute deductions and allowances back. This is mainly due to data constraints and the characteristics of these contributions. In particular, independent workers are not compelled to contribute, and we cannot differentiate types of income: we only have total income. We are thus unable to make an informed adjustment to our tax tabulations.

made by corporate retained profits to top incomes. Since we impute undistributed profits in our adjusted series, which starts in 1990, this could potentially present a problem of double-counting. However, there is evidence that the total amount reported by individuals as capital gains should be insignificant, at least after 1990 where tax incentives remain globally the same. Indeed, Fairfield and Jorratt De Luis (2016) report that only 3-7% of total dividends are distributed to natural persons, since at least 90% of registered shareholders of publicly traded companies are actually corporations. The vast majority of corporate property, and thus capital gains, is not held by individuals. Thus, we judge the part of realized capital gains that is present in our data to be negligible after 1990, not causing any significant bias on the level or the trend of our estimates.[6]

The structure of our data only allows us to study total income in the long run, as it provides no information in terms of composition. This constraint represents a major drawback that probably provokes an underestimation of the level of inequality in our series. Fairfield and Jorratt De Luis (2016) show that both independent income and dividends are substantially underestimated in tax data compared to National Accounts. The authors thus make a proportional adjustment for these types of income, which results in an increase in the top 1% share of fiscal income by nearly 6 percentage points (from roughly 15% to nearly 21%).[7]

2.1.2 Tax System and Data

In Chile, personal income tax has two main components: the *Impuesto Global Complementario* (IGC) and the *Impuesto Único de Segunda Categoría* (IUSC). The former is the most comprehensive of the two, as virtually every individual resident is required to file it once a year. The latter is the tax paid exclusively by people receiving labor income (wages or pensions). It is generally declared to the tax authorities on a monthly basis by third parties, most of whom are employees of organizations, that is, dependent workers.

Since 1972, individuals receiving labor income from a unique source are not obliged to declare the IGC. This implies that the IGC series of data, for which we have the farthest-reaching statistics (from 1964-2015) and which constitutes our main data source, excludes data for some individuals since 1972. However, we have access to a Consolidated series (2004-2015), which includes income declarations from both the IGC and IUSC taxes without double counting. Hence, the estimates displayed in section 3 are built using both the IGC series and the Consolidated data series. Estimates for years prior to 1972 are estimated directly from the IGC series. Estimates for years 1972-2003 are adjusted by the average error that is observed in years where the two series overlap (2004-2015)[8] and

[6] In addition, we observe that the progressive exclusion of most capital gains from the definition of taxable income around the year 2001 (see Appendix A.2) does not have a substantial impact when comparing top shares that are estimated with and without capital gains (see Figure A.2).

[7] See the difference between income definitions Y_{Rlzd} and $Y_{\text{RlzdNatAcc}}$ in their paper.

[8] When comparing results for the 10 years that have both tabulations we find a fairly constant error of

estimates for years 2004-2015 are estimated from the Consolidated data series.

Both the IGC and the Consolidated series come in tabulated form. That is, every year there is a table in which the population is arranged by income-intervals. They contain information on marginal tax rates, quantity of people and total income declared at each interval. The information is the same every year, but the level of interval-aggregation differs depending on the year. For instance, for the early years (1962-1981) the IGC data that was transcribed from official publications divides people into a range of 4 to 20 income intervals.[9] The next span in the same series (1990-1995), which was provided as unpublished data by the tax agency, divides people into 15 to 20 intervals. The most detailed period in the series is 1996-2009, which is also unpublished, and separates declarations into 43 to 65 intervals.[10] For the last five years, we use information that is available online on the tax agency's website, where taxpayers are divided into eight intervals. In the Consolidated series (2004-2015), every year the population is divided into eight subsequent intervals. Furthermore, there are missing years in our dataset. Specifically, the year 1977 (1978 tax year) could not be located, even in the headquarters of the tax agency itself, or in any of the major libraries. This punctual discontinuity may be odd, but the disappearance of data covering the 7 years between 1982 and 1989 is even more intriguing. In any case, this kind of situation is to be expected in a dictatorship scenario. After all, tax returns are the only public traces left by the very rich.

2.1.3 Total Income Control

The tabulations available do not cover the whole adult population, however we need to estimate a comparable total income in order to compute top income shares. In other words, we need a denominator that approximates what would be the aggregate amount declared if every resident adult filed a tax declaration. According to Atkinson, Piketty, and Saez (2011), there are two ways to build such an estimate. One option is to take the total amount declared by tax filers and then add the estimated income of non-filers. The other option is to take total household income from the System of National Accounts (SNA, or simply National Accounts henceforth) and then adjust it by adding and subtracting specific items in order to account for the considerable differences in the income definitions of each dataset. In this paper we use a combination of both of these options, as neither of them would be suitable if used alone.

In the most recent year of our most comprehensive series – the Consolidated series – just over 70% of total adults are accounted for in tax declarations. Based on the first option in Atkinson, Piketty, and Saez (2011), we consider the near 30% of non-filers to

about 8% (less than one percentage point) of the top 1% share value. This information, along with error estimates for other top shares, is used to adjust estimates that are calculated from the IGC series.

[9] Official publications refer to a report called *Boletin de Estadística Tributaria.*

[10] This series includes information on realized capital gains declared by income-bracket for the period 1998-2009. We use that information to build Figure A.2

have a positive but modest income that is equivalent to 20% of the average declared income (as in Piketty and Saez, 2003). The total fiscal income we obtain using that method is approximately 43% of GDP in 2015. However, this definition of total income could not be used before 2004, as prior to that year this method would imply a reliance on the totals of the other less comprehensive series (GC-tax), which covers a considerably lower proportion of the population. Moreover, in both series, the farther we go back in time, the lower the proportion of total adults that filed tax declarations. This may lead to doubts as to the reliability of the estimate.

Our solution to this problem is to take this type of estimate only for 2015, which acts as a sort of base year. We then assume that total fiscal income follows the same relative variations as the second estimate proposed by Atkinson, Piketty, and Saez (2011). Thus, we use SNA to build this second estimate for years with detailed accounts (1996-2015). The rationale behind this latter estimate of total income is to achieve the closest possible approximation to the definition of income obtained from tabulated income declarations. The specific items that are included in the definition are displayed in Table 2. It is equal to the gross balance of primary income received by households, plus social benefits other than transfers in kind received by households, less social contributions paid by households (which includes those at the expense of both employers and employees), less attributed property income for insurance policy holders, and output for own final use. This latter item mainly consists of imputed rents and the consumption of goods produced within households, both of which do not produce actual income.

Table 2: Total Personal Income in National Accounts

	Total Fiscal Income	
(=)	Balance of Primary Income, received by Households, gross	(B.5g)
(+)	Social Benefits other than Transfers in Kind, received by Households	(D.62)
(−)	Social Contributions paid by Households	(D.61)
(−)	Attributed Property Income for Insurance Policy Holders	(D.44)
(−)	Output for Own Final Use (≈ Imputed Rents + Consumption of own Production by Households)	(P.12)
(−)	Consumption of Fixed Capital, Households	(K.1)

Note: Compiled by the authors

Not surprisingly, the amount obtained from National Accounts is generally higher than that based on tax declarations. Indeed, in 2015 it represents almost 53% of GDP: 10 percentage points higher.[11] Aggregates from National Accounts are often considered to be

[11]Some may consider 53% of GDP to be quite low for the total revenue of the whole adult population in 2015. However, before making the adjustments detailed in Table 2, the gross balance of primary household income is 68% of GDP. The income that is subtracted from that balance (nearly 15% of GDP) is composed

more reliable than amounts from both surveys and tax statistics. Indeed, the difference between national accounts aggregates and declared incomes is often interpreted as being due to evasion, avoidance or underreporting.[12] Thus, one could be tempted to use total income estimates from SNA directly as a denominator for top shares, which is the second option in Atkinson, Piketty, and Saez (2011). However, according to Fairfield and Jorratt De Luis (2016), most of the difference between the total income declared to tax authorities and the amount in SNA depends on two specific items: distributed profits (which report the aggregate to be three times higher in SNA) and independent income (1.5 times more in SNA). Both of these income types are also found to be highly concentrated at the top of the distribution.

Thus, if we were to use the aggregate described in Table 2 directly as a denominator for our top shares, we would incur a sizable and unjustifiable bias, as it would be equivalent to imputing the whole difference between totals to the bottom of the distribution.

For earlier years, the SNA does not have sufficiently detailed information. Therefore, in years prior to 1996, we consider a third strategy which assumes that total income is a fixed part of GDP, estimated at 42.6%.[13]

2.2 Tax Incentives and Undistributed Profits

Some specific tax incentives should be considered when analyzing the distribution of Chilean personal income. Before 1984, the profit of companies with traded stock was subject to a special tax (the *impuesto adicional*) that was the anticipation of the income tax over distributed profits(Cerda et al., 2014). This setup did not provide major incentives to profit retention by big firms because the income tax was already paid before dividends were actually distributed. However, since 1984, the Corporate tax of virtually all companies operates as a withholding on personal income tax on distributed profits; that is, corporate tax represents a credit against personal income tax. As a result, profits that are retained within the firm are subject only to corporate tax, while distributed profits may be subject to considerably higher marginal tax rates. This is because dividends are part of the personal income tax base (Fairfield, 2010; Fairfield and Jorratt De Luis, 2016). Hence, instead of distributing dividends, the owners of big companies can access less-taxed revenue via the realization of capital gains over stocks, which are mostly exempt of income

of 6.5% of output for own final use (effectively, imaginary revenue that is imputed to households), 2% of social contributions net of benefits (which we would ideally include in a pre-tax definition of income, but is absent from fiscal data), 3.3% of estimated capital depreciation for the household sector, and 2.8% of attributed income to insurance holders (which again is income that is imputed to households but not received). The rest of the GDP (32%) remains either within corporations as undistributed profits or within the government as primary income, or pays property income to foreigners.

[12]This is in fact the reason behind CEPALSTAT's survey adjustments in the region (Bourguignon, 2015; Fairfield and Jorratt De Luis, 2016), up-scaling adjustments of fiscal income.

[13]Figure A.4 displays the total fiscal income, the declared income in both series, and the aggregate from SNA, for each year for which information is available.

tax. Furthermore, in response to the data structure, individuals often create investment societies exclusively for tax purposes, generally limiting declared income and using retained revenue indirectly (Jorratt De Luis, 2009).[14].

Although the gap between the corporate tax and the top marginal tax rate has been reduced over the course of the last 25 years, it has remained high throughout the whole period. In 1990, the difference was exactly 40 percentage points, with a corporate tax of 10% compared to a marginal top rate of 50%. However, the gap is progressively being reduced, and during the greater part of the 2000s it stayed at 20 points, with corporate tax of 20% and the top marginal rate of personal tax at twice this figure (Figure A.10).

Alvaredo, Atkinson, Chancel, et al. (2016) define the aggregate amount of pre-tax undistributed profits as the net primary income of the corporate sector in National Accounts (both financial and non-financial). According to this definition, it appears that undistributed profits increase substantially as a share of GDP during the period for which detailed data exists (1996-2015). It increases from around 4-5% during the late 1990s and early 2000s to 8-10% during the past five years. The most significant increase appears to take place around the middle of the 2000s. Figure A.7 displays the evolution of both aggregate undistributed profits and total household income as a share of GDP.[15] Their apparent symmetric progression suggests that there may be a substitution effect, where a part of household income would have been progressively shifted to be recorded as undistributed profit. As corporate ownership is highly concentrated in Chile (Fairfield and Jorratt De Luis, 2016), a substitution effect would likely introduce a noticeable downward bias in the trend of personal income inequality, at least according to measurements of both household surveys and fiscal income data.

In order to address this particular issue, we proceed in section 3.2 to the imputation of undistributed profits to the fiscal income distribution. The purpose of this is to check for potential biases to the measured trend of income inequality.

2.3 Total Population and Interpolation Method

In order to calculate income shares accurately, we have to determine which individuals will be considered in our total population. The main issue here is to establish whether income declarations are filed on an individual or household basis. Income has been declared individually for the full period under study. Hence, for our estimations the population total will be, as is common in the top incomes literature, individuals over 20 years old. Our source is the World Bank public database.

[14]This was partly changed in the 2014 tax reform which is still in the process of coming into effect. Two new tax regimes were created for income tax: a semi-integrated system and an attributed system. In the latter, the incentive diminishes, while in the former it partly remains. However, the income tax system is no longer fully integrated.

[15]Table A.2 presents the numbers behind Figure A.7, as well as a comparison between total undistributed profits and our unadjusted total fiscal income (ranging from 7% at the lowest point to 33% at its highest).

The method we adopt to interpolate between given points in fiscal tabulations is different from the classic Pareto Interpolation and Mean Split Histogram that were generally used in earlier fiscal income studies. Here, we use the Generalized Pareto Interpolation (GPI), which is described in detail by Blanchet, Fournier, and Piketty (2017).

Essentially, the technique allows the income distribution to have a varying Pareto coefficient (average income above a given threshold divided by the threshold itself) that changes across the income distribution, using the information for each income interval of the tabulation. The Pareto coefficient usually follows a U-shape. The GPI is a non-parametric method that has been shown to produce more precise estimates than previous techniques, especially while extrapolating to higher shares of the population. In their paper, the method is compared empirically to previous ones by conducting experiments involving comprehensive tax micro data in parallel with tax tabulations from the United States and France, for the period between 1962 and 2014.

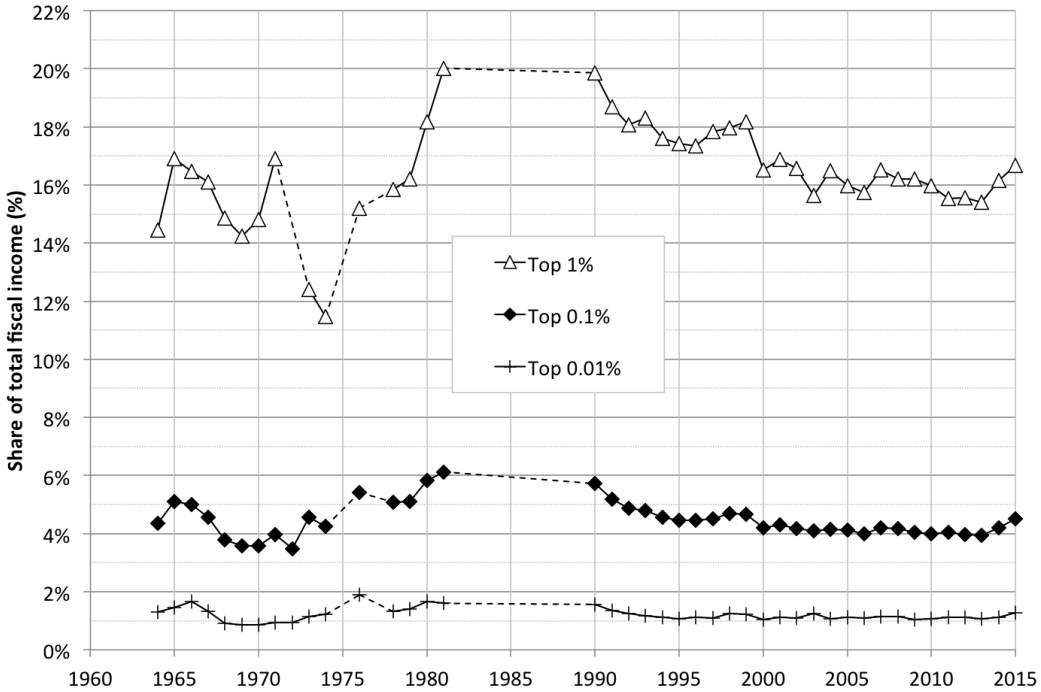
3 Results

3.1 Unadjusted Series (1964-2015)

This subsection provides historical context for our unadjusted estimates on top income shares. Figure 1 presents the progression of the top 1%, 0.1% and 0.01% shares of income over the period 1964-2015, while Figure 2 provides estimates for the richest 10% of the population for the period 2004-2015. We can observe that the general trend in the 1960s is towards decreasing income concentration. The direction is then inverted towards a steady increase in concentration around the beginning of the military dictatorship in 1973. Regrettably, we cannot comment on the evolution of income concentration over the course of the 1980s, as the information on tax declarations seems to have disappeared for those years. Since the return to democracy in 1990, the unadjusted series shows a generally decreasing trend until 2013, in which we can observe a relatively small but noticeable reversion. Although the decreasing trend that is observed over the last 25 years appears to confirm what is observed in household surveys (Appendix A.1), that information should be treated carefully, because it is observed with a definition of income that excludes retained profits.

Early years (1964-1973) In Chile, as in Latin America and the rest of the world, the 1960s were a time of increasing political polarization. The recent Cuban revolution (1959), combined with decades of increasing demands for justice by workers influenced by socialist philosophy, put social issues at the center of the political debate. At the same time, the building of the Berlin wall (1961), the Cuban missile crisis (1962), the Brazilian military

Figure 1: Top 1%, 0.1% and 0.01% Shares of Fiscal Income (1964-2015)



Authors' calculations using tax data, national accounts and population estimates. Dashed lines connect points between which there is at least one year of missing information.

coup (1964), and other ongoing armed conflicts relating to the cold war contributed to levels of tension and anxiety among civilians. In the national political context, two consecutive left-wing presidents governed Chile during this period: E. Frei-Montalva (1964-1970) and S. Allende (1970-1973). The latters' term was brought to an abrupt end by a *coup d'etat* in 1973. Both presidents are recognized for implementing socially oriented policies. Among the most high-profile of their reforms were land reform and the nationalization of the domestic mining industry, and the radical nature of these reforms gradually increased over the course of the decade. Although this paper does provide some historical context, we do not claim to identify a causal effect of policy reforms on concentration of income.

The tax reform of 1964 sets the starting point for the series displayed in Figure 1. This reform introduced, among other things, the first legal definition of income for tax purposes, and raised the top marginal rate from 35% to 60%.[16] Figure 1 shows that the top 1% share increases from 14.5% to 16.9% of total income between 1964 and 1965. However, after 1965, a generally downward trend continues for almost a decade, reaching its lowest point (12.4%) at the end of the period in 1973. Only one discrepancy appears in this trend, in 1971, with a relatively abrupt increase in top shares during that year. Given that this was the first year of the presidency of S. Allende, typified by the implementation

[16] Although there is information available on income declarations for two earlier years (1962 and 1963), we judge them to be inconsistent with the rest of the series, as the reform theoretically affects income received since 1964.

of radical socialist reforms, it is difficult to imagine that the richest individuals increased their share of total income. One possible explanation is an increase in enforcement of tax collection, which may have targeted the rich in particular.[17]

There is an extreme lack of data for the year 1972, as the country was going through a large-scale socio-economic crisis.[18] Only 0.3% of the total adult population declared income to the tax agency (Table A.1), which is not enough to be able to estimate the share of the richest 1% of the population. Figures for the top 0.1% and 0.01% shares are thus heavily compromised for that year.[19]

Dictatorship (1973-1990) In the wake of the military coup of September 11th 1973, a government board composed mainly of military generals was created to govern the country. However, A. Pinochet quickly took over power and was named President by a decree passed at the end of 1974. The military dictatorship lasted 17 years. Inspiration for the government's economic policy was closely related to monetarist ideals. The main reforms included the privatization of public firms, budget cuts for social spending, a change of currency, and the liberalization of the labor market. The latter was enforced by violent repression of demonstrations and union activity.

The trend in income concentration during this period is clear and stable, at least according to the available data. The top 1% share increases 8.5 points between 1974 and 1981, rising from 11.5% to 20% over 7 years. We only observe a slight decrease in inequality between the first and second years of the period. This rise can be mostly explained by that year's increase in the denominator of top shares: total fiscal income (Figure A.3).

Figure 1 does not display top shares for year 1975. This is because we consider estimates from this year to be somewhat inconsistent, perhaps due to an error in the construction of tabulations. Indeed, when that year is included, the top 1% share jumps to an ephemeral 25% of total income for that particular year. However, the increase in total income declared to the tax agency during that year does not correspond to any sizable change in the filing population (Figures A.4 and A.6). The most likely explanation for the phenomenon is that the country was going through one of the most serious economic

[17] We exclude the possibility of this increase being due to variations in the denominator of our top income shares, as GDP per capita increased during that year (Larrain and Meller, 1991).

[18] Between 1970 and 1973, a large-scale operation to destabilize the Chilean economy was taking place, coordinated jointly by US officials and the Chilean economic elite. In a report released on September 18th 2000, the CIA describes in detail its activities in Chile intended to prepare the ground for a military coup. These interventions included distribution of propaganda in association with the local press, financing of the political opposition, planning the coup alongside Chilean military officials, providing intelligence, and even offering large sums of money to Allende in exchange for his resignation (`https://www.cia.gov/library/reports/general-reports-1/chile`).

[19] In 1972, the minimum threshold for tax exemption doubled. Moreover, those who perceived wages or pensions from a single source were no longer obliged to declare under the IGC-tax, but rather under the IUSC. The emigration of many wealthy individuals that year may also have contributed to the phenomenon.

crises of recent decades. Indeed, real GDP per capita growth was less than negative 10% in 1975, and inflation also reached extreme levels (Figure A.3). Of course, one could expect top incomes to be more resilient to this crisis than lower incomes, which would explain the jump, but the resulting estimates appear exaggerated. Since our estimates of total income are based on a fixed share of GDP for these years, we judge them to be rather sensitive and not sufficiently reliable in this kind of exceptional situation.

Inconveniently, data for the year 1977 (1978 tax year) could not be found. However, what is even more remarkable is the absence of data for the whole period between 1982 and 1989. Tabulations for those years appear to have either disappeared or never existed. It is during the 1980s that Sanhueza and Mayer (2011) document the highest concentration of income, however we are unable to comment on that specific period. Moreover, it is in year 1984 that the most significant tax reform in our series takes place. In the name of boosting savings and investment, incentives for profit retention were introduced, along with the core of the integrated tax system that has prevailed throughout the last 25 years of democracy (see Section 2.2 and Appendix A.2).

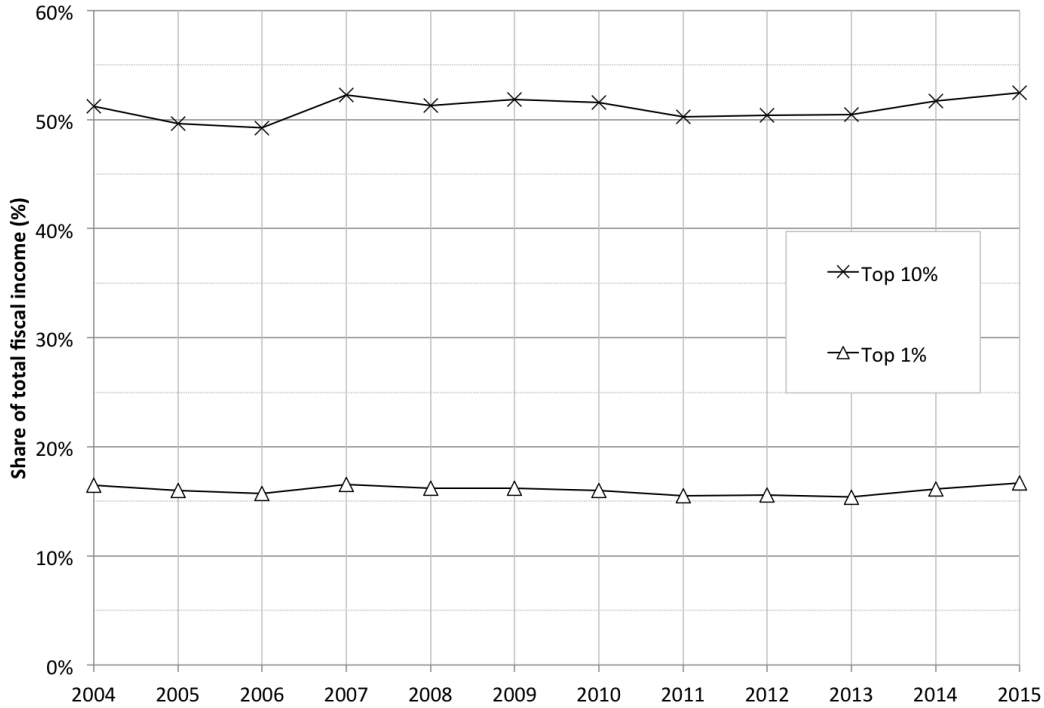
Return to Democracy (1990-2015) In 1990, Chile returned to democracy in the midst of the most accelerated economic boom of its history.[20] The transition occurred in a relatively peaceful way, as it was organized in a way that ensured political stability as a priority. At the beginning of this period, most of those who had participated in the military government organized themselves into right-wing political parties.[21] In parallel to this reshuffle, opposition parties were legalized. Furthermore, a succession of four center-left Presidents held office over the next 20 years, followed by a center-right President between 2010 and 2014. The majority of reforms over the period were aimed at the expansion of social security coverage and the reduction of poverty (Contreras and Ffrench-Davis, 2012). Nonetheless, the foundations of the socio-economic model established by the dictatorship remained in place, with reforms in key sectors (e.g., education, health, pensions, housing) were mostly based on private markets.

As Figure 1 shows, the concentration of income among the richest 1% of the distribution generally decreases over the democratic period, from 19.9% in 1990 to 16.7% in 2015. This is a fall of 3.2 points over the period. Looking in greater detail, the most accelerated decrease in the span takes place during the first half of the 1990s. Indeed, the 2.6 point decrease in inequality between 1990 and 1996 represents four fifths of the total fall during the democratic period. Furthermore, a slight increase (0.9 points) in top shares can be

[20] The so-called "Chilean miracle" refers to the period of high economic growth rates between 1985 and 1997. It corresponds in part to the fast economic recovery following the economic crisis of 1982, and in part to actual growth relative to the level of GDP per capita in 1981.

[21] Only a portion of those who participated directly in ordering human rights violations were tried and imprisoned. Pinochet himself, however, remained as a lifelong senator and retained his post as general commander of armed forces until 1998.

Figure 2: Top 10%, Share of Fiscal Income (2004-2015)



Authors' calculations using tax data, national accounts and population estimates. Estimates for the top 10% share are available for a shorter span, as they are built exclusively using "Consolidated data" (combining declarations for both the IGC and IUSC taxes), beginning in 2004. This is the only series that includes more than 10% of the population over the taxable threshold.

seen between 1996 and 1999, including at the point where the impact of the Asian crisis was at its most severe in Chile.[22]

A relatively sizable drop occurs in the top 1% share between 1999 and 2000. This decrease of 1.6 points is the most abrupt recorded since the return to democracy, but its interpretation is not straightforward and should be treated carefully. There is one deduction on the taxable base, intended to enhance economic growth in the housing sector, which could explain at least a part of this phenomenon. Since the end of 1999, and for a limited period of time, people buying new properties with a mortgage were able to deduct a considerable share of their mortgage dividends from their taxable income (Law Nr. 19,622). The benefit was effective until the full value of the mortgage was repaid, presenting an attractive opportunity for investors. The only condition to access the benefit was to buy a new "affordable property", which produced un-taxable income when rented.[23] Over the following years, the top 1% share appears to fall more or less steadily. As mentioned earlier, by the end of the democratic period, the trend had become inverted. Between 2013 and 2015, a considerable increase in the top 1% share is recorded

[22]Chilean GDP growth was negative for years 1998 and 1999.

[23]This is a somewhat comprehensive definition. Essentially, a property was considered "affordable" if it comprised less than 140m^2 of usable space.

(1.2 points), returning to the same level of inequality that prevailed 10 years previously.[24]

Figure 2 displays the unadjusted share of the top decile, which varies between 50% and 53% of total fiscal income over the period. Upper shares – as the top 0.1% and 0.01% – generally follow the same trends described by the top 1%, but with a lesser degree of variability.

3.2 Adjusted Series Including Undistributed Profits (1990-2015)

In this section, we build a simple yet straightforward approximation of the trend effects caused by imputing undistributed profits to a relatively long set of estimates on personal income concentration. We impute aggregates from National Accounts by making assumptions based on distributive information found in Fairfield and Jorratt De Luis (2016). Previous works on Chilean top incomes have highlighted the relevance of undistributed profits in the study of local income inequality. This seems to be a priority due to the presence of tax incentives favoring artificial retention of profits within corporations (López, Figueroa, and Gutiérrez, 2016; Fairfield and Jorratt De Luis, 2016). Such a phenomenon is indeed likely to have an impact on both the level and the trend of inequality estimates (see Section 2.2).

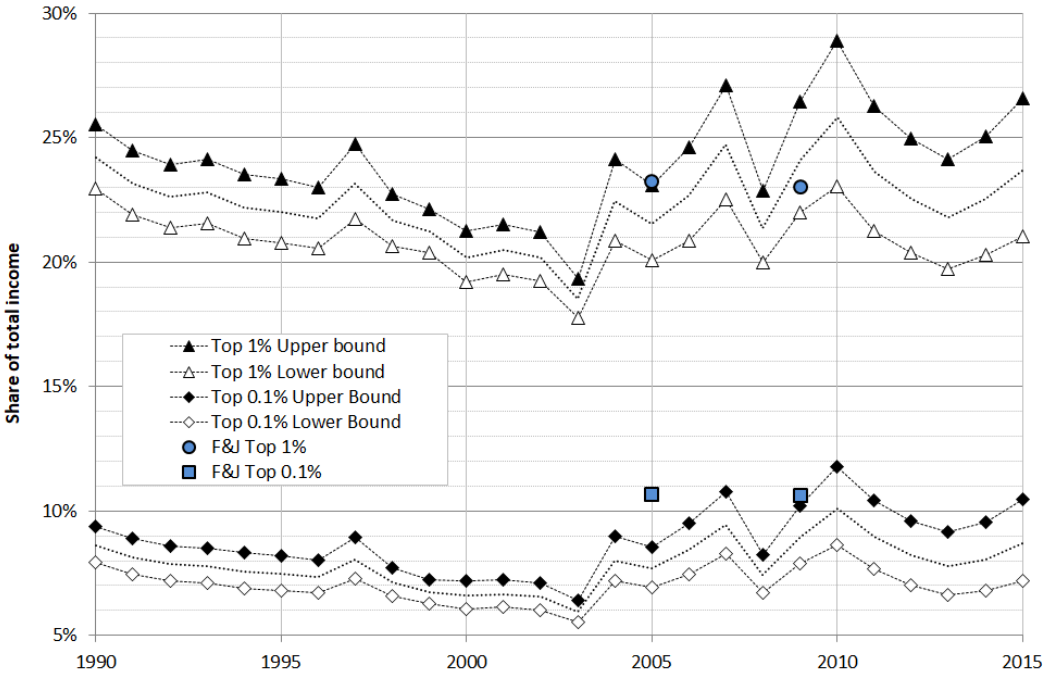
In order to impute total undistributed profits to individual income distribution, we take estimates on the distribution of the accumulated stock of undistributed profits since 1984 from Fairfield and Jorratt De Luis (2016: Table A.9). They found that in 2005, the richest 1% of the fiscal income distribution owned 75% of that stock (using virtually the same definition of fiscal income as ours). Their next observation – in 2009 – records a lower concentration of 69%. We must then make different assumptions in order to construct upper and lower bound estimates, by conjecturing that flows of undistributed profits follow fairly closely the same pattern of concentration as the stock.[25]

Figure 3 displays the adjusted estimates for the top 1% and 0.1% shares of total income, including upper and lower bounds. Both our upper and lower bounds on adjusted top income shares assume that undistributed profits follow a constant pattern of concentration between 1990 and 2005. Between 2005 and 2009, they both mimic the decreasing trend of accumulated profits observed by Fairfield and Jorratt De Luis (2016). However, after 2009, our lower bound estimate assumes that the same linearly decreasing trend will continue until the final year, while the upper bound estimate assumes its constancy throughout the same period. In addition, as one could argue that stocks of undistributed profits may be more concentrated than flows, the lower bound estimate assumes that for the whole

[24]It is not clear, however, how this information should be interpreted. We judge that 2 points are not sufficient to consider this a sustained trend. Moreover, a further tax reform introduced in 2012 could be driving this phenomenon, mainly by limiting recourse to special tax regimes (see Appendix A.2).

[25]Total amounts of undistributed profits are available in Table A.2.

Figure 3: Top 1% Share with Undistributed Profits, Upper and Lower Bounds (1990-2015)



Source: authors' estimates using tax data, detailed National Accounts (1996-2015) and Fairfield and Jorratt De Luis (2016). Note: in each situation, the whole value of undistributed profits is imputed to the fiscal income distribution. Upper bounds assume that yearly flows of undistributed profits are concentrated in top groups to the same degree as the accumulated stock from 1984 (F.U.T.). Lower bounds assume flows to be two thirds as concentrated as stock. The dotted line represents a central tendency, which is estimated as a geometric average of upper and lower bounds. In the absence of detailed National Accounts prior to 1996, the amount of undistributed profits in those years is estimated to be nearly 4.8% of GDP, which is the estimate for 1996. Estimates from Fairfield and Jorratt De Luis (2016) using their definition Y_{AcrdProf} are displayed for comparison.

period, concentration in flows is two thirds of the concentration in stocks.[26] Our upper bound estimates assume that flows of undistributed profits are concentrated to the same degree as accumulated stock.[27]

Perhaps the most striking finding in Figure 3 is that despite conservative assumptions, considerable changes in trend directions emerge relative to unadjusted estimates in all cases. Indeed, even lower bounds, which are remarkably conservative, contradict the decrease in income concentration after the year 2000 that is observed in unadjusted estimates. It thus appears reasonable to conclude that income concentration, including undistributed profits, likely follows a U-shape during the last 25 years for which we have

[26]For instance, in 2009 the richest 1% of the fiscal income distribution owned nearly 70% of the stock of undistributed profits. Assuming only two thirds of the concentration would mean that the richest percentile owned nearly 46% of the flow of undistributed profits during the same year.

[27]In their paper, Fairfield and Jorratt De Luis (2016) find that nearly one third of their estimate of accrued profits (the sum of distributed and undistributed profits) is owned by foreigners. They thus exclude that part from the total for imputation. However, we judge that type of adjustment to be unnecessary in our case, because the estimate of pre-tax undistributed profits we use has already been subtracted from reinvested income on foreign direct investment (D43). Furthermore, our definition of undistributed profits takes into account profits held abroad by Chilean nationals.

data. Income concentration would decrease over the course of the 1990s and then increase fairly steeply after the year 2000.

Moreover, Figure 3 displays comparable estimates by Fairfield and Jorratt De Luis (2016: Table 1).[28] It appears that their estimates are fairly close to ours in level, as almost all of them fall between our upper and lower bounds, including top 10% shares (Figure A.11). When studying the top 0.01%, however, our adjusted top shares appear to be considerably lower than theirs, as we record a concentration of 1.5% of total income in this group, while their estimates are closer to 5%. The underestimation of this particular part of the population may be due to the fact that their imputation is done using micro data, which allows re-ranking of the distribution after imputation.[29]

3.3 The Distribution of Income Growth

Unadjusted series (1964-2015) Figure 4 shows the evolution of real average income as an index of base 100 in 1964, in different groups of the population: the top 0.1%, the next 0.9% (P99-P99.9) and the rest of the population, which is the bottom 99%. Of course, these groups do not necessarily represent the same people every year, as a certain (but limited) degree of mobility between groups is expected to exist.

In Figure 4, the P99-P99.9 group is the one whose income grew the fastest over the whole period. It had its real income multiplied roughly 11 times, while both the top 0.1% and the bottom 99% saw their income multiplied around 9 times.

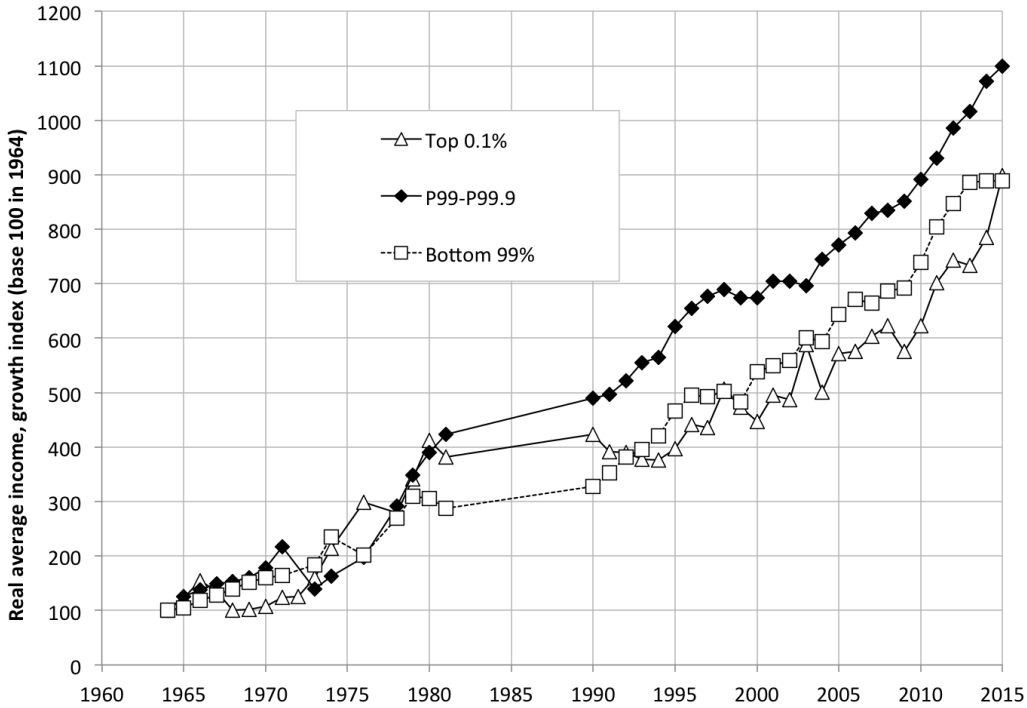
Since 1990, it appears that the fastest growing group is actually the bottom 99%. Throughout the period, its real income increases about 2.7 times, while for the top 0.1% and the next 0.9% it increases around 2.1 and 2.2 times respectively. This finding is in line with the decreasing inequality that can be observed in surveys conducted since the 1990s (Appendix A.1). Nonetheless, once again, Figure 4 does not include undistributed profits, and we therefore consider that it tells an incomplete story.

Series with Undistributed Profits (1990-2015) Figure 5 displays the average income of the same groups shown in Figure 4, but for a shorter period and including the imputation of undistributed profits, as described in Section 3.2. Although these groups have followed different paths over the 25 years, in the end there is no major difference between them in terms of total growth. Indeed, both the top 0.1% share and the bottom 99% have their income multiplied by a factor of roughly 2.9, while the P99-P99.9 group

[28] We display results for the definition of income they call Y_{AcrdProf}. Tables A.4 and A.3 display the numbers behind the upper and lower estimates, including the top 0.01%.

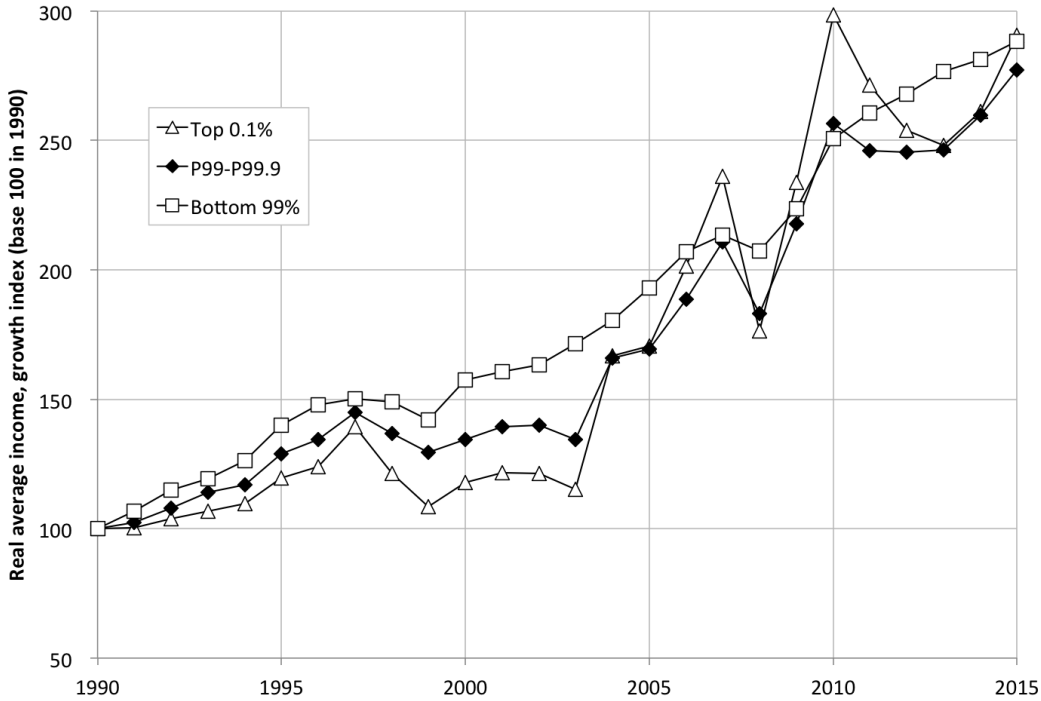
[29] Another difference between our adjustment and theirs which could affect trends is the data source we use to estimate undistributed profits. The authors use net accrued profits as declared by businesses to tax authorities, while we use National Accounts aggregates. Aggregates are often judged to be more accurate, although they do not incorporate distributive information.

Figure 4: Unadjusted Income Growth. Top 0.1%, Next 0.9% and Bottom 99% (Index base 100 in 1964)



Source: authors' calculations using tax data, national accounts and population estimates.
Note: the average income of the bottom 99% of the population is estimated residually using income information for the top 1% (tax data) and total income (National Accounts).

Figure 5: Income Growth Including Undistributed Profits. Top 0.1%, Next 0.9% and Bottom 99% (Index base 100 in 1990)



Source: authors' calculations using tax data, national accounts and population estimates.
Note: the average income of the bottom 99% of the population is estimated residually, using income information for the top 1% (tax data) and total income (National Accounts).

is not far off, with a factor of 2.8. These findings are in line with the U-Shape that is described by the top 1% share in Figure 3.

Before making any conclusive statements about the growth distribution of income, it is worth stating that the bottom 99% is likely to be a somewhat heterogeneous group. Thus, a study of what happens in additional sections of the distribution could be interesting, but is not possible using our tax data due to the fact that it only covers a limited part of the adult population (Figures A.6 and A.5). A reasonable approximation of the median income of our distribution should be provided by the National Socio-Economic Characterization (CASEN) Survey if we assume that median income earners do not pay income tax and do not receive any benefit from undistributed profits.[30] A similar concept to the *base imponible* (Section 2.1.1) may be derived from the survey. When we compare the evolution of the CASEN Survey median (see Figure A.8) with the average income of the top 0.1%, it appears that they too have a very similar end point. The decrease in inequality that can be observed after 1990 is counteracted by a rapid increase from the year 2000 onwards, resulting in more or less equivalent growth. However, it should be noted that the period begins with very high inequality in 1990, and ends in 2015 with similar levels.

4 Comparison with Other Estimates

4.1 International Comparisons

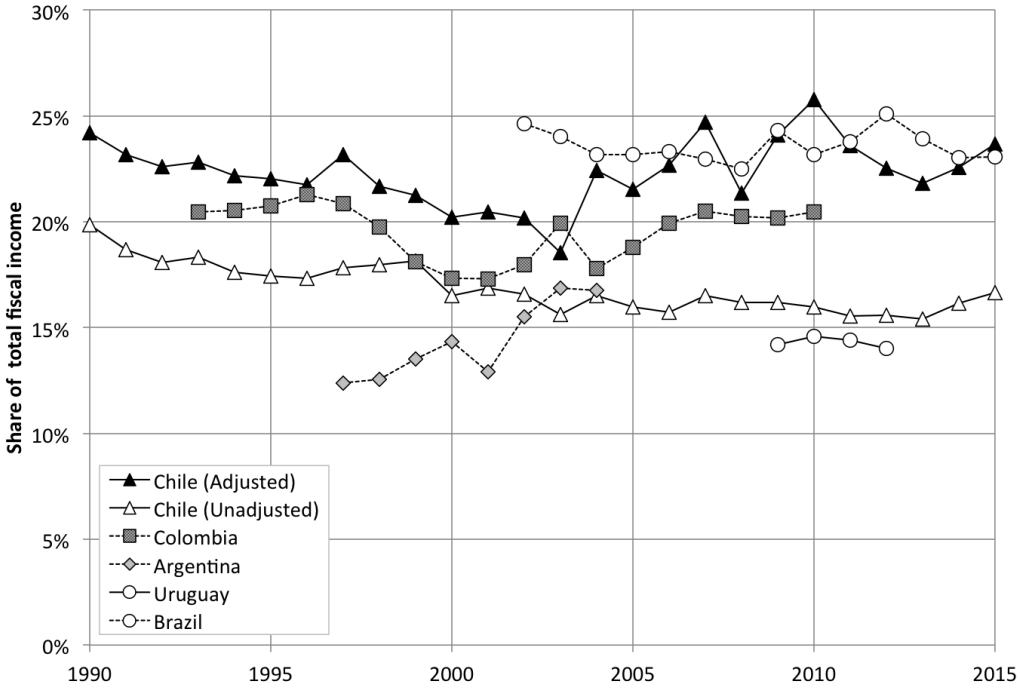
Figure 6 compares both adjusted and unadjusted estimates of the Chilean top 1% share of income to other Latin American countries, which do not have the same incentives to profit retention than Chile.

The adjusted estimate, while following a decreasing trend, places Chile as the most unequal country in the region for the period 1990-2001. However, the Brazilian series starts in 2002, with higher levels of income concentration. Yet, the Chilean top 1% seems to catch up quickly during the following four years. From 2007, both countries alternate between the first and second place in the region. When comparing the unadjusted estimate, Chile ranks as the third most unequal country, after Brazil and Colombia, throughout the whole period. Furthermore, there is no distinguishable trend shared by the five countries.

The top 0.1% share of the adjusted series is generally above but relatively close to the level of concentration observed in Colombia (Figure A.9). Brazil leads the ranking with a top 0.1% share of around 11% of total income, which is generally 2-3 percentage points higher than the Chilean estimate. Contrastingly, the Chilean unadjusted estimates are always lower than any other country with comparable data in the region (the only exception being Argentina in 1997-1998). This observation seems odd and unconvincing,

[30] Figures A.6 and A.5 show that no more than 20% of the adult population has declared taxable income since 1990.

Figure 6: Top 1% Share in Latin America (1990-2015)



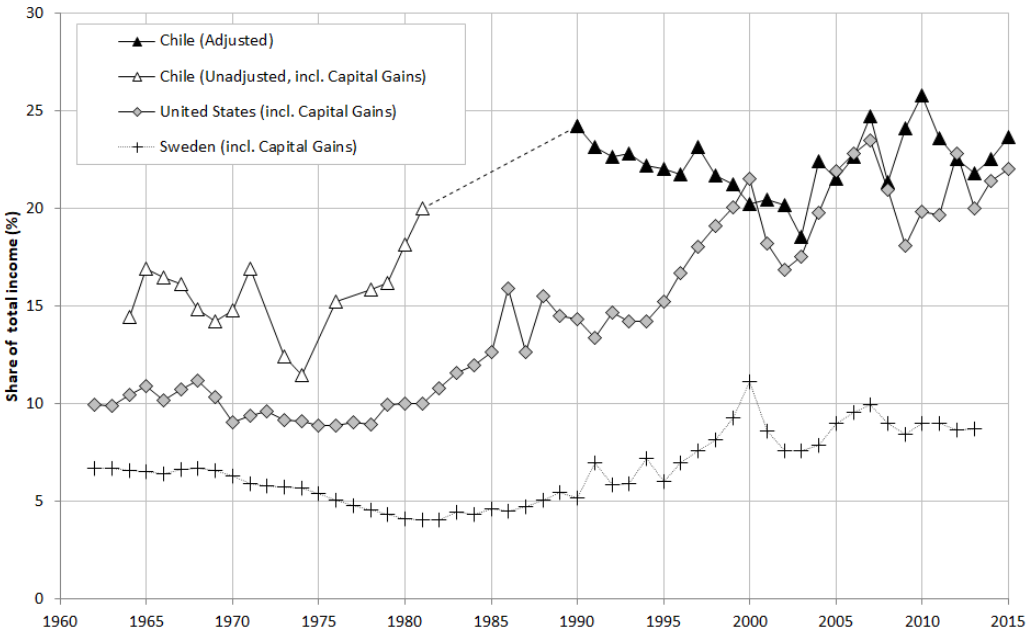
Authors' estimates for Chile, Alvaredo (2010) for Argentina, Morgan (2017) for Brazil, Alvaredo and Londoño-Vélez (2013) for Colombia, and Burdín et al. (2014) for Uruguay.

especially when compared to Uruguay, which is one of the least unequal countries in the Latin American region, with an official Gini coefficient lower than 0.4. We consider that this underestimation of higher top incomes is likely to be related to a Chile-specific institutional framework that disincentives the distribution of corporate profits in the form of dividends, discussed earlier in this paper. Again, we interpret this as evidence for the need to take into account undistributed profits, especially in the Chilean context.[31]

Figure 7 compares our estimates of the top 1% share over the long term with estimates from two developed countries: the United States, an icon among unequal countries, with a sizable increase in income concentration since the 1980s; and Sweden, a country with relatively stable and low levels of income inequality. Chile records a higher concentration than both countries, at least between the 1960s and 2000s. Furthermore, it appears that the increase in inequality in the USA in recent years has brought the country close to the level of income concentration that is recorded in the Chilean adjusted series. Both range between 20% and 25% of total income for the richest top 1%. For the years prior to 1990, even the unadjusted series for Chile is considerably higher than both developed countries, with nearly five points distance from the USA and ten from Sweden. Although Sweden experienced an increase in inequality from 1980 onwards, it unsurprisingly reaches levels

[31]Moreover, according to the most recent Forbes list (2017), Chile has the third highest number of billionaires in Latin America, with twelve. The country is only surpassed by Mexico, with 15 billionaires in a population more than seven times larger, and Brazil, with 43 billionaires in a population more than 11.5 times larger.

Figure 7: Top 1% Share Compared to Other Countries (1964-2015)



Authors' estimates for Chile, using tax data, National Accounts and population estimates from World Bank. Estimates for other countries come from `www.WID.world`. The Chilean adjusted series includes the imputation of undistributed profits. It corresponds to the central trend that is described in Section 3.2. Series for other countries all include realized capital gains.

of concentration that are considerably lower than those of Chile.

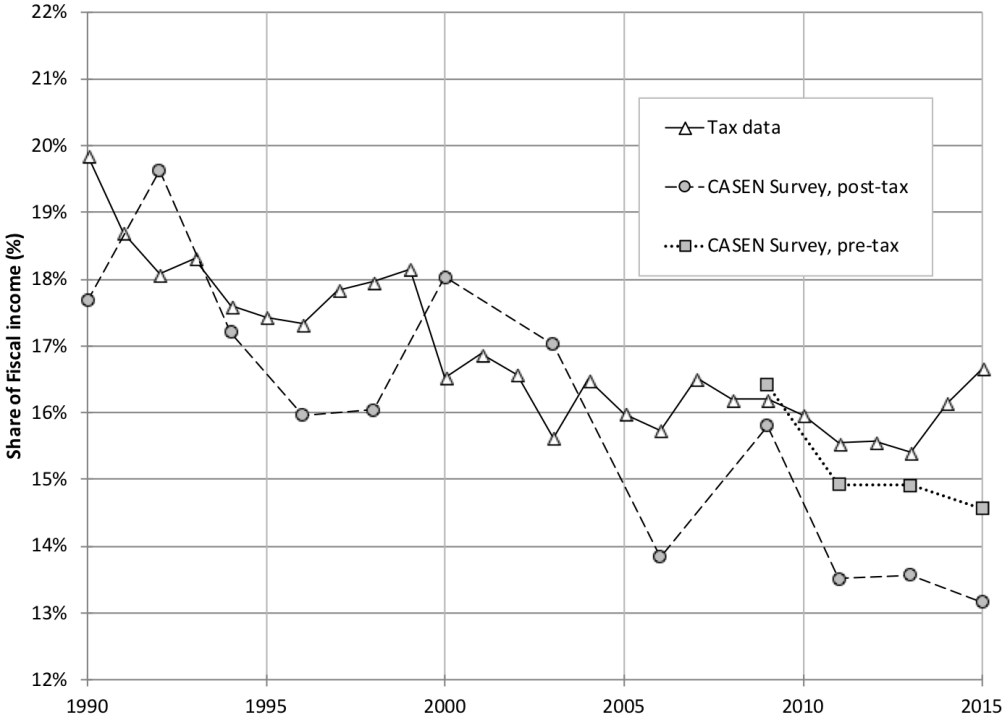
4.2 Local Surveys

This section measures the bias with which top incomes are underestimated in the most popular local household survey (CASEN). For years with sufficient information (2009-2015), we use the survey to build a definition of personal income that is comparable with that derived from the fiscal data. Perhaps the most important step in this endeavor is to obtain pre-tax income based on post-tax income. This retroactive transformation is non-trivial, as it involves several fiscal rules and different marginal tax rates to be applied. For this purpose we build on a similar work by Martínez-Aguilar et al. (2017). These estimates, along with a longer series with post-tax income, are compared here to our unadjusted tax data series (from Section 3.1). Both of our survey estimates are based on CASEN's *orginal* income series.[32]

Figure 8 compares top income shares from both survey and tax statistics between 1990 and 2015. As is to be expected, survey data estimates are generally lower and more

[32]CASEN's datasets included income adjustments to fit aggregated levels of national accounts. Both original and adjusted incomes are publicly available for each year for which data is available (since 2013). Bourguignon (2015) states that this kind of adjustment, applied by the Economic Commission for Latin America and the Caribbean (CEPAL), probably induces considerable biases for the study of the income distribution, and thus should be avoided.

Figure 8: Top 1% Share: Tax Data vs. CASEN Survey (1990-2015)



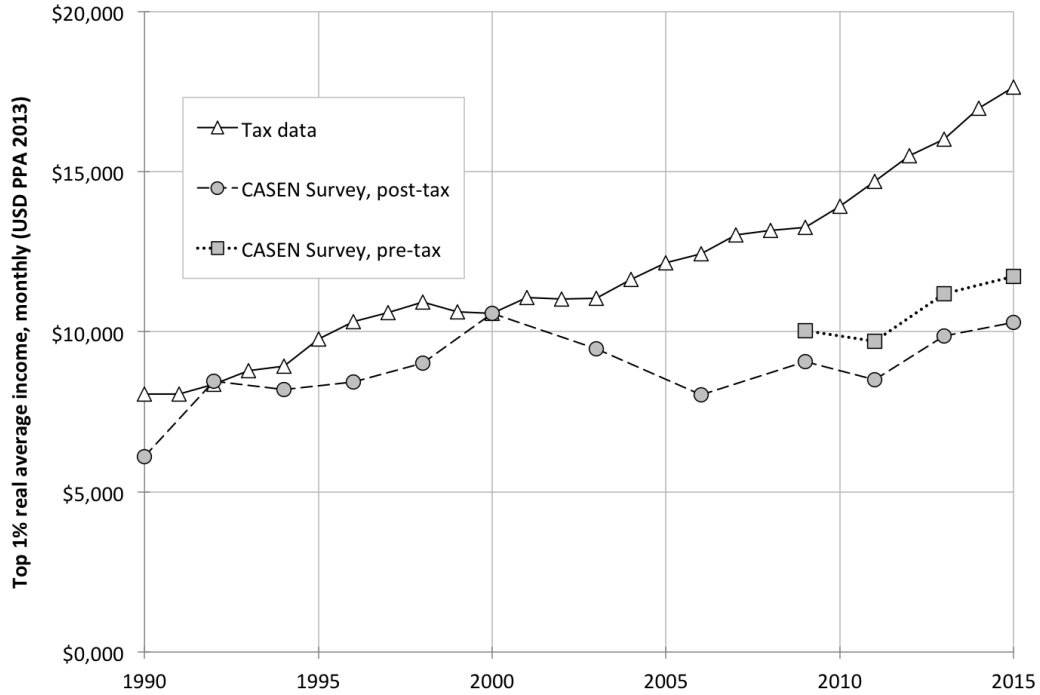
Authors' calculations using unadjusted series from Section 3.1 and CASEN Survey *original* income series.

volatile than those from tax data. However, in some years, survey estimates become close to or even slightly higher than tax estimates. This does not imply, however, that they are measuring the same phenomenon. There are considerable differences in the structure of the estimates in both the numerator and denominator of income shares. For instance, the total income in the tax series is always higher than in both survey-based estimates (denominator). On average, it is nearly 37% higher than in the pre-tax definition, and 43% higher than in the post-tax definition (between 2009 and 2015). The difference is greater when comparing the income of top groups (numerator). For instance, in the same period, according to the tax data, average income of the richest 1% is nearly 44% higher than in the survey's pre-tax series, and 63% higher than post-tax income. The gap is wider towards the top of the distribution (e.g., top 0.1% or 0.01% shares).

Figure 9 displays the evolution of average real income in the top 1% of each series (in 2013 PPA USD).[33] The distance between the tax data series and the survey post-tax series increases throughout the whole period. For the pre-tax series, we can draw the same conclusion, but only for a limited time period. It seems that the bias towards lower top incomes in the survey is increasing over the period. Furthermore, survey estimates appear here to be more volatile than their tax data counterpart. This may be due to the

[33]Comparing total or average income is virtually the same here, as the adult populations in both distributions are practically identical.

Figure 9: Top 1% Share: Tax Data vs. CASEN Survey (1990-2015)



Authors' calculations using unadjusted series from Section 3.1 and CASEN Survey *original* income series.

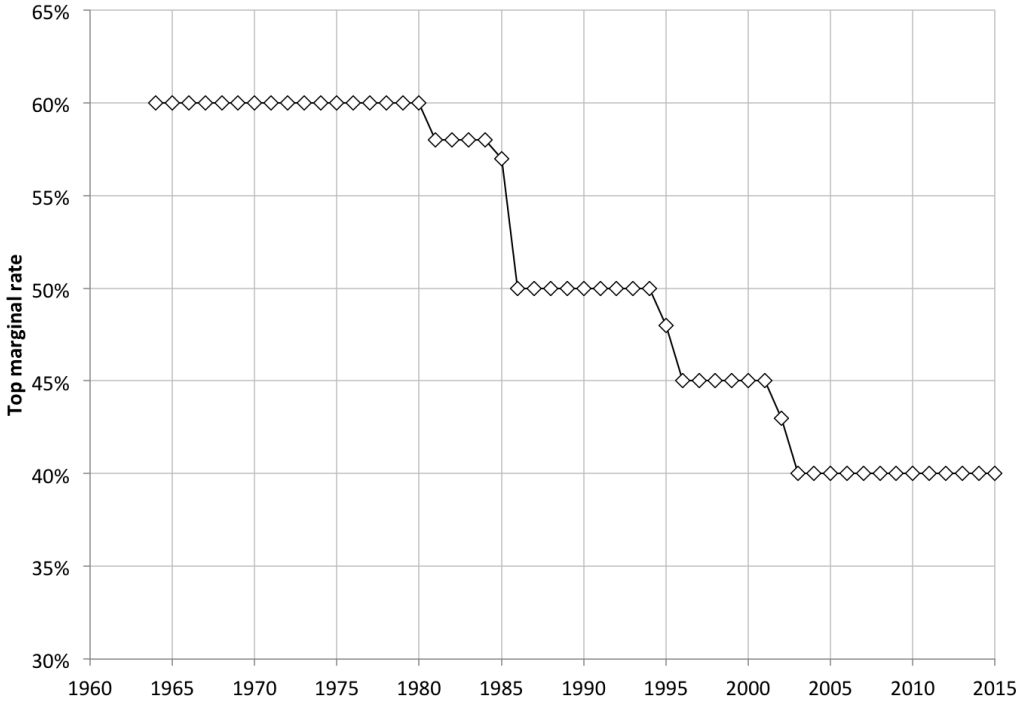
sensitivity of survey estimates with respect to extreme observations.

5 Trend Robustness

As Alvaredo, Atkinson, Piketty, et al. (2013) state, a strong negative correlation is generally found in previous top income literature between top incomes and the top marginal tax rate. Some interpretations of this correlation are often used as arguments to deny the validity of top income trends. They all expect a negative correlation and try to explain trends as being caused by behavioral responses to tax rates. For instance, one of the arguments claims that a fall in top marginal tax rates offers less incentive to seek tax avoidance strategies, hence a parallel increase in top income shares could be caused by a simple statistical artifact (in the case of the USA, for instance). Figure 10 shows the evolution of the top marginal income tax rate for Chile between 1964 and 2015. Contrasting with what is expected in theory, in Chile the coexistence of a constant top marginal income tax rate with a period where top shares describe a U-shape (1962-1980), along with the positive correlation between the top marginal income tax rate and top shares over the last 25 years suggests that tax rates are not the main determinants of reported income levels.

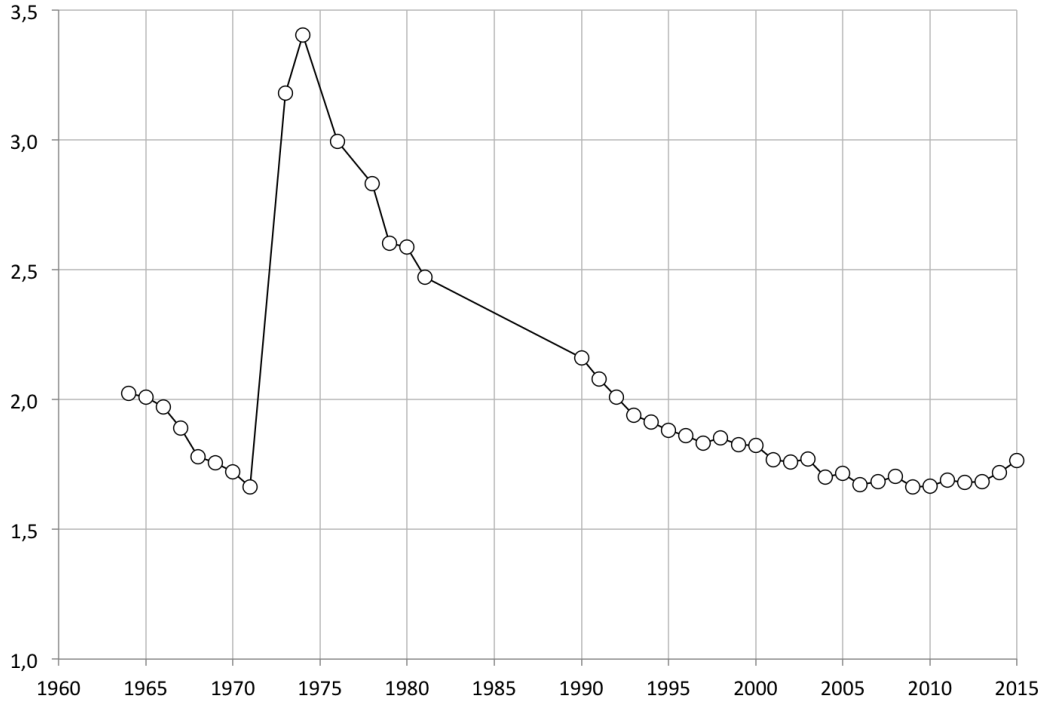
Another recurrent criticism of top income studies is that top shares may be markedly sensitive to variations in total personal income. The argument is that the methodology used to calculate income totals from national accounts could be responsible for a major

Figure 10: Top Marginal Income Tax Rate (1964-2015)



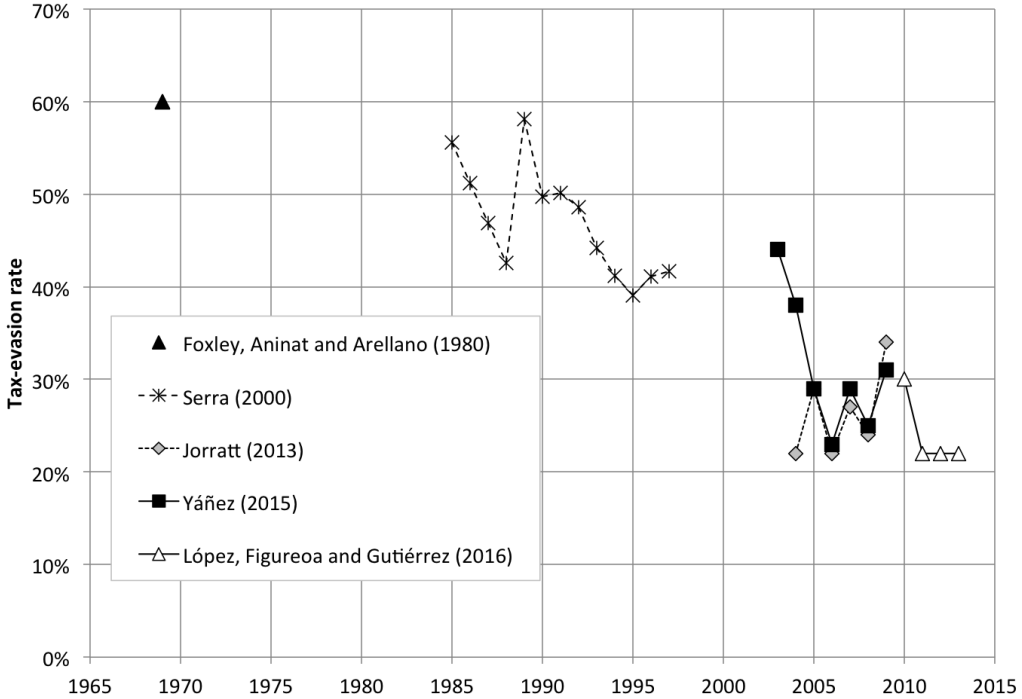
Source: *Servicio de Impuestos Internos* (SII), *Boletines de Estadística Tributaria*.

Figure 11: Inverted Beta Coefficient of Top 1% Share (1964-2015)



Authors' calculations using tax statistics.

Figure 12: Tax Evasion Rates in Literature (1964-2015)



Sources: Foxley, Aninat, and Arellano (1980), Serra (2000), Jorratt (2013), Yáñez (2015) and López, Figueroa, and Gutiérrez (2016). Estimates refer to the *Impuesto de Primera Categoría* (IPC tax): a tax on capital income that for most of the period is integrated into personal income tax.

part of what we perceive as top share trends. This would be a problem when dealing with poorly detailed national accounts, as happens in the early years of the study, where total incomes are estimated as a fixed share of GDP. Considering this issue, Figure 11 presents the Pareto coefficient of the top 1% share for the whole span being studied. This coefficient is built as the ratio between the average income of the richest 1% divided by its threshold (P99). The main intention here is to look at inequality within the top 1% share independently of total income estimates. Figure 11 confirms a generalized decreasing trend of inequality during the 1960s. It then shows a sharp increase in inequality since 1973, followed by a progressive decrease in income concentration within the top 1%. This latter phenomenon occurs at the same time as the increasing overall concentration recorded in Figure 1. Finally, the democratic period continues with a decreasing concentration, which is interrupted and inverted in 2013.

As has been highlighted, theoretically our trends could be distorted by tax evasion, independently of its causes. Indeed, we should expect to find a negative relationship between tax evasion (or the share of undeclared income) and top income shares. In other words, the less you evade, the more you declare. Figure 12 brings together tax evasion estimates found in the literature relating to the "first category tax", which is the tax related to capital income. Globally, estimates seem to draw a downward evolution, especially in the period since 1985, where we have series with comparable estimates. This

progression is in parallel to the observed decrease of top income shares since the return to democracy. As happens with marginal tax rates, the contradiction between expected and observed correlation shows that it is highly unlikely that our observed trends are significantly biased by tax evasion trends.

Conclusions

This paper aimed to establish personal income concentration levels and trends from a historical perspective, based on the best data available. Our results, which are likely to be biased downward, still rank Chile among the most unequal Latin American and developed countries over the observable period. Chilean income concentration remains high throughout the whole period (1964-2015). Our estimates of top income shares show them to be resistant to changes in top marginal tax rates, to potential flaws in our total income estimates, and most likely to tax evasion trends as well. Furthermore, our fiscal data proves to be consistently better than the CASEN Survey at describing what happens at the top of the distribution. In fact, the gap between survey and fiscal averages of both total and top incomes increased throughout the 25 year period.

Additionally, we find that since the beginning of the 2000s, undistributed profits have been increasing considerably as a share of National Income. The parallel reduction of household income during the same period (% of National Income) seems to confirm the concern voiced in previous literature that the Chile-specific institutional structure would incentivize retaining corporate profits within firms, while allowing their owners to access them in less detectable and therefore less taxable ways. We go further by finding that not only the level, but also the trend in income concentration may be biased. We question the decreasing trend in income concentration that appears in both survey and fiscal data estimates, at least since the early 2000s. The evolution of undistributed profits most likely played a role in pushing those trends downwards. It is thus crucial to study the joint evolution of corporate and personal income in order to analyze the whole picture and identify more informed inequality trends in the Chilean scenario. Naturally, further research is needed in order to assess whether this change in trend is found when analyzing a corrected version of other more comprehensive measures of inequality.

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