

Distributional effects of eliminating the differential tax treatment of business and personal income in Chile

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ABSTRACT

This paper estimates the distributional effects that would result from eliminating the differential tax treatment of business and personal income in the Chilean tax system, as well as from the elimination of the main personal income tax exemption, the one for voluntary retirement savings. The results of the analysis show that, while the majority of taxpayers benefitting from this exemption are in the upper income brackets, its elimination would not make the income tax more progressive. As to removing the favourable tax treatment for corporate income, the distributional effect is of relevant magnitude and the income tax becomes significantly more progressive. Generally speaking, the results suggest that income taxation in Chile is less progressive than it appears and that it is feasible to give it a more important redistributive role in reducing income inequality.

KEYWORDS

Tax exemption, income tax, savings, tax policy, income distribution, Chile

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I

Introduction

The last 20 years have seen small changes in the levels of inequality prevailing in Chile, despite sustained economic growth and a sharp reduction in poverty.¹ While there is evidence that government transfers have had an impact in reducing poverty and inequality (Agostini and Brown, 2000 and 2011), there is much disagreement in the public debate over the role that tax policy can play in reducing income inequality.

Evidence for the United States shows that a revenue-neutral tax reform can in fact make the income tax more progressive and can reduce income inequality. For example, using data from the 1994 Consumer Expenditure Survey, Metcalf (1999) shows that a tax reform in which the existing graduated tax is replaced by a uniform sales tax (equivalent to a value added tax, VAT) that raises the same amount of revenue would be highly regressive. Specifically, if the income tax in force in 1988 had been replaced by a national sales tax of 16.5%, the Suits index would have declined from 0.202 (a progressive tax) to -0.286 (a regressive tax). Similarly, Altshuler, Harris and Toder (2010) estimate for the United States the distributional effects of a revenue-neutral tax reform that cuts corporate taxes (a regressive reduction) and at the same time raises the taxes paid by individuals on capital gains and dividends (a progressive increase). The net effect of the reform is progressive and reduces after-tax income inequality.

Even a flat tax with an exemption threshold can be progressive and can reduce after-tax income inequality. For example, using a dynamic general equilibrium model with household heterogeneity and a utilitarian steady-state social welfare criterion, Conesa and Krueger (2006) show that the optimal income tax for the United States is well approximated by a flat tax rate of 17.2% and a fixed deduction of US\$ 9,400. More generally, Davies and Hoy (2002) demonstrate that, with a given pre-tax income

distribution and a requirement to keep revenues constant, after-tax inequality will decline monotonically with the tax rate under a flat tax system in which the personal exemption level is adjusted to keep revenues constant.

Lastly, it is important to consider the evidence on taxpayers' response to changing tax rates in terms of income reporting, in particular among high-income families. Lindsey (1987) finds that the reduction in the top marginal tax rate (from 70% to 50%) introduced by the Economic Recovery Tax Act of 1981 in the United States was associated with a significant increase in the portion of income reported by the top 1% of taxpayers. Feenberg and Poterba (1993) also show that the stable increase in the portion of gross taxable income received by the richest 0.5% of the population since 1970 is consistent with taxpayers' responses to the tax rate cuts for high-income families during that time. A time series analysis by Slemrod (1996), designed to isolate the nontax factors of inequality shows evidence consistent with tax cuts increasing the incomes of wealthy families. Kleven and Schultz (2011), using data from Denmark, found that the elasticity of taxable income is greater for high than for low incomes.

In the specific case of Chile, several characteristics of the income tax explain its limited role in reducing inequality (Engel, Galetovic and Raddatz, 1999). The income tax accounts for around a third of total tax revenues and, although it includes income from all sources, it treats the income of individuals differently from corporate income. The tax rate on corporate profits is only 17% when the profits are not distributed to the owners.² In the case of certain small businesses, no corporate taxes are due as long as the profits are not distributed.³ When profits are distributed, the corporate tax already paid is considered a credit against the personal income tax.⁴

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¹ Between 1990 and 2009 gross domestic product (GDP) per capita in Chile grew by 98% (World Indicators, World Bank). The poverty rate fell from 38.6% in 1990 to 15.1% in 2009. Indigence also dropped sharply in this period, from 13% to 3.7%. The Gini coefficient, on the other hand, was 0.56 in 1990 and 0.53 in 2000 (MIDEPLAN, 2010a and 2010b).

² In order to finance the reconstruction plan following the 2010 earthquake, this tax rate was raised temporarily to 20% in 2011 and 18.5% in 2012. After extensive debate, the national Congress approved a tax adjustment proposed by the government, setting a permanent tax rate of 20%, which is to come into force in 2013.

³ 60% of firms fall under the general tax regime based on accrued earnings, and 40% have a special regime based on distributed profits or presumed income (Jorrot, 2009).

⁴ In contrast to Chile, business profits in the United States pay corporate taxes first and the owners of the firm then pay personal taxes on the dividends received from the firm without any credit for the corporate taxes already paid. A portion of the retained profits is

For example, if a firm has profits of 100 Chilean pesos (Ch\$ 100), it will pay Ch\$ 17 in corporate taxes. Let us assume that the firm subsequently distributes Ch\$ 50 in dividends to each of the owners, and that those persons, after totalling their income including dividends, are liable for Ch\$ 20 in personal income tax. The tax paid by the firm then constitutes a credit against their personal income tax, so that in the end they have to pay only Ch\$ 11.50 ($\$20 - 0.5 * \17).

If all profits were distributed, this mechanism would not generate any problem in terms horizontal tax equity. However, data from the Internal Revenue Service show that less than 30% of corporate profits are distributed each year (Jorrat, 2009).

In addition, there are two special tax regimes under which corporate profits are taxed only when they are distributed.⁵ The objective of these special regimes is to provide liquidity to small businesses.⁶ However, they can also be used by small investment companies owned by a family group whose members can shift their personal income to corporate income. Empirical evidence shows that 52% of all retained earnings in Chile in 2006 are reported in family firms of this type, the owners of which belong to the highest income decile and make wide use of these special tax regimes (Jorrat, 2009).⁷

A second specific feature of the Chilean tax system is the high level of tax-exempted income, which is well above the average wage. This high level, together with a skewed income distribution, implies that few people actually pay income taxes. In 2009, 82.7% of taxpayers had incomes below the exemption threshold and, therefore, did not have to pay income tax. As a consequence, all the tax exemptions and incentives contained in the income tax benefit the top 17% of income earners in the country. Despite this, and notwithstanding the apparent public concern over inequality, recent years

have seen an increase in the number of personal income tax exemptions designed to serve a variety of purposes (encouraging general savings and retirement savings, housing purchases, hybrid automobile purchases, purchase and installation of solar panels in dwellings, etc.), and Congress is now considering several additional incentives and exemptions.

According to statistics from the Chilean Internal Revenue Service (DIPRES, 2009), tax expenditures amounted to around 5.72% of GDP in 2010, and the main component of that expenditure (4.90% of GDP) is related to the income tax. The main source of tax expenditure is tax deferral (4.03% of GDP), which represents an amount almost equal to the total revenue collected through the income tax. Consequently, eliminating the deferral provision has the potential of nearly doubling income tax revenues. Among the various tax mechanisms for postponing the payment of income tax, the most important in terms of magnitude are undistributed profits (2.01%) and distributed profits reinvested before 20 days (0.94%).

This paper describes and analyses the impact that the voluntary retirement savings (*Ahorro Previsional Voluntario*, APV) exemption and the deferred payment of corporate income taxes have on the progressive nature of the income tax. To this end, data from the Chilean Internal Revenue Service (SII) and from the CASEN (National Socioeconomic Survey) are used. Both the APV and the corporate profits tax deferral were discussed as potential sources of revenue for financing the reconstruction effort following the 2010 earthquake, but no agreement was reached on eliminating these tax benefits.

The results show that the APV, although it is used by the highest income groups, has little impact in terms of making the income tax less progressive. However, the distributional effects of corporate profit tax deferral are indeed important. A shift in the tax base from “distributed profits” to “accrued profits”, while maintaining the corporate tax credit for purposes of the individual income tax, makes the income tax significantly more progressive and raises the average tax rate paid by those with the highest incomes.

Previous studies have shown contrasting results with respect to this last point. On the one hand, Engel, Galetovic and Raddatz (1999), for example, find that this kind of change has no effect on the scanty impact of taxation on income distribution. They conclude that only targeted social spending can be effective in redistributing income. The main reason is that incomes across all deciles are very low and the average tax rate is barely 3%. It is important to highlight that in their study these authors used data from the CASEN survey,

also taxed a second time when the owners of the firm obtain capital gains from these retained earnings.

⁵ Articles 14bis and 14ter of the Income Tax Act. Under the article 14bis tax regime firms pay taxes only when profits are distributed. To be eligible for this tax regime a firm must have annual income of less than 5,000 UTM (until 2008 the cutoff was 3,000 UTM) and an initial capital of less than 1,000 UTM (200 UTM until 2008). Under the article 14ter tax regime, firms pay tax on the basis of cash flow, and they are allowed to keep simplified accounts and to deduct investments and inventories as expenses. To be eligible, a firm must collect and pay VAT, it must have annual income of less than 5,000 UTM on average for the last three fiscal years (3,000 UTM until 2008) and an initial capital of less than 6,000 UTM.

⁶ Firms with annual sales of less than Ch\$ 127 million (around US\$ 270,000) or with capitalization below Ch\$ 7.5 million (equivalent to US\$ 16,600) can use these special regimes.

⁷ 77.9% of all retained earnings belong to the highest income decile.

and consequently incomes for the higher deciles are underreported and the distributional effect of the income tax is therefore underestimated. Moreover, the authors assume that corporate profits are not distributed to the firm's owners, which also limits the potential redistributive power of the income tax. On the other hand, Cantalupo, Jorrot and Scherman (2007), using SII data, show that a revenue-neutral tax reform that eliminates both income tax exemptions and special tax regimes for corporate profits and reduces the value added tax (VAT) would make the tax system more progressive and would contribute substantially to improving income distribution in Chile. In this case, taxing the retained profits of the firm's owners plays a key role in the outcome.

II

The Chilean tax system

1. General description

Tax revenue represents the main source of funding for the Chilean State, and generates around 70% of its total revenue. In 2010, net tax revenue represented 13.6% of GDP.⁸ Of that amount, 53.6% was generated by the value added tax (VAT), 10.4% by specific excise taxes (on fuels, alcohol, cigarettes and tobacco), 32.2% by the income tax and the remaining 3.8% by taxes on legal transactions and foreign trade.

Since January 2013,⁹ the income tax has a single permanent rate of 20% for corporate profits and a 7-bracket structure of marginal tax rates, plus an exemption threshold, for personal income. As noted above, the corporate tax rate does not determine the final tax burden on corporate profits, as the corporate tax is integrated with the personal income tax. The corporate tax is just a withholding tax from personal taxable income, and when profits are distributed among shareholders or owners of the firm, the dividends received constitute part of the personal tax base: they are added to all other income received, and individuals pay tax according to the tax bracket in which their income level

This paper uses SII data to analyse the impact of the APV exemption and the CASEN survey as the basis for examining the impact of a change in the corporate profits tax base. For the latter analysis, data equivalent to those employed by Engel, Galetovic and Raddatz (1999) are used, whereas the simulations in this study explicitly consider the distribution of profits to firm owners.

The paper then proceeds as follows. Section II looks in greater detail at the income tax in Chile, with particular emphasis on the current APV exemption. Section III presents the two databases used in the subsequent empirical analysis. Section IV analyses the distributional effect of the main existing exemptions and the mechanism for deferring corporate taxes. Finally, section V summarizes the principal findings and conclusions.

places them. For these purposes, corporate taxes paid in advance by the firm constitute a credit against personal taxes. In this respect, the corporate tax serves merely as a withholding of the personal tax that must ultimately be paid by the owners of the firm. However, there are two special tax regimes for small businesses that allow profits to be taxed only when they are withdrawn by the owners. In these cases, there is no 20% withholding from the accrued profits for each year. The tax expenditure inherent in deferring taxes until profits are distributed to the owners is estimated at 2.01% of GDP for the year 2010 (DIPRES, 2009).

The seven brackets of the personal income tax have marginal rates that range from 5% to 40%. The exemption threshold is such that 83.42% of taxpayers did not have to pay income tax in 2009.¹⁰ Moreover, 10.8% of taxpayers are in the first income tax bracket and pay a marginal rate of 5%. As a result, only 5.78% of taxpayers face a marginal rate of 10% or more. When it comes to the highest marginal rate of 40%, only 0.22% of taxpayers are in this income bracket, meaning that, while the marginal rate of 40% may be considered relatively high compared to other countries in Latin America, in practice it applies to fewer than 1% of individuals.

⁸ In 2008 this figure was 18.5% and the average for the period 2004-2008 was 17.4%, indicating that tax revenues were particularly low in 2009.

⁹ The tax rate, which was 17% until 2010, was temporarily fixed at 20% for 2011 and at 18.5% for 2012.

¹⁰ The exemption threshold was 508,302 pesos per month in the 2009 tax year, equivalent to US\$ 908. This exemption threshold is higher than the average income in Chile, which was 269,921 pesos per month, equivalent to US\$ 482.

Figure 1 shows the marginal tax rates in each bracket and the total number of taxpayers subject to those rates. It can be seen that the largest proportion of taxpayers face a marginal tax rate equal to zero. In light of this, it is not surprising that empirical simulations have shown that the income tax system in Chile has little redistributive power and that, in global terms, the tax system is slightly regressive (Engel, Galetovic and Raddatz, 1999).¹¹

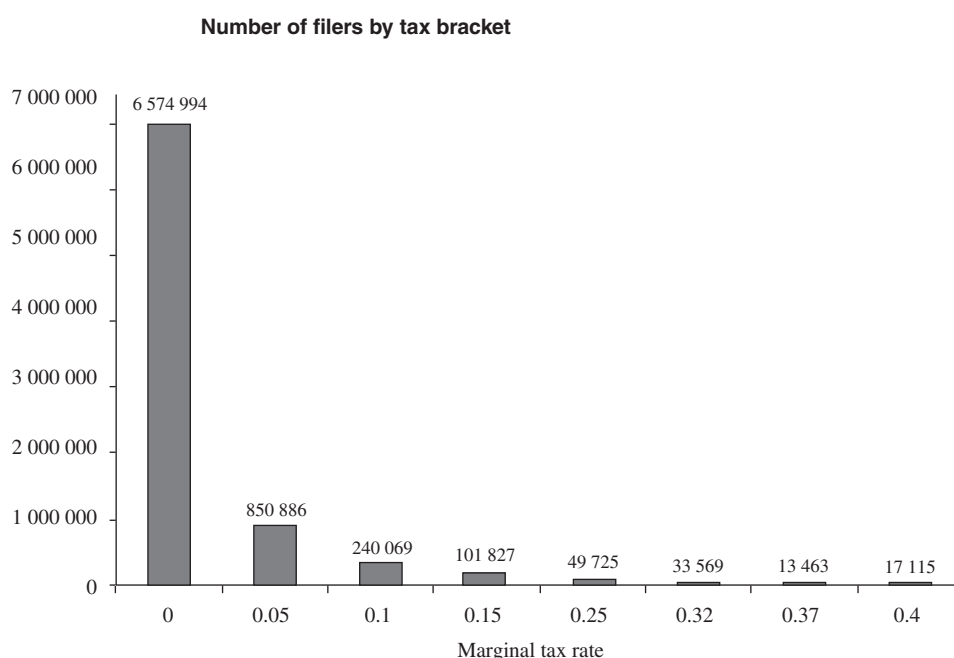
¹¹ According to the 2010 Budget Law, published by the Budget Office, the largest source of revenue is the value added tax (VAT), which in that year accounted for 32% of total revenue (41% of tax revenue). In

In general, the government can affect income distribution through progressive taxes and targeted spending. In practice, Chile has opted exclusively for the social spending route, while collecting taxes in the most efficient manner possible regardless of its distributional effects.¹²

light of this, and of the structure of the income tax, it is not surprising that the tax system is not progressive.

¹² In the 2009 CASEN survey the Gini coefficient of autonomous income per capita is 0.55, but after monetary transfers from the government it drops to 0.53.

FIGURE 1



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

The structure of the Chilean income tax generates a salient horizontal tax inequity by granting preferential treatment to corporate profits in comparison to income from work. As a consequence, two persons with identical incomes may face very different tax rates. A person who earns only labour income pays tax at a marginal rate that can be as high as 40%, while a person whose income derives solely from business pays only 20% until the profits are distributed. If the firm comes under the special

distributed profits tax regime it pays no tax at all until the profits are withdrawn as dividends. Obviously, this tax gap produces incentives to create firms for the sole purpose of paying less tax, leaving all personal savings in the firm as tax-free retained profits (or subject to a tax rate of 20% in the case of large firms).

The horizontal inequity thus generated by the income tax could potentially be only temporary and limited to a financial gain of the cost of money over time, because

once the firm's profits are distributed as dividends they are subject to income tax based on the tax bracket and the marginal tax rate on total income of the firm's owner. In this respect, the scope of the inequity would be limited to the financial gain attributable to the deferral of tax payment. However, Jorrat (2009) shows that less than a third of corporate profits are distributed each year, and that there are many legal loopholes for withdrawing profits without ever paying taxes on them, implying that the horizontal inequity is not only persistent over time but is of substantially greater magnitude.¹³

A second source of horizontal inequity is tax evasion (Slemrod and Yitzhaki, 2002; Slemrod, 2007), since a tax evader pays fewer taxes than a non-evader with the same income. In Chile, tax evasion is estimated at 30% for the corporate income tax and at 46% for the personal income tax. In the latter case, 92% of evasion comes from the distribution of profits and dividends to business owners (Jorrat, 2009).

At the same time, the Chilean tax system, like that in most countries, contains tax exemptions and credits with

multiple objectives.¹⁴ However, it must be considered that, given the high exemption threshold for the personal income tax, these exemptions generate distributional effects only for the top 17% of income earners, who are those able to take advantage of preferential tax treatment. In this paper, the focus is on the retirement savings exemption, known as the voluntary retirement saving (APV), which involves a tax expenditure equal to 0.06% of GDP (see table 1).

2. Voluntary retirement savings (APV)

The main purpose of this exemption is to increase retirement savings through voluntary contributions to their individual capitalization accounts. Chile has a pension system based on individual capitalization accounts and compulsory savings, with monthly contributions of 10% of salary and wages, up to a ceiling of 64.7 UF (*Unidades de Fomento*, an inflation-linked accounting unit).¹⁵ People can choose their pension fund manager (*administradora de fondos de pensiones*, AFP) and the risk profile of the assets portfolio in which their funds are invested. These compulsory savings are exempted from personal income taxes; in fact they are part of a worker's gross salary but are not considered in the tax base.

¹³ One way of withdrawing profits without paying tax is to generate expenses in the firm, which actually correspond to household consumption, e.g. through the purchase of automobiles and 4WD trucks or computers. Another alternative is to create debts artificially with related firms or to purchase all the shares of a related firm for a value that yields a tax-free capital gain. It is also possible to have children over the age of 18 as shareholders or partners: if they are not working, they can each withdraw amounts up to the tax-exempt threshold (around 6 million pesos a year).

¹⁴ Table 1 shows the principal sources of tax expenditure in 2010.

¹⁵ Pension fund managers (AFP) charge commissions to administer the compulsory retirement funds. For a description of the system, see Superintendencia de Pensiones (2003).

TABLE 1

Key items of tax expenditure in Chile, 2010

Tax expenditure	Millions of pesos	Percentage of GDP
Retained business profits pay no tax	3 660	2.01
Treatment of income in the pension fund system	1 723	0.94
Distributed profits reinvested before 20 days pay no tax	646	0.35
Other temporary differences	400	0.22
Special credit for housing construction	377	0.21
Accelerated depreciation	332	0.18
VAT exemption for health services	290	0.16
Housing rental income covered by DFL 2	250	0.14
VAT exemption for education establishments	239	0.13
Leasing quotas	228	0.12
Special treatment for voluntary contributions, contractual deposits and the APV	54	0.06

Source: Subdirección de Estudios, Chilean Internal Revenue Service (SII), September 2009.

Notes:

1. Includes tax returns in foreign currency.
2. Excludes negative expenditure items and items corresponding to the observed average.
3. Using an exchange rate of 522.46 pesos per dollar, corresponding to the average observed for 2008.

In 2002, the low replacement rates for pensioners in the system (39% for women and 58% for men, according to Berstein, Larraín and Pino, 2006) led to the creation of a tax incentive for additional voluntary contributions to individual capitalization accounts: the APV (voluntary retirement savings). Since October 2008, people using this benefit can choose between two tax alternatives. The first is a tax exemption for the voluntary contribution at the time it is made, i.e. the amount of the APV is deducted from taxable income. Voluntary contributions are deducted from taxable income up to a maximum of 50 UF per month (with a ceiling of 600 UF per year). Subsequently, when the funds are withdrawn, they become part of taxable income in the year in which they are withdrawn. If the funds are withdrawn after retirement age, the tax rate is that for the corresponding tax bracket in the regular personal income tax structure. If the funds are withdrawn before reaching that age, an additional tax of between 3% and 7% has to be paid, thereby penalizing the use of the funds for other than retirement purposes.

The second option, in contrast to the first, does not exempt the APV from the tax base in the year the contribution is made. The tax benefit materializes when the funds are withdrawn, at which time only the return to savings become part of taxable personal income. Moreover, the person receives a 15% contribution from the State, to a maximum of six Monthly Tax Units (UTM) per year.

The two alternative tax incentives available are intended to boost the retirement savings of two different kinds of taxpayers. The first alternative benefits people

who must pay personal income tax in the year in which they make the voluntary retirement contribution. The second alternative benefits individuals who are exempt from personal income tax at the time they make their contribution to their retirement fund account. This second option was created in 2008, six years after the creation of the APV.

Since the marginal income tax rates rise with the level of income, the APV tax benefit also rises with income, up to a ceiling. Therefore, when people with different income levels but with the same amount of APV are compared, the tax benefit that each receives as a fraction of their income is exactly that person's marginal rate, provided the APV is less than the ceiling and the exemption does not bring the person into a lower income tax bracket. For example, if the APV is 200,000 pesos (around \$ 450), the tax savings is 10,000 pesos for a person in a tax bracket where the marginal rate is 5%, and it is 80,000 pesos for a person in the 40% tax bracket.

Obviously, people who pay no income tax because they are exempt, as is the case for 82% of workers in Chile, will not benefit from this tax exemption. Exempted persons do receive a tax benefit under the second option described above, but only when they retire and not when they make the APV investment.

According to statistics from the Superintendency of Pensions, in December 2010 there were 827,574 APV accounts in the system, with an accumulated balance of 1,000,817,424 pesos. The tax expenditure associated with these accounts is estimated at 0.8% of personal income tax revenue.

III

Empirical analysis

Two different sources of data are used for the empirical analysis of the distributional impact of the APV tax exemption and the preferential treatment of corporate profits.

First, data from the SII produced especially for this study are used. The SII has a policy of not providing individual taxpayer data, releasing only highly aggregated figures on revenues by type of tax.¹⁶ However, for purposes of this study the SII supplied data for the year 2007 at

a substantially disaggregated level, calculating pre-tax income and the various exemptions used by taxpayers for 1000 income quantiles. These data allow a detailed analysis of the effects on tax progressivity of the main tax exemptions and credits in the personal income tax.

Second, the National Socioeconomic Survey (CASEN) for the year 2003 is used.¹⁷ The data from that survey include the socioeconomic characteristics

¹⁶ The SII has long held that Chilean law prohibits the disclosure of individual taxpayer data, even if the information is completely anonymous.

¹⁷ The 2006 and 2009 CASEN surveys, with the disaggregated income variables needed for this study, were not yet available while working on this study.

of household members, dwelling characteristics, the main durable goods in the household, and its different sources of income, including transfers received from the State.

The 2003 CASEN survey was conducted by the University of Chile for the Ministry of Planning and Cooperation (MIDEPLAN),¹⁸ but the data were subsequently adjusted by the Economic Commission for Latin American and Caribbean (ECLAC) using the national accounts as a reference. The adjustments are related primarily to the problems generated by the lack of income data for certain households and the under- or over-reporting of certain income sources in the sample.¹⁹

The CASEN survey uses a random multi-step sampling method with stratification. In the first step, each of the country's 13 regions is divided into rural and urban zones and the primary sampling units are selected with probabilities proportionate to the population. In the second step, given the stratification, households are selected so that all of them have the same probability of being selected in the sample.²⁰

¹⁸ The name of this entity was changed to Ministry of Social Development in October 2011.

¹⁹ While the adjustments made by ECLAC could have introduced some bias in the data, the evidence suggests that this did not happen (Contreras and Larrañaga, 1999). In any case, unadjusted data are simply not available.

²⁰ The methodological framework is available at: http://www.mideplan.cl/casen/pdf/Metodologia_%202003.pdf

Table 2 provides a statistical description of data from the 2003 CASEN survey. In the expanded sample there are 6,921,064 individuals with positive incomes.²¹ The average autonomous income (excluding monetary transfers from the State) is Ch\$ 311,803 (equivalent to US\$ 660). Pre-tax income is calculated on the basis of each individual's income as calculated in the survey, adjusted to replicate the income tax base. This adjustment requires consideration of components of autonomous income that are not part of the personal income tax base, such as the value of self-consumption, imputed housing income in the case of home ownership, rental income and presumed costs for income as self-employed.²²

Once the pre-tax income of each individual is calculated, the structure of marginal tax rates by income bracket is applied and then each person's tax liability estimated. The average income tax rate for persons in the CASEN survey is 0.5%, slightly below the average of 0.6% in the SHI data. Because the sample is nationally representative and the structure of the sample is considered when the average is calculated, the difference between the two average tax rates may indicate income tax avoidance and evasion or may simply reflect the fact that higher-income individuals are generally not

²¹ The unexpanded sample covers 68,153 households containing 257,077 individuals.

²² Pre-tax income using the CASEN is calculated as: autonomous income-self consumption-imputed rent-receipts not constituting income-presumed expenses (up to the ceiling allowed for the self-employed).

TABLE 2

Descriptive statistics based on the 2003 CASEN survey

Variable	N° of observations	Mean	Standard deviation	Minimum	Maximum
Independent income	6 921 064	311 803	757 864	46	80 000 000
Self-consumption	6 921 064	1 070	9 773	0	823 334
Self-supply	6 921 064	1 042	15 198	0	2 964 000
Rental value	6 921 064	31 750	45 663	0	2 185 000
Property rental	6 921 064	4 416	179 642	0	60 000 000
Property rental 2	6 921 064	81	4 625	0	833 333
Presumed expense (fees and commissions)	6 921 064	3 432	28 431	0	2 400 000
Interest and dividends	6 921 064	91	3 670	0	594 780
Pre-tax income with self-reported interest and dividends	6 921 064	3 239 053	8 365 931	324	666 000 000
Pre-tax income with imputed interest and dividends	6 921 064	9 259 341	227 000 000	324	39 600 000 000
After-tax income with self-reported interest and dividends	6 921 064	3 062 463	6 145 910	324	410 000 000
After-tax income with imputed interest and dividends	6 921 064	6 750 239	136 000 000	324	23 800 000 000
Average tax rate (self-reported interest and dividends)	6 921 064	0 005	0 022	0	0 385
Average tax rate (imputed interest and dividends)	6 921 064	0 008	0 037	0	0 400

Source: prepared by the authors on the basis of the 2003 National Socioeconomic Survey (CASEN).

represented in the survey.²³ The average maximum rate in the CASEN survey is 38.5%, higher than the average top rate of 37.09% calculated from SII data. If business profits are included as part of the personal income tax base regardless of whether they are distributed or not, the average tax rate rises from 0.5% to 0.78% and the average maximum rate increases from 38.5% to 39.9%.

²³ Obviously, this could be a simple sampling error.

Table 3 shows descriptive data of the tax database from the SII. Each income quantile contains 7,422 or 7,423 taxpayers. The data consist of tax returns aggregated for each of the 1,000 pre-tax income quantiles. The average personal income tax rate paid for all taxpayers in Chile is 0.626%. The maximum rate is 37.09% in the last income quantile, i.e. the one containing the richest 0.1% of taxpayers in the country. The low average rate obviously reflects the fact that the great majority of taxpayers have a rate of zero. The average rate rises to 0.627% when the APV tax benefit is eliminated.

TABLE 3

**Descriptive statistics based on administrative data
from the Chilean Internal Revenue Service**

Variables	N° of observations	Mean	Standard deviation	Minimum	Maximum
N° of taxpayers	1 000	7 422	0	7 422	7 423
Withdrawals (Arts. 14 and 14 bis)	1 000	3 790 000 000	53 300 000 000	0	1 670 000 000 000
Dividends (Arts. 14 and 14 bis)	1 000	268 000 000	2 460 000 000	0	70 600 000 000
Expenses disallowed	1 000	970 000 000	13 600 000 000	0	421 000 000 000
Presumptive income	1 000	296 000 000	675 000 000	0	13 400 000 000
Income per simplified accounts (Art. 14 ter)	1 000	247 000 000	883 000 000	0	18 100 000 000
Professional and directors' fees	1 000	2 880 000 000	6 750 000 000	0	125 000 000 000
Income from securities, withdrawals of freely available surpluses, and capital gains	1 000	157 000 000	785 000 000	0	19 600 000 000
Income exempted from GC [graduated general income] tax	1 000	36 600 000	344 000 000	0	10 300 000 000
Income art. 42 (salaries, pensions etc.)	1 000	8 500 000 000	27 100 000 000	0	440 000 000 000
Increase in corporate income	1 000	692 000 000	10 400 000 000	0	325 000 000 000
Corporate and property taxes paid	1 000	962 000 000	13 100 000 000	0	405 000 000 000
Capital losses	1 000	65 000 000	254 000 000	0	5 750 000 000
Pension contributions by owners or partners	1 000	2 774 558	16 300 000	0	286 000 000
Mortgage allowances	1 000	429 000 000	1 020 000 000	0	6 150 000 000
Mutual funds and APV	1 000	38 300 000	186 000 000	0	2 230 000 000
GC tax base	1 000	14 500 000 000	46 700 000 000	0	826 000 000 000
Mutual funds	1 000	255 079	2 023 752	0	52 600 000
<i>Ahorro Previsional Voluntario</i> (APV)	1 000	37 900 000	184 000 000	0	2 220 000 000
57 bis (net positive savings)	1 000	5 185 888	38 900 000	0	957 000 000
<i>Global complementario</i> [graduated general income] tax	1 000	-59 100 000	3 070 000 000	-3 230 000 000	89 500 000 000
Tax base	1 000	31 500 000 000	105 000 000 000	48 236	2 980 000 000 000
Tax base without deduction of APV	1 000	31 500 000 000	105 000 000 000	48 236	2 980 000 000 000
Tax calculated on tax base	1 000	2 240 000 000	35 600 000 000	0	1 100 000 000 000
Tax calculated on tax base without deduction of APV	1 000	2 250 000 000	35 600 000 000	0	1 110 000 000 000
Average tax rate applicable to tax base	1 000	0.00626	0.02377	0.00000	0.37090
Average tax rate applicable to tax base without deduction of APV	1 000	0.00627	0.02384	0.00000	0.37092
APV exemption	1 000	37 900 000	184 000 000	0	2 220 000 000

Source: Chilean Internal Revenue Service (SII) database.

Note: under Article 14 ter businesses are taxed on the basis of their cash flow; they may keep simplified accounts and deduct investments and inventories as expenses. To be eligible, firms must collect and pay VAT, they must have annual sales of less than 5,000 UTM (the average for the last 3 business years was 3,000 UTM until 2008) and their initial capital must be less than 6,000 UTM.

IV

Empirical findings

As discussed in the description of the Chilean income tax system, there are two main factors reducing the progressivity of the income tax. The first is the preferential tax treatment of retained profits, especially in the case of small businesses that pay taxes only when profits are withdrawn. This creates incentives to disguise personal income as corporate income and thereby defer or even avoid the payment of personal tax. The second is the set of tax incentives for personal savings and investment: this paper focuses in particular on the APV tax benefits.

Ideally, SII data would be used to analyse the effect of these two sources in the reduction of tax progressivity. However, SII tax data are available only for personal incomes as reported in the personal income tax return form. Thus, the information on withdrawals and dividends relates only to profits that have been distributed and not to those that are retained in firms. Although the SII has information on the profits of each business through the corporate tax returns, it would be necessary to allocate each firm's retained earnings to each of its owners in proportion to their shares in the firm. Such information was not available from the SII for purposes of this study, nor is it made public. Therefore, the impact of tax exemptions and deductions is analysed using data for 1000 SII quantiles and the impact of the special treatment of retained profits using data from the CASEN survey.

The two empirical analyses presented below make the assumption, as do Metcalf (1999) and Altshuler, Harris and Toder (2010), that the tax incidence on labour income falls on individuals and the incidence of corporate income taxes falls on firms.²⁴ It is important to note that this assumption about the impact of corporate taxes affects, as a practical matter, only the degree of progressivity of the tax. Evidence for the United States shows that the tax is always progressive, even when the burden falls on salaries and wages instead of on capital (Harris, 2009).

The basic principle of horizontal equity in tax policy simply requires that two individuals receiving the same income should pay the same amount in taxes, regardless of the source of that income. Complementarily,

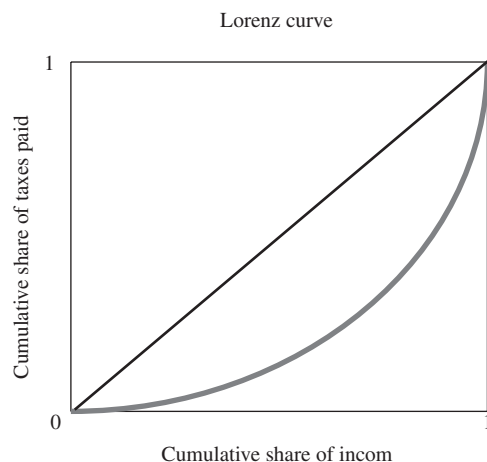
the principle of vertical equity holds that persons with higher incomes should pay higher taxes on average. A tax is progressive, then, if the average tax rate paid rises with income.

One of the indices most widely used in the literature for quantifying the degree of progressivity of a tax is the Suits index (Suits, 1977), which measures progressivity using a Lorenz curve for income and tax revenues as shown in figure 2.

If the area under the proportional line is defined as *K* and the area under the Lorenz curve as *L*, the Suits index is defined as follows:

FIGURE 2

Suits index



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

$$S = 1 - \frac{L}{K} = 1 - \frac{1}{5000} \int_0^{100} T(Y) dY$$

The Suits index has values between -1 and 1. Thus, if the tax is proportional then $S = 0$; if the tax is progressive, $S > 0$; and if the tax is regressive, $S < 0$. The Suits index makes it possible to analyse changes in progressivity resulting from changes in tax codes, and a re-sampling (“bootstrapping”) statistical technique

²⁴ Similarly, Altshuler, Harris and Toder (2010) assume that the highest tax rates on capital gains and dividends are borne directly by the persons reporting this type of income in their tax returns.

can then be used to estimate confidence intervals for the index. This allows testing hypotheses about changes in progressivity due to tax changes (in the tax base or in tax rates).

1. Simulations with tax data

The following section presents the effects on income distribution of eliminating the APV tax incentive.

The potential distributional effects of this exemption depend on the structure of income brackets and of marginal income tax rates, as well as on the distribution of pre-tax income. Figure 3 shows the average tax rate by income quantile, from which it can be seen that the fraction of persons paying income taxes in Chile is small. If pre-tax income is distributed among 1,000 quantiles, only persons in quantiles 824 and higher have a positive tax liability. In other words, 82.3% of individuals fall below the exemption threshold and, therefore, do not pay personal income tax.²⁵ The average tax rate for the total population of taxpayers is 0.63%, a figure that rises to 3.54% when the population is limited to those

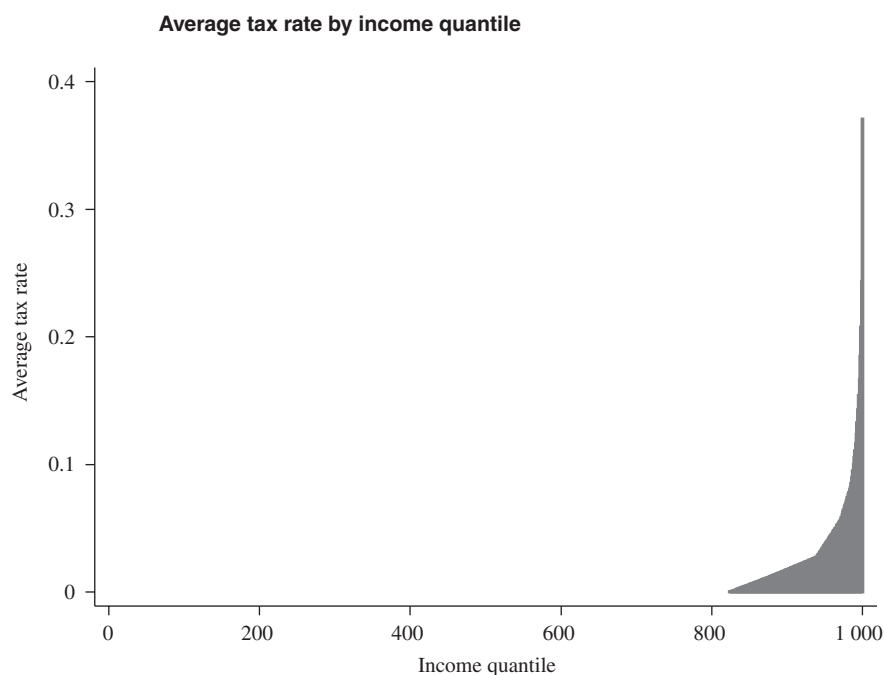
²⁵ In these circumstances, the existence of seven marginal tax rates seems odd.

actually paying taxes. The average top rate is 37.1% for the 1,000th quantile.

Figures 4 and 5 show the APV distribution by income level. As can be seen from figure 4, the APV is close to zero in the first 800 quantiles and is positive in those income levels for which the marginal tax rate is greater than zero. In both figures, it is clear that the use of APV rises with income level, as would be expected since tax savings are greater for higher income levels (up to the ceiling of 600 UF or 6 UTM per year, depending on the regime selected). Figure 6 also shows that the ratio of APV to pre-tax income also rises with income. In this case, the effect of the APV cap becomes clearer: once the ceiling is reached and income exceeds that level, the APV falls as a proportion of income. Nevertheless, it is important to note that the average ratio is barely 0.3%.

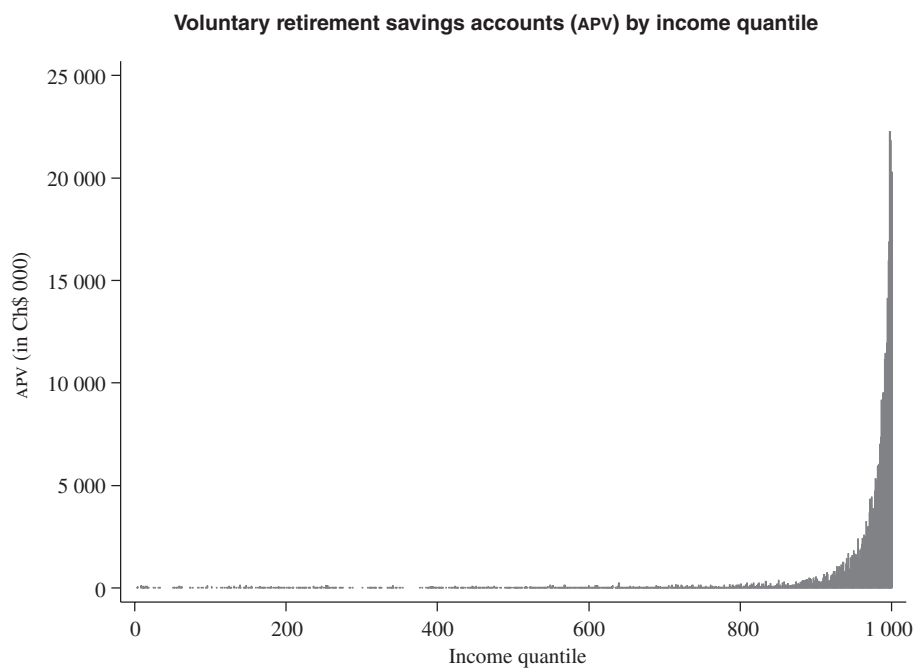
The evidence on APV use by level of income suggests that eliminating this tax benefit would make the personal income tax more progressive. However, as the APV fraction is low in relation to pre-tax income and the great majority of filers are exempted from the tax, the distributional impact is limited. This can be seen in figure 7, which shows the level of tax exemption resulting from the APV for those income quantiles that have positive average tax rates.

FIGURE 3



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

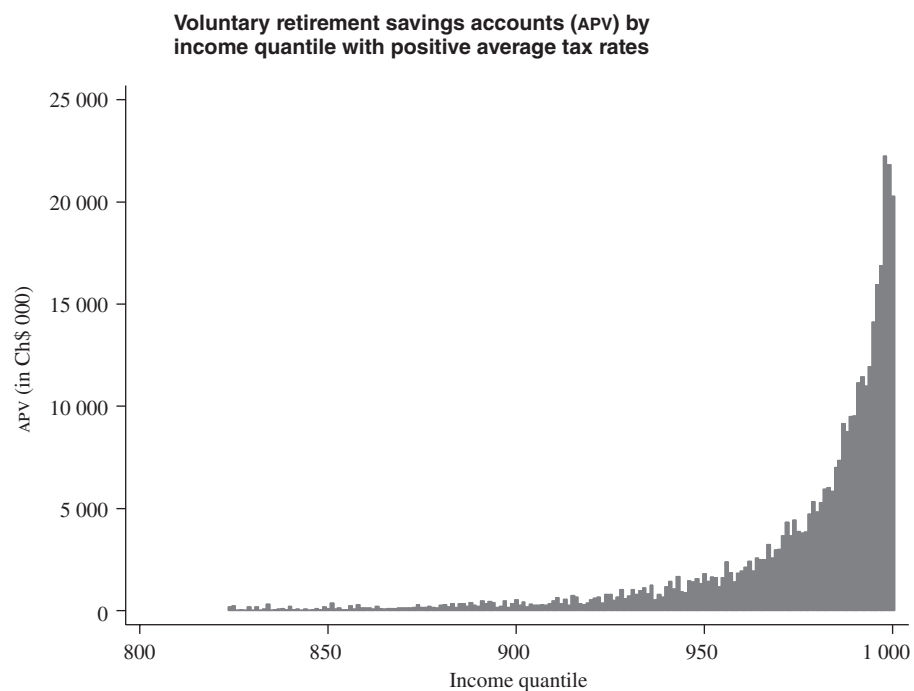
FIGURE 4



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

Note: the APV variable has been scaled, dividing its value by 100,000.

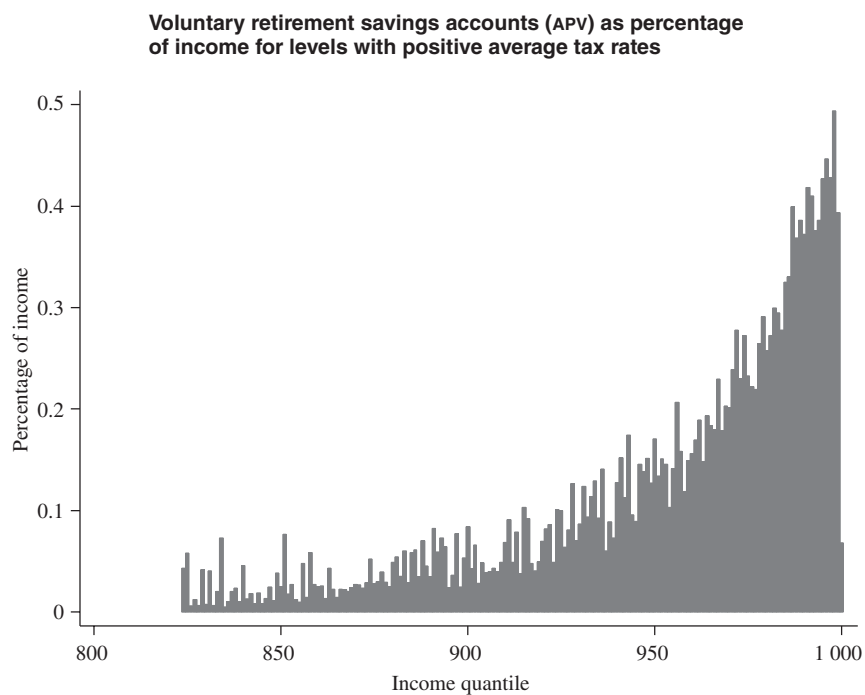
FIGURE 5



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

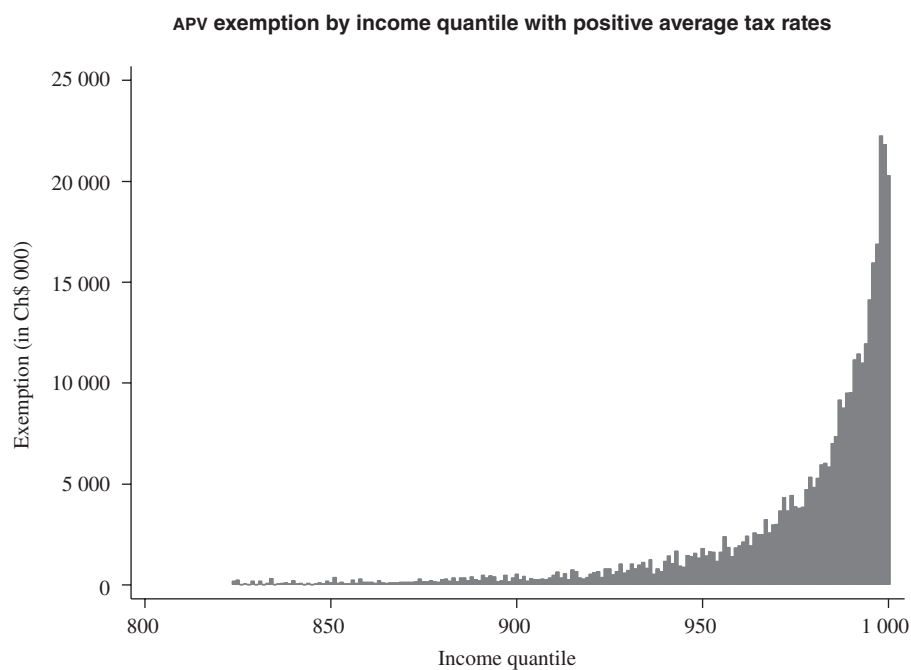
Note: the APV variable has been scaled, dividing its value by 100,000.

FIGURE 6



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

FIGURE 7



Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

Note: the exemption variable has been scaled, dividing its value by 100,000.

Table 4 shows the Suits index for the personal income tax with and without the APV tax benefit. The index declines from 0.67995 to 0.67951, a change that is small in magnitude but opposite in direction to what would be expected, i.e. towards lesser rather than greater progressivity. The change in the index is statistically significant. As can be seen in table 4, the zero value is not contained in the estimated confidence interval. However, in terms of economic rather than statistical importance, elimination of the APV tax benefit would have no meaningful impact for purposes of changing the potential redistributive role of the personal income tax.

One possible explanation for the reduction in the progressivity of the personal income tax that results from eliminating the APV exemption is the role played by the tax benefit cap. For high-income individuals who contribute with the maximum APV, the ceiling represents a small fraction of their taxable income, and consequently their average tax rate would scarcely rise if the benefit were eliminated. By contrast, for lower-income individuals (with positive but low marginal tax rates), the APV benefit cap represents a greater fraction of their taxable income, and consequently their average tax rate would rise significantly if the benefit were eliminated. In fact, the increase in the average tax rate for the first 10 quantiles of individuals with a positive marginal rate is 1.09 percentage points,²⁶ while for the 10 highest income quantiles it is 0.34 percentage points.²⁷

A situation in which the increased revenue from elimination of the APV exemption is distributed proportionately among the population is also simulated. In this case, the Suits index rises slightly from 0.67995 to 0.68001. This would indicate that the personal income tax has become more progressive. The difference between the two indices is statistically significant, as the estimated confidence interval does not contain the value zero (see

table 4). In economic terms, however, the change in the index would have no meaningful distributional effect.

The Suits index is an application of the Gini coefficient for measuring tax progressivity. As such, it constitutes a measure of average progressivity across the entire range of incomes. This must be considered in interpreting the index, because there are tax systems that can be progressive in one income range and regressive in another. In this respect, the Suits index cannot capture the more subtle details which require information on higher-order moments in the distribution of tax payment (variance and kurtosis, for example).

In the case of Chile, changes in tax progressivity through the elimination of exemptions and deductions or changes in positive marginal tax rates can take place only within the income range of that small portion of taxpayers who actually pay personal income tax. The only tax change that would affect a greater number of taxpayers is the reduction of the exempt-income threshold. Because the Suits index implicitly gives greater weight to the taxes paid by persons who fall in the midrange of the distribution, and because in Chile persons who fall within this midrange pay no taxes, tax changes that merely increase the taxes paid by high-income groups—who are at the right-hand end of the distribution—cannot be expected to have much impact on the index. It can be argued that the Suits index—although it is the most widely used in the economic literature and in tax policy analysis (Congressional Budget Office, 1988)—is not the most appropriate one for assessing the progressivity of an income tax structure such as the Chilean one. However, it is not clear which index would be more appropriate because, to date, no other measure has been shown to be superior to the Suits index for this purpose.²⁸

²⁶ The average tax rate for these 10 quantiles rises from 0.108% to 0.110% when the APV exemption is eliminated.

²⁷ The average tax rate for these 10 quantiles rises from 18.441% to 18.504%.

²⁸ Seetharaman and Iyer (1995) have criticized the seven most widely used indices of tax progressivity, including the Suits index. Similarly, Kiefer (1984) identified inconsistencies in various progressivity indices that have been proposed. Finally, Greene and Balkan (1987) compared various indices used in the academic literature.

TABLE 4

Suits index

	Suits index	Difference between Suits indices	Confidence interval for difference between Suits indices	
Base case	0.67995			
Without APV exemption	0.67951	-0.0004369	-0.00043689	-0.00043671
Proportional allocation of increase in revenues through elimination of APV exemption	0.68001	0.00006045	0.00006045	0.00006047

Source: prepared by the authors using administrative data from the Chilean Internal Revenue Service (SII).

2. Simulations with data from CASEN survey

Using data from the 2003 CASEN survey, which contains specific information on all sources of individual income (wages and salaries, rent, interest, capital gains, dividends, profits withdrawals from businesses, capital income), a change in the tax base for dividends and profits that involves a shift from distributed profits to accrued profits was simulated. This change in the tax base maintains the integration of the corporate tax with the personal income tax, whereby a credit against personal income tax is granted for corporate tax paid on accrued profits. In this way, the final income tax rate is the personal rate paid by the firm's owner or shareholders.

The survey data do not show which fraction of the profits is distributed and which portion is maintained as retained earnings. For simulation purposes, then, it is assumed that the total of retained earnings estimated by Jorrat (2009) is proportional to the dividends reported by each individual in the CASEN survey. In this way, an amount of retained earnings is imputed to each individual in proportion to the dividends received.²⁹ Then, the individual's pre-tax income and the taxes that would have to be paid according to the two different tax bases (distributed profits and accrued profits) are calculated.³⁰

²⁹ The annual interest and dividends received by individuals are calculated and their share in total interest and dividends received by the population are estimated. Then the 450,625,000,000 pesos of tax expenditure estimated by the Research Branch of the Internal Revenue Service for the year 2003 (Tax Expenditure Report, December 2004) are allocated among individuals according to each person's share in total interest and dividends.

³⁰ The Suits index is not used to examine the progressivity impact of tax reforms with CASEN survey data. There are two reasons for this: first, the progressivity of the income tax in Chile depends critically on the increase of the average tax rate of those who pay this tax, in line with increases in their incomes. However, as only 17.3% of income recipients pay income tax, the progressivity of the tax depends

Table 5 shows the average tax rate for each percentile of income before and after this change in the tax base. As can be appreciated from the table, there are two significant implications. The first is that many taxpayers below the 86th percentile will now pay a positive tax rate, whereas before the reform they paid no taxes. This reveals the scope of the horizontal inequity that currently exists in the tax base: in fact, many taxpayers who would have to pay taxes in light of their income level are able to defer those taxes because their main sources of income are the profits of firms of which they are owners. If these taxpayers had the same level of income but derived solely from wages and salaries, they would pay tax in accordance with the current tax base, as that base would not be changed through the addition of corporate profits. The second implication of this reform is that those taxpayers who now pay personal income tax would face a much higher marginal tax rate, as they would move into a higher income bracket. A tax reform such as that simulated in this study would certainly spark a behavioural response from taxpayers, who would try to reduce their tax burden (by working less, for example). Consequently, the change in progressivity resulting from this tax reform must be considered as the maximum change that could be obtained by shifting the tax base from distributed to accrued profits.

exclusively on what happens in the tail of the distribution. In the second place, the CASEN survey, with its primary focus on poverty, contains proportionately fewer observations in the upper tail of the distribution than do the SI1 population data. Despite these limitations, it is possible to calculate and report the average income tax rates as a correct approximation for quantifying the income distribution effects of a tax reform, but it is not possible to correctly measure the total progressivity of the income tax using the Suits index. These problems mean that, in calculating the Suits index with CASEN survey data, an index of about 0.23 is obtained, and this does not coincide with the Suits indices calculated from the SI1 date, which include the total population of taxpayers.

TABLE 5

Average tax rate by income percentile, before and after tax reform

Percentile	Average tax rate (distributed profits)	Average tax rate (accrued profits)
1	0.001	0.000
2	0.005	0.000
3	0.009	0.000
4	0.000	0.000
5	0.002	0.000
6	0.001	0.000
7	0.001	0.000
8	0.000	0.000
9	0.000	0.000
10	0.000	0.000

Table 5 (continued)

Percentile	Average tax rate (distributed profits)	Average tax rate (accrued profits)
11	0.003	0.000
12	0.001	0.000
13	0.000	0.000
14	0.000	0.000
15	0.000	0.000
16	0.000	0.000
17	0.000	0.000
18	0.000	0.000
19	0.001	0.000
20	0.004	0.000
21	0.000	0.000
22	0.000	0.000
23	0.000	0.000
24	0.000	0.000
25	0.000	0.000
26	0.000	0.000
27	0.001	0.000
28	0.000	0.000
29	0.000	0.000
30	0.000	0.000
31	0.001	0.000
32	0.003	0.000
33	0.002	0.000
34	0.001	0.000
35	0.000	0.000
36	0.001	0.000
37	0.000	0.000
38	0.002	0.000
39	0.001	0.000
40	0.001	0.000
41	0.000	0.000
42	0.000	0.000
43	0.001	0.000
44	0.000	0.000
45	0.000	0.000
46	0.001	0.000
47	0.007	0.000
48	0.002	0.000
49	0.002	0.000
50	0.001	0.000
51	0.001	0.000
52	0.002	0.000
53	0.001	0.000
54	0.001	0.000
55	0.000	0.000
56	0.002	0.000
57	0.001	0.000
58	0.002	0.000
59	0.002	0.000
60	0.001	0.000
61	0.003	0.000
62	0.001	0.000
63	0.000	0.000
64	0.002	0.000
65	0.001	0.000
66	0.002	0.000
67	0.000	0.000

Table 5 (concluded)

Percentile	Average tax rate (distributed profits)	Average tax rate (accrued profits)
68	0.001	0.000
69	0.001	0.000
70	0.006	0.000
71	0.001	0.000
72	0.002	0.000
73	0.001	0.000
74	0.003	0.000
75	0.004	0.000
76	0.001	0.000
77	0.002	0.000
78	0.001	0.000
79	0.001	0.000
80	0.002	0.000
81	0.004	0.000
82	0.005	0.000
83	0.003	0.000
84	0.004	0.000
85	0.007	0.000
86	0.002	0.001
87	0.007	0.003
88	0.010	0.006
89	0.013	0.008
90	0.018	0.011
91	0.018	0.014
92	0.027	0.016
93	0.028	0.018
94	0.036	0.022
95	0.034	0.024
96	0.039	0.028
97	0.048	0.037
98	0.068	0.052
99	0.098	0.078
100	0.211	0.188

Source: prepared by the authors on the basis of the National Socioeconomic Survey (CASEN), 2003.

V Conclusions

This paper has examined the distributional effect of the main exemptions and deductions in the Chilean income tax. In addition to the CASEN survey, which is a well-known database widely used in several studies, an exclusive tax data generated by the SII was used.

The tax data show that 82% of individuals are exempted from the personal income tax owing to their income level and the structure of the income tax brackets and marginal tax rates. In this context, our empirical analysis shows that the APV exemption has no meaningful economic effect on the progressivity of the

income tax. Although those who take advantage of these exemptions and deductions are the individuals with the highest incomes, and although the use of that exemption rises with income, the relatively small magnitude of the tax benefits vis-à-vis income and the fact that few people face a positive tax rate implies that abolishing these benefits would do very little to make the income tax more progressive.

A different finding emerges when considering a tax reform that eliminates the most important benefit in terms of tax expenditure: that whereby the profits of

firms are taxed only when they are distributed to the owners. Based on CASEN survey data, and assuming a conservative scenario for profit distribution, a change was simulated in the corporate tax that would shift the payment of taxes to an accrual rather than a distributed basis but would maintain its integration with the personal income tax. The results of this empirical analysis show that a tax reform of this kind has a significant impact in terms of increasing the progressivity of the personal income tax and reducing after-tax income inequality.

The results of this study provide a useful and relevant analytical framework for understanding the income tax system in Chile and its potential as a tool for redistribution. In the first place, the fact that only 16.6% of taxpayers are subject to a positive tax rate means that any tax exemption will benefit higher-income groups. This limits the potential of income taxes as a tool for reducing the great income inequality prevalent in the country, and for that reason it should create public and parliamentary debate over the drawbacks of introducing exemptions in the income tax. Any exemption not only generates inefficiencies and incentivizes evasion, but also consistently favours the richest 10% of the population.

In the second place, given the small proportion of persons who actually pay taxes, the only changes with the potential to achieve a more progressive tax system are those that will affect large-scale tax benefits. One such change would be to eliminate the favourable tax treatment of the retained profits of businesses. In the third place, the fact that the elimination of tax exemptions has no great impact on the progressivity of the personal income tax does not mean that this cannot be used as a tool for income redistribution. The conclusion is that greater changes are needed in the current tax structure in order to make it an effective tool. One aspect for debate concerning the structure is the current level of exempted income, as a result of which nearly 83% of the population does not have to pay any income taxes.

This work could be extended in a number of useful ways which depend, unfortunately, on access to data supplied by the tax administration. In particular, there is room for a more detailed analysis of the other exemptions, credits and deductions that now exist in both the personal income tax and the corporate tax, not only to describe their distributional effects, but also to estimate their effects on individual taxpayer behaviour.

TABLE 6

Percentage increase in taxable income and taxes paid after eliminating the APV exemption, by percentile
(Tax-paying percentiles)

Percentile	Percentage increase in income	Percentage increase in tax
824	0.04	21.76
825	0.06	9.16
826	0.01	0.56
827	0.01	0.83
828	0.01	0.33
829	0.04	1.73
830	0.01	0.25
831	0.04	1.22
832	0.01	0.17
833	0.02	0.49
834	0.07	1.58
835	0.00	0.10
836	0.01	0.18
837	0.02	0.34
838	0.02	0.36
839	0.01	0.15
840	0.05	0.62
841	0.01	0.16
842	0.02	0.22
843	0.01	0.09
844	0.02	0.20
845	0.01	0.08

Table 6 (continued)

Percentile	Percentage increase in income	Percentage increase in tax
846	0.01	0.13
847	0.02	0.23
848	0.01	0.10
849	0.04	0.34
850	0.02	0.21
851	0.08	0.62
852	0.02	0.14
853	0.03	0.21
854	0.01	0.09
855	0.01	0.07
856	0.05	0.33
857	0.01	0.09
858	0.06	0.38
859	0.03	0.17
860	0.02	0.15
861	0.03	0.15
862	0.01	0.08
863	0.04	0.24
864	0.02	0.12
865	0.01	0.08
866	0.02	0.12
867	0.02	0.11
868	0.02	0.10
869	0.02	0.12
870	0.03	0.13
871	0.03	0.12
872	0.02	0.11
873	0.03	0.13
874	0.05	0.23
875	0.03	0.12
876	0.03	0.13
877	0.04	0.16
878	0.03	0.12
879	0.02	0.10
880	0.05	0.19
881	0.05	0.21
882	0.04	0.13
883	0.06	0.22
884	0.03	0.10
885	0.06	0.21
886	0.06	0.21
887	0.03	0.12
888	0.07	0.24
889	0.04	0.15
890	0.03	0.11
891	0.08	0.27
892	0.06	0.19
893	0.07	0.23
894	0.06	0.20
895	0.02	0.07
896	0.04	0.11
897	0.08	0.23
898	0.02	0.07
899	0.05	0.15

Table 6 (continued)

Percentile	Percentage increase in income	Percentage increase in tax
900	0.08	0.24
901	0.04	0.12
902	0.07	0.18
903	0.03	0.08
904	0.05	0.13
905	0.04	0.10
906	0.04	0.10
907	0.04	0.11
908	0.04	0.10
909	0.05	0.12
910	0.07	0.17
911	0.09	0.22
912	0.05	0.12
913	0.08	0.19
914	0.04	0.09
915	0.10	0.24
916	0.09	0.21
917	0.05	0.11
918	0.04	0.09
919	0.05	0.11
920	0.07	0.15
921	0.08	0.18
922	0.09	0.19
923	0.05	0.10
924	0.10	0.21
925	0.10	0.21
926	0.06	0.13
927	0.08	0.17
928	0.13	0.26
929	0.07	0.14
930	0.09	0.17
931	0.12	0.24
932	0.09	0.18
933	0.11	0.22
934	0.13	0.25
935	0.09	0.17
936	0.14	0.26
937	0.06	0.11
938	0.09	0.16
939	0.07	0.23
940	0.13	0.45
941	0.15	0.52
942	0.11	0.37
943	0.17	0.56
944	0.10	0.30
945	0.09	0.27
946	0.15	0.43
947	0.14	0.40
948	0.15	0.43
949	0.13	0.35
950	0.17	0.46
951	0.13	0.35
952	0.15	0.39
953	0.15	0.36

Table 6 (concluded)

Percentile	Percentage increase in income	Percentage increase in tax
954	0.10	0.25
955	0.14	0.34
956	0.21	0.48
957	0.16	0.36
958	0.12	0.27
959	0.15	0.33
960	0.16	0.34
961	0.17	0.36
962	0.19	0.39
963	0.15	0.30
964	0.19	0.39
965	0.18	0.36
966	0.18	0.35
967	0.23	0.43
968	0.18	0.33
969	0.20	0.37
970	0.20	0.36
971	0.24	0.63
972	0.28	0.71
973	0.23	0.57
974	0.27	0.65
975	0.23	0.54
976	0.22	0.50
977	0.22	0.48
978	0.26	0.56
979	0.29	0.60
980	0.26	0.52
981	0.27	0.54
982	0.30	0.57
983	0.29	0.55
984	0.28	0.51
985	0.32	0.95
986	0.33	0.92
987	0.40	1.05
988	0.37	0.92
989	0.39	0.91
990	0.37	0.84
991	0.42	0.90
992	0.41	1.06
993	0.38	0.91
994	0.39	0.86
995	0.43	0.89
996	0.45	0.86
997	0.43	0.86
998	0.49	0.88
999	0.39	0.65
1000	0.07	0.07

Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

APV: *Ahorro Previsional Voluntario* [voluntary retirement savings account].

TABLE 7

Share of total taxes paid by percentile before and after eliminating the APV
(*Tax-paying percentiles*)

Percentile	Share of total tax paid (percentage)		Percentage change
	With APV exemption	Without APV exemption	
824	0.000	0.000	21.30
825	0.001	0.001	8.75
826	0.001	0.001	0.18
827	0.001	0.001	0.45
828	0.002	0.002	-0.05
829	0.002	0.002	1.35
830	0.003	0.003	-0.13
831	0.003	0.003	0.84
832	0.004	0.004	-0.21
833	0.004	0.004	0.11
834	0.004	0.005	1.19
835	0.005	0.005	-0.28
836	0.005	0.005	-0.19
837	0.006	0.006	-0.04
838	0.006	0.006	-0.02
839	0.007	0.007	-0.23
840	0.007	0.007	0.24
841	0.008	0.008	-0.22
842	0.008	0.008	-0.16
843	0.009	0.009	-0.28
844	0.009	0.009	-0.18
845	0.010	0.010	-0.30
846	0.010	0.010	-0.25
847	0.011	0.011	-0.15
848	0.011	0.011	-0.28
849	0.012	0.012	-0.04
850	0.012	0.012	-0.17
851	0.013	0.013	0.24
852	0.013	0.013	-0.24
853	0.014	0.014	-0.17
854	0.015	0.014	-0.29
855	0.015	0.015	-0.31
856	0.016	0.016	-0.05
857	0.016	0.016	-0.28
858	0.017	0.017	0.00
859	0.017	0.017	-0.21
860	0.018	0.018	-0.23
861	0.019	0.019	-0.23
862	0.019	0.019	-0.30
863	0.020	0.020	-0.14
864	0.020	0.020	-0.26
865	0.021	0.021	-0.30
866	0.022	0.022	-0.26
867	0.022	0.022	-0.27
868	0.023	0.023	-0.28
869	0.024	0.024	-0.26
870	0.024	0.024	-0.25
871	0.025	0.025	-0.25
872	0.026	0.026	-0.27
873	0.026	0.026	-0.25
874	0.027	0.027	-0.15
875	0.028	0.028	-0.26
876	0.029	0.028	-0.25
877	0.029	0.029	-0.22
878	0.030	0.030	-0.26
879	0.031	0.031	-0.28
880	0.032	0.032	-0.19
881	0.032	0.032	-0.17
882	0.033	0.033	-0.25
883	0.034	0.034	-0.16
884	0.035	0.035	-0.27
885	0.036	0.036	-0.17
886	0.037	0.036	-0.16

Table 7 (continued)

Percentile	Share of total tax paid (percentage)		Percentage change
	With APV exemption	Without APV exemption	
887	0.037	0.037	-0.26
888	0.038	0.038	-0.14
889	0.039	0.039	-0.23
890	0.040	0.040	-0.26
891	0.041	0.041	-0.11
892	0.042	0.042	-0.19
893	0.043	0.043	-0.15
894	0.044	0.044	-0.18
895	0.045	0.045	-0.31
896	0.046	0.046	-0.27
897	0.047	0.047	-0.15
898	0.048	0.048	-0.31
899	0.049	0.049	-0.23
900	0.050	0.050	-0.14
901	0.051	0.051	-0.26
902	0.052	0.052	-0.20
903	0.054	0.053	-0.30
904	0.055	0.055	-0.25
905	0.056	0.056	-0.28
906	0.057	0.057	-0.28
907	0.058	0.058	-0.27
908	0.060	0.059	-0.28
909	0.061	0.061	-0.26
910	0.062	0.062	-0.21
911	0.063	0.063	-0.16
912	0.065	0.065	-0.26
913	0.066	0.066	-0.19
914	0.067	0.067	-0.29
915	0.069	0.069	-0.14
916	0.070	0.070	-0.17
917	0.071	0.071	-0.27
918	0.073	0.073	-0.29
919	0.074	0.074	-0.27
920	0.076	0.076	-0.22
921	0.077	0.077	-0.20
922	0.079	0.079	-0.19
923	0.080	0.080	-0.27
924	0.082	0.082	-0.17
925	0.084	0.084	-0.17
926	0.085	0.085	-0.25
927	0.087	0.087	-0.21
928	0.089	0.089	-0.12
929	0.091	0.091	-0.24
930	0.093	0.093	-0.21
931	0.095	0.095	-0.14
932	0.097	0.097	-0.20
933	0.099	0.099	-0.16
934	0.101	0.101	-0.13
935	0.103	0.103	-0.20
936	0.105	0.105	-0.12
937	0.108	0.107	-0.27
938	0.110	0.110	-0.22
939	0.112	0.112	-0.15
940	0.117	0.117	0.07
941	0.122	0.122	0.14
942	0.128	0.128	-0.01
943	0.133	0.133	0.18
944	0.138	0.138	-0.08
945	0.144	0.144	-0.11
946	0.150	0.150	0.05
947	0.156	0.156	0.02
948	0.163	0.163	0.05
949	0.169	0.169	-0.03
950	0.176	0.176	0.08
951	0.183	0.183	-0.03
952	0.190	0.190	0.01

Table 7 (concluded)

Percentile	Share of total tax paid (percentage)		Percentage change
	With APV exemption	Without APV exemption	
953	0.198	0.197	-0.02
954	0.205	0.205	-0.13
955	0.213	0.213	-0.04
956	0.221	0.221	0.10
957	0.229	0.229	-0.02
958	0.238	0.238	-0.11
959	0.247	0.247	-0.05
960	0.257	0.257	-0.04
961	0.267	0.267	-0.02
962	0.277	0.277	0.01
963	0.287	0.287	-0.08
964	0.298	0.298	0.01
965	0.309	0.309	-0.02
966	0.321	0.321	-0.03
967	0.333	0.333	0.05
968	0.346	0.345	-0.05
969	0.359	0.358	-0.01
970	0.372	0.372	-0.02
971	0.387	0.388	0.25
972	0.409	0.410	0.33
973	0.432	0.433	0.19
974	0.456	0.458	0.27
975	0.481	0.482	0.16
976	0.507	0.507	0.12
977	0.534	0.535	0.10
978	0.563	0.564	0.18
979	0.593	0.594	0.22
980	0.624	0.625	0.14
981	0.658	0.660	0.16
982	0.694	0.695	0.19
983	0.731	0.733	0.17
984	0.770	0.771	0.13
985	0.822	0.826	0.57
986	0.895	0.900	0.53
987	0.973	0.980	0.67
988	1.062	1.068	0.54
989	1.161	1.167	0.53
990	1.269	1.275	0.46
991	1.388	1.395	0.52
992	1.535	1.546	0.68
993	1.735	1.744	0.52
994	1.978	1.988	0.48
995	2.280	2.291	0.50
996	2.659	2.672	0.48
997	3.257	3.272	0.48
998	4.182	4.202	0.50
999	6.034	6.050	0.27
1000	49.317	49.167	-0.30

Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

APV: *Ahorro Previsional Voluntario* [voluntary retirement savings account].

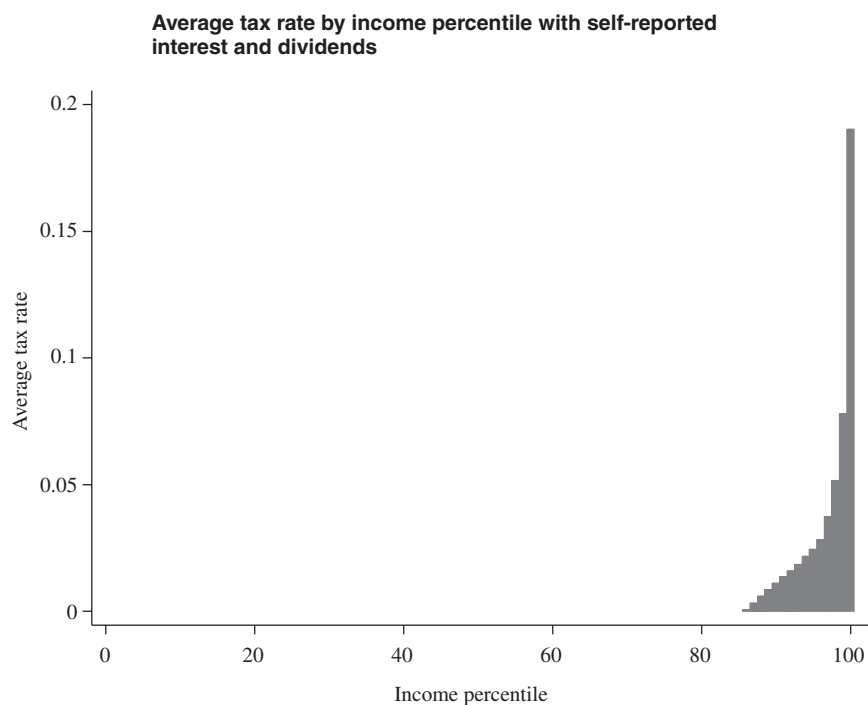
TABLE 8

Change in total revenues from eliminating exemptions

Revenue	Millions of pesos	Percent change from base situation
Base case	2 240 000	
Without APV exemption	2 250 000	0.4

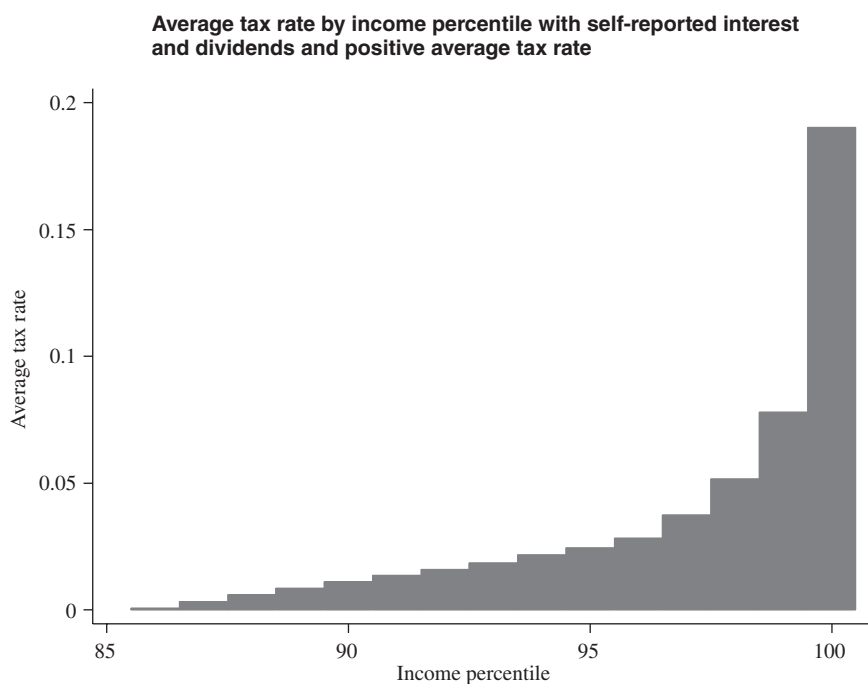
Source: prepared by the authors on the basis of administrative data from the Chilean Internal Revenue Service (SII).

FIGURE 8



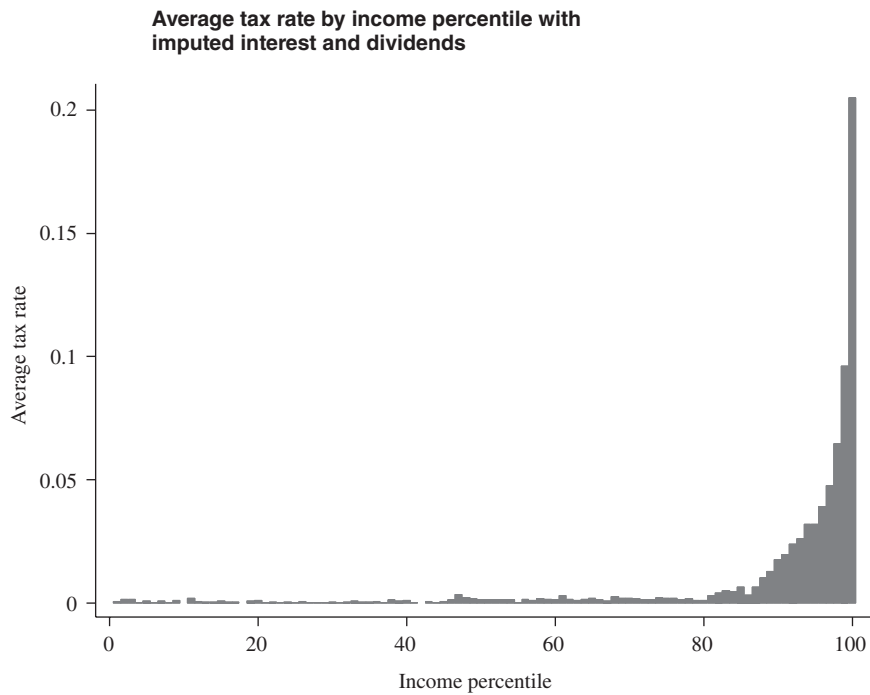
Source: prepared by the authors on the basis of the 2003 National Socioeconomic Survey (CASEN).

FIGURE 9



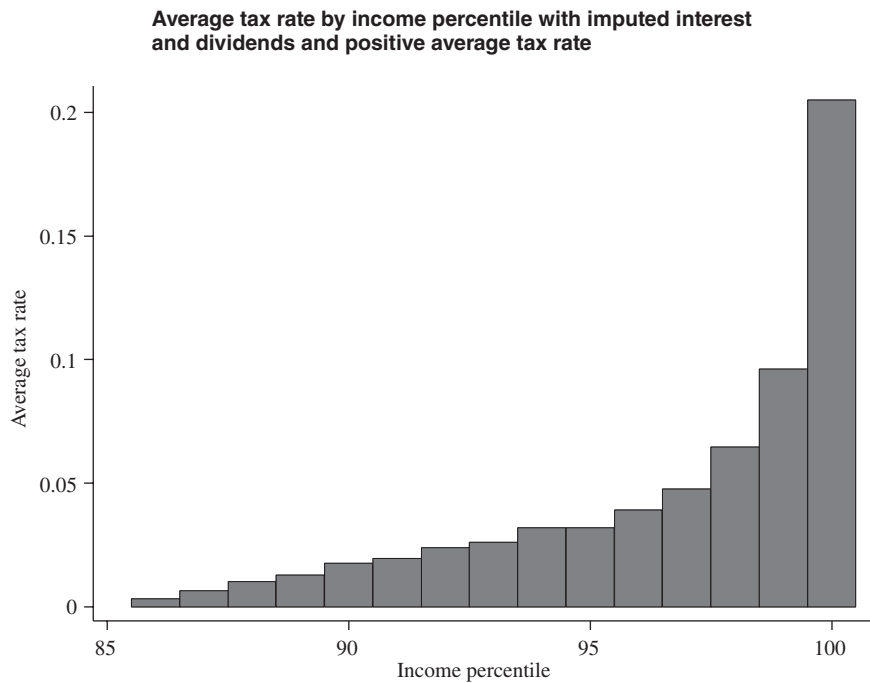
Source: prepared by the authors on the basis of the 2003 National Socioeconomic Survey (CASEN).

FIGURE 10



Source: prepared by the authors on the basis of the 2003 National Socioeconomic Survey (CASEN).

FIGURE 11



Source: prepared by the authors on the basis of the 2003 National Socioeconomic Survey (CASEN).

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