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IECON INSTITUTO DE ECONOMÍA

UNIVERSIDAD DE LA REPÚBLICA URUGUAY

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Mauricio De Rosa y Joan Vilá

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Taxing the rich in Latin America: revenue and distributional effects of a wealth tax

Mauricio De Rosa* y Joan Vilá**

Resumen

La desigualdad de riqueza está aumentando en todo el mundo, lo que genera debates políticos y académicos sobre si se debe abordar y cómo hacerlo; por lo tanto, el impuesto a la riqueza está nuevamente en el debate. La evidencia sobre la distribución de la riqueza en América Latina es relativamente escasa, pero está creciendo y apunta a una concentración extrema. ¿Podría un impuesto a la riqueza ayudar a reducir la desigualdad de riqueza? ¿Cuántos ingresos podría recaudar? Combinamos encuestas de riqueza, listas de multimillonarios y macro-agregados de riqueza neta para simular los efectos distributivos de diferentes diseños de impuestos a la riqueza en México, Colombia, Chile y Uruguay. Asimismo, consideremos los costos administrativos y las respuestas conductuales con base en la literatura para evaluar la capacidad potencial de generación de ingresos del impuesto e ilustrar algunas de los *trade-offs* que se deben considerar. Las estimaciones de los efectos distributivos de los impuestos a la riqueza son modestas en el corto plazo, pero un simple ejercicio dinámico muestra que el efecto acumulativo es sustancial. A su vez, nuestra estimación de recaudación principal, que toma en cuenta las respuestas comportamentales, indica que un impuesto del 1% sobre el 1% de los hogares más ricos recauda en promedio un 0,8% del PIB. Diferentes diseños impositivos (tanto en términos de tasas como de base imponible) y supuestos respecto de las respuestas comportamentales alteran la recaudación proyectada, pero los órdenes de magnitud involucrados sugieren que los impuestos a la riqueza podrían ayudar a recaudar una masa de ingresos muy necesaria en la región.

Palabras clave: América Latina, impuesto a la riqueza, distribución de la riqueza, ajuste de Pareto, listas de multimillonarios, encuestas de riqueza, macroagregados de riqueza, microsimulaciones.

Código JEL: D31, H23, C53

(*) De Rosa, Mauricio, IECON, Universidad de la República, Uruguay, correo electrónico: mauricio.derosa@fcea.edu.uy
(**) Vilá, Joan, IECON, Universidad de la República, Uruguay, correo electrónico: joan.vila@fcea.edu.uy

Abstract

Wealth inequality is increasing around the world, sparking political and academic debate about if and how to address it; hence the wealth tax is back in the discussion. Evidence about wealth distribution in Latin America is relatively scarce but it is growing, pointing at extreme concentration of net wealth. Could a wealth tax help reduce wealth inequality? How much revenue could it actually raise? We combine wealth surveys, billionaires lists, and net wealth macro-aggregates to simulate the distributional effects of different wealth tax designs in Mexico, Colombia, Chile and Uruguay. We also account for administrative costs and behavioral responses based on the literature to assess the potential revenue-generating capacity of the tax and illustrate some of the trade-offs to be considered. The estimates of the distributional effects of wealth taxation are modest in the short run, but a simple dynamic exercise shows that the cumulative effect is substantial. In turn, our benchmark revenue estimate, which accounts for behavioral responses, indicate that a 1% tax on the top 1% wealthiest households raises on average 0.8% of the GDP in revenue. Different tax designs (both in terms of rates and tax base) and assumptions regarding behavioral responses change the projected revenue, but the orders of magnitude involved suggest that wealth taxes could indeed help collect much needed revenue in the region.

Keywords: Latin America, wealth tax, wealth distribution, Pareto adjustment, billionaires lists, wealth surveys, wealth macro-aggregates, microsimulations.

JEL Classification: D31, H23, C5

1 Introduction

Global wealth inequality has increased dramatically in the last few decades. The share of global household wealth captured by billionaires has risen from 1 to 3% since 1995, while the share of the top 0.01% has increased from below 8% to 11% in the same period (WIL, 2022). The rise in wealth inequality has spurred academic and political debate on how to address it, resulting in renewed interest in wealth taxation (Scheuer and Slemrod, 2020; Piketty et al., 2023). Most notably, Brazil took the lead and issued the design of a proposal for a global wealth tax within the G20 (Zucman, 2024). Such a policy may have far-reaching consequences for the world and for Latin America, but we still know surprisingly little about wealth distribution in the region (Carranza et al., 2023), and even less about the distributional effects of wealth taxation. Thus, in this paper, we address two main questions. Could wealth taxation help reduce wealth inequality in Latin America? How much revenue could it raise?

Wealth inequality has been on the rise both globally and within countries and regions. In the United States, wealth concentration has increased substantially since the 1980s (Saez and Zucman, 2022), which has also been the case (to different degrees) for countries such as the United Kingdom (Alvaredo et al., 2018), France (Garbinti et al., 2021), Spain (Martínez-Toledano, 2020), Italy (Acciari et al., 2024) or Russia (Novokmet et al., 2018). Evidence for the region is relatively scarce, but it is growing. Carranza et al. (2023) review the evidence of wealth aggregates and distribution in Latin America, finding increasing aggregate private wealth in the last two decades and top 10% wealth shares (based on surveys) between 50-70% for Colombia, Chile, Mexico and Uruguay, in line with findings by Gandelman et al. (2022). The top 1% shares based on surveys range from 15 to 30% of total household wealth, an they are quite unstable, which is somewhat expected given wealth surveys notorious problems with capturing the top tail of the wealth distribution (Vermeulen, 2018; Kennickell, 2019). Moreover, these results are not surprising considering the large gaps in aggregate wealth captured by regional surveys compared to national accounts, which are particularly massive in the most unequally distributed categories, such as financial assets (Carranza et al., 2023). Estimates for the top 1% share based on administrative sources (either measured directly or through capitalized capital income flows) are in turn far more stable, being 37% for Chile (Hacienda, Ministerio de, 2022; Flores and Gutiérrez, 2021), 40.6% for Colombia (Londoño-Vélez and Ávila-Mahecha, 2021) and 37-39% for Uruguay (De Rosa, 2024), similar to the ones obtained in very unequal countries such as Spain or the United States.

In contrast with this extreme wealth concentration, there is a surprising lack of adequate wealth or even capital income taxation in rich countries (Scheuer and Slemrod, 2021), which is even more striking in the region (Bergolo et al., 2023). Traditional optimal wealth tax theory, based on life-cylce models, infinite elasticity of capital supply and homogeneous returns to wealth suggested zero capital tax (Atkinson and Stiglitz, 1976). However, when the elasticity of capital supply is positive, there are preferences for wealth accumulation or heterogeneous returns, taxing wealth becomes desirable and even efficient (Saez and Stantcheva, 2018; Guvenen et al., 2023). Moreover, considering that wealth better reflects individual's true economic resources as compared with income or consumption –given the importance of capital gains as a source of wealth by the super-rich–, taxing wealth may be considered an effective way to reduce economic inequality (Saez and Zucman, 2019; Piketty et al., 2023).[1] Naturally, the design of such a tax requires considering behavioral responses, either real or financial –including in the latter category both avoidance and evasion– as well as administrative costs (Scheuer and Slemrod, 2020). For instance, Advani and Tarrant (2021) survey the literature and find that "well designed" wealth taxes reduce

[1] Kopczuk (2019) dispute this view, mostly based on implementation issues.

the tax base by 7-17%, while Londoño-Vélez and Avila-Mahecha (2024) find that one-fifth of the revenue is lost due to taxpayers' response.[2]

In this paper, we microsimulate the revenue collection and distributional effects of flat and progressive wealth taxation on four Latin American countries, following similar exercises recently performed for the United Kingdom and the rest of Europe (Advani et al., 2021; Kapeller et al., 2023). We use survey data for Mexico, Colombia, Chile and Uruguay supplemented with billionaires list data to correct the top tail following the method proposed by Vermeulen (2016, 2018), which basically entails fitting a Pareto distribution with the adjusted parameter that result from adding the billionaires to the survey data. In some cases, this procedure ends up mimicking top wealth shares' results based on administrative sources (i.e. top 1% shares close to 40%). Given the relative weakness of the sources, this similarity between administrative sources and rich-list corrected surveys does not necessarily imply that we are absolutely confident of the results, but it is nevertheless reassuring. In order to properly account for the potential revenue, we adjust wealth estimates are to National Accounts' aggregates (reviewed in Carranza et al. (2023)). We assess the potential effects of alternative wealth tax schemes, including possible magnitudes of behavioral responses based on the literature (Advani and Tarrant, 2021).

We find that, after adjusting survey data with billionaires lists, inequality increases significantly. The wealthiest 1% of households, which according to households captures 26-27% in Colombia, Mexico and Uruguay (in the case of Chile, this share is extremely low, only 14%), rises to 34% in Colombia, 41% for Uruguay and Mexico, and to 47% in Chile. These estimates, however, should be taken with extreme caution since the adjustment is very sensitive to the threshold chosen to perform the adjustment. The adjusted top 5 or 10% shares are, in contrast, much more stable. We also find that a flat tax could collect, on average, a revenue of 1% of the GDP with with a tax rate of 1%, targeting the top 1% of households, i.e., of the wealth above the top 1% threshold. As expected, we show that the broader the tax base or the tax rates, the larger the revenue, and that the opposite mechanism operates the more targeted households respond by evading or avoiding the tax. However, for behavioral responses corresponding to a 'well designed' wealth tax, revenue is above 0.8% of the GDP, which is still substantial. With a progressive tax schedule, the same revenue target can be reached by taxing household with over a 1 million US dollars of net worth, with rates that start at 0.5%, increase to 1-1.5% for the top 0.1% and reach 2% only for the top 0.01%. Finally, the redistributive effects are mild in the short run. Top 1% and 0.1% shares are reduced by approximately 0.15-0.30 p.p., depending on the country and the tax scheme. We perform a simple exercise to show that the effects are considerably as time advances.

Our contribution to the literature is threefold. First, we contribute to the wealth inequality literature. Most available estimates for Latin America come from survey data for a handful of countries, namely Colombia, Chile, Mexico and Uruguay (Gandelman et al., 2022; Sanroman and Santos, 2017; Carranza et al., 2023). Other studies produce estimates for the rest of the region based on available survey data and regression-based imputations for the rest of the region, such as World Inequality Database's estimates (`wid.world`, the methodology is discussed in Blanchet and Martínez-Toledano (2022); Bajard et al. (2021)) or Credit Suisse's estimates (Shorrocks et al., 2021; Davies et al., 2011, 2017). Finally, some estimates are based on administrative data (Hacienda, Ministerio de, 2022; Flores and Gutiérrez, 2021; De Rosa, 2024; Londoño-Vélez and Ávila-Mahecha, 2021), but until the moment no systematic attempt has been made to combine survey and rich list data, let alone to compare them with available estimates. Our paper aims at filling this gap, which could point at possible way forward to estimate

[2]For articles emphasizing difficulties regarding evasion and enforcement, see Oh and Zolt (2020); Bastani and Waldenström (2020).

wealth inequality in the region, provided more surveys become available. Second, we contribute to the ongoing debate on wealth taxation (Zucman, 2024; Saez and Zucman, 2019; Kopczuk, 2019; Advani et al., 2021; Scheuer and Slemrod, 2021), providing estimates for a region for which extremely little is known. Third, we provide insights on how much wealth taxes could collect in a region with substantial need for revenue together with a comparatively very low share of wealth taxes (Bergolo et al., 2023; Bachas et al., 2022; Barreix et al., 2017).

The paper is organized as follows. Section 2 presents a theoretical discussion and reviews some of the empirical evidence available on wealth taxation. Section 3 presents the sources of information used and the method for combining them, whereas the results on wealth distribution are discussed in 4. Sections 5, present the simulated tax scenarios, their revenue and distribution effects. Finally, section 6 concludes.

2 The Wealth Tax

In this section, we briefly describe what are the main characteristics of a wealth tax, review some existing wealth taxes, and discuss design issues, insofar they are closely tied to the behavioral responses to taxation, thus affecting revenue and inequality estimates. Moreover, we review recent exercises performed to estimate the revenue and distributional effects of a wealth tax for a number of countries.

2.1 Existing Wealth Taxes (and Proposals)

As discussed by Scheuer and Slemrod (2021), a wealth tax is a broad-based tax on net wealth ownership. Designing a wealth tax requires making decisions about two major components: the tax base and the tax rate schedule. In theory, this includes all types of assets minus liabilities, while in practice, the tax base is determined by the exemption threshold (which can be either for individuals or couples), the exclusion of certain types of assets or valuation problems. From a conceptual standpoint, a useful way to understand a wealth tax is to view it as a tax on the 'normal' rate of return on capital. A wealth tax with a rate t_w is equivalent to a tax rate of t_w/r on capital income, where r is the rate of return. For an asset with an 5% rate of return, a 1% wealth tax is equivalent to a 20% annual tax rate on capital income. Thus, the tax equivalency of a wealth tax rate decreases the higher the rate of return. However, a wealth tax differs from a capital income tax in one key way. For a given wealth amount, the tax liability of a wealth tax does not depend on how much income the wealth actually generates; a capital income tax does. For example, if all of a person's wealth were in a non-interest-bearing demand deposit, a capital income tax would not trigger any tax liability, whereas a wealth tax would. If the wealth declines in a year—that is, if the return is negative—the wealth tax will still apply.

In 1990, twelve OECD countries levied a wealth tax, but now only France, Norway, Spain and Switzerland do. However, others still have similar taxes on some assets, such as taxes on immovable property (which is quite widespread in the OECD) or on financial assets, as in the case of Italy (Scheuer and Slemrod, 2020). The most recent top marginal tax rates range from 1% to 3.75% in the case of Spain, but reached up to 4% in Sweden when the wealth tax was still being levied. The exemption thresholds were usually quite low, between 100.000 to 500.000 euros, with the exception of France or Spain, where they were over 1.000.000 euros. Revenue was under 0.5% of GDP in all cases but Switzerland, where it reached over 1% of GDP (Scheuer and Slemrod, 2021). Proposals such as the ones put forward by United States Senators Sanders and Warren, have much higher projected revenues (1.56% and 1.34%) respectively, but with much higher exemption thresholds (from 32 to 50 million

dollars for married couples) and tax rates (8 and 6% respectively). The proposal for a global wealth tax made by Brazil is a tax on global billionaires, with 2% effective tax rate on their net wealth, which includes all the other taxes they already pay (Zucman, 2024).

Out of the Latin American countries analyzed in this study, only Uruguay and Colombia have a wealth tax. In the case of Uruguay, the wealth tax on individuals in theory taxes all assets, but in practice it only targets real estate, with a very weak enforcement (De Rosa, 2024). The rates range from 0.7 to 1.85% and it is payed by just over 0.3% of the adults, with a virtually non-existing revenue of 0.015% of the GDP according to official records. Columbian wealth tax targets net wealth, exempting up to 137.000 American dollars of the primary residence value, and net equity value of domestic company shares (Londoño-Vélez and Avila-Mahecha, 2024). Less than 0.2% of adults paid the wealth tax, with a resulting total revenue of 0-0.27 % of GDP until 2017. The tax rates are highly progressive, from a 1% to 6% for the wealthiest 0.01%. In both cases, given that the targeted individuals as a percentage of the population is very low, we will perform our estimation exercise assuming that these taxes either do not exist or that are completely substituted by a new wealth tax.

2.2 Theory and Evidence on Wealth Taxes

As argued in Scheuer and Slemrod (2020), there is little rigorous analysis of the optimal taxation of wealth itself, especially when progressive income and inheritance taxes are already in place (see, for example, Saez and Stantcheva 2017). A recent argument in favor of wealth taxation has been provided by Guvenen et al. (2023), who argue that, since returns are heterogeneous, wealth taxation could be efficient insofar it would encourage capital reallocation from unproductive to more productive economic activities. The rationale is that if two firms have the same net worth, but one of them is more productive than the other, the first one would have higher returns, hence facing a lower effective tax rate if a wealth tax was in place. Additional arguments include the effect of wealth inequality with disproportionate political influence by the very wealthy, and that wealth tax could operate as a backstop against evasion of other taxes (Scheuer and Slemrod, 2021; Saez and Zucman, 2019). Moreover, Piketty et al. (2023) argue that it is difficult measure income and consumption for top wealth holders, where capital gains are substantially higher than income or consumption flows, hence a progressive wealth taxation is referred to other types of taxes. They also highlight that, given that a significant fraction of wealth is inherited, there are strong meritocratic reasons to tax wealth.

In designing a wealth tax, one of the key parameters to consider is the behavioral response to wealth taxation. Scheuer and Slemrod (2020) stress that tax-rate elasticities are not structural parameters, thereby they are affected by the wealth tax design. More specifically, the less 'plastic' the tax base is (and the more effective the enforcement), the less behavioral response will be encountered. In their comprehensive review of several of behavioral response studies, Advani et al. (2021) distinguish between real and reported responses, and also highlight the need to pay close attention to the design issues, since they are one of the keys in understanding reported wealth elasticities. In their review, they find that under a well-designed wealth tax, the overall magnitude of behavioral responses might be limited to a 7 to 17 % reduction in wealth in response to a 1% change in the tax rate.

Scheuer and Slemrod (2020, 2021) argue that recent studies based on the experience of European countries and Colombia suggest that the response to wealth taxes can be significant, but that the anatomy of the response varies widely, largely due to differences in the breadth of the tax base. Some studies find that, after a few years, a

reduction of one percentage point in the wealth tax increases reported wealth by 43% in the case of Switzerland, 32% in Catalonia, and 21% in Denmark (Brülhart et al., 2022; Durán-Cabré et al., 2019; Jakobsen et al., 2020). They find no evidence of real changes in accumulation, but simply tax avoidance, for example by moving among cantons and house-price capitalization as in the case of Switzerland.

In contrast to the earlier evidence, Seim (2017) found significantly smaller effects in Sweden: a one percentage point reduction in the wealth tax rate implied an increase in declared wealth of between 0.10% and 0.27%. For the case of Colombia, Londoño-Vélez and Avila-Mahecha (2024) estimate that in the short term a one percentage point cut in the wealth tax in Colombia would increase reported wealth by 2%. They find that these responses predominantly reflect evasion and avoidance, such as the 'misreporting' of wealth assets that are less subject to third-party reporting. In terms of effects on migration, Agrawal et al. (2020) found that the elimination of the wealth tax in Madrid led to a 10% increase in the number of wealthy individuals registered there for tax purposes compared to other regions, but they document that this was mainly due to 'errors' in tax domicile reporting rather than physical migration. On the other hand, Jakobsen et al. (2024), drawing on data from different wealth tax reforms in Scandinavian countries, find significant effects on emigration flows due to increases in the effective wealth tax, but highlight that the annual net migration rate is very low anyway (below 0.01%).

Some studies show that wealth tax evasion can be considerable, especially among the very wealthy, who can use offshore accounts and other sophisticated methods to hide their wealth. Alstadsæter et al. (2019) found that tax evasion increases significantly at the top wealth brackets, with the top 0.01% evading about 25% of the taxes owed. Guyton et al. (2020) combined data from random audits with data on offshore bank accounts and showed that tax evasion by United States taxpayers through offshore financial institutions is highly concentrated at the top of the income distribution, and that random audits virtually never detect this form of evasion.

Advani et al. (2021)'s review discuss a range of possible real responses. First, a wealth tax reduces the net return to savings, which may decrease capital accumulation. While the evidence is still sparse and inconclusive, this effect may be potentially significant. For example, Zoutman (2018) does find evidence that a one percentage point reduction in the wealth tax rate in the Netherlands in 2001 increased long-term accumulated wealth by 14%. In contrast, Ring (2024) finds that, in setting with very limited evasion, the wealth taxation has a positive effect on savings, as a result of strong income effects. For the Scandinavian countries, the results from Jakobsen et al. (2024) suggest that spillover effects from tax-induced migration of the rich exist, but are quantitatively small. More importantly, a wealth tax may theoretically affect the level of effort, although there is no consensus on which elasticity of labour supply is relevant (Advani and Tarrant, 2021). As discussed above, Ring (2024) finds that the income effect dominates the substitution effect, which operates thorough a small increase in taxable labour income. Other studies find no effect of wealth taxation on earnings, such as Brülhart et al. (2022) and Seim (2017) for Switzerland and Sweden respectively.

2.3 Modeling wealth taxation

As mentioned above, a number of recent proposals have been put forward to tax wealthy individuals. In a a study that we follow closely in this article, Advani et al. (2021) micro-simulate wealth the revenue and distributional effects of a series of wealth tax designs in the United Kingdom. These include both flat annual and one-off taxes, as well as progressive ones. To to this, they adjust the Wealth and Assets Survey with data from the Sunday Times

Rich List, using a Pareto imputation. The wealth that results from this adjustment is later scaled up to match aggregate wealth. They find that a wealth 0.17% tax on wealth above the 500.000 euros threshold could raise 10 billion euros in revenue.[3]

Similarly, Kapeller et al. (2023) adjust the Household Finance and Consumption Survey's for 22 European Union Countries with rich lists (and use the ratio of adjusted over unadjusted top wealth for countries with no observations on such lists) They model a number of scenarios, with both flat and progressive taxes, finding a quite large potential revenue, from 1.5 to 2.6% of GDP. This seems to be the result of the simulated tax, with marginal rates of 1-3%, for individuals of the top 3% of the distribution, and a progressive tax rate which reaches up to 10% for the top 0.001%. These results are, however, not far from the 1.-1.5 % found by Krenek and Schratzenstaller (2018) and Landais et al. (2020).

For the case of the United States, Saez and Zucman (2019) estimate the revenue of the Sanders and Warren's proposals (see above). Based on a variety of distributional estimates (capitalized incomes, wealth survey supplemented with Forbes 400 data, and estate multiplier estimates) they find that the initial Warren's proposal, a tax of 2% for individuals with wealth above 50 million dollars (0.1% of the population), and 3% for those above 1 billion dollars, would collect 1% of the GDP in revenue. As mentioned above, the revised Warren's proposal (with 6% top marginal rate) and Sanders', could collect between 1.3-1.5 % of the GDP in revenue.

3 Data and Method

3.1 Data sources

Wealth stock and distribution estimates arise from three main sources of information: wealth household surveys, billionaires lists to correct the right tail of the wealth distribution, and national account's data to account aggregate wealth. We briefly describe them below.

3.1.1 Wealth surveys.

Wealth surveys are one of the most comprehensive sources of information for understanding the distribution of assets and liabilities. They account for household assets such as financial assets (financial instruments, savings accounts, insurance) and non-financial assets (real estate, vehicles, furniture, businesses). In turn, mortgage liabilities (for primary residence or others) and non-mortgage debts (personal loans, credit cards) are included as part of liabilities. Thereby, net wealth of households is equivalent to the total sum of assets (financial and non-financial), minus the total household debt.

We use wealth surveys for Chile, Colombia, Mexico, and Uruguay, as depicted in Table 1. The Chilean *Encuesta Financiera de Hogares* (EFH) is carried out by the Central Bank of Chile and uses multiple imputation for the main variables. It is representative of all urban households in the country and it was the first in the region, starting in 2007. The *Banco Central de Colombia* and the *Departamento Administrativo Nacional de Estadística* (DANE) are in charge of Colombia's *Encuesta de Carga Financiera y Educación Financiera de los Hogares* (IEFIC), which covers the 2010-2018 period. The sample is representative of urban households in Bogotá (from 2017 onwards it also includes Cali and Medellín) and contains approximately 26.000 households.

[3] This is equivalent to 0.5% of United Kingdom's GDP, according to our estimates.

Mexico's *Encuesta Nacional sobre las Finanzas de los Hogares* (ENFIH) is a survey carried out by the *Instituto Nacional de Estadísticas y Geografía* (INEGI) and *Banco de Mexico*. The only available year is 2019, with a sample size of over 17.000 households, which represents 75% of the total number of dwellings chosen, and it is the only nationally representative survey of the four. Lastly, Uruguay has the *Encuesta Financiera de los Hogares Uruguayos* (EFHU), carried out by *Banco Central del Uruguay* (BCU) in association with the *Universidad de la República* (UdelaR). It is representative of cities with over 20.000 inhabitants for the year 2013, with a sample size of over 4.300 households. In all four cases, we use the last available year, i.e. Chile-2017, Colombia-2018, Mexico-2019 and Uruguay-2013.

Table 1: Wealth surveys

Country	Name and producer	Time coverage	Sample size (Households)	Geographical coverage	Target population
Chile	Encuesta Financiera de Hogares (EFH) - Banco Central de Chile	2007-2017	4,5K	National - Urban	Urban households
Colombia	Encuesta de Carga Financiera y Educación Financiera de los Hogares (IEFIC) - Banco Central de Colombia and Departamento Administrativo Nacional de Estadística	2010-2018	26K	Bogotá 2010-2016; plus Cali and Medellín in 2017/18	Adults (18+)
Mexico	Encuesta Nacional sobre las Finanzas de los Hogares (ENFIH) - Instituto Nacional de Estadística y Geografía (INEGI)	2019	17,4K	National	Adults (18+)
Uruguay	Encuesta Financiera de los Hogares Uruguayos (EFHU) - Banco Central del Uruguay (BCU) y Universidad de la República (UdelaR)	2013	4,3K	National	Households in cities of over 20K inh.

Notes. Adapted from Carranza et al. (2023)

3.1.2 Billionaires List.

As an alternative source of information to identify individuals and households located at the right tail of the wealth distribution, we turn to the list of billionaires compiled annually by Forbes at a global level (see https://www.forbes.com/billionaires/). To be part of the Forbes list, individuals must exceed one billion current dollars of net worth in February of each year. To estimate the wealth of individuals, Forbes performs an analysis of the stocks and transactions of potential billionaires, incorporating stakes in companies, land and real estate, art, cash, among others.[4] There are no Uruguayans in *Forbes* list until 2021. For this reason, capitalization method's estimates were used to account for billionaire's wealth. These estimates are taken from De Rosa (2024). Naturally, observations below the one billion dollar net worth could be drawn from this dataset, but we decided to only consider individuals above the threshold for comparability reasons.

3.1.3 Net Private Wealth Aggregates.

The third source of information is the aggregate net private wealth reported by the national accounts. By far the country with the best aggregate wealth data is Mexico, who regularly publishes a complete official balance sheet.

[4]For more details on the work methodology, see: https://www.forbes.com/sites/chasewithorn/2023/10/03/2023-forbes-400-methodology-how-we-crunch-the-numbers/?sh=173dde476b95.

Colombia and Chile only publish financial accounts, while Uruguay's aggregate wealth comes from estimates by De Rosa (2024) based on cadaster data, firm's tax returns, the Government's balance sheet, balance of payment and the household survey.

Wealth aggregates for these countries have been supplemented and contrasted by Carranza et al. (2023), who also compare them with the aggregates arising from wealth surveys, showing that the latter usually capture a minority proportion of total wealth. These results are depicted in Table 2. In column (1), aggregate net wealth expressed in terms of net national income is depicted. In the case of Mexico, aggregate wealth captured by the survey is almost 50% larger than net national income, while it is close to twice as large in Chile and Uruguay. In the case of Colombia, the survey's aggregate wealth seems quite low, being just 86% of net national income. Estimates of aggregate net private wealth are 347% and 318% of net national income in Mexico and Chile. In the case of Colombia there are no estimates for aggregate net worth, and for Uruguay it is 496% of net national income. Uruguay's high wealth to income ratio is mainly explained by the fact that it is a book-value estimate, as opposed to market-value as in Mexico and Chile.[5] In fact, Mexico's official balance sheets present both types of estimate, and its book-value estimate is almost identical to the Uruguayan (Carranza et al., 2023).

Column (3) portrays the ratio between survey and aggregate wealth, while column (4) depicts the scaling factor, which is simply the inverse of the latter ratio. Note that Colombia does not have a scaling factor (since it does not have an aggregate wealth estimate) and Uruguay's ratio is quite large, considering that its survey reports the largest amount of net wealth in its survey, which is the result of its large book-value estimate. For these two cases, we calculated an "adjusted" scaling factor, which assumes that the country has the same net wealth to income ratio than Mexico. This is based on two considerations. First, Mexico has the most reliable aggregate wealth data, so it makes sense to take it as the benchmark. Second, as stated above, the book value net wealth for Mexico and Uruguay are almost the same, so assuming that Uruguay has the same market value net wealth to income ratio than Mexico, is simply assuming that they both have the same Tobin's Q. As a result, the adjusted scaling factor for Colombia is the largest (derived from its low survey's aggregate wealth) and in the case of Uruguay, it is lower than the unadjusted one.

Table 2: Net wealth's aggregates

Country	Year	Svy./ Nat. Inc. (1)	Net priv. wth. / Nat. Inc (2)	Svy./ Net priv. wth (3=(1)/(2))	Scaling Factor (4=1/(3))	Adjusted Scaling Factor	Observations
MEX	2019	1,44	3,47	41,5%	2,41	2,41	
CHL	2017	1,92	3,18	60,5%	1,65	1,65	
COL	2018	0,86	-	-	-	4,02	Assume Mex.'s (2)
URY	2013	2,00	4,96	40,4%	2,48	1,73	Assume Mex.'s (2)

Notes. Based on Carranza et al. (2023).

[5]The difference between the two valuation methods boils down to the way in which the corporate sector's net worth is valued. The market value of corporations is their market price, while the book value is in turn the difference between corporate assets at their cost of replacement and non-equity liabilities. The difference between market and book values is what is called the "residual value of corporations", and the ratio of market to book value is Tobins' Q (WIL, 2021).

3.2 Definitions

In this section, we discuss the main definitions and methodological decisions we made to conduct this study, which refer to both the definition of taxable wealth and some key parameters for the estimation of revenue collection and distributional effects.

Unit of analysis. The simulated tax schemes consider the household as the unit of analysis. The reason for this decision is not conceptual, but practical. Our main source of information, i.e. the surveys, have the limitation of reporting of the main wealth variables at the household level, and it is often impossible to estimate per-adult wealth (in particular in the case of Mexico). This means that, when considering billionaires list data, we are assuming that their wealth is the wealth of the household which is often the case. When it is not, we are assuming a lower bound.

Residence criterion. Our estimates consider only households classified as residents, focusing then on the tax residence criterion to identify tax taxpayers. Thus, we consider the totality of the net wealth held by households, independently of where that wealth is located (i.e. in the country of residence and abroad).

Taxable base. The household's net wealth includes all economic assets owned by it, minus its liabilities. All of the household's assets are a part of the tax base, with the exception of pensions and household goods. We do not consider the possibility of deductions, preferential rates or discount and bonus factors on assets. Thus, net taxable wealth will be used to estimate revenue, but distributional effects will be reported based on total household's net wealth.

Valuation of assets. The valuation criterion for is market value, since both the value in the wealth surveys and in the billionaires list comes from either a reply by the respondents of what is the price in the market of their assets, or by direct market valuation in the case of billionaires list. Moreover, when scaling up to macro aggregates, the market value criterion of aggregate wealth is also use.

Behavioral Responses. The previous review of the literature shows a broad set of behavioral responses to changes in wealth taxes, such as under-reporting, offshore evasion, gifting, fragmentation, asset portfolio restructuring, savings, labour supply adjustments, and migration (Scheuer and Slemrod, 2021). This evidence, however, indicates changes in response to changes in marginal tax rates and does not necessarily reflect the average evasion levels (or reported wealth) in each of the countries (Saez and Zucman, 2019). Thus, we consider different levels of behavioral responses to taxable wealth. In section 5 we incorporate three scenarios into our estimates. First, a *no behavioral response scenario*. Second, a the *17% behavioral response* scenario, which takes the upper bound of the marginal behavioral responses to a 'well designed' wealth tax, reported in Advani et al. (2021), incorporating a 17% reduction in revenue in response to 1% increases in the tax rate. Our *50% behavioral response* scenario is very extreme. It incorporates a very low degree of enforcement by tax authorities, which reduces aggregate reported wealth, resulting in an evasion rate of 50% (as in the Saez and Zucman (2019)'s low-enforcement scenario). We apply these responses to each household's tax rate under each tax structure. For example, for a household facing an average tax rate of 0.5%, we reduce his or her taxable wealth by 8.5% in *17% behavioral response* scenario. The 17% and 50% figures represent average responses, summarizing the combined effect of each household's response across the different margins. By proceeding in this way, we ignore heterogeneity in responses across households. Although this assumption may affect the estimation of the distributional effects of implementing a wealth tax, it will not influence estimates of aggregate revenue from the tax.

Costs for the tax authority. To estimate net revenue, the costs that the tax authority must face to administer the wealth tax must be included. These costs can basically be divided into three components. The costs of building a new system to administer the wealth tax, the costs related to the assessment of household assets, and the costs related to the inspection and *enforcement* of the tax. In this study, we will consider only this last component. Potential taxpayers will be required to file a tax return, a percentage of which would be audited by the tax authority. We assume that the cost of auditing a wealth tax return will be the same as the cost of inspection acts by the Mexican Tax Administration Service (SAT) in 2019, which was approximately USD 2,215 per act (Hacienda and SAT, 2019). Finally, we assume that 5% of tax returns will be audited, and that all taxpayers whose net wealth exceeds the non-taxable minimum threshold will be required to file a return.

3.3 Pareto Correction and Scaling Up to Macro-aggregates

To correct the right tail of the wealth distribution, we fit a Pareto function to wealth above a predetermined minimum wealth threshold, following Vermeulen (2018, 2016). The distribution of wealth presents two main empirical regularities, its asymmetry to the left, and the approximation to a Pareto distribution in the right tail (Davies and Shorrocks, 2000). Based on these regularities, a number of previous studies have used the Pareto function to approximate the right tail of the wealth distribution with observations from other sources, or as a way to extrapolate observed distributions to other time periods (Levy and Solomon, 1997; Kopczuk and Saez, 2004; Klass et al., 2006; Ogwang, 2011; Blackwell et al., 2012; Chan et al., 2017; Vermeulen, 2018).

In this paper, we use the methodology put forward by Vermeulen (2016) to adjust the right tail of the wealth distribution reported in the surveys by incorporating extreme wealth values from a secondary source (in our case, the billionaires list discussed in Section 3.1.2). This exercise allows us to deal with the existence of non-reporting in the wealth surveys, covering the gap between the maximum reported in the surveys and the minimum from external sources. In order to correct the observed distribution, it is necessary to determine the minimum wealth amount (w_{thr}) from which the distribution follows a Pareto distribution. The Pareto function has a cumulative complementary distribution that follows the following form:

$$P(W > w) = (\frac{w_{thr}}{w})^{\alpha} \tag{1}$$

where the parameter α determines the concentration of wealth in the range defined by the Pareto function. The parameter α approximates the degree of wealth dispersion above w_{thr}, the dispersion being greater the lower the value of the parameter. To Maximum Likelihood estimate of the parameter of interest α is:

$$\alpha_{ml} = \sum_{i=1}^{n} [\frac{N_i}{N} ln(\frac{w_i}{w})]^{-1} \tag{2}$$

However, this estimation procedure does not work well in finite samples, hence we use a pseudo-ML based on the regression derived in Vermeulen (2018), which incorporates the existence of individuals who are not part of a random sample and therefore allows the incorporation of sample weights:

$$ln((i - 1/2)\frac{\bar{N_{fi}}}{\bar{N}}) = C - \alpha ln(w_i) \tag{3}$$

where i is the position in the wealth ranking of each individual (ordered in descending order), and α is the

parameter of the Pareto function. The parameter C is determined by $C = ln(n) + \alpha * ln(n_t hr)$, where n is the size of the population and $n_t hr$ is the number of individuals above the adjustment threshold established for the Pareto function. As in Vermeulen (2018), we use the Gabaix and Ibragimov (2011) ranking adjustment (rank-1/2), to limit the potential biases of estimating this regression by OLS in small samples. Lastly, the component $\bar{N_{fi}}/\bar{N}$ adjusts the sample values by including the weights for household individual i, so that the weights accompany the observations in all the sample.

From the estimated parameter α, we obtain, first of all, the aggregate wealth level incorporating the adjustment in the right tail of the distribution. The mass of wealth accumulated by individuals above the minimum wealth threshold (W_{pareto}) is estimated from the following Equation 4:

$$W_{pareto} = \frac{N_{min} * \alpha * w_{thr}}{\alpha - 1} \tag{4}$$

with α being the Pareto parameter estimated previously, N_{min} being the number of observations above the threshold w_{thr} for the Pareto adjustment. In order to perform the microsimulations, this new mass of wealth generated is distributed to the individuals included in the surveys. Since we assume a Pareto distribution for the right tail of the distribution, we know that above the threshold, the following is true:

$$\frac{W^*}{W_i} = \beta \tag{5}$$

where W^* is the average wealth of households with wealth greater than that of household i, and $\beta = \alpha\alpha - 1$ the Pareto parameter estimated previously. From this rule, it is possible to redistribute the new wealth generated to the set of individuals in the survey located above the minimum wealth threshold included in the Pareto function. Therefore, the wealth of household i is obtained from $W_i = {}^{W^*}/_{\beta}$.

Finally, after adjusting the right tail of the household wealth distribution using the billionaires list, wealth is scaled up proportionally to macro-aggregates, to capture more precisely the potential revenue collection (without altering the distribution).

4 Adjustments to the Data

In this section, we present the results of the survey adjustment based on billionaires data (sec. 4.1), followed by the scaling to aggregate private wealth (sec. 4.2).

4.1 Pareto Adjustment: Correction of the Wealth Surveys

Below we describe the estimation procedure for the survey correction based on information from the Billionaires data. First, we combine the data assuming that they follow the same Pareto distribution. Table 3 shows the number of observations included in the billionaires list for the four countries in the year of the last wealth survey, the total wealth of these individuals, and how much of the wealth reported in the surveys the billionaires wealth represents. As a reference, the table includes similar statistics reported by Vermeulen (2018) for the United States and European countries. It is worth noting at this point that we select as the unit of analysis in the surveys is usually the household, while in the *Forbes* list it is in some cases the household (or family), while in others it is the individual. The assumption we have used is that the wealth on the *Forbes* list corresponds to the household's

wealth, either because the household lives alone or because the vast majority of the household's net wealth is given by its net worth.

The number of billionaires on the billionaires list for Mexico and Chile (16 and 12 respectively) is comparable to European countries such as Spain, Italy or France. In the Colombia or Uruguayan cases, the number of billionaries is two and three respectively, similar with the number of billionaires in the Forbes list for the Netherlands, Portugal, Finland and Belgium. The billionaires accumulate between 5.6% and 8.9% of the total wealth reported in the wealth surveys, which is considerably higher than what happens in their European or American counterparts (which probably reflects the relative weakness of the surveys). Therefore, Latin American countries are at the upper limit of wealth concentrated by individuals on the billionaires list, which may be due to both a greater concentration of wealth and larger limitations of the surveys to estimate wealth levels than in the rest of the countries reported.

As an approximation to the potential limits of surveys to account for the upper levels of wealth due to problems of non-response and under-reporting, the last columns of Table 3 report the gap between the maximum amount of wealth in surveys and the minimum amount of wealth for the billionaires. In the case of Mexico and Uruguay, the highest wealth recorded in their wealth surveys is 25 and 35 times lower than the lowest wealth recorded by the billionaires list, which indicates the limits of the survey to capture the highest wealth values. However, this gap is similar to those found in countries such as Italy and Portugal. However, for Chile and Colombia this gap is almost 300 times lower. In short, the list of billionaires represents a complementary source of information to access the levels and dispersion of wealth at the right end of the distribution, information not available in the wealth surveys.

Table 3: Estimated wealth from financial surveys and Forbes billionaires list

		Billionaires			Gap survey/billionaires list		
Country	Year	N	Tot. Wealth	% of Total	Max survey	Min Billionaires	Gap
U.S.	2010	396	1.328.156	2,3%	806	737	0,9
Germany	2011	52	246.355	2,4%	76	818	10,8
U.K.	2009	37	108.739	0,7%	92	780	8,5
Italy	2011	14	62.630	0,7%	26	893	34,3
Spain	2009	12	36.289	0,6%	409	780	1,9
France	2010	11	81.568	0,9%	153	810	5,3
Austria	2011	5	17.472	1,2%	22	1.560	70,9
Netherlands	2010	3	6.515	0,4%	5	958	191,6
Portugal	2010	2	5.565	0,7%	27	1.110	41,1
Finland	2010	1	1.357	0,2%	15	958	63,9
Belgium	2010	1	2.579	0,1%	8	1.920	240,0
Chile	2017	12	41.400	7,9%	4	1300	296,5
Colombia	2018	2	14.900	5,6%	9	2800	316,4
Mexico	2019	16	128.200	8,9%	47	1200	25,4
Uruguay	2013	3	6.072	5,9%	29	1030	35,5

Notes: Total wealth and minimum and maximum wealth expressed in millions of current year dollars. ***Source:*** Mexico, Chile, and Colombia: own estimations based on financial surveys and the Forbes list. Uruguay: own estimations based on financial surveys and capitalization method estimates (De Rosa, 2024). Rest of countries: Vermeulen (2018) based on Eurosystem Household Finance and Consumption Survey (HFCS), the UK Wealth and Assets Survey (WAS) and the U.S. Survey of Consumer Finances (SCF).

We combine wealth surveys and billionaires list to we built a database to estimate the Equations 2 and

3. Pareto adjustment requires two main decisions: first, the choice of the method to recover α and, second, the minimum threshold (w_{min}) from which the Pareto function is to be adjusted to the wealth distribution. For the latter, we use a set of alternative thresholds starting from the 90th percentile, up to the 99.5th. Moreover, we calculated the optimal threshold derived from the Van Kerm (2007) formula, which in the case of all four countries is in the 96th percentile.[6] A lower value of the threshold implies a greater number of observations, increasing the precision of the estimate, but, on the other hand, it increases the probability of including observations with wealth levels that do not fit a Pareto function (Vermeulen, 2018).

We present the thresholds in US dollars corresponding to the selected percentiles (highlighting the optimal one) in Table 4, as well as the parameter α estimated for each dataset, i.e. the survey and the survey plus the billionaires database. Considering only the observations included in the surveys, the parameter α is located between 1.2 and 1.5 for Mexico and Uruguay, and reaches values of 2 or higher in the case of Colombia for the upper thresholds, indicating a thinner tail. The case of Chile has substantially larger estimates for α, pointing at an even thinner right tail. Part of the parameter instability in these cases can be explained by the few observations in the right tail in the case of Chile and Colombia, and especially, by the larger gaps between these observations in the survey and the *Forbes* list. The addition of the billionaires list into the estimation increases the level of wealth concentration, with parameters α decreasing significantly towards upper thresholds (i.e. a thicker tail), most notably in Chile or Uruguay to a lesser degree.

Table 4: Estimation of parameter α according to minimum threshold and country

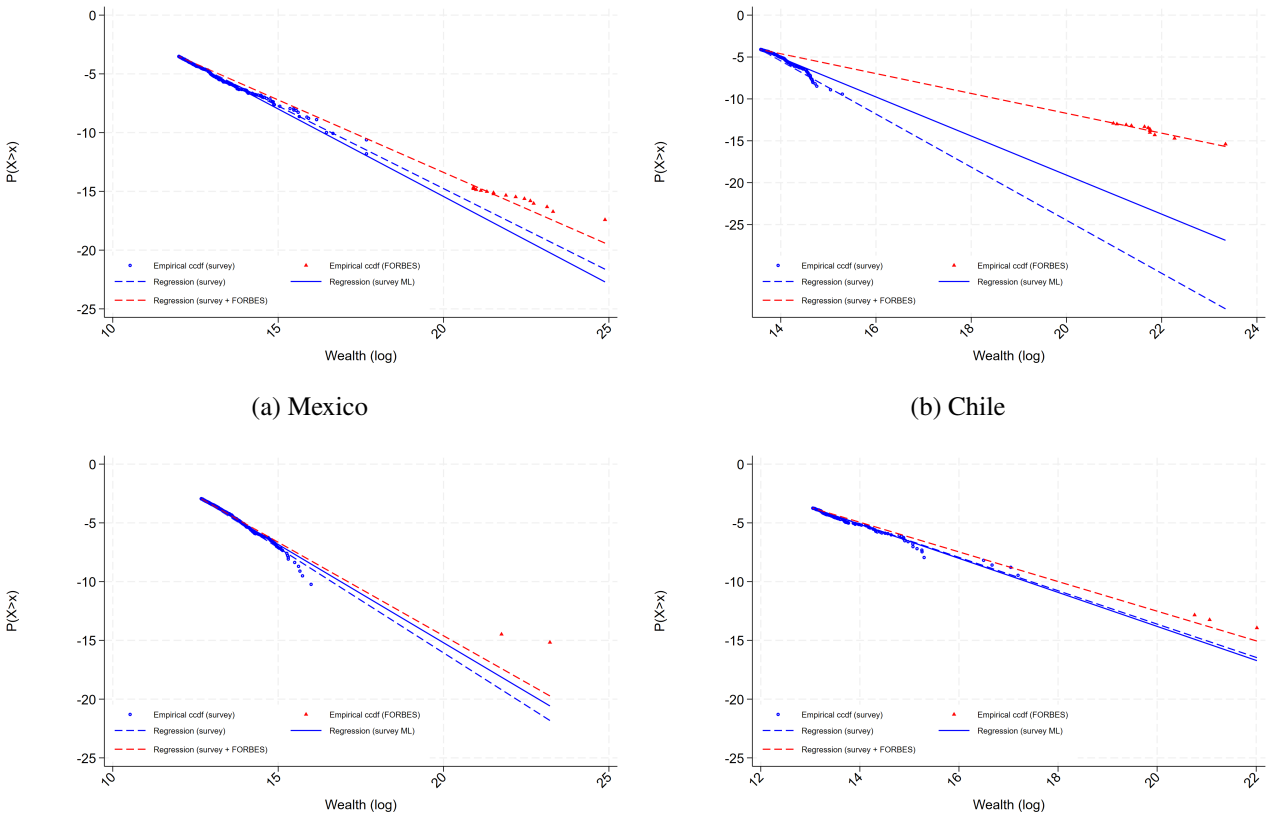
	Mexico			Chile			Colombia			Uruguay		
P	Thresh.	Svy.	Svy + Bill.	Thresh.	Svy.	Svy + Bill.	Thresh.	Svy.	Svy + Bill.	Thresh.	Svy.	Svy + Bill.
900	90.649	1,506	1,312	400.955	2,263	1,304	143.963	1,511	1,470	214.069	1,457	1,331
950	140.364	1,425	1,248	672.975	2,926	1,215	269.986	1,732	1,584	386.940	1,439	1,281
960	**162.182**	**1,406**	**1,233**	**780.070**	**3,168**	**1,185**	**319.038**	**1,790**	**1,592**	**463.291**	**1,419**	**1,261**
970	194.909	1,389	1,218	938.508	3,474	1,144	386.179	1,852	1,582	556.364	1,380	1,234
980	250.390	1,365	1,199	1.167.437	3,698	1,086	505.657	1,935	1,546	705.285	1,356	1,208
990	422.805	1,278	1,161	1.530.541	4,010	0,980	765.752	2,035	1,438	1.366.113	1,338	1,169
995	732.623	1,269	1,144	2.238.459	2,890	0,843	1.067.073	2,088	1,317	2.905.428	1,122	1,095

Notes: Net wealth thresholds expressed in dollars (USD). Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method.

The adjustment is also depicted in Figure 1, showing the relationship between the complementary cumulative distribution function of Eq. 1 and the wealth level (in logarithms). In blue, we represent the observations corresponding to the wealth surveys and in red the points corresponding to the billionaires list. In turn, the adjustment made by the estimation methods using only the survey observations (blue line) and incorporating the rich list (red line) is shown. In the case of the regression method, it can be observed how the incorporation of the secondary source of information modifies the slope of the line, increasing the degree of concentration of the estimated wealth.

[6] The Pareto optimal threshold is obtained from the following equation: $threshold = min(max(2.5w, q0.98), q0.97)$, where w is the weighted average of wealth in the survey, and q_i are the corresponding quantiles of the wealth distribution in the sample.

Figure 1: Pareto Adjustment: combination of Financial Surveys with billionaires list



(a) Mexico

(b) Chile

(c) Colombia

(d) Uruguay

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Threshold for adjustment at the 96th percentile.

Finally, we approximate the degree of concentration of wealth that emerges from previous estimates of Pareto parameters. For the four countries, Table 5 presents the share of top 1% of households based on both samples: the financial surveys and the combination of surveys with billionaires lists. The level of net wealth appropriation of the wealthiest 1% of households in the wealth surveys is 26-27 % for Mexico, Colombia and Uruguay, while it is only 14.7% for Chile. This may represent a lower concentration of wealth in Chile or a larger under-reporting of the right tail of the wealth distribution due to higher under-reporting or non-response in the Chilean survey.[7]

The correction based on the billionaires' list increases in all cases the estimate of wealth appropriation by the top 1%, but the estimated level of concentration depends on the chosen threshold and the estimated parameter (α), and it is very sensitive. For thresholds around the 96th percentile, the top 1% is 41-42 % of total wealth for Mexico and Uruguay, reaching 47.1% for Chile and just 34.1% for Colombia. As a reference point, estimates based on administrative data for Colombia, Chile and Uruguay are approximately 40% (Carranza et al., 2023). The adjustment in the case of Chile seems to be more problematic since the estimates vary in an implausible range, which makes it hard to get a sense of the likely level of inequality. This seems to be related to the very few

[7]Note that this is consistent with the much thinner tail (higher α parameter), as shown in Table 4 or Figure 1.

observations at the top of the distribution of the survey (see Figure 1) and to the large gap between it and Forbes data (as shown in Table 3).

Variation in the corrected estimates seems to be less violent for larger population groups. Tables A.1 and A.2 in the appendix present the levels of net wealth appropriation for the top 5 and 10. In this case, Colombia shows the highest levels of wealth concentration in the survey, with 79.5% of the total appropriated by the top 10%. In the case of Uruguay and Mexico, the 10% with the greatest wealth appropriates 67%, while in the Chilean case, the top 10% share is 71.5%. For the top 5%, the range is even lower, with estimates from 57.6% (Mexico and Uruguay) to 62% (Colombia and Chile).

Table 5: Levels of wealth concentration (Top 1%), survey and adjustment from billionaires list

	Mexico		Chile		Colombia		Uruguay	
p	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.
900	27,6%	38,6%	14,7%	39,6%	26,4%	37,8%	26,1%	36,4%
950	27,6%	41,7%	14,7%	46,0%	26,4%	34,2%	26,1%	39,4%
960	**27,6%**	**42,2%**	**14,7%**	**47,1%**	**26,4%**	**34,1%**	**26,1%**	**41,1%**
970	27,6%	42,5%	14,7%	51,1%	26,4%	34,8%	26,1%	42,3%
980	27,6%	43,1%	14,7%	54,6%	26,4%	36,2%	26,1%	42,3%
990	27,6%	45,4%	14,7%	-2,5%	26,4%	39,3%	26,1%	44,0%
995	27,6%	42,5%	14,7%	26,4%	26,4%	41,3%	26,1%	49,1%

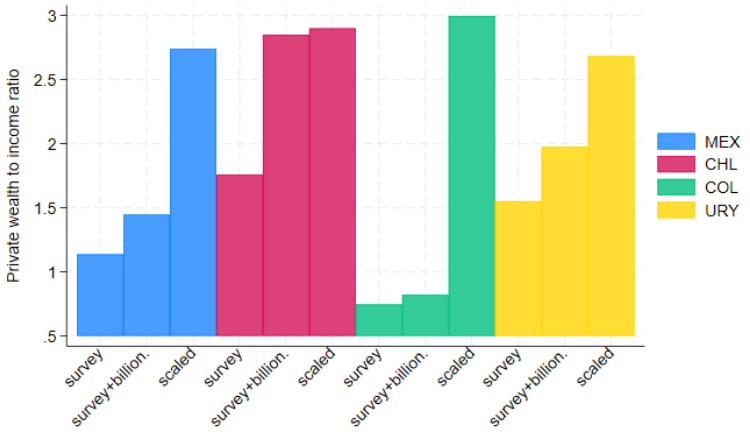
Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method.

4.2 Scaling to wealth aggregates

The adjustment of wealth survey data with billionaires' list data has the effect not only of increasing wealth concentration at the top of the distribution, but also of mechanically increasing the amount of net wealth. Figure 2 shows private net wealth (expressed in relation to gross national income) for aggregate wealth in the survey data and in the adjusted survey data. Figure 2 also depicts net private wealth aggregates discussed in section 3. Thus, the ratio between the first and last column of each country (i.e. the ratio between aggregate net wealth and survey's net wealth) is given by the adjusted scaling factor of Table 2.[8] Since revenue estimates are based not on net wealth but on net taxable wealth, the same scaling factors, as well as the adjustment from surveys corrected with the billionaires list to aggregate wealth, (i.e. the adjustment from the second to the third column in each country) are also applied to net taxable wealth (see Figure A.5). Note that in Mexico and Uruguay, the billionaire's list adjustment accounts for a significant part of the distance to net private wealth aggregate, but less than half nevertheless. In the case of Chile, this adjustment alone accounts for almost the whole distance that separates survey from aggregate wealth. Colombia is the opposite case: the billionaire's adjustment almost does not increase survey's wealth, hence the scaling to wealth aggregate is substantial.

[8]These adjusted scaling factors assumed that, for the case of Uruguay and Colombia, Mexico's market value net wealth to income ratio was considered as its aggregate wealth. Note that in Figure 2 net aggregate wealth is different across these three countries, which results not from different aggregate wealth (the numerator) but from differences in the denominator, since GDP is used as in Figure 2 as opposed to net national income in Table 2.

Figure 2: Aggregate net wealth in different estimation stages



Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from Carranza et al. (2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Aggregate income is each country's current GDP.

5 Simulation of an Annual Wealth Tax

In this section, we simulate the revenue that could be obtained from the implementation of an annual wealth tax in the four selected countries. We first consider the case of a flat tax on net wealth, and simulate the tax rates that would be necessary to collect a given amount of taxes, considering different exemption thresholds. Alternatively, we consider the case of a progressive wealth tax scheme. In both cases, we take into account the effects of possible behavioral responses and the potential costs of implementing and managing these schemes. After considering the revenue-collecting dimension of each tax, we simulate and discuss their redistributive effect. We begin by discussing the potential revenue of wealth tax (section 5.1), followed by the estimates of the distributive effects (section 5.2).

5.1 Revenue Effect of a Wealth Tax

5.1.1 Revenue: a First Approximation

In sections 5.1.2 and 5.1.3, we present estimates of the revenue collection of a wealth tax based on a micro-simulations model. However, it is useful to begin by providing a first approximation of the potential revenue based on a much simpler approach in order to understand the orders of magnitude involved (Saez and Zucman, 2019). We begin by discussing the case of a wealth tax of 1% on the top 1% of households (Table 6).[9]

In Table 6, two methods to estimate the potential revenue are shown. In the first one, the revenue over GDP (R_Y) is calculated based in Equation 6:

$$R_Y = t1_{sh} * W_Y * \tau * (1 - \epsilon) \tag{6}$$

where $t1_{sh}$ is the share of net taxable wealth above the top 1% threshold, W_Y is the wealth to income ratio

[9]The same exercise with rates of 2%, 1.5% and 0.5% are depicted in Tables A.3, A.4 and A.5 respectively.

(where aggregate income is GDP), τ is the tax rate and ϵ is the reduction in reported wealth as a result of the behavioral response (could be either avoidance or evasion). In Equation 6, the term $t1_{sh} * W_Y$ represents the tax base (in the case only the top 1% is taxed) and $\tau * (1 - \epsilon)$ is the net of behavioral response tax rate. For $t1_{sh}$ and W_Y, we present four possible scenarios for each country, which represent the top 1% wealth share and aggregate wealth resulting from (i) the surveys alone; (ii) survey scaled up to macro-aggregates of private wealth; (iii) survey adjusted with billionaires list and (iv) survey adjusted with billionaires list and then scaled up to macro aggregate wealth. By construction, $t1_{sh}$ of scenarios (i)-(ii) and (iii)-(iv) are identical, while the same happens with W_Y in scenarios (ii)-(iv) (scenarios (i) and (iii) refer to the remaining aggregates of Figure A.5). We consider the three behavioral response scenarios (ϵ) discussed in Section 3: *no behavioral response*, *17% behavioral response*, and *50% behavioral response*.

The results of this exercise are straightforward. When the surveys are adjusted with billionaires lists and scaled up to macro-wealth aggregates, in the scenario with no evasion a tax rate of 1% to the top 1%, results in an average revenue of 0.9% of the GDP. Somewhat trivially, the higher ϵ, the lower the revenue (the same mechanical effect but with opposite sign than an increase in the tax rates of Tables A.4 and A.3). Although our preferred estimates are the ones with adjusted and scaled up surveys, it is interesting to note that, even if one only trusts in the surveys, which entails the heavy assumption that they capture the right tail of the distribution and the aggregate level of wealth adequately, the revenue is between 0.1-0.45 % of GDP, which is a significant amount. The difference between countries reflects their different survey-based $t1_{sh}$ and W_Y: the higher either of them, the higher the estimated revenue. The effect of changes in these two parameters is also clear in the intermediate scenarios (ii-iii), where increases in W_Y or $t1_{sh}$ –resulting from adjusting aggregate wealth or the top tail– mechanically increase the revenue,the amount depending on the magnitude of the adjustments in each country.

Table 6 presents a second approach which is slightly more sophisticated, since it better accounts for the shape of the upper tail, but which still follows the same principle nonetheless, as shown in Equation 7.

$$R_Y = \frac{pop * g_{size} * (\beta - 1) * th * \tau * (1 - \epsilon)}{GDP} \tag{7}$$

where pop is total population (in households), g_{size} is the group size being taxed (1% in this case), β is the inverted Pareto coefficient, and th is the threshold measured in monetary units (current US dollars). The intuition is the same as in Equation 6. The term $pop * g_{size} * (\beta - 1) * th$ provides the tax base measured in dollars, which is then multiplied by the net of behavioral response tax rate $\tau * (1 - \epsilon)$ and expressed in terms of GDP. The product of $pop * g_{size}$ results in the number of households targeted by the tax, while $(\beta - 1) * th$ is equivalent to the average wealth of those households above the threshold. This latter estimate is the result of the key property of the Pareto distribution, which establishes that the average wealth above any threshold is given by $\beta = {}^{\alpha}/_{(\alpha-1)}$, hence $\beta * th$ is the average wealth above the threshold.[10] These β are calculated based on Table 4 (using the optimal p) for both survey alone and billionaires-adjusted surveys, while pop is the total number of households in each survey. The rest of the parameters are the same as in the previous exercise.

Results indicate very similar as in method 1, although somewhat higher in all cases. The revenue collection estimates in method 2 are 0.66% for Colombia, 1% for Mexico and 1.3 - 1.35 % for Chile and Uruguay (while in

[10]Note that $pop * g_{size} * (\beta - 1) * th$ is equivalent to the wealth held by the group under consideration, but excluding the wealth held by those households under the threshold (hence the $(\beta - 1)$).

method 1, these were 0.63%, 0.9%, 1.12% and 0.86% respectively). Colombian low revenue is in part the result of its mild α parameter adjustment (recall Table 4). The same comments regarding the mechanical effect of τ and ϵ apply for this second method, as well as the increase in revenue when the top tail adjustment or the scaling up to macro-aggregates. The estimates of these two exercises suggest that the orders of magnitude involved in taxing the top 1% of households, with a tax rate of 1% (above the exemption threshold) results in a revenue of 1% of GDP on average in the no behavioral response scenario, and 0.8% with a 'well designed' tax (corresponding to the 17% behavioral response). These amounts of revenue is comparable with Switzerland's wealth-tax revenue, the highest among countries with such a tax (Scheuer and Slemrod, 2021).

Table 6: Revenue collection: 1% rate to the top 1%

	Mexico				Chile				Colombia				Uruguay			
	Survey	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**
METHOD 1: $R_Y = t1_{sh} * W_Y * \tau * (1 - \epsilon)$																
Wealth share	19,0%	19,0%	35,6%	35,6%	4,8%	4,8%	43,8%	43,8%	13,2%	13,2%	22,5%	22,5%	18,2%	18,2%	34,3%	34,3%
Agg. net wealth	114%	274%	145%	274%	176%	290%	285%	290%	75%	300%	82%	300%	155%	268%	198%	268%
Agg. taxable wealth	99%	239%	130%	246%	146%	241%	255%	260%	69%	277%	76%	279%	141%	245%	184%	250%
Tax rate	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%
Revenue/GDP (no behavioral resp.)	*0,19%*	*0,45%*	*0,46%*	*0,88%*	*0,07%*	*0,12%*	*1,12%*	*1,14%*	*0,09%*	*0,37%*	*0,17%*	*0,63%*	*0,26%*	*0,45%*	*0,63%*	*0,86%*
Revenue/GDP (17% behav.l resp.)	*0,16%*	*0,38%*	*0,38%*	*0,73%*	*0,06%*	*0,10%*	*0,93%*	*0,94%*	*0,08%*	*0,30%*	*0,14%*	*0,52%*	*0,21%*	*0,37%*	*0,52%*	*0,71%*
Revenue/GDP (50% behav.l resp.)	*0,09%*	*0,23%*	*0,23%*	*0,44%*	*0,04%*	*0,06%*	*0,56%*	*0,57%*	*0,05%*	*0,18%*	*0,09%*	*0,31%*	*0,13%*	*0,22%*	*0,32%*	*0,43%*
Number Households	36.644.680	36.644.680	36.644.680	36.644.680	4.868.518	4.868.518	4.868.518	4.868.518	3.886.309	3.886.309	3.886.309	3.886.309	1.133.217	1.133.217	1.133.217	1.133.217
Group size	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%
Beta coef.	3,17	3,17	5,93	5,93	1,78	1,78	7,68	7,68	2,18	2,18	2,84	2,84	3,22	3,22	6,57	6,57
Threshold	312.208	752.421	378.816	717.432	932.275	1.538.254	1.125.276	1.144.853	837.195	3.365.525	849.058	3.102.682	731.466	1.265.436	920.468	1.250.091
Tax rate	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%
GDP	1,27E+12	1,27E+12	1,27E+12	1,27E+12	2,76E+11	2,76E+11	2,76E+11	2,76E+11	3,34E+11	3,34E+11	3,34E+11	3,34E+11	6,21E+10	6,21E+10	6,21E+10	6,21E+10
Revenue/GDP (no behavioral resp.)	*0,20%*	*0,47%*	*0,54%*	*1,02%*	*0,13%*	*0,21%*	*1,32%*	*1,35%*	*0,11%*	*0,46%*	*0,18%*	*0,66%*	*0,30%*	*0,51%*	*0,94%*	*1,27%*
Revenue/GDP (17% behav.l resp.)	*0,16%*	*0,39%*	*0,45%*	*0,85%*	*0,11%*	*0,17%*	*1,10%*	*1,12%*	*0,10%*	*0,38%*	*0,15%*	*0,55%*	*0,25%*	*0,42%*	*0,78%*	*1,05%*
Revenue/GDP (50% behav.l resp.)	*0,10%*	*0,24%*	*0,27%*	*0,51%*	*0,06%*	*0,11%*	*0,66%*	*0,67%*	*0,06%*	*0,23%*	*0,09%*	*0,33%*	*0,15%*	*0,26%*	*0,47%*	*0,64%*

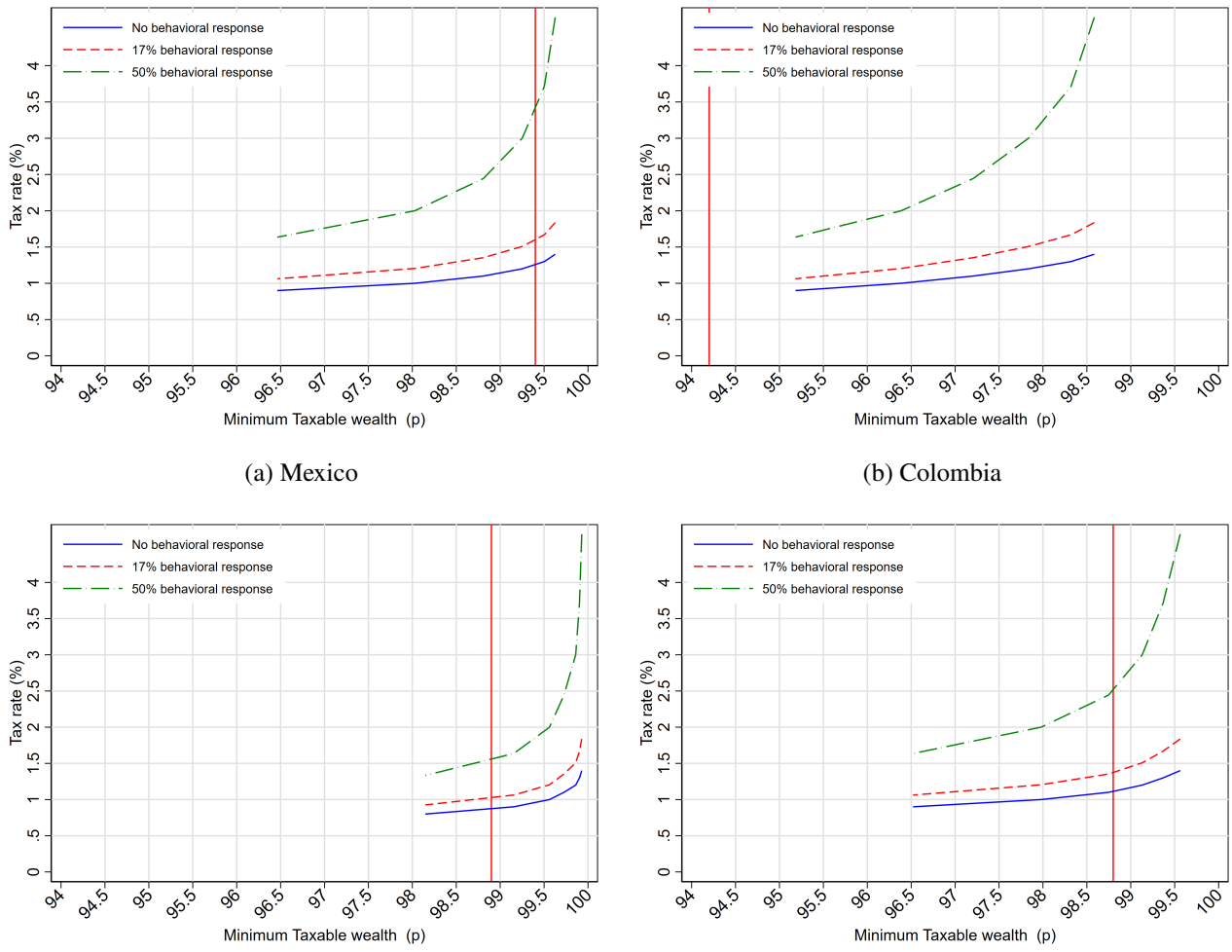
Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from (Carranza et al., 2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Quantities in current US dollars.

5.1.2 Flat Wealth Tax Scheme

Having established the overall orders of magnitude in terms of revenue collection, we now estimate the revenue associated with a wider range of tax rates and taxed households based on a micro-simulation model. In all cases, we use the billionaires-adjusted survey, scaled up to marco-aggregates discussed in section 4. For this exercise, we fix the revenue of 1% of GDP, and we calculate the exempted threshold necessary to collect it.

Figure 3 illustrates the tax rates that would be required to meet the 1% of GDP revenue target for an annual wealth tax before administrative costs. Each figure presents the path of tax rates under the three behavioral response scenarios, for alternative exemption thresholds, expressed as percentiles of the net taxable wealth distribution. The main trade-off of wider tax base vs higher tax rates is evident in all four countries. The fewer households are taxed, the larger the tax rate to reach the 1% of GDP target. The tax rates path is relatively smooth as the tax bases shrink, except for the last percentile where it rises steeply, but never above a tax rate of 2% (except in the more extreme 50% behavioral response scenario). Moreover, even in the 17% response scenario, the rates required to raise 1% of the GDP are relatively modest (up to 1%), especially if the tax base is broadened.

Figure 3: Minimum taxable and tax rates to reach 1% of GDP collection under a flat wealth tax



(a) Mexico

(b) Colombia

(c) Chile

(d) Uruguay

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Blue dotted line represents the USD 1.000.000 net taxable wealth threshold in the survey, while the red one represents the same threshold but after adjusting wealth to national wealth aggregates.

Tables A.6 to A.9 present the estimates for the tax collection scenario of 1% of each country's GDP. The first column presents the value of the threshold where the exemption threshold would be located. The second column presents the percentile of net wealth where this threshold is located, the third presents the tax rate, while columns four to six present the revenue levels for the three different behavioral response scenarios. Column seven shows the number of taxpayers (households) that would pay taxes, and the last column presents the administrative cost for the tax authority associated with each scenario. These tables add to additional trade-offs. They show that when the exemption threshold increases, the administrative costs are reduced since fewer households need to be audited, but the revenue loss due to behavioral responses increase.

In summary, and beyond the set of simplifications and limitations, these simulation exercises allow us to identify and quantify a series of trade-offs that will be important when designing a wealth tax, in this case, under

a flat tax schedule and considering only efficiency aspects. Lower exemption thresholds imply a broader tax base, and therefore, lower tax rates to achieve the revenue objective, although with relatively high administrative costs for the tax authority. On the other hand, higher exemption thresholds require higher tax rates with significant revenue losses as a consequence of possible behavioral responses by agents to minimize their tax burden. In contrast, in this scenario, the administrative costs of the system would be substantially lower in terms of potential collection. Intermediate scenarios, such as focusing on the top 1% of households with the highest net wealth, seem to be a reasonable balance between tax rate levels, and possible efficiency and administration costs of the tax system.

5.1.3 Progressive Wealth Tax Scheme

Table A.10 presents estimates based on simulating a progressive tax scheme. The simulation is based on three assumptions: (i) the exempted threshold is set at USD 1 million, highlighted in Figure 3; (ii) brackets are fixed at 10, 25 and 70 million dollars; (iii) the progressive scheme corresponds to four net wealth brackets with positive rates (i.e., not counting the wealth band below the exempted threshold) which are multiple of the first one (set at 0.5%). A tax scheme under these assumptions results in a revenue collection of approximately 1% of the GDP (except for Chile, where it is higher), thereby they are roughly comparable.[11] The columns in these tables correspond to the same columns in Tables A.6-A.9, while the rows correspond to the values for each of the net wealth brackets in the progressive scheme. The values in the *Threshold* column should be read as the minimum threshold for the corresponding brackets. The columns under the *Collection* heading show the total values for the progressive scheme, and are therefore repeated in each row.

Table A.10 shows that a revenue target of approximately 1% of GDP could be achieved by taxing the top 1-1.2% wealthiest households with a progressive tax rate scheme that starts at 0.5% and ends with a rate of 2% only for the top 0.01% (and a rate of 1-1.5% only for the top 0.1%) for all countries but Colombia. In this latter case, since the 1 million USD threshold begins at a lower percentile as shown in Figure 3, a little more than the top 5% needs to be taxed, but rates of 1% are only applied to the top 0.01% as in the other cases. Compared to the scheme that taxes all taxpayers in the top 1% at a flat rate of 1%, the revenue loss is slightly higher because the progressive scheme has higher marginal rates at the top of the wealth distribution. In other words, by taxing the additional wealth of the wealthiest groups at higher rates (vs. the flat tax scheme) the potential to extract revenue from these groups is higher, but so is the level of potential losses as a result of behavioral responses. Under the tax flat scheme, revenue losses due to behavioral responses are around 17%. In contrast, the increase in rates in the upper tail of the distribution under the progressive scheme would increase these revenue losses to 25-28% for all countries except Colombia, where losses would remain around 17%.

5.2 Re-distributive Effects of a Wealth Tax

In this section, we briefly describe the potential redistributive effects of implementing a wealth tax in the four selected countries. To this end, the effects on household wealth appropriation are estimated for a flat tax schemes with rates from 0.6% to 1.4% and the progressive scheme to reach a tax collection level of 1% of GDP. In all cases, the baseline scenario (before taxes) considers household wealth levels corrected according to the methodology

[11] Considering that the four countries have different wealth distribution, it is impossible to fix simultaneously the revenue, the thresholds, and the tax rates. Therefore, we let the revenue vary and fix the remaining parameters.

implemented in section 4, incorporating the billionaires' list for estimating the right tail of the distribution and scaling up to wealth macro-aggregates.

Table 7 summarizes the main effects of the wealth tax on the appropriation of total wealth by different groups of the population. For each simulated tax scheme (table columns), the degree of appropriation of total wealth before and after the tax is estimated for the wealthiest groups (top 0.1%, top1%, top 5% and top 10%), and for the rest of the households (deciles 5 to 9, i.e. *Middle* 40%) and for households located below the wealth median *(Bottom* 50%). Given the high level of wealth concentration (see table 5), in most of the simulated schemes the households affected by the tax are concentrated in the top 1%, and in particular, in the top 0.1% of the wealthiest households. For instance, a flat tax rate of 1%, reduces the top 1% between 0.16-0.21 p.p. The flat schedules with lower rates, and hence a broader tax base that reaches a greater number of taxpayers, reduce the redistributive impacts in the right tail of the distribution. The simulated progressive scheme has a similar effect for the top 1% than the 1% flat tax rate, but between 33 and 81% stronger for the top 0.1% group, being the lowest difference pre vs pos tax in Colombia (0.12 p.p) and the higher in Chile and Uruguay (0.31 p.p).

Table 7: Re-distributive effect of a Wealth Tax.

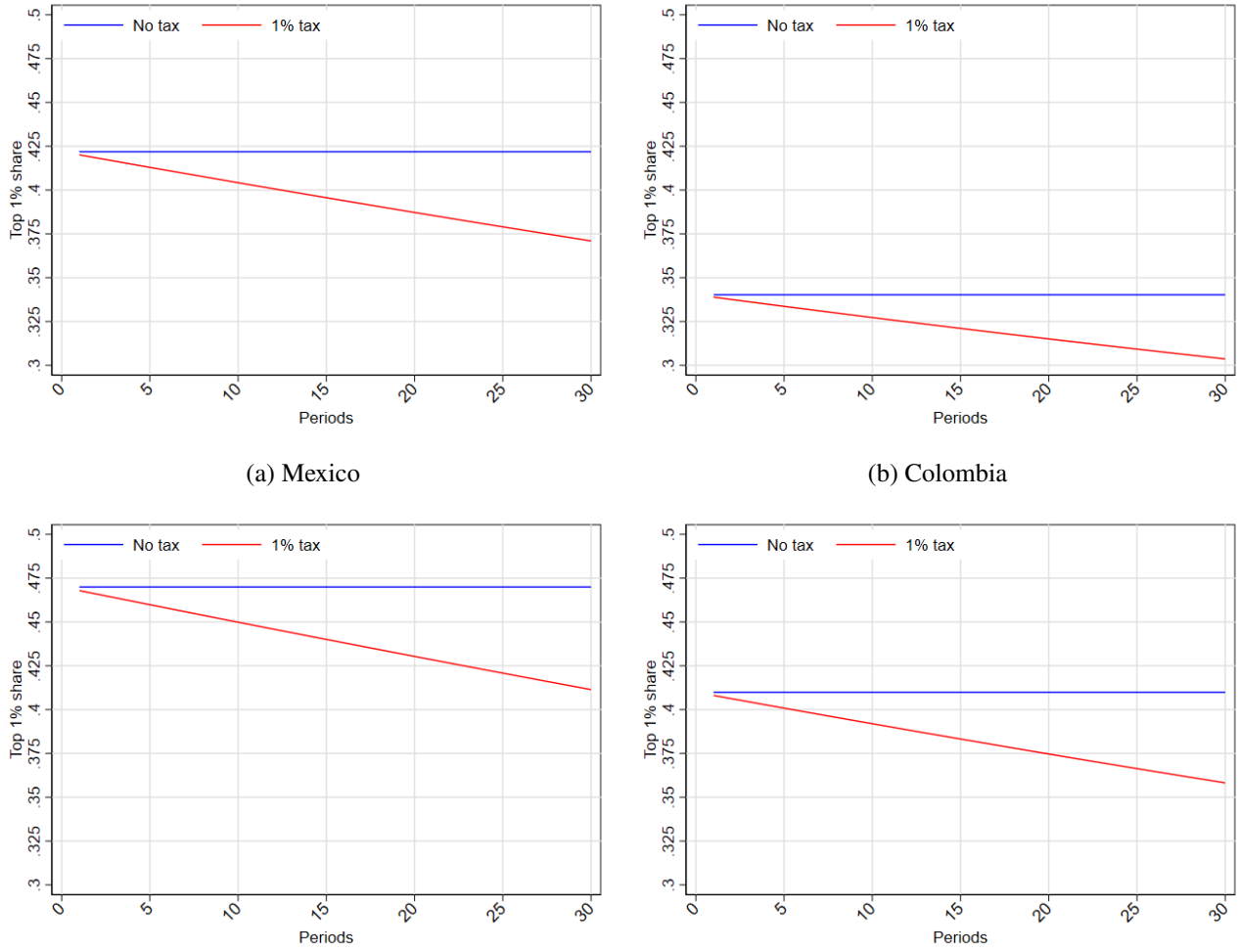
		Baseline	1.4	1.0	0.6	Prog.
Mexico	Top 0.1%	26,90	26,67	26,75	26,85	26,68
	Top 1%	42,09	41,88	41,89	42,01	41,89
	Top 10%	67,23	67,11	67,11	67,14	67,12
	Middle 40%	28,74	28,85	28,85	28,82	28,84
	Bottom 50%	4,03	4,04	4,04	4,04	4,04
Colombia	Top 0.1%	14,28	14,14	14,19	14,24	14,16
	Top 1%	33,63	33,42	33,47	33,56	33,49
	Top 10%	78,42	78,35	78,35	78,35	78,36
	Middle 40%	21,58	21,65	21,65	21,65	21,58
	Bottom 50%	0,00	0,00	0,00	0,00	0,00
Chile	Top 0.1%	32,18	31,94	31,98	32,10	31,87
	Top 1%	46,84	46,66	46,66	46,73	46,57
	Top 10%	71,08	70,98	70,98	70,98	70,93
	Middle 40%	24,48	24,57	24,57	24,57	24,61
	Bottom 50%	4,43	4,45	4,45	4,45	4,46
Uruguay	Top 0.1%	32,18	31,94	32,01	32,10	31,87
	Top 1%	40,84	40,62	40,63	40,75	40,62
	Top 10%	66,85	66,73	66,73	66,75	66,73
	Middle 40%	28,94	29,05	29,05	29,02	29,04
	Bottom 50%	4,21	4,23	4,23	4,23	4,23

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method.

Finally, Figures A.6-A.9 presents indicators on the share of total payment of the simulated tax as an approximation of the groups on which the tax falls. First, it can be observed that most of the schemes imply that 100% of the tax falls on the 0.1% with the highest wealth. Only the flat tax schemes with rates lower than 0.6% and the progressive scheme incorporate households with a lower level of wealth within the taxpayers. In any case, only the flat tax scheme with lower rates (0.2) incorporates households below the 10% with the highest wealth.

This mild distributive effect is a result of both the moderate taxation schemes simulated, but also of the fact that these micro-simulations only allow to estimate the effects on one period. Naturally, wealth taxation has a dynamic effect that could be much larger. In order to illustrate this, we run an extremely simple exercise that simulated the cumulative distributive effect of taxation, depicted in Figure 4. For this exercise, we assume that the rate of return to wealth is 5%, and 50% of it is re-invested and the rest is consumed (and that the distribution of earnings is constant). These are very strong assumptions, considering that both the rate of return and the savings rate are highly correlated with wealth (Saez and Zucman, 2016; Fagereng et al., 2016, 2020; Smith et al., 2021), but they have the advantage of generating an unchanging distribution of period after period. As an alternative, we simulate the introduction of a wealth tax of 1% to the top 1% (i.e. to the wealth above 1% threshold) and report its effects on the top 1% share of net wealth. This exercise shows that the cumulative effect after 30 periods is substantial, with a decrease in the top 1% share of approximately 5 p.p. depending on the country. Naturally, this is assuming a counterfactual in which the distribution of wealth remains unchanged, but it does provide the orders of magnitude involved in the reduction of wealth inequality or in the moderation of its increase.

Figure 4: Accumulated distributive effect of a wealth tax of 1% to the top 1%



(a) Mexico

(b) Colombia

(c) Chile

(d) Uruguay

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. A tax of 1% for wealth above the 99th percentile of the distribution is simulated for 30 periods, assuming 5% rate of return of wealth and 50% of savings within that return. The tax is applied to net taxable wealth, but the results reported refer to net wealth.

6 Concluding Remarks

Wealth inequality is high in Latin America, and resources are urgently needed to deploy public policies that foster sustainable economic growth and reduce poverty. One of the most direct ways to address both issues is through wealth taxation. However, we know surprisingly little of its potential effects. This paper attempts to contribute to fill this gap, by presenting estimates for wealth distribution in four Latin American countries, and simulate the revenue and redistributive effects of a set of possible wealth tax designs, including both behavioral responses and administrative costs. Our results show that the revenue-collection potential is substantial, but the effect on wealth distribution is mild in the short run.

It should be said once more that the data used is far from perfect and results should be taken with extreme

caution. However, estimates are the result of state of the art methods and transparent assumptions, so we do believe that it can help to open a much-needed discussion. Our results show that a wealth tax can indeed collect revenue in the region and help moderate wealth inequality in the medium-run, with tax rates that are similar to actual experience of wealth taxation around the world and below recent wealth taxation proposals. In order to achieve the objectives of wealth redistribution and revenue collection, the literature highlights the importance of some key issues of the wealth tax design, such as third-party reporting, the sharing of information, centralized designs, reducing the number of exempted assets, not including liability caps, and broad tax bases. These issues, beyond being good practices, would help reduce behavioral responses, hence increasing efficiency and fostering the fire-power of the wealth tax. In sum, there is room to introduce wealth taxation in the region and countries would greatly benefit from it.

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A Appendix

A.1 Tables

Table A.1: Levels of wealth concentration (Top 5%), survey and adjustment from billionaires rich list

	Mexico		Chile		Colombia		Uruguay	
p	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.
900	46,1%	56,7%	38,7%	57,8%	58,2%	63,1%	46,0%	54,5%
950	46,1%	57,6%	38,7%	61,8%	58,2%	61,9%	46,0%	56,3%
960	**46,1%**	**57,6%**	**38,7%**	**62,2%**	**58,2%**	**62,1%**	**46,0%**	**57,6%**
970	46,1%	57,5%	38,7%	65,0%	58,2%	62,9%	46,0%	58,3%
980	46,1%	57,7%	38,7%	67,4%	58,2%	64,0%	46,0%	57,9%
990	46,1%	59,3%	38,7%	-4,7%	58,2%	65,6%	46,0%	59,1%
995	46,1%	57,1%	38,7%	57,2%	58,2%	66,7%	46,0%	62,9%

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method.

Table A.2: Levels of wealth concentration (Top 10%), survey and adjustment from billionaires rich list

	Mexico		Chile		Colombia		Uruguay	
p	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.	Svy	Svy + Bill.
900	58,5%	67,0%	53,7%	68,1%	77,5%	78,7%	58,3%	64,9%
950	58,5%	67,4%	53,7%	71,1%	77,5%	79,4%	58,3%	66,2%
960	**58,5%**	**67,4%**	**53,7%**	**71,5%**	**77,5%**	**79,5%**	**58,3%**	**67,2%**
970	58,5%	67,3%	53,7%	73,5%	77,5%	80,0%	58,3%	67,7%
980	58,5%	67,5%	53,7%	75,4%	77,5%	80,5%	58,3%	67,5%
990	58,5%	68,7%	53,7%	-6,1%	77,5%	81,4%	58,3%	68,4%
995	58,5%	67,0%	53,7%	76,0%	77,5%	82,0%	58,3%	71,3%

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method.

Table A.3: Revenue collection: 2% rate to the top 1%

	Mexico				Chile				Colombia				Uruguay			
	Survey	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**
METHOD 1: $R_Y = t1_{sh} * W_Y * \tau * (1 - \epsilon)$																
Wealth share	19,0%	19,0%	35,6%	35,6%	4,8%	4,8%	43,8%	43,8%	13,2%	13,2%	22,5%	22,5%	18,2%	18,2%	34,3%	34,3%
Agg. net wealth	114%	274%	145%	274%	176%	290%	285%	290%	75%	300%	82%	300%	155%	268%	198%	268%
Agg. taxable wealth	99%	239%	130%	246%	146%	241%	255%	260%	69%	277%	76%	279%	141%	245%	184%	250%
Tax rate	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%
Revenue/GDP (no behavioral resp.)	*0,38%*	*0,91%*	*0,93%*	*1,75%*	*0,14%*	*0,23%*	*2,24%*	*2,28%*	*0,18%*	*0,73%*	*0,34%*	*1,26%*	*0,52%*	*0,89%*	*1,26%*	*1,71%*
Revenue/GDP (17% behav.l resp.)	*0,31%*	*0,75%*	*0,77%*	*1,45%*	*0,12%*	*0,19%*	*1,86%*	*1,89%*	*0,15%*	*0,61%*	*0,29%*	*1,04%*	*0,43%*	*0,74%*	*1,05%*	*1,42%*
Revenue/GDP (50% behav.l resp.)	*0,19%*	*0,45%*	*0,46%*	*0,88%*	*0,07%*	*0,12%*	*1,12%*	*1,14%*	*0,09%*	*0,37%*	*0,17%*	*0,63%*	*0,26%*	*0,45%*	*0,63%*	*0,86%*
Number Households	36.644.680	36.644.680	36.644.680	36.644.680	4.868.518	4.868.518	4.868.518	4.868.518	3.886.309	3.886.309	3.886.309	3.886.309	1.133.217	1.133.217	1.133.217	1.133.217
Group size	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%
Beta coef.	3,17	3,17	5,93	5,93	1,78	1,78	7,68	7,68	2,18	2,18	2,84	2,84	3,21	3,21	6,57	6,57
Threshold	312.208	752.421	378.816	717.432	932.275	1.538.254	1.125.276	1.144.853	837.195	3.365.525	849.058	3.102.682	731.466	1.265.436	920.468	1.250.091
Tax rate	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%
GDP	1,27E+12	1,27E+12	1,27E+12	1,27E+12	2,76E+11	2,76E+11	2,76E+11	2,76E+11	3,34E+11	3,34E+11	3,34E+11	3,34E+11	6,21E+10	6,21E+10	6,21E+10	6,21E+10
Revenue/GDP (no behavioral resp.)	*0,39%*	*0,94%*	*1,08%*	*2,04%*	*0,25%*	*0,42%*	*2,65%*	*2,70%*	*0,23%*	*0,92%*	*0,36%*	*1,33%*	*0,59%*	*1,02%*	*1,87%*	*2,54%*
Revenue/GDP (17% behav.l resp.)	*0,32%*	*0,78%*	*0,90%*	*1,70%*	*0,21%*	*0,35%*	*2,20%*	*2,24%*	*0,19%*	*0,77%*	*0,30%*	*1,10%*	*0,49%*	*0,85%*	*1,55%*	*2,11%*
Revenue/GDP (50% behav.l resp.)	*0,20%*	*0,47%*	*0,54%*	*1,02%*	*0,13%*	*0,21%*	*1,32%*	*1,35%*	*0,11%*	*0,46%*	*0,18%*	*0,66%*	*0,30%*	*0,51%*	*0,94%*	*1,27%*

Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from (Carranza et al., 2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Quantities in current US dollars.

Table A.4: Revenue collection: 1.5% rate to the top 1%

	Mexico				Chile				Colombia				Uruguay			
	Survey	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**
METHOD 1: $R_Y = t1_{sh} * W_Y * \tau * (1-\epsilon)$																
Wealth share	19,0%	19,0%	35,6%	35,6%	4,8%	4,8%	43,8%	43,8%	13,2%	13,2%	22,5%	22,5%	18,2%	18,2%	34,3%	34,3%
Agg. net wealth	114%	274%	145%	274%	176%	290%	285%	290%	75%	300%	82%	300%	155%	268%	198%	268%
Agg. taxable wealth	99%	239%	130%	246%	146%	241%	255%	260%	69%	277%	76%	279%	141%	245%	184%	250%
Tax rate	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%
Revenue/GDP (no behavioral resp.)	*0,28%*	*0,68%*	*0,69%*	*1,31%*	*0,11%*	*0,18%*	*1,68%*	*1,71%*	*0,14%*	*0,55%*	*0,26%*	*0,94%*	*0,39%*	*0,67%*	*0,95%*	*1,28%*
Revenue/GDP (17% behav.l resp.)	*0,23%*	*0,56%*	*0,58%*	*1,09%*	*0,09%*	*0,15%*	*1,39%*	*1,42%*	*0,11%*	*0,45%*	*0,21%*	*0,78%*	*0,32%*	*0,56%*	*0,78%*	*1,07%*
Revenue/GDP (50% behav.l resp.)	*0,14%*	*0,34%*	*0,35%*	*0,66%*	*0,05%*	*0,09%*	*0,84%*	*0,85%*	*0,07%*	*0,27%*	*0,13%*	*0,47%*	*0,19%*	*0,33%*	*0,47%*	*0,64%*
METHOD 2: $R_Y = \frac{pop*g_{size}*(\beta-1)*th*\tau*(1-\epsilon)}{GDP}$																
Number Households	36.644.680	36.644.680	36.644.680	36.644.680	4.868.518	4.868.518	4.868.518	4.868.518	3.886.309	3.886.309	3.886.309	3.886.309	1.133.217	1.133.217	1.133.217	1.133.217
Group size	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%
Beta coef.	3,17	3,17	5,93	5,93	1,78	1,78	7,68	7,68	2,18	2,18	2,84	2,84	3,22	3,22	6,57	6,57
Threshold	312.208	752.421	378.816	717.432	932.275	1.538.254	1.125.276	1.144.853	837.195	3.365.525	849.058	3.102.682	731.466	1.265.436	920.468	1.250.091
Tax rate	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%
GDP	1,27E+12	1,27E+12	1,27E+12	1,27E+12	2,76E+11	2,76E+11	2,76E+11	2,76E+11	3,34E+11	3,34E+11	3,34E+11	3,34E+11	6,21E+10	6,21E+10	6,21E+10	6,21E+10
Revenue/GDP (no behavioral resp.)	*0,29%*	*0,71%*	*0,81%*	*1,53%*	*0,19%*	*0,32%*	*1,99%*	*2,02%*	*0,17%*	*0,69%*	*0,27%*	*0,99%*	*0,44%*	*0,77%*	*1,40%*	*1,91%*
Revenue/GDP (17% behav.l resp.)	*0,24%*	*0,59%*	*0,67%*	*1,27%*	*0,16%*	*0,26%*	*1,65%*	*1,68%*	*0,14%*	*0,57%*	*0,23%*	*0,83%*	*0,37%*	*0,64%*	*1,17%*	*1,58%*
Revenue/GDP (50% behav.l resp.)	*0,15%*	*0,35%*	*0,40%*	*0,77%*	*0,10%*	*0,16%*	*0,99%*	*1,01%*	*0,09%*	*0,35%*	*0,14%*	*0,50%*	*0,22%*	*0,38%*	*0,70%*	*0,95%*

Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from (Carranza et al., 2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Quantities in current US dollars.

Table A.5: Revenue collection: 0.5% rate to the top 1%

	Mexico				Chile				Colombia				Uruguay			
	Survey	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**	**Survey**	**Scaled survey**	**Adjusted survey**	**Sca. Adj. Survey**
METHOD 1: $R_Y = t1_{sh} * W_Y * \tau * (1 - \epsilon)$																
Wealth share	19,0%	19,0%	35,6%	35,6%	4,8%	4,8%	43,8%	43,8%	13,2%	13,2%	22,5%	22,5%	18,2%	18,2%	34,3%	34,3%
Agg. net wealth	114%	274%	145%	274%	176%	290%	285%	290%	75%	300%	82%	300%	155%	268%	198%	268%
Agg. taxable wealth	99%	239%	130%	246%	146%	241%	255%	260%	69%	277%	76%	279%	141%	245%	184%	250%
Tax rate	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%
Revenue/GDP (no behavioral resp.)	*0,09%*	*0,23%*	*0,23%*	*0,44%*	*0,04%*	*0,06%*	*0,56%*	*0,57%*	*0,05%*	*0,18%*	*0,09%*	*0,31%*	*0,13%*	*0,22%*	*0,32%*	*0,43%*
Revenue/GDP (17% behav.l resp.)	*0,08%*	*0,19%*	*0,19%*	*0,36%*	*0,03%*	*0,05%*	*0,46%*	*0,47%*	*0,04%*	*0,15%*	*0,07%*	*0,26%*	*0,11%*	*0,19%*	*0,26%*	*0,36%*
Revenue/GDP (50% behav.l resp.)	*0,05%*	*0,11%*	*0,12%*	*0,22%*	*0,02%*	*0,03%*	*0,28%*	*0,28%*	*0,02%*	*0,09%*	*0,04%*	*0,16%*	*0,06%*	*0,11%*	*0,16%*	*0,21%*
METHOD 2: (pop. (households) * g. size * (b_coef-1)*threshold*tax rate)/GDP																
Number Households	36.644.680	36.644.680	36.644.680	36.644.680	4.868.518	4.868.518	4.868.518	4.868.518	3.886.309	3.886.309	3.886.309	3.886.309	1.133.217	1.133.217	1.133.217	1.133.217
Group size	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%
Beta coef.	3,17	3,17	5,93	5,93	1,78	1,78	7,68	7,68	2,18	2,18	2,84	2,84	3,22	3,22	6,57	6,57
Threshold	312.208	752.421	378.816	717.432	932.275	1.538.254	1.125.276	1.144.853	837.195	3.365.525	849.058	3.102.682	731.466	1.265.436	920.468	1.250.091
Tax rate	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%	0,50%
GDP	1,27E+12	1,27E+12	1,27E+12	1,27E+12	2,76E+11	2,76E+11	2,76E+11	2,76E+11	3,34E+11	3,34E+11	3,34E+11	3,34E+11	6,21E+10	6,21E+10	6,21E+10	6,21E+10
Revenue/GDP (no behavioral resp.)	*0,10%*	*0,24%*	*0,27%*	*0,51%*	*0,06%*	*0,11%*	*0,66%*	*0,67%*	*0,06%*	*0,23%*	*0,09%*	*0,33%*	*0,15%*	*0,26%*	*0,47%*	*0,64%*
Revenue/GDP (17% behav.l resp.)	*0,08%*	*0,20%*	*0,22%*	*0,42%*	*0,05%*	*0,09%*	*0,55%*	*0,56%*	*0,05%*	*0,19%*	*0,08%*	*0,28%*	*0,12%*	*0,21%*	*0,39%*	*0,53%*
Revenue/GDP (50% behav.l resp.)	*0,05%*	*0,12%*	*0,13%*	*0,26%*	*0,03%*	*0,05%*	*0,33%*	*0,34%*	*0,03%*	*0,12%*	*0,05%*	*0,17%*	*0,07%*	*0,13%*	*0,23%*	*0,32%*

Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from (Carranza et al., 2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Quantities in current US dollars.

Table A.6: Revenue Estimates for a flat Wealth Tax: Scenario 1% GDP. Mexico

Threshold	P	Tax rate	Tax revenue			N househ.	Cost
			No evasion	17% evasion	50% evasion		
1,68	99,63	1,40	12690,00	9669,78	3807,00	136.756	15,1
1,24	99,50	1,30	12690,00	9885,51	4441,50	182.000	20,2
0,88	99,25	1,20	12690,00	10101,24	5076,00	274.294	30,4
0,61	98,81	1,10	12690,00	10316,97	5710,50	436.353	48,3
0,41	98,03	1,00	12690,00	10532,70	6345,00	722.538	80,0
0,26	96,46	0,90	12690,00	10748,43	6979,50	1.296.158	143,5
0,16	92,25	0,80	12690,00	10964,16	7614,00	2.840.346	314,6
0,10	86,40	0,70	12690,00	11179,89	8248,50	4.984.305	552,0
0,06	73,96	0,60	12690,00	11395,62	8883,00	9.543.505	1.056,9
0,03	55,34	0,50	12690,00	11611,35	9517,50	16.366.328	1.812,6
0,00	20,40	0,40	12690,00	11827,08	10152,00	16.366.328	1.812,6
0,00	20,40	0,30	12690,00	12042,81	10786,50	16.366.328	1.812,6
0,00	20,40	0,20	12690,00	12258,54	11421,00	16.366.328	1.812,6
0,00	20,40	0,10	12690,00	12474,27	12055,50	16.366.328	1.812,6

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Thresholds and costs in million dollars. Number of households in thousands.

Table A.7: Revenue Estimates for a flat Wealth Tax: Scenario 1% GDP. Colombia

Threshold	P	Tax rate	Tax revenue			N househ.	Cost
			No evasion	17% evasion	50% evasion		
2,49	98,58	1,40	3342,00	2546,60	1002,60	54.982	6,1
2,18	98,32	1,30	3342,00	2603,42	1169,70	65.279	7,2
1,90	97,84	1,20	3342,00	2660,23	1336,80	84.115	9,3
1,63	97,21	1,10	3342,00	2717,05	1503,90	108.587	12,0
1,38	96,39	1,00	3342,00	2773,86	1671,00	140.458	15,6
1,15	95,18	0,90	3342,00	2830,67	1838,10	187.227	20,7
0,94	93,51	0,80	3342,00	2887,49	2005,20	252.338	27,9
0,73	91,04	0,70	3342,00	2944,30	2172,30	348.275	38,6
0,53	88,09	0,60	3342,00	3001,12	2339,40	462.744	51,2
0,33	83,09	0,50	3342,00	3057,93	2506,50	657.117	72,8
0,12	76,69	0,40	3342,00	3114,74	2673,60	905.973	100,3
0,00	67,08	0,30	3342,00	3171,56	2840,70	905.973	100,3
0,00	67,08	0,20	3342,00	3228,37	3007,80	905.973	100,3
0,00	67,08	0,10	3342,00	3285,19	3174,90	905.973	100,3

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Thresholds and costs in million dollars. Number of households in thousands.

Table A.8: Revenue Estimates for a flat Wealth Tax: Scenario 1% GDP. Chile

Threshold	P	Tax rate	Tax revenue			N househ.	Cost
			No evasion	17% evasion	50% evasion		
13,16	99,93	1,40	2762,00	2104,64	828,60	3.473	0,4
9,28	99,90	1,30	2762,00	2151,60	966,70	4.722	0,5
6,17	99,86	1,20	2762,00	2198,55	1104,80	6.797	0,8
3,91	99,73	1,10	2762,00	2245,51	1242,90	13.364	1,5
2,37	99,56	1,00	2762,00	2292,46	1381,00	21.347	2,4
1,31	99,15	0,90	2762,00	2339,41	1519,10	41.118	4,6
0,67	98,15	0,80	2762,00	2386,37	1657,20	90.146	10,0
0,34	94,93	0,70	2762,00	2433,32	1795,30	246.812	27,3
0,17	87,98	0,60	2762,00	2480,28	1933,40	585.336	64,8
0,07	68,95	0,50	2762,00	2527,23	2071,50	1.511.573	167,4
0,01	33,08	0,40	2762,00	2574,18	2209,60	3.257.902	360,8
0,00	24,96	0,30	2762,00	2621,14	2347,70	3.257.902	360,8
0,00	24,96	0,20	2762,00	2668,09	2485,80	3.257.902	360,8
0,00	24,96	0,10	2762,00	2715,05	2623,90	3.257.902	360,8

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Thresholds and costs in million dollars. Number of households in thousands.

Table A.9: Revenue Estimates for a flat Wealth Tax: Scenario 1% GDP. Uruguay

Threshold	P	Tax rate	Tax revenue			N househ.	Cost
			No evasion	17% evasion	50% evasion		
2,45	99,56	1,40	621,00	473,20	186,30	4.951	0,5
1,87	99,37	1,30	621,00	483,76	217,35	7.166	0,8
1,39	99,13	1,20	621,00	494,32	248,40	9.860	1,1
0,99	98,75	1,10	621,00	504,87	279,45	14.185	1,6
0,68	97,98	1,00	621,00	515,43	310,50	22.904	2,5
0,44	96,52	0,90	621,00	525,99	341,55	39.426	4,4
0,28	93,64	0,80	621,00	536,54	372,60	72.099	8,0
0,18	86,72	0,70	621,00	547,10	403,65	150.538	16,7
0,10	75,71	0,60	621,00	557,66	434,70	275.210	30,5
0,05	54,24	0,50	621,00	568,22	465,75	518.576	57,4
0,00	30,62	0,40	621,00	578,77	496,80	786.213	87,1
0,00	29,03	0,30	621,00	589,33	527,85	786.213	87,1
0,00	29,03	0,20	621,00	599,89	558,90	786.213	87,1
0,00	29,03	0,10	621,00	610,44	589,95	786.213	87,1

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Thresholds and costs in million dollars. Number of households in thousands.

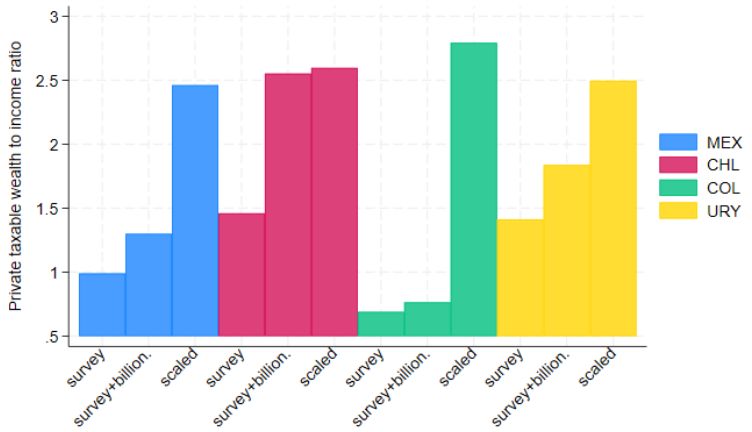
Table A.10: Revenue Estimates for a Progressive Wealth Tax

Country	Threshold	P	Tax rate	Tax revenue			N. HH.	Cost
				No evasion	17% evasion	50% evasion		
Mexico	1	99.33	0.50	11,767	8,777	2,973	234,905	26.02
	10	99.97	1.00	11,767	8,777	2,973	6,405	0.71
	25	99.99	1.50	11,767	8,777	2,973	3,348	0.37
	70	100.00	2.00	11,767	8,777	2,973	1,545	0.17
Colombia	1	94.19	0.50	2,954	2,454	1,483	219,731	24.34
	10	99.85	1.00	2,954	2,454	1,483	4,320	0.48
	25	99.96	1.50	2,954	2,454	1,483	1,345	0.15
	70	99.99	2.00	2,954	2,454	1,483	287	0.03
Chile	1	98.80	0.50	4,179	3,015	756	53,562	5.93
	10	99.90	1.00	4,179	3,015	756	3,142	0.35
	25	99.97	1.50	4,179	3,015	756	933	0.10
	70	99.99	2.00	4,179	3,015	756	647	0.07
Uruguay	1	98.75	0.50	606	457	169	13,338	1.48
	10	99.93	1.00	606	457	169	534	0.06
	25	99.97	1.50	606	457	169	228	0.03
	70	99.99	2.00	606	457	169	85	0.01

Notes: Own estimations based on financial surveys and Forbes (Chile 2017, Colombia 2018, Mexico 2019, Uruguay 2013). Uruguayan billionaires based on capitalization method. Thresholds and costs in million dollars.

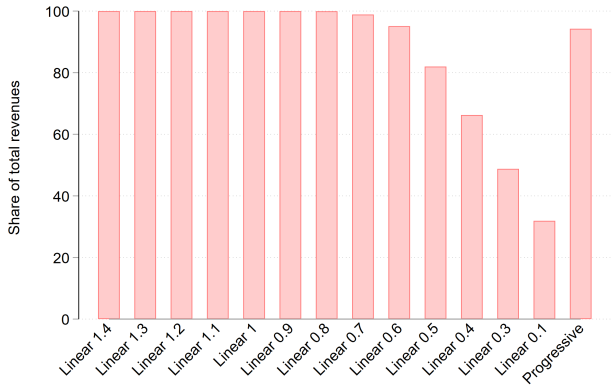
A.2 Figures

Figure A.5: Aggregate net taxable wealth in different estimation stages

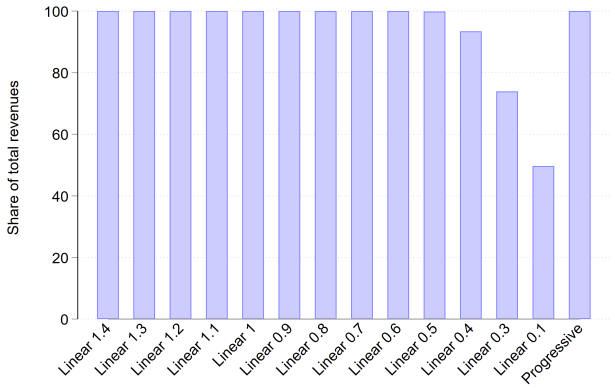


Notes: Own estimates based on household wealth surveys, billionaires lists and wealth aggregates from Carranza et al. (2023). Chile 2017, Colombia 2018, Mexico 2019 and Uruguay 2013. Aggregate income is each country's current GDP.

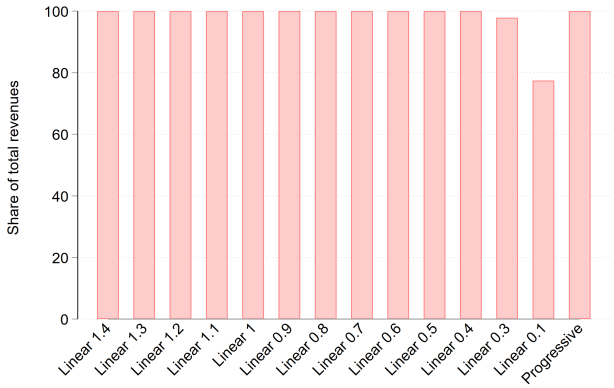
Figure A.6: Share of total wealth tax revenue. Flat and progressive schemes. Mexico.



(a) Share of top 0.1%



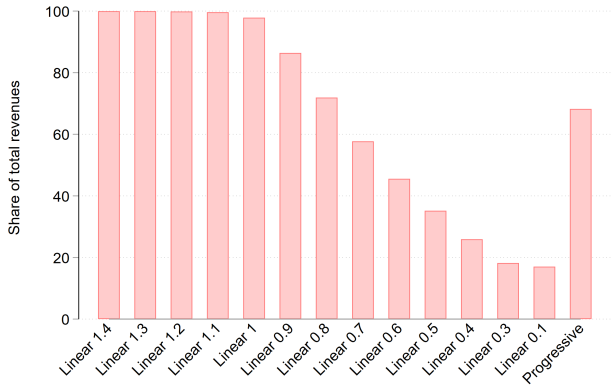
(b) Share of top 1%



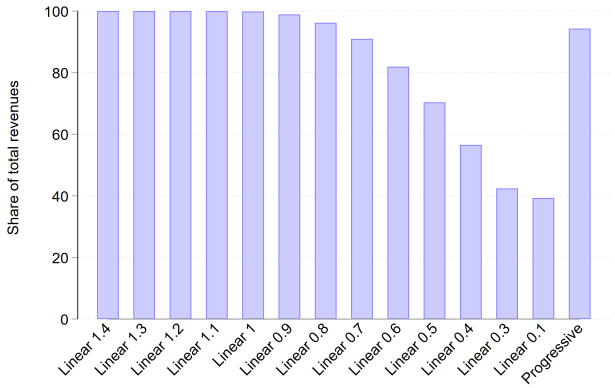
(c) Share of top 10%

Notes. Own elaboration based on wealth survey, billionaires list and nataional wealth aggretages.

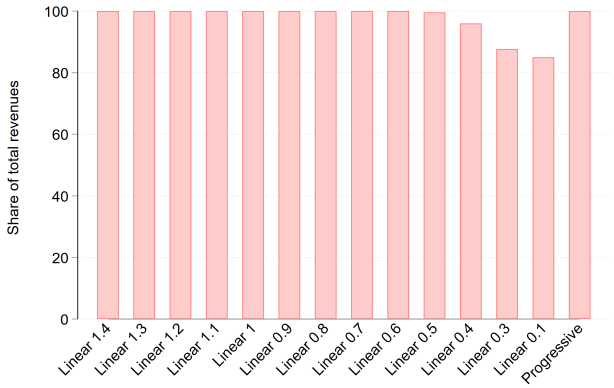
Figure A.7: Share of total wealth tax revenue. Flat and progressive schemes. Colombia.



(a) Share of top 0.1%



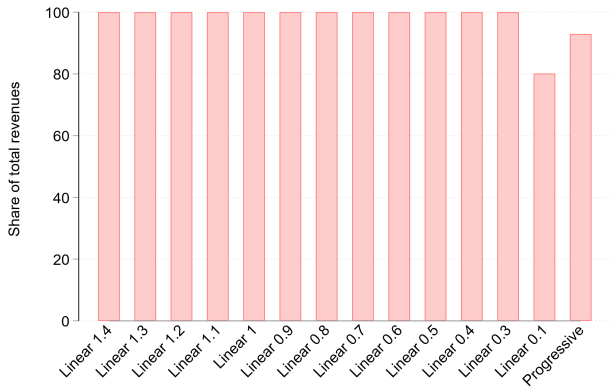
(b) Share of top 1%



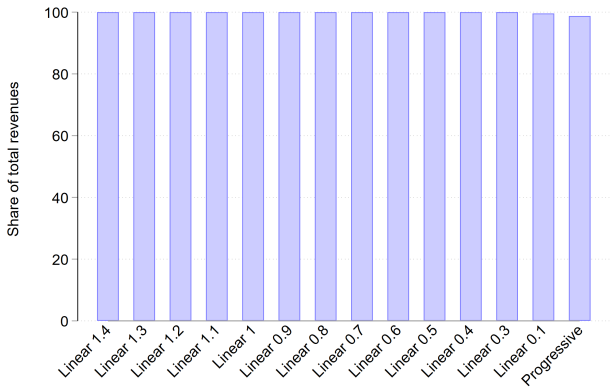
(c) Share of top 10%

Notes. Own elaboration based on wealth survey, billionaires list and nataional wealth aggretages.

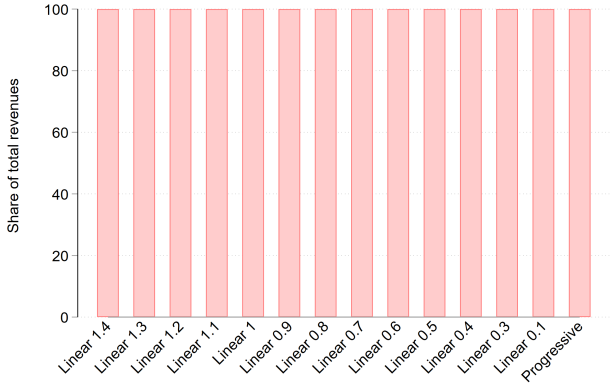
Figure A.8: Share of total wealth tax revenue. Flat and progressive schemes. Chile.



(a) Share of top 0.1%



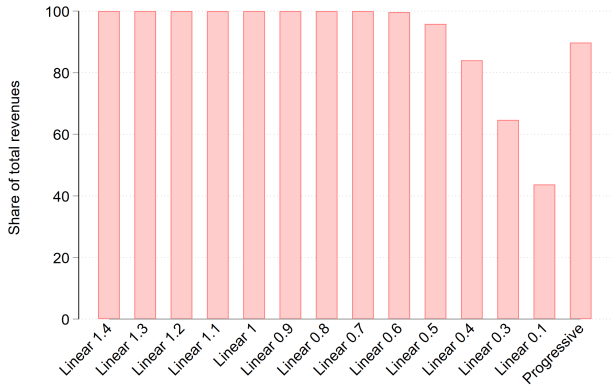
(b) Share of top 1%



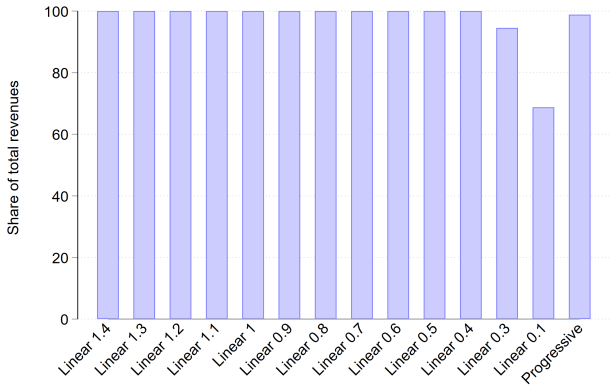
(c) Share of top 10%

Notes. Own elaboration based on wealth survey, billionaires list and nataional wealth aggretages.

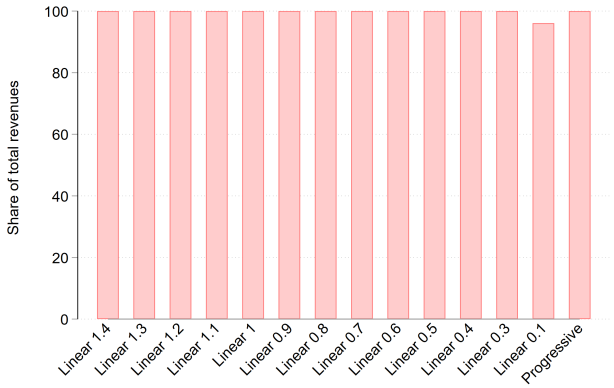
Figure A.9: Share of total wealth tax revenue. Flat and progressive schemes. Uruguay.



(a) Share of top 0.1%



(b) Share of top 1%



(c) Share of top 10%

Notes. Own elaboration based on wealth survey, billionaires list and nataional wealth aggretages.