Estimating Top Income Shares Without Tax Return Data: Mexico Since the 1990s

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This study estimates the income of individuals in the top part of the income distribution in Mexico since 1992. Mexico is the only Organisation for Economic Co-operation and Development country that does not report publicly income from fiscal sources. To circumvent this problem, we use income information from household surveys but adjust the misrepresentation of top earners using national accounts data. We then estimate incomes of the very rich using interpolations based on a Pareto distribution. Once we correct for the misrepresentation of top earners in the survey, we find that the income share of the top decile has increased in the last two decades. Our findings contradict the conclusion that is usually obtained solely from household survey information. We also find that the income share of top-1% earners in Mexico is close to 25%, making Mexico one of the countries where the rich take the largest share of total income. Moreover, we find that inequality among the rich in Mexico is larger than in most countries where information is available.

Este trabajo estima los ingresos de las personas en la parte superior de la distribución del ingreso en México desde 1992. México es el único país de la Organización para la Cooperación y el Desarrollo Económico que no publica los ingresos a partir de fuentes fiscales. Para eludir este problema, utilizamos la información de ingresos de las encuestas de hogares, pero ajustamos la subrepresentación de los ingresos más altos utilizando los datos de las cuentas nacionales. Luego estimamos los ingresos de los más ricos utilizando interpolaciones basadas en una distribución de Pareto. Una vez que corregimos la subrepresentación de los ingresos más altos en la encuesta, encontramos que la participación del ingreso del decil superior ha aumentado en las últimas dos décadas. Nuestros hallazgos contradicen la conclusión que generalmente se obtiene con la información de encuestas de hogares. También encontramos que la participación de los ingresos del 1% que más gana en México es cercana al 25%, lo que convierte a México en uno de los países donde los ricos obtienen una mayor participación del ingreso total. Además, encontramos que la desigualdad entre los ricos en México es mayor que en la mayoría de los países donde hay información disponible.

本文预测了自1992年起墨西哥收入分配最顶层的个人收入。墨西哥是经济合作与发展组织（Organisation for Economic Co-operation and Development）中唯一一个不从其

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财政资源中公开报道收入的国家。为规避这一问题， 笔者使用家庭调查中获得的收入信息, 但用国民账户数据来调整有关最高收入者的误解。之后, 笔者用基于帕累托分布的插值来预测最高收入者的收入。当笔者纠正了调查中关于最高收入者的误解后， 发现属于前十分之一的最高收入者的收入份额在过去20年间不断增加。这一研究结果与仅从家庭调查信息中得出的结论相抵触。笔者还发现， 收入占前1%的人群的收入份额接近25%, 这让墨西哥成为全体收入中富人占有份额最多的国家之一。此外， 相比起大多数信息公开的国家, 墨西哥富人间存在的不平等要大得多。

Key words: top income, rich, inequality, Pareto, Mexico

Introduction

The study of inequality is important to understand many political and economic aspects of society, including growth, development, mobility, and political stability.[1] As Anand and Segal (2008) have pointed out, even if researchers do not agree on whether inequality is increasing or decreasing, there is consensus that the levels of inequality in the world are very high, so it is no surprise that researchers around the world have taken a renewed interest in it.

The literature on equality has produced numerous measures. The most-widely used is the Gini Index, which provides a single indicator of inequality for an entire distribution. As useful as it is, the Gini Index does not say much about who is capturing society's income; a Gini Index close to one indicates that inequality is high, but it does not indicate what part of the distribution captures income. Another measure that has been increasingly used in recent years is the income share of top earners. This way of measuring inequality relates to the power of elites in a given society. As Amsden, DiCaprio, and Robinson (2012) argue, elites are highly influential in determining the path of economic development. "The elite minority is [...] able not only to create or execute policy, but also to define its objectives and how issues are framed within the national discourse" (p. 1). Acemoglu, Johnson, and Robinson (2005) also point out the importance of the distribution of resources in determining the political power that sets up economic institutions and economic outcomes. Understanding the elites and the share of income that accrues to them is essential to understanding a country's economic and political development.

Piketty (2001) uses tax returns to calculate income shares at the top part of the distribution. With this data, he obtains homogenous annual series on top incomes in France from 1901 to 1998. Thus far, 26 different countries have been examined using the same methodology, and Atkinson and Piketty (2007, 2010) have compiled the studies in two books. They show that in recent decades, top income shares have increased in many countries around the world, and the increase of top income shares has been larger in English-speaking countries (Atkinson, Piketty, & Saez 2011). Unfortunately, this methodology cannot be applied to numerous countries, since it relies on the availability of income information from tax returns, and many countries do not make this information public.

Most countries publish large-scale, statistically representative household surveys on a regular basis, but it has been shown that data from self-reporting household surveys underestimates incomes at the top part of the distribution. For example, Alvaredo (2010) compares income information

reported in tax returns with that shown in household surveys in Argentina and finds that income at the top part of the distribution is largely underreported in the surveys. Székely and Hilgert (1999) analyze household surveys in 16 Latin American countries, finding that the richest households earn incomes at company manager levels—an improbably low level, they argue, for the wealthiest earners in these countries (see also Korinek, Mistiaen, and Ravallion, 2006; Mistiaen & Ravallion, 2003). If household surveys are to be used to measure incomes at the top, these incomes must be corrected and brought in line with reality.

In this article, we provide a methodology that does so, and then use it to calculate corrected income shares for the top 10%, 5%, 1%, 0.1%, and 0.01% in Mexico since 1992. Since income data from tax returns is not available publicly in Mexico, we perform a statistical estimation of top income shares over the last two decades. In a country that is characterized by extensive poverty and high-income inequality, this kind of information is of the utmost interest. According to the National Institute for Poverty Evaluation (CONEVAL, 2014), in 2014, 53.2% of the Mexican population lived below the national income poverty line, and 20.6% lived in extreme poverty, that is, with an income below the minimum well-being level.[2] At the other extreme, some of the world's richest people are Mexican; according to the Forbes (2016) list, there are 15 Mexicans among the world's billionaires.[3] Moreover, as Esquivel (2015) has shown, the concentration of wealth at the very top has grown so dramatically that by 2014, using only the annual return on their assets, the four wealthiest Mexicans could have hired almost 3 million minimum-wage workers, whereas in 1996, they could have hired only half a million of these same workers.

Our aim in this article is to add to the nascent literature on top incomes in Mexico. We propose to circumvent the problem related to lack of tax-return data by using national accounts income information and applying statistical methods to correct for the misrepresentation of top earners in household surveys. Our method builds on Lakner and Milanovic's (2013) work, who estimated household consumption at the top of the distribution using data from household surveys adjusted with additional information on consumption from the national accounts. They then analyzed changes in the consumption Gini Index caused by this correction for top-earner misrepresentation in household surveys. Our method differs from Lakner and Milanovic's in inflating income rather than consumption.

We obtain the base income distribution from the National Income and Expenditure Survey (ENIGH, 2016), a nationally representative household survey published every 2 years since 1992, and household disposable income from national accounts data of the National Statistics Institute (INEGI, 2015a). We refer to the latter as our "control income," following previous literature on the subject (see Alvaredo, 2010; Alvaredo & Londoño, 2013; Banerjee & Piketty, 2010; Fairfield & Jorrat, 2015). We then contrast the total income obtained from ENIGH and the control income from national accounts to calculate the difference between household survey income and disposable income in national accounts. We refer to this difference as the "residual." We assign a share of this residual to the earners in the top decile, and from this

new distribution we calculate the Pareto coefficient of the top tail to estimate income shares and average incomes for top 10%, 5%, 1%, 0.1%, and 0.01% earners from 1992 to 2014.

This method assumes implicitly that the income of most of the bottom 90% of the distribution is captured adequately in household surveys, but that the income of top earners is not. Previous research supports this strategy for increasing incomes only at the top. Mistiaen and Ravallion (2003) and Korinek et al. (2006) show that part of the discrepancy in income from household surveys and national accounts can be attributed to the lower participation of the wealthy in household surveys. Banerjee and Piketty (2010) arrive at the same conclusion in their study of top Indian earners. A recent study by Del Castillo (2015) comes to a similar conclusion for the Mexican case; he shows that capital income is grossly underrepresented in Mexican household surveys and that this type of income is highly concentrated at the top part of the distribution. In addition, Samaniego (2014) demonstrates that the capital share in the Mexican economy has been increasing since the 1990s, with a corresponding decrease in the labor share, suggesting that the owners of capital have benefited the most from income growth since the 1990s. In spite of the average 1.1% annual growth in per capita Gross Domestic Product (GDP) between 1992 and 2014, income poverty in the same period was virtually unchanged (CONEVAL, 2015). Previous studies and aggregate statistics for Mexico are consistent with the underrepresentation of incomes at the upper level of the distribution based on household surveys.

Our analysis of income data from the ENIGH shows that the income share of Mexican top-10% earners has decreased since 1992, but with our correction for the misrepresentation of the rich, we find that income shares of the richest 10% have actually increased in the last two decades. Moreover, we find that the income share of the richest 1% of Mexicans is approximately 25% of total income,[4] making Mexico one of the countries where the rich take the largest share of income. According to data from the World Wealth and Income (WWI) (Alvaredo, Atkinson, Piketty, Saez, & Zucman, 2016) database, few countries (including the United States and Colombia) show a similar concentration of income at the top.

The methodology we propose comes with a caveat; there are no clear guidelines as to what share of the residual income from national accounts and household surveys should be assigned to the top decile. We can lessen this disadvantage by assigning this residual income based on what should be assigned in countries with income distributions similar to Mexico's. We apply our method to other Latin American countries where tax returns have been used to calculate top income shares, to find the share of residual income that should be assigned to the top decile to obtain similar results.

We consider this methodology a good first step toward measuring the income of the rich in Mexico. The results provide valuable input for policy concerns ranging from income inequality to tax reform and redistribution. We recognize that a better source for measuring top incomes could be tax returns compiled by the tax authority, but in a country such as Mexico where tax evasion is pervasive, even tax-return data could understate the income of the rich (see Levy, 2008). If there is large-scale tax evasion, our methodology

might provide a clearer and more-precise picture of top incomes than tax-return data. Our approach also has the advantage that it can be extended to other countries that lack public information on tax returns.

This article is organized as follows. In the methodology section we discuss the data sources and methodology, as well as the assumptions needed to estimate top-income shares using household surveys. In the results section we present our results. In the international comparison section we contrast the Mexican results with those available in the World Wealth and Income database for other countries. The final section offers some conclusions.

Methodology

In theory, total income from household surveys should be equal to total household disposable income from national accounts, but in most countries it is not the case, and income from national accounts is greater than that reported by household surveys. We therefore cannot use top income shares directly as reported in household surveys, since they underestimate the income of the rich (see the discussion in Deaton, 2005). We impute a portion of the difference, or "residual income," to the top decile of the income distribution found in the survey. We then estimate the Pareto coefficient in the new distribution to estimate top income shares. In the following subsections, we explain these steps in more detail.

Household Surveys

We use the income and expenditure national household survey in Mexico (ENIGH). The survey is available every 2 years from 1992 to 2014, and for the year 2005. The ENIGH captures *net* income from individuals, whether they are salaried, self-employed, or business owners.[5] Income is reported at the individual level and includes that obtained from property, interest, net asset sales, pensions, in-kind transfers, government programs, and cash transfers. Following the standard practice in top-income literature, we restrict the calculations to include individuals who are 20 years of age and older (see Alvaredo, 2010; Alvaredo & Londoño, 2013; Banerjee & Piketty, 2010; Fairfield & Jorrat, 2015) and calculate average income by decile for each available year.

Income Control

Following Lakner and Milanovic (2013), we use national accounts to inflate the income distribution obtained in the household survey, but we do not use the total income registered in national accounts, because we have to make the income in national accounts comparable to net incomes in the household survey. Following closely the top-income literature, we estimate net income from national accounts, commonly known as the "control income," since it is the denominator used to calculate top income shares. We follow specifically the methodology of Alvaredo (2010) for the case of Argentina, of Alvaredo and Londoño (2013) for Colombia, and of Fairfield and Jorrat (2015) for Chile to calculate the income control in the Mexican case.

The National Statistics Institute (INEGI, 2015a, 2015b) has reported national income accounts suited to our methodology since 2003. To obtain our control income, we start with the household Balance of Primary Incomes (Gross),

subtract the household account's fixed-capital consumption, actual and imputed social-security contributions (from the employer and the household), imputed rent, and attributed property and investment income, and then add social benefits (other than in-kind).[6] This calculation yields a household net income of 60.8% of GDP for the 2003–2012 period, so we assign 60.8% of GDP as our income control for every year in the sample. This share of net income is similar to what has been found in the literature on top incomes for other countries.

Population Control

To restrict the calculations to the population that is 20 years and older, a restriction referred to in the literature as "population control," we employ official statistics from the Consejo Nacional de Población (CONAPO, 2018), the national population council. In 1992, there were approximately 46.5 million Mexicans in this age group; by 2012 there were close to 72.2 million. In each year, we assign this population to each decile evenly.

Residual Income

Total income in the economy is calculated by multiplying average income (from household surveys) by the total number of individuals 20 years and older. We obtain the "residual income" by subtracting total income in the economy from the income control (household disposable income from national accounts). In most countries, the income obtained from household surveys is less than the household income from national accounts, likely because individuals in the upper part of the income distribution underreport, and top-income individuals do not participate in the survey (creating both underreporting and truncation problems). The problem is to assign a proper share of the income residual to the top-income individuals, for which there is no clear guide in the literature. Lakner and Milanovic (2013) assign the full residual to the top decile. We are skeptical about this method and have constructed alternative scenarios. The most-reliable procedure is to take other countries as a reference, preferably countries with income distributions similar to Mexico's. Latin American countries are obvious candidates. In Latin America, top income shares have been calculated using tax-return data for Chile, Colombia, and Uruguay.[7] Because these countries also have available household surveys, we can calculate the share of residual income we need to impute to the top decile to mimic the top 1% income share observed in tax-return data.[8]

The shares we calculate are 100% for Chile, 88% for Colombia, and 61% for Uruguay. In our baseline scenario, we assign 83% of the residual (the average of these three values) to the top decile. We also construct an upper and lower bound. For the upper bound, we assign 88% of the residual to the top decile. We choose this upper bound to mimic the share that has to be assigned in the Colombian case, since its level of inequality, as measured by the Gini Index, is similar to that of Mexico. Our lower bound assigns 78% of the residual to the top decile, a figure chosen to assure symmetrical results around the baseline. In each case, what remains of the residual is assigned to the ninth decile. We could assign this amount to lower deciles, but assigning a lesser amount of the residual to the ninth decile would increase inequality at the

top, which would in turn increase the top-income share. By assigning all the remaining residual to the ninth decile, we keep our estimate conservative.

Pareto Distribution

There is overwhelming evidence that the distribution of top incomes can be approximated by a Pareto distribution (Atkinson, 2007; Atkinson & Piketty, 2007, 2010; Atkinson, Piketty, & Saez, 2011; Feenberg & Poterba, 1993). The Pareto cumulative distribution function for income y is expressed as:

$$1-F(y)=\left(\frac{k}{y}\right)^{\alpha} \quad for\ k>0,\ \alpha>1 \tag{1}$$

where k is a given parameter and α is the Pareto coefficient. The key insight of the Pareto distribution is that the ratio of mean income over the income threshold y does not depend on y, and that it is equal to $\frac{\alpha}{\alpha-1}$ (see Atkinson, Piketty, & Saez, 2011), a ratio also known as the inverted Pareto coefficient. The inverted coefficient is easier to interpret; an inverted Pareto coefficient of 2 means that average income above y is 2 times y. To correct for the misrepresentation of top earners in household surveys, we calculate the Pareto coefficient of the income distribution once we have assigned a share of the residual income to the ninth and tenth deciles.

Let us define the income share of the top 20 and 10% of the distribution as S_{20} and S_{10}, and the respective proportions of the population as $H_{20}=0.20$ and $H_{10}=0.10$. Manipulating the Pareto distribution, it can be shown that (See Atkinson, 2007, p. 24):

$$\frac{S_{10}}{S_{20}}=\left(\frac{H_{10}}{H_{20}}\right)^{\frac{\alpha-1}{\alpha}} \tag{2}$$

Quantities S_{20} and S_{10} are known, so we can solve for α to obtain the estimated Pareto coefficient $\hat{\alpha}$. Once we know the Pareto coefficient of the distribution, we can manipulate equation (2) to obtain the share of any fractile income by interpolation: $S_{\text{top}}=S_{10}\times\left(\frac{H_{\text{top}}}{H_{10}}\right)^{\frac{\hat{\alpha}-1}{\hat{\alpha}}}$. For example, if we are interested in the top 1% income share, we have to substitute only $H_{top}=0.01$. Also, using the income share of a particular fractile and the number of individuals in that fractile, we can calculate average income by fractile with $\frac{S_{\text{top}}\cdot \text{Income Control}}{\text{Individuals}_{\text{top}}}$.

Summary

To facilitate replication and encourage calculation of top-income shares for other countries, we present a summary of our method.

1. From household surveys, calculate the average income by decile and for the whole distribution using the population aged 20 years and older.
2. From national accounts, calculate the household disposable income. In most countries, this number is close to 60% of GDP.

3. From population statistics, calculate the population aged 20 years and older. Assign the population evenly to each decile.
4. Obtain total income by multiplying average income (from household survey data) by the population aged 20 years and older. The residual income is the difference between the household disposable income from national accounts and total income from household surveys.
5. Assign a share of residual income to the top decile, and the rest to the ninth decile.
6. Using the new shares in the top and ninth deciles, calculate the Pareto coefficient of the income distribution.
7. Using the Pareto coefficient and the new shares, calculate income shares in other fractiles of the distribution.

Appendix 1 includes all the raw data needed to replicate the main results in this paper, as well as additional summary statistics from our calculations.

Results

Figure 1 shows top-10% income shares since 1992, before and after our correction for the misrepresentation of top earners. As is described, we inflate top earners' income by assigning it a share of the residual income from household surveys and national accounts. Our main statistics come from the average share of residual income (83%) that needs to be imputed to the top decile to mimic the top 1% share across three Latin American countries for which tax-return data is available. We also include an interval of +/− 5 percentage points.

Figure 1 makes evident the extent to which household surveys underestimate incomes at the top. Top 10% shares in Mexico are not only smaller before correcting for misrepresentation of top earners but also show a decreasing trend. If we were to judge top income shares using exclusively information from the ENIGH, we would have to conclude that income inequality at the top has decreased in the last two decades in Mexico, but our estimations contradict this conclusion. Figure 1 shows that income shares of top 10% earners have actually increased in the last two decades. For example, in the baseline case, the share of the top 10% has increased from 53.5% in 1992, to 64% in 2014. The implications of this finding are very important for a number of public-policy issues.

The growing gap between the top 10 income share from the household survey and the survey corrected with national accounts is attributable mainly to the increasing amount of residual income in the period we analyze. Figure 2 shows average individual income in the household survey and average individual disposable income from national accounts. These measures of income have diverged in recent decades, increasing the amount of residual income. The negative trend in average individual income seen in household surveys is completely at odds with the evolution of per-capita income that we know from national accounts data. We argue that this increase in residual income is explained mainly by a growing share of income going to rich earners in the

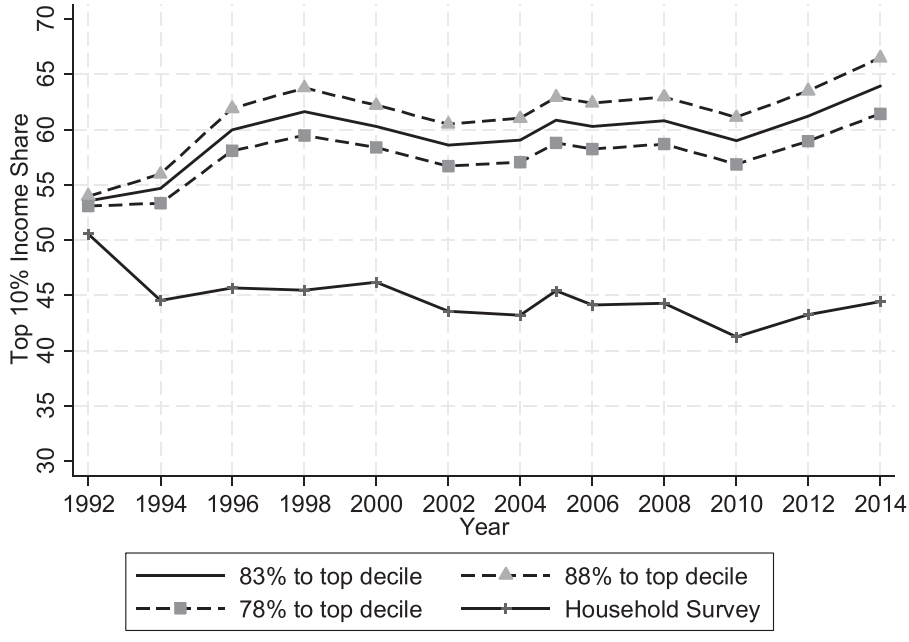

Figure 1. Top 10% Income Share.

Source: INEGI (2015a, 2015b).

Note: This figure shows income shares of top 10% earners in Mexico before and after correcting for misrepresentation of top earners in the household survey.

same period, resulting in a growing share of underreported income in the household survey.[9] We know that in 2014, 53% of the population in Mexico was poor as defined by income, and that the poverty rate hardly changed from 1992 to 2014 (CONEVAL, 2015). Recent research by Samaniego (2014) also shows that the share of total income going to capital has increased in recent decades (with a consequent decrease in income to labor); since capital income goes mainly to the top deciles, we could expect that the income share of the rich has actually increased in the last two decades.

Let us now analyze the rich earners at the very top of the distribution. Figure 3 shows income shares of top 1% earners since 1992, under our three scenarios. In the middle scenario, we find that top 1% shares have ranged at approximately 25% of total income. The upper and lower bounds range 30 and 23%, respectively. In all three cases, the trend is positive. In Figure 4, we show shares for top 5, top 1, top 0.1, and top 0.01% earners. In the middle scenario, we find that approximately 12% of total income goes to top 0.1% earners (see Figure 4, panel C), while in the lower-bound scenario the figure is approximately 8%. Almost 5% of total income goes to top 0.01% earners (see Figure 4, panel D), which means that in a country with a population of nearly 120 million people, the richest 12,000 persons receive approximately 5% of the country's total income.

Table 1 shows in greater detail our findings for 2012. Panel A gives the top-income share information for 2012. Panel B analyzes top-income shares

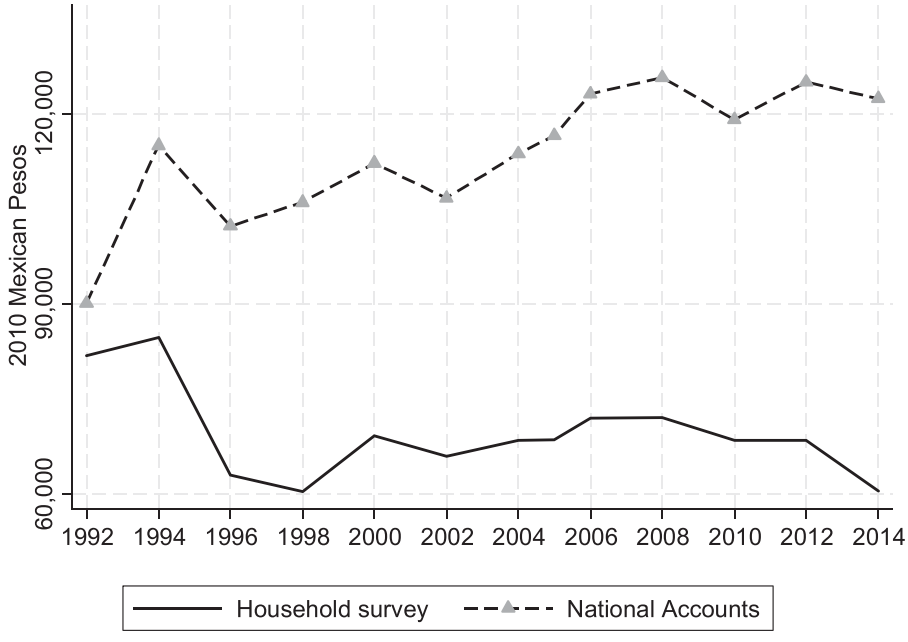

Figure 2. Average Annual Individual Income.

Source: INEGI (2015a, 2015b).

Note: This figure shows average annual individual income from the ENIGH household survey and average individual disposable income from national accounts (60.8% of GDP).

within different fractiles of top earners and shows that income inequality is present even among top earners. Only approximately one-fifth of the income share belonging to top 10% earners goes to the least rich among the rich (those between the 90th and 95th percentile); the remaining four-fifths go to the richest half of top earners. This inequality among rich earners is not exclusive to the Mexican rich. Inequality at the top is characteristic of Pareto distributions, which, according to Kuznets (1953), describe all income distributions. The magnitude of income inequality at the top varies according to the Pareto parameter of the distribution; the smaller the Pareto parameter, the larger the inequality at the top, a point that will be explored more fully in the next section.

Figure 5 shows the average annual income of top 1% earners in 2010 purchasing power parity (PPP) dollars since 1992. Mean annual income of top 1% earners in Mexico has grown from approximately U.S.$300,000 to U.S.$450,000, representing an average annual growth rate of approximately 1.6%. Given the 1.1% average annual growth of the economy in the same period and the data in Figure 1, this growth in top income implies that most of the gains from growth have accrued to the top decile. Mean income for other top earners in 2012 is shown in Table 2. These figures give deeper insight into inequality among the top of the income distribution. For example, in our baseline scenario, individuals in the 99.99th to 100th percentile earn seven times more than those in the 99.9th to the 99.99th percentile, and approximately 200 times more than those in the 90th and 95th percentile (the least-rich among the rich).

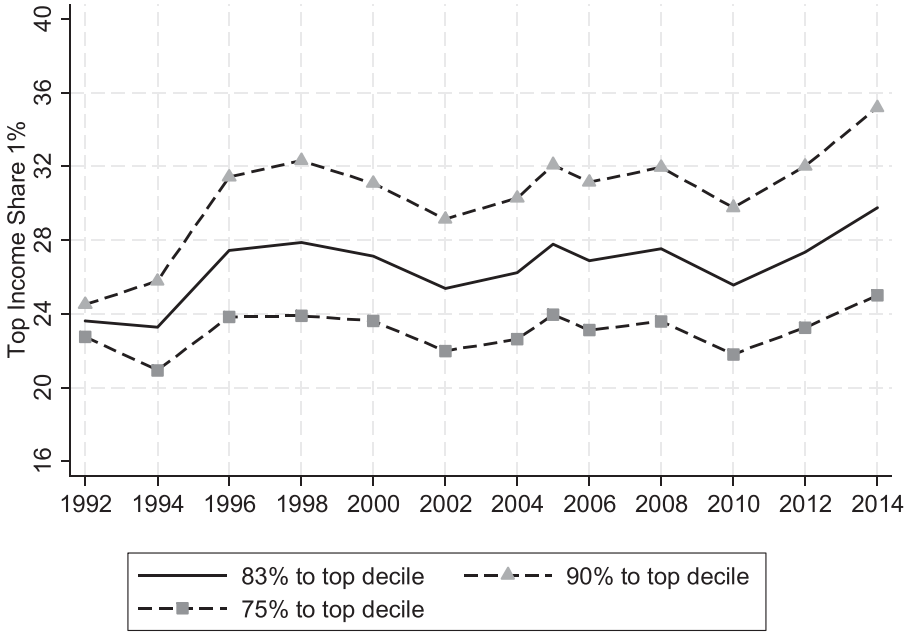

Figure 3. Top 1% Income Shares.

Source: INEGI (2015a, 2015b).

Note: This figure shows income shares of top 1% earners in Mexico after correcting for misrepresentation of top earners in the household survey.

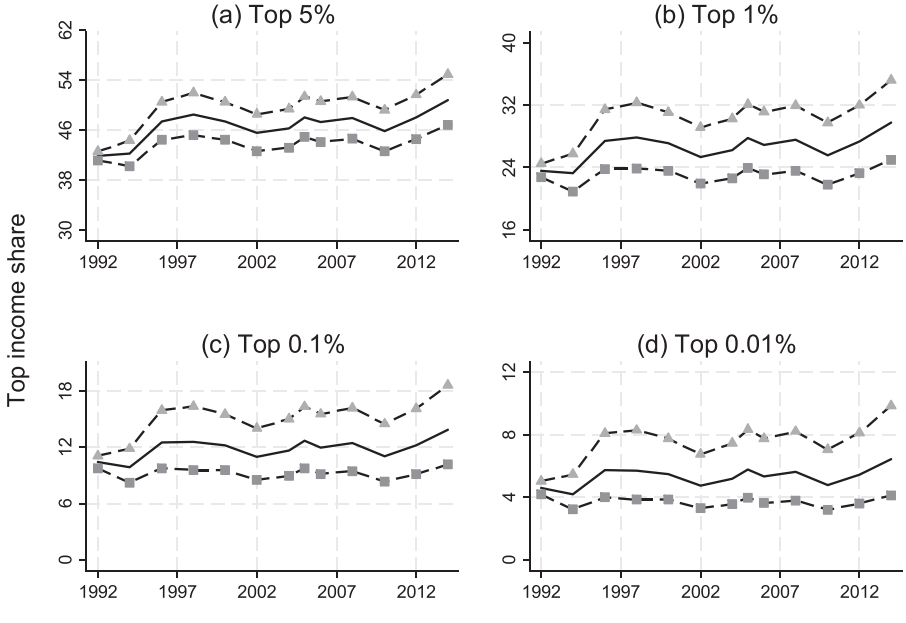

Figure 4. Top Earner Income Shares.

Source: INEGI (2015a, 2015b).

Note: This figure shows income shares of top 5, top 1, top 0.1, and top 0.01% earners in Mexico after correcting for misrepresentation of top earners in the household survey.

Table 1. Income Share of Top Earners, 2012

	78% to Top Decile	83% to Top Decile	88% to Top Decile
Panel A - Top Income Shares			
Top 10%	59.0	61.2	63.5
Top 5%	44.6	48.1	51.7
Top 2%	30.8	34.9	39.3
Top 1%	23.3	27.4	32.0
Top 0.1%	9.2	12.2	16.1
Top 0.01%	3.6	5.5	8.1
Panel B - Shares Within Shares			
90–95	14.4	13.2	11.8
95–98	13.8	13.2	12.3
98–99	7.5	7.5	7.3
99–99.9	14.1	15.1	15.9
99.9–99.99	5.6	6.8	8.0
99.99–100	3.6	5.5	8.1

Source: INEGI (2015a, 2015b).
Note: This table shows income shares of different top-earner fractiles in Mexico after correcting for misrepresentation of top earners in the household survey.

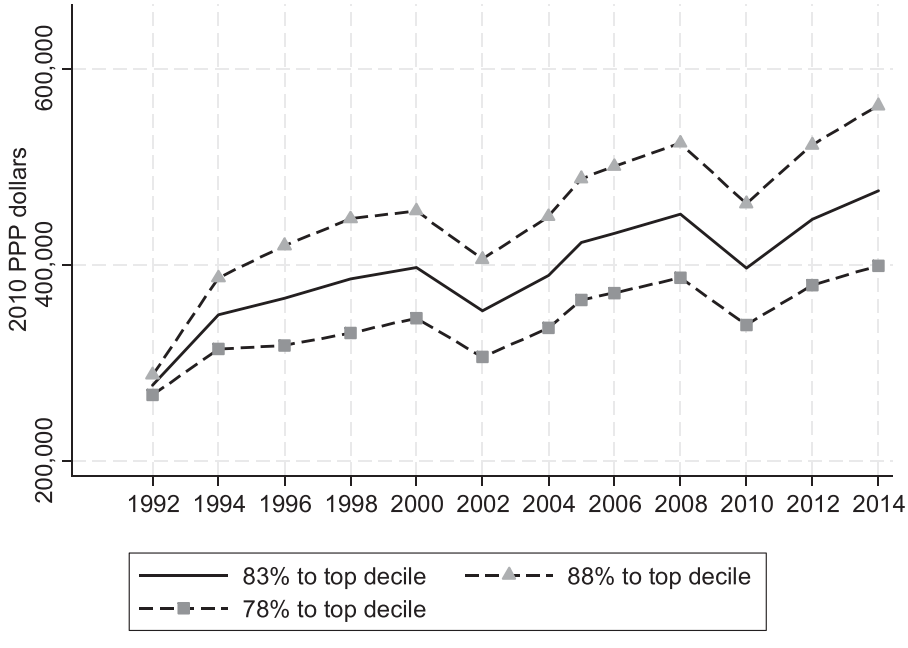

Figure 5. Mean Income of Top 1% Earners.

Source: INEGI (2015a, 2015b).
Note: This figure shows mean income of top 1% earners in Mexico after correcting for misrepresentation of top earners in the household survey.

Table 2. Mean Income of Top Earners (2010 PPP dollars), 2012

	78% to Top Decile	83% to Top Decile	88% to Top Decile
Panel A - Top Income Shares			
Top 10%	96,171	99,860	103,550
Top 5%	145,344	156,709	168,502
Top 2%	250,892	284,313	320,727
Top 1%	379,175	446,167	521,906
Top 0.1%	1,494,976	1,993,434	2,630,483
Top 0.01%	5,894,258	8,906,485	13,300,000
Panel B - Shares Within Shares			
90–95	46,998	43,012	38,597
95–98	74,978	71,640	67,019
98–99	122,610	122,459	119,548
99–99.9	255,197	274,248	287,619
99.9–99.99	1,006,167	1,225,317	1,449,645
99.99–100	5,894,258	8,906,485	13,300,000

Source: INEGI (2015a, 2015b).
Note: This figure shows mean income of different fractiles of top earners in Mexico after correcting for misrepresentation of top earners in the household survey.

International Comparison

In this section, we compare our results for top-income shares in Mexico with top-income shares obtained from tax-return data in other countries. This comparison provides information not only about where Mexican top earners stand in relation to those in other countries but also about which of our scenarios is most likely in line with observations from other countries. Figure 6 shows our middle and bottom scenarios for top 1% income shares, along with those of selected countries in the WI database.[10] We find that income shares of top 1% Mexican earners are greater than those from countries in the database, but they are not very different from those of other highly unequal countries such as Colombia and the United States. Top income shares in Mexico are also much higher than those in countries such as France or India, where overall income inequality is smaller. Figure 7 is similar to Figure 6, but instead of top 1% earners, it presents data for top 0.1% earners in panel A, and top 0.01% earners in panel B. The story remains the same; Mexican top earners take larger shares than top earners in any other country for which there is available data.

The figures suggest that the lower-bound scenario is more in line with what we observe in countries characterized by high income inequality, although we cannot rule out the alternative scenarios (which present an even larger concentration of income at the top part of the distribution). We therefore include in Table 3 a series of statistics that allow for a closer comparison of top earners' income in recent years. We include in this table our lower-bound estimate for Mexico, and the income shares and mean incomes of top 1% earners for all countries in the WI database. Not only are the income shares of Mexican top 1% earners among the largest in the world but their

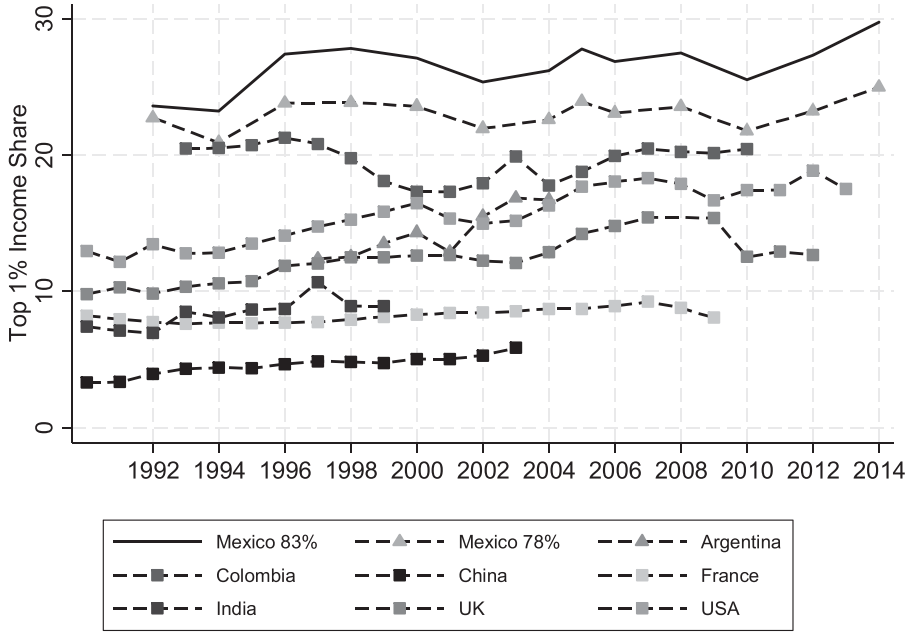

Figure 6. Top 1% Shares in Selected Countries.
Sources: Mexico: INEGI (2015a, 2015b). Other countries: Alvaredo et al. (2016).
Note: This figure shows income shares of top 1% earners in selected countries.

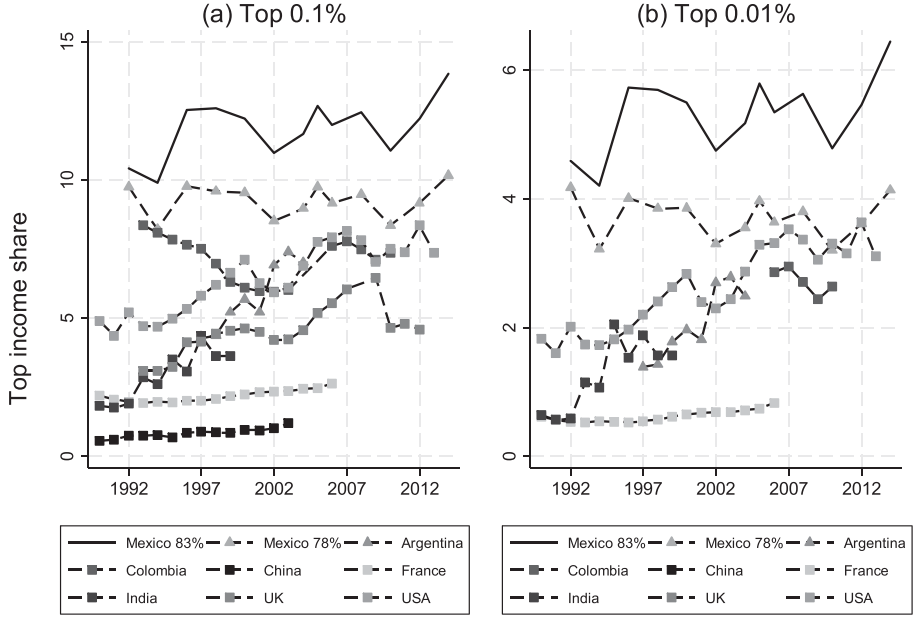

Figure 7. Top 0.1% and Top 0.01% Income Shares in Selected Countries.
Sources: Mexico: INEGI (2015a, 2015b). Other countries: Alvaredo et al. (2013).
Note: This figure shows income shares of top 0.1 and top 0.01% earners in selected countries.

Table 3. Selected Statistics for Top Earners

	Top 1% Earners				
	Mean Income (in 2010 PPP dollars)	Share of total Income (%)	Pareto Parameter	GDP per Capita (in 2010 PPP Dollars)	Year of Reference
Argentina	132,159	16.75	1.607	10,240	2004
Australia	300,324	9.17	1.864	39,119	2010
Canada	351,625	12.22	1.828	40,055	2010
China	29,032	5.87	3.099	3,903	2003
Colombia	221,592	20.45	1.797	10,680	2010
Denmark	171,123	6.41	2.165	41,807	2010
France	280,761	8.94	2.118	36,047	2006
Germany	520,249	13.89	1.534	39,728	2008
Ireland	424,407	10.5	1.982	43,893	2009
Italy	211,792	9.38	2.178	34,654	2009
Japan	192,158	9.51	2.366	33,741	2010
Korea	246,329	12.23	1.814	30,835	2012
Malaysia	220,531	9.43	1.748	20,675	2010
Mauritius	147,590	5.96	2.1	13,919	2006
New Zealand	248,731	8.85	2.095	30,986	2012
Norway	272,957	7.8	2.021	61,734	2011
Portugal	229,713	9.13	2.54	25,225	2003
Singapore	733,968	13.57	2.101	68,926	2012
South Africa	200,658	16.68	2.184	12,232	2011
Spain	185,997	8.2	2.075	29,399	2012
Sweden	199,527	7.24	1.882	42,045	2013
Switzerland	472,156	10.63	1.726	51,322	2010
United Kingdom	328,413	12.7	1.789	35,204	2012
United States	906,261	17.85	1.605	50,319	2014
Uruguay	164,334	14	1.936	18,378	2012
Mexico	345,499	23.25	1.631	15,476	2012

Sources: México: INEGI (2015a, 2015b). Other countries: Alvaredo et al. (2013); Heston, Summers, and Aten (2011).

Note: This table shows mean incomes and income shares of top 1% earners (excluding capital gains) in selected countries. Additionally, the table shows Pareto parameters of the top of the income distribution and GDP per capita. For Mexico, we take the case where 78% of the residual is imputed to the top decile.

mean income is also among the highest, even though Mexico is a relatively poor country. It means that although over half of Mexico's population lives below the national poverty line, rich Mexicans have incomes that are similar to or higher than those of rich individuals in richer countries.[11]

To compare inequality among top earners, Table 3 also shows the Pareto parameters of the top of the distribution in different countries. According to our estimates, Mexico is one of the countries with the greatest degree of inequality among the rich.[12] That is, as we move up in the distribution, income becomes more concentrated.

Conclusions

In this study we find that, contrary to the conclusions drawn from household surveys, the income shares of top earners in Mexico have increased in recent decades. This finding has serious implications for public-policy issues ranging from redistribution to taxation of top incomes. Beyond public policy, our findings are also relevant to a broader academic and public discussion on income inequality in a country that has shown low growth rates since the 1990s.

Studies have generally concluded that income inequality in Mexico has decreased in recent years throughout the entire income distribution. In particular, estimations of the Gini Index using household-survey data show that inequality has been reduced (see De la Torre, Levy-Yeyati, Beylis, Didier, and Schmukler 2014).[13] These estimations do not take into account the misrepresentation of top earners in household surveys. One possible scenario is that inequality for the whole distribution may have in fact decreased in Mexico in recent decades, even while the concentration of incomes at the top has increased. Alternatively, inequality for the whole distribution may have increased, but sources used traditionally to estimate inequality are not sufficient to provide a complete picture of the income distribution. Research based on household surveys also shows that most Latin American countries have seen their Gini Indices decrease in recent decades, but as we have argued, income inequality in these countries may have increased if misrepresentation of top incomes in household surveys is taken into account.

In sum, our study shows that the top 1% in Mexico receives close to 25% of total income, that the mean incomes of rich earners in Mexico are similar to or larger than those of rich earners in wealthier nations, and that inequality among the rich is larger in Mexico than in most countries where information is available. These facts are particularly troubling in an economy where over half the population lives below the national poverty line.

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Notes

[1]Although there is mixed evidence about the effects of inequality on growth per se (see Alesina & Rodrik, 1994; Berg & Osrty, 2013; Banerjee & Duflo, 2005; Ostry, Berg, and Tsangarides, 2014, among others), there is a relative degree of consensus that higher inequality increases the difficulty of economic growth benefiting the poor (see Ferreira & Ravallion, 2008). With respect to economic development, Galor and Zeira (1993) show that the coexistence of inequality and credit constraints results in inefficiencies in the economy, because high-ability individuals who are poor do not reach their true human-capital potential. With regard to mobility, Corak (2013) provides evidence that higher income inequality is related to lower intergenerational mobility, since inequality shapes the opportunities in a society. Additionally, as Soubbotina and Sheram (2000), and Soubbotina (2004) note, inequality affects trust and commitment and threatens political stability because it increases people's dissatisfaction with their own economic status.

[2]CONEVAL's definition of income poverty is different from the one adopted by the World Bank and other international organizations. For CONEVAL, people living in income poverty are those who do not have an income large enough to satisfy access to basic needs in terms of education, housing, and food. People living in extreme poverty are those who do not have enough income to satisfy their nutritional needs.

[3]See Forbes (2016).

[4]Using a completely different methodology, Del Castillo (2015) reaches a strikingly similar conclusion.

[5]If the individual is a salaried worker, the survey asks, "What was your last month's income?" Social-security contributions are discounted from income. In the case of self-employed workers and business owners, from 2005, the survey asks for net income and profits, not total sales. "From the business's profits, how much did you keep for your household purposes?" Because the questions refer to last month's income, taxes or other expenses could be still due, but we assume that this reported income is the true net income.

[6]We use the following codes from the national accounts from INEGI for the 2003–2012 period: B5b+D62-P51c-D611-D612-D613-D441-D442-(9% of GDP). INEGI assumes that imputed rent is 9% of GDP.

[7]See Alvaredo and Londoño (2013) for Colombia; and Fairfield and Jorrat (2015) for Chile; and Burdín, Esponda, and Vigorito (2014) for Uruguay.

[8]In Appendix 2 we include a detailed explanation of the data and the assumptions that we used to calculate top income shares in Colombia, Chile, and Uruguay. We also include the necessary raw data to replicate our calculations.

[9]Other studies also discuss the income discrepancy between household surveys and national accounts. See Banerjee and Piketty (2010), Korinek et al. (2006), and Mistiaen and Ravallion (2003).

[10]Information in the WI database is obtained from tax returns, so estimates for those countries could be more precise than those obtained with our method.

[11]To compare the "richness" of countries in Table 3, we include GDP per capita in PPP dollars.

[12]Smaller Pareto parameters indicate larger inequality among the rich.

[13]A notable exception is Del Castillo (2015). Interestingly, he also corrects income from household surveys using national accounts data and alternative sources of information.

References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1A, pp. 385–472). Amsterdam: Elsevier.

Alesina, A., & Rodrik, D. (1994). Distributive politics and economic growth. *The Quarterly Journal of Economics*, *109*(2), 465–490.

Alvaredo, F. (2010). The rich in Argentina over the twentieth century, 1932–2004. In A. B. Atkinson & T. Piketty (Eds.), *Top incomes: A global perspective*. (pp. 253–298). Oxford: Oxford University.

Alvaredo, F., Atkinson, A. B., Piketty, T., Saez, E., & Zucman, G. (2016). *The World Wealth and Income Database*. WWI. Retrieved from http://www.wid.world

Alvaredo, F., & Londoño, J. (2013). High Incomes and personal taxation in a development economy. Colombia 1993–2010. *CEQ Working* Paper (12). New Orleans: Tulane University.

Amsden, A. H., DiCaprio, A., & Robinson, J. A. (2012). *The role of elites in economic development*. Oxford: Oxford University.

Anand, S., & Segal, P. (2008). What do we know about global income inequality? *Journal of Economic Literature*, *46*(1), 57–94.

Atkinson, A. B. (2007). Measuring top incomes: Methodological issues. In A. B. Atkinson & T. Piketty (Eds.), *Top incomes over the twentieth century: A contrast between continental European and English-Speaking countries* (pp. 18–42). Oxford: Oxford University.

Atkinson, A. B., & Piketty. T. (Eds.) (2007). *Top incomes over the twentieth century: A contrast between continental European and English-Speaking countries*. Oxford: Oxford University.

Atkinson, A. B., & Piketty, T. (Eds.) (2010). *Top incomes: A global perspective*. Oxford: Oxford University.

Atkinson, A. B., Piketty, T., & Saez, E. (2011). Top incomes in the long run of history. *Journal of Economic Literature*, *49*(1), 3–71.

Banerjee, A. V., & Duflo, E. (2005). Growth theory through the lens of development economics. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1A, pp. 473–552). Amsterdam: Elsevier.

Banerjee, A., & Piketty, T. (2010). Top Indian Incomes, 1922–2000. In A. Atkinson & T. Piketty (Eds.), *Top incomes: A global perspective* (pp. 1–39). Oxford: Oxford University.

Berg, A. G., & Ostry, D. J. (2013). Inequality and unsustainable growth: Two sides of the same coin? *International Organizations Research Journal*, *8*(4), 77–99.

Burdín, G., Esponda, F., & Vigorito, A. (2014). Inequality and Top Incomes in Uruguay: A Comparison between Household Surveys and Income Tax Micro-Data. *WTID. Working Paper* (2014-1). Retrieved from https://ideas.repec.org/p/wel/wpaper/201401.html

CONAPO. (2018). *Estadísticas*. CONAPO. Retrieved from http://www.conapo.gob.mx/

CONEVAL. (2014). Evolución De Las Dimensiones De La Pobreza 1990–2014. CONEVAL. Retrieved from https://www.coneval.org.mx/Medicion/EDP/Paginas/Evolucion-de-las-dimensiones-de-la-pobreza-1990-2014-.aspx

CONEVAL. (2015). *Medición de la pobreza en México y en las entidades federativas 2014*. Consejo Nacional de Evaluación de la Política de Desarrollo Social. Retrieved from http://www.coneval.gob.mx/Medicion/Documents/Pobreza%202014_CONEVAL_web.pdf

Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, *27*(3), 79–102.

De la Torre, A., Levy-Yeyati, E., Beylis, G., Didier, T., & Schmukler, S. (2014). *Inequality in a Lower Growth Latin America: LAC Semiannual Report Office.* Washington DC: The World Bank.

Deaton, A. (2005). Measuring Poverty in a Growing World (Or Measuring Growth in a Poor World). *Review of Economics and Statistics*, *87*(1), 1–19.

Del Castillo, M. (2015). *La magnitud de la desigualdad en el ingreso y la riqueza en México, una propuesta de cálculo*. México, DF: Publicación de las Naciones Unidas.

ENIGH. (2016). Encuesta Nacional de Ingresos y Gastos de los Hogares 2016. INEGI. Retrieved from http://www.beta.inegi.org.mx/proyectos/enchogares/regulares/enigh/nc/2016/

Esquivel, G. (2015). *Extreme inequality in Mexico*. Mexico City: Oxfam.

Fairfield, T., & Jorrat, M. (2015). Top Income Shares, Business Profits, and Effective Tax Rates in Contemporary Chile. *Review of Income and Wealth*, *62*(S1), S120–S144.

Feenberg, D. R., & Poterba, J. M. (1993). Income inequality and the incomes of very high-income taxpayers: Evidence from tax returns. In J. Poterba (Ed.), *Tax policy and the economy* (Vol. 7, pp. 145–77). Cambridge, MA: MIT.

Ferreira, F. H. G., & Ravallion, M. (2008). Global poverty and inequality: A review of the evidence. *World Bank Policy Research Working Paper*(4623). Washington, DC: The World Bank.

Forbes. (2016). The Billionaires. *Forbes*. Retrieved from http://www.forbes.com/billionaires/#tab:overall_country:Mexico

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, *60*(1), 35–52.

Heston, A., Summers, R., & Aten, B. (2011). *Penn World Table Version 7.0 Center for International Comparisons of Production*. Philadelphia: Income and Prices at the University of Pennsylvania.

INEGI. (2015a). *Sistema de Cuentas Nacionales*. INEGI. Retrieved from http://www.inegi.org.mx/est/contenidos/proyectos/scn/

INEGI. (2015b). *Encuesta Nacional de Ingresto y Gasto de los Hogares*. INEGI. Retrieved from http://www.beta.inegi.org.mx/proyectos/enchogares/regulares/enigh/tradicional/2014/

Korinek, A., Mistiaen, J. A., & Ravallion, M. (2006). Survey Nonresponse and the Distribution of Income. *Journal of Economic Inequality*, *4*(1), 33–55.

Kuznets, S. (1953). *Shares of upper income groups in income and savings*. Cambridge, MA: National Bureau of Economic Research.

Lakner, C., & Milanovic, B. (2013). Global income distribution: From the fall of the Berlin wall to the great recession. *World Bank Policy Research Working Paper(6719)*. Washington, DC: The World Bank.

Levy, S. (2008). *Good intentions, bad outcomes*. Washington, DC: Brookings Institution.

Mistiaen, J. A., & Ravallion, M. (2003). Survey compliance and the distribution of income. *World Bank Policy Research Working Paper(2956)*. Washington, DC: The World Bank.

Ostry, J. D., Berg, A. G., & Tsangarides, C. G. (2014). *Redistribution, Inequality, and Growth. IMF Discussion Note SDN/14/02*. Washington, DC: International Monetary Fund.

Piketty, T. (2001). *Les hauts revenus en France au 20e siècle: Inégalités et redistribution, 1901–1998*. Paris: Bernard Gasset.

Samaniego, N. (2014). La Participación Del Trabajo En El Ingreso Nacional: El Regreso a Un Tema Olvidado. *Economía UNAM*, *11*(33), 52–77.

Soubbotina, T. P. (2004). *Beyond economic growth, an introduction to sustainable development* (2nd ed.). Washington, DC: The World Bank.

Soubbotina, T. P., & Sheram, K. A. (2000). *Beyond economic growth, meeting the challenges of global development*. Washington, DC: The World Bank.

Székely, M., & Hilgert, M. (1999). What's behind the inequality we measure: An investigation using Latin American data. *IDB Working Paper*(409). Washington, DC: Inter-American Development Bank.

Appendix 1. Detailed Statistics

Table A1. Population, Mean income, and Total Income

	Population	Mean income				Total income				Residual	Inflation
	(1)	(2)	(3)	(4)	(5)	(4)	(6)	(7)	(8)	(9)	(10)
	20 years and older	*from household survey*	*from household survey*	*from national accounts*	*from national accounts*	*from household survey (1)x(2)*	*from household survey (1)x(3)*	*from national accounts (1)x(4)*	*from national accounts (1)x(5)*	*(8)-(6)*	*2010 base*
	(thousands)	(current pesos)	(2010 pesos)	(current pesos)	(2010 pesos)	(million current pesos)	(million 2010 pesos)	(million current pesos)	(million 2010 pesos)	(million 2010 pesos)	
1992	46,652	13,325	81,885	14,666	90,125	621,655	3,820,140	684,203	4,204,505	384,364	0.16
1994	49,228	16,197	84,783	21,981	115,062	797,341	4,173,684	1,082,090	5,664,207	1,490,524	0.19
1996	51,779	21,838	63,012	35,462	102,324	1,130,731	3,262,680	1,836,180	5,298,227	2,035,548	0.35
1998	54,238	29,280	60,416	51,412	106,085	1,588,064	3,276,825	2,788,510	5,753,836	2,477,011	0.48
2000	56,591	42,821	69,218	69,451	112,263	2,423,301	3,917,123	3,930,295	6,353,091	2,435,968	0.62
2002	59,000	45,624	66,012	73,789	106,764	2,691,819	3,894,747	4,353,583	6,299,125	2,404,377	0.69
2004	61,417	51,794	68,471	86,059	113,768	3,181,052	4,205,276	5,285,490	6,987,294	2,782,018	0.76
2005	62,589	53,958	68,596	91,715	116,595	3,377,196	4,293,355	5,740,341	7,297,569	3,004,214	0.79
2006	63,801	58,657	71,958	100,424	123,195	3,742,396	4,590,996	6,407,174	7,860,020	3,269,024	0.82
2008	66,500	64,207	72,067	112,062	125,781	4,269,779	4,792,497	7,452,173	8,364,488	3,571,991	0.89
2010	69,380	66,928	68,495	116,394	119,119	4,643,519	4,752,240	8,075,493	8,264,570	3,512,330	0.98
2012	72,213	72,046	68,487	131,578	125,079	5,202,632	4,945,656	9,501,649	9,032,330	4,086,674	1.05
2014	75,016	68,677	60,461	139,092	122,453	5,151,845	4,535,554	10,434,113	9,185,929	4,650,376	1.14

Source: Authors' calculations, based on INEGI (2015a, 2015b).

Table A2. Decile 10 Income

	Mean Income							
	(1) *from household survey* (current pesos)	(2) *from household survey* (2010 pesos)	(3) *88% of residual goes to decile 10* (current pesos)	(4) *88% of residual goes to decile 10* (2010 pesos)	(5) *83% of residual goes to decile 10* (million current pesos)	(6) *83% of residual goes to decile 10* (million 2010 pesos)	(7) *78% of residual goes to decile 10* (million current pesos)	(8) *78% of residual goes to decile 10* (million 2010 pesos)
1992	67,367	413,978	79,166	486,481	78,495	482,361	77,825	478,242
1994	72,122	377,520	123,024	643,969	120,132	628,830	117,239	613,690
1996	99,668	287,588	219,562	633,536	212,749	613,880	205,937	594,224
1998	133,116	274,673	327,885	676,561	316,819	653,727	305,752	630,892
2000	197,680	319,538	432,020	698,335	418,705	676,812	405,391	655,290
2002	198,639	287,407	446,494	646,024	432,411	625,648	418,328	605,272
2004	223,617	295,616	525,147	694,232	508,015	671,584	490,883	648,935
2005	244,906	311,344	577,164	733,736	558,286	709,736	539,407	685,737
2006	258,907	317,615	626,456	768,507	605,573	742,888	584,689	717,269
2008	284,259	319,059	705,386	791,741	681,458	764,884	657,530	738,027
2010	276,038	282,501	711,339	727,994	686,606	702,682	661,873	677,370
2012	311,577	296,187	835,464	794,197	805,698	765,901	775,931	737,605
2014	305,220	268,708	924,873	814,235	889,666	783,239	854,458	752,243

Source: Authors' calculations, based on INEGI (2015a, 2015b).

Table A3. Decile 9 Income

	Mean Income							
	(1) *from household survey* (current pesos)	(2) *from household survey* (2010 pesos)	(3) *12% of residual goes to decile 10* (current pesos)	(4) *12% of residual goes to decile 10* (2010 pesos)	(5) *17% of residual goes to decile 10* (million current pesos)	(6) *17% of residual goes to decile 10* (million 2010 pesos)	(7) *22% of residual goes to decile 10* (million current pesos)	(8) *22% of residual goes to decile 10* (million 2010 pesos)
1992	19,650	120,751	21,259	130,638	21,929	134,758	22,600	138,877
1994	25,403	132,970	32,344	169,304	35,236	184,443	38,128	199,582
1996	33,363	96,267	49,712	143,442	56,524	163,098	63,336	182,754
1998	47,908	98,855	74,468	153,657	85,534	176,492	96,601	199,327
2000	68,428	110,609	100,383	162,263	113,698	183,786	127,013	205,309
2002	76,078	110,076	109,876	158,978	123,959	179,354	138,042	199,730
2004	82,213	108,684	123,331	163,041	140,463	185,689	157,596	208,338
2005	84,461	107,373	129,769	164,972	148,647	188,972	167,525	212,971
2006	95,627	117,311	145,748	178,796	166,631	204,415	187,515	230,034
2008	102,350	114,880	159,776	179,336	183,704	206,193	207,631	233,050
2010	112,615	115,252	171,974	176,001	196,707	201,313	221,440	226,625
2012	119,933	114,009	191,372	181,920	221,139	210,216	250,905	238,512
2014	110,707	97,464	195,206	171,854	230,413	202,850	265,621	233,846

Source: Authors' calculations, based on INEGI (2015a, 2015b).

Table A4. Top 10% and Top 1% Income Shares

	Top 10%				Top 1%		
	(1) *Original household survey data*	(2) *88% of residual goes to decile 10*	(3) *83% of residual goes to decile 10*	(4) *78% of residual goes to decile 10*	(5) *88% of residual goes to decile 10*	(6) *83% of residual goes to decile 10*	(7) *78% of residual goes to decile 10*
1992	50.6	54.0	53.5	53.1	24.5	23.6	22.8
1994	44.5	56.0	54.7	53.3	25.8	23.3	20.9
1996	45.6	61.9	60.0	58.1	31.4	27.4	23.8
1998	45.5	63.8	61.6	59.5	32.3	27.9	23.9
2000	46.2	62.2	60.3	58.4	31.1	27.1	23.6
2002	43.5	60.5	58.6	56.7	29.1	25.4	22.0
2004	43.2	61.0	59.0	57.0	30.3	26.2	22.6
2005	45.4	62.9	60.9	58.8	32.1	27.8	23.9
2006	44.1	62.4	60.3	58.2	31.1	26.9	23.1
2008	44.3	62.9	60.8	58.7	31.9	27.5	23.6
2010	41.2	61.1	59.0	56.9	29.8	25.5	21.8
2012	43.2	63.5	61.2	59.0	32.0	27.4	23.3
2014	44.4	66.5	64.0	61.4	35.2	29.8	25.0

Source: Authors' calculations, based on INEGI (2015a, 2015b).

Table A5. Top 0.1% and Top 0.01% Income Shares

	Top 0.1%			Top 0.01%		
	(1) *88% of residual goes to decile 10*	(2) *83% of residual goes to decile 10*	(3) *78% of residual goes to decile 10*	(4) *88% of residual goes to decile 10*	(5) *83% of residual goes to decile 10*	(6) *78% of residual goes to decile 10*
1992	11.1	10.4	9.8	5.0	4.6	4.2
1994	11.9	9.9	8.2	5.5	4.2	3.2
1996	16.0	12.5	9.8	8.1	5.7	4.0
1998	16.4	12.6	9.6	8.3	5.7	3.9
2000	15.5	12.2	9.5	7.8	5.5	3.9
2002	14.0	11.0	8.5	6.8	4.8	3.3
2004	15.0	11.7	9.0	7.5	5.2	3.6
2005	16.4	12.7	9.8	8.3	5.8	4.0
2006	15.5	12.0	9.2	7.8	5.3	3.6
2008	16.2	12.5	9.5	8.2	5.6	3.8
2010	14.5	11.1	8.4	7.1	4.8	3.2
2012	16.1	12.2	9.2	8.1	5.5	3.6
2014	18.6	13.8	10.2	9.9	6.4	4.1

Source: Authors' calculations, based on INEGI (2015a, 2015b).

Appendix 2. Income Residual in Selected Latin American Countries

To find the proper share of the income residual to be assigned to top-income individuals, we construct different scenarios, taking other Latin American countries as a reference. Our aim is to find the share of residual income that should be assigned to the top decile to obtain the same top-1%-income share obtained in the countries using tax-return data. In Latin America, top-income shares have been calculated for Chile, Colombia, and Uruguay using tax return data. For Colombia, we use the *Gran Encuesta Integrada de Hogares* (GEIH) household survey; for Chile, we use the *Encuesta de Caracterización Socioeconómica Nacional* (CASEN) household survey; and for Uruguay, we use *Encuesta Continua de Hogares* (ECH) household survey. Table A6 shows the main population and income statistics for each country.

Table A6. Population, Mean Income, and Total Income in Colombia, Chile, and Uruguay

A. Colombia (in Colombian pesos, 2010)

(1) Population *20 years and older* (thousand)	(2) Mean Income *from household survey* (thousand)	(3) Mean Income *from national accounts* (thousand)	(4) Total Income *from household survey (1)x(2)* (million)	(5) Total Income *from national accounts (1)x(3)* (million)	(6) Residual Income *(3)-(2)* (million)	(7) Decile 10 Mean Income *from household survey* (thousand)	(8) Decile 9 Mean Income *from household survey* (thousand)	(9) Decile 10 Mean Income *88% of residual goes to decile 10* (thousand)	(10) Decile 9 Mean Income *12% of residual goes to decile 9* (thousand)
28,105	10,212	12,042	287,014,391	338,440,410	51,426,019	43,021	15,169	62,555	17,833

B. Chile (in Chilean pesos, 2009)

(1) Population *20 years and older* (thousand)	(2) Mean Income *from household survey* (thousand)	(3) Mean Income *from national accounts* (thousand)	(4) Total Income *from household survey (1)x(2)* (million)	(5) Total Income *from national accounts (1)x(3)* (million)	(6) Residual Income *(3)-(2)* (thousand)	(7) Decile 10 Mean Income *from household survey* (thousand)	(8) Decile 9 Mean Income *from household survey* (thousand)	(9) Decile 10 Mean Income *100% of residual goes to decile 10* (thousand)	(10) Decile 9 Mean Income *no residual goes to decile 9* (thousand)
11,583	4,715	4,996	54,608,413	57,866,257	3,257,844	21,825	7,283	24,554	7,283

Table A6. Continued

C. Uruguay (in Uruguayan pesos, 2011)

(1) Population *20 years and older* (thousand)	(2) Mean Income *from household survey* (thousand)	(3) Mean Income *from national accounts* (thousand)	(4) Total Income *from household survey (1)x(2)* (million)	(5) Total Income *from national accounts (1)x(3)* (million)	(6) Residual Income *(3)-(2)* (thousand)	(7) Decile 10 Mean Income *from household survey* (thousand)	(8) Decile 9 Mean Income *from household survey* (thousand)	(9) Decile 10 Mean Income *61% of residual goes to decile 10* (thousand)	(10) Decile 9 Mean Income *39% of residual goes to decile 9* (thousand)
1,932	162	215	313,946	416,000	102,054	585	277	905	482

Source: Authors' calculations, based on INEGI (2015a,b).
Note: We use top 1%-income share estimates calculated by Alvaredo and Londoño (2013) for Colombia, by Fairfield and Jorrat (2015) for Chile, and by Burdín et al. (2014) for Uruguay.