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Growth is (really) good for the (really) rich*

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Abstract

This paper analyzes the relationship between mean income and the income of the rich. Our methodology closely follows that of Dollar and Kraay (2002), but instead of looking at the bottom of the distribution, we analyze the top. We use panel data from the World Top Incomes database, which collects top income data from several countries using tax returns as the raw source. We define the "rich" as earners in the top 10 percent, 1 percent, 0.1 percent, and 0.01 percent of the income distribution. We find that economic growth is good for the rich in the sense that the mean income of the top decile of the distribution grows in the same proportion as that of the whole population. However, we also find that the income of earners in the top percentile of the distribution and above grows in an even larger proportion than average income: that is, economic growth is really good for the really rich. We also find that during economic downturns, the average income of top earners responds proportionally less to changes in mean income than during economic expansions. Our results are robust to different sample specifications.

Keywords: Growth, Income distribution; Inequality; Top Income; Rich.

JEL: D31; D63; E01; I30; O40.

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1. INTRODUCTION

In recent years there has been growing concern about the rising inequality said to be driven by increasing gains in the top brackets of the income distribution. This concern is evident in the political and social sphere, notably in public demonstrations in some countries against rising incomes at the top (e.g., the Occupy Wall Street movement, with its slogan of "We are the 99 percent" slogan). Such concern is also found in the academic sphere, as expressed, for example, by Alvaredo et al. (2013, p. 3): "For three decades, the debate about rising income inequality in the United States has centered on the dispersion of wages and the increased premium for skilled/educated workers […]. In recent years, however, there has been a growing realization that most of the action has been at the very top." And Emmanuel Saez (2012, p. 4) writes: "From 2009 to 2010, average real income per family grew by 2.3% but the gains were very uneven. Top 1% incomes grew by 11.6% while bottom 99% incomes grew only by 0.2%. Hence, the top 1% captured 93% of the income gains in the first year of recovery. Such an uneven recovery can possibly explain the recent public demonstrations against inequality."

In this paper, we examine whether there is a relationship between increasing economic gains at the top of the income distribution and overall economic growth across countries and time. Our title makes allusion to Dollar and Kraay's (2002) "Growth Is Good for the Poor." We use their methodology to investigate whether there is a systematic cross-country pattern that relates economic gains in a specific segment of the income distribution to economic growth. However, instead of looking at incomes of the poor, we focus our attention on the other extreme of the distribution: the "rich" and the "very rich."

By looking at the top of the distribution, our work has several advantages over that of Dollar and Kraay (2002). The first is greater precision: instead of just looking at the bottom 20 percent or 40 percent, as do Dollar and Kraay (2002) and Dollar, Kleineberg and Kraay (2013), we inspect the top of the income distribution in much finer detail. We focus on four groups within the top decile of the distribution: the top 10 percent, 1 percent, 0.1 percent, and 0.01 percent earners.

The second advantage is greater reliability of data sources. Our main data source is the World Top Incomes (WTI) database, which compiles data at the top of the income distribution using tax returns as the raw source. This data source allows greater cross-country comparability than household surveys, which are the source of data for the bottom of the distribution.[1]

We use panel data from 1980 to 2011, encompassing 23 countries representing 51.2 percent of total world population and 72.1 percent of world Gross Domestic Product (GDP), to investigate what happens to incomes at the top with the growth of income per capita. This work can be seen as complementary to that of Dollar and Kraay (2002) and Dollar et al. (2013), who found, as their title suggests, that growth is good for the poor in the sense that when average income grows, their income grows in the same proportion. Instead of examining the income of the poor, we regress top incomes (top 10 percent, 1 percent, 0.1 percent, and 0.01 percent) with respect to GDP per capita.

There have been few previous attempts to systematically study how economic growth relates to income of the rich in a cross-country context. Using data from the WTI database, Andrews, Jencks, and Leigh (2011) analyze the effect of income shares of top earners (top 10 and 1 percent) on economic growth; they find that, in general, shares of top earners are not correlated with economic growth. However, our approach aims to examine the gains that top earners take from economic growth; this, to our knowledge, is the first attempt to do so in a systematic manner. Their work uses only the top 10 and 1 percent shares, while our work also analyzes the effect of growth on very top incomes (top 0.1 and 0.01 percent shares). They also restrict their study to 12 countries and their sample ends in 2000, while our sample includes 23 countries and covers the period from 1980 to 2011.

Our findings, as our title suggests, indicate that growth is good for the rich: when average income grows, income in the top decile of the distribution grows in the same proportion. However, our findings also indicate that growth is really good for the really rich: when average income grows, income in the top percentile and above grows in an even larger proportion. These results are

[1] We describe our data sources in more detail in Section 3.1.

robust to different specifications. We perform robustness tests using different country samples and time observations in our dataset. We always find the same pattern: the income of the richest grows proportionally more than that of their less rich counterparts, although in some specifications the standard errors are relatively large due to smaller samples. We also find that during periods of economic downturn, the income of the rich responds less than during economic expansions. In other words, the pattern of income growth for the rich is asymmetric: in good times the very rich increase their income in greater proportion than economic growth, but in bad times their income decreases by approximately the same proportion as overall per capita income.

Our work is motivated by the importance of studying the income dynamics of the rich. Atkinson (2007) offers three reasons why we should be interested in examining the rich: their command over resources, their command over people, and their global significance. Whether or not the reader agrees with these reasons, top earners undeniably exert a larger influence on national and international political and economic decisions than other segments of the population. Since their decisions have a large influence on policy and on the economy, it is important to analyze their economic interaction with the rest of the population. We hope that our work contributes to this discussion.

The work proceeds as follows: In Section 2 we conduct a brief review of the literature on which we base our research. In Section 3 we describe our data sources, the information, and the methodology we use in our empirical analysis. Section 4 presents the main results and several robustness tests. Section 5 offers some conclusions.

2. LITERATURE REVIEW

We base our research on two different branches of the literature. The first, described as "pro-poor growth," aims to investigate the relationship between economic growth and the earnings of the bottom part of the income distribution. We base our analysis in particular on the efforts of Dollar and Kraay (2002) to describe the relationship between the income of the poor and the

average income of the population as a whole. Defining poor individuals as earners in the bottom quintile of the income distribution, they find, as their title suggests, that economic growth is good for the poor: on average, when mean income grows, income of the poor grows proportionally.[2] They find no empirical evidence that particular economic policies or other determinants of overall economic growth are specifically correlated to the income growth of poor individuals. Their findings are limited to stating that growth is good for the poor chiefly because their total share of income does not change with economic growth: if average income increases, the income of poor individuals increases in the same proportion. They perform cross-country regression analysis to arrive at that conclusion, and their findings hold across geographic regions and periods of economic crisis. They use GDP per capita to measure overall income and data compiled in household surveys to measure the income of poor individuals.[3] Their dataset consists of 953 observations that cover 137 countries from 1950 to 1990.

Dollar et al. (2013) have recently updated the work of Dollar and Kraay (2002). Their dataset consists of 963 observations covering 151 countries during the period 1967-2011. They extend the definition of poor earners to include not only those in the bottom 20 percent of the income distribution, but also those in the bottom 40 percent. Their findings remain unchanged: income of the poor grows in the same proportion as mean income. This result holds for both the bottom 20 and the bottom 40 percent of the income distribution. They thus conclude that even in the first decade of the 21st century, growth is good for the poor. Like Dollar and Kraay (2002), Dollar et al. (2013) were unable to find variables correlated both to overall economic growth and to changes in the income share of the poor.

[2] Using methodologies similar to those of Dollar and Kraay (2002), Romer and Gugerty (1997) and Gallup, Radelet, and Warner (1998) also find that income of the poor grows in the same proportion as mean income. They also conclude that economic growth is an important driver of poverty reduction.

[3] Their method is to take the share of income earned by the poorest quintile of the population, multiply it by mean income, and divide by 0.2. When that information is not available, they use Gini coefficients and assume that the income distribution is lognormal to obtain the share of income for the poorest percentile.

We cannot use household surveys to obtain the income of top earners, as did Dollar and Kraay (2002) and Dollar et al. (2013), because, as Saez (2001) notes, top earners are undersampled by such surveys. We thus need to find a different source to measure this income. This is where we draw upon another branch of the literature, one which obtains the incomes of top earners using tax returns.

Piketty (2001) was the first to use tax returns to calculate income shares at the top of the distribution,[4] obtaining homogenous annual series on top incomes in France from 1901 to 1998, using income tax, wage tax, and inheritance tax returns.[5] Several studies calculating top incomes from tax return data followed this initial effort. Atkinson (2002) applied Piketty's methodology to obtain income series of top earners in the United Kingdom from 1908 to 2000. Piketty and Saez (2003) followed suit, creating a top income series for the United States from 1913 to 2002. Since then, several authors have made use of the same methodology, creating internationally comparable series for 26 different countries. This work is compiled in Atkinson and Piketty (2007, 2010), and the data has been made public through the World Top Incomes database, which is available online. The database is regularly updated and, for many countries, series are available through the year 2011.

We should note that the literature on which we base our research has not been free of criticism. Lübker, Smith, and Weeks (2002) critique Dollar and Kraay's (2002) work, observing, first, that by construction we should expect an elasticity of income of the poor with respect to average income equal to one. They also find a weakness, showing that the findings do not hold for

[4] Before Piketty (2001), other authors had used tax returns to calculate income shares for top earners: Kuznets (1953), for example, estimated incomes of top earners in the United States using tax return data, but he did not estimate top income shares other than the top 10 percent. Feenberg and Poterba (1993) also calculated income shares of top earners from 1951 to 1990 in the United States based on tax returns, describing trends in income concentration at the top similar to those found by later authors. See the article by Atkinson, Piketty, and Saez (2011) for a general overview of this subject.

[5] Historical data contained in tax returns has been used for purposes other than estimating incomes of top earners. Goolsbee, Hall, and Katz (1999), for example, used such information to calculate taxpayers' responses to changes in the marginal income tax rate in the United States from the 1920s to the 1990s. Piketty and Zucman (2013) use tax returns to calculate wealth-income shares in industrialized countries from 1700 to 2010. There is clearly a trend toward using historical tax-return data to analyze subjects related to public finance and income distribution.

different sub-samples. A third critique concerns the reliability of their data on poor earners, since some observations are expressed before taxes and others after taxes, among other issues.[6]

It is important to consider the critiques of Lübker et al. (2002), as we follow the very methodology they criticize. However, we should also mention Dollar and Kraay's (2002b) response to those critiques. They do not address the point about data inconsistency, but that criticism does not apply to our case, since the World Top Incomes database, which we use, has made a considerable effort to compare top incomes across different countries (see the dataset in Alvaredo et al., 2013 and a general overview in Atkinson, Piketty, and Saez, 2011). They do show that the derivation for the *a priori* result for the elasticity is incorrect, and that the samples chosen by Lübker et al. (2002) are not statistically valid, as they draw samples on the dependent variable, which will in general bias estimates toward zero. In order to avoid this problem, we perform several robustness tests on our results.

There is also criticism of the literature on measuring income of top earners using tax returns. Burkhauser, Hahn, and Wilkins (2013), for example, replicate Atkinson and Leigh's (2007) calculations of top incomes in Australia using tax return data. They argue that the rise in income accruing to top earners in Australia observed in Atkinson and Leigh's (2007) work is the result of changes in Australian tax law that took place in 1987 and 1988, which treated a larger share of company profits as personal income. They construct an alternative series for incomes of top Australian earners excluding realized capital gains, and they find smaller increases in top income shares.

An analysis by Burkhauser et al. (2013) shows that estimates using Piketty's (2001) method could be sensitive to changing definitions in the tax law over time. However their estimates do not

[6] A different critique is presented by Foster and Szekely (2008). They argue, among other things, that the method used by Dollar and Kray (2002) and others is not coherent in cross-country comparisons, since the bottom 20 percent in poor countries is poorer than the bottom 20 percent in rich countries. They propose a different method to inspect the relation between growth and income of the poor, one using "generalized means," which give larger weights to earners at the bottom of the distribution. Using this methodology, they find that income of the poor increases in a smaller proportion than mean income, although many of their estimates are not statistically significant.

differ greatly from those found by Atkinson and Leigh (2007), and the trends observed in both series are similar. Their findings, moreover, signal a cautionary problem in a particular country, not a flaw in the overall methodology. Atkinson and Piketty (2007) recognize that their methodology may be affected by particular issues,[7] and they explain the methods used to correct them.

Although we recognize the validity of some of this criticism of the literature on which we base our work, we do not consider that it fundamentally affects the results and conclusions drawn. We believe that the methodologies developed by Dollar and Kraay (2002) and by Piketty (2001) provide a strong basis for examination of the relationship between economic growth and changes in income of top earners.

3. DATA AND METHODOLOGY

3.1 *Data*

The main source of data for this work is the World Top Incomes database (Alvaredo et al., 2013), which compiles extensive data on income at the top of the distribution across countries over long periods of time. Most countries included in the WTI database are developed, although there are also a number of developing countries. There are a total of 26 countries, of which 23 are included in our empirical analysis. Although the number of countries covered in the database is not large, those covered represent 51.2 percent of total world population and 72.1 percent of world GDP. Therefore, we can argue that these countries are large enough to allow us to derive general conclusions on the relationship between income and economic growth.[8] All income in the database is before taxes, and all the information is converted into constant 2005 international PPP dollars, using data from the Penn World Tables. The raw data for the WTI database is obtained from tax returns, which are

[7] Some of these issues are mentioned where we describe our data sources.

[8] Countries covered in the World Top Incomes database are Argentina, Australia, Canada, China, Colombia, Denmark, Finland, France, Germany, India, Indonesia, Ireland, Italy, Japan, Mauritius, Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

available for some countries from the late nineteenth and early twentieth centuries, coinciding with the establishment of progressive income taxes (see Atkinson and Piketty, 2007).[9]

Using the WTI database to examine income distribution dynamics at the top has several advantages that other sources of data cannot provide. The most important of these is the very fact that the database allows us to examine income dynamics at the top. Other sources of data on income distribution are based on household surveys, and these typically undersample top earners. In addition, data in the WTI is obtained from the same raw source for all countries, guaranteeing cross-country comparability. Data obtained from household surveys is often not comparable across countries since surveys differ in their methodology and representativeness.[10]

Atkinson, Piketty, and Saez (2011) mention several limitations of the WTI data, two of which are of concern for our study. The first is that data for some countries is based on individual income and for others on family income. We therefore use only data on individual income. The second problem is that the series might be biased as a result of tax evasion. Even so, WTI data still presents a more reliable picture of income at the top than other sources.[11]

Several other authors have used the WTI database in studies related to income of the rich. Piketty, Saez, and Stantcheva (2011) analyze the effects of top earners´ tax rates on their income shares before and after taxes. They also analyze the correlation between tax cuts for top earners and economic growth. Andrews, Jencks, and Leigh (2011) analyze the effect of income shares of top

[9] Tax return data typically includes average income and number of tax filers for different income branches. With this information, Pareto extrapolation techniques can be used to calculate the share of income accruing to top earners. This is possible because income distributions closely follow a Pareto distribution. For a more detailed explanation of Pareto extrapolation techniques, see Feenberg and Poterba (1993). Of course, these techniques also present some methodological problems, such as which total income and population information must be used to calculate the share of total income that top earners receive. These and other issues are discussed in greater detail by Atkinson and Piketty (2007), who conclude that their calculations are nonetheless fairly robust.

[10] See Dollar and Kraay (2002) for a more detailed discussion of the problems with data on bottom earners in cross-country analysis. For a more detailed description of the World Top Incomes database, see Atkinson and Piketty (2007).

[11] In the case of the United States, Piketty, Saez and Stantcheva (2011) argue that there is little evidence of a relationship between a decrease in tax avoidance and a surge in top income.

earners on economic growth. To our knowledge, however, our study is the first to analyze the gains that top earners take from economic growth in a systematic cross-country manner.

We are interested in four variables from the database: average income of top 10 percent, 1 percent, 0.1 percent, and 0.01 percent earners.[12,13] With this data, we construct a dataset that covers 23 different countries.[14,15] Table 1 shows the number of annual observations of top earners per country available in our dataset from 1980 to 2011. In some cases, data in the WTI database goes back further than 1980; however, we restrict our sample to the period 1980-2011, since data for most countries dates from 1980 onwards, and our aim is to analyze global trends. Data for most countries does not cover the entire period, and the number of observations varies according to the top earner category under consideration, but we are still able to include a relatively large number of observations: 490 for top 10 percent earners, 559 for the top 1 percent, 483 for the top 0.1 percent, and 337 for the top 0.01 percent. As shown in Table 1, there is considerable variability in the data availabile for each country. At one extreme, Sweden has 32 observations, one for each year in the period 1980-2011, for each category of top earner (top 10 percent, 1 percent, 0.1 percent, 0.01 percent). South Africa, however, has zero observations for the top 10 percent, 13 for the top 1

[12] Series chosen for the analysis performed in this work do not include capital gains because these are available for a smaller number of countries.

[13] Data for average income of top 10 percent, 1 percent, 0.1 percent, and 0.01 percent earners in the WTI database is expressed in constant local currency units, and base years differ among countries. In order to obtain data on top incomes in a comparable international unit, we take a price index for each country from the database and use it to transform amounts to 2005 constant prices, and then use the PPP conversion factor in the Penn World Tables to transform amounts to international dollars. Data on GDP per capita was obtained from the Penn World Tables and is also expressed in constant 2005 international PPP dollars.

[14] The WTI database covers 26 different countries. We exclude three countries from our analysis: Finland, because data for that country does not include top earners for the period under study; the Netherlands, because of difficulties in obtaining an appropriate conversion factor from the Dutch guilder to international PPP dollars; and Indonesia, because units in the WTI database seem to be incorrectly expressed for that country.

[15] Our dataset is much smaller than that of Dollar and Kraay (2002) and Dollar et al. (2013), who include more than 100 countries. We inlude only 23, because public information from tax returns is more limited than that from household surveys. For the time being, an analysis such as ours cannot be performed for a larger number of countries. Nevertheless, the WTI database is constantly expanding, and work is in progress that may allow analysis of a larger sample in the near future.

percent earners, and 9 for both the top 0.1 percent and 0.01 percent. This variability in available observations for each country causes an imbalance in our data panel.[16]

Table 2 shows detailed information on average income for the four categories of top earners. The data shows a wide variability in average income of top earners across countries: evidently, some countries have richer rich than others. The United States is the country with the wealthiest rich among those countries with available data on top earners (and, most probably, in the entire world). The data also suggests that countries where GDP per capita is higher tend to have top earners with higher income. There are exceptions, however: Argentina, for example, with a relatively low GDP per capita (9,671 PPP dollars in 2005), and France, with relatively high GDP per capita (31,230 PPP dollars in 2005). Although French average income is much higher than that of Argentinians, top earners in both countries have similar incomes: on average, the richest 0.01 percent in France earned 2,057,056 PPP dollars in 2005, while their counterparts in Argentina earned 2,100,391 PPP dollars in 2004.[17]

The Penn World Tables provide data on GDP per capita, which is our main explanatory variable. In addition, we use a variety of sources to obtain our control variables: The Penn World Tables also provide the share of government consumption, as well as the share of international trade as a proportion of GDP.[18] From the World Bank we obtain population growth and inflation.[19] Finally, we use the Chinn-Ito measure of financial openness.[20] These variables are similar to those used by Dollar and Kray (2002) and Dollar et al. (2013).

Table 3 shows the number of annual observations available for each of the variables in our regressions. Those with fewest observations are the average incomes of top earners; most of the other variables have information available for every year. Thus, the number of observations with

[16] Tables A1 through A4 provide further details on available information by country, year, and categories of top earners.
[17] All quantities are expressed in constant 2005 PPP international dollars.
[18] See Heston, Summers, and Aten (2012).
[19] See World Bank (2013).
[20] See Chinn and Ito (2008).

which we perform our regression analysis is determined mostly by the availability of top income data. Table 4 also shows the number of annual observations for different sample specifications.

3.2 *Methodology*

Our empirical strategy closely follows the method developed by Dollar and Kraay (2002), who investigate the relationship between income of the poor and economic growth with an equation like the following:

$$y_{ct}^{R} = \alpha_0 + \alpha_1 \cdot y_{ct} + \alpha_2' \boldsymbol{X}_{ct} + \mu_c + \varepsilon_{ct} \quad (1)$$

where c and t are indices for countries and years, y_{ct}^{R} is the logarithm of average income of top earners in country c at time t, y_{ct} is the logarithm of average income of all earners in country c at time t, and X_{ct} is a set of control variables. Dollar and Kraay (2002) are interested in growth and income of the poor; thus, instead of y_{ct}^{R}, they have y_{ct}^{P} as the dependent variable, where y_{ct}^{P} is the logarithm of the average income of earners at the bottom of the distribution in country c at time t. The αs are parameters to be estimated and μ_c is an unobserved country-specific effect.

Following this method, we use GDP per capita to quantify average income of the whole population. Our control variables are the shares of government consumption and international trade as proportion of GDP, population growth, inflation, and financial openness. We choose this set of controls based on variables that Dollar and Kraay (2002) and Dollar et al. (2013) include in their analysis on growth and income of the poor, but we use those that are most likely to be related to income of the rich.

Since variables are expressed in logarithms, coefficient α_1 in equation (1) measures the elasticity of income of top earners with respect to mean income (EIT). If $\alpha_1 = 1$, then when average income grows, the mean income of top earners grows in the same proportion. If $\alpha_1 > 1$, the average income of top earners grows proportionally more than that of all earners. If $\alpha_1 < 1$, then the average income of top earners grows proportionally less.

In order to eliminate the unobserved country-specific effects μ_c, we apply first differences to (1):

$$y_{ct}^{R} - y_{c,t-k(c,t)}^{R} = \alpha_1 \cdot (y_{ct} - y_{c,t-k(c,t)}) + \alpha_2'(\boldsymbol{X}_{ct} - \boldsymbol{X}_{c,t-k(c,t)}) + (\varepsilon_{ct} - \varepsilon_{c,t-k(c,t)}) \quad (2)$$

where k is the year preceding t with information available.

As in the previous literature, we face a problem of missing values for different years across countries. There is no clear way to solve this problem. In order to be transparent about our results, we follow two approaches for estimating equation (2). In the first approach, $k = 1$; thus, k is the first year preceding t with information available. We call this the one-period difference approach. Note that this approach does not necessarily take one-year differences because there might be years with missing values between two observations. Instead, we take one-period differences, each period being the immediately preceding year with available information. In the second approach, $k = 5$; thus, k is the period for the first five years preceding t with available data. We call this approach, which is that taken by Andrews, Jencks, and Leigh (2011), the five-period difference approach. Again, these are not five-year differences because there might be years with missing values within five observations. In both approaches we restrict the period between t and $t - k$ to ensure that it is no longer than ten years. We prefer the five-period over the one-period difference approach because it allows us to capture the change in incomes of both the whole population and the rich over longer periods of time, thus eliminating short-run effects. In any case, we also describe the robustness of our results to different specifications in the lag structure and sample.

It is important to mention that when we estimate equation (2), we calculate the average *annual* log difference for every variable. In other words, we divide the difference for variable x between period t and $t - k$ over the number of years between period t and $t - k$. This procedure, also followed by Dollar et al. (2013), reduces the problem of taking differences with different lag periods.

We are interested in analyzing the relation between economic growth and changes in incomes of different categories of top earners. Thus, we estimate equations (1) and (2) using our four categories of top earners (top 10 percent, 1 percent, 0.1 percent, and 0.01 percent) as dependent variables, and we show results for each category. In this respect, our analysis improves on those of Dollar and Kraay (2002) and Dollar et al. (2013). Where they use only one and two definitions of the poor, respectively, we use four definitions of the rich. This allows us to understand more thoroughly how economic growth is related to income gains in different groups at the top part of the distribution. In equation (1), we estimate robust standard errors using random and fixed effects. In equation (2) we correct standard errors for heteroskedasticity and autocorrelation using the standard Newey-West procedure, following Dollar and Kraay (2002).[21]

As Dollar and Kraay (2002) mention, there are several reasons why using an OLS estimator in equations (1) and (2) could result in inconsistent parameter estimates. We are mainly concerned with two of these reasons. First, although we use a set of control variables, there might be omitted variables that are correlated both with average income for the whole population and average income of top earners. Second, it might be the case that average income of the rich causes average income of the whole population. To assess these issues, we estimate equation (2) using both an OLS and an IV estimator.

We base our instruments on those chosen by Dollar and Kraay (2002), using previous values of economic growth and GDP per capita. In particular, in the one-period difference approach we instrument the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita one period before $t-k$ and the level of GDP per capita two periods before $t-k$. In the five-period difference approach we instrument the annual log difference of GDP per capita between t and $t-k$ with the corresponding value five periods before $t-k$ and the

[21] We do not use cluster standard errors (at the country level). The intra-class correlation of GDP growth is close to zero and sometimes negative, which suggests that cluster standard errors will be, if anything, lower than those produced by the Newey-West methodology. We calculated the robust and cluster standard errors and determined that standard errors were marginally lower than those using Newey-West (results are available upon request). Hence, we decided to be conservative and use Newey-West standard errors.

level of GDP per capita seven periods before t. Since contemporaneous GDP per capita depends on previous values, our instrument is correlated with mean income. Our instruments are not correlated with the error term, provided that ε_{ct} is not correlated over time. In order to test whether our results hold to different specifications, we perform different robustness tests for equation (2) that we present in Section 4.1.

4. RESULTS

Figures 1 and 2 show a graphic description of our main findings. Figure 1 plots the logarithm average incomes of top 10 percent, 1 percent, 0.1 percent, and 0.01 percent earners, and the logarithm of GDP per capita (in constant 2005 USD adjusted by PPP). It shows a positive relation between income of top earners and GDP per capita, and the slope of richer earners is steeper than the slope of their less rich counterparts. This implies that the incomes of top 0.01 or 0.1 percent earners rise proportionally more than the incomes of top 1 or 10 percent earners when average income grows (i.e., when economic growth takes place). Figure 2 illustrates this relation more clearly by plotting annual average growth in incomes of top earners and annual average growth in GDP per capita. In Figure 2 the slopes for the richest earners are steeper than the slopes of less rich earners. For top 10 percent earners the data is centered on the 45-degree line, which implies that the income of the richest 10 percent changes in approximately the same proportion as the income of the population as a whole. However, as we move to richer subgroups inside the top 10 percent, changes in income of the rich are larger than changes in mean income. This suggests that economic growth is associated with larger income increases for the richest earners than for the population as a whole.

In order to examine more thoroughly the graphic relations between incomes of the rich and mean incomes, we perform regression analysis using equations (1) and (2). Table 5 shows the results of regressing incomes of the rich only with respect to GDP per capita ($\alpha_2' = 0$). Panels A and B show estimates of equation (1); Panel A assumes fixed effects, and Panel B assumes random

effects. For top 10 percent earners, α_1 is close to one, which implies that the average income of top 10 percent earners increases in the same proportion as mean income. However, as suggested by Figures 1 and 2, for richer earners the value of α_1 is bigger. For top 1 percent earners, the elasticity of income of top earners with respect to mean income (EIT) is close to 1.3, meaning that, on average, incomes of this group of earners increase proportionally more than mean income. Panels A and B of Table 5 also show that α_1 for top 0.1 and 0.01 percent earners is close to 1.8 and above 2.0, respectively; thus, with economic growth, the average income of the richest earners grows more than average income of their less rich counterparts. Increases in GDP of 1 percent per capita are associated with increases of more than 2 percent in the average income of top 0.01 percent earners.

Panels C and D of Table 5 show estimates of equation (2) using our two alternative approaches. In the five-period difference approach, EIT estimates are very similar to those obtained with equation (1). In the one-period approach, EIT estimates are slightly smaller than those obtained with the other specifications. In any case, the increasing pattern of α_1 described above still holds in these results. In Panels A to C, the EIT for top 10 percent earners is not significantly different from one, whereas in Panel D it is significantly below unity. However, for top 1 percent, 0.1 percent, and 0.01 percent earners we can reject the null hypothesis that $\alpha_1 = 1$; i.e., α_1 is statistically larger than one.

In Table 6, we extend our analysis by analyzing whether variables that are related to growth are also related to income of the rich. Panel A of Table 6 shows estimates under our five-period difference approach, and Panel B shows them under the one-period approach. In Panel A, elasticities of incomes of top earners with respect to mean incomes remain very similar to estimates obtained not including controls (see Table 5). In Panel B, estimates for top 10 percent, 1 percent and 0.1 percent earners are very similar to those obtained with previous specifications. However, the α_1 estimate for top 0.01 percent earners falls well below those obtained in previous regressions. We consider that this result highlights the importance of using longer periods of time to estimate income growth, especially when estimating the EIT for the richest earners, since they can modify

their income more easily than other groups of earners, and their income growth may be accrued over a longer period of time.[22] As in the analyses of Dollar and Kraay (2002) and Dollar et al. (2013) of the income of the poor, we do not find variables correlated to growth being consistently correlated to income.

As explained in the previous section, we estimate equation (2) using instrumental variables. Table 7 shows first stage regressions using the instruments previously defined for both our five-period and one-period difference approaches. Our instruments in the first stage regressions are always statistically significant with large values in the F-test, and the overidentification test is not rejected in any specification at the one percent level of significance. In Table 8 we present the second stage regression results for these IV estimations. The findings from previous regressions remain: α_1 is always highly statistically significant, and it is higher for the richest earners. As before, the increasing pattern of EIT shown in previous regressions holds in our IV estimation, with the exception of top 0.01 percent earners in the one-period difference approach. Furthermore, comparing Panels B of Tables 6 and 8, we find that IV estimates are higher than OLS estimates in our one-period approach, and are closer to estimates using other specifications.

In sum, the income of the top 10 percent earners grows in the same proportion as mean income, and our findings also allow us to establish the direction of causation: when mean income grows, the income of top 10 percent earners grows in the same proportion, and the income of top 1 percent, 0.1 percent, and 0.01 percent earners grows even more than average income. This implies that growth is good for the rich, but that it is better for the richest earners, those at the very top of the income distribution.

4.1 *Robustness*

In order to check whether our results are robust to different sample specifications, we estimate equation (2) with both the one-period and the five-period difference approaches using

[22]In his analysis of the responses of top earners to changes in marginal tax rates, Goolsbee (2000) provides evidence regarding the estimation bias that results from not correcting short-run effects of incomes of top earners.

different country samples. First, we run regressions using observations only from those countries that have data for all categories of top earners (top 10 percent, 1 percent, 0.1 percent, 0.01 percent).[23] We do so because there are countries that lack data for all four categories, presenting the possibility of bias due to the influence of countries with higher (or lower) EITs on α_1 in a particular category of top earners.

We also estimate equation (2) using only observations from English-speaking countries.[24] We do this to test the findings compiled in Atkinson and Piketty (2007) indicating that in recent decades, the shares of top earners in those countries have risen more than in other countries, particularly continental European countries. Additionally, we estimate the equation using data from non-English-speaking countries to test whether our findings hold for those countries or are driven mainly by soaring top shares in English-speaking countries. Finally, we estimate the equation excluding observations from China. Unlike other countries, Chinese top income data in the WTI database is based largely on household surveys rather than tax returns; we therefore exclude China to test for any estimation bias arising from this difference in the raw source of Chinese data.

Table 9 shows the results of our robustness tests with the five-period difference approach on equation (1). Panels A and B show estimates with all countries in our dataset, as reviewed in the preceding tables. Panels C and D show estimates using only countries that have information for all categories of top earners. In this case, estimates of α_1 follow the same pattern of increase found in all previous exercises: the richer the earner, the higher the elasticity of income to mean income.

In Panels E and F we include only English-speaking countries to test whether they have larger elasticities. As the work compiled in Atkinson and Piketty (2007) suggests, elasticities for top 10 percent earners in English-speaking countries are smaller than those for top 10 percent earners using all the countries in our database. In fact, they are statistically smaller than one, which means

[23] Countries that have information for all categories of top earners are: Australia, Canada, Denmark, France, Germany, Italy, Japan, Portugal, Singapore, Spain, Sweden, Switzerland, and the United States.
[24] English-speaking countries are Australia, Canada, Ireland, New Zealand, United Kingdom, and the United States.

that when economies grow, the average income of top 10 percent earners in English-speaking countries grows proportionally less. However, elasticities for top 0.1 percent and 0.01 percent earners in English-speaking countries are larger than those for the sample of all countries. The EIT of top 0.01 percent earners in English-speaking countries is larger than 3, implying that gains from economic growth for the richest earners are larger in those countries than in other places. This result is in line with findings in the work compiled by Atkinson and Piketty (2007).

Panels G and H show estimates for non-English-speaking countries. Elasticities in these countries are very similar to those reported for the sample of all countries in our database, suggesting that higher values of EIT for the richest earners is not a result driven by the enormous gains obtained by those earners in English-speaking countries. There seems to be a pattern that is also present outside English-speaking countries, in which richer earners gain more from economic growth. Finally, Panels I and J show estimates excluding China from the sample. Estimates of α_1 remain very similar, suggesting that inclusion of China in the analysis does not greatly influence the estimates.

In Table 10 we replicate Table 9, but with the one-period difference approach. Panels A and B indicate that estimates are smaller than those obtained using five-period differences but, with few exceptions, they move upwards when we use instruments. As mentioned previously, we believe this is a consequence of one-period-difference observations failing to capture longer-term variations in income growth of the richest earners.

Other sample specifications using the one-period difference approach yield conclusions similar to those using the five-period difference: α_1 estimates using only countries with data on all categories of earners are similar to those obtained using all countries in the sample; α_1 estimates for English-speaking countries are larger for the richest earners than those obtained using all countries in the sample; elasticities are similar whether China is included or excluded. There is, however, one significant change: when we use non-English-speaking countries, α_1 for top 0.01 percent earners falls, and becoming non-significantly different from unity. This result suggests that the richest

earners in non-English-speaking countries take much smaller gains from economic growth than the richest earners in English-speaking countries. This is a different story than the one told by the five-period difference approach, and we believe that further country case research can address this particular result.

Additional robustness tests are shown in Table 11. As mentioned earlier, for some countries there is data for the entire period analyzed, whereas others have fewer observations. We believe that this imbalance could cause some countries to bias estimates based on the whole set of observations. In an attempt to address this problem, we estimate equation (2) using observations that are separated by a five-year interval.[25] By using only these observations, we eliminate a larger share of information from those countries that have more data, providing greater balance in our panel dataset.[26] Panel A of Table 11 shows results obtained through this procedure. We find the same increasing pattern of α_1 obtained in previous regressions, and estimates are very similar to those with other specifications.

Following Dollar and Kraay (2002), we also estimate equation (2) using observations that are separated by *at least* five years.[27] Panel B in Table 11 shows estimates under this procedure, and they are very similar to those of other specifications.

Panels C and D of Table 11 show IV estimates for our five-period and one-period difference approaches using alternative instruments. For the five-period difference approach, instead of instrumenting the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita five periods before $t-k$ and the level of GDP per capita seven periods before t, we instrument with the annual log difference of GDP per capita seven periods before $t-k$ and the level of GDP per capita eight periods before t. Panel C shows the results with

[25] We use the annual log difference, as described in Section 3.
[26] We try to use data only for years 2010, 2005, 2000, 1995, 1990, 1985 and 1980; however, not every country has available information for every category of top earner for these years. Where this is the case, we take the data point available for the nearest year, provided that that year differs by not more than two years.
[27] E.g., we take the annual log difference between 2010 and 2005, but if data is not available for 2005, we take the value of the next available year, provided that that year differs by not more than ten years.

these instruments, which are very similar to those obtained with the previous ones. For the one-period difference approach, instead of instrumenting the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita one period before $t-k$ and the level of GDP per capita two periods before $t-k$, we instrument with the annual log difference of GDP per capita two periods before $t-k$ and the level of GDP per capita three periods before $t-k$. Panel D shows these estimations, which remain very similar to those obtained with the original instrument.[28]

Robustness tests indicate that the estimated value of α_1 for top 10 percent earners is in most cases not statistically different from one. This suggests that growth is good for earners in the top decile of the income distribution in the sense that when economies grow, the average income of this segment of the population grows in the same proportion as that of the whole population. For earners in the top percentile of the income distribution, α_1 is greater than one in most sample specifications. For the richest earners for whom data is available (top 0.1 percent and 0.01 percent), α_1 is always larger than one and in many cases it is close to or even greater than two, indicating that on average, economic growth brings much larger gains for the richest earners than for the rest of the population.

Figure 3 provides a visual summary of the previous paragraph. It illustrates our preferred estimates for α_1, i.e. OLS and IV estimates obtained when regressing equation (2) under the five-period difference approach for all countries in the sample, and including controls (Panel B of Table 9a). The figure clearly shows that economic growth is good for the rich, but that it is really good for the really rich. As suggested by the confidence intervals shown, standard errors are, in general, larger for the top 0.1 percent and particularly for the top 0.01 percent than for top 10 percent and 1 percent earners. This may suggest that there is a wide variance across countries in the gains that the richest earners take from economic growth. However, we think that the larger variance for the very

[28] We further extend our analysis of estimates under the alternative sets of instruments. In Tables A.5 and A.6 we show IV estimates obtained using equation (2) under our five-period and one-period difference approach, with different sample specifications and alternative sets of instruments. As shown in the tables, results remain very similar to those obtained with the original sets of instruments.

rich is at least in part attributable to a sample size that is smaller than that of the other estimates. Despite the larger size of the standard errors for the richest earners, our robustness tests support the conclusion that at least since the 1980s, economic growth has, on average, been good for the rich, and really good for the really rich.

4.2 *The EIT in periods of negative GDP per capita growth*

We perform one additional extension to our analysis of economic growth and the income of the rich. We are interested in knowing whether elasticities of the income of top earners with respect to mean incomes are different in periods when the change in GDP per capita is negative. To investigate this question, we create a dummy variable that takes the value of one in periods when growth in GDP per capita is negative, and we multiply it by the annual log difference in GDP per capita. We include this variable as a control in our five-period difference regressions with equation (2).

Table 12 shows the results. The interaction is always negative and highly statistically significant. Moreover, including the interaction in our set of controls does not essentially change α_1 estimates. This means that the EIT is smaller during periods of economic crisis, which implies that when the average income of the population as a whole decreases, the average income of the rich also decreases, but proportionally less than it increases in a growing economy. In fact, negative estimates of coefficients of the interaction yield EIT values for top 10 percent earners that are significantly smaller than one in periods of economic crisis, meaning that this segment of the population is less affected by economic downturns than the rest of the population. For top 1 percent and 0.1 percent earners the coefficient of the interaction effect is large enough to preclude rejection of the null hypothesis that the EIT of top 1 percent and 0.1 percent earners is equal to one during periods of negative growth; in other words, during economic downturns these groups fare as badly in average income growth as the rest of the population. Although the interaction takes the highest value for top 0.01 percent earners, it is not high enough for that group to bring the EIT to one.

In sum, changes in economic activity affect the rich differently in good times and bad. In good times, the income of the rich changes proportionally more with economic activity in comparison with periods of economic downturn. In fact, we could say that crises are not bad for top 10 percent earners, in the sense that when mean income falls, the average income of top 10 percent earners falls proportionally less.

4.2 *Discussion*

Piketty and Saez (2006), Alvaredo et al. (2013b), and Atkinson et al. (2011) show that since the 1980s, many countries have witnessed a rise in the income share of top earners.[29] Our findings are in line with this trend: if the elasticity of income of top earners with respect to mean income during the 1980-2011 period is larger than one, then their income increases in a larger proportion than average income. If this occurs over a long period of time, the income share of top earners will therefore rise. We have also found that α_1 is larger than one for top 1 percent, 0.1 percent, and 0.01 percent earners, and that $\alpha_{1,top\ 0.01} > \alpha_{1,top\ 0.1} > \alpha_{1,top\ 1}$, suggesting that income shares for these groups of earners have increased since the 1980s. Indeed, the work collected in Atkinson and Piketty (2007) describes how income shares of top 1 percent, 0.1 percent, and 0.01 percent earners have in recent decades increased in many countries. These articles also show that, in many countries, income shares of the richest earners (e.g., the top 0.01 percent) have increased more than the income shares of less rich earners (e.g., the top 1 percent). This is in line with our result that $\alpha_{1,top\ 0.01}$ is larger than $\alpha_{1,top\ 1}$.

Saez (2013) describes income trends for top 1 percent earners compared with the rest of the population in the United States in the period 1993-2012. Since 1993, top 1 percent earners in the U.S. have captured 68 percent of total income gains, while since the recovery from the Great Recession, income gains for that group have been even greater: from 2009 to 2012, they captured 95% of total income gains. Hungerford (2011) also describes how rich earners in the United States

[29] An example of this rise in top income shares in the United States is described by Saez (2013): "The top decile income share in 2012 is equal to 50.4%, the highest ever since 1917 when [the top income series in the United States] started."

have captured larger gains from economic growth than other groups. He notes that from 1996 to 2006 the poorest 20 percent of tax filers experienced a 6 percent decrease in income, while the richest 0.1 percent doubled their income. Although we perform cross-country analysis rather than focusing on only one country, Saez's (2013) and Hungerford's (2011) findings for the United States may turn out to be a representative example of what has happened with top income groups in many countries.

It is important to note that our findings may imply that some groups of earners in the top decile of the income distribution have elasticities less than one. Top 1 percent, 0.1 percent, and 0.01 percent earners are included in the top 10 percent, and they have elasticities greater than one. Thus, the richest earners may be averaging upwards the elasticities of their less rich counterparts. Therefore, we cannot rule out the hypothesis that incomes of the less rich among the rich increase proportionally less than mean incomes. Our results may suggest that inequality even among the rich has been increasing in recent decades.

5. CONCLUSION

We know from the work of Dollar and Kraay (2002) and others that growth is good for the poor. We have now shown that growth is also good for the rich, and that it is particularly good for the extremely rich. It is indeed likely that growth is good for almost everyone--in which case we should care about economic growth as a means of increasing the welfare of society. However, the fact that in a growing economy, the income of earners in the top one percent of the income distribution and above increases proportionally more than mean income implies that earners in other parts of the income distribution must be increasing their income proportionally less than mean income. This suggests that we should also care about policies that are not necessarily related to promoting economic growth, since benefits from economic growth are not evenly distributed, as argued by Basu (2013) and Foster and Szekely (2000, 2008).

We have seen throughout this work that economic growth is good for the rich in the sense that it *causes* the income of the richest earners in the distribution to grow in at least the same proportion. Nevertheless, we do not rule out the possibility of underlying economic and political forces that drive this relation between economic growth and the income of the rich. Technological shifts or changes in political or bargaining power of the rich could drive the gains from growth to the higher part of the income distribution.[30] We also have to recognize that economic phenomena are not perpetual, that things change, and that our findings might be particular to the period analyzed and not sustained over larger periods of time.

There are ways in which this work might be extended. One of these is to analyze the relation between growth and other parts of the income distribution. We have shown that benefits from growth are unevenly distributed within the top part of the distribution; additional research could analyze which parts of the income distribution are losing the income gains associated with economic growth.

The analysis performed in this study could also be extended to examine the social desirability of our finding that when economies grow, the income of the richest earners grows proportionally more than mean income. There are arguments that favor this result as desirable. It might be argued that larger benefits from economic growth creates incentives for the rich to increase investment and production, which in turn creates economic growth, thus benefitting the whole population, and that even if incomes of some earners grow in a smaller proportion than mean incomes, they do still grow. Thus, even if economic growth does not benefit everyone in the same way, people are better off with growth than without it. And if the rich have to get larger gains from growth in order to continue investing, then having $\alpha_1 > 1$ could be socially desirable.

[30] Piketty et al. (2011) present evidence that a large part of the income of top earners is determined by their bargaining power and not by their marginal product. Bivens and Mishel (2013) argue that the increase in wages for top 1 percent earners in the last three decades is a result of the creation of economic rents and not only increases in their productivity.

However, there are also arguments that consider findings in this work as socially harmful. In countries with significant economic inequality (like many of those included in our regressions), the rich getting larger shares from a growing economy could create still more inequality. Corak (2013) describes how greater inequality is associated with lower intergenerational mobility, arguing that "inequality lowers mobility because it shapes opportunity" (p. 98). Top earners increasing their income share and their children's access to human capital formation implies an economic advantage over earners at the bottom, which reduces the chances that hard work and talent will determine individual economic outcomes. Countries could promote policy mechanisms (progressive income taxation, for example) so that benefits from growth are more equally distributed. As Bivens and Mishel (2013) and Hungerford (2012) note, such policies can be established without negative impact on economic growth. In this work we provide data that contributes to the debate, but we do not discuss whether our findings are socially desirable.

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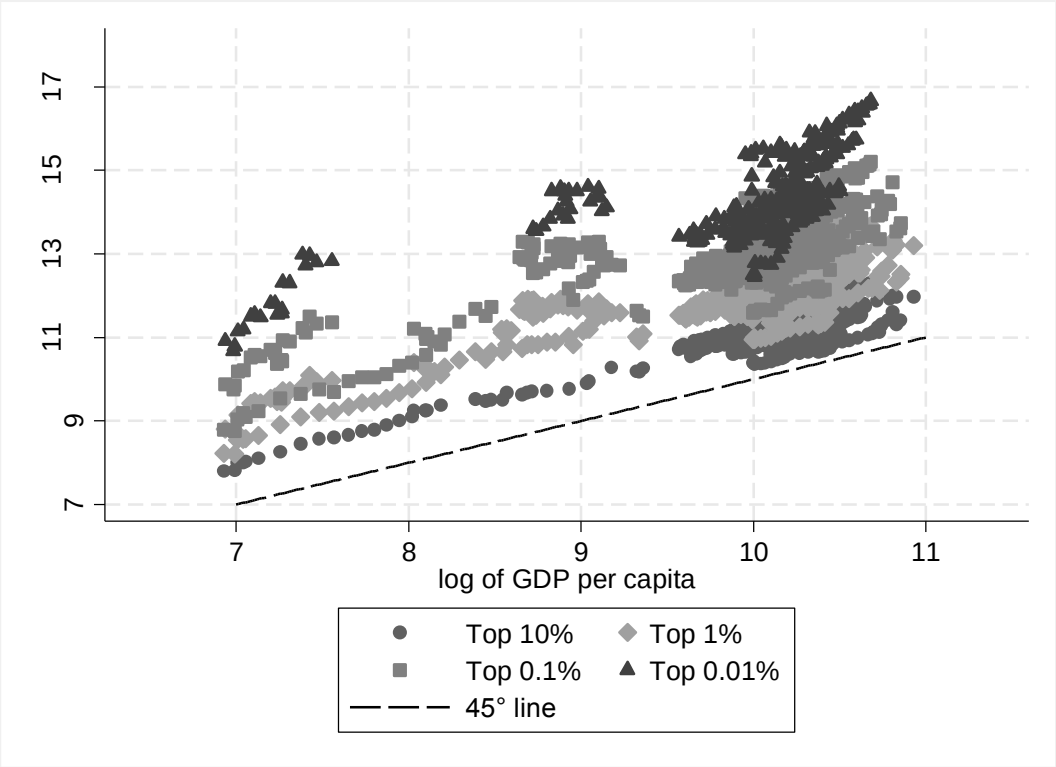
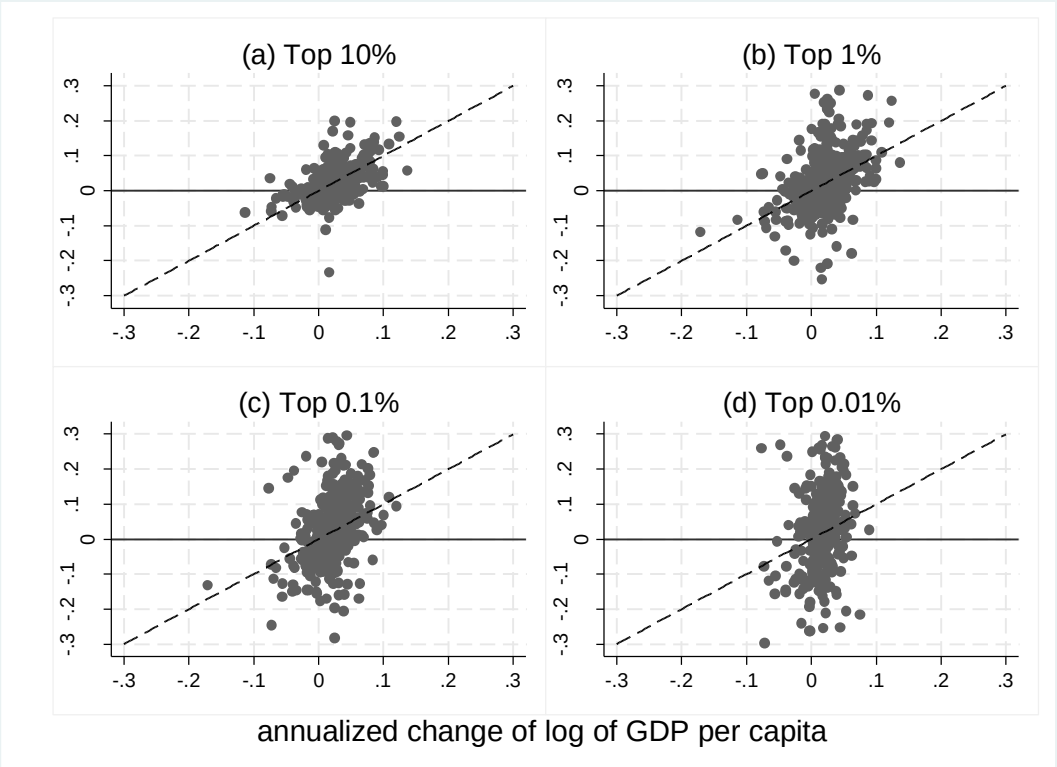
Figure 1. Levels



Sources: Incomes of top earners from the World Top Incomes database. GDP per capita from the Penn World Tables.

Note: This figure shows pooled data of the logarithm of average income of top earners and the logarithm of GDP per capita from 1980 to 2011 in 23 different countries.

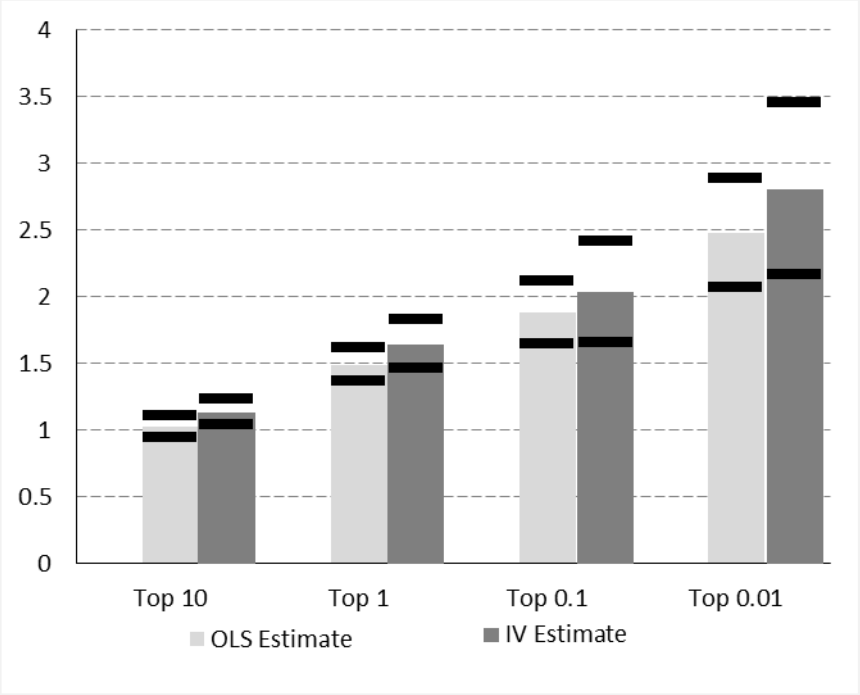
Figure 2. Annual Average Growth Rates



Sources: Incomes of top earners from the World Top Incomes database; GDP per capita from the Penn World Tables.

Note: This figure shows pooled data for the annualized change in the logarithm of average incomes of different categories of top earners and the annualized change of the logarithm in GDP per capita from 1980 to 2011 in 23 different countries.

Figure 3. Preferred Estimates of the Elasticity of Income of Top Earners to Mean Income (α_1)



Note: This figure shows α_1 estimates using equation (2) including controls under the five-period difference approach, using observations from all countries in our dataset. Black lines show the upper and lower bounds of the 95 percent confidence interval for each estimator.

Table 1. Number of Annual Observations of Average Income of Top Earners (1980-2011)				
	Top 10%	*Top 1%*	*Top 0.1%*	*Top 0.01%*
Argentina	0	8	8	8
Australia	31	31	31	14
Canada	21	21	21	21
China	18	18	17	0
Colombia	0	18	16	5
Denmark	31	31	31	31
France	30	30	27	27
Germany	7	7	7	7
India	0	20	20	20
Ireland	30	30	11	0
Italy	28	28	28	28
Japan	31	31	31	31
Mauritius	18	28	18	0
New Zealand	31	31	10	0
Norway	29	29	29	0
Portugal	20	20	20	17
Singapore	30	30	17	3
South Africa	0	13	9	9
Spain	30	30	30	30
Sweden	32	32	32	32
Switzerland	22	22	22	22
United Kingdom	19	19	16	0
United States	32	32	32	32
Total	**490**	**559**	**483**	**337**

Source: World Top Incomes database.
Note: This table shows the number of available annual observations for top earners' average income in the period 1980-2011 in our dataset.

Table 2. Average Income of Top Earners in 2005 Constant 2005 international dollars (PPP)					
	Top 10%	*Top 1%*	*Top 0.1%*	*Top 0.01%*	GDP per capita
Argentina	N.A.	141,292 /1	592,158 /1	2,100,391 /1	9,671
Australia	91,368	272,712	912,646	1,892,842 /2	38,384
Canada	102,054 /3	326,869 /3	1,261,006 /3	4,552,830 /3	36,654
China	11,736 /4	24,674 /4	50,445 /4	N.A.	4,335
Colombia	N.A.	126,274	529,926 /5	N.A.	6,491
Denmark	402,055	933,774	2,477,789	8,239,257	34,677
France	91,486	242,990	688,929	2,057,056	31,230
Germany	113,292 /2	355,236 /2	1,408,143 /2	5,120,521 /2	31,657
India	N.A.	21,221 /6	86,376 /6	372,743 /6	2,492
Ireland	N.A.	40,247	389,030	N.A.	122,161
Italy	65,490	184,482	546,540	1,744,193	29,562
Japan	78,045	181,283	476,827	1,346,970	31,380
Mauritius	20,185	73,133	232,128	N.A.	8,360
New Zealand	73,191	174,850	N.A.	N.A.	27,254
Norway	110,293	486,250	2,463,727	N.A.	49,293
Portugal	76,364	194,987	494,308	1,383,502	19,949
Singapore	133,825	475,693	1,537,172	N.A.	41,989
South Africa	N.A.	118,428	353,210	1,021,447	6,767
Spain	66,702	176,327	525,501	1,749,056	28,325
Sweden	60,546	142,789	428,248	1,433,022	33,959
Switzerland	119,000	367,168	1,366,432	5,636,665	36,994
United Kingdom	110,209	377,339	1,374,309	N.A.	33,983
United States	210,406	827,832	3,633,734	15,394,558	42,482
Mean	*107,569*	*272,428*	*992,208*	*3,603,004*	*30,473*
Standard Deviation	*83,071*	*228,563*	*877,901*	*3,778,579*	*23,729*

/1 In 2004. /2 In 1998. /3 In 2000. /4 In 2003. /5 In 2006. /6 In 1999.

Sources: Data on top earners from the World Top Incomes database. GDP per capita from the Penn World Tables.

Note: This table shows average income for different categories of top earners in 2005 (unless otherwise noted). Incomes and GDP per capita are shown in constant 2005 international PPP dollars.

Table 3. Number of Annual Observations per Variable (1980-2011)										
	Top 10% average income	Top 1% average income	Top 0.1% average income	Top 0.01% average income	GDP per capita	Share of Gov. Consumption (of GDP)	Openness as share of GDP	Financial Openness	Population Growth	Inflation
Argentina	0	8	8	8	31	31	31	32	32	32
Australia	31	31	31	14	31	31	31	32	32	32
Canada	21	31	21	21	31	31	31	32	32	32
China	18	18	18	0	31	31	31	28	32	25
Colombia	0	18	16	5	31	31	31	32	32	32
Denmark	31	31	31	31	31	31	31	32	32	32
France	30	30	27	27	31	31	31	32	32	32
Finland	0	0	0	0	31	31	31	32	32	32
Germany	7	7	7	7	31	31	31	32	32	20
India	0	20	20	20	31	31	31	32	32	32
Ireland	30	30	11	0	31	31	31	32	32	32
Italy	28	28	28	28	31	31	31	32	32	32
Japan	31	31	31	31	31	31	31	32	32	32
Mauritius	18	28	19	0	31	31	31	32	32	32
New Zealand	31	31	10	0	32	31	31	32	31	32
Norway	29	29	29	0	31	31	31	32	32	32
Portugal	20	20	20	17	31	31	31	32	32	32
Singapore	30	30	17	3	31	31	31	32	32	32
South Africa	0	13	9	9	31	31	31	32	32	32
Spain	30	30	30	30	31	31	31	32	32	32
Sweden	32	32	32	32	31	31	31	32	32	32
Switzerland	22	22	22	22	31	31	31	16	32	32
United Kingdom	19	19	16	0	31	31	31	32	32	23
United States	32	32	32	32	31	31	31	32	32	32
Total	490	569	485	337	745	744	744	748	767	740

Sources: Average income of top 10 percent, 1 percent, 0.1 percent, and 0.01 percent earners from the World Top Incomes database; GDP per capita, government consumption, and openness as share of GDP from the Penn World Tables; population growth and inflation from the World Bank, and financial openness from the Chinn-Ito index.

Note: This table shows the number of available annual observations for all variables used in our regressions in the period 1980-2011.

Table 4. Number of Annual Observations for Different Sample Specifications (1980-2011)

	Top 10%	*Top 1%*	*Top 0.1%*	*Top 0.01%*
Observations in all countries	490	559	483	337
Developed countries[/1]	434	434	375	278
Developing countries[/2]	56	125	108	59
Only countries with data for all categories of top earners[/3]	345	345	329	295
Developed countries	325	325	309	278
Developing countries	20	20	20	17

[/1] Developed countries are: Australia, Canada, Denmark, France, Germany, Ireland, Italy, Japan, New Zealand, Norway, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.
[/2] Developing countries are: Argentina, China, Colombia, India, Mauritius, Portugal, and South Africa.
[/3] Countries that have data for all categories of top earners are: Australia, Canada, Denmark, France, Germany, Italy, Japan, Portugal, Singapore, Spain, Sweden, Switzerland, and the United States.
Source: World Top Incomes database.
Note: This table contains the number of annual observations for different samples in our dataset.

Table 5. α_1 Estimates, Not Including Controls. OLS				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
A. Fixed Effects				
Log of GDP per capita	1.014***	1.374***	1.850***	2.403***
	(0.0618)	(0.0912)	(0.193)	(0.358)
P-Ho: $\alpha_1 = 1$	0.819	0.000469	0.000223	0.00123
No. of Observations	473	542	470	323
B. Random Effects				
Log of GDP per capita	1.015***	1.347***	1.765***	2.155***
	(0.0600)	(0.0821)	(0.167)	(0.274)
P-Ho: $\alpha_1 = 1$	0.804	0	0	0
No. of Observations	473	542	470	323
C. First Differences (five-period difference)				
Log of GDP per capita	0.984***	1.365***	1.814***	2.492***
	(0.0377)	(0.0479)	(0.0913)	(0.163)
P-Ho: $\alpha_1 = 1$	0.669	0	0	0
No. of Observations	385	434	362	250
D. First Differences (one-period difference)				
Log of GDP per capita	0.790***	1.107***	1.554***	1.739***
	(0.0659)	(0.0897)	(0.159)	(0.323)
P-Ho: $\alpha_1 = 1$	0.00151	0.235	0.000528	0.0226
No. of Observations	467	534	461	313

Note: This table shows results of estimating equations (1) (Panels A and B) and (2) (Panels C and D) using all observations in our dataset. OLS refers to ordinary least squares. For equation (1), clustered standard errors are shown in parenthesis; for equation (2), Newey-West standard errors are shown in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. OLS Estimates, in Differences

Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Five-period difference				**B. One-period difference**			
Log of GDP per capita	1.026***	1.491***	1.880***	2.472***	0.820***	1.075***	1.440***	1.285**
	(0.0400)	(0.0656)	(0.120)	(0.206)	(0.081)	(0.113)	(0.193)	(0.510)
Share of gov. consumption	0.024***	0.0232**	0.011	0.027	0.023**	0.006	0.0002	0.034
	(0.006)	(0.010)	(0.016)	(0.026)	(0.010)	(0.013)	(0.024)	(0.046)
Openness as share of GDP	0.0003	-0.0004	0.0001	0.008***	0.001	0.001	0.002	0.013*
	(0.0003)	(0.0004)	(0.0009)	(0.002)	(0.001)	(0.001)	(0.002)	(0.008)
Financial openness	-0.009	-0.008	0.007	-0.114***	0.003	0.013	0.026	-0.009
	(0.006)	(0.011)	(0.019)	(0.023)	(0.006)	(0.012)	(0.020)	(0.021)
Population growth	-0.002	-0.010	0.025	0.039	0.002	-0.001	0.008	-0.079
	(0.005)	(0.008)	(0.027)	(0.043)	(0.006)	(0.007)	(0.014)	(0.082)
Inflation	-0.0004	0.005**	0.007**	0.007	-2.74e-05	0.0002	0.001	0.004
	(0.002)	(0.002)	(0.003)	(0.006)	(0.001)	(0.001)	(0.002)	(0.005)
P-Ho: $\alpha_1 = 1$	0.511	0	0	0	0.0276	0.506	0.0227	0.576
No. of Observations	382	431	359	247	467	534	461	313

Note: This table shows results of estimating equation (2) using our five-period and one-period difference approaches. OLS refers to ordinary least squares. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. First-stage Regressions, in Differences

	GDP pc (Top 10%) (1)	GDP pc (Top 1%) (2)	GDP pc (Top 0.1%) (3)	GDP pc (Top 0.01%) (4)	GDP pc (Top 10%) (5)	GDP pc (Top 1%) (6)	GDP pc (Top 0.1%) (7)	GDP pc (Top 0.01%) (8)
	A. Five-period difference				**B. One-period difference**			
Share of gov. consumption	-0.041***	-0.033***	-0.027***	-0.019***	-0.032***	-0.033***	-0.034***	-0.037***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.004)	(0.003)	(0.004)	(0.004)
Openness as share of GDP	0.001***	0.0018***	0.0015***	0.0002	0.001***	0.001***	0.001***	0.004***
	(0.0002)	(0.0003)	(0.0004)	(0.001)	(0.0002)	(0.0002)	(0.0003)	(0.0005)
Financial openness	0.002	0.0089*	0.0053	-0.0047	-0.002	0.004	0.004	-0.003
	(0.005)	(0.005)	(0.006)	(0.007)	(0.005)	(0.004)	(0.004)	(0.003)
Population growth	0.004	0.0036	-0.0137	0.0117	0.0001	0.0003	-0.0008	0.0013
	(0.006)	(0.006)	(0.012)	(0.012)	(0.0029)	(0.0030)	(0.0034)	(0.0074)
Inflation	0.001	0.0008	-0.0002	-0.004***	-0.0002	-0.001***	-0.001***	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0003)	(0.0003)	(0.0004)
Change in GDP per capita	0.369***	0.322***	0.282***	-0.062	0.143***	0.189***	0.155***	0.189***
	(0.029)	(0.030)	(0.029)	(0.056)	(0.027)	(0.026)	(0.023)	(0.025)
Level of GDP per capita	0.0009***	0.001***	0.001***	0.002***	0.002***	0.001***	0.001***	0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
No. of Observations	382	431	359	247	467	534	461	313
Weak identification test (F statistic)	90.236	57.341	53.215	58.187	70.513	67.795	147.704	42.579
Overidentification test (p-value)	0.9695	0.1399	0.0298	0.5852	0.6153	0.3774	0.7698	0.1262

Note: This table shows first-stage results of estimating equation (2) with our five-period and one-period difference approaches. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 8. IV Estimates, in First Differences

Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Five-period difference				**B. One-period difference**			
Log of GDP per capita	1.130***	1.638***	2.031***	2.798***	1.212***	1.633***	1.804***	1.507**
	(0.0485)	(0.0929)	(0.192)	(0.326)	(0.204)	(0.291)	(0.447)	(0.672)
Share of gov. consumption	0.0277***	0.0271***	0.0140	0.0287	0.0368**	0.0249	0.0127	0.0398
	(0.00585)	(0.0103)	(0.0165)	(0.0261)	(0.0142)	(0.0153)	(0.0270)	(0.0524)
Openness as share of GDP	-0.000153	-0.00120**	-0.000674	0.00512	-0.000143	-0.000575	0.00131	0.0121
	(0.000337)	(0.000550)	(0.00116)	(0.00334)	(0.000736)	(0.00117)	(0.00219)	(0.00782)
Financial openness	-0.0134*	-0.0139	0.00234	-0.110***	-0.00190	0.00525	0.0210	-0.00854
	(0.00691)	(0.0114)	(0.0206)	(0.0229)	(0.00714)	(0.0121)	(0.0202)	(0.0210)
Population growth	-0.00227	-0.00980	0.0256	0.0321	0.00186	-0.00135	0.00867	-0.0826
	(0.00521)	(0.00910)	(0.0280)	(0.0439)	(0.00609)	(0.00823)	(0.0132)	(0.0824)
Inflation	0.000162	0.00534**	0.00754**	0.00933	0.000195	0.00120	0.00188	0.00430
	(0.00240)	(0.00217)	(0.00346)	(0.00642)	(0.00120)	(0.00182)	(0.00262)	(0.00538)
P-Ho: $\alpha_1 = 1$	0.007	0	0	0	0.299	0.030	0.0727	0.451
No. of Observations	382	431	359	247	467	534	461	313

Note: This table shows results of estimating equation (2) using our five-period and one-period difference approaches. IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 9a. OLS and IV Estimates. Five-period Difference								
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				IV			
	A. All countries, not including controls							
Log of GDP per capita	0.984***	1.365***	1.814***	2.492***	1.046***	1.437***	1.893***	2.657***
Newey-West SE	(0.0377)	(0.0479)	(0.0913)	(0.163)	(0.0451)	(0.0600)	(0.109)	(0.174)
P-Ho: $\alpha_1 = 1$	0.669	0	0	0	0.304	0	0	0
No. of Observations	385	434	362	250	385	434	362	250
	B. All countries, including controls							
Log of GDP per capita	1.026***	1.491***	1.880***	2.472***	1.130***	1.638***	2.031***	2.798***
Newey-West SE	(0.0400)	(0.0656)	(0.120)	(0.206)	(0.0485)	(0.0929)	(0.192)	(0.326)
P-Ho: $\alpha_1 = 1$	0.511	0	0	0	0.00756	0	0	0
No. of Observations	382	431	359	247	382	431	359	247
	C. Countries with data for all categories of earners, not including controls							
Log of GDP per capita	1.000***	1.326***	1.873***	2.372***	1.023***	1.417***	1.995***	2.493***
Newey-West SE	(0.0667)	(0.0781)	(0.111)	(0.156)	(0.0736)	(0.0868)	(0.123)	(0.169)
P-Ho: $\alpha_1 = 1$	1.000	0	0	0	0.754	0	0	0
No. of Observations	273	273	258	228	273	273	258	228
	D. Countries with data for all categories of earners, including controls							
Log of GDP per capita	0.997***	1.355***	1.946***	2.229***	1.011***	1.562***	2.461***	2.697***
Newey-West SE	(0.0523)	(0.0952)	(0.148)	(0.243)	(0.0663)	(0.122)	(0.200)	(0.320)
P-Ho: $\alpha_1 = 1$	0.951	0.000239	0	0	0.874	0	0	0
No. of Observations	270	270	255	225	270	270	255	225
	E. English-speaking countries, not including controls							
Log of GDP per capita	0.860***	1.510***	2.385***	3.184***	0.893***	1.535***	2.357***	3.355***
Newey-West SE	(0.0405)	(0.0776)	(0.193)	(0.272)	(0.0523)	(0.0976)	(0.205)	(0.296)
P-Ho: $\alpha_1 = 1$	0.000726	0	0	0	0.0419	0	0	0
No. of Observations	132	132	90	53	132	132	90	53
	F. English-speaking countries, including controls							
Log of GDP per capita	0.761***	1.818***	2.036***	3.596***	0.973***	2.244***	1.812***	3.627***
Newey-West SE	(0.0867)	(0.181)	(0.345)	(0.416)	(0.125)	(0.268)	(0.409)	(0.554)
P-Ho: $\alpha_1 = 1$	0.00662	0	0.00355	0	0.829	0	0.0502	0
No. of Observations	132	132	90	53	132	132	90	53

Note: This table shows results of estimating equation (2) with our five-period difference approach using different sets of observations in our dataset. OLS refers to ordinary least squares; IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 9b. OLS and IV Estimates. Five-period Difference

Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				**IV**			
	G. Non-English-speaking countries, not including controls							
Log of GDP per capita	1.038***	1.311***	1.705***	2.331***	1.112***	1.399***	1.792***	2.500***
Newey-West SE	(0.049)	(0.058)	(0.097)	(0.188)	(0.058)	(0.074)	(0.123)	(0.204)
P-Ho: $\alpha_1 = 1$	0.445	0	0	0	0.0552	0	0	0
No. of Observations	253	302	272	197	253	302	272	197
	H. Non-English-speaking countries, including controls							
Log of GDP per capita	1.053***	1.382***	1.753***	2.227***	1.150***	1.487***	1.910***	2.545***
Newey-West SE	(0.045)	(0.072)	(0.125)	(0.226)	(0.067)	(0.110)	(0.219)	(0.422)
P-Ho: $\alpha_1 = 1$	0.240	0	0	0	0.0279	0	0	0.000323
No. of Observations	250	299	269	194	250	299	269	194
	I. Excluding China, not including controls							
Log of GDP per capita	0.940***	1.382***	1.975***	2.492***	0.958***	1.556***	2.144***	2.472***
Newey-West SE	(0.043)	(0.0560)	(0.105)	(0.163)	(0.050)	(0.085)	(0.144)	(0.206)
P-Ho: $\alpha_1 = 1$	0.171	0	0	0	0.405	0	0	0
No. of Observations	373	422	350	250	370	419	347	247
	J. Excluding China, including controls							
Log of GDP per capita	0.998***	1.460***	2.088***	2.657***	1.055***	1.771***	2.493***	2.798***
Newey-West SE	(0.053)	(0.068)	(0.120)	(0.174)	(0.064)	(0.111)	(0.206)	(0.326)
P-Ho: $\alpha_1 = 1$	0.971	0	0	0	0.396	0	0	0
No. of Observations	373	422	350	250	370	419	347	247

Note: This table shows results of estimating equation (2) with our five-period difference approach using different sets of observations in our dataset. OLS refers to ordinary least squares; IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 10a. OLS and IV Estimates. One-period Difference								
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				**IV**			
	A. All countries, not including controls							
Log of GDP per capita	0.790***	1.107***	1.554***	1.739***	1.141***	1.571***	1.929***	2.141***
Newey-West SE	(0.065)	(0.089)	(0.159)	(0.323)	(0.161)	(0.227)	(0.354)	(0.533)
P-Ho: $\alpha_1 = 1$	0.00151	0.235	0.000528	0.0226	0.380	0.0120	0.00892	0.0329
No. of Observations	467	534	461	313	467	534	461	313
	B. All countries, including controls							
Log of GDP per capita	0.820***	1.075***	1.440***	1.285**	1.212***	1.633***	1.804***	1.507**
Newey-West SE	(0.081)	(0.113)	(0.193)	(0.510)	(0.204)	(0.291)	(0.447)	(0.672)
P-Ho: $\alpha_1 = 1$	0.0276	0.506	0.0227	0.576	0.299	0.0304	0.0727	0.451
No. of Observations	467	534	461	313	467	534	461	313
	C. Countries with data for all categories of earners, not including controls							
Log of GDP per capita	0.702***	1.014***	1.567***	1.834***	1.100***	1.415***	2.016***	2.096***
Newey-West SE	(0.087)	(0.106)	(0.178)	(0.307)	(0.157)	(0.193)	(0.312)	(0.602)
P-Ho: $\alpha_1 = 1$	0.000748	0.896	0.00161	0.00697	0.525	0.0324	0.00127	0.0701
No. of Observations	328	328	312	274	328	328	312	274
	D. Countries with data for all categories of earners, including controls							
Log of GDP per capita	0.766***	1.044***	1.523***	1.208**	1.113***	1.451***	1.995***	1.563**
Newey-West SE	(0.114)	(0.131)	(0.221)	(0.545)	(0.134)	(0.197)	(0.338)	(0.751)
P-Ho: $\alpha_1 = 1$	0.0412	0.739	0.0185	0.702	0.400	0.0223	0.00350	0.454
No. of Observations	328	328	312	274	328	328	312	274
	E. English-speaking countries, not including controls							
Log of GDP per capita	0.755***	1.283***	2.122***	2.853***	0.926***	1.590***	2.159***	3.697***
Newey-West SE	(0.080)	(0.159)	(0.372)	(0.703)	(0.145)	(0.295)	(0.613)	(1.109)
P-Ho: $\alpha_1 = 1$	0.00287	0.0772	0.00314	0.0105	0.609	0.0469	0.0612	0.0178
No. of Observations	161	161	119	65	161	161	119	65
	F. English-speaking countries, including controls							
Log of GDP per capita	0.735***	1.222***	1.153**	2.713***	0.763***	1.666***	1.006	3.657
Newey-West SE	(0.131)	(0.214)	(0.562)	(0.975)	(0.202)	(0.433)	(0.977)	(2.648)
P-Ho: $\alpha_1 = 1$	0.0457	0.301	0.786	0.0842	0.243	0.126	0.995	0.320
No. of Observations	161	161	119	65	161	161	119	65

Note: This table shows results of estimating equation (2) with our one-period difference approach using different sets of observations in our dataset. OLS refers to ordinary least squares; IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 10b. OLS and IV Estimates. One-period Difference								
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				**IV**			
	G. Non-English-speaking countries, not including controls							
Log of GDP per capita	0.805***	1.050***	1.436***	1.477***	1.239***	1.569***	1.867***	1.798***
Newey-West SE	(0.086)	(0.107)	(0.174)	(0.359)	(0.225)	(0.286)	(0.415)	(0.580)
P-Ho: $\alpha_1 = 1$	0.0250	0.638	0.0130	0.186	0.289	0.0475	0.0377	0.170
No. of Observations	306	373	342	248	306	373	342	248
	H. Non-English-speaking countries, including controls							
Log of GDP per capita	0.831***	1.033***	1.369***	0.917	1.323***	1.607***	1.730***	0.958
Newey-West SE	(0.112)	(0.141)	(0.216)	(0.602)	(0.270)	(0.350)	(0.518)	(0.675)
P-Ho: $\alpha_1 = 1$	0.132	0.813	0.0889	0.891	0.233	0.0836	0.160	0.950
No. of Observations	306	373	342	248	306	373	342	248
	I. Excluding China, not including controls							
Log of GDP per capita	0.696***	1.043***	1.516***	1.739***	1.031***	1.430***	1.803***	2.141***
Newey-West SE	(0.068)	(0.096)	(0.179)	(0.323)	(0.153)	(0.191)	(0.362)	(0.533)
P-Ho: $\alpha_1 = 1$	1.13e-05	0.657	0.00412	0.0226	0.838	0.0251	0.0272	0.0329
No. of Observations	451	518	445	313	451	518	445	313
	J. Excluding China, including controls							
Log of GDP per capita	0.748***	1.000***	1.370***	1.285**	1.033***	1.414***	1.552***	1.507**
Newey-West SE	(0.085)	(0.129)	(0.238)	(0.510)	(0.151)	(0.207)	(0.421)	(0.672)
P-Ho: $\alpha_1 = 1$	0.00316	0.999	0.121	0.576	0.825	0.0460	0.191	0.451
No. of Observations	451	518	445	313	451	518	445	313

Note: This table shows results of estimating equation (2) with our one-period difference approach using different sets of observations in our dataset. OLS refers to ordinary least squares; IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11. OLS and IV Estimates, in Differences.				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
	OLS			
	A. Observations separated by 5 years			
Log of GDP per capita	1.110***	1.521***	1.945***	2.566***
Newey-West SE	(0.148)	(0.152)	(0.258)	(0.516)
P-Ho: $\alpha_1 = 1$	0.458	0.000883	0.000448	0.00370
No. of Observations	94	104	87	61
	B. Observations separated by at least 5 years			
Log of GDP per capita	1.019***	1.502***	1.806***	2.129***
Newey-West SE	(0.110)	(0.174)	(0.328)	(0.460)
P-Ho: $\alpha_1 = 1$	0.865	0.00521	0.0168	0.0188
No. of Observations	71	79	65	45
	IV (alternative instrument)			
	C. Five-period difference			
Log of GDP per capita	1.120***	1.649***	2.003***	2.777***
Newey-West SE	(0.046)	(0.093)	(0.185)	(0.336)
P-Ho: $\alpha_1 = 1$	0.0104	0	0	0
No. of Observations	382	431	359	247
Weak identification test (F statistic)	89.022	59.776	63.659	37.664
Overidentification test (p-value)	0.7569	0.079	0.0155	0.4869
	D. One-period difference			
Log of GDP per capita	1.175***	1.487***	1.864***	1.854**
Newey-West SE	(0.228)	(0.282)	(0.444)	(0.763)
P-Ho: $\alpha_1 = 1$	0.442	0.0850	0.0522	0.263
No. of Observations	467	534	461	313
Weak identification test (F statistic)	39.206	41.572	68.703	30.885
Overidentification test (p-value)	0.1801	0.5345	0.9195	0.109

Note: This table shows results of estimating equation (2) under different specifications. Panel A uses observations separated by five years. Panel B uses observations separated by at least five years. Panel C uses our alternative instrument for the five-period difference approach: the annual log difference of GDP per capita seven periods before $t - k$ and the level of GDP per capita eight periods before t. Panel D uses our alternative instrument for the one-period difference approach: the annual log difference of GDP per capita two periods before $t - k$ and the level of GDP per capita three periods before $t - k$. OLS refers to ordinary least squares; IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 12. OLS Estimates, in First Differences								
Average income of:	Top 10%	Top 10%	Top 1%	Top 1%	Top 0.1%	Top 0.1%	Top 0.01%	Top 0.01%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Five-period difference							
Log of GDP per capita	0.989***	1.040***	1.373***	1.498***	1.836***	1.896***	2.575***	2.544***
	(0.037)	(0.039)	(0.048)	(0.065)	(0.091)	(0.120)	(0.159)	(0.205)
Share of gov. consumption		0.0222***		0.0209**		0.00210		0.00891
		(0.0057)		(0.010)		(0.016)		(0.027)
Openness as share of GDP		0.000200		-0.000581		-0.000199		0.00542**
		(0.0003)		(0.0004)		(0.0009)		(0.002)
Financial openness		-0.00992		-0.00611		0.0141		-0.0985***
		(0.006)		(0.011)		(0.019)		(0.021)
Population growth		-0.00212		-0.00946		0.0353		0.0597
		(0.005)		(0.008)		(0.027)		(0.042)
Inflation		-6.70e-06		0.00473**		0.00646**		0.00354
		(0.002)		(0.002)		(0.003)		(0.005)
Log GDPpc * 1(Δlog GDP pc <0)	-0.363***	-0.306***	-0.271***	-0.221**	-0.598***	-0.622***	-1.117***	-0.794***
	(0.0708)	(0.0696)	(0.104)	(0.100)	(0.185)	(0.162)	(0.107)	(0.152)
P-Ho: $\alpha_1 = 1$	0.761	0.312	0	0	0	0	0	0
P-Ho: $\alpha_1 + \beta_{crisis\_interaction} = 1$	0	0	0.353	0.021	0.229	0.162	0.005	0.001
No. of Observations	385	382	434	431	362	359	250	247

Note: This table shows results of estimating equation (2) with our five-period difference approach using all countries in our dataset. OLS refers to ordinary least squares. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX

Table A1. Available Annual Information per Country. Average Income of Top 10 Percent Earners

Year	Argentina	Australia	Canada	China	Colombia	Denmark	France	Germany	India	Ireland	Italy	Japan	Mauritius	New Zealand	Norway	Portugal	Singapore	South Africa	Spain	Sweden	Switzerlan	United Kingdom	United States
1980		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓			✓
1981		✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1982		✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1983		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1984		✓	✓			✓	✓			✓	✓	✓		✓	✓		✓		✓	✓			✓
1985		✓	✓			✓	✓			✓	✓	✓		✓	✓		✓		✓	✓	✓		✓
1986		✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓			✓
1987		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1988		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1989		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1990		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
1991		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1992		✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓			✓	✓		✓	✓
1993		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1994		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
1995		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1996		✓	✓	✓		✓	✓			✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
1997		✓	✓	✓		✓	✓			✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1998		✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
1999		✓	✓	✓		✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2000		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
2001		✓		✓		✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2002		✓		✓		✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2003		✓		✓		✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2004		✓				✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
2005		✓				✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
2006		✓				✓	✓			✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓
2007		✓				✓	✓			✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓
2008		✓				✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
2009		✓				✓	✓			✓	✓	✓		✓			✓		✓	✓	✓	✓	✓
2010		✓				✓						✓		✓			✓		✓	✓			✓
2011													✓							✓			✓
Total	0	31	21	18	0	31	30	7	0	30	28	31	18	31	29	20	30	0	30	32	22	19	32

Source: WTI database.

Note: This table shows which years in our dataset have available information on average income of top 10 percent earners per country in the period 1980-2011.

Table A2. Available Annual Information per Country. Average Income of Top 1 Percent Earners																							
Year	Argentina	Australia	Canada	China	Colombia	Denmark	France	Germany	India	Ireland	Italy	Japan	Mauritius	New Zealand	Norway	Portugal	Singapore	South Afri	Spain	Sweden	Switzerlan	United Kingdom	United States
1980		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓
1981		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1982		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓
1983		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1984		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1985		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1986		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1987		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1988		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1989		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1990		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
1991		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1992		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓
1993		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1994		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
1995		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1996		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
1997	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1998	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
1999	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2000	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
2001	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
2002	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2003	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2004	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2005		✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2006		✓			✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
2007		✓			✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
2008		✓			✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
2009		✓			✓	✓	✓			✓	✓	✓		✓			✓	✓	✓	✓	✓		✓
2010		✓			✓	✓						✓	✓	✓			✓	✓	✓	✓	✓		✓
2011													✓							✓			✓
Total	8	31	21	18	18	31	30	7	20	30	28	31	28	31	29	20	30	13	30	32	22	19	32

Source: WTI database.

Note: This table shows which years in our dataset have available information on average income of top 1 percent earners per country in the period 1980-2011.

Table A3. Available Annual Information per Country. Average Income of Top 0.1 Percent Earners																						
Year	Argentina	Australia	Canada	China	Colombia	Denmark	France	Germany	India	Ireland	Italy	Japan	Mauritius	New Zealand	Norway	Portugal	Singapore	South Africa	Spain	Sweden	Switzerland	United Kingdom	United States
1980		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓
1981		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1982		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓
1983		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1984		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓				✓	✓			✓
1985		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓
1986		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1987		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
1988		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓
1989		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
1990		✓	✓	✓		✓	✓		✓	✓	✓	✓			✓	✓			✓	✓			✓
1991		✓	✓	✓		✓	✓		✓		✓	✓			✓	✓			✓	✓	✓		✓
1992		✓	✓	✓		✓	✓	✓	✓		✓	✓			✓	✓			✓	✓			✓
1993		✓	✓	✓	✓	✓	✓		✓		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓
1994		✓	✓	✓	✓	✓	✓		✓		✓	✓			✓	✓			✓	✓		✓	✓
1995		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓			✓	✓	✓	✓	✓
1996		✓	✓	✓	✓	✓	✓		✓			✓			✓	✓			✓	✓	✓	✓	✓
1997	✓	✓	✓	✓	✓	✓	✓		✓			✓			✓	✓			✓	✓	✓	✓	✓
1998	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓			✓	✓	✓	✓	✓
1999	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓	✓			✓	✓	✓	✓	✓
2000	✓	✓	✓	✓	✓	✓	✓				✓	✓			✓	✓	✓		✓	✓	✓	✓	✓
2001	✓	✓		✓	✓	✓	✓				✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
2002	✓	✓		✓	✓	✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
2003	✓	✓		✓	✓	✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
2004	✓	✓				✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
2005		✓				✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
2006		✓			✓	✓	✓				✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓
2007		✓			✓	✓					✓	✓	✓		✓			✓	✓	✓	✓	✓	✓
2008		✓			✓	✓					✓	✓	✓		✓			✓	✓	✓	✓		✓
2009		✓			✓	✓					✓	✓					✓	✓	✓	✓	✓	✓	✓
2010		✓			✓	✓						✓						✓	✓	✓			✓
2011																				✓			✓
Total	8	31	21	17	16	31	27	7	20	11	28	31	18	10	29	20	17	9	30	32	22	16	32

Source: WTI database.

Note: This table shows which years in our dataset have available information on average income of top 0.1 percent earners per country in the period 1980-2011.

Table A4. Available Annual Information per Country. Average Income of Top 0.01 Percent Earners

Year	Argentina	Australia	Canada	China	Colombia	Denmark	France	Germany	India	Ireland	Italy	Japan	Mauritius	New Zealand	Norway	Portugal	Singapore	South Africa	Spain	Sweden	Switzerland	United Kingdom	United States
1980			✓			✓	✓	✓	✓		✓	✓								✓			✓
1981			✓			✓	✓		✓		✓	✓							✓	✓	✓		✓
1982			✓			✓	✓		✓		✓	✓							✓	✓			✓
1983			✓			✓	✓	✓	✓		✓	✓							✓	✓	✓		✓
1984			✓			✓	✓		✓		✓	✓							✓	✓			✓
1985		✓	✓			✓	✓		✓		✓	✓							✓	✓	✓		✓
1986		✓	✓			✓	✓	✓	✓		✓	✓							✓	✓			✓
1987		✓	✓			✓	✓		✓		✓	✓							✓	✓	✓		✓
1988		✓	✓			✓	✓		✓		✓	✓							✓	✓			✓
1989		✓	✓			✓	✓	✓	✓		✓	✓				✓	✓		✓	✓	✓		✓
1990		✓	✓			✓	✓		✓		✓	✓				✓	✓		✓	✓			✓
1991		✓	✓			✓	✓		✓		✓	✓				✓	✓		✓	✓	✓		✓
1992		✓	✓			✓	✓	✓	✓		✓	✓				✓			✓	✓			✓
1993		✓	✓			✓	✓		✓		✓	✓				✓			✓	✓	✓		✓
1994		✓	✓			✓	✓		✓		✓	✓				✓			✓	✓			✓
1995		✓	✓			✓	✓	✓	✓		✓	✓				✓			✓	✓	✓		✓
1996		✓	✓			✓	✓		✓			✓				✓			✓	✓	✓		✓
1997	✓	✓	✓			✓	✓		✓			✓				✓			✓	✓	✓		✓
1998	✓	✓	✓			✓	✓	✓	✓		✓	✓				✓			✓	✓	✓		✓
1999	✓		✓			✓	✓		✓		✓	✓				✓			✓	✓	✓		✓
2000	✓		✓			✓	✓				✓	✓				✓			✓	✓	✓		✓
2001	✓					✓	✓				✓	✓				✓			✓	✓	✓		✓
2002	✓					✓	✓				✓	✓				✓		✓	✓	✓	✓		✓
2003	✓					✓	✓				✓	✓				✓		✓	✓	✓	✓		✓
2004	✓					✓	✓				✓	✓				✓		✓	✓	✓	✓		✓
2005						✓	✓				✓	✓				✓		✓	✓	✓	✓		✓
2006					✓	✓	✓				✓	✓						✓	✓	✓	✓		✓
2007					✓	✓					✓	✓						✓	✓	✓	✓		✓
2008					✓	✓					✓	✓						✓	✓	✓	✓		✓
2009					✓	✓					✓	✓						✓	✓	✓	✓		✓
2010					✓	✓						✓						✓	✓	✓			✓
2011																				✓			✓
Total	8	14	21	0	5	31	27	7	20	0	28	31	0	0	0	17	3	9	30	32	22	0	32

Source: WTI database.

Note: This table shows which years in our dataset have available information on average income of top 0.01 percent earners per country in the period 1980-2011.

Table A5a. IV Estimates (Alternative Set of Instruments). Five-period Difference				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
	IV			
	A. All countries, not including controls			
Log of GDP per capita	1.038***	1.427***	1.867***	2.630***
Newey-West SE	(0.0413)	(0.0583)	(0.107)	(0.177)
P-Ho: $\alpha_1 = 1$	0.362	0	0	0
No. of Observations	385	434	362	250
	B. All countries, including controls			
Log of GDP per capita	1.120***	1.649***	2.003***	2.777***
Newey-West SE	(0.046)	(0.093)	(0.185)	(0.336)
P-Ho: $\alpha_1 = 1$	0.0104	0	0	0
No. of Observations	382	431	359	247
	C. Countries with data for all categories of earners, not including controls			
Log of GDP per capita	1.026***	1.415***	1.987***	2.457***
Newey-West SE	(0.072)	(0.085)	(0.122)	(0.174)
P-Ho: $\alpha_1 = 1$	0.723	0	0	0
No. of Observations	273	273	258	228
	D. Countries with data for all categories of earners, including controls			
Log of GDP per capita	1.007***	1.564***	2.412***	2.637***
Newey-West SE	(0.066)	(0.121)	(0.204)	(0.333)
P-Ho: $\alpha_1 = 1$	0.919		0	
No. of Observations	270	270	255	225
	E. English-speaking countries, not including controls			
Log of GDP per capita	0.896***	1.537***	2.347***	3.295***
Newey-West SE	(0.052)	(0.096)	(0.205)	(0.319)
P-Ho: $\alpha_1 = 1$	0.0480	0	0	0
No. of Observations	132	132	90	53
	F. English-speaking countries, including controls			
Log of GDP per capita	0.980***	2.249***	1.759***	3.711***
Newey-West SE	(0.126)	(0.265)	(0.406)	(0.574)
P-Ho: $\alpha_1 = 1$	0.871	0	0.0651	0
No. of Observations	132	132	90	53

Note: This table shows results of estimating equation (2) under our five-period difference approach using different sets of observations in our dataset, and our alternative set of instruments. We instrument the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita seven periods before $t-k$ and the level of GDP per capita eight periods before t. IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A5b. IV Estimates (Alternative Set of Instruments). Five-period Difference				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
	IV			
	G. Non-English-speaking countries, not including controls			
Log of GDP per capita	1.094***	1.381***	1.763***	2.493***
Newey-West SE	(0.052)	(0.071)	(0.119)	(0.205)
P-Ho: $\alpha_1 = 1$	0.0730	0	0	0
No. of Observations	253	302	272	197
	H. Non-English-speaking countries, including controls			
Log of GDP per capita	1.128***	1.495***	1.884***	2.571***
Newey-West SE	(0.055)	(0.104)	(0.203)	(0.423)
P-Ho: $\alpha_1 = 1$	0.0228	0	0	0.000268
No. of Observations	250	299	269	194
	I. Excluding China, not including controls			
Log of GDP per capita	0.999***	1.460***	2.080***	2.630***
Newey-West SE	(0.052)	(0.068)	(0.120)	(0.177)
P-Ho: $\alpha_1 = 1$	0.981	0	0	0
No. of Observations	373	422	350	250
	J. Excluding China, including controls			
Log of GDP per capita	1.050***	1.774***	2.480***	2.777***
Newey-West SE	(0.063)	(0.110)	(0.206)	(0.336)
P-Ho: $\alpha_1 = 1$	0.435	0	0	0
No. of Observations	370	419	347	247

Note: This table shows results of estimating equation (2) under our five-period difference approach using different sets of observations in our dataset, and our alternative set of instruments. We instrument the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita seven periods before $t-k$ and the level of GDP per capita eight periods before t. IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6a. IV Estimates (Alternative Set of Instruments). One-period Difference				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
	IV			
	A. All countries, not including controls			
Log of GDP per capita	1.126***	1.469***	1.968***	2.612***
Newey-West SE	(0.210)	(0.242)	(0.361)	(0.582)
P-Ho: $\alpha_1 = 1$	0.551	0.0529	0.00767	0.00596
No. of Observations	467	534	461	313
	B. All countries, including controls			
Log of GDP per capita	1.175***	1.487***	1.864***	1.854**
Newey-West SE	(0.228)	(0.282)	(0.444)	(0.763)
P-Ho: $\alpha_1 = 1$	0.442	0.0850	0.0522	0.263
No. of Observations	467	534	461	313
	C. Countries with data for all categories of earners, not including controls			
Log of GDP per capita	1.238***	1.550***	2.145***	2.583***
Newey-West SE	(0.335)	(0.356)	(0.440)	(0.640)
P-Ho: $\alpha_1 = 1$	0.477	0.123	0.00977	0.0139
No. of Observations	328	328	312	274
	D. Countries with data for all categories of earners, including controls			
Log of GDP per capita	1.280***	1.581***	2.122***	1.949**
Newey-West SE	(0.330)	(0.363)	(0.468)	(0.770)
P-Ho: $\alpha_1 = 1$	0.396	0.110	0.0171	0.219
No. of Observations	328	328	312	274
	E. English-speaking countries, not including controls			
Log of GDP per capita	0.876***	1.434***	2.114***	3.630***
Newey-West SE	(0.150)	(0.340)	(0.657)	(1.252)
P-Ho: $\alpha_1 = 1$	0.411	0.204	0.0923	0.0396
No. of Observations	161	161	119	65
	F. English-speaking countries, including controls			
Log of GDP per capita	0.657***	1.259**	0.725	3.886
Newey-West SE	(0.241)	(0.564)	(1.102)	(2.922)
P-Ho: $\alpha_1 = 1$	0.156	0.647	0.803	0.327
No. of Observations	161	161	119	65

Note: This table shows results of estimating equation (2) under our one-period difference approach using different sets of observations in our dataset, and our alternative set of instruments. We instrument the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita two periods before $t-k$ and the level of GDP per capita three periods before $t-k$. IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6b. IV Estimates (alternative set of instruments). One-period difference				
Average income of:	Top 10%	Top 1%	Top 0.1%	Top 0.01%
	(1)	(2)	(3)	(4)
	IV			
	G. Non-English-speaking countries, not including controls			
Log of GDP per capita	1.239***	1.480***	1.925***	2.339***
Newey-West SE	(0.301)	(0.310)	(0.427)	(0.653)
P-Ho: $\alpha_1 = 1$	0.429	0.122	0.0310	0.0413
No. of Observations	306	373	342	248
	H. Non-English-speaking countries, including controls			
Log of GDP per capita	1.301***	1.489***	1.808***	1.161
Newey-West SE	(0.312)	(0.342)	(0.507)	(0.774)
P-Ho: $\alpha_1 = 1$	0.335	0.153	0.112	0.836
No. of Observations	306	373	342	248
	I. Excluding China, not including controls			
Log of GDP per capita	1.108***	1.458***	2.029***	2.612***
Newey-West SE	(0.234)	(0.265)	(0.403)	(0.582)
P-Ho: $\alpha_1 = 1$	0.645	0.0841	0.0109	0.00596
No. of Observations	451	518	445	313
	J. Excluding China, including controls			
Log of GDP per capita	1.124***	1.441***	1.932***	1.854**
Newey-West SE	(0.246)	(0.298)	(0.484)	(0.763)
P-Ho: $\alpha_1 = 1$	0.616	0.140	0.0548	0.263
No. of Observations	451	518	445	313

Note: This table shows results of estimating equation (2) under our one-period difference approach using different sets of observations in our dataset, and our alternative set of instruments. We instrument the annual log difference of GDP per capita between t and $t-k$ with the annual log difference of GDP per capita two periods before $t-k$ and the level of GDP per capita three periods before $t-k$. IV refers to instrumental variables. Newey-West standard errors are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.