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Income Inequality in America: Conclusions from 100 years of income tax data and cross-country comparisons

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Abstract

In 1913, taxation of income was permanently introduced in the United States. Other similarly developed countries soon followed suit. From there, income inequality in the United States dropped significantly, and the decline in Europe was even more dramatic. First, this paper considers the changes over time of the share of national income gained by the top 1% of income earners in seven countries going back to World War Two. A second analysis considers the impact that tax policy may have had on the share of income accruing to the top 1% of U.S. income earners between 1980 and 2014, a period that begins just before the largest tax cut in US history and saw major increases in income inequality in the US. The first analysis shows that income inequality began to rise in some countries in the last two decades of the twentieth century, notably the United States, United Kingdom and Australia. However, this wasn't the case in other countries, including France, Japan and the Netherlands. We also look at Norway, which has experienced a more unique path. The second analysis shows mixed findings for the impact of income tax policy and its progressivity on income inequality in the U.S. from 1980 and 2014.

I. INTRODUCTION

Throughout the field of economics concern about worsening inequality seems to be growing. Views on the costs of the concentration of wealth and income, as with many other issues, tend to diverge to create a dichotomy with "Market Fundamentalists" and "Leftist Socialists" finding no common ground between two opposing poles. First, this paper hopes to highlight patterns across countries to establish that income inequality differs between countries. Specifically, we look at two general patterns of historical income inequality across major developed economies. The data and previous research by Atkinson, Piketty and Saez (2011) show that some countries experienced decreased income inequality with no or modest increases from the mid-twentieth century up through the early twenty-first century. This paper considers three of these countries, France, Japan and Netherlands. The second general pattern of historical income inequality sees the same decline in income inequality but then a substantial increase beginning in the last twenty years of the twentieth century. This paper considers three countries representative of this pattern - the U.S., U.K. and Australia. A final unique example, Norway, is also presented here to add to the strength of the analysis.

From there, income inequality in the U.S. becomes the focus of this paper. As stated before, the U.S. and the other six countries considered here all saw considerable declines in income inequality dating back to at least the mid-twentieth century. The interest of this paper, however, is why certain countries, and the U.S. specifically, have seen a substantial increase in income inequality and concentration in recent decades.

In reviewing the literature in the field this paper will summarize the work of Edwin Seligman, Simon Kuznets, Anthony Atkinson, Thomas Piketty, Emmanuel Saez, Joseph Stiglitz and Gabriel Zucman. As established by Kuznets' (1953) original work, this paper also makes use of micro-data on the share of national income earned by different percentiles of income earners. Hence, this paper uses the share of national income earned by the top 1% of income earners as the outcome variable of interest. In other words, the metric for income inequality used in this paper is share of income earned by the top 1%. Not only has top income share been a long-established metric for U.S. income inequality going back to the work of Kuznets in 1953, but this data is widely available for many countries. In fact, this data goes as far back as countries' systems of income taxation. For example, taxation on income in the U.S. as we know it today goes back to 1913. As is the case with much economic data, developed countries provide the most data, but there is no reason to believe that the lessons learned cannot apply to the future of developing countries. Also, there is no evidence in the literature that suggests conclusions about the relationship between income inequality and (progressive) taxation changes as countries go through different stages of development.

One caveat is in order here. As tax regimes can vary as much as human ingenuity allows, the discussion found here will focus overwhelmingly on one specific form of taxation in one country, namely, taxation on "ordinary" income in the U.S. The one notable, and hopefully justified, exception is a brief discussion on taxation of dividends in Norway. Taxation of income is the natural and most significant tool governments around the world possess to combat the concentration of income and wealth and ensure inclusive growth, competition and meritocracy. The topic of inequality and concentration are all the more important because wealth and income inequality seem to exhibit something like increasing returns. This effect of "accumulated advantage", the Matthew Effect, adds a long-run dimensionality to the issue. The overarching goal of this paper is to add to the literature and common knowledge by highlighting the relationship between income inequality and income taxation. It is beyond the goal of this paper to attempt to explain the historical income inequality of all developed countries or even all countries considered here.

II. WHY INEQUALITY MATTERS

There is a widespread ideology that suggests that government fiscal policy decisions that increase equality or reduce inequality or concentration of income will reduce allocative efficiency. This ideology, often referred to as 'trickle-down economics', seems to have gained mainstream traction, in the United States at least, during the presidency of Ronald Reagan. Arthur Okun, who is often credited as a prominent messenger, published his book *Equality and Efficiency: The Big Trade Off* in 1975. Despite his importance to purveyors of supply-side economics, Reaganomics, and tax cuts, it can be argued that a fuller reading of Okun and the ideas in his book reveal a belief that institutional responses by the state can address issues of inequality while also improving efficiency. In fact, Okun credits U.S. Government programs during the presidency of President Lyndon Johnson in the Civil Rights Era for a "decline in the number of poor people from 40 million in 1961 to 24 million in 1969." Okun is partly referring here to the establishment of laws explicitly referencing equality. He draws specific attention to the establishment of the Equal Employment Opportunity Commission (EEOC). For this paper, the focus will be the institutional response of progressive taxation.

Having discussed Okun's own allowance for improvements in efficiency corresponding with reductions in income inequality, let us turn to more recent empirical data confirming the same. A 2015 IMF report found that “if the income share of the top 20 percent increases, then GDP growth actually declines over the medium term, suggesting that benefits do not trickle down. In contrast, an increase in the income share of the bottom 20 percent is associated with higher GDP growth.” (IMF 2015) Lest it be forgotten, income inequality is a proxy for equality of opportunity, which is the primary concern. Related concerns include inequality of outcomes and intergenerational inequality of opportunity, which then becomes a hurdle and impediment to social mobility now and generations into the future. This is the Matthew Effect mentioned earlier. If the lack of empirical evidence for a trade off between efficiency and equality and the potential for inequality to reduce efficiency aren’t enough to motivate researchers and policy makers to act, consider the following implications of widening inequality: the concentration of political and decision-making power in the hands of a few; the suboptimal use of human resources in allocation; investment-reducing political and economic instability; and elevated crisis risk. Finally, see point 9 in the 2015 IMF Report cited earlier, which reads:

Higher inequality lowers growth by depriving the ability of lower-income households to stay healthy and accumulate physical and human capital (Galor and Moav 2004; Aghion, Caroli, and Garcia-Penalosa 1999). For instance, it can lead to under investment in education as poor children end up in lower-quality schools and are less able to go on to college. As a result, labor productivity could be lower than it would have been in a more equitable world (Stiglitz 2012). In the same vein, Corak (2013) finds that countries with higher levels of income inequality tend to have lower levels of mobility between generations, with parent’s earnings being a more important determinant of children’s earnings. Increasing concentration of incomes could also reduce aggregate demand and undermine growth, because the wealthy spend a lower fraction of their incomes than middle- and lower-income groups."

Finally, in overviews (Piketty 2005 and Piketty and Saez 2006) of this literature it is suggested that even though there will always be severe identification problems, cross country analysis seems a natural next step (Roine et al 2009).

III. TAXATION OF INCOME IN THE U.S.

Having discussed research that shows how inclusive growth leads to sustainable growth, whereas greater inequality can hinder future growth, let us discuss the policy instrument of taxation, especially the concept of progressive taxation.

Let us use the U.S. case as a starting point. The economic development of the U.S. and other countries we regard as highly developed today can help us as we consider the fiscal policies of today's developing countries. From even before the founding of the U.S. there was a strong spirit of anti-taxation and libertarianism. For example, the US War for Independence and the events leading up to it gained much fuel and momentum from the Boston Tea Party in 1773. At that time, not many people could conceive of direct income taxes. In fact, the taxation of income in the U.S. dates back to only 1913. Before that, the main source of tax revenue was tariffs. This seems to be a common evolution seen as economies move through stages of development. Some attempts to tax income in the U.S. had been made pre-1913, most notably during the Civil War and years immediately following, but there was a debate at the time about the constitutionality of "direct" income taxes. The issue was that the U.S. Constitution required any direct income taxes to be apportioned among the states by population. Still, those people supporting the creation of an income tax, and a progressive system of taxation, particularly those who considered themselves "Populists" and "Progressives", continued advocating for an update to American taxation that would relieve the burden on the poor (Seligman 1894). Finally, in 1909 the Sixteenth Amendment to the United States Constitution was passed by Congress allowing Congress to levy an income tax without apportioning it among the states on the basis of population. The Sixteenth Amendment was ratified by the requisite number of states on February 3, 1913. Not long after, The Revenue Act of 1913 became law when President Woodrow Wilson signed the bill into law on October 3, 1913. Along with establishing the income tax system as we know it, the Revenue Act of 1913 also significantly lowered tariffs that disproportionately impacted citizens of lower incomes, not unlike regressive taxes like sales taxes. So, from its foundation the American income tax was a policy instrument designed to redistribute the tax burden from regressive taxation using tariffs on lower income Americans to progressive taxation using increasing marginal income tax rates that reflected the greater ability of Americans with higher incomes to contribute more. What did the marginal rates look like at that time? Those making less than 20 thousand dollars paid 1 percent while those in the highest bracket, 500 thousand dollars and greater, paid seven percent. This American story is an important one because the role of income taxation was non-existent or negligible at the beginning of the twentieth century. As the U.S. has developed, its tax system has evolved as well. Most notably, tariffs were replaced by income taxes as the primary source of government revenue. As mentioned earlier, as other countries have developed, their tax systems have evolved in a similar way. In addition to perhaps revealing something about the nature of economic development, this widely observed relationship between development and taxation policies allows for greater data on income distribution. It might seem obvious, but if a system of income taxation does not exist, availability of data on income and its distribution or concentration is not a real thing.

IV. TRENDS IN INEQUALITY

In the last twenty years, economics has seen a revival of interest in the study of inequality and top incomes. The research of inequality in France first, then the U.S., by Piketty is widely credited as a seminal work in the literature. Data now exists for nearly 30 countries, but it must be said that the data for many countries lacks the multi-decade track record of the developed world, where some of the data goes back for a century or more. To reiterate, without the policy innovation of the income tax, this data would not exist. Without a system of taxation of income, why would any state or national tax administration collect the data?

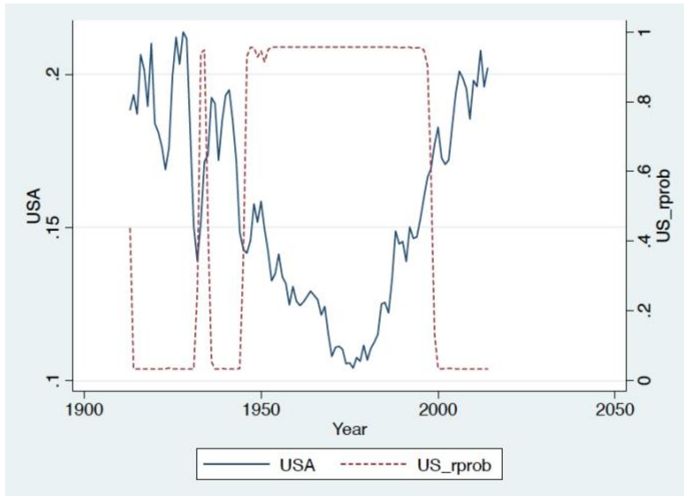
So, what are the trends in inequality? Recent work uses data for 26 countries to present the long run evolution of top income percentile shares in each country. Looking at the overall long run development, there are clear similarities across the six groups of countries. They all exhibit a sharp decline in the top income percentile shares over the twentieth century, beginning around the time of the First World War and further reinforced by dramatic drops around the Second World War. "This twentieth century equalization trend in the top income shares continued up until the 1980's when it either flattened out in some countries or was reversed into increasing top income shares" (Roine et al. 2014).

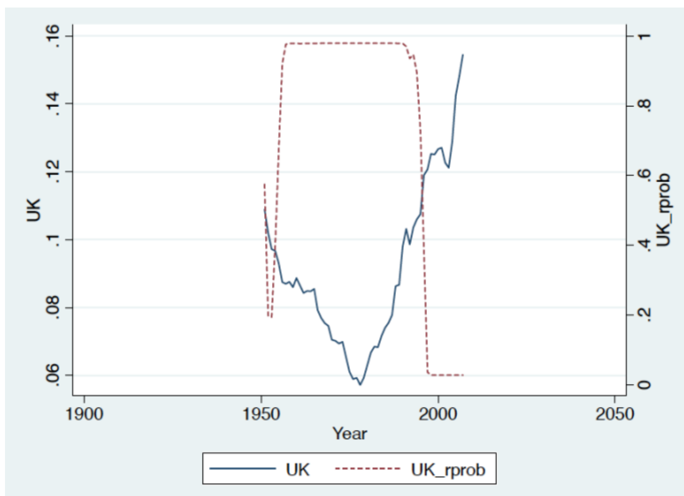
To reiterate, this paper first will explore the trends in income concentration for seven countries. This will be done by applying a Markov-switching dynamic regression model to the time series of top 1% income shares for each country. Of the countries for which data is available, all seven countries considered in this paper are developed countries with observations for top 1% income shares that go back to at least 1951 (U.K). They are representative also of the two major trends in top income shares seen across the developed world.

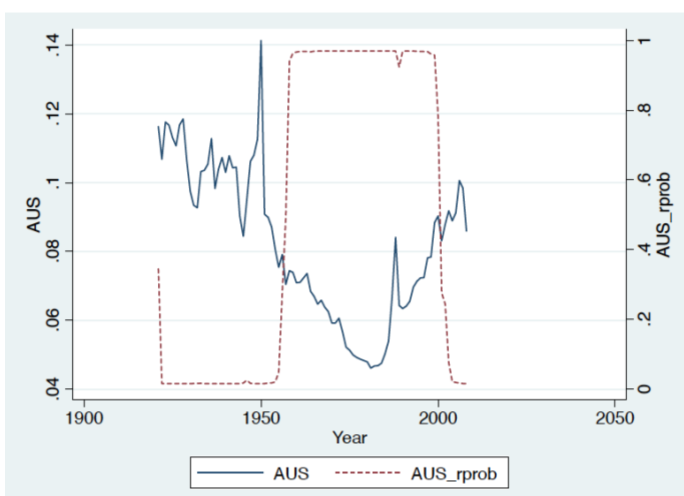
Let's start with the U.S., U.K. and Australia. The share of national income going to the top 1% in these countries declined from just after WW2 (observations begin in 1951 for the U.K.) for approximately three decades. Some researchers call this group, the Anglo-Saxon countries, or those where inequality in the twentieth century forms a "U" shape. It can also be said that these are countries where neoliberal policies were most put into action. In the U.S and U.K., neoliberalism is generally referred to as Reaganomics and Thatcherism, respectively (see solid line in Figures 1A, 1B and 1C, "Income Concentration in Neoliberal Countries").

In Figures 2A, 2B and 2C we see three countries that experienced the same secular decline of income concentration (solid line) but without the substantial increase in income concentration in the last 2 decades of the twentieth century seen in the neoliberal countries. As demonstrated in the figures, France has seen a modest increase since the beginning of the twenty-first century, Japan has seen some variation by year but no significant increase, and inequality in the Netherlands saw a continuing decrease through the end of the twentieth century. The dashed line in these figures represents the probability of "moderate" inequality, and the vertical scale on the left side indicates the income share of the top 1% for each country. The vertical scale on the right side indicates the probability that the country is in a state of lower inequality.

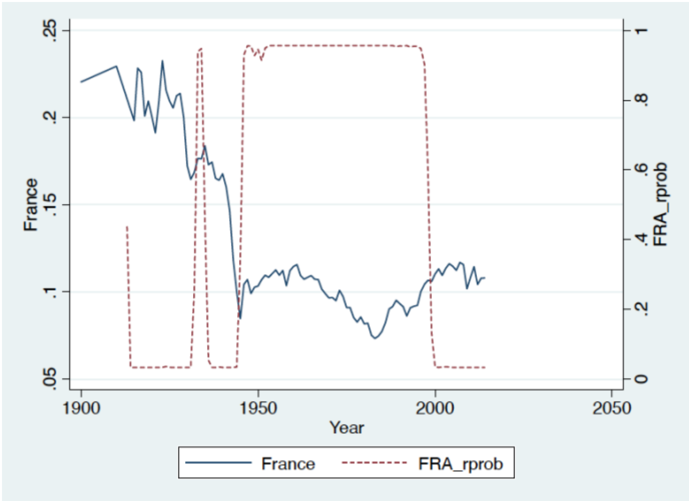
Figures 1A, 1B and 1C, “Inequality in Neoliberal Countries – U.S., U.K and Australia”

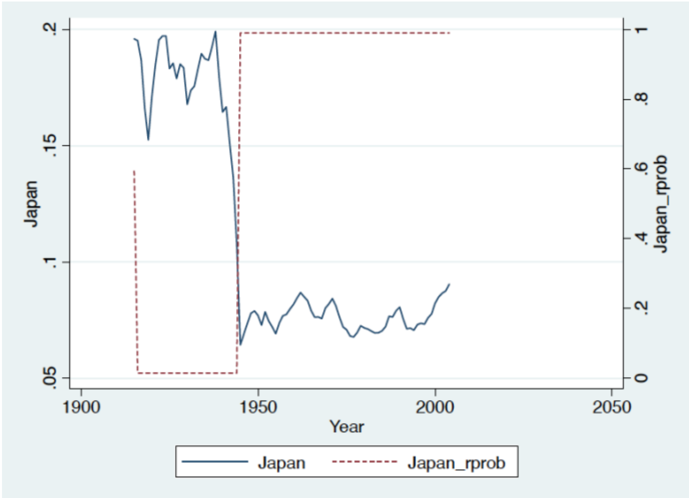


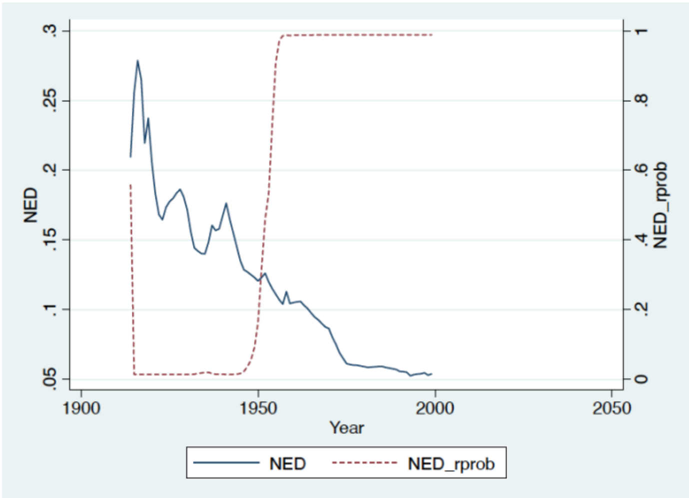




Figures 2A, 2B and 2C, “Countries Staying More Equal – France, Japan and the Netherlands”



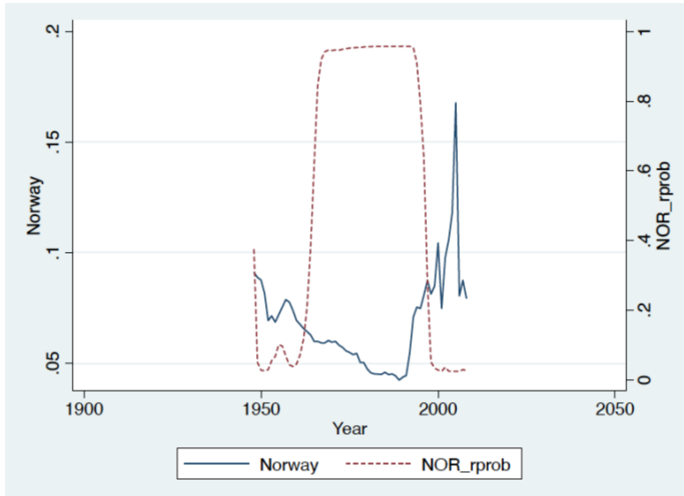




For example, when the dashed line is at or near 1 on the scale, the probability is very high that inequality is relatively low for that specific country.

Finally, Norway is a special case, which is included because it is the only developed country where we see a time series of top income shares that resembles the neoliberal countries but then a drastic decline. The share of income accruing to the top 1% of families in Norway increased from 7.5% in 2001 to 16.8% in 2005. If this drastic spike isn't shocking enough, the share of income of the top 1% sank even more quickly than it rose. In fact, it was cut by more than 50% in one year. In 2006, their share was 8%. So, our chosen metric for inequality doubled in four years and then was halved in one year. Two things are true about this phenomenon. First, it is unique. To our knowledge, such a change cannot be found in any other country. Secondly, the change can be attributed to a tax policy change. This is important because it should provide evidence for inequality researchers as to determinants and causes. It must be said that this change, especially the dramatic decrease in 2006, by and large is attributed to the re-introduction of taxation on dividends for shareholders in 2006. Between 2002 and 2005, dividends were tax-free income for shareholders. No doubt, dividends were timed to take advantage of this policy change, but this case should demonstrate the impact that income tax policy, even tax policy on dividends, can have on inequality. As we can see in Figure 3, the top 1% of families in Norway saw their share of national income double between 2001 and 2005 and then saw it cut in half just one year later. Before this period, it can be said that income concentration in Norway demonstrated a "neoliberal" pattern although at a much lower level relative to its neoliberal counterparts, the United States, the United Kingdom and Australia.

Figure 3, “Norway – Inequality and Taxation on Dividend Income”



Equation 1 is:

Top 1% Income Share of Country X = β (S_t) = u_t, where S_t = State 1 or 2 coefficient

V. PREVIOUS RESEARCH

Before moving onto the second and final analysis, let us discuss the work of those who were pioneering researchers on inequality. At the turn of the twentieth century, Edwin Seligman wrote about the differences between American and European taxation, about the burden that the poor faced with the prevalence of indirect taxes (tariffs) as the main source of public revenues and the need for a new paradigm in taxation, namely a progressive income tax (Seligman 1894). As stated earlier, the American income tax system as we know it dates back to 1913. Moving on in the literature, Simon Kuznets was the first to collect and analyze data on income distribution. During the 1950’s and ’60’s, Kuznets published his research and advanced the idea now known as the Kuznets Curve, whereby the relationship between economic growth and income inequality is dependent on the level of development of an economy. Anthony Atkinson wrote extensively on optimal taxation, but it wasn't until he joined Thomas Piketty and Emmanuel Saez that he replicated the work of Kuznets for the U.K., France and many other countries. Building on this research, the work of Joseph Stiglitz took this literature to policy. He has worked with the U.S. government, the IMF and the UN, and he popularized the term "the 1%", when referring to the elite class of the most wealthy and powerful people in the world (Stiglitz, 2015). Gabriel Zucman's research, which began under Piketty and Saez, brings us current in the literature. His work synthesizes the research on taxation and inequality, and his influence has been seen in recent proposals for a new innovation in American taxation: a wealth tax (Zucman 2019).

VI. INEQUALITY AND TOP MARGINAL RATES OF TAXATION IN THE U.S.

For the second analysis that focuses on income inequality in the U.S., our metric for progressive taxation is the top marginal tax rate, which is the rate paid by all of the top 1% of income earners, and we are testing whether the change in this rate has a negative effect on pre-tax income. We also add a dummy variable in hopes of gaining further clarity. First of all, top marginal statutory tax rates are an exogenous policy choice with no relationship of direct reverse causality with pre-tax income shares. Second, we will focus on the period since just before the largest tax cut in American history. The official name of that tax cut is the Economic Recovery Tax Act of 1981. Signed by President Ronald Reagan during his first year in office amidst an atmosphere of high inflation, the top marginal statutory tax rate was cut from 70% to 50%. Table 1 shows the results for this regression (Equation 2). The results suggest that top marginal income tax rates are significant at the 1% level allowing us to reject the null that they are not a significant determinant of the top 1% income share in the U.S. between 1980 and 2014. Additionally, more than one-third of the variation is explained by this one variable.

Equation 2 is:

$$\text{Top 1\% income share} = \beta\ (\text{Top Marginal Statutory Tax Rate}) + u_t$$

Table 1, "Top 1% Income Share and Top Marginal Tax Rates since 1980"

	Top 1% Income Share
Top Marginal Income Tax Rate	-0.183***
	(0.0449)
Constant	0.234***
	(0.0183)
Observations	35
R-squared	0.336

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

Of course, more research is needed to explain and understand the full variation of inequality, but our focus here is on the relationship between income concentration and top marginal tax rates in the U.S. Further, our focus is on the period where we saw the reversal of the long decline in inequality and its continual rise subsequently. In Table 2 we add the dummy variable.

For all values of the probability of the moderate inequality state from the Markov switching dynamic regression greater than 0.9, the dummy variable will take a value of 1. In other words, D = 0 in years with less than a 90% chance of being lower inequality.

Equation 3 is:

$$\text{Top 1\% income share} = \beta 1(\text{Top Marginal Rate}) - \beta 2(\text{D x TMR}) + u_t$$

Table 2, "Top 1% Income Share and Top Marginal Tax Rates with Dummy"

	Top 1% Income Share
Top Marginal Income Tax Rate	0.00590
	(0.0278)
D x Top Marginal Tax Rate	-0.122***
	(0.0115)
Constant	0.186***
	(0.0098)
Observations	35
R-squared	0.853

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

The results of Table 2 show that the top marginal income tax rates now become insignificant; however, the interaction between the dummy and top marginal tax rates is significant at the 1% level. This means that the top statutory marginal income tax rate does not have a statistically significant effect on top 1% income share in the higher inequality regime, but that it does have a have statistically significant negative impact in the lower inequality regime. From this it follows that tax policy actually may not be effective when income inequality is high. Lastly, R-squared is now 0.853.

VII. CONCLUSIONS AND POLICY IMPLICATIONS

Cognizant of the danger and hazard of "drawing definitive policy implications from cross-country regression analysis and that there are measurement limitations in comparing inequality across time and countries" (IMF 2015), this paper simply looks at general trends in inequality and finds that the developed world has seen divergence in income inequality and concentration beginning in the last twenty years of the twentieth century. Considering three neoliberal countries that have experienced a reversal of fortunes for those not in the top 1%, namely, the U.S., the U.K and Australia, three countries that have more or less continued down the path of greater equality (France, Japan and the Netherlands) and one country – Norway – that provides a special third pattern, we hope to have shown that these time series are not random. As mentioned, there is great risk in drawing definitive conclusions from cross-country comparisons. For instance, in comparing the U.S. and France, the OECD reports that in 2017 taxes on personal income, profits and gains in the U.S. represented 39% of tax revenues in the U.S., whereas these taxes represented 19% of tax revenues in France in the same year. This would lead one to conclude that changes in income taxation would have a different effect on income inequality in France. With that said, in our first analysis, we hope to have demonstrated statistically that the seven countries experienced different patterns of inequality in the twentieth century and early part of the current century.

In our second analysis, where we focus on income inequality in America, we consider the 35 years since just before the largest tax cut in American history (The Economic Recovery Tax Cut of 1981). We perform two different regressions. In the first, we find a negative relationship between inequality and top marginal tax rates between 1980 and 2014 that is significant at the 1% level. In the second regression, we find a negative relationship between the interaction of our dummy and top marginal tax rates that is also significant at the 1% level. Moreover, the R-squared value for the second regression is 0.853.

In this effort to understand whether there exists a statistically significant negative relationship between progressive taxation and income inequality, I hope to have contributed by having applied a Markov-switching dynamic regression to analyze patterns in the developed world and by having analyzed the rise of inequality in the U.S. in the context of the largest tax cut in the nation's history. Without a doubt, further research into the measurable aspects of neoliberalism are in order, so that economists and policy makers can better understand inequality, its causes and its consequences. Finally, researchers and policy makers need to better understand the political, economic and social context of developed and developing countries to draw conclusions about determinants and policy choices.

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