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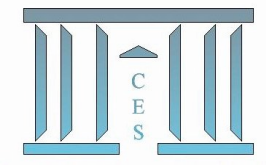

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What Determines Top Income Shares? The Role of the Interactions between Financial Integration and Tax Policy

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April 11, 2016

Abstract

This article aims at analyzing the role of the interactions between financial deregulation policies and changes in top tax marginal rates to explain the evolution in top income shares since the 1980s in most OECD countries. I argue that higher financial integration should have an increasing-effect on top income shares by resulting in lower marginal top tax rates. First, international financial integration has gradually contributed to increased tax competition by raising capital mobility. Second, financial integration also reflects higher bargaining power for top earners, pushing for a reduction in marginal top tax rates. Based on instrumental variables and simultaneous equations system regressions, I find strong evidence of my hypothesis: first, financial integration is negatively correlated with higher top marginal tax rates; second, this result seems to explain the negative relationship between marginal top tax rates and top income shares.

Résumé

LE RÔLE DES INTERACTIONS ENTRE L'INTÉGRATION FINANCIÈRE ET LA POLITIQUE FISCALE DANS LA MONTÉE DES HAUTS REVENUS

Cet article cherche à analyser le rôle des interactions qui peuvent exister entre les politiques de dérégulation financière et les récentes modifications de politique fiscale pour expliquer l'évolution de la part du revenu national détenue par les hauts revenus depuis les années 1980 dans la plupart des pays de l'OCDE. Nous avançons l'argument selon lequel l'intégration financière aurait contribué à accroitre les inégalités dans le haut de la distribution des revenus en réduisant les taux de taxation auxquels sont les hauts revenus. Premièrement, l'intégration financière au niveau international a contribué progressivement à renforcer la concurrence fiscale en accentuant la mobilité du capital. Deuxièmement, l'intégration financière s'est également traduite par renforçer le pouvoir de négociation pour les hauts revenus, ceux-ci prônant un faible niveau de taxation sur leurs propres revenus. A l'aide d'un modèle à variables instrumentales et d'un modèle à équations simultanées, notre hypothèse principale semble vérifiée : d'une part, une plus forte intégration financière est corrélée à de plus faibles taux de taxation sur les hauts revenus ; d'autre part, ce résultat semble expliquer la relation négative entre le niveau des taxation des hauts revenus et la part du revenu national détenue par ces derniers.

Keywords: Financial integration, top income shares, tax policy

Mots clés: Intégration financière, part des hauts revenus, politique fiscale

JEL Classification: G1 · I39 · J63

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1 Introduction

Over the three last decades, income inequality has continuously increased in all OECD countries. One of the most predominant patterns is the increase in upper-tail income inequality, as reflected by the rise in top income shares. As it has been well documented in a recent literature (*e.g.*, Piketty, 2014), the Anglo-Saxon countries have in particularly experienced a sharp increase in income inequality. This paper investigates the determinants of top income shares in a cross-country comparison. The aim of this paper is to analyze the effect of the interactions between financial deregulation policies and tax policy on the evolution in top income shares. Some recent contributions have analyzed the impact of financial integration and tax policy on top income shares (Roine *et al.*, 2009; Cabral *et al.*, 2015).

This paper revisits the link between financial integration and upper-tail income inequality. The closest papers to mine are Roine *et al.* (2009) and Cabral *et al.* (2015), who both find strong support for a positive effect of the international financial integration and a negative effect of progressivity of taxation on top income shares. The originality of this contribution is, however, to argue that changes in financial deregulation policies and changes in tax policies are not disconnected. More particularly, financial deregulation policies may have affected tax policy, thereby exploring two different theoretical mechanisms. First, financial deregulation policies at the global level have contributed to the increase in tax competition, thereby increasing capital mobility (Rodrik, 1997; Plümper and Troeger, 2009). Consequently, capital income inequality has increased due to higher differences in rates of returns across individuals and due to higher possibilities of shifting labor income into capital income (Saez and Zucman, 2016). Second, as a result of increasing international financial integration, financial deregulation policies have also contributed to strengthening top earners' bargaining power. As argued by Piketty *et al.* (2014) and Atkinson (2015), financial deregulation policies have gradually increased top earners' incentives to bargain for higher income, thereby pushing for further reduction in marginal top tax rates (Alverado *et al.*, 2013).

Using a panel data on 17 OECD countries from 1970 to 2010, I consider different measures of financial integration: first, two *de jure* indicators of financial deregulation are used: the Chinn and Ito's (2008) *Financial Openness Index* and an overall *Financial Reform Index* proposed by Abiad, Detragiache and Tressel (2010). The first indicator measures the degree of capital account liberalization whereas the second one captures different aspects of internal financial liberalization. Second, I use in this paper different additional *de facto* indicators of financial integration: two measures of international financial integration extracted from the Lane and Milesi-Feretti's Database to capture the international dimension

of financial development and the stock market capitalization ratio given by the World Bank Database to measure the internal dimension of financial development.

Using fixed-effects regressions in panel data, my results clearly suggest that tax policy is powerful driver of the increase in top income shares. My different financial variables do not appear statistically significant, suggesting a potential multicollinearity between financial variables and the measure of marginal top tax. Then, using 2SLS-IV and 3SLS regression model dealing with the issue of endogeneity and reversed causality, I find evidence of my main argument: further financial integration is strongly associated with a reduction in top tax rates, thereby affecting the evolution of income inequality at the top of the distribution. My robustness tests suggest that these estimated effects are particularly pronounced in the Anglo-Saxon countries. Significant differences in these estimated effects between different periods of time, depending on the financial variable which has been used.

The paper is organized as follows. I review the related literature and present my main argument in Section 2. In Section 3, I present data on the evolution in top income shares, financial development and marginal top tax rates. Section 4 presents my estimation strategy. Regression results are then reported in Section 5. Finally, Section 6 provides some concluding remarks and policy implications.

2 Literature review

A large literature has tried to identify the major determinants of the increase in income inequality, and especially in top income shares, since the last three decades in advanced OECD countries. First, the structure of the tax system has been since long time identified as one of the major drivers of the continuous increase in income inequality. A recent literature has paid strong attention on the importance of the growing development of financial markets and financial activities. As a result, as noted by Jaumotte and Osorio (2015), "financial deregulation and the decline in top marginal personal income tax rates are often cited as important contributors to the rise of inequality." First, I briefly review these two strands of literature. Then, I focus on the main contribution of this paper: the role of the role of the interactions between financial deregulation and tax policies on income inequality.

2.1 Financial deregulation and tax policies as determinants of income inequality

A first strand of literature has investigated the connection between tax system and income inequality, and especially in the United States. Most such work focuses on the impact of tax policy on inequality in the United States by comparing pre-tax inequality to post-tax inequality (Piketty and Saez, 2007;

Debacker *et al.*, 2013; Bargain *et al.*, 2015; Cooper *et al.*, 2015). For instance, Piketty and Saez (2007) and Debacker *et al.* (2013) show a positive effect of the federal tax system in the reduction in income inequality in the United States. More recently, Bargain *et al.* (2015) find evidence of a positive effect of the reduction in federal taxes on the income share of high-income earners (top 20%). Finally, Cooper *et al.* (2015) find that federal and states taxes widen the post-tax income distribution in the United States. Very few studies have investigated the impact of tax policy on inequality from a cross-country perspective. A report from the OECD (2012) notes taxes and transfers reduce by 25% market (pre-tax) income inequality measured by the Gini index. Three quarters of the reduction in inequality is due to transfers, the rest to direct household taxation. Alverado *et al.* (2013) also argue that tax policy plays a major role in the evolution in income inequality since the 1980s. Top income marginal tax rates have been significantly cut by half in most OECD countries from the mid-1970s (around 70% in almost half of the OECD countries) to the end-2000s (Alverado *et al.*, 2013; OECD, 2014). Average top statutory rate declined since the 1980s: it decreased from 66% in 1981 to 51% in 1990 and to 41% in 2008 (OECD, 2014). More generally, tax-benefit system has become less redistributive and progressive in most OECD countries (OECD, 2011).

A growing literature has identified financial deregulation as a powerful determinant of the rise of inequality (Philippon and Reshef, 2012; Godechot, 2012; Flaterty, 2015; Darcillon, 2016). Philippon and Reshef (2012) argue that financial deregulation in the United States has caused a stronger increase in skill intensity and in wages in the financial sector than in other sectors: this has resulted in excess wages in finance and then an increase in wage differentials between the workers working in the finance industry and those working in the rest of the economy. According to Phillipon and Reshef (2012), financial deregulation has strongly contributed to the increase in the demand for skill in the financial sector, , thereby raising the productivity gap between the financial industry and the rest of the economy and increasingly attracting high-skilled workers. Philippon and Reshef find that deregulation alone accounts for 23% of changes in wages in the financial sector. Whereas finance industry hires more proportionately high-skilled workers in the 1980s and 1990s when financial markets were strongly deregulated, wages in finance industry grew faster than in the rest of the economy from 1995 to 2006. By this way, finance has contributed more proportionately to the increase in wage inequality at the top of the distribution: whereas finance contributes to 6.2% of the increase in the p_{90}/p_{10} ratio, this effect accounts for 15% of the increase in the p97/p10 ratio. More generally, their analysis reveals that finance is responsible for 15% to 25% of the overall increase in wage inequality since 1980. In the same vein, Godechot (2012) also finds that the growth of the financial industry in France has strongly contributed to the increase

in top income shares: results indicate that half of the share of the top 0.1% is due to the increase in pay among top finance managers between 1996 and 2007. Darcillon (2016) finds a positive effect of domestic financial development on income inequality measured by Gini coefficient.

Investigating the determinants of top income shares, Flaterty (2015) finds evidence of a positive effect of financial globalization on top 1% income share. This article stresses two different mechanisms which explain how financialisation influences top incomes: first, higher financial activities and more developed financial markets have created asymmetrical bargaining power between capital holders and workers; second, financialisation has also influenced state regulatory controls and redistributive mechanisms. Roine *et al.* (2014) find some evidence of a positive effect of financial deregulation and a negative effect of tax progressivity. Cabral *et al.* (2015) find very similar results: increasing international financial integration is positively correlated to higher top income shares. These two papers emphasize the increasing-effect of globalization on the increase in top income shares. In this case, the concept of globalization is multidimensional and refers to higher trade openness as well as to higher international financial integration. Godechot (2015) analyzes the impact of various forms of financialisation (i.e., the growth of the financial sector, the growth of one of its subcomponents, financial markets, the financialisation of non-financial firms, and the financialisation of households) on income inequality. Results clearly indicate that various forms of financialisation are positively associated with an increase in different top income shares (top 10 percent; top 1 percent; top 0.1 percent and top 0.01 percent). Finally, Tenndal and Waldenström (2016) find that the 'Big Bang'-deregulations in the United Kingdom in 1986 and Japan in 1997-1999 increased the share of pre-tax top income shares.

2.2 Interactions between financial deregulation and tax policies

The aim of this paper is to analyze the role of the interactions between financial deregulation policies and changes in top tax marginal rates to explain the evolution in top income shares over time. This section provides a literature review on the theoretical mechanisms by which financial globalization has influenced income inequality through taxation. More particularly, financial integration has strongly contributed to the reduction in taxation on capital income (Rodrik, 1997; Plümper and Troeger, 2009), thereby affecting the distribution of capital income. Sources of capital income are very diversified: housing rents, individual business profits from unincorporated business assets, dividends and retained earnings from corporate equities, interest income and amount of equities and fixed claim assets held indirectly through pension funds. Capital income inequality can be due to differences are rates of returns across individuals, the ability of shifting of labor income to capital income and inheritances (Piketty,

2014; Saez and Zucman, 2016). It can be argued that financial integration at the international and domestic levels has affected the rates of returns and the possibilities of shifting labor / capital income. Due to the composition of top incomes, it can be expected that capital is highly concentrated in the top of the income distribution (Figure 1). As a result, the increase in top income shares can stem from a rise in capital income inequality. I focus on two different theoretical mechanisms: First, financial globalization has contributed to higher tax competition, thereby affecting the distribution of capital income. Second, the deregulation of finance may have participated to the increase in top earners' bargaining power, which has interacted with changes in top tax marginal rates (Alverado *et al.*, 2013).

Financial globalization and tax competition First, it can be claimed that financial globalization by enhancing tax competition has contributed to higher possibilities of shifting labor income into capital income. This makes more difficult in practice to distinguish between capital and labor income. As documented by Saez and Zucman (2016), the profits of assets that the hedge fund and private equity fund managers receive can be considered as labor income but are actually taxed as realized capital gains in the United States. In addition, as shown by Pirttila and Selin (2011), the introduction of the dual income tax system in Finland in 1993 also induced shifting from labor to capital income, especially among self-employed. This tax system combines a progressive tax on earned income and a proportional tax on capital income and was implemented in some Nordic countries (such as Denmark, Finland or Sweden) from 1987 to 1993. As a result, international financial integration has strongly participated to increasing shifting elasticity. As shown by Christiansen and Tuomala (2008), differential marginal tax rates for labor and capital income taxation induce an additional shifting distortion with a finite shifting elasticity. In other words, the higher the shifting elasticity, the closer the tax rates on labor and capital income should be. This issue is more particularly relevant for top incomes.

Second, financial globalization by reducing corporate tax rates has also affected differences in rates of returns across individuals. A decrease in corporate tax rates should affect corporate equities, *i.e.* the value of corporate stock. As underlined by Zodrow (2010), competition in corporate statutory tax rates may even fiercer than for effective marginal tax rates. Statutory corporate tax rates have declined significantly in the last three decades. Combined with increasing trade openness, financial openness has also contributed to triggering a tax competition process in the late 1990s and the 2000s: governments tended to cut their corporate tax rates, thereby reducing the tax gap between countries (Cassette and Patty, 2008). At the same time though, tax bases have been broadened, so that corporate tax revenues as a fraction of GDP are quite stable during the past 40 years.

To sum up, capital income inequality has increased due to higher differences in rates of returns across individuals and due to higher possibilities of shifting labor income into capital income.

Financial deregulation policies and the compensation bargaining Second, financial deregulation policies at the domestic level haves also affected the distribution of income.

Alverado *et al.* (2013) argue that the deregulation of finance may have contributed to the increase in top earners' bargaining power. Symmetrically, financial openness and more broadly financial deregulation policies have contributed to the reduction in workers' bargaining power (Darcillon, 2015). The adoption of more shareholder-oriented corporate practices by large companies has gradually led to an erosion/decentralization of collective bargaining institutions, thereby reducing unions' power. In this vein, Jaumotte and Osorio (2015) finds evidence of a positive relationship between the increase in top income shares and the erosion of unions' power measured by the decrease in the trade union density rate.

At the same, the remuneration of top executives substantially increased, particularly during the 1980s and the 1990s. At that time, new forms of incentive remuneration for executives (such as performance-related salary or stock options) were introduced with the aim of aligning the minority shareholders' interests with those of managers by proposing high rewards to top managers. In line with this compensation bargaining story, top earners may increase their pay by exerting influence on corporate boards, and particularly when top tax rates are lower (Piketty, 2014). In that sense, this political economy argument based on the hierarchical company structures provides a better explanation to the increase in the remuneration at the top which has little to do with marginal productivity. As argued by Atkinson (2015), when marginal top tax rates were particularly high, top executives had very low incentives to bargain for higher income. Instead, they were more motivated by other goals that are not directly liable to taxation (such as the growth of the activities in the firm or the firm growth). By contrast, when marginal top tax rates have begun to decrease, top executives have been more motivated by the increase in their own income. In other words, as shown by U.S. data on CEO pay, low tax rates have then induced top managers to increase the share of stock options in their income during the 1980s and the 1990s. Piketty *et al.* (2014) provide evidence of this compensation bargaining hypothesis: they find that US CEO "pay for luck" (*i.e.* pay not direcly based on the individual CEO's effort) is quantitatively more prevalent when top tax rates are low. Indeed, in that context, CEOs might hence be able to bargain in order to extract rents which take the form of being rewarded for lucky outcomes. In addition, they also find that international CEO pay levels are negatively correlated with top tax rates, even controlling for firms'

characteristics and performance.

Putting together the arguments discussed in the two previous subsections, I assume that higher financial integration should have an increasing-effect on top income shares by resulting in lower marginal top tax rates.

3 Data and trends

As the dependent variable, I use the top 1% income share index proposed by Alvaredo, Atkinson, Piketty and Saez in their World Top Incomes Database. This database provides different time series of the top income shares over the long run for more than twenty countries from 1870 to 2010. Income tax data are used to compute the top income series and national accounts are used to compute income. A major advantage with the top income share data is that they stem from very similar source, tax statistics, and have been computed using the exact same methodology, which make them highly comparable over time and also across countries. However, since the database is constructed using tax statistics, the series are concerned with gross income before tax and the definition of income can vary across countries.

I restrict my sample to 17 OECD countries from 1970 to 2010. In addition, some observations are missing for some countries in this sample. Figure 2 displays the top 1% income share in five countries from 1960 to 2010 (France, Germany, Japan, the United Kingdom and the United States). Most countries, including the European countries, have experienced an increase in top income shares. Substantial cross-country differences can be however observed: France and Germany experienced a very more modest increase in top income shares over the 1960-2010 period than for Anglo-Saxon countries, such as the United Kingdom or the United States. Data (not shown here) also indicate that Northern and Southern European countries have also experienced a substantial but smaller rise in income inequality.

[INSERT FIGURE 2 ABOUT HERE]

My main explanatory variable is marginal top tax rates. This variable is provided by Piketty *et al.* (2014). Following the methodology used by Piketty *et al.* (2014), marginal top tax rates (*MRT*), containing only local and national income taxes, is calculated as follows:

$$MTR = 1 - (\text{national income tax rate}) \times (1 - \text{local income tax rate})$$

Some countries, such as Japan, Finland, and Canada, have not deductible local taxes. In this case, $MTR = 1 - (1 - \text{national income tax rate} - \text{local income tax rate})$. For France, the CSG (*contribution*

sociale généralisée) is deductible and is added. More details are provided in the Appendix in Piketty *et al.* (2014).

Figure 3 displays the marginal top tax rates in 17 OECD countries from 1960 to 2010. As noted by the OECD (2014), marginal top tax rates have been reduced in most OECD countries. However, there are large disparities across countries. Not very surprisingly, most Anglo-Saxon countries, such as Australia, Canada, Ireland, the United Kingdom and the United States have experienced a sharp decrease in marginal top tax rates since the early-1960s. Continental and Northern European countries (such as Denmark, France, Germany or Sweden) share a more modest decrease, generally from the 1990s.

[INSERT FIGURE 3 ABOUT HERE]

I use different financial variables to examine the relationship between financial integration at the domestic and global levels and marginal top tax rates. I first use two *de jure* measures (*Financial Openness Index* and *Financial Reform Index*). Then, I use different *de facto* measures: different measures of international financial integration (*Total assets and liabilities* and *Portfolio equity and FDI assets and liabilities*) and the stock market capitalization ratio in percent of GDP.

First, I use the Chinn and Ito's (2008) *de jure* index measuring a country's degree of capital account openness: *Financial Openness Index* is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (*AREAER*). The authors assigned dummy variables for the four major categories on the restrictions on external accounts: a first variable indicating the presence of multiple exchange rates (k_{1t}), a second variable indicating restrictions on current account transactions (k_{2t}), the third variable indicating restrictions on capital account transactions (using the share of a five-year window) (*SHARE*k_{3t}) and a last variable indicating the requirement of the surrender of export proceeds (k_{4t}). These four variables are equal to one when the capital account restrictions are non-existent. The synthetic index is built on the basis on the first standardized principal component of k_{1t}, k_{2t}, *SHARE*k_{3t}, k_{4t}. The higher the index is, the more open the country is to cross-border capital transactions. Then, the *Financial Reform Index* is an overall financial reform index provided by Abiad, Detragiache and Tressel (2010) based on eight different dimensions of financial sector policy: (1) Credit controls and excessively high reserve requirements; (2) Aggregate credit ceilings; (3) Interest rate controls; (4) Entry barriers; (5) State ownership in the banking sector; (6) Capital account restrictions; (7) Prudential regulations and supervision of the banking sector and (8) Securities market policy. To construct this synthetic index

of financial liberalization, the authors assign several codes along the dimensions which have various sub-dimensions.

Second, I use different *de facto* measures of financial development at the international and at the domestic levels. To capture the international dimension of financial development, I use two different measures proposed by Cabral *et al.* (2015) based on the database on international financial integration provided by Lane and Milesi-Ferretti (2007).[1] I use a first measure of international financial integration (*Total assets and liabilities*) computed by the sum of foreign assets and liabilities as a percent of GDP. External assets and liabilities are including (i) portfolio investment (subdivided into equity securities and debt securities), (ii) foreign direct investment (FDI) that refers to equity participations above 10%, (iii) financial derivatives and (iv) reserve assets. Then, I use an alternative measure of financial globalization (*Portfolio equity and FDI assets and liabilities*) based on the sum of portfolio equity assets and liabilities as well as FDI assets and liabilities, as a percentage of GDP. Finally, to capture the domestic dimension of financial development, I use the stock market capitalization ratio to GDP (*Stock capitalization ratio*). Market capitalization is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded. The stock market capitalization ratio gives a measure of stock market activity, *i.e.* to what extent the stock market can efficiently allocate capital to investment projects. It is assumed that a more developed financial market also increases the investors' opportunities for risk diversification. Consequently, this indicator reflects the capacity of stock markets to provide external financing.

Table A1 in Appendix A shows correlation matrix. My different measures of financial integration are all positively inter-correlated.

4 Empirical strategy

4.1 OLS/PCSE regressions

The aim of this paper is to analyze empirically the impact of tax and financial deregulation policies on the evolution in top income shares on a sample of 17 OECD countries (Australia, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom and United States). My database covers the 1970-2010 period for three financial measures (*Financial Openness Index, Total assets and liabilities* and *Portfolio equity and FDI assets*

[1] Data are freely available on Philip R. Lane's website: http://www.philiplane.org/EWN.html

and liabilities) is shorter (starting from 1975) for the two last financial variables. My panel sample is strongly unbalanced because I have incomplete data for some countries.

I have argued that the top income shares can be expressed as a function of the marginal top tax rate. That is, using a linearized approximation, I can express the top income shares as:

$$\Delta Y_{it} = \alpha \cdot Y_{i,t-1} + \beta \cdot mtr_{it} + \gamma \cdot \sum_{k} X_{k,it} + \nu_t + \eta_i + \epsilon_{it} \tag{1}$$

Y_{it} denotes the dependent variable capturing the 10% top income share measuring upper-tail income inequality, mtr_{it} denotes the marginal top tax rate, $\sum_k X_{k,it}$ a set of control variables, ν_t the time specific effect, η_i is the country i fixed effect, and ϵ_{it} an error term.

I briefly report the way I deal with different methodological problems: heterogeneity of panel data; serial correlation; autocorrelation and reversed causality.

First, OLS regression assumes homoskedasticity and independence of the errors. These specific hypotheses are not verified. First, the influence of the observed independent variables on the dependent variable needs to be the same for all individuals. I test for the pooling restrictions: if parameters of Equation (1) are equal across countries (i.e., $\beta_{1i} = \beta_1$, $\beta_{2i} = \beta_2$, $\beta_{3i} = \beta_3$ and $\beta_{ki} = \beta_k$, $\forall = [1, 17]$), time-series and cross-sectional data is more appropriate in this case. I run a Fisher test for the equality of coefficients across countries: the null hypothesis is strongly rejected. I run a Breusch-Pagan test. The null hypothesis in this test is that variances across entities are zero. These tests imply that Equation (1) includes country individual effects. Then, I calculate a modified Wald test for groupwise heteroskedasticity in the residuals of a fixed effect regression model. The null hypothesis of homoskedasticity is strongly rejected. The above tests suggest that I might not use the standard fixed effect procedure without taking into account spatial correlation and panel heteroskedasticity.

Second, another problem related to the use of TSCS data concerns serial correlation. Beck and Katz (1995) recommend to examine the temporal proprieties of data. It has been suggested the inclusion of the lagged dependent variable in the regression to deal with this problem. I control for serial correlation: a Lagrange-Multiplier test for serial correlation is necessary to see whether it is adequate to add a lagged dependent variable. I implement the Wooldridge test for serial correlation in the idiosyncratic errors of a linear panel-data model. The Wooldridge test does not allow to reject serial correlation of the residuals.

Third, I perform stationarity and unit-root tests belonging to the first- (assuming cross-country independence, Im, Pesaran and Shin, 2003; Maddala and Wu, 1999 and Levin, Lin and Chu, 2002) and second-generation (Pesaran, 2007). The results, not reported in the paper, suggest that all series are sta-

tionary. I also check for autocorellation of residuals, by using the tests proposed by Nickell *et al.* (2005). To address the issue of autocorrelation of residuals, I use a AR(1) autocorrelation structure by assuming, as advocated by Beck and Katz (1995), a 'common rho' for all countries (first-order autocorrelation coefficient).

My choice of control variables is in line with the existing literature (Roine *et al.*, 2009). First, I control for redistribution. A large literature has shown that redistributive policies are central in reducing income inequality (Doerrenberg and Peichl, 2014; Ostry *et al.*, 2014). Doerrenberg and Peichl (2014) find strong evidence of a negative effect of social expenditure policies on income inequality. This effect is stronger than for progressive taxation. Very similarly, Ostry *et al.* (2014) find that more inequality tends to be associated on average with higher redistribution in OECD countries. The variable *Redistribution* provided by the Standardized World Income Inequality Database (Solt, 2009) estimates redistribution by the percentage reduction in gross income inequality, that is, the difference between the market and net income inequality, divided by market income inequality, multiplied by 100. Then, I control for trade openness as a measure of trade globalization. It has been long recognized that economic openness has strongly contributed to higher income inequality in the sense that globalization has brought higher rewards mainly for high-skilled workers. Indeed, it was proved that the removal of barriers to trade and the workers' shift from traditional low-productivity toward modern high-productivity activities caused a rise in inequality in most industrial countries. According the Stolper-Samuelson theorem, increased trade integration is associated with higher relative wages of skilled workers in richer countries. Symmetrically, low-skilled workers in those countries are directly competed with low-skilled workers from the emerging countries. Hence, trade integration is accordingly associated with a rise in income inequality in developed countries. I use the variable *Trade Openness* defined as the sum of exports and imports as a percentage of current GDP and is provided by the OECD Database. I control for unemployment rates. An increase in unemployment level is likely to exert downward pressure on incomes at the lower end of the income distribution. In other words, unemployment is more likely to affect low-paid and low-skilled workers. The variable *Unemployment* is defined as the unemployment rate as a percentage of civilian labor force and is provided by the OECD Database. Finally, I control for union density rate. It has been widely shown that labor market regulation has a strong negative impact on income inequality (e.g., Card *et al.*, 2004; Koeniger *et al.*, 2007; Jaumotte and Osorio, 2015). The variable *Trade Union Density* is the degree of trade union density, calculated by the OECD as the proportion of union members among workers.

4.2 Endogenizing marginal top tax rates

An exploratory analysis relies on a reduced form regression. Equation (1) can be rewritten as follows:

$$\Delta Y_{it} = \alpha \cdot Y_{i,t-1} + \hat{\beta}_{IV} \cdot mtr_{it} + \gamma \cdot \sum_{k} X_{k,it} + \nu_t + \eta_i + \epsilon_{it} \tag{2}$$

Where $\hat{\beta}_{IV}$ is obtained by instrumenting my main explanatory variable by the different financial indicators.[2]

As opposed to 'between estimator' focusing on cross-sectional differences that might reflect measurement errors, I use a within estimator that considers variation in top income shares in each country over time. Unobservable differences between countries constant over time (such as some labor market institutions etc that influence both upper-tail income inequality and marginal top tax rate) are controlled for.

The reduced-form regression does not, however, allow us to understand the particular mechanisms through which financial integration impacts upper-tail income inequality. By contrast, the reduced form equation quantifies the overall effect of marginal top tax rate on the dependent variable.

To overcome this situation, I will hence estimate the simultaneous equation system given by following equations (3) and (4) through three-stage least squares methods (3SLS):

$$\begin{cases} mtr_{it} = \alpha_1 \cdot mtr_{i,t-1} + \beta_1 \cdot fin_{it} + \nu_t + \eta_i + \epsilon_{1it} & (3) \\ \Delta Y_{it} = \alpha_2 \cdot Y_{i,t-1} + \beta_2 \cdot mtr_{it} + \gamma_2 \cdot \sum_{k} X_{k,it} + \nu_t + \eta_i + \epsilon_{2it} & (4) \end{cases}$$

Equation (3) investigates the specific determinants of marginal top tax rates. First, the Wooldridge test for serial correlation suggests to introduce a lagged dependent variable. Then, I include my different financial variables. In addition, according to Hungerford (2012), marginal top tax rates are directly correlated with higher labor income share, as a predictor of workers' bargaining power. He finds that

[2] STATA provides different tests: (1) Overidentifying restrictions (Sargan-Hansen-J statistic): the null hypothesis of this first test is that the instruments are valid instruments, *i.e.*, uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. If the null is not rejected, the overidentification restrictions are valid; (2) Underidentification test (Kleibergen-Paap LM statistic): the underidentification test is relevant to verify whether the equation is quite identified: in this case, instruments are relevant in the sense that they are correlated with assumed endogenous regressions. The null hypothesis cannot be rejected; (3) Endogenous regressors tests (Anderson-Rubin χ^2 test and Anderson-Rubin F-test): the Anderson-Rubin tests are tests of the significance of endogenous regressors in the structural estimated equation: the null hypothesis tested is that the coefficients of the endogenous regressors in the structural equation are jointly equal to zero; (4) Weak-identification test (Kleibergen-Paap F-statistic or Cragg-Donald): the Kleibergen-Paap (or Cragg-Donald) test of the weak-instruments problem that arises when the correlations between the endogenous regressors and the excluded instruments are nonzero but small. The null hypothesis is that the estimator is weakly identified in the sense that it is subject to bias that the investigator finds unacceptably large. To be able to reject the null that the size of the test is unacceptably large the Cragg-Donald F-statistic must exceed the tabulated critical value. See Baum *et al.* (2007) for more details on testing the relevance and validity of instruments.

labor share of income is higher with higher top marginal tax rates in the United States between 1945 and 2010. For this reason, I also control for the labor income share. Finally, I include country and year fixed effects. Equation (4) refers to my baseline Equation (1).

The 3SLS method has the main advantage of exploiting the correlation of the disturbances across different equations. In other words, I suppose that the variable mtr as endogenous and depends on the disturbances of each equation. If all equations are corrected specified, system procedures such as 3SLS are asymptotically more efficient than 2SLS. However, if one equation in a system is misspecified, the 3SLS or GMM estimates of all the parameters are generally inconsistent (Wooldridge, 2012). The identification of the parameters of interest depends on the existence of enough instruments for the endogenous variables in the equation. The necessary order condition for identification of that equation is that the number of exogenous variables excluded from the equation should be greater than, or equal to, the number of endogenous explanatory variables included in that equation. I check the identification status of simultaneous equations system with STATA command `checkreg3`. This test suggests no problem with the identification of the simultaneous equations system.

5 Estimation results

5.1 Baseline results

The aim of the paper is to investigate the complex relations between financial deregulation policies, tax policies and the evolution in income inequality. However, it is very difficult to disentangle my main explanatory variables as they seem to be themselves interrelated. For this reason, it is important to understand how the relationships hold up when both marginal top tax rates and my different measures of financial integration are included simultaneously, and with the inclusion of standard controls.

My basic specification is a simple model in which changes in upper-tail income inequality depend on marginal top tax rates and the degree of financial integration at the international and the domestic levels. The econometric results of the panel regressions of Equation (1) by the estimator of PCSE are reported in Tables 1 and 2. To address the issue of serial correlation, I introduced a lagged value of the dependent variable. For each financial measure, I test the simple relationship between marginal top tax rates and top income shares in column (1). Then, I include additional controls to test the sensibility of the results in column (2). First, one can see that the coefficient of the lagged value of the dependent variable is highly significant and negative, indicating strong inertia in the evolution of upper-tail income inequality. More importantly, I find that higher marginal top tax rates seem to lower top income shares.

Then, I introduce my different financial indicators. In Table 1, I use the Chinn and Ito's (2008) financial openness index in columns (3)-(4) and the overall financial reform index provided by Abiad *et al.* (2008) in columns (5)-(6). Then, in Table 2, I use two different measures of international financial integration in columns (1) to (4) and the stock market capitalization ratio in columns (5)-(6). All my specifications clearly indicate that higher financial integration, when the coefficients appear statistically significant, has a positive effect on the dependent variable. Very surprisingly, capital account openness has a non-significant effect on the increase in upper-tail inequality. By contrast, results clearly that higher integration financial integration (*Total assets and liabilities* and *Portfolio equity and FDI assets and liabilities*) has a strong and significant impact on the dependent variable. In addition, I also find that higher stock market capitalization ratio is positively and significantly correlated to higher increase in the top 1% income share.

[INSERT TABLES 2 and 1 ABOUT HERE]

These finding may to depict a 'lose-lose' situation, in which financial integration has an overall pro-inequality effect, counting both potential positive direct effects but also a positive effect of the resulting lower marginal top tax rates. Moreover, the inclusion of additional determinants of upper-tail income inequality does not seem to change my conclusions about the effects of financial deregulation and tax policies. Very surprisingly, I find that none of my control variables appear to be statistically significant with a small effect. More specifically, trade openness, as a measure of trade globalization, and the trade union density (Jaumotte and Osorio, 2015) are more likely to affect the dynamics of top income shares. In addition, all these results are robust even after excluding the variable *Redistribution* from my model, suggesting no multicollinearity between *Marginal top tax rates* and *Redistribution*.

This preliminary analysis suggests complex linkages between financial integration, tax policy and the evolution of the upper-tail income inequality. However, as argued in the literature review, financial deregulation policies and tax policies should interact to affect the evolution in top income shares. To analyze these interactions, I run IV-2SLS (instrumental variables) and simultaneous equations system (3SLS) regressions.

5.2 Reduced-form and simultaneous equation system regressions results

First, Table 3 shows reduced-form equation results. Part A presents the first-stage results where the dependent variable is the level of marginal top tax rates. At this stage, I have assumed that the level of marginal top tax rate simply depends on its lagged value, the different financial measures, the control

variables and the top 1% income share (due to the problem of serial correlation). First-stage results show that most of my financial measures (except *Financial Reform Index*) is negatively associated with marginal top tax rates, validating my main hypothesis. In other words, financial integration (at the global and domestic levels) by contributing to the reduction in marginal top tax rates indirectly leads to an increase in upper-tail inequality. I also find some unexpected results among controls: higher trade openess as well as higher lagged value of top 1% income shares are positively correlated to higher marginal top tax rates. In line with the literature and more specifically with the 'race-to-the-bottom' hypothesis, a negative relationship between trade openness and marginal top tax rates was expected. In addition, according to the argument of compensation bargaining, marginal top tax rates should be particularly low when top income shares are high.

Part B of Table 3 displays the second-stage results where the dependent variable is the first-difference in top 1% income share. When instrumenting the main explanatory variable, I find again that higher marginal top tax rates are strongly negatively correlated with higher top income shares. Compared to PCSE/OLS regressions shown in Table 1, I find slightly lower coefficients associated with the variable *Marginal top tax rates*. Among controls, I find standard results: higher redistribution and higher trade density union rates are both negatively correlated with higher top income shares. However, the size of these coefficients is very small. This finding may thus suggest that top incomes are less likely to be affected by redistribution policies which imply higher taxation. Trade openness, as a measure of trade globalization, has a positive effect on the dependent variable.[3]

[INSERT ABOUT HERE TABLE 3]

Then, Table 4 presents the simultaneous equations system regression results. I find very similar results as in 2SLS-IV regressions. I find that all measures of financial integration are negatively correlated with the first dependent variable. This result suggests that increasing financial integration has gradually contributed in weakening governments' capacity to raising additional revenues, and especially taxes from capital incomes. Second, results clearly indicate that marginal top tax rates are strongly negatively and significantly correlated with higher top income shares. Moreover, the coefficient of the lagged value of the second dependent variable is highly significant and negative, indicating strong inertia in the evolution of upper-tail income inequality. Then, I find very surprisingly that neither trade openness nor

[3]However, the test of overidentifying restrictions (Sargan-Hansen-J) is only validated for *de jure* financial indicators in columns (1) and (2). By contrast, tests for the validity of instruments are not validated for *de facto* financial measures, suggesting that these measures are weak instruments as predictors of the level of marginal top income rate. It can be argued that changes in marginal top tax rates are more closely related to legal changes.

redistribution is significantly correlated with higher upper-tail inequality. Finally, higher unemployment rates are positively correlated with my second dependent variable.

[INSERT ABOUT HERE TABLE 4]

5.3 Robustness checks

Previous results suggest a negative relationship between higher financial integration and marginal top tax, thereby impacting the evolution in top income shares. Does this relationship hold even when restricting my sample of countries or time span? I replicate my 3SLS-specification on specific countries (*e.g.* Anglo-Saxon countries) and on specific periods of time (*e.g.* in the 1980s/1990s).

For all financial variables, I find a higher impact of higher financial integration on marginal top tax rates in the Anglo-Saxon countries than in other countries (mostly Northern and Continental European countries).[4] As reported in a large literature in comparative political economy, financial development has been more important in the Anglo-Saxon countries. In addition, changes in tax policy has been more profound in those countries compared to other European countries. As the result, the interactions between financial deregulation and tax policies can explain why the increase in top income shares has been larger in the Anglo-Saxon countries. By constrat, the estimated effects (on first-stage and on second-stage) on the non-Anglo-Saxon countries are slightly lower compared to the general model presented in the previous section.

I find more contrasted results when testing my model on different periods of time. First, I find that tax policy and then changes in the top income shares was largely affected by capital account openess during the 1970s. The size of the effect then decreased in the 1980s/1990s but remains statistically significantly. This effect is no longer significant during the 2000s. I find different results when using the index of overall financial liberalisation. Results indicate that tax policy and changes in the top income shares were affected by financial deregulation policy during all decades, even if the size of the coefficients is particularly large during the 2000s. When focusing on *de facto* measures of financial integration at the global level, I find a significant effect on the level of marginal top tax rates and on changes in top income shares only during the 1970s/1980s. When looking at the stock market capitalisation ratio, the negative coefficients associated with the financial variable and the marginal top tax rate variable are statistically significant only from the 1960s to the 1990s, but not during the 2000s.

[4] Anglo-Saxon countries are composed of Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States.

6 Conclusion and policy implications

The aim of this paper was to assess how financial deregulation policies and changes in top tax marginal rates interact to explain the evolution in top income shares since the 1970s in most OECD countries. This originality of this contribution is to argue that these two factors are not disconnected: financial deregulation policies by affecting tax policy have strongly contributed to the increase in top income shares.

First, my analysis suggests that financial deregulation policies - both at the global and national levels - are strongly correlated to reduced marginal top tax rates. This finding provide some evidence that international financial integration has gradually contributed to increased to competition by raising capital mobility. In accordance with the 'compensation bargaining' thesis (Piketty *et al.* 2014, Atkinson, 2015), this new context (the development of financial markets with the emergence of new actors and instruments) has then participated in increased bargaining power for top earners, pushing for further reduction in marginal top tax rates. Then, by significantly affecting tax policy, financial deregulation policies are also associated with higher upper-tail income inequality. After controlling the effect of different measures of financial integration on the level of marginal top tax rates by using different econometric techniques in panel data (2SLS-IV and 3SLS regression models), I find that changes in marginal top tax rates are in most specifications associated with increased income inequality at the top of the income distribution. I also find that these estimated effects are more pronounced in the Anglo-Saxon countries where financial integration is deeper.

Financial development - and associated financial regulation - plays a central role in tax policy. As it has been shown in a large literature, tax policy is a powerful driver to the evolution in income inequality. As a result, due to strong side effects between financial deregulation and tax policies, these two policies cannot be considered as disconnected each other. In addition, it can also be argued that financial deregulation policies have also additional side effects that can affect the dynamics of the income inequality. For instance, these policies have also contributed to the weakening in labor market regulation (such as unionization and government redistribution) which plays a central role in mitigating the increase in income inequality (Darcillon, 2015; 2016).

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Table 1: Impact of the tax and financial deregulation policies on top income shares (PCSE/OLS estimations)

	Dependent variable: Changes in Top 1% Income Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged dependent variable	-0.2209***	-0.2726***	-0.3236***	-0.3681***	-0.1401***	-0.1506***
	(0.0383)	(0.0521)	(0.0570)	(0.0711)	(0.0417)	(0.0496)
Marginal top tax rate	-0.0352***	-0.0308***	-0.0335***	-0.0248***	-0.0323***	-0.0324***
	(0.0067)	(0.0073)	(0.0086)	(0.0090)	(0.0074)	(0.0076)
Financial Openness Index			0.0019	0.0020		
			(0.0023)	(0.0024)		
Financial Reform Index					0.0035*	0.0023
					(0.0021)	(0.0029)
Redistribution		-0.0000		-0.0000		0.0001
		(0.0001)		(0.0001)		(0.0001)
Trade openness		0.0000		0.0000		0.0000
		(0.0000)		(0.0000)		(0.0000)
Unemployment rate		-0.0001		0.0001		-0.0001
		(0.0002)		(0.0002)		(0.0002)
Union density		-0.0000		-0.0001		-0.0000
		(0.0001)		(0.0001)		(0.0001)
Constant	0.0404***	0.0354***	0.0468***	0.0398***	0.0258***	0.0245***
	(0.0071)	(0.0080)	(0.0087)	(0.0096)	(0.0064)	(0.0081)
Observations	650	551	467	441	518	503
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.2382	0.2467	0.2578	0.2683	0.1447	0.1361
Number of countries	17	17	14	14	17	17

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

Table 2: Impact of the tax and financial deregulation policies on top income shares (PCSE/OLS estimations)

	Dependent variable: Changes in Top 1% Income Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged dependent variable	-0.2722***	-0.3314***	-0.2721***	-0.3482***	-0.2807***	-0.3077***
	(0.0432)	(0.0549)	(0.0417)	(0.0544)	(0.0564)	(0.0633)
Marginal top tax rate	-0.0360***	-0.0384***	-0.0363***	-0.0362***	-0.0449***	-0.0441***
	(0.0075)	(0.0089)	(0.0073)	(0.0090)	(0.0096)	(0.0096)
Total assets and liabilities (log)	0.0028***	0.0033***				
	(0.0008)	(0.0013)				
Portfolio equity and FDI assets and liabilities (log)			0.0020***	0.0030***		
			(0.0005)	(0.0007)		
Stock capitalization (log)					0.0024***	0.0022***
					(0.0006)	(0.0007)
Redistribution		0.0000		-0.0000		-0.0000
		(0.0001)		(0.0001)		(0.0001)
Trade openness		0.0000		-0.0000		0.0000
		(0.0000)		(0.0000)		(0.0001)
Unemployment rate		-0.0002		-0.0003*		-0.0001
		(0.0002)		(0.0002)		(0.0002)
Union density		-0.0001		-0.0001		-0.0001*
		(0.0001)		(0.0001)		(0.0001)
Constant	0.0393***	0.0490***	0.0407***	0.0535***	0.0359***	0.0428***
	(0.0059)	(0.0087)	(0.0059)	(0.0090)	(0.0085)	(0.0085)
Observations	587	551	587	551	436	436
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.1809	0.2045	0.1845	0.2160	0.1865	0.1953
Number of countries	17	17	17	17	17	17

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

Table 3: IV-2SLS estimations

A. First-stage result - Dependent variable: Marginal top tax rate

	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable	0.8861***	0.7650***	0.8765***	0.8752***	0.8883***
	(0.0291)	(0.7650)	(0.0386)	(0.0296)	(0.0348)
Financial Openness Index	-0.0153**				
	(0.0072)				
Financial Reform Index		0.0055			
		(0.0073)			
Total assets and liabilities (log)			-0.0206***		
			(0.0040)		
Portfolio equity and FDI assets and liabilities (log)				-0.0114***	
				(0.0024)	
Stock capitalization (log)					-0.0036
					(0.0047)
Labor income share	0.1322***	0.1998***	0.0650	0.0890**	0.1124
	(0.0482)	(0.0683)	(0.0447)	(0.0436)	(0.0892)
Lagged Top 1% Income share	0.1823*	-0.1237	0.3763***	0.3462***	0.1890*
	(0.0970)	(0.1321)	(0.1077)	(0.1102)	(0.0997)
Redistribution	-0.0002	-0.0004	-0.0000	-0.0006	-0.0003
	(0.0002)	(0.0004)	(0.0002)	(0.0002)	(0.0003)
Trade openness	0.0003**	0.0003**	0.0007***	0.0006***	0.0002
	-0.0001	-0.0002	(0.0002)	(0.0001)	(0.0002)
Unemployment rate	0.0006	-0.0008	0.0008	0.0011**	0.0012*
	-0.0005	-0.001	(0.0005)	(0.0005)	(0.0007)
Union density	0.0003	0.0007***	0.0001	0.0003*	0.0001
	-0.0002	-0.0002	(0.0002)	(0.0001)	(0.0003)

B. Second-stage result - Dependent variable: Changes in Top 1% Income Share

	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable	-0.0289***	-0.0607***	-0.0302***	-0.0308***	-0.0271***
	(0.0074)	(0.0196)	(0.0083)	(0.0081)	(0.0095)
Marginal top tax rate	-0.2427*	-0.3350**	-0.1902**	-0.1912**	-0.1777*
	(0.1270)	(0.1324)	(0.0887)	(0.0885)	(0.0999)
Redistribution	0.0001*	-0.0003	0.0001	0.0001	0.0001
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
Trade openness	0.0001	0.0001*	0.0001*	0.0001*	0.0001
	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0001)
Unemployment rate	0.0001	-0.0006	-0.0000	-0.0000	-0.0000
	(0.0001)	(0.0004)	(0.0001)	(0.0001)	(0.0001)
Union density	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Observations	436	225	542	542	430
R-squared	0.1614	0.3400	0.1445	0.1447	0.1269
Number of countries	14	17	17	17	17
Hansen J-statistic (P-value)	0.6512	0.6577	0.0498	0.0181	0.0050
Kleibergen Paap LM χ^2 test (P-value)	0.0000	0.0000	0.0000	0.0000	0.0000
Anderson-Rubin χ^2 test (P-value)	0.0000	0.0030	0.0000	0.0004	0.0000
Anderson-Rubin F-test (P-value)	0.0000	0.0046	0.0000	0.0003	0.0000
Kleibergen Paap LM F-statistic	162.29	49.757	162.033	166.682	108.880

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

Table 4: 3SLS estimations

A. First equation result - Dependent variable: Marginal top tax rate

	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable	0.8528***	0.8393***	0.8640***	0.8669***	0.8692***
	(0.0255)	(0.0196)	(0.0181)	(0.0182)	(0.0197)
Financial Openness Index	-0.0201**				
	(0.0092)				
Financial Reform Index		-0.0430***			
		(0.0089)			
Total assets and liabilities (log)			-0.0078***		
			(0.0029)		
Portfolio equity and FDI assets and liabilities (log)				-0.0044**	
				(0.0020)	
Stock capitalization (log)					-0.0022
					(0.0025)
Labor income share	0.1208**	0.0062	0.0568	0.0735*	0.0951*
	(0.0570)	(0.0428)	(0.0432)	(0.0423)	(0.0553)
Observations	316	497	542	542	430
Number of countries	13	17	17	17	17
R-squared	0.9414	0.9506	0.9528	0.9526	0.9443
RSME	0.0272	0.0254	0.0249	0.025	0.0261

B. Second equation result - Dependent variable: Changes in Top 1% Income Shares

	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable	-0.1295***	-0.1045***	-0.2044***	-0.2052***	-0.1810***
	(0.0327)	(0.0266)	(0.0263)	(0.0263)	(0.0291)
Marginal top tax rate	-0.0187***	-0.0185***	-0.0212***	-0.0217***	-0.0212**
	(0.0065)	(0.0064)	(0.0071)	(0.0071)	(0.0083)
Redistribution	-0.0000	0.0001	-0.0000	-0.0000	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Trade openness	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Unemployment rate	0.0003**	-0.0000	-0.0001	-0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Union density	-0.0001**	0.0000	-0.0000	-0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Observations	316	497	542	542	430
R-squared	0.2941	0.2111	0.2329	0.2332	0.2355
RSME	0.0039	0.0056	0.0064	0.0064	0.0067

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

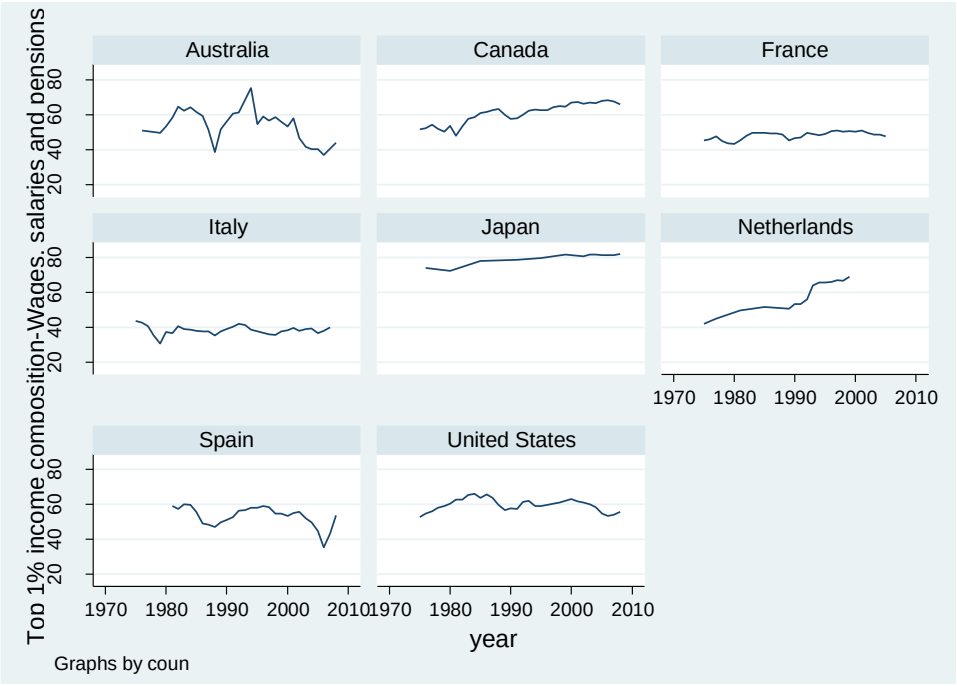

Figure 1: Top 1% income composition-Wages, salaries and pensions

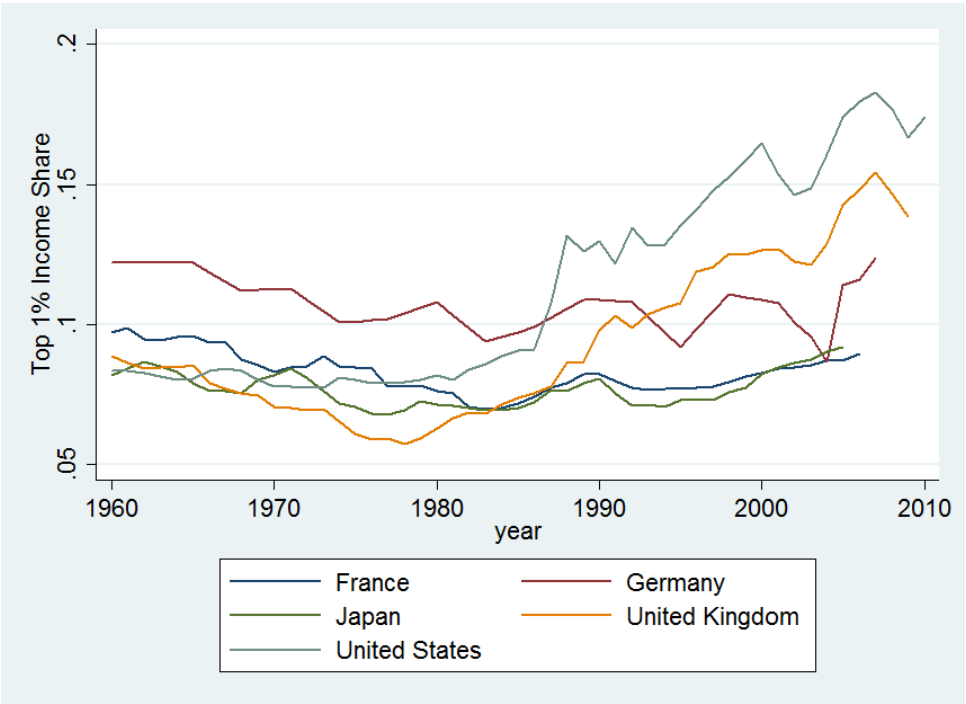

Figure 2: Top 1% Income Shares

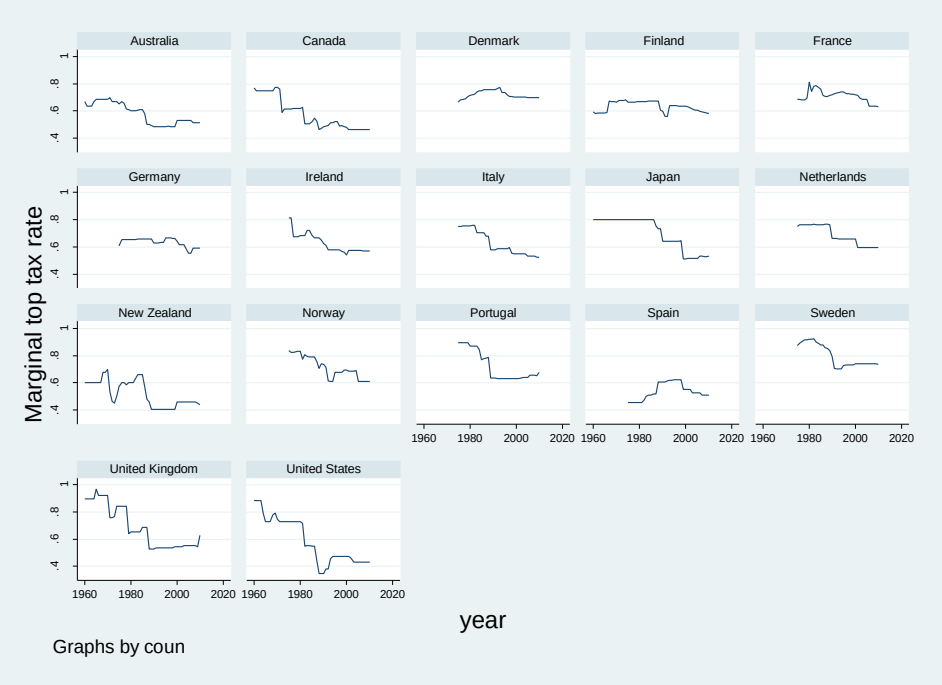

Figure 3: Marginal top tax rates

Table A1. Correlation matrix: financial indicators

	Financial Openness	Financial Reform	Total assets and liabilities	Portfolio equity and FDI	Stock capitalization ratio
Financial Openness	1.00				
Financial Reform	0.7816***	1.00			
Total assets and liabilities	0.3166***	0.4728***	1.00		
Portfolio equity and FDI	0.3487***	0.5038***	0.9578***	1.00	
Stock capitalization ratio	0.4295***	0.5587***	0.2095***	0.2917***	1.00

Note: *** p<0.01, ** p<0.05, * p<0.1

Table A2. Variables description

Variables	**Description**	**Time**	***N***
Top 1% Income Share	Top 1 percent's share of pretax, pretransfer income (Source: World Top Income Database)	1970-2010	618
Marginal Top Tax Rates	Marginal tax rates on 1% top incomes (Source: Piketty *et al.*, 2014)	1970-2010	647
Financial Openness Index	Degree of capital account openess (Source: Chinn and Ito, 2008)	1970-2010	679
Financial Reform Index	Overall financial reform index (credit controls, credit ceilings ...) (Source: Abiad, Detragiache and Tressel, 2010)	1973-2005	561
Total assets and liabilities/GDP	Stock of external assets and external liabilities / GDP (Source: Lane and Milesi-Ferretti, 2007)	1970-2010	696
Portfolio equity and FDI assets and liabilities/GDP	Stock of portfolio equity assets and liabilities + stock of their direct investment assets and liabilities / GDP (Source: Lane and Milesi-Ferretti, 2007)	1970-2010	695
Stock market development	Stock market capitalization to GDP (source: Financial Structure Database)	1989-2010	476
Redistribution	Difference between the pre-tax and post-tax income inequality, divided by pre-tax income inequality, multiplied by 100) as an estimate of redistribution (source: Solt, 2009)	1975-2009	606
Trade Openness	Share of exports and imports in GPD (Source: OECD Database	1970-2010	685
Unemployment rate	Standardized unemployment rates (source: OECD Main Economic Indicators Database)	1970-2010	685
Trade union density	Proportion of union members among workers (source: OECD Database)	1970-2010	681