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# The Knowledge Economy and Taxes on the Rich

David Hope<sup>1</sup> and Julian Limberg<sup>2</sup>

## ABSTRACT

What drives taxes on the rich? In this article, we claim that the existing empirical literature on taxing the rich suffers from two key shortcomings: 1) It pays too little attention to the major structural and technological changes that have taken place in advanced capitalist economies since the 1970s; and 2) it lacks consensus on how to measure taxes on the rich. In this paper, we seek to address these shortcomings by exploring the implications of the rise of the knowledge economy for taxing the rich, as well as constructing a new, comprehensive measure of taxes on the rich. We then carry out a panel data analysis estimating the effect of the employment share in knowledge-intensive services on taxes on the rich in 13 OECD countries from 1970-2015. Our results show that the expansion of the knowledge economy is strongly and robustly associated with lower taxes on the rich.

**KEYWORDS** Taxes on the rich; knowledge economy; Bayesian latent variable analysis

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## 1. Introduction

Inequality is one of the central problems of the 21<sup>st</sup> century (Atkinson, 2015). Progressive taxation is a promising policy tool to reduce soaring levels of inequality. However, whilst top income and wealth shares have increased worldwide (Piketty, 2014), taxes on the rich have declined substantially in recent decades (Ganghof, 2006; Kiser & Karceski, 2017). What explains this puzzling phenomenon? The current literature has emphasised a range of domestic factors that drive taxes on the rich, such as partisan politics (Osterloh & Debus, 2012), veto players (Hallerberg & Basinger, 1998; Swank, 2016), electoral systems (Hays, 2003), and financial crises (Limberg, 2019, 2020), as well as several international ones, including tax competition (Genschel & Schwarz, 2011), capital mobility and trade (Swank & Steinmo, 2002), and the diffusion of neoliberal ideas from the United States (Swank, 2016).

We see two key shortcomings of the existing empirical literature. The first is the lack of attention paid to the transformative structural and technological changes that have taken place across the advanced capitalist economies since the 1970s. An emerging literature in comparative political economy (CPE) has shown that the transition to the knowledge economy has had substantial effects on general government redistribution (Iversen & Soskice, 2015), but we currently know very little about its effects on taxing the rich. The second is the absence of agreement around how to measure taxes on the rich. There is currently neither consensus on which taxes to look at, nor which indicators to use, which contributes to the previous inconsistent empirical findings (Adam et al., 2013).

We seek to address these shortcomings in this article. First, we explore the existing literature linking structural and technological change to tax policies and redistributive preferences, and show it suggests the expansion of the knowledge economy exerts downward pressure on taxes on the rich. This effect operates through both mass politics, with the rise of the knowledge economy dampening voters support for redistribution, and interest group politics, with increasingly powerful actors in knowledge-intensive industries pushing for lower taxes on the rich. Second, to test our argument empirically, we utilise an innovative statistical approach—Bayesian latent variable analysis—to construct a new, comprehensive measure of taxes on the rich. We then estimate the effect of the rise of the knowledge economy on taxes on the rich by carrying out a panel data analysis covering 13 OECD countries from 1970 to 2015. We find that the expansion of the knowledge economy is strongly and

robustly associated with lower taxes on the rich. Our analysis therefore provides a powerful, yet often overlooked, explanation for the remarkable reduction in tax progressivity that has taken place across the advanced democracies in the past 50 years (Kiser & Karceski, 2017). It also provides a new, comprehensive indicator of taxes on the rich that will be a valuable tool for future empirical research in this field.

The rest of the article proceeds as follows. The next section sets out the literature on taxing the rich and what we see as the two most important missing pieces. Section 3 explains the construction of our indicator of taxes on the rich and presents some descriptive evidence on how taxes on the rich have evolved over the past five decades. The fourth section presents our empirical analysis on the determinants of taxes on the rich. Lastly, Section 5 provides some concluding remarks.

## **2. Taxing the rich**

There is substantial agreement in the literature that mass warfare plays a major role in the development of progressive taxation. Scheve and Stasavage's (2010, 2012) extensive work on this topic persuasively argues that citizens higher up the income and wealth distribution (i.e. the rich) are less likely to participate in fighting wars and stand to gain greater economic benefits from war efforts, which signifies preferential treatment from the state. This culminates in compensatory demands to restore fiscal fairness in the post-war period. The authors find evidence that mass mobilisation for war is associated with higher top rates of income taxation (Scheve & Stasavage, 2010) and inheritance taxation (Scheve & Stasavage, 2012), and argue that this channel explains the highly-progressive tax systems that emerged in the OECD countries following the two World Wars.

In recent decades, mass warfare has been largely absent from the advanced democracies, in part due to advances in transport and communications technologies that have led to modern wars being fought at greater distance and with significantly smaller armies (Onorato et al., 2014). As mass warfare has receded from view, it remains an open question what determines taxation on the rich, which varies substantially across countries and over time (Kiser & Karceski, 2017; Limberg, 2019). The existing empirical literature does not provide a clear picture of the determinants (Adam et al., 2013), with a wide range of domestic and external factors found to influence taxes on the rich in recent decades.

On the domestic side, institutional, political and economic variables have all been shown to affect taxes on the rich. Hallerberg and Basinger (1998) find that top marginal income and corporate tax rates see more sweeping (downward) reforms in countries with only one veto player. With a similar focus on political institutions, Hays (2003) finds that countries with majoritarian electoral systems experience greater downward pressure on capital taxes from economic integration. Other work exploring the role of partisanship shows that left-wing leaders are associated with higher rates of corporate taxation, but that this effect has become weaker over time (Osterloh & Debus, 2012). A final strand of the literature emphasising domestic factors argues that compensatory arguments for more progressive taxation are also made in the wake of financial crises. Limberg (2019, 2020) finds financial crises are associated with greater demand for redistribution and higher top rates of personal income taxation.

On the external side, there is a substantial literature on the role of international tax competition, where governments compete for mobile economic assets by competitively lowering tax rates (as summarised in Genschel & Schwarz, 2011). Relatedly, increases in trade and capital mobility have been shown to put downward pressure on corporate tax rates (Swank & Steinmo, 2002). Finally, Swank (2016) emphasises the importance of highly visible neoliberal tax reforms in the United States in pushing down capital tax rates in other OECD countries.

While there is a wide body of empirical work on the determinants of taxing the rich in the last 50 years, it is clear that there is still little agreement on the most salient drivers and on the choice of dependent variable. We see there being two important missing pieces in the existing literature, which if addressed, would help greatly improve our understanding of taxing the rich in the OECD countries.

### ***2.1. Missing piece 1: The rise of the knowledge economy***

First, the current literature on taxing the rich has largely overlooked the fact that the advanced capitalist economies have been through a period of immense structural and technological change since the collapse of the Fordist system of production in the 1970s. The transition to the knowledge economy has been characterised by the shift of economic activity out of manufacturing and into services (i.e. deindustrialisation), the rise of mass systems of higher education, greater female labour force participation, and the weakening of labour

market institutions (Durazzi, 2019; Iversen & Soskice, 2015; O'Donovan, 2020; Wren, 2013). In particular, several authors have argued that the rise of the knowledge economy has had a crucial impact on patterns of redistribution and inequality in OECD countries (Hope & Martelli, 2019; Iversen & Soskice, 2015, 2019). Thus, it is a key weakness of the existing empirical literature on taxing the rich that the expansion of the knowledge economy has received so little attention.

How does the rise of the knowledge economy affect taxes on the rich? A lot of literature in CPE tries to explain policy-making by focusing on *either* the mass politics of preference formation *or* the quiet politics of business power and interest groups (Canes-Wrone, 2015; Schlozman, 2010). Typically, the two views are studied as competing explanations (Culpepper, 2010; Gilens & Page, 2014). In the remainder of this section, however, we show that the existing literature on tax policy and redistribution from *both* the mass politics *and* the interest group perspectives suggest that the rise of the knowledge economy is associated with lower taxes on the rich.

Let us start with the mass politics perspective. The transition to the knowledge economy has fundamentally altered the characteristics of labour forces in advanced capitalist economies. As the knowledge economy has expanded, more workers typically possess tertiary education and high-level general (i.e. transferable) skills and are employed in white-collar occupations in internationally-exposed service sectors such as finance, business services, and technology (Hope & Martelli, 2019; Iversen & Soskice, 2015; Wren, 2013). All these factors have been shown to reduce support for redistribution.

Iversen and Soskice (2001) find strong evidence from public opinion data for 11 advanced democracies supporting their theoretical argument that workers with general skills have lower demand for social protection because the transferability of their skills reduces their costs of job loss. More recent research has argued that the acquisition of higher education also affects redistributive preferences through channels beyond economic self-interest. Gelepithis & Giani (2020) find that European universities foster norms of cultural inclusion but erode norms of economic solidarity, while Mendelberg et al. (2017) trace conservative economic views in the United States to socialization that takes place on affluent college campuses.

A related strand of the literature explores how individuals' perceptions of upward and downward mobility affect their preferences for redistribution. The "prospect of upward

mobility” (POUM) hypothesis (Piketty, 1995) predicts that individuals who anticipate they will climb the income ladder will be more averse to redistribution. There is strong empirical support for the POUM hypothesis (Agranov & Palfrey, 2020; Rainer & Siedler, 2008), as well as evidence that subjective upward mobility is substantially higher among the college-educated (Berger & Engzell, 2020).

Turning to changing employment structures in the knowledge economy, Wren and Rehm (2014) find evidence that working in knowledge-intensive and internationally exposed sectors, such as finance and business services, reduces support for social protection, as exposed, high-skilled workers worry about international competitiveness. Likewise, Guillaud (2013) finds that individuals in occupations that are typically associated with the knowledge economy, such as managers, professionals and associate professionals, are significantly more opposed to redistribution. Lastly, Thewissen and Rueda (2019) find a lower appetite for redistribution among those working in jobs that focus on the type of abstract and analytical tasks that are complementary to new information and communications technologies (Thewissen & Rueda, 2019).

The literature that looks at how tax policymaking is affected by business power and interest groups in the knowledge economy reinforces the findings from the mass politics literature. Hacker and Pierson (2010) argue that organised business interests and the wealthy in the US have increasingly utilised their power and resources to shape public policy, including tax policy, in their favour. Rothstein (2020) shows how tech companies successfully lobbied for lower taxes on capital in the US since the late 1970s. A similar argument has been made to explain the Swiss voters’ rejection of a tax on the super-rich in a popular vote in 2015 (Emmenegger & Marx, 2019) and the marked shift towards a less redistributive tax and spending system in Sweden (Svallfors, 2016). Interest groups from knowledge-intensive services, most notably financial institutions and technology companies, have been particularly aggressive in lobbying for their interests on tax issues since the financial crisis (Dellinger, 2019; Kalaitzake, 2017; Kastner, 2018).

To summarise, given the existing empirical literatures from the mass politics and interest group perspectives point in the same direction, we hypothesise that the rise of the knowledge economy will be associated with reduced taxes on the rich. The importance of this often overlooked factor in putting downward pressure on taxes on the rich in the advanced capitalist economies since the 1970s will be assessed empirically in Section 4.

## **2.2. Missing piece 2: Measuring taxes on the rich**

The second major obstacle to identifying the drivers of taxing the rich in the last 50 years is the lack of a clear and comprehensive operationalisation of taxes on the rich. In fact, many of the incoherent findings can be traced back to indicator choice (Adam et al., 2013). We can differentiate between two aspects of this ‘dependent variable problem’: disagreement about which taxes to look at and disagreement about which indicators to use. We will discuss each aspect in turn.

First, the literature disagrees on which taxes to consider when analysing the determinants of taxing the rich. Most studies focus on one of three broad types of taxes: taxes on top personal income, taxes on capital income, and taxes on assets. Taxes on top personal income cover many types of individual income. In particular, scholars have focused on top incomes from either wages or capital gains such as dividends (Ahrens et al., 2020; Egger et al., 2019). As income inequality has increased sharply in the last decades due to rising top incomes (Atkinson et al., 2011), looking at taxes on top personal incomes is seen as a valid indicator for taxing the rich (Piketty, 2014; Scheve & Stasavage, 2010). In contrast, taxes on capital do not fall on any form of income other than capital income. This can cover corporate income taxes as well as capital gains taxes. Hence, personal and capital income taxation are not mutually exclusive. In fact, both can overlap as they share a common tax base, namely income (Ganghof, 2006). Since richer people tend to hold much more capital, these taxes are generally seen as highly progressive (Saez & Zucman, 2019). Finally, a growing body of literature looks at the drivers of taxes on assets (Emmenegger & Marx, 2019; Glennerster, 2012). In contrast to income taxes which target economic flows, taxes on assets fall on economic stocks. Most importantly, this covers taxes on net wealth, inheritance/estate taxes, and taxes on net property. As assets are highly concentrated amongst the richest members of society, such taxes are considered to be very progressive (Messere et al., 2003).

Second, studies which look at the exact same taxes can still use completely different indicators. Many analyses investigate statutory or marginal tax rates (Lierse & Seelkopf, 2016). For instance, several scholars have looked at top marginal income tax rates as a proxy for the tax burden on high incomes (Ganghof, 2006; Limberg, 2019; Scheve & Stasavage, 2010). The strength of such approaches is that they analyse actual tax policy change; a change



in top personal income tax rates is a direct and highly visible tax policy reform. However, critics argue that tax rates do not capture changes in the underlying tax base (Genschel, 2002). In particular, tax rates do not measure differences in tax exemptions and thresholds. Therefore, several studies have used average effective tax rates or tax revenues instead (Egger et al., 2019; Swank & Steinmo, 2002). Both approaches have the advantage that they cover the definition of the tax base. However, they are also vulnerable to macroeconomic developments, as both can change automatically without reforms of the tax code. Simply put, average effective tax rates are calculated by dividing a tax's total revenue by its tax base (Mendoza et al., 1994). Another approach is to look at the amount of revenues that a specific tax generates (as a percentage of GDP). For instance, Profeta et al. (2014) look at the development of inheritance tax revenues to analyse the drivers of taxing the rich.

In sum, there is no consensus on how to measure taxes on the rich. Studies have used different taxes and indicators to investigate the drivers of taxing the rich. Since different progressive taxes can be seen as substitutes to one another, a comprehensive approach is needed to overcome this persistent 'dependent variable problem' in empirical studies on taxing on the rich. A look at tax policy developments in advanced capitalist economies in recent decades powerfully emphasises the need for such an approach. In many cases, governments have legislated packages of tax reforms on the rich, altering multiple taxes at the same time. For instance, the 1986 tax reform under the Reagan administration in the US cut both top personal income tax rates and corporate income tax rates, and the Swedish tax reform at the beginning of the 1990s cut taxes on top incomes, corporate income, dividend income, and inheritances altogether.<sup>1</sup> However, it is not always the case that taxes on the rich are altered at the same time. For example, Sweden repealed its inheritance tax in 2005 without cutting other taxes, Ireland cut its corporate tax rate in 2001 from 20% to 12% in 2003 without implementing any major reductions in income taxes, and Finland cut corporate tax rates from 26% in 2011 to 20% in 2014, while slightly increasing taxes on top personal incomes and inheritances. If we only study taxes on the rich individually and don't take account of their substitutability, we may therefore miss important changes in the tax burden on the rich. For this reason, we believe a more encompassing and comprehensive measure is

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<sup>1</sup> All data points in this paragraph are taken from the sources listed in Table 1.

required if we hope to draw generalisable findings on the determinants (and consequences) of the overall tax burden on the rich from empirical analysis.

### **3. Constructing a comprehensive measure of taxes on the rich**

In order to overcome the ‘dependent variable problem’ of the literature on taxing the rich, we construct a new, comprehensive measure of taxes on the rich using Bayesian latent variable analysis for a wide range of taxes and indicators. Treating taxes on the rich as a latent concept has several advantages. First, in contrast to studies modelling the overall tax burden on the rich based on microdata, it does not require fine-grained data on household income and wealth as well as individual tax payments. This allows creating a measure which is comparable across countries and over time. Usually, studies using micro data only cover single countries (Saez & Zucman, 2019) or specific points in time (Prasad & Deng, 2009). Second, using a Bayesian latent variable approach makes the results less sensitive to aggregation rules. Studies using microdata have to make several contentious choices, such as the assignment of tax incidence (Saez & Zucman, 2019). Our approach of treating taxing the rich as a latent variable avoids these aggregation problems by solely relying on the shared variance of commonly used indicators. Finally, Bayesian latent variable analyses are particularly robust to the existence of missing values (Lee, 2007). Thus, it allows us to cover longer time series even if data for some indicators is missing for specific time periods. For instance, Hanson & Sigman (2019) have made use of this advantage of Bayesian latent variable analysis when creating a worldwide measurement of state capacity. This is an important advantage of Bayesian latent variable analysis compared to classic factor analysis that is based on frequentist models.

**Table 1.** Indicators and data sources

Tax Type	Indicator	Time Span	Source
Income	Top Personal Income Tax Rate	1965-2015	Scheve & Stasavage (2016), expanded by the authors for the years 2011-2015.
Income	Effective Tax Rate on Top 1% Wage Earners	1980-2007	Egger et al. (2019)
Income/ Capital	Top Tax Rate Dividend Income <sup>2</sup>	1981-1999; 2000-2015	OECD (2020b)
Capital	Corporate Income Tax Rate	1965-2015	Lierse & Seelkopf (2016), expanded by the authors for the years 1965-1980 and 2011-2015.
Capital	Effective Tax Rate on Capital	1965-2015	McDaniel (2007)
Assets	Top Inheritance Tax Rate	1965-2015	Scheve & Stasavage (2016), expanded by the authors for the years 2011-2015.
Assets	Revenue from Taxes on Assets (Inheritance, Net Wealth, and Property Taxes, % of GDP)	1965-2015	OECD (2020b)

The choice of indicators is crucial for the creation of our new measure on taxing the rich. In line with the previous discussion about measuring taxes on the rich (Section 2.1.), we cover three types of taxes that predominantly fall on the rich: taxes on top incomes, taxes on capital, and taxes on assets. For each tax type, we take both a measure on statutory tax rates as well as a measure on effective tax rates or tax revenues (% of GDP). In total, we employ 7 indicators. Table 1 provides an overview of the indicators used and the respective data sources. The coverage of data on top income tax rates, corporate income tax rates, and inheritance tax rates has been expanded by us.

To generate our indicator for taxes on the rich, we estimate our latent variable using a Bayesian Markov-Chain Monte Carlo (MCMC) approach (Hanson & Sigman, 2019; Lee, 2007). We calculated the models using a single dimension as we expect taxes on the rich to be a one-

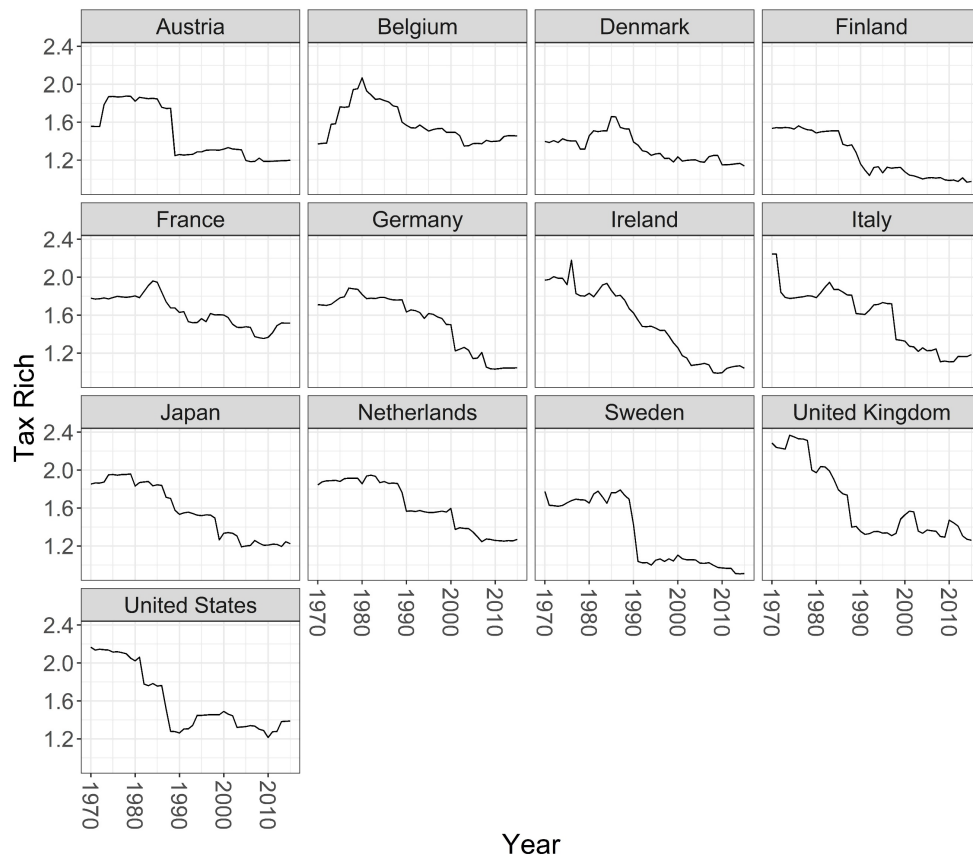
<sup>2</sup> Tax rates on dividends are provided in two different time series by the OECD: a ‘historical’ time series (1981-1999) and a recent time series (2000-2015). Although both align rather smoothly (Hakelberg & Rixen, 2020), the OECD cautions against merging them. Therefore, we include the two time series as individual indicators.

dimensional variable. Models with more than one dimension failed to converge, in line with our assumption that taxing the rich consists of one major theoretical and empirical dimension. Models were run with diffuse normal priors, three MCMC chains and 1000 burnin iterations. For all estimations of the MCMC, we used the blavaan package in R (Merkle & Rosseel, 2018).<sup>3</sup> Figure A1 in the Online Appendix shows the correlation of the new measure on taxing the rich with the seven indicators used in its construction. Six out of seven indicators are positively and statistically significantly correlated with the new index. The top personal income tax rate shows the highest rate of correlation ( $R=0.93$ ). This shows support for previous studies that have looked at top personal income tax rates as a proxy for taxing the rich (Lierse & Seelkopf, 2016; Limberg, 2019; Scheve & Stasavage, 2010). The only indicator that is not positively correlated with the new measure on taxing the rich is the effective tax rate on capital.  $R$  is close to zero ( $-0.054$ ) and fails to reach conventional levels of statistical significance. Since the effective tax rate on capital is a very broad indicator and its exact calculation is disputed (Devereux et al., 2002; Mendoza et al., 1994), the lack of correlation does not come as a surprise. However, since it is a widely used measurement (Genschel, 2002; Osterloh & Debus, 2012), we keep it in our models.<sup>4</sup>

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<sup>3</sup> In total, our new indicator for taxing the rich covers 19 OECD countries over half a century (1965-2015). The measure ranges from 0.3 to 2.7 with a mean of 1.4.

<sup>4</sup> In addition, we have calculated our measure for taxing the rich without the effective average tax rate on capital. The resulting indicator is almost identical ( $R=0.99$ , see Figure A2 in the Online Appendix).



**Figure 1.** Comprehensive indicator of taxes on the rich, 1970-2015

Figure 1 shows the development of the indicator for the individual OECD countries over time. Three things stand out. First, taxes on the rich have declined substantially in most countries since the 1970s. This observation is in line with previous analyses (Kiser & Karceski, 2017). Second, liberal market economies like the US and the UK taxed the rich heavily up to the beginning of the 1980s. This might appear counterintuitive at first since these countries are generally seen as much less redistributive than continental European and Scandinavian countries (Iversen & Soskice, 2019). However, it shows support for previous research that has identified an inverse relation between tax progressivity and redistributive welfare programmes (Prasad & Deng, 2009). Third, important tax policy reforms that reduced the tax burden on the richest members of society can be seen very clearly in the data. For instance, in the US, the indicator for taxing the rich drops starkly with two Reagan tax cuts in 1981 and 1986.

## 4. What determines taxes on the rich?

So far, we have argued that the literature on taxing the rich misses two crucial pieces. First, it has paid little attention to the transformative structural and technological changes in advanced capitalist production systems since the 1970s. More specifically, we have argued that the rise of the knowledge economy exerts downward pressure on taxes on the rich. Second, the literature lacks consensus on how to measure the central dependent variable. In particular, we have put forward a new, comprehensive approach to measure taxes on the rich. In this section, we will use this new measure of taxing the rich to test our central hypothesis that the expansion of the knowledge economy is associated with reduced taxes on the rich.

### 4.1. Data and method

Our main dependent variable is the new indicator on taxing the rich. To operationalise the rise of the knowledge economy, we calculate the share of knowledge-intensive employment as a percentage of total employment. More specifically, we follow the approach utilised by Wren (2013) and Hope & Martelli (2019) by summing the employment shares of the three sectors with the highest levels of ICT intensity<sup>5</sup>: finance and insurance activities, information and communication, and professional, scientific, technical, administrative and support services. Data come from the EU KLEMS database (O'Mahony & Timmer, 2009; Stehrer et al., 2019). To obtain longer time series, we combine and smooth the 2009 and the 2019 EU KLEMS releases (see Figure A3 in the Online Appendix).

This indicator is preferred to other approaches to measuring knowledge employment because 1) the selection of sectors is transparent and data driven; 2) employment has expanded dramatically in these sectors across the advanced democracies since the collapse of the Fordist system in the 1970s (see Figure A3); and 3) it is based on ICT, which the theoretical literature puts at the centre of changing production processes during the transition to the knowledge economy (Hope & Martelli, 2019). This high-level measure also

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<sup>5</sup> As measured by the average contribution of ICT capital services to value-added growth across 12 advanced democracies between 1983 and 2006. See Hope & Martelli (2019) for a more detailed explanation of the construction of the measure.

aims to capture both the interest group and mass politics channels through which the knowledge economy is expected to influence taxes on the rich (see Section 2.1), as greater knowledge employment is likely to increase the structural power of interest groups from knowledge-intensive services, as well as altering the characteristics of labour forces in ways that affect mass preferences for redistribution (e.g. higher share of tertiary-educated workers, more workers in knowledge-intensive occupations, more workers in international-exposed service sectors, etc.).

In total, our sample covers 13 OECD countries from 1970-2015. The countries are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Sweden, the UK, and the US. The sample is restricted to these 13 countries, as these are the only countries with data availability for both the tax data used to construct our comprehensive indicator of taxes on the rich (see Table 1) and the 2009 and 2019 EU KLEMS data used to construct the knowledge employment measure. The EU KLEMS data in particular restricts the size of the sample, as it only covers a very limited number of countries outside of the European Union.

We control for both domestic and international factors that might affect taxes on the rich. To account for the impact of domestic socio-economic problem pressure, we control for GDP growth, public deficits, inflation, and the unemployment rate. Data come from the OECD (2020a). The literature has also argued that domestic politics and political institutions matter for tax policy-making (Ganghof, 2006; Swank & Steinmo, 2002). To control for political partisanship, we include a variable that measures the cabinet seat share of leftist parties (Armingeon et al., 2020).<sup>6</sup> Furthermore, we include an index of institutional constraints on central governments based on Schmidt (1996) to account for the effect of veto points. In addition, tax policy-making might vary substantially between consensus and majoritarian democracies (Hays, 2003). We control for this by including an index that proxies the first dimension of consensus democracies as conceptualised by Lijphart (1999). Data come from Armingeon et al. (2020). As the financial crisis of 2008 might have affected taxes on the rich as well (Limberg, 2019), we add a dummy variable that turns one for the time period from

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<sup>6</sup> Several authors have argued for using a cabinet-based periodisation when analysing the effect of partisanship on policy-making (Ahrens et al., 2020). However, partisan effects are not the main focus of our study. Therefore, we opt for a country-year periodisation.

2008 onwards in countries that experienced a systemic banking crisis (Laeven & Valencia, 2013). In addition to these domestic variables, we also control for international factors by including the widely used KOF index of globalisation into our models (Dreher et al., 2008). Since globalisation is a multifaceted phenomenon, we take three main dimensions of the KOF index which are measuring economic, social, and political globalisation.

We use a country fixed effects approach to account for unobserved unit heterogeneity. Importantly, this means we are primarily analysing within-variance. Such an approach is in line with our theoretical focus since we are mainly interested in how structural and technological economic changes (i.e. the rise of the knowledge economy) lead to changing taxes on the rich. Temporal dynamics are another crucial factor that needs to be controlled for. A standard approach in TSCS analysis is to use year fixed effects. However, recent work has argued that such two-way fixed effects models can produce un-identifiable and un-interpretable results (Kropko & Kubinec, 2020). Therefore, we opt for a more parsimonious approach by including time trends in our main models. All independent variables are lagged by one year to avoid simultaneity bias. Furthermore, we use panel-corrected standard errors (PCSEs) to account for heteroscedasticity (Beck & Katz, 1995). To ensure that our results are not driven by our choice of covariates, we use a stepwise approach. First, we only look at the effect of knowledge employment on taxing the rich whilst controlling for country fixed effects. Then, we subsequently add time trends, the domestic variables, and the international variables. The final estimation uses the full model.

## **4.2. Results**

Table 2 displays the results. Let us start by looking at the effect of the rise of the knowledge economy. The share of knowledge-intensive employment has a negative effect on our new measure of taxing the rich. This finding holds when adding time trends as well as our set of covariates. In the full model (Table 2, Model 5), an increase in knowledge-intensive employment by 2 standard deviations (9 percentage points) leads to a decrease in the indicator on taxing the rich by almost 1.5 standard deviations (0.4 points). As a comparison, this reflects a drop in the taxing the rich measure that is similar to the decrease in the US due to the second Reagan tax cut (i.e. the Tax Reform Act of 1986). Apart from the substantial magnitude of the effect, the coefficient is also highly statistically significant across all the



models. These findings show strong support for our hypothesis that the rise of the knowledge economy is associated with lower taxes on the rich.

**Table 2.** TSCS analyses for 13 Countries, 1970-2015

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0668*** (0.0025)	-0.0424*** (0.0070)	-0.0356*** (0.0065)	-0.0502*** (0.0077)	-0.0441*** (0.0078)
GDP Growth			-0.0015 (0.0033)		-0.0027 (0.0036)
Public Deficit			0.0024 (0.0023)		0.0019 (0.0023)
Inflation			0.0116*** (0.0023)		0.0122*** (0.0025)
Unemployment			0.0125*** (0.0028)		0.0124*** (0.0029)
Leftist Cabinet			0.0005** (0.0002)		0.0005*** (0.0002)
Institutional Constraints			-0.0112 (0.0176)		0.0007 (0.0184)
Consensus Democracy			0.0292** (0.0139)		0.0287** (0.0138)
Financial Crisis			0.0570** (0.0260)		0.0329 (0.0301)
Economic Globalisation				-0.0030 (0.0022)	-0.0014 (0.0023)
Social Globalisation				-0.0039 (0.0034)	-0.0028 (0.0030)
Political Globalisation				-0.0046* (0.0025)	-0.0066*** (0.0024)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.783	0.787	0.808	0.792	0.813
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

Several authors have criticised TSCS models for being very sensitive to modelling choices (Wilson & Butler, 2007). To address these issues, we run several robustness checks. In particular, we calculate models that include an equally weighted spatial lag, Prais-Winsten regressions that correct for first-order autocorrelation, a lagged dependent variable, normal standard errors instead of PCSEs, a jackknife approach to account for influential cases, year

fixed effects, and cubic time trends (Tables A1-A7 in the Online Appendix). Throughout all models, knowledge employment has a negative and statistically significant effect on our measure of taxing the rich.

We also address potential concerns of endogeneity by running two-stage least squares regressions. We utilise knowledge-intensive employment in the previous year (t-2) as an instrument for the share knowledge employment in the subsequent year (t-1). Results hold across all models (Table A8 in the Online Appendix). Furthermore, we include an additional control variable that measures stock market capitalisation (as a percentage of GDP) to ensure that our results are not driven by financialisation dynamics (Table A9). Again, across all models, the effect of knowledge employment is negative and statistically highly significant. Finally, we use an alternative measure for knowledge employment developed by Kwon and Roberts (2015) to check our results are not dependent on our choice of knowledge economy measure. The alternative measure looks at occupations rather than sectors. It constructs the employment share for managers, professionals, technicians, and associate professionals—all occupations that require the type of high-level, general skills that are complementary to ICT (Hope & Martelli, 2019).<sup>7</sup> Results hold when using this alternative measurement (Table A10).

## 5. Conclusion

Our article makes two main contributions to the literature on taxing the rich in the last 50 years. First, the article addresses a major gap in the literature by exploring the role of recent transformative changes in capitalist production systems. Second, the article provides a new, comprehensive measurement for taxes on the rich. Using panel data analysis, we then find strong and robust evidence supporting that the rise of the knowledge economy is associated with lower taxes on the rich.

Bringing changes of domestic production regimes into the picture also nicely mirrors important work taking place on the role of industrialisation in the establishment of progressive systems of taxation in the 19<sup>th</sup> century (Beramendi et al., 2019; Emmenegger et al., 2020). In both cases, economically progressive forces have been the driving factors for taxing the rich. However, whilst the emergence of new economic elites has historically led to

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<sup>7</sup> The alternative measurement of knowledge employment is only available from 1980 onwards. Furthermore, it entails several missing values, which have been interpolated using exponentially weighted moving averages.

higher taxes on the rich, this relation has been turned on its head. In the twentieth century, the rise of the knowledge economy has exerted downward pressure on progressive taxation. One reason might be fundamentally different scope conditions. For instance, states' general fiscal capacity in the aftermath of the two world wars has been much higher than at the end of the 19<sup>th</sup> century. Whilst economic elites supported higher taxes on the rich in the 19<sup>th</sup> century to fund investment in public infrastructure and education which were crucial for their businesses, modern states are capable of financing these tasks without higher taxes on the rich. Hence, progressive taxation has become little more than a costly burden for new economic elites.

Our analysis opens up many potentially fruitful avenues for future research. It paves the way for a more thorough exploration of the mechanisms linking the knowledge economy to reductions in taxation on the rich. In particular, disentangling the interest group and mass politics channels will require a more zoomed in approach. Possible methodologies include using individual-level survey data to investigate the effects of knowledge employment on preferences for tax progressivity and using qualitative case studies to look at the effects of lobbying by big tech companies on tax policy. The new measurement of taxes on the rich could also be used as an independent variable in future empirical analyses to assess the effects of changes in taxes on the rich on pertinent economic and political outcomes such as inequality, GDP growth, and electoral results.

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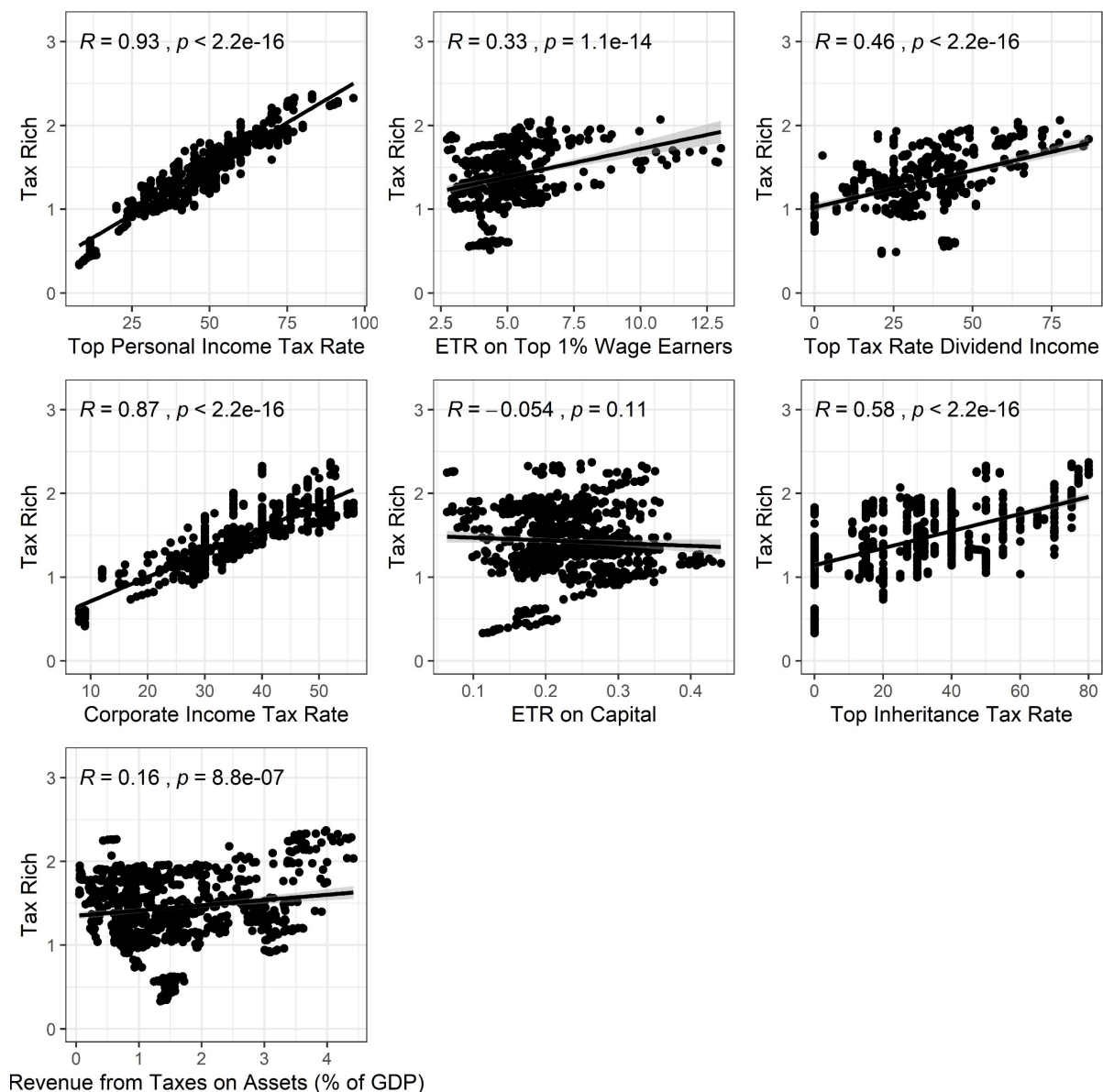
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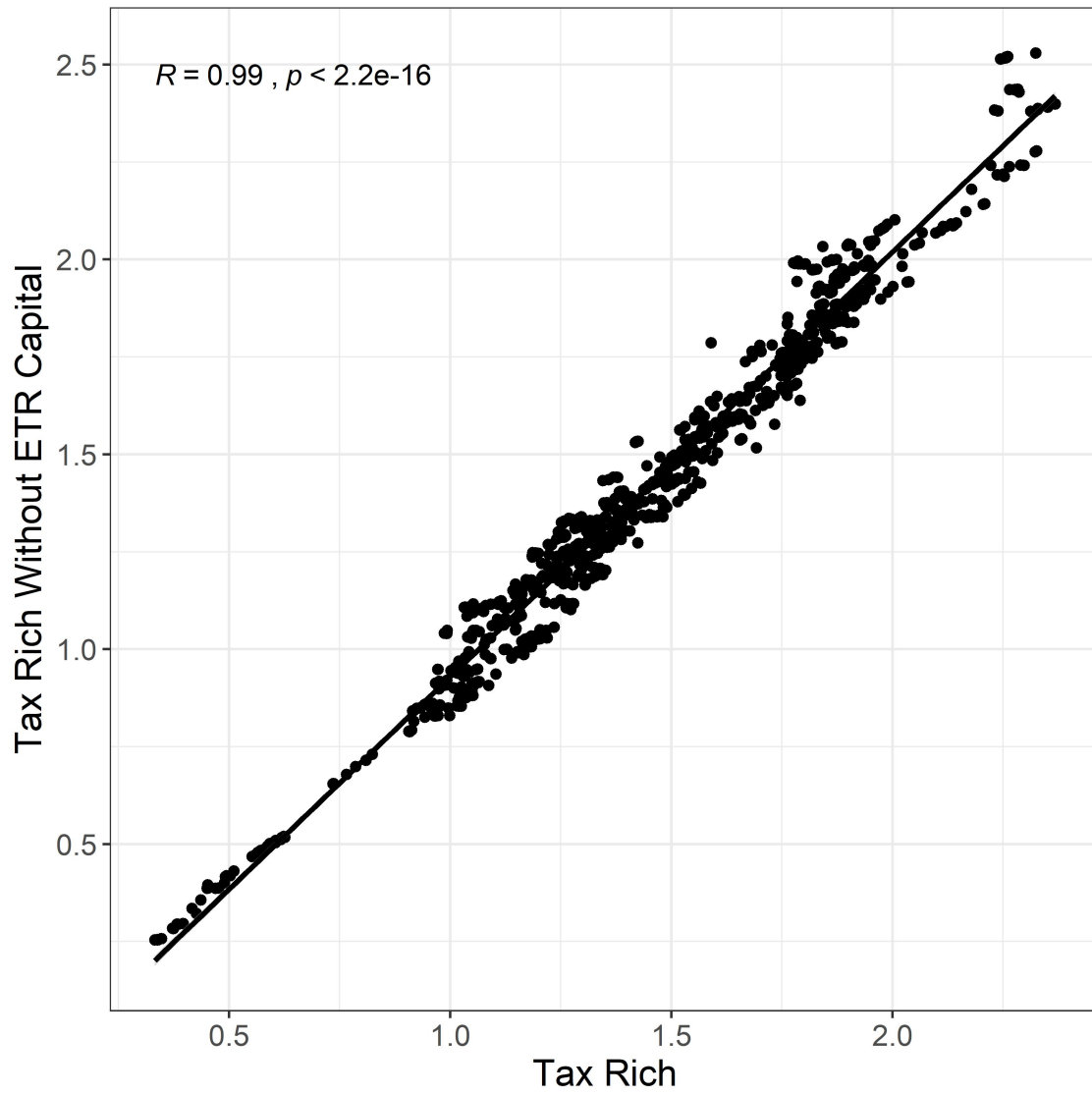
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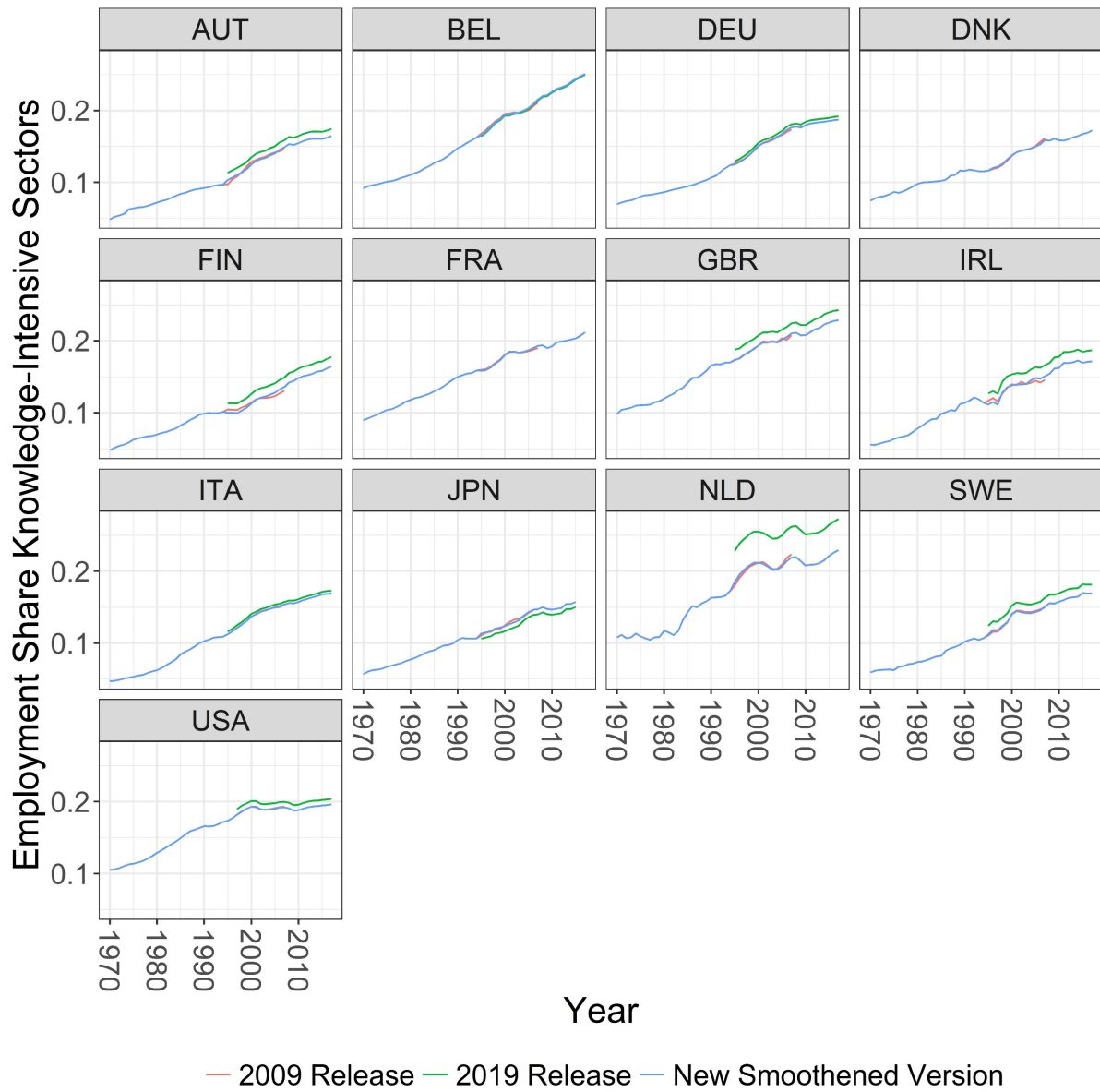
## Online Appendix



**Figure A1.** Scatterplots of comprehensive indicator of taxes on the rich vs. individual tax indicators



**Figure A2.** Scatterplot of comprehensive indicator of taxes on the rich with and without ETR capital.



**Figure A3.** Smoothened Indicator for knowledge-Intensive employment, 1970-2017

**Table A1.** TSCS analyses for 13 countries, 1970-2015, equally weighted spatial lag

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0272*** (0.0042)	-0.0304*** (0.0063)	-0.0298*** (0.0065)	-0.0378*** (0.0068)	-0.0378*** (0.0075)
Spatial Lag	0.6040*** (0.0603)	0.6241*** (0.0629)	0.5021*** (0.0696)	0.6328*** (0.0732)	0.5233*** (0.0788)
GDP Growth			-0.0029 (0.0026)		-0.0044 (0.0028)
Public Deficit			0.0030 (0.0022)		0.0023 (0.0021)
Inflation			0.0085*** (0.0019)		0.0091*** (0.0020)
Unemployment			0.0083*** (0.0029)		0.0077*** (0.0029)
Leftist Cabinet			0.0004** (0.0002)		0.0004** (0.0002)
Institutional Constraints			-0.0106 (0.0148)		0.0004 (0.0164)
Consensus Democracy			0.0282** (0.0141)		0.0284** (0.0141)
Financial Crisis			0.0341** (0.0162)		0.0116 (0.0208)
Economic Globalisation				-0.0011 (0.0015)	-0.0004 (0.0019)
Social Globalisation				-0.0037 (0.0024)	-0.0028 (0.0027)
Political Globalisation				-0.0059*** (0.0019)	-0.0076*** (0.0019)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R-squared	0.809	0.809	0.820	0.814	0.826
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A2.** TSCS analyses for 13 countries, 1970-2015, Prais-Winsten regressions (AR(1))

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0573*** (0.0049)	-0.0270** (0.0111)	-0.0216** (0.0105)	-0.0236** (0.0110)	-0.0206** (0.0105)
GDP Growth			0.0008 (0.0014)		0.0010 (0.0014)
Public Deficit			-0.0016 (0.0016)		-0.0013 (0.0016)
Inflation			0.0045** (0.0018)		0.0048*** (0.0018)
Unemployment			0.0063* (0.0035)		0.0057* (0.0034)
Leftist Cabinet			0.0001 (0.0002)		0.0002 (0.0002)
Institutional Constraints			0.0186 (0.0183)		0.0237 (0.0187)
Consensus Democracy			0.0223 (0.0183)		0.0202 (0.0181)
Financial Crisis			-0.0021 (0.0266)		0.0097 (0.0265)
Economic Globalisation				-0.0009 (0.0024)	-0.0027 (0.0024)
Social Globalisation				-0.0089** (0.0040)	-0.0083** (0.0038)
Political Globalisation				0.0035 (0.0022)	0.0029 (0.0021)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.743	0.749	0.764	0.763	0.777
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes
AR(1)	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A3.** TSCS analyses for 13 countries, 1970-2015, lagged dependent variable

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
LDV	0.8647*** (0.0219)	0.8641*** (0.0226)	0.8571*** (0.0221)	0.8688*** (0.0225)	0.8609*** (0.0224)
Knowledge Employment	-0.0093*** (0.0017)	-0.0087*** (0.0033)	-0.0061* (0.0032)	-0.0086** (0.0036)	-0.0075** (0.0037)
GDP Growth			0.0008 (0.0014)		0.0011 (0.0014)
Public Deficit			-0.0025** (0.0011)		-0.0021* (0.0011)
Inflation			0.0036*** (0.0011)		0.0034*** (0.0011)
Unemployment			-0.0004 (0.0015)		0.0000 (0.0015)
Leftist Cabinet			0.0001 (0.0001)		0.0001 (0.0001)
Institutional Constraints			0.0106 (0.0073)		0.0142* (0.0076)
Consensus Democracy			-0.0085 (0.0060)		-0.0106* (0.0063)
Financial Crisis			0.0173 (0.0111)		0.0107 (0.0123)
Economic Globalisation				-0.0024** (0.0010)	-0.0020* (0.0011)
Social Globalisation				0.0012 (0.0014)	-0.0007 (0.0014)
Political Globalisation				0.0016 (0.0011)	0.0013 (0.0010)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R-squared	0.956	0.956	0.959	0.957	0.959
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.



**Table A4.** TSCS analyses for 13 countries, 1970-2015, normal standard errors

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0668*** (0.0017)	-0.0424*** (0.0076)	-0.0356*** (0.0080)	-0.0502*** (0.0079)	-0.0441*** (0.0085)
GDP Growth			-0.0015 (0.0029)		-0.0027 (0.0029)
Public Deficit			0.0024 (0.0022)		0.0019 (0.0022)
Inflation			0.0116*** (0.0021)		0.0122*** (0.0021)
Unemployment			0.0125*** (0.0030)		0.0124*** (0.0032)
Leftist Cabinet			0.0005** (0.0002)		0.0005** (0.0002)
Institutional Constraints			-0.0112 (0.0143)		0.0007 (0.0153)
Consensus Democracy			0.0292** (0.0144)		0.0287* (0.0148)
Financial Crisis			0.0570*** (0.0219)		0.0329 (0.0262)
Economic Globalisation				-0.0030 (0.0019)	-0.0014 (0.0023)
Social Globalisation				-0.0039 (0.0030)	-0.0028 (0.0032)
Political Globalisation				-0.0046** (0.0021)	-0.0066*** (0.0021)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.783	0.787	0.808	0.792	0.813
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	No	No	No	No	No

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A5.** TSCS analyses for 13 countries, 1970-2015, jackknife procedure

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0668*** (0.0019)	-0.0424*** (0.0080)	-0.0356*** (0.0088)	-0.0502*** (0.0076)	-0.0441*** (0.0088)
GDP Growth			-0.0015 (0.0029)		-0.0027 (0.0030)
Public Deficit			0.0024 (0.0021)		0.0019 (0.0022)
Inflation			0.0116*** (0.0025)		0.0122*** (0.0026)
Unemployment			0.0125*** (0.0033)		0.0124*** (0.0036)
Leftist Cabinet			0.0005** (0.0002)		0.0005** (0.0002)
Institutional Constraints			-0.0112 (0.0159)		0.0007 (0.0167)
Consensus Democracy			0.0292 (0.0189)		0.0287 (0.0191)
Financial Crisis			0.0570*** (0.0199)		0.0329 (0.0244)
Economic Globalisation				-0.0030 (0.0019)	-0.0014 (0.0023)
Social Globalisation				-0.0039 (0.0025)	-0.0028 (0.0025)
Political Globalisation				-0.0046** (0.0021)	-0.0066*** (0.0023)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.783	0.787	0.808	0.792	0.813
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes
Jackknife	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A6.** TSCS analyses for 13 countries, 1970-2015, cubic time trends

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0668*** (0.0025)	-0.0236*** (0.0064)	-0.0259*** (0.0064)	-0.0226*** (0.0076)	-0.0279*** (0.0080)
GDP Growth			-0.0019 (0.0029)		-0.0037 (0.0032)
Public Deficit			0.0038* (0.0022)		0.0026 (0.0022)
Inflation			0.0070*** (0.0022)		0.0072*** (0.0024)
Unemployment			0.0092*** (0.0032)		0.0081** (0.0032)
Leftist Cabinet			0.0004** (0.0002)		0.0005** (0.0002)
Institutional Constraints			0.0013 (0.0162)		-0.0008 (0.0166)
Consensus Democracy			0.0269* (0.0139)		0.0263* (0.0140)
Financial Crisis			-0.0204 (0.0265)		-0.0295 (0.0297)
Economic Globalisation				0.0048** (0.0020)	0.0032 (0.0022)
Social Globalisation				-0.0062* (0.0032)	-0.0056 (0.0034)
Political Globalisation				-0.0028 (0.0020)	-0.0049** (0.0022)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.783	0.813	0.821	0.816	0.825
Country FE	Yes	Yes	Yes	Yes	Yes
Cubic Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A7.** TSCS analyses for 13 countries, 1970-2015, year fixed effects

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0668*** (0.0025)	-0.0217*** (0.0063)	-0.0237*** (0.0064)	-0.0330*** (0.0073)	-0.0351*** (0.0077)
GDP Growth			-0.0046 (0.0036)		-0.0075** (0.0037)
Public Deficit			0.0042* (0.0024)		0.0029 (0.0023)
Inflation			0.0070** (0.0028)		0.0078*** (0.0028)
Unemployment			0.0081** (0.0032)		0.0079** (0.0033)
Leftist Cabinet			0.0003* (0.0002)		0.0004* (0.0002)
Institutional Constraints			-0.0261 (0.0166)		-0.0256 (0.0167)
Consensus Democracy			0.0297** (0.0139)		0.0307** (0.0134)
Financial Crisis			-0.0201 (0.0172)		-0.0905*** (0.0226)
Economic Globalisation				0.0005 (0.0019)	0.0005 (0.0022)
Social Globalisation				-0.0056 (0.0035)	-0.0066 (0.0040)
Political Globalisation				-0.0105*** (0.0020)	-0.0126*** (0.0021)
Observations	585	585	585	585	585
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.783	0.835	0.843	0.845	0.853
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A8.** TSCS analyses for 13 countries, 1970-2015, 2SLS with instrument lagged knowledge employment

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0679*** (0.0017)	-0.0449*** (0.0078)	-0.0413*** (0.0082)	-0.0535*** (0.0080)	-0.0502*** (0.0088)
GDP Growth			-0.0004 (0.0028)		-0.0014 (0.0028)
Public Deficit			0.0023 (0.0021)		0.0019 (0.0022)
Inflation			0.0111*** (0.0021)		0.0118*** (0.0021)
Unemployment			0.0114*** (0.0030)		0.0117*** (0.0031)
Leftist Cabinet			0.0005** (0.0002)		0.0005*** (0.0002)
Institutional Constraints			-0.0092 (0.0140)		0.0033 (0.0148)
Consensus Democracy			0.0163 (0.0142)		0.0165 (0.0145)
Financial Crisis			0.0575*** (0.0214)		0.0305 (0.0255)
Economic Globalisation				-0.0032* (0.0019)	-0.0018 (0.0022)
Social Globalisation				-0.0022 (0.0029)	-0.0025 (0.0031)
Political Globalisation				-0.0053** (0.0021)	-0.0068*** (0.0021)
Observations	573	573	573	573	573
Number of Countries	13	13	13	13	13
R <sup>2</sup>	0.791	0.795	0.813	0.800	0.817
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes
Instrument Lagged Knowledge Employment	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A9.** TSCS analyses for 13 countries, 1970-2015, additional control for stock market capitalisation

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0634*** (0.0016)	-0.0477*** (0.0055)	-0.0447*** (0.0068)	-0.0505*** (0.0055)	-0.0512*** (0.0080)
Stock Market Capitalisation	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0002 (0.0002)	-0.0002 (0.0002)
GDP Growth			0.0014 (0.0021)		-0.0001 (0.0020)
Public Deficit			0.0037** (0.0017)		0.0029 (0.0018)
Inflation			0.0102*** (0.0015)		0.0100*** (0.0016)
Unemployment			0.0081*** (0.0023)		0.0047* (0.0025)
Leftist Cabinet			0.0001 (0.0001)		0.0002 (0.0002)
Institutional Constraints			0.0107 (0.0127)		0.0245* (0.0128)
Consensus Democracy			0.0354** (0.0142)		0.0309** (0.0143)
Financial Crisis			0.0403** (0.0173)		0.0545*** (0.0180)
Economic Globalisation				-0.0002 (0.0016)	-0.0001 (0.0017)
Social Globalisation				-0.0096*** (0.0018)	-0.0112*** (0.0021)
Political Globalisation				-0.0025 (0.0015)	-0.0033** (0.0015)
Observations	489	489	489	489	489
Number of Countries	13	13	13	13	13
R-squared	0.797	0.799	0.820	0.804	0.824
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.

**Table A10.** TSCS analyses for 13 countries, 1980-2015, alternative measure for knowledge employment

	DV: Tax Rich				
	(1)	(2)	(3)	(4)	(5)
Knowledge Employment	-0.0017** (0.0008)	-0.0050*** (0.0015)	-0.0057*** (0.0015)	-0.0035* (0.0020)	-0.0068*** (0.0020)
GDP Growth			0.0027 (0.0039)		0.0032 (0.0039)
Public Deficit			0.0001 (0.0021)		0.0013 (0.0021)
Inflation			0.0118*** (0.0032)		0.0113*** (0.0033)
Unemployment			0.0047* (0.0027)		0.0055** (0.0028)
Leftist Cabinet			0.0003** (0.0002)		0.0004** (0.0002)
Institutional Constraints			0.0156 (0.0194)		0.0251 (0.0191)
Consensus Democracy			-0.0253* (0.0148)		-0.0294* (0.0154)
Financial Crisis			0.0815*** (0.0293)		0.0703** (0.0319)
Economic Globalisation				-0.0080*** (0.0025)	-0.0048* (0.0025)
Social Globalisation				0.0047 (0.0048)	-0.0029 (0.0044)
Political Globalisation				0.0031 (0.0027)	0.0037 (0.0027)
Observations	468	468	468	468	468
Number of Countries	13	13	13	13	13
R-squared	0.581	0.791	0.814	0.800	0.816
Country FE	Yes	Yes	Yes	Yes	Yes
Time Trends	No	Yes	Yes	Yes	Yes
PCSE	Yes	Yes	Yes	Yes	Yes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10.