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# What's Fair? Preferences for Tax Progressivity in the Wake of the Financial Crisis\*

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## Abstract

Progressive taxation is an effective redistributive tool in times of growing inequality. However, like all public policies, an increase in tax progressivity is unlikely if it lacks popular demand. Has the financial crisis affected the demand for progressive taxation? Building on research that has identified fairness beliefs as the main factor pushing for taxes on the rich, I argue that the Great Recession and states' reactions to it have caused a general shift in tax policy preferences. As a consequence, demand for tax progressivity is higher in crisis countries. Multilevel analyses using survey data for 32 countries show support for my argument. These findings have important implications for our understanding of the politics of redistribution in the 21<sup>st</sup> century.

Keywords: taxation, inequality, redistribution, preferences, fairness

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# 1 Introduction

In recent decades, inequality has increased massively in most countries around the world (Atkinson & Piketty 2010). Some authors even consider growing inequality as a fundamental threat to democracy (Piketty 2014). Progressive taxation is a highly effective tool to reduce inequality. Yet, popular demand is an essential prerequisite for an increase in tax progressivity. But when do people demand tax progressivity? Several scholars have argued that fairness arguments have a strong impact on people’s political appetite for progressive taxation (Alesina & Angeletos 2005; Ballard-Rosa, Martin, & Scheve 2017; Durante, Putterman, & van der Weele 2014; Tyran & Sausgruber 2006). If the economic success of rich people is perceived as ‘undeserved’, demand for tax progressivity increases. Mass mobilization for war has historically been the main cause of fairness-based preference shifts in favour of progressive taxation (Scheve & Stasavage 2016). However, after an initial period of very high tax rates on the rich in the post-war era, tax progressivity has decreased remarkably in the last forty years (Kiser & Karceski 2017). There are multiple explanations for this, covering tax competition (Ganghof 2006; Genschel, Kemmerling, & Seils 2011; Genschel & Schwarz 2011; Swank 2006) and the disappearance of mass warfare (Obinger 2012; Scheve & Stasavage 2012). So, can fairness arguments still play a role for taxing the rich in the 21<sup>st</sup> century?

This article looks at tax policy preferences in the wake of the financial crisis of 2008 in order to answer this question. I argue that fairness arguments have increased demand for progressive taxation in countries that faced a deep recession. Two factors account for this. First, the crisis has put a spotlight on risky investment behaviour on financial markets. Thus, perceptions of rich people’s wealth as individually deserved – hence, as based on their hard work and merit – have suffered. Second, the role of the state before and during the crisis has raised concerns about institutional deservingness. Crucially, the crisis has increased the salience of regulatory failure and led to discussions about large scale bailout packages. As a consequence, the perception of rich people’s economic success as institutionally deserved has suffered as well. Multilevel models combining micro data from the 2009 round of the International Social Survey Programme (ISSP) with

several macro indicators support these claims. The analysis shows that demand for tax progressivity is higher in countries that have experienced a more severe asymmetric shock. Importantly, this effect stems from a strengthened impact of fairness considerations on tax policy preferences. Moreover, I use data from the 1999 ISSP round to check my model's exogeneity assumptions. Additional robustness checks as well as placebo tests and an analysis of over time variation in tax policy preferences provide further support for my argument.

The contribution of this article to the literature is threefold. First, the article shows that fairness arguments are still important for progressive taxation. Due to the crisis, perceptions of economic success as 'deserved' have suffered and the impact of fairness beliefs on tax policy preferences has intensified. As a consequence, demand for tax progressivity is higher in crisis countries. Although mass warfare has – fortunately – disappeared in the last decades (Onorato, Scheve, & Stasavage 2014), fairness-induced appetite for progressive taxation is not dead. Other macro level shocks can strengthen demand for tax progressivity as well. Second, the article systematically differentiates between distinct fairness dimensions and their impact on tax policy preferences. It demonstrates how the Great Recession as a macro-phenomenon triggered specific fairness dimensions whilst others remained unaffected. Thus, instead of regarding fairness dimensions *en bloc*, using a more fine-grained typology can help disentangle the connection between fairness perceptions and demands for public policy. Finally, the article also contributes to a growing body of literature that deals with the impact of financial and economic crises on national tax policies (Hakelberg 2016; Lierse & Seelkopf 2016; Swank 2016a). Whilst these studies have focussed on tax policy changes on the macro level, this article adds the micro level to the discussion. By investigating how and why tax policy preferences differ between countries, it marks a first step towards better integration of the demand and supply side of tax policies in times of crisis.

The article is structured as follows. It starts by offering a short overview of the role of economic self-interest and fairness perceptions for redistributive policies. Then, it develops the theoretical argument about the impact of fairness arguments on tax policy

preferences during the Great Recession. After describing the data sources and the different model specifications of the analysis, the results are presented. The final section concludes by discussing the effects of crisis-induced demand for progressive taxation on the political supply side.

## 2 Theory

### 2.1 Economic Self-Interest and Fairness Perceptions

The micro foundations of redistribution have been gaining increasing attention in recent years. Most studies dealing with personal attitudes towards redistributive policies look at the determinants of preferences for general redistribution and for social policy programmes. In comparison, attempts to explain preferences for tax policies have been rare. We can differentiate between two major explanatory factors for tax policy preferences: economic self-interest and fairness perceptions.

Traditionally, analyses of the impact of economic-self-interest on redistributive preferences have dominated the literature. Much work has focused on the impact of income status and socio-economic risk exposure on preferences for redistribution (Meltzer & Richard 1981; Moene & Wallerstein 2001; Rehm 2009). Studies looking at the impact of income on tax policy preferences are based on the premise that people want to maximise their individual net income. Whilst findings clearly show that higher income leads to a lower demand for tax progressivity (Ballard-Rosa et al. 2017; Barnes 2015), the predictive power of income for redistributive preferences varies remarkably between countries (Beramendi & Rehm 2016; Berens & Gelepithis 2018; Dion & Birchfield 2010). Authors looking at the influence of (social) risks on individual preferences argue that higher risk exposure increases demand for social insurance (Moene & Wallerstein 2001; Rehm 2009). For example, Rehm (2011) claims that support for social policy programmes is particularly high if the common risk pool is homogeneous.<sup>1</sup> Progressive taxation can serve the same function of social insurance, as it mitigates the negative effect of social risks on real income by reducing income differences (Varian 1980). Barnes (2015) differentiates

between preferences for the size of taxation (tax level) and the structure of taxation (tax progressivity). She finds that risk exposure leads to higher demand for tax progressivity, whilst it does not have an effect on preferences for tax levels. Although they are quite distinctive in their theoretical expectations, both income- and risk-based explanations share the same baseline assumption; individuals want to optimise their economic outcome. They do so by either maximising their current economic situation (income-based explanations) or by finding an optimal insurance coverage (risk-based explanations).<sup>2</sup>

The general argument of studies that look at the role of fairness perceptions for redistributive preferences is straightforward: if economic outcomes are perceived as unfair, demand for a correction of these outcomes will increase (Alesina & Angeletos 2005). Hence, even the richest members of society might demand more tax progressivity if they perceive the tax system as unfair. Several studies have found strong correlations between individuals' preferences for fairness and tax progressivity (Ackert, Martinez-Vazquez, & Rider 2007; Ballard-Rosa et al. 2017; Lü & Scheve 2016). Importantly, fairness beliefs are closely linked to the process that has led to the status quo (Hennighausen & Heinemann 2015): if the previous allocation process is perceived as fair, the socio-economic outcome will be perceived as fair, too. Thus, demand for redistributive taxation will be low (Fong 2001; Rowlingson & Connor 2011). We can differentiate between three dimensions of fairness perceptions.

First, people are more likely to regard economic success as deserved (and fair) if they perceive success as independent from socio-economic family background. Hence, if intergenerational mobility is high, demand for market corrective, redistributive measures will be lower (Alesina, Stantcheva, & Teso 2018; Fong 2001). However, if people believe that wealth and income levels are predetermined by socio-economic origins, the perception of deservingness will suffer. In this case, the procedural dimension – the lottery of birth – is completely based on luck. Therefore, its outcome is perceived as unfair. Unsurprisingly, fairness issues related to family background are highly salient in discourses over the inheritance tax (Beckert 2008).

Second, the role of individual effort and merit are important for fairness perceptions.

If people attribute economic success to effort and work performance, they will perceive income differences as deserved (Durante et al. 2014; Rowlingson & Connor 2011). Contrary to the family background, the individual has an active position in the procedural dimension. Whilst family background is exogenous to an individual's decision, work effort and performance are not. Therefore, this deservingness dimension focuses on behavioural aspects. By strategic risk-taking, an individual can even incorporate luck into the work process. If economic success is the result of risk-taking, people could still view inequality as deserved. However, this will only be the case if the risks that have been taken can actually materialise. If there is no chance of risk-materialisation, as in the case of moral hazard, the perception of success as a reward for bold risk-taking suffers.

Third, institutional circumstances matter for the perception of deservingness. If the political and economic system of a country is perceived as structurally unfair, inequality will also be regarded as unfair (Hennighausen & Heinemann 2015). In particular, the role of the state is of central importance. When a subgroup of the population is treated beneficially by public authorities, fairness principles are violated. In order to restore the 'principle of equal treatment', demands for policies which compensate for previously granted beneficial advantages become stronger (Scheve & Stasavage 2010, 2012, 2016).

One shortcoming of most studies on fairness perceptions is that they do not offer an explanation for why tax policy preferences vary cross-nationally and over time. If fairness perceptions matter for tax policy preferences, why is their impact stronger in some countries than in others? And why do preferences change? The contribution by Scheve and Stasavage (2016) is an important exception. The two authors show that mass warfare intensifies the impact of the institutional deservingness dimension. They argue that when a country faces mass warfare, richer people are treated beneficially by the state: they are less likely to face conscription and might profit economically from a higher demand for war-related goods. As a consequence, fairness-based demand for tax progressivity increases. Thus, in short, mass mobilisation for warfare causes 'compensatory arguments' to tax the rich (Scheve & Stasavage 2010, 2012).

Although the work by Scheve and Stasavage helps fill a major gap in the litera-

ture on fairness beliefs, two important questions remain unanswered. First, their main independent variable – mass warfare – has disappeared. Modern wars are different to traditional wars: they are mainly extra-state or intrastate wars which are fought by smaller armies because of modern war technology (Onorato et al. 2014; Sarkees & Wayman 2010). According to Scheve and Stasavage (2016), the absence of mass warfare in the last decades can explain the demise of progressive taxation. However, we do not know whether this means that fairness arguments have become irrelevant for tax progressivity. The financial crisis of 2008 is a prime example of a massive asymmetric shock other than warfare which might have triggered fairness-based demands for progressive taxation. After all, both warfare and economic crises can cause fundamental structural and political changes (Widmaier, Blyth, & Seabrooke 2007). Second, the perception of institutional deservingness might not be the only fairness dimension that is affected by asymmetric shocks. Yet, a systematic analysis that differentiates between fairness dimensions after such shocks is missing. The financial crisis provides the opportunity to look at the interplay between shocks on the macro level and different fairness dimensions.

To sum up, the literature that deals with preferences for redistribution has faced a recent ‘fairness turn’. For times of mass warfare, our understanding of why the power of fairness perceptions for tax policy preferences varies between countries has improved greatly. However, we still know little about the role of fairness arguments in the absence of mass warfare. In particular, the impact of asymmetric economic shocks might lead to an intensified impact of some fairness dimensions on tax policy preferences whilst other dimensions remain unaffected. As I argue in the next section, two characteristics of the financial crisis have increased the impact of fairness beliefs on preferences for tax progressivity: the role of financial and economic elites in the run up to the financial crisis and the role of the state before and during the crisis. In countries that were hit harder by the crisis, these two factors gained particular public attention.



## 2.2 Fairness Arguments and the Great Recession

### The Crisis, the Rich, and the State

My main argument is that the Great Recession has increased demand for tax progressivity. In other words, the Great Recession as a cross-nationally varying factor on the macro level has increased micro level preferences for tax progressivity. Furthermore, I claim that this effect originated in an intensified impact of fairness considerations on tax policy preferences. Fairness arguments have prominently re-entered public discussions following the economic downturn in the wake of the financial crisis. The prime example of this is the Occupy Wall Street (OWS) protest movement, which has mainly targeted socio-economic inequality and particularly the role of the richest members of US society. Even the main slogan of the OWS movement, "We are the 99%", straightforwardly refers to growing inequality induced by the wealth and income development". According to Bartels (2013), repealing the 2001/2003 Bush tax cuts was "the most concrete policy issue addressed (insofar as any concrete policy issue was addressed) by the Occupy Wall Street movement" (Bartels 2013, p. 63).<sup>3</sup> Directly referring to the OWS slogan, Paul Krugman in his New York Times column went even further and focused on the richest 0.1% of society: "So should the 99.9 percent hate the 0.1 percent? No, not at all. But they should ignore all the propaganda about "job creators" and demand that the super-elite pay substantially more in taxes" (Krugman 2011).

But how might the financial crisis have sparked demands for fiscal fairness? The crisis has led to an increased public salience of two factors. First, the financial crisis has sparked a public debate about its causes – prominently blaming risky financial investments. The majority of opinions in the public debate has blamed the financial and economic elites, particularly bankers, for the emergence of the Great Recession (Bartels & Bermeo 2014; Hellwig & Coffey 2011). The image of 'greedy' bankers shamelessly pursuing risky financial activities to maximise personal wealth has dominated public perception. Financial market activities have been characterised as "a gambling casino" (Sinn 2010, p. 70) allowing for "skyrocketing financial speculation" (Foster & Magdoff 2009, p.

80). This criticism has cut across political affiliations (Münnich 2016). Although financial speculation contributed to growing inequality prior to the Great Recession (Volscho & Kelly 2012), it was only in the wake of the crisis that financial risk-taking gained public salience (Fourcade, Steiner, Streeck, & Woll 2013). Thus, the discussion about the causes of the crisis has put a spotlight on practices of financial investment and the role of economic elites.

Second, the financial crisis has increased attention on the role of the state *before* and *during* the crisis (Comiskey & Madhogarhia 2009; Hellwig & Coffey 2011). Discussions about the role of the state *before* the crisis focus on regulatory failure. The general argument is that ineffective financial regulation enabled financial market actors to take up systemic risk. The huge economic downturn in 2009 (Figure 1) revealed the external effects that came along with risky financial business models. These economic effects did not solely hit those who previously benefited from financial markets practices, but hurt society as a whole. In particular, lower income groups that did not participate in risky financial investments beforehand – simply because they lacked the capital to do so – have suffered from the crisis economically. In the U.S., relative losses in wealth "were disproportionately concentrated among lower-income, less educated, and minority households" (Pfeffer, Danziger, & Schoeni 2013, p. 98). To sum this point up, the crisis has put a spotlight on pre-crisis regulatory failure which enabled financial actors to take up huge external risks.<sup>4</sup> Furthermore, public attention on the role of the state *during* the crisis has concentrated on bank bailout packages. These packages were not only expensive (Reinhardt & Rogoff 2013), but they have also been perceived by many as measures to bail out a richer subgroup of the population (Hacker & Pierson 2010). Thus, rescuing struggling financial institutions with public money has become a publicly salient and highly criticised topic (Hellwig & Coffey 2011). I argue that both factors – the role of economic elites and the role of the state – have affected fairness-based demand for progressive taxation.

## Fairness Dimensions and the Financial Crisis

To disentangle how the crisis-induced perception of economic elites and the state might have influenced attitudes towards taxation, let us refer back to the three different fairness dimensions. The impact of the lottery of birth on later economic success is a rather stable factor, independent of economic downturns. Neither the role of the rich in the run up to the crisis nor the role of the state stands in a direct connection to the perception of advantages based on family background. Therefore, we have little reason to assume that the crisis has had an impact on this fairness dimension.

Perceptions of economic success as a reward for hard work and merit were affected both by the perception of economic elites and of the state's activities. First, discussions about the crisis' causes put a focus on risk-taking on financial markets. When financial risk-taking becomes an important public issue, doubts that inequality simply results from economic elites' higher work effort will increase. As a consequence, the perception of economic success as a "fruit of one's labour" suffers and people view inequality as more unfair (Alesina & Angeletos 2005). In other words, wealth is increasingly perceived as exogenously rather than endogenously determined (Fong 2001). Second, in principle, wealth that emerges from financial risk-taking might also be perceived as deserved. This would be the case if people view the courage to take high personal risks as an effort – and therefore as endogenously determined. If risks are entirely internalised, there would be no need for compensation. However, the crisis has shown that these risks were not completely internalised. Instead, many high risk-takers were bailed out with public money. If risks cannot materialise, risk-taking becomes a less bold endeavour. Hence, rewards resulting from moral hazard are seen as undeserved. In sum, there is good reason to assume that the impact of this behavioural fairness dimension on tax policy preferences has intensified in crisis countries.

Second, states' policies before the crisis and states' reactions to the financial crisis are related to aspects of institutional fairness. Regulatory failure in the run up to the crisis enabled financial market actors to take up risks at the expense of society as a whole. Thus, a lack of financial market regulation by the state indirectly favoured rich financial

investors. Furthermore, bank bailouts also affected the institutional fairness dimension. When struggling financial institutions were rescued with public money, people may have perceived these bailouts as a beneficial treatment of a specific subgroup of the population. Bailing out risk-takers might therefore create compensatory demands (Scheve & Stasavage 2016). Hence, the role of the state before and during the crisis directly touches upon the institutional fairness dimension. The more severe the economic crisis, the more salient are discussions about the crisis' causes and states' reactions to it. As a consequence, the impact of the institutional fairness dimension on tax policy preferences will increase in crisis countries.

Based on these considerations, I expect that the financial crisis has caused a general shift in tax policy preferences. Issues of financial risk-taking by economic elites and the role of the state before and during the crisis have affected perceptions of behavioural and institutional fairness. Therefore, I expect that preferences for tax progressivity are stronger in countries that were hit harder by the crisis. Especially in those countries that faced the biggest asymmetric economic shocks, demand for taxing the rich should be higher. Thus, my first working hypothesis is as follows.

*H1: People have a higher demand for progressive taxation in countries that have faced a more severe economic downturn after the financial crisis of 2008.*

Yet, *H1* could also follow out of pure economic self-interest in times of crisis. Most notably, a stronger economic downturn might just raise demand for insurance via taxation as it increases the risk of becoming unemployed. In addition, experiencing crisis-induced personal economic shocks might influence preferences for redistribution (Margalit 2013). I do not rule out that economic development has an influence on preferences for tax progressivity by changing individual socio-economic circumstances. However, my argument builds upon the influence of fairness considerations on tax policy preferences in the wake of the crisis. Therefore, we would expect that *H1* stems from an intensified impact of behavioural and institutional fairness perceptions on tax policy preferences in crisis countries.

*H2: The influence of behavioural and institutional fairness perceptions on tax pol-*

*icity preferences is stronger in countries that have faced a more severe economic downturn after the financial crisis of 2008.*

### **3 Data and Models**

To test my hypotheses about the impact of the Great Recession on tax policy preferences empirically, I combine micro data from the 2009 ISSP Social Inequality IV round with several macro level indicators and analyse it by using multilevel modelling. In total, my sample consists of 32 countries on the macro level and 31,331 respondents on the micro level.<sup>5</sup> My main dependent variable is the question: "Do you think people with high incomes should pay a larger share of their income in taxes than those with low incomes, the same share, or a smaller share?" Respondents could answer on a five point scale covering "much smaller share", "smaller", "the same share", "larger" and "much larger share". I recode the variable so that it ranges from 1="much smaller share" to 5="much larger share". In comparison to other studies on preferences for tax progressivity, this measurement has the advantage that it does not ask people for their opinion in relation to the current tax system (thus, whether they think taxes on the rich are too high/low). Instead, it directly asks for general attitudes towards progressive taxation. I treat the values of the variable as metric.<sup>6</sup>

To capture the different dimensions of deservingness, I include three items from the ISSP as independent variables. To cover the impact of deservingness based on family background, I use the question: "Getting ahead: How important is coming from a wealthy family?" Answers can range from 1="Not important at all" to 5="Essential". Thus, the higher the variable's values, the stronger is the perception that family background determines socio-economic success. I expect preferences for tax progressivity to be higher when the status quo is perceived as more unfair. Behavioural deservingness is measured by the question: "How well he or she does the job - how important should that be in deciding pay?", where answers can again range from 1="Not important at all" to 5="Essential". Here, higher values indicate stronger preferences for a congruence between performance

and payment. I therefore expect demand for tax progressivity to be stronger as well. Finally, to measure the impact of the institutional deservingness dimension on tax policy preferences, I include the statement: "To get all the way to the top in <Respondent's country> today, you have to be corrupt.", to which people could agree from 1="Strongly disagree" to 5="Strongly agree". Admittedly, this operationalisation is far from perfect as it focuses on corruption. However, since it directly captures the perception of an important part of structural (un)deservingness in the economic and political system, it still constitutes a valid indicator for the institutional dimension. Higher values mean that the institutional set-up is perceived as more unfair. Consequently, I expect preferences for tax progressivity to increase with higher values. In sum, all three dimensions are measured on a scale from '1' to '5' and I expect all coefficients to be positive.

[Figure 1 about here.]

My main economic variable on the macro level, the degree to which a country has been hit by a crisis economically, is measured by real GDP growth rates in the year 2009. Data come from the World Bank's National Account Database (2017). GDP growth in the year 2009 is particularly suited to measuring the extent to which the economic crisis hit a country because the economic effects of the Great Recession were the most pronounced in this year. Therefore, the differences between those countries which were hit by the crisis vis-à-vis those which were relatively unaffected by it became clearest. Furthermore, economic growth rates on the country level are a very visible indicator for a general nationwide economic downturn. Figure 1 shows the average real GDP growth rate for the 32 countries in my sample. Although GDP growth already dropped from 5.1% in 2007 to 1.4% in 2008, the year 2009 marks the low point as GDP shrunk by 4.3% on average. In line with *H1*, I expect people to have higher preferences for tax progressivity in countries with a lower GDP growth in 2009. I only include those countries in the analysis in which the fieldwork exclusively took place in 2009/2010.<sup>7</sup>

Additional to these main variables of interest, I include a battery of covariates into my models. On the micro level, I control for several variables that are likely to influence individual attitudes towards tax progressivity. Since people with a higher income might

demand less tax progressivity simply because they want to pay less taxes, I include a measurement of household income into my analysis (Kenworthy & Pontusson 2005). As income is not directly comparable in the ISSP, I follow common practice by looking at the relative position of income earners in a country (Alt & Iversen 2017; Barnes 2015). This is done by assigning observations to the country-specific income deciles. I expect people with higher income to be less supportive of progressive taxation.

Rehm (2009, 2011) has made use of occupation-specific unemployment rates as a measure of economic risk. Unfortunately, occupation-specific unemployment rates are only available for a limited number of countries (~20). This is unproblematic for Rehm's studies as he mainly focuses on micro variables whilst controlling for multilevel structures via fixed effects. Yet, I cannot apply fixed effects models since I am primarily interested in the influence of macro variables on attitudes towards progressive taxation (Allison 2009; Möhring 2012). Thus, I use multilevel models with random effects. In these models, such a relatively low number of countries becomes problematic because type I errors are more likely (Stegmueller 2013). Therefore, occupational unemployment rates are less suitable for my analysis. In order to still control for individual risk, I use a dummy that takes the value '1' if a person is in part-time or even less than part-time employment (Rueda 2005; Stegmueller, Scheepers, Roßteutscher, & de Jong 2012). Additionally, I include dummies that control for unemployment, being in education (student/school/vocational training), and retirement. Finally, a dummy for people who are not in the labour force equals '1' for those who help family members, housemen/housewives, permanently disabled, and for those who are not available on the labour market because of other reasons. For all of these dummies, the reference category is full-time employment.

To control for the effect of education on preferences towards redistribution, I include a variable that measures the highest educational degree ranging from 0="no formal education" to 5="university degree completed" and treat it as continuous (Barnes 2015; Beramendi & Rehm 2016; Häusermann, Kurer, & Schwander 2016). Furthermore, I add a control variable for religiosity that measures the attendance of religious services, ranging from 1="never" to 8="several times a week". Following studies that stress the impor-

tance of religiosity on redistributive preference (Scheve & Stasavage 2006; Stegmueller et al. 2012), I expect more religious people to have a lower demand for tax progressivity. Finally, I control for age and gender (0=female; 1=male). In line with previous research on redistributive preferences (Gingrich & Ansell 2012; Schmidt-Catran 2016), I expect older people to be more supportive of progressive taxation, whereas I expect men to be less in favour of tax progressivity.

On the macro level, I include several covariates. Since countries might already differ in economic growth prior to the crisis, I control for economic growth in 2007. To account for different levels of risks that have been taken by financial institutions in the run up to the crisis, I include a country's average z-score from the years 2003–2008 in my analysis (Cihak, Demirguc-Kunt, Feyen, & Levine 2012). The firm-level z-score measures the financial stability of each institution. Higher values indicate a more stable financial system. It is calculated by dividing the sum of equity capital return as a percentage of assets by the standard deviation of returns. Then, the country-level averages of the firm-level z-scores are taken.<sup>8</sup> To take the influence of different levels of economic development into account, I control for the overall level of real GDP per capita (*ln* value) for the year 2009. Data come from the World Bank (2017). In addition, I check my results for robustness by including several other macro variables (see Table OA4 in the Online Appendix). First, different levels of inequality might influence tax policy preferences. Including inequality becomes particularly important because my income variable does not capture absolute differences in household income. Thus, I control for the market Gini coefficient (pre-tax and pre-transfer) and the net Gini coefficient (post-tax and post-transfer) as measurements of inequality (Solt 2016). Second, tax progressivity might be more popular in countries that have a longer history of redistributive taxation. Therefore I include the introduction year of the personal income tax (PIT) from the Tax Introduction Database (Seelkopf & Genschel 2018). Third, since a more regressive tax system might have boosted compensatory arguments as well (Scheve & Stasavage 2016), I control for the share of total consumption tax revenues (% of GDP, year 2009) as a proxy for overall regressivity (Prasad & Deng 2009). Data come from Prichard (2016). Finally, I control for welfare



state effort by including social benefit expenditure as % of GDP for the year 2009 (IMF 2017).<sup>9</sup>

I run several multilevel specifications with random intercepts to identify the determinants of preferences for tax progressivity. Since income as a predictor of preferences for redistribution may vary strongly between countries (Beramendi & Rehm 2016), all models include random slopes for household income. First, I calculate a minimum example that only includes real GDP growth rates. By doing so, I ensure that the effects of my main independent variable are not driven by my choice of covariates (Lenz & Sahn 2017). Subsequently, I add the micro and macro variables.<sup>10</sup> All individual level variables are unstandardised and unweighted.<sup>11</sup>

## 4 Results

### 4.1 Main Results

Table 1 presents the results of the multilevel analyses. In the minimum example (Model 1), GDP growth in 2009 has a negative and statistically significant impact on preferences for tax progressivity. Thus, respondents in countries with a lower GDP growth in 2009 have a higher demand for tax progressivity.<sup>12</sup> This finding is in line with *H1* and holds when adding control variables on the micro level (Model 2), taking average GDP growth in the first half of 2009 for those countries where the fieldwork took place earlier (Model 3), and adding further controls on the macro level (Model 4). A change in growth by two standard deviation leads to a change in tax progressivity by 1/4 of its standard deviation. As a comparison, this effect is nearly the same size as the effect of a change from the lowest to the highest household income group. This result is highly significant and robust to adding further control variables (Table OA4) and using multilevel generalized linear models (Table OA6).

[Table 1 about here.]

Regarding the other control variables on the macro level, neither the coefficients of

previous GDP growth in 2007, nor the ones of ln GDP per capita 2009 nor the z-score are statistically significant.

Let us now look at the micro variables.<sup>13</sup> All three dimensions of deservingness have positive and highly significant coefficients. Thus, demand for tax progressivity is higher if socio-economic outcomes are perceived as unfair. Since all three variables are scaled identically, we can compare their coefficients directly. The coefficients differ remarkably. The institutional dimension of deservingness has the largest effect of the three dimensions, followed by the behavioural and the family background dimension. The coefficient of the institutional dimension is nearly twice as large as that of the family background dimension. This finding indicates that the strength of different fairness dimensions varies substantially. In particular, if the political and economic system of a country is perceived as unfair, demand for correcting the economic outcomes via progressive taxation increases.

In line with other empirical studies, my results show that people with a higher income are less supportive of tax progressivity (Barnes 2015; Hennighausen & Heinemann 2015). The coefficient for economic risk – measured via part-time employment – is not statistically significant. This is in contrast to studies which look at the impact of risk on preferences for social policy. Although this might result from the operationalisation of economic risk (Rehm 2011), it hints at differences between social policy and taxation; in contrast to social policy, progressive taxation does not *directly* insure people against social risks. Therefore, the demand for social insurance via redistributive taxation (Varian 1980) might be weaker than the demand for insurance via welfare state programmes. As expected, more religious people have a lower demand for tax progressivity (Scheve & Stasavage 2006). The same applies to people with a higher level of education. Interestingly, whereas older people have a higher demand for progressive taxation, retired persons actually want less tax progressivity. Cohort effects regarding experiences of mass warfare might be one factor that could explain why older people tend to be more supportive of tax progressivity (Obinger 2012; Scheve & Stasavage 2012), whereas the negative effect of retirement remains puzzling. Apart from the umbrella category of not being in the

labour force, all other micro variables (unemployment and gender) are not statistically significant. Moreover, I have added dummies which measure political affiliation to the models (Table OA7).<sup>14</sup> People with affiliations to leftist or centrist parties demand more tax progressivity than rightist voters. All other coefficients stay similar. As a comparison, a change in growth by one standard deviation has the same effect on preferences for tax progressivity than being a centrist instead of a rightist voter.

## 4.2 Exogeneity of the Crisis

The depth of the 2009 recession may not be entirely exogenous. In the following, I describe the factors that challenge the exogeneity assumption. Furthermore, I provide evidence that the effect of the financial crisis on tax policy preferences remains stable across model specifications which take exogeneity concerns into account.

First, domestic institutions and policies might mitigate the economic shock. In particular, automatic stabilisers such as social security programmes can lead to less severe economic downturns. In other words, economic shocks might be weaker in countries with bigger governments and more generous social policy programmes. To control for possible stabilisation effects, I include total government expenditure as a percentage of GDP into my model (Table 2, first column). Data come from the IMF (2017). The crisis effect remains robust.

Second, the depth of the recession in 2009 could be influenced by previous economic development. Countries with a strong growth trajectory might have experienced a weaker downturn than countries that already had poor economic prospects prior to the crisis. To rule out that the crisis measure is determined by previous economic trajectories, I rerun my models by using the cumulative output gap instead of real GDP growth rates. To calculate the output gap, I estimate GDP per capita (pc) in 2009 with a Kalman smoothing procedure based on GDP pc time series from 2000-2008. The output gap is the difference between real and estimated values of GDP pc in 2009 as a percentage of GDP pc in 2008. Furthermore, I check the results by taking the output gap for 2010 if the ISSP's fieldwork took place later. Columns 2 & 3 in Table 2 present the results. The

findings are in line with *H1*: countries with a bigger output gap have a higher demand for tax progressivity.

Third, one might argue that countries with generally stronger preferences for progressive taxation have faced a stronger economic downturn. To rule out this possibility, I make use of the 1999 ISSP round and run a placebo test with the 1999 ISSP data and GDP growth rates from 2009 (Table 2, column 4). The results reveal that the economic downturn of 2009 was not stronger in countries where people already demanded more progressive taxation prior to the crisis. This finding supports my model's exogeneity assumption. In addition, I compare the impact of GDP growth rates in 1999 on tax policy preferences to the results in 2009 for those countries that were surveyed in both rounds (Table 2, columns 5 & 6). In the wake of the crisis, the impact of GDP growth on preferences for tax progressivity is robust to using this reduced sample. In 1999, however, we cannot find an impact of GDP growth. Hence, economic development does not have an impact on tax policy preferences per se. Instead, the procedural dimension that is connected to the economic downturn – the financial crisis – is crucial in order to understand the effect in 2009.

[Table 2 about here.]

Thus far, I have shown that crisis countries have had a higher demand for tax progressivity. However, I have not looked at changes in tax policy preferences. Due to the lack of yearly data, I focus on long term development of tax policy preferences by looking at the changes from 1999 to 2009. I calculate each country's weighted mean in tax progressivity preferences in both years and take the first difference. In total, this leaves me with 19 observations.<sup>15</sup> First, I run bivariate models to see whether the crisis in 2009 can explain differences in changes. Then, I expand this model by adding control variables. I include changes in age as a covariate since ageing societies might demand more tax progressivity. Furthermore, changing patterns of economic risk might have an effect on tax progressivity. Therefore, I include changes in unemployment and part-time work. Finally, I control for changes in religiosity to capture secularisation trends. The regression analyses (Table 3, Models 1-5) support my previous findings: Across all

models, real GDP growth in 2009 has a negative and statistically significant influence on the change in preferences for tax progressivity. Thus, a strong economic downturn has increased preferences for progressive taxation. Additionally, I rerun the same model but replace GDP growth with a dummy variable that turns ‘1’ when a country faced a strong economic downturn of more than 2% of GDP.<sup>16</sup> The results show that a strong economic downturn in the wake of the crisis has had a positive influence on support for progressive taxation (Table 3, Model 6). The effect of a major economic crisis on demand for tax progressivity is 0.2 points – again, as a comparison, this equals the effect of switching from the highest to the lowest income decile.

[Table 3 about here.]

### 4.3 The Impact of Fairness Perceptions in Times of Crisis

To find out whether the impact of the fairness dimensions on tax policy preferences is stronger in countries that faced a more severe economic downturn (*H2*), I use a cross-level interaction term between the 2009 growth rates and each of the three deservingness dimensions (Table OA5). Looking only at the interaction terms, we see that the interactions between growth and the behavioural deservingness dimension as well as between growth and the institutional deservingness dimension are negative and statistically significant. To interpret the cross-level interaction terms substantially, I calculate the marginal effects of each fairness dimension conditional on GDP growth in 2009 (Brambor, Clark, & Golder 2006). Hainmueller, Mummolo, and Xu (2017) have shown that interaction effects are often interpreted in areas without common support in the data. I follow their suggestion and add histograms which show the distribution of GDP growth to the marginal effects plots. Figure 2 presents the results.<sup>17</sup> As expected, the coefficient for the family background dimension does not vary considerably; the impact is very similar between countries which faced a strong recession in 2009 and those which did not. For the other two dimensions, however, the coefficients differ strongly. The marginal effect for the behavioural deservingness dimension is more than twice as large in countries with a major economic downturn of 5% in 2009 compared to those with a positive growth rate of 1%.

For the institutional deservingness dimension, the marginal effect increases slightly less, but still substantially by 50%. Thus, the impact of fairness considerations on tax policy preferences has intensified in countries that were hit harder by the crisis. These results are largely in line with *H2*.

[Figure 2 about here.]

## 5 Conclusion

Can fairness arguments play a role for progressive taxation in the absence of mass warfare? By looking at the impact of the Great Recession on tax policy preferences, I have shown that different fairness dimensions are still important for shaping public preferences towards tax progressivity. The perception of rich people's economic success as individually deserved and institutionally fair suffered as the crisis raised the salience of risky financial investments and fuelled public discussions about regulatory failure and bank bailouts. As a consequence, the impact of the behavioural and institutional fairness dimension on tax policy preferences intensified in countries with a strong economic downturn and demand for progressive taxation increased. The mechanisms during the Great Recession are somewhat similar to those during wartime (Scheve & Stasavage 2016): when society is doing badly and rich people are perceived as the ones to blame and/or profiteers of state actions, notions of undeservingness are triggered. Hence, people think it is only fair that the rich do worse as well. As a result, aggregate demand for a compression of income and wealth via progressive taxation increases. My analysis also considers that other factors can have an effect on attitudes towards progressive taxation. In fact, dominant theories about the influence of micro level characteristics such as income and religion are supported by my results. Yet, these factors cannot fully explain why attitudes towards progressive taxation vary between countries in the wake of the crisis. Crisis-induced fairness arguments help understand this variation.

Placing my study in the discussion about progressive taxation in the last 30 years, I have shown that public opinion in the wake of the crisis pushes against the general time

trend in tax policy-making. Whilst the taxation of top incomes has decreased massively since the late 1970s (Ganghof 2006; Kiser & Karceski 2017; Swank 2016b), the crisis has raised political demand for progressive taxation again. By analysing preferences for progressive taxation in the wake of the crisis, this study has looked at the demand side – the very first stage of public policy-making. Yet, I have not examined actual tax policy outputs. Looking at the development of top statutory PIT rates reveals that the crisis was a game-changer indeed (Figure 3). Whilst tax rates for top incomes have decreased from 2000 to 2008, this development has reversed since the financial crisis. Thus, the data suggest that demand for progressive taxation was supplied politically. Moreover, the trend of increasing top PIT rates since the crisis has persisted. This indicates that a substantial change in tax policy-making has taken place. However, more work has to be done in order to identify the causal effect of the financial crisis on tax policies. Furthermore, we know relatively little about the responsiveness of governments towards tax policy demands. Finding out when and how politicians react to voters’ tax policy preferences is therefore a promising avenue for further research.

[Figure 3 about here.]

Finally, it is noteworthy that the ISSP question about tax progressivity does not exclusively refer to highly progressive tax measures for the richest members of society. Instead, it captures a broader feeling about the idea of redistributive income taxation. While taxing income still marks the focal point of the redistributive tax state, it would be interesting to investigate whether the crisis has affected attitudes towards other taxes. For example, the idea of redistributing wealth via the taxation of inheritances has recently re-entered the public and scholarly debate (Atkinson 2015; Piketty 2014). Other highly progressive taxes such as recurrent taxes on wealth, land taxes, and capital gains taxes have also gained momentum (The Economist 2018). Finding out which role fairness perceptions have played for this development is crucial for our understanding of progressive taxation in the 21<sup>st</sup> century.

# Notes

<sup>1</sup>For an extension of this model covering labour market segmentation, see Alt and Iversen (2017).

<sup>2</sup>Also, some studies combine income-based with risk-based explanations and demonstrate that both approaches are not mutually exclusive (Carnes & Mares 2015; Moene & Wallerstein 2003; Rehm, Hacker, & Schlesinger 2012).

<sup>3</sup>For an overview of the discussion about the Bush tax cuts, see Bartels (2005), Hacker and Pierson (2005), Lupia, Levine, Menning, and Sin (2007), and Bartels (2007).

<sup>4</sup>Authors like Morgenson and Rosner (2011) have claimed that "the mortgage binge enriched a few and imperiled many" and call it "a reckless endangerment of the entire [U.S.] nation by people at the highest levels of Washington and corporate America" (Morgenson & Rosner 2011, p. 7).

<sup>5</sup>Table OA1 in the Online Appendix lists the countries and the fieldwork period of the ISSP. Taiwan is excluded from the analysis as it lacks data for most macro level indicators. Portugal is excluded because it lacks the question on the behavioural fairness dimension.

<sup>6</sup>See also Beramendi and Rehm (2016) as well as Gingrich and Ansell (2012). However, I additionally check my results by running multilevel generalised linear models for an ordinal dependent variable.

<sup>7</sup>Additionally, I rerun my analysis by using the average year-to-year GDP growth of the first two quarters of 2009 for those countries in which the fieldwork started before 07/2009.

<sup>8</sup>For a more detailed discussion about measuring financial risks and the advantages/disadvantages of the z-score, see Laeven and Valencia (2012).

<sup>9</sup>Tables OA2 and OA3 provide an overview and summary statistics of the variables used in the analysis.

<sup>10</sup>All models are estimated with a maximum likelihood estimation. Regression tables are produced with the texreg package (Leifield 2013).

<sup>11</sup>For a discussion of standardisation via mean centring, see Hox (2010).

<sup>12</sup>Figure OA1 visualises this result by plotting average preferences for tax progressivity (weighted) against GDP growth in 2009.

<sup>13</sup>The effect sizes and significance levels of the micro variables stay similar when all country-level clustering is controlled for via a fixed effects model (OA7, Model 1) and when using country-specific clustered standard errors (OA7, Model 2). Furthermore, I checked the models for multicollinearity.

<sup>14</sup>The number of countries decreases to 29 as information on political affiliation is missing for three countries (Chile, Hungary, Israel).

<sup>15</sup>The question on attendance of religious service has not been asked in Bulgaria in 1999. Therefore, Bulgaria is excluded from the analysis.

<sup>16</sup>Results are also robust to taking different thresholds (-1 and 0 percent of GDP) for strong economic downturns.



<sup>17</sup>Marginal effects plots have been produced with the interplot package (Solt & Hu 2015).

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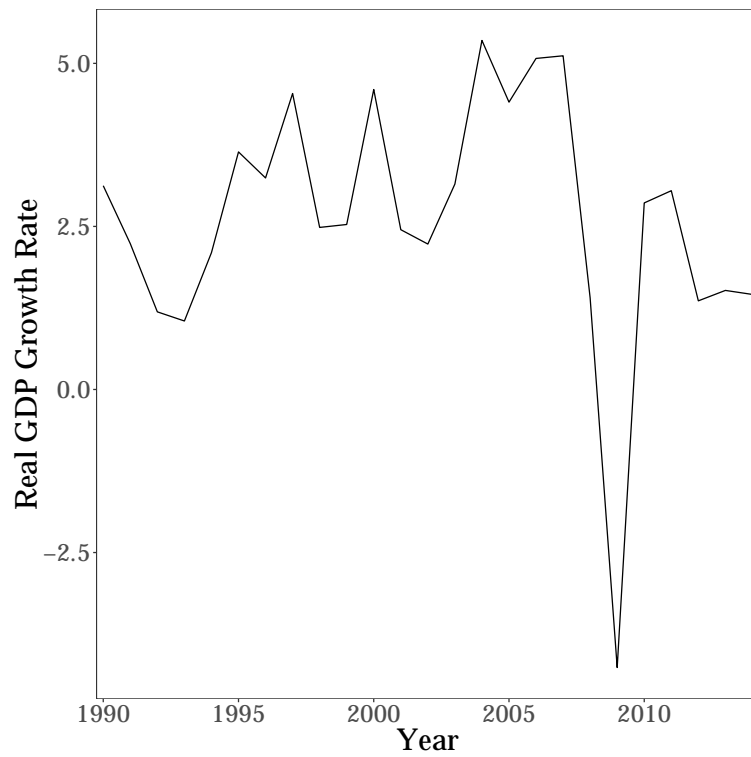
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Figure 1: Average GDP Growth Rates of Countries in the Sample, 1990-2014



*Note:* Data come from the World Bank (2017). Unweighted mean of the 32 countries in the sample.

Figure 2: Marginal Effects of Different Fairness Dimensions

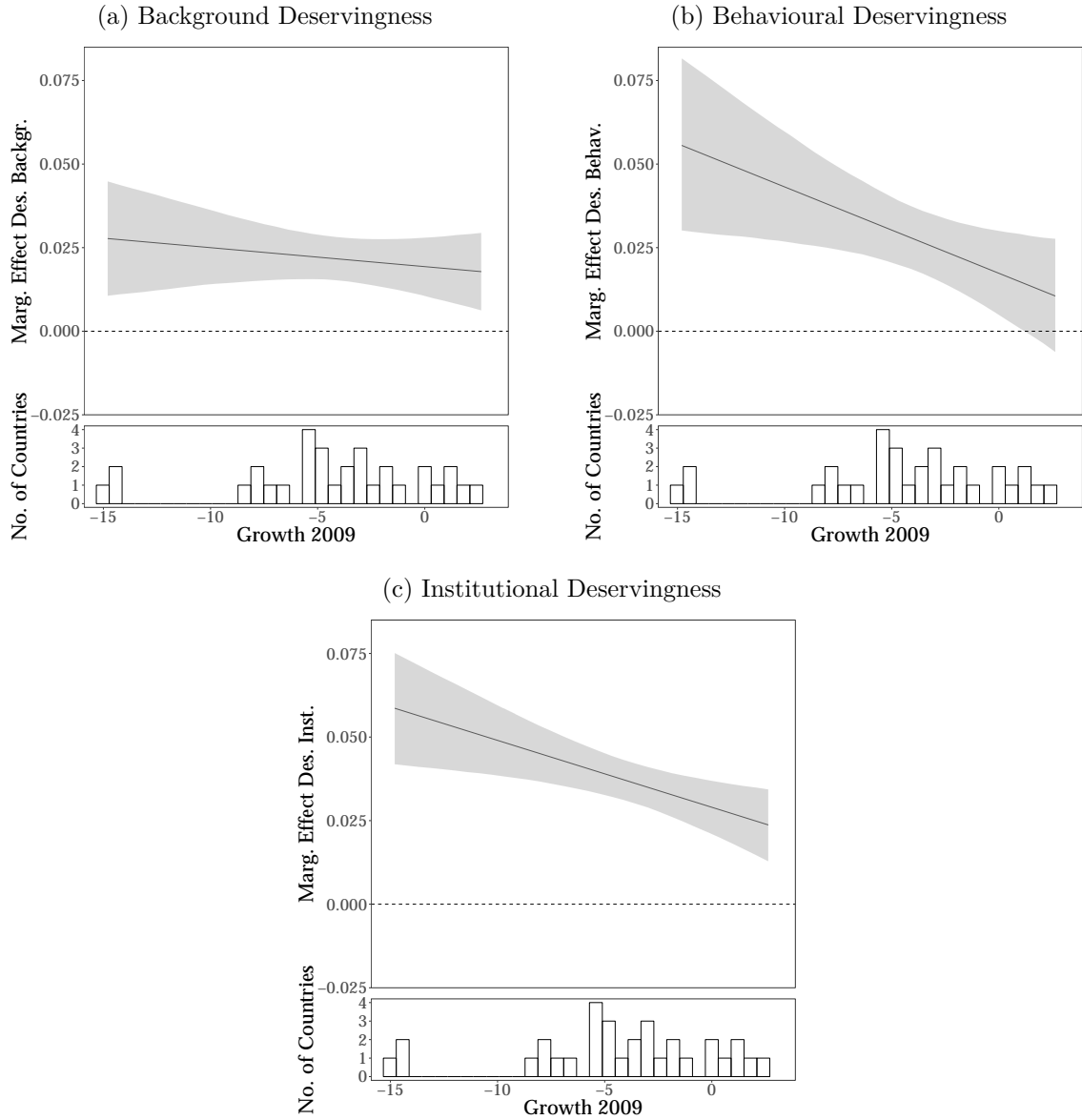
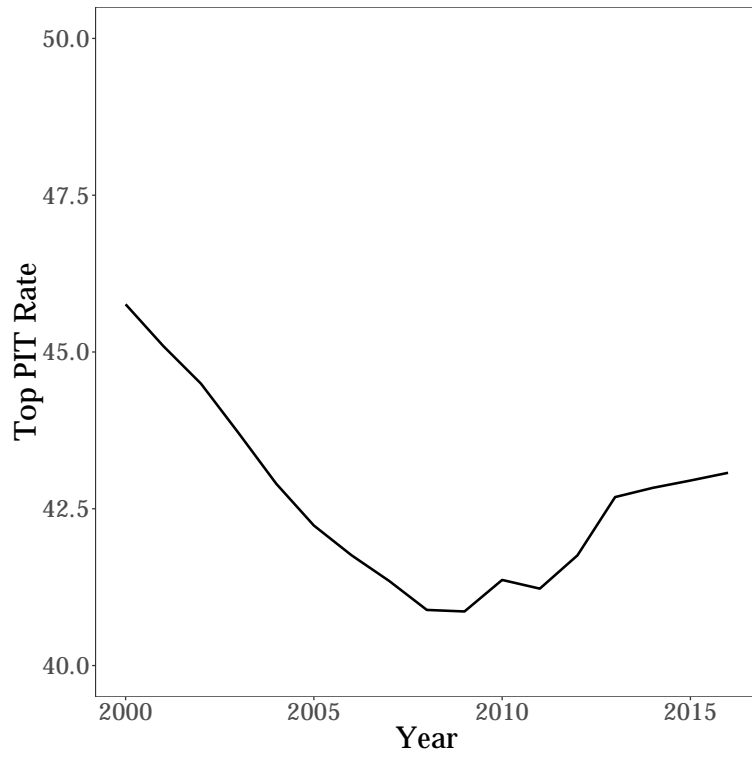


Figure 3: Top PIT Rate, 2000-2016



*Note:* Average for 35 OECD Countries. Data come from the OECD (2017).

Table 1: Results Multilevel Models for Tax Progressivity

	DV: Preferences for Tax Progressivity			
	Model 1	Model 2	Model 3	Model 4
<i>Micro Variables</i>				
Part-Time Employed		-0.0102 (0.0152)	-0.0102 (0.0152)	-0.0102 (0.0152)
Unemployed		-0.0149 (0.0179)	-0.0149 (0.0179)	-0.0151 (0.0179)
In Education		-0.0771*** (0.0216)	-0.0771*** (0.0216)	-0.0769*** (0.0216)
Retired		-0.0285* (0.0151)	-0.0285* (0.0151)	-0.0286* (0.0151)
Not in Labour Force		-0.0392*** (0.0149)	-0.0391*** (0.0149)	-0.0393*** (0.0149)
Educational Level		-0.0060* (0.0035)	-0.0060* (0.0034)	-0.0059* (0.0035)
Age		0.0043*** (0.0004)	0.0043*** (0.0004)	0.0043*** (0.0004)
Male		-0.0110 (0.0089)	-0.0110 (0.0089)	-0.0110 (0.0089)
Religiosity		-0.0101*** (0.0022)	-0.0101*** (0.0022)	-0.0102*** (0.0022)
Income		-0.0225*** (0.0034)	-0.0225*** (0.0034)	-0.0225*** (0.0034)
Des. Backgr.		0.0216*** (0.0040)	0.0216*** (0.0040)	0.0216*** (0.0040)
Des. Behav.		0.0270*** (0.0058)	0.0270*** (0.0058)	0.0271*** (0.0058)
Des. Inst.		0.0368*** (0.0036)	0.0368*** (0.0036)	0.0368*** (0.0036)
<i>Macro Variables</i>				
Growth 2009	-0.0205*** (0.0073)	-0.0193*** (0.0064)		-0.0168** (0.0065)
Growth First Half 2009			-0.0220*** (0.0064)	
Growth 2007				-0.0053 (0.0123)
Z-Score				-0.0065 (0.0046)
GDP 2009 (ln)				-0.0251 (0.0354)
(Intercept)	3.9068*** (0.0450)	3.7009*** (0.0524)	3.6830*** (0.0529)	4.0544*** (0.3951)
AIC	71407.5999	70540.4758	70538.5077	70543.9832
Log Likelihood	-35699.7999	-35251.2379	-35250.2538	-35249.9916
Num. obs.	31331	31331	31331	31331
Num. groups: country	32	32	32	32

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table 2: Results Multilevel Models for Tax Progressivity in 2009 and 1999

	DV: Preferences for Tax Progressivity					
	Control Exp.	Output Gap I	Output Gap II	Placebo 1999	Reduced 1999	Reduced 2009
<i>Micro Variables</i>						
Part-Time Employed	-0.0090 (0.0151)	-0.0101 (0.0152)	-0.0101 (0.0152)	-0.0049 (0.0207)	-0.0052 (0.0207)	-0.0013 (0.0195)
Unemployed	-0.0141 (0.0178)	-0.0148 (0.0179)	-0.0148 (0.0179)	0.0033 (0.0270)	0.0039 (0.0270)	-0.0256 (0.0243)
In Education	-0.0800*** (0.0215)	-0.0766*** (0.0216)	-0.0766*** (0.0216)	-0.0525* (0.0305)	-0.0522* (0.0305)	-0.1137*** (0.0304)
Retired	-0.0261* (0.0150)	-0.0284* (0.0151)	-0.0283* (0.0151)	-0.0080 (0.0212)	-0.0073 (0.0212)	-0.0394** (0.0192)
Not in Labour Force	-0.0342** (0.0149)	-0.0392*** (0.0149)	-0.0392*** (0.0149)	-0.0486** (0.0205)	-0.0491** (0.0205)	-0.0343* (0.0200)
Educational Level	-0.0098*** (0.0034)	-0.0059* (0.0035)	-0.0058* (0.0035)	-0.0209*** (0.0048)	-0.0208*** (0.0048)	-0.0114** (0.0044)
Age	0.0042*** (0.0004)	0.0043*** (0.0004)	0.0043*** (0.0004)	0.0025*** (0.0005)	0.0025*** (0.0005)	0.0044*** (0.0005)
Male	-0.0079 (0.0089)	-0.0111 (0.0089)	-0.0111 (0.0089)	-0.0296** (0.0124)	-0.0300** (0.0124)	-0.0190 (0.0115)
Religiosity	-0.0072*** (0.0022)	-0.0102*** (0.0022)	-0.0102*** (0.0022)	-0.0065 (0.0047)	-0.0067 (0.0047)	-0.0116*** (0.0029)
Income	-0.0212*** (0.0033)	-0.0224*** (0.0034)	-0.0224*** (0.0034)	-0.0259*** (0.0050)	-0.0258*** (0.0050)	-0.0258*** (0.0040)
Des. Backgr.	0.0195*** (0.0040)	0.0216*** (0.0040)	0.0216*** (0.0040)	0.0298*** (0.0055)	0.0299*** (0.0055)	0.0196*** (0.0052)
Des. Behav.	0.0305*** (0.0057)	0.0271*** (0.0058)	0.0271*** (0.0058)	0.0194** (0.0080)	0.0195** (0.0080)	0.0273*** (0.0076)
Des. Inst.	0.0373*** (0.0036)	0.0368*** (0.0036)	0.0369*** (0.0036)	0.0349*** (0.0051)	0.0352*** (0.0051)	0.0327*** (0.0049)
<i>Macro Variables</i>						
Growth 2009	-0.0183** (0.0079)			-0.0062 (0.0076)		-0.0194** (0.0090)
Growth 1999					-0.0149 (0.0124)	
Output Gap 2009		-1.4509** (0.6032)				
Output Gap 2009/2010			-1.1350** (0.5709)			
Growth t-2	-0.0090 (0.0122)	-0.0120 (0.0131)	-0.0118 (0.0136)	-0.0166 (0.0148)	-0.0206 (0.0147)	-0.0019 (0.0144)
Z-Score	-0.0051 (0.0045)	-0.0051 (0.0047)	-0.0058 (0.0047)	-0.0143** (0.0058)	-0.0165*** (0.0054)	-0.0066 (0.0053)
GDP (ln)	-0.0271 (0.0436)	-0.0304 (0.0358)	-0.0375 (0.0367)	-0.0639** (0.0258)	-0.0720*** (0.0255)	-0.0165 (0.0444)
Government Exp.	-0.0031 (0.0043)					
(Intercept)	4.1169*** (0.3990)	4.0715*** (0.4010)	4.1749*** (0.4094)	4.7743*** (0.2915)	4.9531*** (0.2937)	3.9291*** (0.4854)
AIC	70158.8442	70544.5801	70546.2602	39720.2755	39719.5869	41219.0290
Log Likelihood	-35053.4221	-35250.2901	-35251.1301	-19838.1377	-19837.7935	-20584.5145
Num. obs.	31331	31331	31331	17363	17363	18374
Num. groups: country	32	32	32	19	19	19

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table 3: Determinants of Change in Preferences for Tax Progressivity 1999–2009

	DV: $\Delta$ Preferences for Tax Progressivity					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Growth 2009	-0.0191** (0.0073)	-0.0192** (0.0074)	-0.0195** (0.0074)	-0.0192** (0.0085)	-0.0188** (0.0082)	
Major Economic Crisis						0.2121*** (0.0670)
$\Delta$ Age		0.0149 (0.0152)	0.0080 (0.0149)	0.0073 (0.0189)	0.0068 (0.0188)	0.0038 (0.0231)
$\Delta$ Part-Time Empl.			-1.6727 (1.4980)	-1.6912 (1.6177)	-1.7881 (1.5008)	-2.7635** (1.1062)
$\Delta$ Religiosity				0.0132 (0.1850)	0.0152 (0.1840)	0.0963 (0.1558)
$\Delta$ Unempl.					-0.1082 (0.8859)	-0.3869 (0.7139)
(Intercept)	-0.1862*** (0.0530)	-0.2095*** (0.0535)	-0.2046*** (0.0443)	-0.2015*** (0.0578)	-0.1978*** (0.0561)	-0.2594*** (0.0814)
R <sup>2</sup>	0.2173	0.2350	0.2806	0.2808	0.2813	0.4905
Num. obs.	19	19	19	19	19	19

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

# Online Appendix for "What's Fair? Preferences for Tax Progressivity in the Wake of the Financial Crisis" (Journal of Public Policy)

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Table OA1: Country Sample and Time of Fieldwork

Country	Time Period of Fieldwork
Argentina	07/2010-11/2010
Australia	12/2009-02/2010
Austria	07/2010-09/2010
Belgium	03/2009-07/2009
Chile	05/2009-06/2009
Croatia	06/2009-09/2009
Denmark	09/2009-01/2010
Estonia	06/2010-07/2010
Finland	10/2009-12/2009
France	04/2009-07/2009
Germany	05/2010-11/2010
Hungary	11/2009
Iceland	11/2009-05/2010
Israel	09/2009-02/2010
Japan	11/2009
Latvia	06/2009-07/2009
New Zealand	07/2009-11/2009
Norway	10/2009-05/2010
Philippines	10/2009
Poland	06/2010-07/2010
Russia	12/2009
Slovak Republic	09/2009-10/2009
Slovenia	03/2009-06/2009
South Africa	11/2009-12/2009
South Korea	06/2009-08/2009
Spain	11/2009
Sweden	02/2009-05/2009
Switzerland	02/2009-09/2009
Turkey	10/2009-01/2010
Ukraine	06/2009
United Kingdom	06/2009-11/2009
United States	03/2010-08/2010
Venezuela	06/2010

Table OA2: Summary Statistics of Main Micro and Macro Variables

	Country	Tax Prog.		Des. Backgr.		Des. Behav.		Des. Inst.		Growth 2009
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	
1	Ukraine	4.50	0.71	3.34	1.19	4.31	0.75	3.68	1.11	-14.80
2	South Korea	4.42	0.67	3.39	1.01	4.10	0.74	3.24	1.22	0.71
3	Russia	4.38	0.80	3.09	1.19	4.18	0.77	3.47	1.19	-7.82
4	France	4.23	0.73	2.31	0.99	4.03	0.79	3.04	1.28	-2.94
5	Japan	4.22	0.70	2.55	0.92	4.11	0.74	2.26	1.33	-5.53
6	Slovenia	4.19	0.68	2.96	1.09	4.10	0.74	3.20	1.16	-7.80
7	Croatia	4.12	0.67	3.32	1.18	4.27	0.66	3.40	1.19	-7.38
8	Germany	4.11	0.72	2.92	1.05	4.14	0.61	2.55	1.33	-5.62
9	Finland	4.09	0.68	2.17	0.85	4.01	0.69	2.17	1.08	-8.27
10	Turkey	4.07	0.94	3.05	1.20	4.01	0.68	3.43	1.26	-4.83
11	Spain	4.07	0.70	2.87	1.20	3.92	0.73	2.33	1.29	-3.57
12	Latvia	4.00	0.67	3.16	1.15	4.09	0.71	2.94	1.18	-14.35
13	Hungary	4.00	0.76	3.29	1.13	4.35	0.74	3.20	1.17	-6.56
14	United Kingdom	4.00	0.71	2.35	1.00	3.94	0.73	2.29	1.12	-4.19
15	Slovak Republic	4.00	0.79	3.01	1.18	4.25	0.75	3.08	1.17	-5.49
16	Argentina	3.99	0.77	2.37	1.21	4.00	0.64	2.56	1.36	0.05
17	Austria	3.98	0.66	3.00	1.05	4.34	0.67	2.68	1.28	-3.80
18	Estonia	3.97	0.77	2.93	0.99	4.17	0.77	2.64	1.24	-14.72
19	Chile	3.92	0.86	2.92	1.23	4.03	0.66	2.26	1.17	-1.04
20	Australia	3.91	0.70	2.61	1.01	3.99	0.76	2.22	1.11	1.82
21	Sweden	3.87	0.71	2.49	0.94	4.15	0.64	1.84	1.02	-5.18
22	South Africa	3.87	0.80	3.35	1.25	4.06	0.81	2.36	1.44	-1.54
23	Iceland	3.87	0.60	2.39	0.94	4.12	0.68	2.69	1.24	-4.68
24	Poland	3.84	0.79	3.33	1.11	4.18	0.73	3.04	1.19	2.63
25	Belgium	3.84	0.75	2.60	0.86	4.09	0.69	2.67	1.09	-2.28
26	Venezuela	3.82	0.82	2.32	1.17	3.84	0.91	2.58	1.35	-3.20
27	Philippines	3.81	1.07	2.95	1.20	4.19	0.71	1.44	0.76	1.15
28	United States	3.80	0.76	2.85	1.07	4.29	0.61	2.17	1.16	-2.78
29	Norway	3.78	0.64	2.45	0.88	3.97	0.76	1.77	0.91	-1.62
30	Israel	3.78	0.78	3.09	1.04	4.09	0.76	3.09	1.15	1.27
31	Denmark	3.76	0.69	2.35	0.84	3.76	0.82	1.57	1.00	-5.09
32	New Zealand	3.65	0.70	2.25	0.93	4.18	0.67	1.72	0.86	-0.25



Table OA3: Summary Statistics of Micro and Macro Variables

Variable	N	Mean	St. Dev.	Min	Max	Comment	Data Source
<i>Micro Variables</i>							
Tax Progressivity	31,331	4.004	0.784	1	5	–	ISSP
Des. Backgr.	31,331	2.823	1.140	1	5	–	ISSP
Des. Behav.	31,331	4.097	0.745	1	5	–	ISSP
Des. Inst.	31,331	2.600	1.326	1	5	–	ISSP
Part-Time Employed	31,331	0.098	0.298	0	1	Ref. Category: Full-Time Employed	ISSP
Unemployed	31,331	0.074	0.261	0	1	Ref. Category: Full-Time Employed	ISSP
In Education	31,331	0.048	0.215	0	1	Ref. Category: Full-Time Employed	ISSP
Retired	31,331	0.200	0.400	0	1	Ref. Category: Full-Time Employed	ISSP
Not in Labour Force	31,331	0.119	0.324	0	1	Ref. Category: Full-Time Employed	ISSP
Educational Level	31,331	3.951	1.452	1	6	–	ISSP
Age	31,331	33.014	16.686	1	84	–	ISSP
Male	31,331	0.459	0.498	0	1	–	ISSP
Religiosity	31,331	3.638	2.298	1	8	–	ISSP
Income Deciles	31,331	5.311	2.829	1	10	–	ISSP
<i>Macro Variables</i>							
Growth 2009	32	–4.303	4.485	–14.800	2.634	–	World Bank (2017)
Growth 2007	32	5.198	2.741	0.426	10.834	–	World Bank (2017)
Z-Score	32	10.256	6.506	–0.945	27.488	Average 2004–2008	Cihak et al. (2012)
GDP 2009 (ln)	32	9.919	0.904	7.516	11.290	Per capita	World Bank (2017)
Net Gini	32	32.486	7.719	24.159	59.175	Year 2009	Solt (2016)
Market Gini	32	46.599	6.216	33.226	67.570	Year 2009	Solt (2016)
Introduction PIT	32	1,922.656	42.765	1,842	1,994	–	Seelkopf and Genschel (2018)
Revenue from Sales Tax	32	6.595	2.217	1.953	11.242	% of GDP, Year 2009	Prichard (2016)
Social Benefit Expenditure	29	40.138	16.760	14	73	% of GDP, Year 2009	IMF (2017)

Table OA4: Results Multilevel Models for Tax Progressivity: Robustness Checks

	DV: Preferences for Tax Progressivity				
	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Micro Variables</i>					
Part-Time Employed	-0.009 (0.015)	-0.009 (0.015)	-0.009 (0.015)	-0.009 (0.015)	-0.000 (0.016)
Unemployed	-0.014 (0.018)	-0.013 (0.018)	-0.014 (0.018)	-0.014 (0.018)	-0.001 (0.019)
In Education	-0.080*** (0.021)	-0.080*** (0.021)	-0.080*** (0.021)	-0.080*** (0.021)	-0.069*** (0.021)
Retired	-0.026* (0.015)	-0.026* (0.015)	-0.026* (0.015)	-0.026* (0.015)	-0.021 (0.015)
Not in Labour Force	-0.034** (0.015)	-0.034** (0.015)	-0.034** (0.015)	-0.034** (0.015)	-0.019 (0.016)
Educational Level	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.012*** (0.003)
Age	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)
Male	-0.008 (0.009)	-0.008 (0.009)	-0.008 (0.009)	-0.008 (0.009)	-0.005 (0.009)
Religiosity	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.005** (0.002)
Income	-0.021*** (0.003)	-0.021*** (0.003)	-0.021*** (0.003)	-0.021*** (0.003)	-0.023*** (0.003)
Des. Backgr.	0.020*** (0.004)	0.020*** (0.004)	0.020*** (0.004)	0.020*** (0.004)	0.025*** (0.004)
Des. Behav.	0.031*** (0.006)	0.031*** (0.006)	0.031*** (0.006)	0.031*** (0.006)	0.027*** (0.006)
Des. Inst.	0.037*** (0.004)	0.037*** (0.004)	0.037*** (0.004)	0.037*** (0.004)	0.040*** (0.004)
<i>Macro Variables</i>					
Growth 2009	-0.017** (0.007)	-0.017*** (0.006)	-0.016** (0.007)	-0.020*** (0.007)	-0.018*** (0.006)
Net Gini	-0.002 (0.004)				
Market Gini		-0.006 (0.004)			
Introduction PIT			0.000 (0.001)		
Revenue from Sales Taxes				-0.017 (0.013)	
Social Benefits Expenditure					0.003 (0.002)
(Intercept)	3.673*** (0.144)	3.893*** (0.215)	2.991** (1.421)	3.717*** (0.095)	3.523*** (0.090)
AIC	70156.174	70154.704	70156.142	70154.929	62709.331
Log Likelihood	-35055.087	-35054.352	-35055.071	-35054.465	-31331.666
Num. obs.	31331	31331	31331	31331	28679
Num. groups: country	32	32	32	32	29

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table OA5: Results Multilevel Models with Interaction Effects

	DV: Preferences for Tax Progressivity		
	Model 1	Model 2	Model 3
<i>Micro Variables</i>			
Part-Time Employed	-0.0102 (0.0152)	-0.0101 (0.0152)	-0.0100 (0.0152)
Unemployed	-0.0152 (0.0179)	-0.0151 (0.0179)	-0.0156 (0.0179)
In Education	-0.0769*** (0.0216)	-0.0769*** (0.0216)	-0.0766*** (0.0216)
Retired	-0.0285* (0.0151)	-0.0284* (0.0151)	-0.0284* (0.0151)
Not in Labour Force	-0.0393*** (0.0149)	-0.0395*** (0.0149)	-0.0391*** (0.0149)
Educational Level	-0.0059* (0.0035)	-0.0059* (0.0035)	-0.0060* (0.0035)
Age	0.0043*** (0.0004)	0.0043*** (0.0004)	0.0043*** (0.0004)
Male	-0.0110 (0.0089)	-0.0109 (0.0089)	-0.0110 (0.0089)
Religiosity	-0.0102*** (0.0022)	-0.0102*** (0.0022)	-0.0102*** (0.0022)
Income	-0.0225*** (0.0034)	-0.0225*** (0.0034)	-0.0225*** (0.0034)
Des. Backgr.	0.0194*** (0.0053)	0.0215*** (0.0040)	0.0213*** (0.0040)
Des. Behav.	0.0270*** (0.0058)	0.0172** (0.0077)	0.0268*** (0.0058)
Des. Inst.	0.0367*** (0.0036)	0.0366*** (0.0036)	0.0290*** (0.0049)
<i>Macro Variables</i>			
Growth 2007	-0.0053 (0.0123)	-0.0052 (0.0123)	-0.0049 (0.0123)
Z-Score	-0.0065 (0.0046)	-0.0064 (0.0045)	-0.0065 (0.0046)
GDP 2009 (ln)	-0.0249 (0.0355)	-0.0244 (0.0354)	-0.0216 (0.0355)
Growth 2009	-0.0151** (0.0071)	-0.0061 (0.0085)	-0.0110 (0.0070)
<i>Cross-Level Interaction Terms</i>			
Des. Backgr * Growth 2009	-0.0006 (0.0009)		
Des. Behav. * Growth 2009		-0.0026* (0.0013)	
Des. Inst. * Growth 2009			-0.0020** (0.0009)
(Intercept)	4.0592*** (0.3956)	4.0882*** (0.3951)	4.0418*** (0.3959)
AIC	70545.5903	70542.2662	70540.5574
Log Likelihood	-35249.7951	-35248.1331	-35247.2787
Num. obs.	31331	31331	31331
Num. groups: country	32	32	32

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table OA6: Results Multilevel Models for Tax Progressivity: Generalised Linear Models

	DV: Preferences for Tax Progressivity			
	Model 1	Model 2	Model 3	Model 4
<i>Micro Variables</i>				
Part-Time Employed		-0.0243 (0.0387)	-0.0226 (0.0387)	-0.0227 (0.0387)
Unemployed		-0.0274 (0.0460)	-0.0271 (0.0460)	-0.0306 (0.0460)
In Education		-0.1825*** (0.0547)	-0.1815*** (0.0547)	-0.1822*** (0.0547)
Retired		-0.0572 (0.0384)	-0.0552 (0.0384)	-0.0584 (0.0384)
Not in Labour Force		-0.0991*** (0.0384)	-0.0956** (0.0384)	-0.0986** (0.0384)
Educational Level		-0.0159* (0.0087)	-0.0157* (0.0087)	-0.0153* (0.0087)
Age		0.0118*** (0.0009)	0.0117*** (0.0009)	0.0118*** (0.0009)
Male		-0.0206 (0.0227)	-0.0209 (0.0227)	-0.0223 (0.0227)
Religiosity		-0.0265*** (0.0056)	-0.0269*** (0.0056)	-0.0274*** (0.0056)
Income		-0.0605*** (0.0044)	-0.0606*** (0.0044)	-0.0608*** (0.0044)
Des. Backgr.		0.0640*** (0.0104)	0.0636*** (0.0104)	0.0634*** (0.0104)
Des. Behav.		0.0782*** (0.0148)	0.0773*** (0.0148)	0.0771*** (0.0148)
Des. Inst.		0.1105*** (0.0094)	0.1104*** (0.0094)	0.1099*** (0.0094)
<i>Macro Variables</i>				
Growth 2009	-0.0530*** (0.0194)	-0.0462** (0.0183)		-0.0391** (0.0183)
Growth First Half 2009			-0.0519*** (0.0184)	
Growth 2007				-0.0233 (0.0350)
Z-Score				-0.0096 (0.0128)
GDP 2009 (ln)				-0.1889* (0.1033)
AIC	68901.0312	67971.9362	67970.4015	67973.4204
Log Likelihood	-34444.5156	-33966.9681	-33966.2008	-33964.7102
Num. obs.	31331	31331	31331	31331
Groups (country)	32	32	32	32

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table OA7: Results Multilevel Models for Tax Progressivity: Additional Party Variables

	DV: Preferences for Tax Progressivity		
	Model 1	Model 2	Model 3
<i>Micro Variables</i>			
Part-Time Employed	-0.0175 (0.0157)	-0.0175 (0.0157)	-0.0176 (0.0157)
Unemployed	-0.0198 (0.0185)	-0.0198 (0.0185)	-0.0202 (0.0185)
In Education	-0.0783*** (0.0220)	-0.0783*** (0.0220)	-0.0781*** (0.0220)
Retired	-0.0185 (0.0155)	-0.0186 (0.0155)	-0.0186 (0.0155)
Not in Labour Force	-0.0318** (0.0155)	-0.0318** (0.0155)	-0.0319** (0.0155)
Educational Level	-0.0092*** (0.0035)	-0.0093*** (0.0035)	-0.0092*** (0.0035)
Age	0.0042*** (0.0004)	0.0042*** (0.0004)	0.0042*** (0.0004)
Male	-0.0093 (0.0091)	-0.0092 (0.0091)	-0.0092 (0.0091)
Religiosity	-0.0066*** (0.0023)	-0.0065*** (0.0023)	-0.0066*** (0.0023)
Income	-0.0216*** (0.0035)	-0.0216*** (0.0035)	-0.0216*** (0.0035)
Des. Backgr.	0.0200*** (0.0041)	0.0200*** (0.0041)	0.0199*** (0.0041)
Des. Behav.	0.0261*** (0.0059)	0.0261*** (0.0059)	0.0261*** (0.0059)
Des. Inst.	0.0396*** (0.0037)	0.0396*** (0.0037)	0.0396*** (0.0037)
Left Affiliation	0.2335*** (0.0118)	0.2335*** (0.0118)	0.2335*** (0.0118)
Center Affiliation	0.0791*** (0.0133)	0.0791*** (0.0133)	0.0788*** (0.0133)
No Affiliation	0.0761*** (0.0155)	0.0761*** (0.0155)	0.0753*** (0.0155)
<i>Macro Variables</i>			
Growth 2009	-0.0169** (0.0068)		-0.0155** (0.0070)
Growth First Half 2009		-0.0195*** (0.0069)	
Growth 2007			-0.0117 (0.0155)
Z-Score			-0.0060 (0.0054)
GDP 2009 (ln)			-0.0512 (0.0400)
(Intercept)	3.6288*** (0.0567)	3.6123*** (0.0574)	4.2680*** (0.4683)
AIC	64124.2587	64122.7419	64127.8460
Log Likelihood	-32040.1294	-32039.3710	-32038.9230
Num. obs.	28837	28837	28837
Num. groups: country	29	29	29

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table OA8: Results Multilevel Models for Tax Progressivity: Robustness Micro Variables

	DV: Preferences for Tax Progressivity	
	Model 1	Model 2
<i>Micro Variables</i>		
Part-Time Employed	-0.0094 (0.0152)	-0.0206 (0.0247)
Unemployed	-0.0116 (0.0179)	-0.0227 (0.0280)
In Education	-0.0706*** (0.0216)	-0.0573* (0.0295)
Retired	-0.0173 (0.0151)	0.0224 (0.0329)
Not in Labour Force	-0.0393*** (0.0149)	-0.0141 (0.0279)
Educational Level	-0.0056 (0.0034)	-0.0006 (0.0098)
Age	0.0043*** (0.0004)	0.0042*** (0.0006)
Male	-0.0116 (0.0089)	-0.0228 (0.0151)
Religiosity	-0.0103*** (0.0022)	-0.0135* (0.0067)
Income	-0.0215*** (0.0017)	-0.0190*** (0.0031)
Des. Backgr.	0.0208*** (0.0040)	0.0282** (0.0130)
Des. Behav.	0.0270*** (0.0058)	0.0315** (0.0134)
Des. Inst.	0.0381*** (0.0036)	0.0783*** (0.0113)
(Intercept)	3.7908*** (0.0438)	3.6175*** (0.1123)
Adj. R <sup>2</sup>	0.0961	0.0430
Num. obs.	31331	31331
Num. groups: country	32	32
Model	Country FE	Country Clustered SE

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Figure OA1: GDP Growth 2009 and Aggregate Demand for Tax Progressivity

