Article

Who Gives, Who Gains? Progressivity and Preferences

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Pablo Beramendi[1] and Philipp Rehm[2]

Abstract

The extent to which popular support for the welfare state depends on income varies greatly across nations and policy domains. We argue and show formally that these variations—largely overlooked yet essential to understanding the politics of redistribution—reflect in part the design of tax and transfer policies in terms of progressivity. When progressivity is high, politics is perceived by income groups as a zero sum game and conflicts over *who gets what* intensify. When progressivity is low, and tax contributors and benefit recipients overlap, redistributive struggles become politically less salient. We test these predictions both across nations and across policy domains within a sample of advanced industrial democracies. Our findings indicate that the progressivity of the tax and transfer system is a major determinant of the predictive power of income on preferences for redistribution.

Keywords

political economy, taxation, progressivity, redistribution, economic policy

Introduction

In the aftermath of the Great Recession, debates about the size and the feasibility of the welfare state have vigorously re-emerged, as has scholarship about citizens' support for redistribution. These two streams of research

[1]Duke University, Durham, NC, USA
[2]The Ohio State University, Columbus, OH, USA

Corresponding Author:
Pablo Beramendi, Duke University, 326 Perkins Library, Durham, NC 27708, USA.
Email: pb45@duke.edu

connect directly: Welfare states need and enjoy broad public support, but they also elicit political opposition. The intensity of the conflict between supporters and opponents of the welfare state defines the scope of class (or "first dimension") politics within society. In some countries, class politics dominates the political agenda. In others, it is weaker, either because there is consensus around the welfare state or because parties compete on issues unrelated to distributive politics ("second-dimension" politics). Accordingly, income and attitudes toward redistribution are tightly linked in some countries whereas loosely connected in others. In this article, we set out to explain why. We argue that progressivity is a crucial, and so far largely overlooked, factor shaping contestation over redistribution: By determining *who gives and who gains*, the design of the tax and transfer system shapes citizens' expected net benefits and mediates the impact of income on preferences for redistribution. We provide a simple mechanism that explains, at least in part, why the rich at times support larger welfare states while the poor remain indifferent toward them, a mechanism that does not require complex behavioral assumptions or multi-dimensional political spaces. In progressive welfare states, income and preferences for redistribution are closely linked, whereas they are only loosely or not at all correlated in less progressive welfare states.

By way of motivation of this article's puzzle, Figure 1 displays the size of the income coefficients when predicting attitudes toward redistribution in different countries. The bars represent the size of the coefficient from regressing redistribution attitudes on income and a small set of controls (gender, education, age); these coefficients refer to around 2006, and are recovered from a multi-level model.[1]

Income has almost always a negative effect on support for redistribution across rich democracies, but the diversity in the magnitude of the effect is striking (Dion, 2010; Dion & Birchfield, 2010). Why is income such a strong predictor of redistributional attitudes in New Zealand, but not in Spain? What explains the fact that income is more closely correlated with redistribution preferences in the United States compared with Sweden, despite the fact that the Swedish welfare state is much larger? Why does income seem to be a worse predictor of support for redistribution in France or Finland? Why are richer respondents in Portugal more likely than poorer respondents to express support for redistribution?

Arguably, existing scholarship points to three potential explanations for varying welfare state contestation (as measured by the income slopes). First, higher inequality may lead to a closer relation between income and redistributive attitudes. The connection between income slopes and pre-tax income inequality seems straightforward: As the gap between the rich and the poor increases, both the potential loss of the former and the potential gains of the

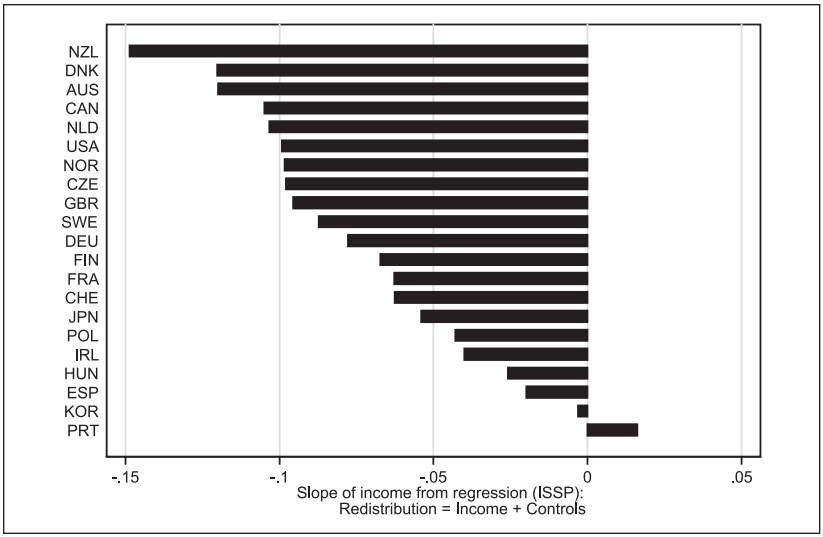

Figure 1. Income as predictor of redistributional attitudes.
Shown are Best Linear Unbiased Predictors (BLUPs) from multi-level models, derived from Model (2) in Table 3. Based on ISSP 2006. Preferences for redistribution: "On the whole, do you think it should be or should not be the government's responsibility to reduce income differences between the rich and poor" (1. Definitely should not be, 2. Probably should not be, 3. Probably should be, 4. Definitely should be). Controls are education, gender, and age. Sample is restricted to employed respondents aged 18 to 65. ISSP = International Social Survey Program.

latter increase, thereby polarizing conflicts over redistribution. Under those circumstances, income should be a stronger predictor of preferences for redistribution. This intuition is consistent with a recent literature that suggests that increases in income inequality are an important source of political polarization (Iversen & Soskice, 2001, 2015; McCarty, Poole, & Rosenthal, 2006; Pontusson & Rueda, 2010). Second, larger welfare states may be associated with more income-based political contestation. One may hypothesize that where there is more money at stake, political behavior revolves more along income lines (Svallfors, 2004). Third, the redistributive effect of welfare states may explain income slopes. Income may be more closely correlated with redistribution attitudes when the welfare state is more effective at reducing inequality.

Yet, however compelling in their simplicity, none of these three logics seems to work very well. Figure 2 plots income slopes as reported in Figure 1 against four variables related to these logics: the Gini coefficient of pre-tax income inequality (top left panel), the Gini coefficient of post-tax income

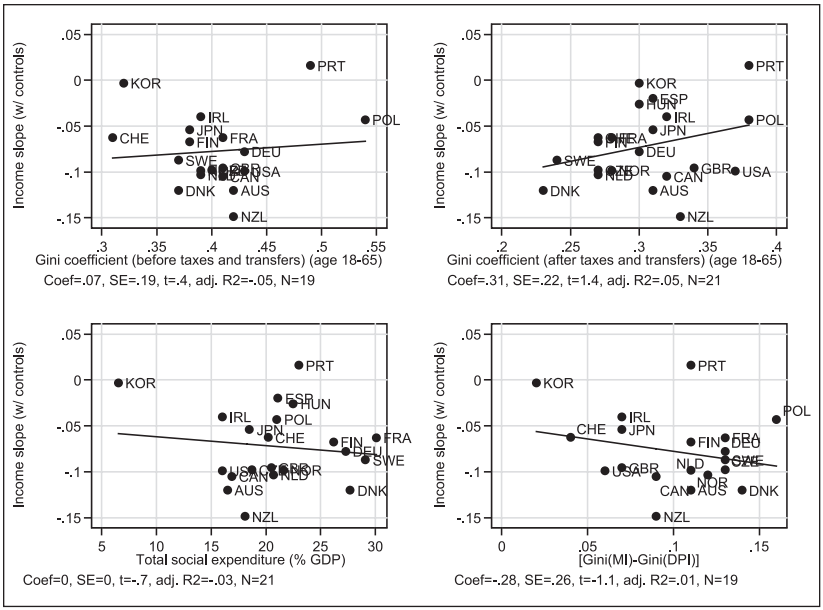

Figure 2. Inequality, welfare state size, vocational training, and income slopes.
GDP = gross domestic product; MI = market income; DPI = disposable income.

inequality (top right panel), the size of the welfare state—measured as total public social expenditure as % of gross domestic product (GDP; bottom left panel), and the reduction in inequality—measured as the difference between the Gini coefficients of pre- and post-tax inequality (bottom right panel). Figure 2 conveys that income slopes do not correlate well with pre-existing patterns of inequality, nor the size of the welfare state, and only weakly with the redistributive success of welfare states. As such, the patterns of variation depicted in Figure 1 do not sit well with dominant theoretical approaches in the field, and we therefore propose an alternative account.

We suggest that the progressivity of the welfare state shapes welfare state contestation (as captured by the income slopes). Progressivity captures the incidence of taxes and transfers across different income groups. In a tax (benefit) system that is neither progressive nor regressive, each income group pays the same proportion of overall taxes (receives the same proportion of benefits). Progressivity measures to which degree a tax (or transfer/benefit) system deviates from proportionality. In a progressive *tax* system, richer income groups pay a higher share of the taxes. In a regressive tax system, poorer income groups disproportionally carry the overall tax burden. On the flipside,

in a progressive *transfer* system, benefits are disproportionally targeted at the poor, that is, they receive a higher proportion of the overall transfers. In a regressive transfer system, richer income groups receive a higher share of benefits. Below, we develop the argument that welfare state contestation ("first-dimension politics") is greater in more progressive welfare states.

Hence, we expect the design of the tax and transfer system to play a key role in explaining why income is a better predictor of attitudes toward redistribution in some countries, why "first-dimension politics" dominates in some countries but not in others. We believe that establishing that progressivity mediates the impact of income on preferences for redistribution is an important and consequential result that makes several contributions.

First, we bring into the discussion an aspect of design of welfare states, progressivity, that is typically downplayed by comparative analyses. We know that redistribution equals size times progressivity (Kakwani, 1977; Kim & Lambert, 2009). And yet the literature has focused either on the size of welfare states (measured by spending, or replacement rates) or, increasingly, on their redistributive effects (measured as the difference in inequality of market and disposable income). However, to the best of our knowledge, no one has focused on the second element of the equation. Yet, neither the size of welfare states nor their ability to reduce inequality tell us all that much about who gives and who gains, and consequently leaves important aspects of redistributive politics in the dark. The missing link between welfare state effort and redistributive effect is, in fact, progressivity. Interestingly, when we turn the focus to the degree of progressivity of taxes and transfers, countries do not fall into familiar clusters. For example, although overall spending levels in the United States are much lower than in Sweden, and although the welfare state in Sweden reduces inequality more than in America, the progressivity of (cash) benefits in the two countries is almost identical—and the U.S. tax system is much more progressive than the Swedish one. Overall, this makes America *more* progressive than Sweden, and we would expect income to be more closely related to redistributive attitudes in the United States—an expectation borne out by the data. By analyzing progressivity as a key theoretical dimension of redistributive conflicts, our article makes sense of these unexplained empirical regularities that cut across conventional regime classifications.

Second, as part of the process of theorizing and measuring the importance of progressivity, we not only pay attention to the expenditure (benefit) side of welfare states but also systematically incorporate the revenue side (taxes and contributions)—which tends to be overlooked in comparative accounts of the welfare state (though see Steinmo, 1996, for an early exception). The small literature on taxation and social policy uncovered the

counterintuitive combination between regressive revenue structures and large, redistributive welfare states (Beramendi & Rueda, 2007; Kato, 2003; Steinmo, 2010), adding to what earlier came to be known as "the paradox of redistribution" on the spending side (Korpi & Palme, 1998). We build on this literature to identify an important institutional mechanism that affects preference formation. Preferences respond to the *actual distribution of who gives and who gains*, which is determined jointly by the tax system, the transfer structure, inequality, and risk (and summarized by progressivity). Existing contributions typically focus exclusively on individual-level determinants of social policy preferences, emphasizing mechanisms as diverse as self-interest, values and believes, and other-regarding preferences (for a recent review, see Alesina & Giuliano, 2011). We build on the micro-level literature and offer a micro-level account of social policy attitudes, but we advance an argument that links institutional characteristics to preference formation. Linking micro- and macro-level arguments and analyzing "preferences in context" (Gingrich & Ansell, 2012) strike us as a pressing research agenda.

Third, we offer a bridge between the largely divorced literatures on comparative political economy, on the one hand, and parties and elections on the other. By focusing on what makes social policy politically contested, our framework contributes to the scholarship on the dimensionality of the political space ("first- vs. second-dimension politics"). Typically, arguments about second-dimension politics focus on non-economic rationales (identity, religion, culture, electoral systems) to account for the relative importance of economic versus non-economic determinants of political choice. Our framework suggests that the scope for second-dimension politics reflects the very design of the welfare state and the fiscal system: in countries with progressive tax and transfer systems, first-dimension politics should overshadow other lines of political divide.

The article proceeds as follows. In the next section, we present our theoretical argument and empirical strategy. Subsequently, we discuss our empirical analyses and findings. Finally, the conclusion summarizes our results, discusses some of the limitations of the article, and points to future lines of inquiry.

The Argument: Progressivity, Redistribution, and Preferences

Along a number of previous contributions (Gingrich, 2014; Svallfors, 2004), we conceive welfare state institutions as a key ingredient to understand the process of political preference formation. Our argument points to progressivity

Table 1. Hypothetical Tax and Transfer Systems.

	System A				System B			
	Pre-tax	Taxes	Transfers	Final income	Pre-tax	Taxes	Transfers	Final income
Poor	20	0	30	50	20	10	10	20
Rich	80	40	10	50	80	30	30	80

as the mechanism that drives the feedback from institutions to citizens' preferences. As opposed to the size of the welfare effort, it is the design in terms of progressivity that determines the degree to which the fiscal contract between different income classes is a zero sum game, thus shaping the patterns of political contention.

In contrast to progressivity, the size of the welfare state—arguably the most prominent dependent variable in the social policy literature—has no obvious connection to the distribution of expected net benefits, and therefore no clear link to interests and politics. Indeed, it is difficult to conceive of a convincing argument that connects just the size of welfare states with patterns of support across different income groups. To see this, consider the comparison between two hypothetical fiscal systems in Table 1.

Systems A and B have identical levels of pre-tax inequality and, importantly, *equally sized welfare states* (40 units of tax take and transfers). What differentiates them is who gives to the budget (progressivity in taxes) and who gains from the fiscal expenditures (progressivity in transfers). System A is much more progressive than system B overall and, as a result, the levels of final income inequality are much lower. Our claim is that for any given level of welfare state size, more progressive systems (à la A in Table 1) are experienced by voters as a zero sum game and therefore lead to higher levels of contestation. By contrast, to the extent that the fiscal system departs from this logic and those who contribute also share in the benefits, the levels of polarization around income will be significantly lower. Differently put, changing the size of the welfare state in System A will be highly contested as any change divides the poor and the rich in clear net benefit winners and losers. This is not the case in System B where a change in the size of the welfare state has no redistributive effect, assuming that the parameters of the tax and transfer system remain unchanged.

One objection to this line of reasoning might be that welfare state contestation can be expected to be high in the less progressive tax and transfer System B as well, because the poor have incentives to increase its progressivity and the rich have incentives to prevent that. In other words, progressivity itself could be the topic of contestation. This is a valid point, but the vast majority of policymaking is about incremental changes to the status quo

("more or less") within a given institutional structure (such as a tax and transfer system) rather than that institutional structure itself ("system A or B" or "the rules of the game"). This is especially true for budgetary decisions and welfare policies, which tend to exhibit a particularly high degree of inertia and path dependency. In these cases, politics plays out within the contours of a given tax and transfer system whose parameters are not up for grabs in the short run. The fundamentals of social policy programs tend to be based on compromises reached decades ago[2], and contemporary policy making tends to be about incremental changes of these early compromises. In other words, conflict about welfare state policies in advanced industrial societies is largely about marginal changes within a generally accepted institutional framework. In that sense, the core parameters of the tax and transfer system ("progressivity") are typically exogenously determined.

This line of reasoning links directly to two important premises in our analysis, both theoretically and empirically: First, when individuals form preferences over redistribution, the key parameters of the system under which they operate are fixed. In other words, in advanced industrial democracies, the majority of citizens become political animals under a set of institutional parameters largely fixed since before they enter politics. In line with this, our formal model below explores citizens' preferred spending level under a given degree of progressivity. Second, major changes in the overall levels of progressivity do not occur as a result of individuals' or group-level preferences under day-to-day electoral politics. Rather, ideological shifts and coalitional changes build up over long periods of time and tend to crystalize at times of crises (both military and/or economic/financial).

To substantiate our premises, Table 2 displays over-time data on tax progressivity for a set of countries.[3] The picture emerging is clear and consistent with our assumption: Across most of the cases with available data, tax progressivity is a rather stable institutional feature, as reflected by the fact that the rank order of countries remains largely the same over four decades. Moreover, cross-national differences trump differences over time. We think that these differences are much more likely to reflect exogenous pressures in extraordinary times rather than the feedback of citizens mobilized over tax policy under normal electoral politics.[4] Citizens grow up in a fairly stable tax and transfer environment.

A second potential objection to our argument relates to the informational requirements implied by our framework. The concern would be that we assume overly sophisticated agents. However, we think that the informational requirements we put on citizens are relatively modest, at least compared with standard approaches in the literature (such as voting models, which often assume that citizens know their ideal points and all parties' positions). Our argument does not require citizens to know the specifics of every aspect of the fiscal system, nor the

Table 2. Progressivity of Taxes Over Time.

Country	1970s	1980s	1990s	2000s
United States	0.556 (2)	0.584 (1)	0.588 (1)	0.621 (1)
Canada	0.566 (1)	0.521 (2)	0.553 (2)	0.550 (2)
Germany	0.507 (3)	0.509 (3)	0.514 (4)	0.549 (3)
United Kingdom	0.459 (6)	0.473 (4)	0.532 (3)	0.548 (4)
Norway	0.495 (4)	0.447 (5)	0.447 (5)	0.451 (5)
Sweden	0.479 (5)	0.409 (6)	0.373 (6)	0.380 (6)

Source. Freeze (2015).
Shown is the progressivity of taxes, averaged for each decade. Ranks are in parentheses.

actual degree of progressivity associated with tax and transfer policy tools. This would be quite an unrealistic informational prior (Gingrich, 2014). What our framework does require is that citizens have a general sense of whether and how much they benefit or lose from the tax and transfer system, that is, they have a general sense of their net benefits derived from the welfare state. Unlike, say, the positioning of all parties in the policy space, this is a topic of direct material importance for citizens, and we think it is indeed realistic that citizens have a sense of their net benefits from the welfare state.

To clarify and further develop the intuition presented in Table 1, we now offer a simple formalization that builds on the canonical Meltzer–Richard model (MR; Meltzer & Richard, 1981). Citizens have an exogenously given level of income (w_i), which is taxed by function t_i. Taxes are collected and handed out as a flat-rate benefit c. Taxation leads to disincentive effects (labor supply decreases as taxation increases), which we capture (indirectly) by function L. Individuals' utility is then

$$U_i = \left(1 - t_i\right) w_i + c - L \tag{1}$$

This formulation departs from the MR model in two main ways. First, it simplifies the original model by taking incomes as exogenous. Second and more interestingly, t_i varies by individuals, adding a progressive tax design to the original model. In particular, we follow De Donder and Hindrik (2003) and set

$$t_i = \alpha + \beta w_i \tag{2}$$

With this income tax function, individual i's tax payment is

$$w_i t_i = \alpha w_i + \beta w_i^2 \tag{2'}$$

Parameter alpha captures a proportional tax rate (everybody pays, say, 20% of their income as taxes). Parameter beta is the progressivity tax parameter, with $\beta > 0$ indicating a (marginally) progressive income tax and $\beta < 0$ representing a (marginally) regressive one (De Donder and Hindrik set $c \geq 0$, $0 \leq \alpha \leq 1$, and $-(\alpha / 2) \leq \beta \leq (1 - \alpha) / 2$). In the MR model, $\beta = 0$, that is, taxes are proportional. We assume that deadweight losses are not constant across taxpayers. Instead, we capture the differential (dis)incentive effects associated with progressivity as $L = (w_i t_i)^2 / 2$. Balanced budgets require that the sum of benefits equals the tax take, which implies,[5]

$$c = \frac{\sum w_i t_i}{N} = \frac{\sum \alpha w_i + \beta w_i^2}{N} = \alpha w + \beta E\left(w_i^2\right) = \alpha w + \beta\left[Var\left(w_i\right) + w^2\right] \quad (3)$$

where w is the average wage.

Note that tax policies are bi-dimensional: Benefit c depends on α and β. This simple set-up allows us to explore the impact of progressivity (β) on preferred spending levels (c).

This exploration involves several steps (see appendix for details), which yield the following expression for optimal c, c^*:

$$c^* = \beta.Var\left(w_i\right) + \left(\frac{w}{w_i} - 1\right)\left(\frac{w}{w_i} + \beta w_i w\right) \quad (4)$$

Expression (4) provides a number of insights into the relationship between progressivity, income (w_i), and the optimal level of benefits (c^*). We concentrate on the case of progressive taxation (i.e., $\beta > 0$) and compare the predicted preferences of rich versus poor citizens.

(1) ***The poor ($w_i < w$) under progressive taxation ($\beta > 0$)***: Evaluating (4) for citizens satisfying $w_i < w$ produces

$$c^* = \underbrace{\beta.Var\left(w_i\right)}_{>0} + \underbrace{\left(\frac{w}{w_i} - 1\right)}_{>0}\underbrace{\left(\frac{w}{w_i} + \beta w_i w\right)}_{>0} > 0 \quad (5)$$

which implies that c^* is positive for all poor citizens.

(2) ***The rich ($w_i \geq w$) under progressive taxation ($\beta > 0$)***: In turn, evaluating (4) for citizens satisfying $w_i \geq w$ produces,

$$c^* = \underbrace{\beta.Var\left(w_i\right)}_{>0} + \underbrace{\left(\frac{w}{w_i} - 1\right)}_{>0}\underbrace{\left(\frac{w}{w_i} + \beta w_i w\right)}_{>0} \quad (6)$$

Notice that (6) has a positive and a negative term, which requires further analyses to establish the conditions under which $\partial c^* / \partial w_i < 0$. Taking the derivative of (6) with respect to w_i, setting it to 0 and solving for β allow us to establish the following condition:

$$\frac{\partial c^*}{\partial w_i} < 0 \text{ iff } \beta > \underbrace{\frac{1}{w_i^2}}_{\to 0}\left(1 - \frac{2w}{w_i}\right) \tag{7}$$

Under this mild condition, it holds that the wealthier the citizens, the lower the support for redistribution $(\partial c^* / \partial w_i < 0)$.

Finally, the cross-partial of c^* with respect to β and w_i allows us to establish how the degree of progressivity mediates the relationship between income and preferences for redistribution:

$$\frac{\frac{\partial c^*}{\partial w_i}}{\partial \beta} = \frac{\left[-\frac{2w^2}{w_i^3} + \frac{w}{w_i^2} - \beta w\right]}{\partial \beta} = -w < 0 \tag{8}$$

The results in (6) to (8) summarize our argument: The more progressive the tax system, the stronger the effect of income on preferences for redistribution. In more progressive systems, relatively poorer citizens will show stronger support for larger benefits, whereas relatively wealthier citizens will show stronger opposition to redistributive policies. Hence, we hypothesize that *the impact of income on preferences over redistribution is higher in systems with higher levels of progressivity*. The remainder of the article offers empirical assessments of this expectation.

Empirical Strategy: Design and Measurement

Our argument is that progressivity influences the predictive power of income when it comes to attitudes toward social insurance programs. After a descriptive exploration of the relationship between progressivity and income slopes, we test this claim in two different ways:

1. *Across countries:* Do income slopes (from predicting redistributional/social insurance attitudes) vary systematically with the degree of progressivity?
2. *Across social policy domains, across countries:* Do income slopes vary with the degree of progressivity in different social policy domains in different countries?

Our dependent variable is the predictive power of income for social insurance attitudes. To compute a reliable measure, we estimate hierarchical linear models predicting social insurance attitudes with income and a set of controls (education, gender, and age), with random intercepts and random slopes (see Table 3).[6] We then recover country-specific income slopes (and their standard errors) from best linear unbiased predictions (BLUPs). These income slopes are our dependent variable (and we use the inverse of the standard errors as weights in all further country-level estimates). Figure 1 above displayed these slopes. Larger (more negative) coefficients indicate that social policy issues are a more salient cleavage in a society. One advantage of this approach is that it allows us to take into account other relevant factors: The partial correlation coefficient of social policy attitudes and income is net of control variables. Perhaps the largest challenge for the income-slope approach is that the income data in our public opinion survey are of problematic quality and not necessarily comparable across countries. It is therefore reassuring that the estimated income gradients from alternative data sources with better and more comparable income variables are consistent with one another.[7]

The main source for measuring our dependent variable is the International Social Survey Program's (ISSP) "Role of Government" (RoG) module IV (ISSP Research Group, 2006). We recover income slopes on the following attitudinal items (where the answer categories are 1. "Definitely should not be," 2. "Probably should not be," 3. "Probably should be," and 4. "Definitely should be"):

- On the whole, do you think it should or should not be the government's responsibility to . . .
  - Reduce income differences between rich and poor
  - Provide decent standard of living for the old
  - Provide decent standard of living for the unemployed
  - Provide health care for the sick
  - Provide decent housing for those who cannot afford it

Our main focus is on the redistribution item (government responsibility to reduce income difference between rich and poor). However, we also rely on the other items for a comparative analysis of contestation across social policy domains. The comparison across policy domains also allows to consider, in an indirect way, how sensitive our results are to differences in the relative prevalence of income versus insurance motives (Moene & Wallerstein, 2001).

Our key explanatory variable is "progressivity"—parameter β in the model presented above. How should it be measured? One prominent strategy in the literature is to equate progressivity with the redistributive effect taxes

Table 3. Preferences for Government Responsibility.

	(1)	(2)	(3)	(4)
	Preferences for redistribution		Preferences for government responsibility in specific domains	
Income (in noviles)	−0.072**	−0.045**	−0.029**	−0.015†
	(0.010)	(0.007)	(0.004)	(0.009)
Education (ISCED)	−0.074**	−0.080**	−0.008*	−0.014
	(0.008)	(0.017)	(0.004)	(0.024)
Female	0.146**	0.148**	0.067**	0.092**
	(0.018)	(0.032)	(0.009)	(0.021)
Age	0.002**	0.001	0.003**	0.003*
	(0.001)	(0.002)	(0.000)	(0.001)
Progressivity		−0.187		0.311
		(0.152)		(0.221)
Income × Progressivity		0.222**		0.049*
		(0.030)		(0.019)
Constant	3.383**	3.414**	3.168**	3.249**
	(0.058)	(0.073)	(0.064)	(0.091)
Variance components				
Var(income)	0.002**		0.001**	
	(0.001)		(0.000)	
Var(constant)	0.023**		0.161**	
	(0.011)		(0.035**)	
Var(residual)	0.871**		0.484**	
	(0.012)		(0.004)	
No. of cases	11009	11009	24646	24646
No. of countries/ clusters	21	21	46	46
Adj. R^2		.107		.049
Log likelihood	−14,913.9	−15,078.8	−26,168.5	−30,168.2

Standard errors in parentheses. Models (1) and (3) are multilevel mixed-effects linear regression; Models (2) and (4) are OLS. Discussions of the correlates of income slopes in the test are based on Models (1) and (3). In Models (3) and (4), individuals are nested in domains and countries: The cluster level is a social-policy domain in different countries. In the stacked data set, attitudes in four social policy domains[8] are mapped onto four domain-specific concentration of benefits, as follows:

- Provide decent standard of living for the unemployed → concentration of unemployment benefits.
- Provide decent standard of living for the old → concentration of old age pensions.
- Provide health care for the sick → concentration of disability benefits.
- Provide decent housing for those who cannot afford it → concentration of housing benefits.

†$p < .1$. *$p < .05$. **$p < .01$.

and transfers have, which is typically measured as the (proportional) reduction in the Gini coefficient comparing market and disposable income distributions (Bradley, Huber, Moller, Nielsen, & Stephens, 2003; Kenworthy & Pontusson, 2005). Standard measures capturing the overall reduction in inequality due to taxes and transfers, such as the difference in Gini coefficients before and after taxes and transfers, provide a summary of the scope of redistribution but do not speak to the directionality of the policy effects behind observable redistribution nor about the subspace of the income distribution in which the reallocation of resources actually takes place. For instance, a 10% reduction in pre-tax inequality may reflect transfers from the top to the middle, from the middle to the bottom, or from the top to the bottom. These are three very different scenarios in terms of progressivity and the politics of social policy—and yet the overall reduction in the Gini coefficient for pre-tax inequality offers no leverage to distinguish between them. This is not to say though that redistribution and progressivity are unrelated.

Following Kakwani and Lambert, the overall redistributive impact of the fiscal system—measured by the difference between market and disposable income Gini coefficients—can be broken into two components (Kakwani, 1977; Kim & Lambert, 2009): the scope of the effort and its progressivity. The relationship can be formally stated as follows:[9]

$$Gini^{market} - Gini^{disposable} = \frac{\tau}{(1-\tau)}\beta = \frac{t\beta^{T} + b\left|\beta^{B}\right|}{1-t+b} \tag{9}$$

where t denotes the tax level, b denotes the benefit level, and β^{T} and β^{B} indicate the progressivity of taxes and benefits. Assuming balanced budgets ($t = b = \alpha$), we can rewrite this equality as follows:

$$Gini^{market} - Gini^{disposable} = \alpha\left(\beta^{T} + \left|\beta^{B}\right|\right) \tag{10}$$

In words, the overall reduction in inequality due to taxes and transfers can be decomposed into the product of the size of the welfare state (α) and the progressivity of its taxes (β^{T}) and benefits (β^{B}). It is our contention that progressivity is a central ingredient of welfare state politics.

The literature has followed Kakwani in measuring β^{T} and β^{B}. Kakwani (1977) defines progressivity as a tool to "measure deviations of the tax [or transfer] system from proportionality" (p. 74), which are commonly captured by concentration curves of taxes and benefits, respectively. The *concentration of taxes* is derived by plotting the share of taxes paid against rank-ordered income groups. In a progressive system, those at the bottom of the income scale pay a lower share of taxes. The concentration coefficient of taxes (β^{T})

sums the area between the concentration curve and the 45-degree line in a way that more positive values indicate more progressive systems. Progressivity of benefits is measured analogously. The *concentration of benefits* is derived by plotting the share of benefits received against rank-ordered income groups. In a progressive system, those at the bottom of the income scale receive a higher share of benefits. The concentration coefficient of benefits (β^B) sums the area between the concentration curve and the 45-degree line, where the area above the 45-degree line has a negative sign, whereas the area below the 45-degree line has a positive sign. More negative values indicate more progressive transfer systems.

In the empirical analysis below, we will capture progressivity by the concentration of benefits (β^B) as well as a measure of overall progressivity ($\beta^T - \beta^B$). In both cases, a value of zero indicates proportionality. With respect to the concentration of benefits, negative values indicate more progressive benefits systems, and we expect a positive correlation between income slopes (welfare state contestation) and that measure. With respect to the combined measure of progressivity—taking into account taxes and benefits—positive values indicate more progressive systems, and we expect a negative relationship between income slopes and overall progressivity. We take these measures from the Organization for Economic Co-Operation and Development (OECD; Förster & Whiteford, 2009; OECD, 2008), and they refer to the mid-2000s. The OECD also provides concentration measures of cash benefits for various social policy domains. These measures are displayed in Table 4, together with an indicator of the importance of benefits (percentage share of public cash transfers in household disposable income).

Analysis and Findings

Our theoretical framework predicts that the importance of social policy as a political cleavage will be larger, the higher the levels of progressivity. Figure 3 presents a preliminary exploration of this relationship by plotting the relationship between progressivity of transfers (top panel), taxes (middle), and combined (bottom panel) and the average levels of support for redistribution of income groups. Within each figure, we distinguish between the poor (measured as the bottom three of nine income noviles) and the rich (measured as the top three of nine income noviles).

Figure 3 reveals two interesting patterns. First, the higher the level of progressivity is, the larger is the gap in the average level of support for redistribution between the rich and the poor, as predicted by our framework. The gap is larger in the case of transfers (top panel), but it is also apparent if the analysis is restricted to taxes. Second, the rich seem more sensitive to variations in

Table 4. Concentration Measures; Income Slopes.

	Transfers	Concentration of . . .			Concentration of cash benefits for . . .				Income slopes	
Country	% DI	Cash benefits	HH taxes	HH taxes–cash benefits	Old age pension	Unemployment benefits	Housing benefits	Disability benefits	Coefficient	*SE*
AUS (Australia)	14.3	–0.43	0.49	0.92	–0.47	–0.44		–0.35	–0.120	0.014
CAN (Canada)	13.6	–0.17	0.47	0.65	–0.11	–0.06			–0.105	0.016
CHE (Switzerland)	16.0	–0.18	0.21	0.39	–0.19	–0.15			–0.063	0.016
CZE (Czech Republic)	24.3	–0.15	0.42	0.58	–0.11	–0.28	–0.66	–0.06	–0.098	0.016
DEU (Germany)	28.2	–0.07	0.44	0.51	0.10	–0.28	0.00		–0.078	0.014
DNK (Denmark)	25.6	–0.30	0.33	0.64	–0.49	–0.22	–0.58	–0.18	–0.120	0.014
ESP (Spain)	21.3	0.10			0.04	0.02	0.48	0.11	–0.020	0.011
FIN (Finland)	14.4	–0.26	0.42	0.68	–0.44	–0.24	–0.61	0.07	–0.067	0.015
FRA (France)	32.9	0.10	0.35	0.26	0.25	0.08	–0.55	0.14	–0.063	0.014
GBR (United Kingdom)	14.5	–0.35	0.49	0.83	–0.21			–0.20	–0.096	0.018
HUN (Hungary)	35.1	–0.03			0.01	–0.25			–0.026	0.017
IRL (Ireland)	17.7	–0.21	0.53	0.74	–0.32	–0.07	–0.46	–0.27	–0.040	0.017
JPN (Japan)	19.7	0.02	0.36	0.34	0.02	–0.11			–0.054	0.015
KOR (South Korea)		0.04	0.36	0.32					–0.003	0.013
NLD (Netherlands)	17.1	–0.22	0.44	0.66	–0.16	0.03	–0.65	–0.11	–0.103	0.015
NOR (Norway)	21.7	–0.18	0.36	0.53	–0.27	–0.12	–0.65	–0.06	–0.098	0.013
NZL (New Zealand)	13.0	–0.33	0.49	0.82	–0.32	–0.38	–0.37	–0.35	–0.149	0.016
POL (Poland)	35.8	0.17	0.38	0.21	0.26	0.13	–0.26	0.04	–0.043	0.014
PRT (Portugal)	25.5	0.32			0.33	0.20	0.13	0.03	0.016	0.014
SWE (Sweden)	32.7	–0.15	0.33	0.48	–0.19	–0.10	–0.66	0.25	–0.087	0.014
USA (United States)	9.4	–0.12	0.55	0.66	–0.04	0.07			–0.099	0.012

Source. OECD, 2008, Table 4.3, 4.4; Figure 4.2.

Income slopes are derived from ISSP 2006, using multi-level models, and are also displayed in Figure 1. DI = disposable income; HH = household; *SE* = standard error; ISSP = International Social Survey Program; OECD = Organization for Economic Co-Operation and Development.

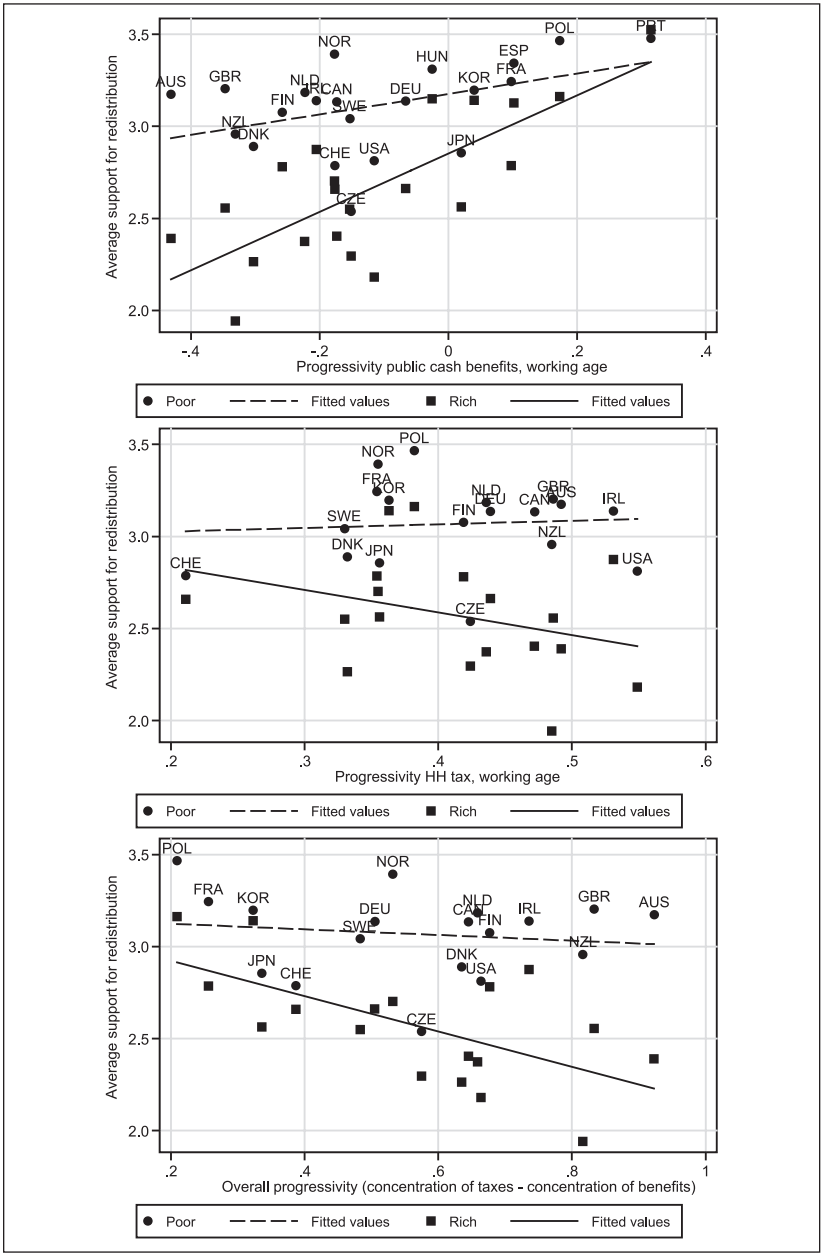

Figure 3. Income gap regarding redistribution preferences.

the levels of progressivity than the poor. In other words, cross-national differences in welfare state contestation are largely driven by differences in the support of the rich, not the poor.

To test more systematically the relationship between progressivity and the overall gap between the rich and the poor and their support for redistribution, we resort back to income slopes as the endogenous variable in a set of tests that control for other possible determinants of the differences in support for redistribution between the rich and the poor. Clearly, the tax and transfer system is not the only plausible factor influencing how contested welfare states are. We have already noted two plausible alternative explanatory variables: *income inequality* (higher inequality should lead to more contestation) and the *magnitude of the welfare state* (the more is at stake, the more contested should welfare states be). Neither of these variables performed well in the bivariate analysis (Figure 2), but the need to use them as control variables follows from both our theoretical model and the preceding conceptual discussion. Inequality is a determinant of the optimal benefits in our theoretical model (Expression (5) above). And the need to control for the overall size of the welfare state follows directly from the relationship between the overall levels of redistribution, the size of the welfare budget, and its design in terms of progressivity (see Expression (9) above). We therefore include controls for the level of inequality (the Gini coefficient of household disposable income[10]) and the size of the welfare state (total social expenditure as a percentage of GDP).

Because it is plausible that attitudes toward government intervention are shaped by ideology (Margalit, 2013) or dominant (left) parties and unions, we include control variables for *left party dominance* (cumulative share of cabinet posts for left parties). Systems that rely on specific skills may foster stronger support for social insurance, and we therefore include a control for the *incidence of vocational training* (Iversen & Soskice, 2001). Moreover, the overall level of risk in a society may shape attitudes toward social policy and have an impact on the link between income and redistribution preferences. To take this possibility into account, we control for the *unemployment rate*. Because of its prominence as explanation for second-dimension politics, we also control for *ethnic fractionalization*. Table 5 lists all variables and their sources.[11]

We now turn to the results. We are primarily concerned with the correlation of welfare state contestation and the structure of the tax and transfer system. We will concentrate on two outcome variables: the progressivity of benefits and the overall progressivity of the tax and transfer system. Figure 4 displays bivariate correlations between these two core explanatory variables and the income slopes. The figure shows that the more redistributive benefits, the

Table 5. Sources of Variables.

Variable	Source/comment
Concentration of public cash benefits (working age)	OECD, 2008, Tables 4.3, 4.4
Concentration of HH tax (working age)	
Overall progressivity	Calculated as (concentration of HH tax—concentration of public cash benefits)
HH market income inequality (Gini)	OECDs—Gini coefficient based on equivalized household market income, before taxes and transfers (18-65 years only) (http://stats.oecd.org/wbos/Index.aspx?DataSetCode=INEQUALITY)
Total public social expenditure as % of GDP	SOCX—OECD (http://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG#)
Percentage share of public cash transfers in household disposable income ("% of HH disposable income from public cash transfers")	OECD, 2008, Figure 4.2
Average tax wedge (%)	OECD Taxing Wages (http://stats.oecd.org/Index.aspx?DataSetCode=AWCOMP) Defined as "Sum of personal income tax and employee plus employer social security contributions together with any payroll tax less cash transfers, expressed as a percentage of labour costs" (http://stats.oecd.org/glossary/detail.asp?ID=7273)
Incidence of vocational training	Data from Torben Iversen (Iversen & Soskice, 2001, p. 888)
Religious fractionalization	Data available at: (http://www.anderson.ucla.edu/faculty_pages/romain.wacziarg/papersum.html)
Ethnic fractionalization	
Cumulative left parties in percentage of total cabinet posts, weighted by days	Calculated from the Comparative Political Dataset (Armingeon, Potolidis, Gerber, & Leimgruber, 2009) Based on variable gov_left1. Variable is the cumulative cabinet share of left parties since 1990, for 2005.
Trade union density (OECD)	OECD (http://stats.oecd.org/Index.aspx?DataSetCode=UN_DEN)
Rate of unemployment as % of civilian labor force	OECD (http://stats.oecd.org)

OECD = Organization for Economic Co-Operation and Development; HH = household; GDP = gross domestic product; SOCX = Social Expenditure Database.

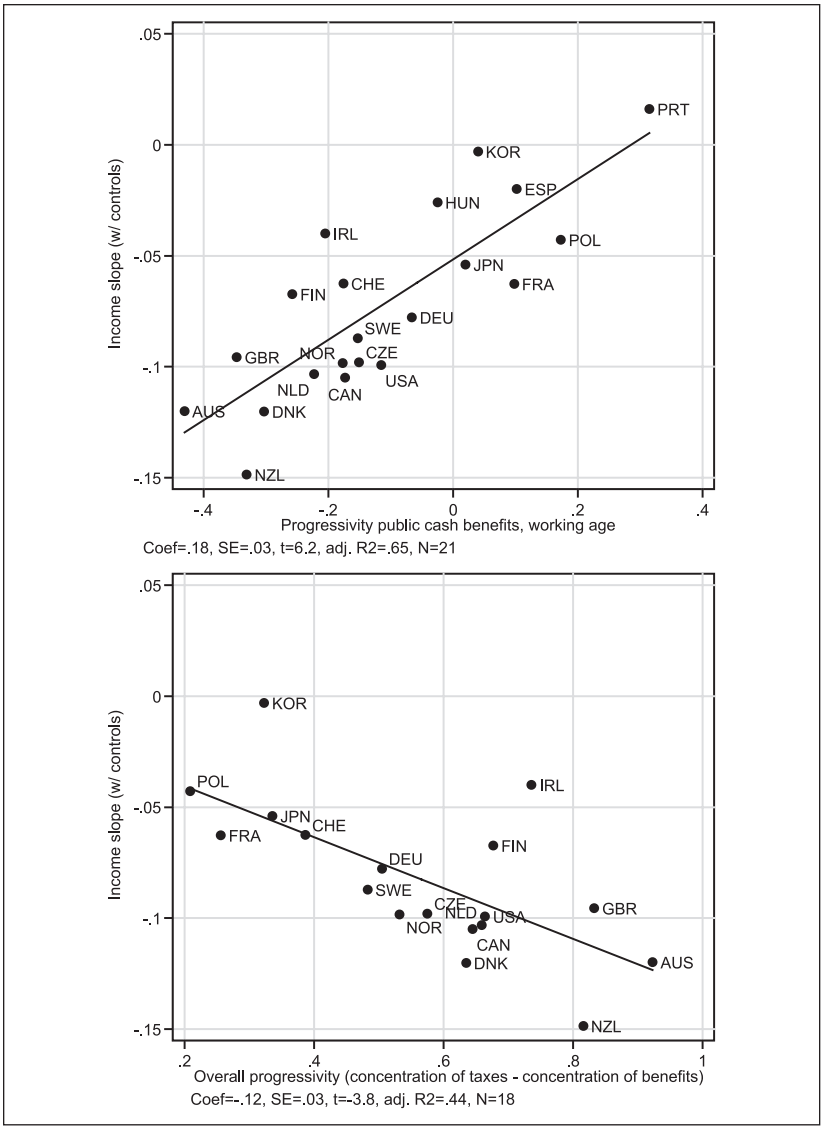

Figure 4. Concentration of benefits/benefits and taxes and income slopes.

more contested they are. This is what we expected from our theoretical framework.[12] We find the close fit between income slopes and the concentration of (taxes and) benefits, as displayed in Figure 4, remarkable.

We also explored whether these correlations withstand the inclusion of control variables. The results are easy to report: The key explanatory variables—the concentration of benefits and overall progressivity, respectively—turn out to be statistically significant in all models including controls for inequality, welfare state size, or any other macro-level determinants of the size of the income slope derived from the hierarchical linear models described above (see Tables 6 and 7). The substantive impact of cash benefit concentration is also significant. The estimated slope in the top panel of around 0.18 suggests that a one standard deviation (0.19) change in the concentration of benefits changes the income slope by about 0.034. Because the income slope ranges from about −0.15 to about −0.02, this is a 20% change.[13]

In the next step, we turn to the analysis disaggregated by policy domain (unemployment, pensions, health care, and housing). To this end, we need to match survey items on social policy domains to concentration measures of social policy domains. Although there is often more than one possible match, many mappings are straightforward. In particular, the ISSP RoG survey includes the following social policy attitudinal items[14] that can be easily matched with concentration measures of benefits:

- Provide decent standard of living for the unemployed → concentration of unemployment benefits
- Provide decent standard of living for the old → concentration of old age pensions
- Provide health care for the sick → concentration of disability benefits
- Provide decent housing for those who cannot afford it → concentration of housing benefits

When we explore the correlation between income slopes (from multi-level models predicting a social policy attitude) and concentration measures within each of these domains, we find the expected positive correlations (the more concentrated benefits are toward the poor, the more contested is the social policy area). Figure 5 shows the results, pooling the four social policy domains together (see Models (4)-(6) in Table 3). As can be seen from the figure, there is a positive correlation between the concentration of benefits and the income slopes—a finding that also holds within each domain (not shown). The relationship between income slopes and progressivity in this domain-country-level analysis is not as close as at the country-level analysis, but it is reasonably strong, and statistically significant.

To recapitulate, we have tested our hypothesis that social policy polarization (measured in terms of the strength of income as a predictor of redistributive attitudes) can be explained by the progressivity of the tax and transfer

Table 6. Predicting Income Slopes With the Concentration of Cash Benefits.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Income slope of regression: preferences for redistribution = income + controls (ISSP)						
Concentration of cash benefits	0.184**	0.188**	0.203**	0.191**	0.189**	0.209**	0.190**
	(0.030)	(0.033)	(0.032)	(0.044)	(0.042)	(0.036)	(0.040)
Income inequality (Gini of HH disposable income)		−0.044	−0.175	−0.069	−0.083	−0.151	−0.107
		(0.152)	(0.160)	(0.264)	(0.210)	(0.174)	(0.205)
Total social expenditure (% of GDP)			−0.002†	−0.001	−0.001	−0.002	−0.002
			(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Incidence of vocational training				0.000			
				(0.001)			
Cumulative Left parties in percentage of total cabinet posts, weighted by days					0.000		
					(0.000)		
Unemployment rate						−0.001	
						(0.002)	
Ethnic fractionalization							−0.035
							(0.033)
Constant	−0.052**	−0.038	0.045	−0.005	−0.003	0.039	0.025
	(0.006)	(0.048)	(0.064)	(0.122)	(0.101)	(0.067)	(0.102)
No. of cases	21	21	21	17	20	21	20
Adj. R^2	.652	.634	.676	.603	.604	.659	.629
Log likelihood	48.664	48.712	50.584	41.084	48.048	50.691	48.680

Standard errors are in parentheses. Concentration of cash benefits: Higher values indicate *less* progressive systems. ISSP = International Social Survey Program; HH = household; GDP = gross domestic product.

a. ISSP 2006. Preferences for redistribution: "On the whole, do you think it should be or should not be the government's responsibility to: Reduce income differences between the rich and poor" [1. Definitely should not be; 2. Probably should not be; 3. Probably should be; 4. Definitely should be]. Controls are education, gender, and age. Sample is restricted to employed respondents aged 18 to 65.

†$p < .1$. *$p < .05$. **$p < .01$.

Table 7. Predicting Income Slopes With the Overall Progressivity.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Income slope of regression: preferences for redistribution = income + controls (ISSP)						
Overall progressivity (concentration of taxes–concentration of cash benefits)	–0.119**	–0.120**	–0.127**	–0.102*	–0.092*	–0.116**	–0.102**
	(0.031)	(0.032)	(0.029)	(0.045)	(0.036)	(0.036)	(0.033)
Income inequality (Gini of HH disposable income)		0.127	–0.031	0.073	0.093	–0.105	0.103
		(0.157)	(0.162)	(0.280)	(0.187)	(0.215)	(0.179)
Total social expenditure (% of GDP)			–0.002†	–0.001	0.001	–0.003†	–0.001
			(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Incidence of vocational training				0.000			
				(0.001)			
Cumulative Left parties in percentage of total cabinet posts, weighted by days					–0.000		
					(0.000)		
Unemployment rate						0.001	
						(0.003)	
Ethnic fractionalization							–0.040
							(0.032)
Constant	–0.015	–0.053	0.045	–0.038	–0.066	0.063	–0.028
	(0.019)	(0.050)	(0.066)	(0.129)	(0.099)	(0.075)	(0.095)
No of cases	18	18	18	15	17	18	17
Adj. R^2	.445	.433	.532	.123	.322	.507	.376
Log likelihood	41.014	41.395	43.754	36.188	42.278	43.954	42.981

Standard errors are in parentheses. Overall progressivity: Higher values indicate *more* progressive systems. ISSP = International Social Survey Program; HH = household; GDP = gross domestic product.

a. ISSP 2006. Preferences for redistribution: "On the whole, do you think it should be or should not be the government's responsibility to: Reduce income differences between the rich and poor" [1. Definitely should not be; 2. Probably should not be; 3. Probably should be; 4. Definitely should be]. Controls are education, gender, and age. Sample is restricted to employed respondents aged 18 to 65.

†$p < .1$. *$p < .05$. **$p < .01$.

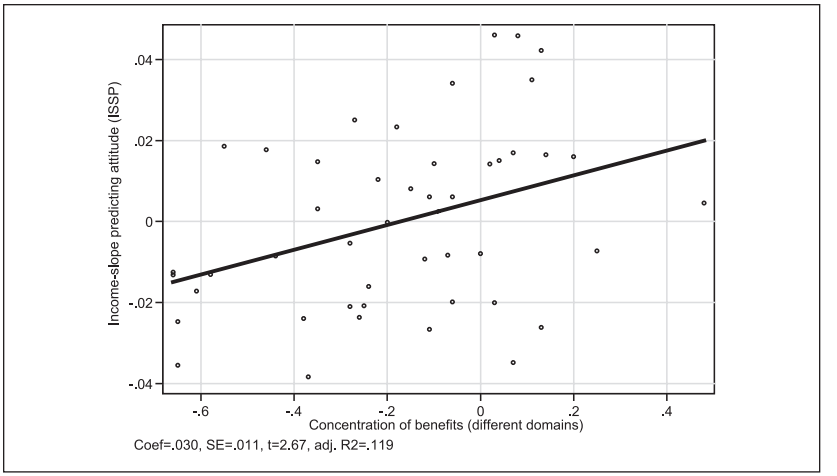

Figure 5. Correlation between concentration of benefits in various social policy domains and income slopes in matched social policy domains.
The unit of analysis is a social-policy domain in different countries. The solid line is the regression line. ISSP = International Social Survey Program.

system. Our findings suggest, in line with our theoretical expectations, a strong impact of progressivity on welfare state contestation. This finding is robust across measures of concentration (cash benefits vs. benefits and taxes), income measures (not shown, see fn. 7), and policy domains, as well as to the inclusion of relevant control variables. These are solid empirical grounds.

Conclusion

We began this article by showing that the importance of income as a predictor of redistribution varies greatly across rich democracies (Figure 1), although not in expected ways (Figure 2). To account for these patterns, we have argued that progressivity is a key ingredient for understanding the politics of the welfare state, because it decidedly shapes the distribution of expected net benefits, that is, who gives and who gains. And we have shown that a higher concentration of taxes and transfers (higher progressivity) produces higher levels of polarization over social policy (more negative income slopes). This finding is robust across a range of different tests (cross-national and cross-domain).

The core message of this article is that the usual practice of ignoring progressivity hinders our understanding of the politics of the welfare state. As noted by a burgeoning literature, the rich play an important role in explaining redistributional preferences. Be it through the demand for insurance (Moene

& Wallerstein, 2001), the presence of other regarding preferences (Fehr & Schmidt, 1999), or the externalities of crime (Piven & Cloward, 1956; Rueda & Stegmueller, 2015), the observed deviations from behavior driven by short run materialist considerations is primarily a matter of the rich. Figure 3 above is consistent with this observation. Yet, our analysis needs not resort to increasingly complex assumptions at the individual level. It provides an *institutional* argument about the conditions under which the poor may shy away from redistribution and the rich may endorse large budgetary commitments to such policies. And it does so within the fundamental parameters of standard materialist accounts by introducing a more realistic analysis of the role of fiscal institutions. In closing, we discuss some of the limitations of the article and avenues for further research.

Our analysis falls short of causally identifying the impact of progressivity on preferences. Situations in which a clearly exogenous change in progressivity precedes public opinion formation are rare, which poses significant challenges to ruling out potentially confounding effects. However, German Reunification (1989-1990) could be plausibly considered one such instance. By virtue of incorporating five new poorer *Länder* and 20 million largely poorer citizens into the West, the levels of progressivity and redistribution increased—although mainly through mechanisms largely outside our formal model. The fundamentals of the fiscal system did not change, despite a massive alteration in the geography of income and labor markets. Rather, it assimilated the new members in a short period of time, triggering an unprecedented redistributive effort from the West to the East.[15]

This redistributive effort had two clear dimensions: inter-personal redistribution from rich to poor individuals in both the East and West, and inter-territorial redistribution from Western taxpayers to Eastern recipients.[16] From a geographic perspective, progressivity will be at its highest in the newly unified Germany, reflecting the joint effect of inter-personal and inter-territorial redistribution. Of the two Germanys, the East will be one with the lowest degree of progressivity as its population has an over-concentration of welfare beneficiaries, whereas in Western Germany, the majority of taxpayers coexist with a sizable group of welfare recipients. Hence, income slopes should be larger in the unified Germany than in Western Germany, and larger in the West than in the East. In turn, in terms of dynamics, according to our framework, increasing progressivity should translate into larger (i.e., *more negative*) income slopes.

Figure 6 provides suggestive evidence that this was the case.[17] Income slopes are indeed larger in the newly unified Germany than in either of its constituent parts throughout the period. In terms of dynamics, it is important

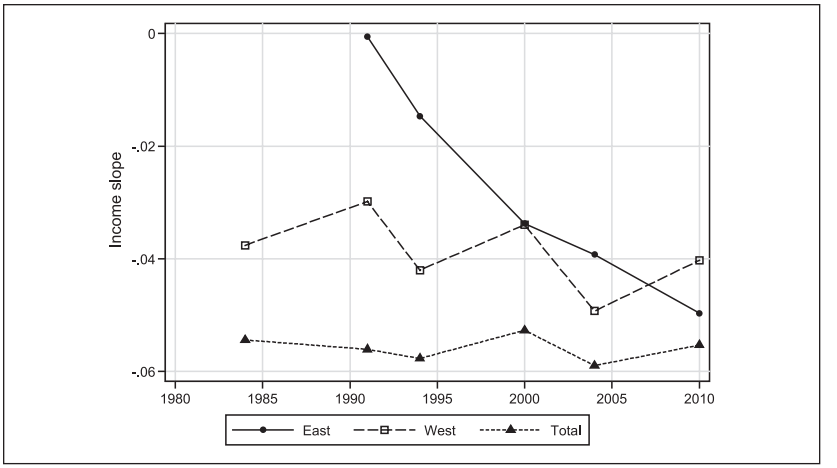

Figure 6. Germany—evolution of income slopes.
Source. Based on the German General Social Survey (ALLBUS), 1980-2010 (GESIS—Leibniz-Institut für Sozialwissenschaften, 2012).
Shown are Best Linear Unbiased Predictors (BLUPs) from multi-level models (individuals nested in time). Dependent variable: Preferences for "state should secure income in times of hardship" (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Controls variables are gender, age, marital status, and education. Sample restricted to respondents aged 18 to 60 and (full- or part-time) employed. ALLBUS = Allgemeine Bevölkerungsumfrage der Sozialwissenschaften.

to distinguish between the West and the East. In the West, due to the concentration of taxpayers, income slopes are large from the beginning and strengthen marginally over time. Overall, the evolution of income slopes in Germany after reunification suggests that the link between progressivity and political contestation moves in the right direction in one of the rare instances of plausibly exogenous change in the levels of progressivity. However, the full causal identification of the specific mechanisms through which reunification reshaped preferences would require extensive additional research well beyond the scope of this article.

The limitations of the quasi-natural experiment in Germany point to the first of several fruitful avenues for future research: the use of experimental techniques to assess how the capacity and progressivity of the fiscal system shape citizens' predispositions toward the welfare state. An experimental approach would not only allow to assess the specific impact of the different components of progressivity (taxes vs. transfers), but, more importantly, it would ensure that the impact of the exposure to different regimes is cleanly net off confounders such as the ones undermining inference when exploiting exogenous shocks on observational data.

Second, our study highlights the importance of studying the conditions under which different levels of progressivity emerge historically. It is fairly well established that the levels of progressivity reflect the joint legacy of past political bargains between elites and critical moments in history (major political or economic crises, often intertwined) that rewrite the fundamentals of the social contract. Yet, beyond this general intuition, the conditions under which higher or lower levels of progressivity emerges need further exploration. Given the significance of the distributive and political effects associated with different levels of progressivity, shifting the focus toward its historical origins is a natural next step.

Finally, a third path for future analysis would be to extend the analysis to situations with low state capacity and regressive fiscal designs. Our empirical sample primarily includes countries with well-developed state bureaucracies and moderate levels of progressivity, with the exception of South European democracies. The majority of citizens in developing democracies operate under fiscal legacies that feature weak states and regressive fiscal contracts. Our findings suggest that the nature of political competition will be very different in these circumstances. By shaping the scope of class politics, progressivity feeds back directly into the type of programmatic linkages between citizens and elites, ultimately shaping the nature of political representation. It is no wonder that clientelism is rampant in countries with very low progressivity and low state capacity. At the extreme, citizens cannot distinguish between Left and Right offerings when it comes to fiscal policy, income does not predict citizens' positioning, and politics turns into a game of crude non-programmatic exchanges. Exploring the role of functional equivalents to progressive fiscal allocation of rents (such as remittances or informality) in the process of preference formation will contribute to our collective understanding of politics in much of the democratic world. Jointly, these three lines of research would give a richer and more precise picture of who gets what at what price. And that is what arguably politics is all about.

Appendix

*Calculation of the Optimal Level of Benefits, c**

Following from main text, individuals' utility is defined by,

$$U_i = (1 - t_i) w_i + c - L \tag{A1}$$

We incorporate progressivity (De Donder & Hindriks, 2003) by defining,

$$t_i = \alpha + \beta w_i \tag{A2}$$

and using a quadratic income tax function, such that individual *i*'s tax payment is,

$$w_i t_i = \alpha w_i + \beta w_i^2 \tag{A2'}$$

Recall that parameter alpha captures a proportional tax rate (everybody pays, say, 20% of their income as taxes). Parameter beta is the progressivity tax parameter, with $\beta > 0$ indicating a (marginally) progressive income tax and $\beta < 0$ representing a (marginally) regressive one.

Finally, we capture the differential (dis)incentive effects associated with progressivity as $L = (w_i t_i)^2/2$. Balanced budgets require that the sum of benefits equals the tax take, which implies,

$$\begin{aligned} c = \frac{\sum w_i t_i}{N} = \frac{\sum \alpha w_i + \beta w_i^2}{N} &= \alpha w + \beta E\left(w_i^2\right) \\ &= \alpha w + \beta\left[Var\left(w_i\right) + w^2\right] \end{aligned} \tag{A3}$$

where w is the average wage. Given this set-up, the calculation of the optimal level of benefits, *c** involves several steps.

1. Solving (A3) for α yields,

$$\alpha = \frac{c - \beta.Var\left(w_i\right) - \beta \times w^2}{w}$$

and substituting back into (A1) in turn produces,

$$w_i - \frac{c - \beta\left[Var\left(w_i\right) + w^2\right]}{w} w_i - \beta w_i^2 + c - L \tag{A1'}$$

2. Modeling disincentive effect as $L = (w_i t_i)^2 / 2$, which—given the tax function (A2')—is the same as $L = (w_i t_i^2 / 2) = [\alpha w_i + \beta w_i^2]^2 / 2$ — and inserting into (A1') gives the following utility function:

$$\begin{aligned} U_i &= w_i - \frac{c - \beta\left[Var\left(w_i\right) + w^2\right]}{w} w_i - \beta w_i^2 + c - L \\ &= w_i - \frac{c - \beta\left[Var\left(w_i\right) + w^2\right]}{w} w_i - \beta w_i^2 \\ &+ c - \frac{\left[\left\{\frac{c - \beta\left[Var\left(w_i\right) + w^2\right]}{w}\right\} w_i + \beta w_i^2\right]^2}{2} \end{aligned} \tag{A1''}$$

3. Taking the derivative with respect to c yields,

$$\frac{dU_i}{dc} = -\frac{w_i}{w} + 1 - \left\{ \frac{c - \beta\left[Var\left(w_i\right) + w^2 \right]}{w} w_i + \beta {w_i}^2 \right\}. \frac{w_i}{w} \tag{A4}$$

4. Setting (A4) to zero, let us solve for optimal c, which we call c^*:

$$c^* = \beta . Var\left(w_i\right) + \left(\frac{w}{w_i} - 1 \right)\left(\frac{w}{w_i} + \beta w_i w \right)$$

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Notes

1. To produce these slopes, we estimate hierarchical linear models predicting social policy attitudes with income and a set of controls (education, gender, and age), with random intercepts and random slopes. We then recover country-specific income slopes (income gradients) and their standard errors from best linear

unbiased predictions (BLUPs), based on Model (2) in Table 3. Our analysis refers to roughly 2005/2006 (International Social Survey Program [ISSP] Research Group, 2006). We limit our sample to respondents aged 18 to 65 because our macro-level measure of progressivity refers to the same working age population. The question wording of the dependent variable is as follows: "On the whole, do you think it should be or should not be the government's responsibility to: Reduce income differences between the rich and poor" (1. Definitely should not be, 2. Probably should not be, 3. Probably should be, 4. Definitely should be).

2. On the politics behind these compromises: Stigler (1970); Dixit and Londregan (1995, 1998); Beramendi and Cusack (2009). This assumption by no means implies a denial of the possibility of fiscal systems changing over time. However, fiscal systems move slowly and change only as a result of major political compromises at specific historical moments, often driven by exogenous reasons. In such instances, we expect changes in progressivity to translate into changes in income slopes.
3. Progressivity is measured by concentration curves (explained below). We focus on the concentration curve of taxes because this is the dimension of fiscal policy on which we can reliably reproduce the estimates we use from the Organization for Economic Co-operation and Development (OECD). The Luxembourg Income Studies (LIS) data sources used in Table 2 are not detailed enough to derive concentration curves for benefits that are comparable with the published OECD results. The sample in the table consists of all countries for which consistent over-time data are available. We thank Kent Freeze for sharing these calculations and the syntax file used to produce them.
4. The exception to the rule of over-time stability is Sweden (though, interestingly, Sweden's rank remains stable). The reduction in progressivity in Sweden reflects a series of reforms that were largely a reaction to the deep economic recession in the early 1990s and, more importantly, Reagan's reforms in 1986 and their expected impact on the global circulation of capital. Accordingly, capital and corporate marginal tax rates dropped significantly, which in turn triggered political pressures to adjust income taxes as well (Ganghof, 2006, 2007). The 1991 tax reform enacted a massive reduction of the top marginal tax rate from 80% to 50% and a simplification of the tax code such that about 85% of the population were no longer required to file an income tax (Bengtsson, Holmlund, & Waldenstrom, 2012; Steinmo, 2002). Instead, all tax payers were to pay a proportional tax of 20% (which eventually increased to 30% in most districts) and the top 20% of income earners an additional national tax rate of either 20% or 25% depending on their pre-tax income level. Overall, the reform reduced the pre-existing levels of progressivity in the system. The case of Sweden illustrates the infrequency of major tax reforms and the importance of external events in triggering them.
5. $\beta E(w_i^2) = \beta[Var(w_i) + w^2]$ because $E(X^2) = Var(X) - [E(X)]^2$
6. Model (1) reports the multi-level model results. Model (2) displays the results from a cross-level interaction model, which some scholars prefer over multi-level models. For robustness checks, we executed various approaches to estimate

the income slopes, namely (a) two-stage regressions, (b) cross-level interactions, and (c) BLUPs derived from a multi-level model. Unsurprisingly, results are consistent across different estimation strategies. We consider the third approach to be most reasonable, and therefore rely on it in this article.

7. We convert the country-specific family income variables in the ISSP surveys into income noviles. However, not all countries report detailed income data. To get a sense of the robustness of our estimates of the dependent variable, we also relied on the European Social Survey (ESS; 2008). In particular, the ESS 2002, 2004, 2006, 2008, 2010, and 2012 contain the following survey item: "Using this card, please say to what extent you agree or disagree with each of the following statements: The government should take measures to reduce differences in income levels. [The answer categories are 1. "Disagree strongly," 2. "Disagree," 3. "Neither agree nor disagree," 4. "Agree," 5. "Agree strongly"]. Unfortunately, the ESS sample is restricted to European countries, and it changed the way income is reported in 2008. We therefore prefer to use the ISSP surveys. However, a comparison of the estimates of contestation from the two different data sources (available for 15 countries) shows a considerable degree of overlap.
8. These are based on ISSP survey items, with the following wording stem: "On the whole, do you think it should or should not be the government's responsibility to . . . ." The answer categories are (1) "Definitely should not be," (2) "Probably should not be," (3) "Probably should be," and (4) "Definitely should be."
9. The first equality has been established by Kakwani (1977, p. Equation 3.2), the second by Lambert (Kim & Lambert, 2009, p. Equation 3).
10. It would be preferable to use market income inequality data, but we would lose several observations from our already small sample. However, the results hold either way.
11. In additional robustness checks, we have also controlled for a variety of other variables. These include alternative measures of welfare state size (percentage share of public cash transfers in household disposable income; average tax wedge), trade union density, and factors that are discussed in the growing literature exploring the link between income and voting (De La O & Rodden, 2008), such as *religious fractionalization*. None of these meaningfully changes the results we report below.
12. There are also good reasons why the results are generally stronger when we solely look at the benefit structure (top panel) as opposed to both the benefit and financing structure (bottom panel): Benefit structures vary more across countries than tax structures. This certainly does not imply that financing structures can or should be neglected. However, it implies that in our empirical investigations, their effects are smaller than those generated by the structure of benefits.
13. Income slopes: $M = -.07$, $SD = .04$, Min $= -.15$, Max $= .02$, $N = 21$. Concentration of cash benefits: $M = -.11$, $SD = .19$, Min $= -.43$, Max $= .31$, $N = 21$. Overall progressivity: $M = .57$, $SD = .2$, Min $= .21$, Max $= .54$, $N = 18$.
14. These are based on ISSP survey items, with the following wording stem: "On the whole, do you think it should or should not be the government's responsibility

to . . . ." The answer categories are (1) "Definitely should not be," (2) "Probably should not be," (3) "Probably should be," and (4) "Definitely should be."

15. Beramendi (2012) points to various mechanisms de facto increasing redistribution toward the East: (a) the concentration of financing effort among tax payers in the West, (b) the concentration of risk among the new citizens in the East, (c) the increase in unemployment induced by the recession following reunification, and (d) the rapid incorporation into the benefit system of the new pool of welfare dependents into the system.
16. The latter, however, decreased marginally over time as the cost and the size of transfers to the East became a major focus of political contention in the late 1990s.
17. We rely on the German General Social Survey, Allgemeine Bevölkerungsumfrage der Sozialwissenschaften (ALLBUS; GESIS—Leibniz-Institut für Sozialwissenschaften, 2012). In particular, we explore the predictive power of income on the response to the following statement: "the state should secure income in times of hardship" with responses ranging from strong disagreement (1) to strong agreement (4). German question wording: "Der Staat muss dafuer sorgen, dass man auch bei Krankheit, Not, Arbeitslosigkeit und im Alter ein gutes Auskommen hat." This is as close to a redistributive item as is available. Reported estimates are, as before, BLUPs from multilevel models, with individuals nested in time. Control variables include gender, age, marital status, and education. The sample is restricted to respondents aged 18 to 60.

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Author Biographies

Pablo Beramendi is an associate professor of political science at Duke University. His work focuses on different aspects of the political economy of inequality and redistribution. He has paid particular attention to the territorial dimension of distributive conflicts, the relationship between inequality and turnout, and, more recently, the origins and consequences of different tax structures.

Philipp Rehm is an associate professor of political science at the Ohio State University. His work is located at the intersection of political economy and political behavior. In particular, he is interested in the causes and consequences of income dynamics (such as income loss, income volatility, and risk exposure). At the micro level, his research explores how income dynamics shape individual preferences for redistribution, social policies, and parties. At the macro level, his work analyzes the impact of labor market and income dynamics on polarization, electoral majorities, and coalitions underpinning social policy.