THE ECONOMIC JOURNAL

The Economic Journal, **131** (*November*), 3274–3295 https://doi.org/10.1093/ej/ueab022
Advance Access Publication Date: 22 March 2021

CLASS ALTRUISM AND REDISTRIBUTION*

Christian Ghiglino, David Juárez-Luna and Andreas Müller

Why do tax rates vary so much across countries? We study the role of other-regarding preferences and ethnic fragmentation in redistribution. A government is elected by altruistic voters and chooses a redistributive income tax. Altruism is directed towards social identity groups. Three main factors yield low levels of redistribution: (i) strong in-group altruism among rich voters—referred to as class altruism; (ii) weak universal altruism—in particular among the rich; and (iii) ethnic fragmentation among poor voters. We document survey evidence that the pattern of altruism in the United States and the European Union is consistent with the observed differences in taxes.

The wide differences in tax rates across democracies, and particularly the low tax rates in some advanced economies, such as the United States, is a long-standing puzzle. In a democracy the median voter, who would typically benefit from redistribution, should determine the tax rate and the level of redistribution. This economic channel predicts a positive correlation between pre-tax income inequality and redistribution; however, the opposite is actually observed. In response, a vast literature has explored other ways in which a country's specific characteristics might affect income redistribution and there is consensus that cross-country variation is the result of political, institutional and behavioural factors.[1] In this paper we explore the less-studied behavioural factors, such as altruism and social identity, within a political economy framework.

Individual motives for redistribution are both egoistic and other-regarding. However, most of the existing literature, including behavioural studies, mainly focus on the egoistic motive while extending the relevant choice set. For example, allowing preferences to include religion or race has a significant effect on redistribution because it results in policy bundling.[2] When considering individuals with other-regarding preferences, the 'others' and how they are regarded must be specified. Following social identity theory, we let self-identification guide the specific form of altruism. According to Akerlof and Kranton (2000), social identity is related to the 'person's sense of self' and leads individuals to sympathise with other individuals belonging to a social group and to exhibit altruistic motives towards this group.[3] As social identification is

* Corresponding author: Christian Ghiglino, Department of Economics, University of Essex, Wivenhoe Park, Colchester, CO4 3SQ, UK. Email: cghig@essex.ac.uk

This paper was received on 10 April 2018 and accepted on 13 March 2021. The Editor was Rachel Kranton.

The data and codes for this paper are available on the Journal website. They were checked for their ability to reproduce the results presented in the paper. The authors were granted an exemption to publish parts of their data because access to these data is restricted. However, the authors provided the Journal with temporary access to the data, which enabled the Journal to run their codes. The codes for the parts subject to exemption are also available on the Journal website. The restricted access data and these codes were also checked for their ability to reproduce the results presented in the paper.

We would like to thank the editor, two anonymous referees, Nizar Allouch, Yann Bramoullé, Vicky Fouka, Aditya Goenka, Piero Gottardi, Sanjeev Goyal, Mich Tvede and participants to the 24th Coalition Theory Network Workshop, the Stanford-CIDE-Colmex Workshop and the Birmingham Workshop in Economic Theory for their constructive and insightful comments on the article.

[1] See, for example, Alesina *et al.* (2001), Persson (2002), Alesina and Glaeser (2004) and Alesina and La Ferrara (2005).

[2] See Putterman *et al.* (1998), Roemer (1998) and Lee and Roemer (2006).

[3] See, also, the recent research using experiments—for example, Kranton *et al.* (2013) and the survey by Costa-Font and Cowell (2014).

not exclusive to individuals of one's own social group, in addition to in-group altruism we also consider identification with the population as a whole contributing to an individual's universal altruism.[4]

Our paper builds on a standard political economy framework along the lines of Persson and Tabellini (2002) and Acemoglu and Robinson (2006), to which we introduce voters with social identity and altruistic preferences. More specifically, we assume that the altruistic motive has two components: a voter's utility depends positively on the average after-tax income in the social identity group and negatively on the level of inequality in that group.[5] Furthermore, we allow for voter heterogeneity with respect to income and ethnicity, where the latter is absent in the standard framework. Voters can group and self-identify along any of these two dimensions, which allow us not only to analyse voting outcomes in societies with different income classes but also to study its interaction with ethnic fragmentation.

The main results of our theoretical analysis are organised according to the different patterns of social groups and altruism. We start by considering a society with two broad income groups, which we refer to as social classes: the poor majority of voters and the rich elite. We find that stronger in-group altruism, i.e., class altruism, of the rich reduces the equilibrium tax rate, as Proposition 1 will show. In contrast, stronger class altruism of the poor, composed of traditional low- and middle-income voters, increases the tax rate. Thus, we find that class altruism reinforces the standard political conflict over redistribution. As a complementary result, Proposition 1 will also establish that the levels of inequality aversion and tax rates are positively correlated in a democracy with class altruism.

Next, we consider social identification with the population as a whole captured by universal altruism. We first explore the role of universal altruism among rich voters in particular, and find in Proposition 2 that it leads to higher equilibrium redistribution than when the rich are class altruistic. Furthermore, in Proposition 3 we will show that, with sufficiently high inequality aversion, a social group's stronger universal altruism increases the equilibrium tax rate and therefore redistribution.

The final channel that we explore is associated with the ethnic fragmentation among poor voters, i.e., when poor voters of a specific ethnicity self-identify with their own group. In line with recent US Current Population Survey (CPS) data from the US Census Bureau (2019), we consider a society where the share of low-income voters among the ethnic minority (Black householders) is higher than among voters of the prevalent ethnicity (White householders) whose majority belongs to the middle-income group. Proposition 4 will then show that, in a society with this structure, ethnic fragmentation leads to a lower equilibrium tax rate than in societies where the poor vote is united.

In the empirical section of the paper, we document direct evidence on the pattern of altruism in the United States and the European Union. Considering the sixth wave of the World Values Survey (Inglehart *et al.*, 2014, henceforth WVS 6), we find evidence that class altruism is stronger among rich Americans and universal altruism among rich Europeans. Through the lens of our model, this pattern is consistent with the rich's lower support for redistribution in the United States compared to the EU.

[4] Alesina *et al.* (2001) provide a good example of differential social identity when they write 'a natural generalisation of the race-based theory is that Americans think of the poor as members of some different group while Europeans think of the poor as members of their own group'.

[5] A related rationale for this formulation can be found in the maximisation of the social identity group's welfare as in Proposition 1 of Wittman (2005): altruism is overall positively associated with Pareto improvements, while voters also prefer more equal allocations.

We also document that among poor voters, in particular in the United States, the support for income redistribution is modest. If all the poor voters were in-group altruistic, one should observe firm support for redistribution, so we conclude that the role of universal altruism is important in explaining the poor's redistribution stance. This pattern of altruism is stronger in the United States, where the higher social mobility might drive the social identification of the poor with the rich class. We also find that lower inequality aversion among poor Americans alone could not explain the lower support for redistribution compared to the EU.

Related Literature The existing literature has considered mainly economic, political and behavioural mechanisms to explain the differences in redistributive government policies across countries.

The main economic mechanism relies on the fact that, in the median voter model, poor voters determine the level of redistribution. However, the extent to which governments can redistribute income is limited by distortions or economic costs associated with taxation and redistribution. Alesina *et al.* (2001) find that differences between the United States and Europe are not significant in this respect, thus they cannot be the main driver for the variation in policies.

Alesina *et al.* (2001) argue that redistribution may differ between Europe and the United States for political reasons: America does not have proportional representation and has strong courts which prevent the growth of socialist parties and reject popular attempts at redistribution. This explanation is more generally related to a literature that focuses on how interest groups affect political outcomes.[6] Often, an elite chooses entry barriers, regulations and inefficient contracting institutions in order to protect their economic rents.[7] Another way that elite minorities affect political outcomes is discussed in Acemoglu and Robinson (2006; 2008). They adopt a probabilistic voting framework and provide micro-political foundations (lobbying, capturing the party system and ideology) for why the elite may have disproportionate political power in a democracy. We introduce other-regarding preferences to a similar probabilistic voting framework and show that it has stark implications for the level of redistribution.

Alesina *et al.* (2001) argue that another possible explanation for the difference in redistribution between the United States and Europe is based on the higher political representation of the poor in Europe and a lower general level of altruism due to racial prejudice in the United States. Similarly, introducing religion and race in voter's preferences, as in Roemer (1998), Putterman *et al.* (1998) and Lee and Roemer (2006), also affects tax levels. In contrast, our paper explores mechanisms beyond the differences in the representation of the poor and focuses mainly on the role of social identity and differential forms of altruism.

Our model uses altruistic preferences that go beyond the traditional uniform altruism in standard political economy models (e.g., Smith, 1759; Becker, 1974; Arrow, 1981; Samuelson, 1993; Sen, 1995: all cited in Fehr and Schmidt, 2006).[8] In a closely related paper, Dixit and Londregan (1998) consider how much citizens and politicians alike care about distributive equity, and they relate this to altruism. They conclude that the voter with the median income gains the most. However, the role of altruism has rarely been used to study the political process—and even less so differences between class and universal altruism. We are aware of two exceptions: (i)

[6] See Austen-Smith (1996) for a review. For example, the elite's ability to mobilise large groups of voters explains the turnout in elite-driven mobilisation models (e.g., Uhlaner, 1989; Morton, 1991; Shachar and Nalebuff, 1999; Herrera and Martinelli, 2006: all cited in Evren, 2012).

[7] Refer to Acemoglu (2010) who cites work of Olson (1982), Krusell and Rios-Rull (1996), Parente and Prescott (1999). See also Bandiera and Levy (2011) and Bourguignon and Verdier (2012).

[8] Fehr and Schmidt (2006) review the evidence gathered by experimental economists and psychologists. They also suggest how it can be best interpreted and how it should be modelled.

Widerquist (2003) applies altruism to analyse problems of public choice. However, unlike our approach, he considers altruistic individuals who disagree on what the public interest is. He finds that many of the basic problems persist no matter whether people are egoistic or other-regarding. (ii) In political economy, Fowler and Kam (2007) extend the participation model by adding a term related to in-group altruism, where groups are defined by political party affiliation. They show that both universal altruism and in-group altruism increase political participation.

A recent and closely related literature adopts tractable models in which individuals endogenously chose social identity. In this environment, induced social identity changes can have significant effects on economic outcomes. In our paper, rather than considering endogenous changes of social identity, we allow the characteristics of the social identity group to be endogenous, which are affected by the policy choice. This allows us to consider a richer political model suited to study equilibrium redistribution in the presence of income heterogeneity and ethnic diversity. We now relate to the literature with endogenous social identity choice in more detail.

In Shayo (2009; 2020), individuals choose both their voting action and social identity. Social identity is chosen by trading off the gain from the identity group's social status and the cost of the perceived distance to the group. The political equilibrium is then obtained via the median voter theorem. Importantly, the dissonance cost is not affected by the equilibrium tax rate. For example, when the group characteristic is earned income, perceived distance is not affected by the policy but solely by the given pre-tax income inequality of the social identity group.[9] Shayo's model generates two types of social identity equilibria: a high-tax equilibrium with self-identification among the poor and a low-tax equilibrium where the poor identify with the nation as a whole. Lindqvist and Östling (2013) extend Shayo's model and let voters choose in addition self-identification with respect to ethnicity.

The major difference of our framework to Shayo (2009; 2020) and Lindqvist and Östling (2013) is that we endogenise the dissonance cost using inequality aversion. In our model, conditional on a voter's social identity, the utility cost from the identity group's consumption inequality is affected by the equilibrium tax rate. This allows us to also take into account how the inequality aversion of voters affects the level of redistribution.

Grossman and Helpman (2020) adapts Shayo's notion of a social identity equilibrium to analyse the role of identity in trade policies. They consider three social identity groups: the elite formed of high-skill workers, the working class with low-skill workers and the nation as a whole. Workers can choose to identify to their own working class or to the nation. Individuals vote on an ad valorem tariff that increases the domestic relative price of the import-competing good, which is more intensive in low-skill workers. In this framework, changes in social identification patterns that may result from exogenous changes in the environment (e.g., heightened racial and ethnic tensions), lead to pronounced changes in trade policy. In our paper, we consider a different economic environment and we depart from their analysis in the same way as we depart from Shayo (2009; 2020).

There is another strand of the political economy literature that relates identity to redistribution, which evolved from Bénabou and Tirole (2011; 2016). In Bénabou and Tirole (2011) individuals hold beliefs about their own attributes. The authors assume that identity reinforces beliefs about one-self but that beliefs are formed with the desire to improve self-image and individual welfare. Similarly, in Gennaioli and Tabellini (2019) identity influences beliefs via group stereotypes, which are 'exaggerated' group characteristics. Lower class individuals believe that low class

[9] This has important implications. For example, Shayo (2009, proposition 2) finds that the qualitative effect of pre-tax income inequality on equilibrium redistribution is ambiguous.

individuals have prospects that are below the realised value. Thus, by identifying to a low class the individuals become too pessimistic about their social mobility, enhancing their demand for redistribution. In contrast to our work, voters do not obtain utility from the status or equity of their identity group.

Klor and Shayo (2010) investigate the link between identity and redistribution in an experimental setting. They divide participants into two groups based on their field of studies and randomly assign gross incomes. Subjects then vote anonymously over a redistributive scheme consisting of a linear tax and a lump sum transfer. They find that group identification is a strong force: participants prefer high levels of redistribution when their identity group is relatively poor even if they themselves are relatively rich—and vice versa. Furthermore, they also document evidence that the social identification with rich groups is stronger than with poor groups. Overall, their findings underline the importance of modelling the social identity group's status alongside inequality aversion in the altruistic part of preferences.

Finally, our paper is also related to a recent literature on altruism in networks—in particular, Bourlès *et al.* (2017). In their network model, altruism for directly connected individuals motivates private transfers. In equilibrium, altruism occurs in the form of 'cooperative egoism'.[10] Rather than focusing on informal transfers between individuals, our analysis considers how political competition shapes a centralised redistributive scheme.

The rest of the paper is organised as follows: in Section 1, we present our model and characterise the equilibrium tax rate. In Section 2, we analyse the effect of different forms of altruism and social identity on the equilibrium redistribution. An attempt to explain the dispersion of tax rates is in Section 3. Section 4 concludes. The mathematical appendix contains all the formal proofs.

1. The Model

To study conflict over income redistribution, we develop a model of political competition with two political parties and multiple social groups, based on Persson and Tabellini (2002) and Acemoglu and Robinson (2006). The economic policy is a proportional income tax to finance lump sum transfers. Individuals vote according to their preferred tax rate, ideology and parties' popularity in a probabilistic voting setting. Altruism plays a key role in individual preferences as voters are altruistic towards their social identity group. Political parties are purely office-seeking and maximise their probability of winning the election. We now present the model, explaining its components in greater detail.

1.1. *The Economy*

We consider an economy populated by voters of two ethnicities $e \in \{v, w\}$ and three incomes y^i ordered according to $0 < y^l < y^m < y^h$. This allows us to model a set of social groups $\mathcal{G}$, which can be any partition of $\mathcal{U} \equiv \{v, w\} \times \{l, m, h\}$. In this section we keep the composition of social groups general, while later in Section 2 we focus on social groups that are directly relevant for our empirical exercise.[11] We assume a continuum of voters, which we normalise to a unit

[10] Those who receive help are expected to return the favour in the future (see footnote 1 in Lindbeck and Weibull, 1988).

[11] Each voter belongs to exactly one social group $g \in \mathcal{G}$. For example, if a society is composed of voters with low, middle, or high income and ethnicity has no role, then $\mathcal{G} = \{\{v, w\} \times l, \{v, w\} \times m, \{v, w\} \times h\}$ and contains three social groups.

measure, and denote by $\lambda^{e,i} > 0$ the share of voters in each ethnicity-income pair. The average income in social group g is then given by

$$\bar{y}^g = \frac{1}{\lambda^g} \sum_{(e,i)\in g} \lambda^{e,i} y^i, \quad \lambda^g \equiv \sum_{(e,i)\in g} \lambda^{e,i},$$

where λ^g is the share of voters in social group g. Since $\lambda^{\mathcal{U}} = 1$, the average and total income among all voters is $\bar{y} = \bar{y}^{\mathcal{U}}$, and we assume that $y^l < y^m < \bar{y} < y^h$.[12] For convenience, we will henceforth refer to voters with below average income as the 'poor' and those with high income as the 'rich'.

The political system determines a non-negative income tax rate $0 \leq \tau \leq 1$ and tax revenues are redistributed via a lump sum transfer T to each voter. We assume that it is costly to raise taxes and let $C(\tau)$ denote the deadweight loss of taxation. Thus, given that the total income in the economy is $\bar{y}$, the cost induced by a tax rate τ is given by $C(\tau)\bar{y}$. The lump sum transfer to each voter is then determined by the tax system's balanced budget constraint

$$T = \sum_{(e,i)\in\mathcal{U}} \left[\lambda^{e,i}\tau y^i - C(\tau)\bar{y}\right] = [\tau - C(\tau)]\bar{y}.$$

We assume that $C(0) = 0$, $C'(0) = 0$, $C'(\tau) > 0$, $\forall \tau > 0$, and $C''(\tau) > 0$. These assumptions imply that distortions become more salient as the tax rate increases. Furthermore, we require $C'(1) = 1$ such that increases in the tax rate eventually reduce tax revenues due to the loss associated with distortions.

1.2. *Preferences and Social Identity*

We consider voters with altruistic preferences. Following the literature on social identity, we assume voters of social group g are altruistic towards members of social identity group $a(g)$. More specifically, voters may either self-identify with their own social group, in which case $a(g) = g$, or with the population as a whole, when $a(g) = \mathcal{U}$. Thus, altruism is not necessarily reciprocal between social groups, and a voter's ethnicity and income may differ from other members in the social identity group. To remain consistent with our empirical application, we focus our theory on social identity with regard to ethnicity and income. However, it would be straightforward to consider other attributes of social identification, such as religion, age, gender and occupation, in our framework. Finer categorisations of ethnicity and income could also be considered.

In the egoistic part of preferences, voters are simply concerned with their own consumption (i.e., after-tax income)

$$x^i = (1-\tau)y^i + T = (1-\tau)y^i + [\tau - C(\tau)]\bar{y}.$$

In the altruistic part of preferences, following the literature on social identity, we assume that only members of the social identity group are included. More formally, the utility function for a voter i in group g who identifies with group $a(g)$ is given by

$$U^{gi} = x^i + A^g\left[\bar{x}^{a(g)} - E^g I^{a(g)}(x)\right], \quad a(g) \in \{g, \mathcal{U}\}, \tag{1}$$

[12] This order is consistent with our empirical income categorisation in Section 3, where households in income deciles 1–3 are classified 'low income', income deciles 4–6 'middle income', and deciles 7–10 'high income'.

where $A^g > 0$ measures the overall strength of altruism, $0 < E^g \leq 1/2$ the strength of consumption inequality aversion, and the altruistic motive of voters depends positively on the average consumption in social identity group a

$$\bar{x}^a = \frac{1}{\lambda^a} \sum_{(e,i)\in a} \lambda^{e,i} x^i = (1-\tau)\bar{y}^a + [\tau - C(\tau)]\bar{y},$$

and negatively on its level of consumption inequality[13]

$$I^a(x) = \frac{1}{\lambda^a} \sum_{(e,i)\in a} \lambda^{e,i} |x^i - \bar{x}^a|.$$

The particular form of the utility function, borrowed from Wittman (2005), captures the welfare of voters in each social group. In the egoistic part, the linearity in consumption is adopted for tractability and we will discuss its role for our results when necessary. The altruistic part of utility, which incorporates status and inequality concerns, can be interpreted as a second-order approximation to a standard welfare function for the social identity group.[14] Inequality aversion has been documented in many experiments and, by introspection, it seems plausible that an increase in the average consumption (i.e., higher status) of a social identity group is more desirable when the consumption of all group members, rather than that of a single individual, increases. The parameter restriction $E^g \leq 1/2$ ensures that the altruism measure increases, even when a rich voter's income in the social identity group increases.[15] Note that there are, of course, many possible altruistic functions, but Wittman's formulation strikes a good compromise between tractability and realism.

The preferences in (1) encompass two prominent types of altruism: *in-group* altruism, where voters self-identify in-group, $a(g) = g$; and *universal* altruism, where voters are altruistic towards the population as a whole, $a(g) = \mathcal{U}$. For both types of altruism the indirect utility function over the tax rate can be expressed as

$$\begin{aligned} V^{gi}(\tau) = (1-\tau)\left[y^i + A^g\left(\bar{y}^{a(g)} - E^g I^{a(g)}(y)\right)\right] \\ + (1+A^g)[\tau - C(\tau)]\bar{y}, \quad a(g) \in \{g, \mathcal{U}\}, \end{aligned} \tag{2}$$

where $I^a(y)$ denotes pre-tax income inequality in the social identity group. In the absence of altruism when voters are purely egoistic, i.e., when $A^g \to 0$, our theory has standard implications: rich voters oppose redistribution since they are net contributors to the transfer system; poor voters earning below average income would prefer a positive tax rate that redistributes from the rich to the poor. In contrast, when voters have altruistic motives our theory can rationalise deviations

[13] Shayo (2009) refers to $\bar{x}^a$ as the social status of the identity group. He considers voters that, *ceteris paribus*, endogenously choose the social identity that minimises the perceived distance to the fixed attributes of a group. In contrast, we take the social identity of voters as given, but allow them to endogenously determine the social identity group's attributes, such as the consumption inequality $I^a(x)$, through policy choices.

[14] Consider the welfare function $w^a(\mathbf{x}) = 1/\lambda^a \sum_{(e,i)\in a} \lambda^{e,i} u(x^i)$, where $u(x^i)$ is a strictly increasing and concave utility function. Ignoring irrelevant terms, a second-order Taylor approximation of w^a around $x^i = x^*$ yields

$$w^a(\mathbf{x}) \approx \cdots + u'(x^*)\left[\bar{x}^a + \frac{u''(x^*)}{2u'(x^*)} \frac{1}{\lambda^a} \sum_{(e,i)\in a} \lambda^{e,i}(x^i - x^*)^2\right].$$

Similar to this second-order approximation, $\bar{x}^a - E^g I^a(x)$ is increasing in $\bar{x}^a$ and decreasing in the consumption inequality of the social identity group (just set $x^* = \bar{x}^a$). However, the inequality measure in Wittman (2005) is much more tractable.

[15] In fact, this restriction ensures that voters always prefer Pareto improvements. See proposition 1 in Wittman (2005).

from these standard predictions. For instance, with universal altruism the rich will consider the consumption possibilities of poor voters and support higher tax rates, while they remain opposed to redistribution if they self-identify in-group.

Finally, the assumptions about $C(\tau)$ ensure that $V^{gi}(\tau)$ is strictly concave and such that preferences over the tax rate are single-peaked. The restriction $E^g \leq 1/2$ ensures that the term $\bar{y}^{a(g)} - E^g I^{a(g)}(y)$ is strictly positive and therefore any voter's utility is maximised at a tax rate strictly below one.[16]

1.3. *Probabilistic Voting*

In this section we describe the political competition and the voting process. Two parties, 1 and 2, compete for the public office and announce tax policy platforms τ_1 and τ_2 (with commitment) to maximise the probability of winning the majority election. A voter j of social group g with income y^i prefers the tax policy of party 1 over party 2 if

$$V^{gi}(\tau_1) \geq V^{gi}(\tau_2) + \sigma^j + \delta,$$

where σ^j is an individual-specific ideology parameter that has a uniform distribution on $[-1/(2\phi), 1/(2\phi)]$ and is unrelated to policy. A positive value of σ^j implies that voter j is biased in favour of party 2. This distribution has probability density $\phi > 0$. δ measures the average popularity of party 2 relative to party 1 in the population as a whole and we assume it has a uniform distribution on $[-1/(2\psi), 1/(2\psi)]$ with probability density $\psi > 0$. The indifferent voter is characterised by the threshold realisation

$$\tilde{\sigma}^{gi} = V^{gi}(\tau_1) - V^{gi}(\tau_2) - \delta,$$

thus all voters with income y^i in group g with $\sigma^j \leq \tilde{\sigma}^{gi}$ prefer party 1 over 2. Party 1's vote share is then

$$\pi_1 = \frac{1}{2} + \phi \sum_{g \in \mathcal{G}} \sum_{(e,i) \in g} \lambda^{e,i} \tilde{\sigma}^{gi}.$$

Since the threshold $\tilde{\sigma}^{gi}$ depends on the random variable δ the vote share is a random variable as well. Party 1's probability of winning the election is then

$$P_1(\tau_1, \tau_2) = \text{Prob}\,[\pi_1 \geq 1/2] = \frac{1}{2} + \psi\phi \sum_{g \in \mathcal{G}} \sum_{(e,i) \in g} \lambda^{e,i} \left[V^{gi}(\tau_1) - V^{gi}(\tau_2) \right].$$

Party 2's winning probability is symmetric and given by $P_2(\tau_2, \tau_1) = 1 - P_1(\tau_1, \tau_2)$.

1.4. *Political Equilibrium*

In the political competition, we assume that both parties simultaneously choose the tax policy that maximises their probability of winning the election. The resulting Nash equilibrium of the policy competition game between the two parties is a pair of policies (τ_1^*, τ_2^*) that solves

$$\tau_1^* = \arg \max_{0 \leq \tau_1 \leq 1} P_1(\tau_1, \tau_2) \tag{3}$$

[16] For any given average income level, $\bar{y}^{a(g)}$, the maximum inequality occurs when all income is in the hands of rich group members. Suppose their share is $\lambda^* > 0$ in the group, such that $\bar{y}^{a(g)} = \lambda^* y^h$. Even in this extreme case, $\bar{y}^{a(g)} - E^g I^{a(g)}(y) = y^h \lambda^* [1 - 2E^g(1 - \lambda^*)] > 0$ since $E^g \leq 1/2$.

$$\tau_2^* = \arg\max_{0\leq\tau_2\leq 1} P_2(\tau_2, \tau_1). \tag{4}$$

In this political equilibrium, due to the symmetry of the objectives in (3) and (4), both parties will announce the same tax rate $\tau_1^* = \tau_2^* = \tau^*$ and win the election with probability 1/2. Such policy convergence is common in models with purely office-seeking political candidates. The following lemma characterises the equilibrium tax rate.

LEMMA 1 (TAX RATE). *The equilibrium tax rate* $\tau^* \in [0, 1)$ *is characterised by:*

$$C'(\tau^*) = (\leq) 1 - \underbrace{\frac{\sum_{g\in\mathcal{G}} \lambda^g (1 + A^g)\bar{y}^{a(g)}}{\bar{y}\sum_{g\in\mathcal{G}} \lambda^g (1 + A^g)}}_{Status} + \underbrace{\frac{\sum_{g\in\mathcal{G}} \lambda^g A^g E^g I^{a(g)}(y)}{\bar{y}\sum_{g\in\mathcal{G}} \lambda^g (1 + A^g)}}_{Inequality} \quad \text{if } \tau^* > (=)\, 0, \tag{5}$$

where $a(g) \in \{g, \mathcal{U}\}$ *and the equality applies if* $\tau^* > 0$.

PROOF. In Section A1 of the Appendix.

In the following sections we will characterise the comparative statics of the political equilibrium when the tax rate is interior, $\tau^* > 0$. In this case, since $C'(\tau)$ is strictly increasing and the equality applies, the equilibrium tax rate is strictly increasing with the right-hand side of equation (5). The second term, which enters the equation negatively, captures how concerns for the social identity groups' status affect the political objective function, while the third positive term is driven by inequality considerations. For instance, higher income inequality in any social identity group, $I^{a(g)}(y)$, is associated with a higher equilibrium tax rate.

We note that an interior equilibrium results for a broad set of parameters. The equilibrium tax rate is always strictly positive when rich voters are universally altruistic. In such economies, the status term in (5) is smaller than one yielding a strictly positive right-hand side, as we will show in Propositions 2 and 3. Furthermore, the following corollary to Lemma 1 clarifies the conditions that yield an interior tax rate when all groups, including the rich voters, are in-group altruistic.

COROLLARY 1 (TAX RATE IN-GROUP ALTRUISM). *Suppose that all voters are in-group altruistic,* $a(g) = g$, *and have the same strength of altruism,* $A^g = A > 0$, $\forall g \in \mathcal{G}$. *Then, the equilibrium tax rate is strictly positive and given by*

$$\tau^* = (C')^{-1}\left(\frac{A}{\bar{y}(1 + A)}\sum_{g\in\mathcal{G}} \lambda^g E^g I^{a(g)}(y)\right) > 0.$$

Corollary 1 establishes an important benchmark, where the status term in (5) is exactly one and the positive inequality term determines an interior equilibrium tax rate. Consequently, the corollary also shows that a zero tax rate can only occur when rich voters have relatively stronger in-group altruism than poor voters. In this case, the status term in (5) is greater than one, which is necessary to yield $\tau^* = 0$.

The described political equilibrium is a standard one, but it is worthwhile to briefly comment on some of its advantages over a median voter framework. First, the equilibrium tax rate is efficient, because maximising the probability of winning, given policy convergence, is equivalent

to maximising the following utilitarian social–welfare function

$$\tau^* = \arg\max_{0\leq\tau\leq 1} \sum_{g\in\mathcal{G}} \sum_{(e,i)\in g} \lambda^{e,i} V^{gi}(\tau), \tag{6}$$

where the welfare weights correspond to vote shares. For instance, in the absence of social identity, when $A^g \to 0$, parties would propose a zero tax rate because the objective function in (6) coincides with the preferences of a (hypothetical) voter with average income who is indifferent with regard to redistribution:

$$\sum_{g\in\mathcal{G}} \sum_{(e,i)\in g} \lambda^{e,i} V^{gi}(\tau)|_{A^g=0} = (1-\tau)\bar{y} + [\tau - C(\tau)]\bar{y}.$$

This property follows from the linearity of the egoistic utility and the fact that political parties weigh preferences of social groups according to their vote shares. If voters' egoistic utility was concave, then more equal allocations would yield higher voter support and the political equilibrium would feature a positive tax rate even when $A^g = 0$. However, for our comparative statics results, which are derived from the altruistic part of preferences, this linearity assumption is not crucial. Furthermore, the political objective function in (6) also yields policies that are smooth in parameters since the identity of the pivotal voter group does not change discretely as in the median voter framework.

Second, the framework is flexible enough to incorporate multiple voter attributes and policy dimensions. Voters' indirect utility varies with income *and* ethnicity and could be a function of multiple policy instruments (for example, public goods) as well. Lastly, differences in the political clout or political representation across social groups could be modelled by assuming that ϕ is group-specific.[17]

2. Social Identity and Redistribution

Following social identity theory, we posit that self-identification guides the altruism with regard to the social identity group. We acknowledge that the heterogeneity of voters, and therefore the possible patterns for self-identification, may be even richer in the data, but for the sake of tractability we focus here on broad differences in ethnicity and income that we find empirically most relevant. More specifically, we consider a society composed of the poor majority, which we assume may be ethnically fragmented, and the rich elite. In the following, we analyse in turn the role of in-group altruism, universal altruism and ethnic fragmentation in determining the equilibrium tax rate in such a society.

2.1. *Class Altruism*

We consider voters composed of two social groups: the poor, $p \equiv \{v, w\} \times \{l, m\}$, and the rich, $r \equiv \{v, w\} \times h$. Henceforth, we will refer to them as social classes and, therefore, to voters' in-group altruism as class altruism. As a first step, we consider social identity with regard to income solely. Further below, in Subsection 2.3, we will additionally study the role of ethnic fragmentation among the poor for the determination of the equilibrium tax rate.

[17] In this case, the political objective function can be written as $\sum_{g\in\mathcal{G}} \sum_{(e,i)\in g} \omega^g \lambda^{e,i} V^{gi}(\tau)$ where $\omega^g = \phi^g / \sum_{h\in\mathcal{G}} \lambda^h \phi^h$ measures the political clout of social group g relative to the population average. Among other things, ω^g could capture differences in voter turnout across social groups, for example.

Our first proposition establishes the comparative statics of the equilibrium tax rate when both the poor and the rich voters are altruistic towards their own social class, i.e., are endowed with the indirect utility function (2) with $a(g) = g$.

PROPOSITION 1 (CLASS ALTRUISM). *Consider an economy with $\mathcal{G} = \{p, r\}$ and in-group altruism among the poor and the rich, $a(g) = g$. Starting from an interior equilibrium, the tax rate is:*

(a) Strictly decreasing (increasing) in the class altruism, A^r (A^p), of the rich (poor);
(b) Strictly increasing in the inequality aversion, E^p, of the poor.

PROOF. In Section A2 of the Appendix.

The proposition establishes in part (a) of the proposition that in-group altruism increases the class's political power and therefore reinforces the standard political conflict over income redistribution: the rich support lower taxes because they value the status of their rich peers beyond their own consumption, while the poor support higher taxes to redistribute from the rich to all poor. In addition, the poor gain from the reduction in consumption inequality among all the poor due to the higher taxes.[18] Part (b) of the proposition shows that inequality aversion of the poor is positively related to redistribution. The result in this part would also apply for E^r had we assumed some income inequality among the rich.

We should stress that the vote share of a social class plays an important role in determining the equilibrium tax rate as well, although we do not want to give this well-understood mechanism centre stage in the form of a proposition. The marginal effects on the equilibrium tax rate will be more pronounced the higher a social class's vote share in the economy. Thus, the degree of equilibrium redistribution depends not only on the inter-class conflict but also on the vote share that each social class carries in the electorate.

2.2. *Universal Altruism*

In this section we consider the role of altruism and social identity with regard to the population as a whole. This is often referred to as universal altruism in the literature. Under universal altruism a social group's utility is given by (2) with $a(g) = \mathcal{U}$. The following proposition establishes that for the rich voters the type of altruism—in-group or universal—has important implications for the level of distribution.

PROPOSITION 2 (UNIVERSAL ALTRUISM OF THE RICH). *Consider an economy with $\mathcal{G} = \{p, r\}$, in-group altruism of the poor, $a(p) = p$, and universal altruism of the rich, $a(r) = \mathcal{U}$. The tax rate of this economy is interior and higher than under class altruism of the rich.*

PROOF. In Section A3 of the Appendix.

The proposition highlights that the universal altruism of the rich implies more redistribution through two channels. First, the rich care about the average consumption level of all voters and not only their own. Thus, they are less opposed to redistributive income taxes. Second, they worry

[18] This motive for redistribution would also be present among the rich, had we assumed some income heterogeneity among them. However, part (a) of the proposition would still apply in such a setting since $E^r \leq 1/2$ ensures that the status concern dominates inequality aversion.

about consumption inequality in the population as a whole. In contrast, when the rich are solely altruistic towards their social class then inequality aversion has no role.[19]

Proposition 2 provides the comparative statics of the equilibrium tax rate with respect to the rich voters' type of altruism. As a next step, we also explore the role of the strength of universal altruism. To this aim, we consider an economy where not only the rich but also poor voters are universally altruistic. The following proposition establishes the comparative statics of the tax rate in such a society.

PROPOSITION 3 (UNIVERSAL ALTRUISM). *Consider an economy with $\mathcal{G} = \{p, r\}$ and universal altruism of the poor and the rich, $a(g) = \mathcal{U}$. Define the threshold*

$$\widetilde{E}^k \equiv \frac{\lambda^k A^k}{1 + \lambda^k A^k} E^k, \quad k \neq g \in \{p, r\}.$$

Then, the equilibrium tax rate is always interior and:

(a) Strictly decreasing in the universal altruism, A^g, of group g for sufficiently low inequality aversion, $0 < E^g < \widetilde{E}^k$;
(b) Strictly increasing in the universal altruism, A^g, of group g for sufficiently high inequality aversion, $\widetilde{E}^k < E^g \leq 1/2$;
(c) Strictly increasing in the inequality aversion, E^g, of both groups.

PROOF. In Section A4 of the Appendix.

The proposition shows in parts (a) and (b) that the presence of universal altruism is not sufficient for higher tax rates due to its interaction with inequality aversion. The concern for consumption inequality of the focal group g has to be sufficiently high compared to the other group k. To gain intuition for part (a), consider the special case where the focal group has no inequality aversion, i.e., $E^g \to 0$ and $E^k > 0$. Then, if A^g increases, the political clout of group g relative to group k increases. Thus, parties will accommodate the preferred policy of group g, who only cares about average consumption but is not averse to inequality, and propose a lower tax rate. For part (b), consider the opposite case where $E^g > 0$ and $E^k \to 0$. Then, if A^g increases, the political clout is shifting to group g, which is more concerned about consumption inequality relative to average consumption compared to group k. Finally, the last part (c) of Proposition 3 highlights that the inequality aversion of both classes increases the equilibrium tax rate under universal altruism.

An immediate corollary of Proposition 3 is that, in the intermediate case, where both social classes have the same inequality aversion, $E^p = E^r$, the tax rate will always be strictly increasing in the altruism A^g for both groups, as stated in part (b) of the proposition.

COROLLARY 2 (UNIVERSAL ALTRUISM). *Consider the economy with universal altruism described in Proposition 3. Let $E^p = E^r$, then the equilibrium tax rate is increasing in the universal altruism, A^g, for both the poor and the rich.*

We consider Proposition 2 and Corollary 2 our benchmark results for equilibrium redistribution in societies with universally altruistic voters. Both will guide our empirical analysis in Section 3.

[19] Proposition 2 would still apply, had we assumed some income inequality among the rich, as long as $I^r(y) < I^{\mathcal{U}}(y) + (y^h - \bar{y})/E^r$.

2.3. *Ethnic Fragmentation*

As a final step, we study the role of ethnic fragmentation in our theory. We thus revisit the economy populated by poor and rich voters, however, we now assume that the poor voters self-identify with their income class *and* ethnicity. More formally, the society has three social groups and is composed of the v-poor, $vp \equiv v \times \{l, m\}$, the w-poor, $wp \equiv w \times \{l, m\}$, and the rich, r. For the rich voters we assume social identity is independent of ethnicity and they may self-identify in-class or universally.

The social structure implied by this setup has attracted a lot of attention in the empirical literature. First, the ethnic fractionalisation is much higher in the United States compared to European countries (Alesina *et al.*, 2003) and more concentrated among the poor. Second, social identification is stronger within than across ethnic groups in the United States (Alesina *et al.*, 2001). This may be due to racial prejudice or the perception that ethnic minorities could do as well as White Americans if they only tried hard enough (Lipset, 1996, p. 133).

In the following proposition, we show that the correlation between ethnicity and the income composition has important implications for the equilibrium tax rate in fragmented societies. Without loss of generality, let v be the ethnic minority and w the prevalent ethnicity. Furthermore, define the share of middle-income voters among the poor of ethnicity e as $\theta^{ep} \equiv \lambda^{e,m}/\lambda^{ep}$, and similarly $\theta^{p} \equiv (\lambda^{v,m} + \lambda^{w,m})/\lambda^{p}$ as the middle-income share among all poor voters. Then we obtain the following result.

PROPOSITION 4 (ETHNIC FRAGMENTATION). *Consider an economy with ethnic fragmentation, $\mathcal{G} = \{vp, wp, r\}$ and in-group altruism among the e-poor, $a(ep) = ep$. Let $\theta^{p} = 1/2$, $\theta^{vp} < 1/2$ and $\theta^{wp} > 1/2$. Starting from an interior equilibrium, the equilibrium tax rate is strictly lower, ceteris paribus, compared to an economy without ethnic fragmentation and $a(p) = p$.*

PROOF. See Section A5 of the Appendix.

The proposition shows that ethnic fragmentation among the poor lowers the perceived in-group consumption inequality in both ethnic groups. For example, middle-income voters, which compose the majority among the prevalent ethnicity, become less concerned with low-income voters as their group share increases from $\theta^{p} = 1/2$ (without fragmentation) to $\theta^{wp} > 1/2$ (with ethnic fragmentation). The proposition is also in line with the observation in the empirical literature that the presence of poor ethnic minorities typically reduces the observed redistribution.[20]

We note that the assumptions in the proposition with regard to a group's middle-income share are empirically relevant. In the US CPS 2019 (US Census Bureau, 2019), for instance, Blacks account for 18% of all poor households (i.e., households with income in deciles 1–6). We find that the middle-income share among them is only 41%. Among poor White householders, who belong to the prevalent ethnicity, a majority of 54% reports a middle income (income deciles 4–6).[21]

[20] See, for example, Alesina *et al.* (1999), Alesina and La Ferrara (2000), Alesina and La Ferrara (2005) and Lee and Roemer (2006) for the United States. For Europe, see Stichnoth (2012) and Alesina *et al.* (2018). Luttens and Valfort (2012) offer analyses for both Europe and the United States.

[21] If we split poor White and non-White (Asian, Hispanic and Black) householders, the corresponding middle-income shares would be 54% and 46%, respectively. The middle-income share among poor Black and non-Black householders (White, Asian and Hispanic) is 41% and 53%, respectively. Thus, the assumptions in the proposition are robust to a broad range of binary categorisations of ethnicity.

In summary, for an economy with an income and ethnicity structure similar to the United States, our model predicts that the level of redistribution is lower when the poor are ethnically fragmented. This mechanism for poor voters complements the role of rich voters' class altruism in mitigating redistribution, as we stated earlier in Propositions 1 and 2.

3. Explaining the Dispersion of Tax Rates

In this section we provide evidence on the empirical pattern of altruism in two major economies, the United States and the EU. Through the lens of our model, we then illustrate how voters' altruism contributes to the observed differences in tax rates. We acknowledge, however, that multiple factors may contribute to these cross-country differences and we cannot rule out mechanisms that are outside the scope of our model.

In our theory, the equilibrium tax rate depends on the type of voters' altruism as well as the composition of social groups. Two crucial model predictions are that class altruism of the rich leads to lower equilibrium tax rates, while stronger universal altruism of the rich, when the level of inequality aversion is comparable for social classes, yields higher tax rates. Below we will provide empirical support for both of these predictions in survey data for the United States and the EU. In addition, we also document indirect evidence for poor voters' universal altruism by looking at their redistribution stance.

3.1. *Altruism of the Rich*

We consider the WVS 6: 2010–14 and focus on the income dimension of social identity. To determine the income group of survey respondents we use Question V239, which asks about the income decile of the household. The strength of altruism regarding the low-income group is well captured by two survey questions: Question V98 asks respondents to indicate, on a scale from 1 to 10, whether 'The government should take more responsibility to ensure everyone is provided for (1)' or 'People should take more responsibility to provide for themselves (10)'. Similarly, in Question V80 respondents answer whether 'People living in poverty and need' is the world's most serious problem. Finally, to focus the empirical evidence on regular voters, we use Question V227, which asks respondents whether they 'always', 'usually' or 'never' participate in national elections.

The WVS 6 provides direct evidence that rich American voters are less universally altruistic than rich European voters. In Figure 1, in line with our theory, we group voters into the poor class, whose low and middle income is below the average, and the rich class with high income. The figure illustrates that only 19% of rich Americans answered to Question V98 that the government should take more responsibility ensuring everybody is provided for (dark grey bars), while 63% support that people should take more responsibility to provide for themselves (light grey bars). In comparison, among rich European voters the same shares are almost balanced, 37% and 38%, respectively. This shows the higher concern for low-income groups, i.e., stronger universal altruism, among rich Europeans compared to Americans. We also find a similar empirical pattern of altruism in Question V80, where fewer rich Americans (52%) than Europeans (61%) responded that people living in poverty and need is the most serious problem in the world.

Independently, Falk *et al.* (2018) documents in the Global Preference Survey that the general level of altruism—which can be either of the in-group or the universal type—in the United States, Canada and Australia is 0.26 standard deviations above the world average, while in

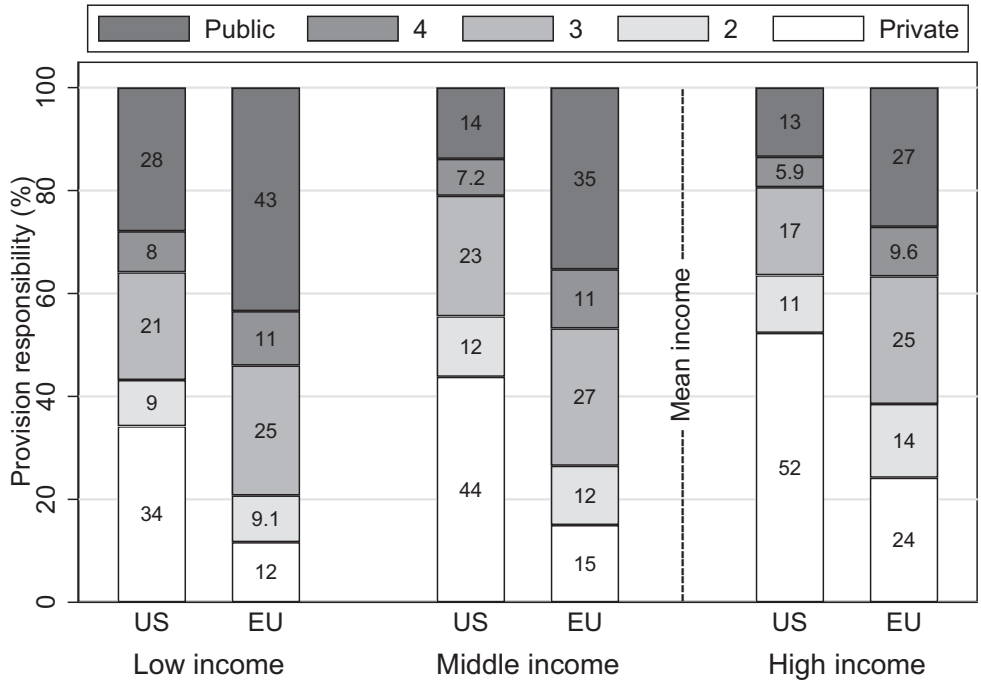

Fig. 1. *Voters' View on Public Provision for the Poor in the United States and the European Union.*
Notes: The EU countries in the survey are Cyprus, Estonia, Germany, Netherlands, Poland, Romania, Slovenia, Spain and Sweden. Low income is income deciles 1–3, middle income deciles 4–6, and high income deciles 7–10. Provision responsibility is Public (5) for V98 $\in \{1, 2, 3\}$, 4 for V98 $= 4$, 3 for V98 $\in \{5, 6\}$, 2 for V98 $= 7$, and Private (1) if V98 $\in \{8, 9, 10\}$. Only respondents that always or usually vote in national elections are considered.
Source: WVS 6, Question V98.

western Europe, it is 0.04 below the world average. Given the stronger universal altruism of rich Europeans documented in Figure 1, this suggests that rich Americans' altruism, on average, is stronger with respect to their own social class compared to rich Europeans. Through the lens of our model, both stronger universal altruism of rich Europeans and stronger class altruism of rich Americans should lead to weaker preferences for redistribution in the United States compared to the EU. This redistribution stance of the rich, as we will document below, is supported in the WVS 6 data.

3.2. *Redistribution Stance and Altruism of the Poor*

Our previous discussion provides direct evidence for the empirical pattern of altruism among the rich. For poor voters, the modest concern for low-income earners in the United States compared to the EU, as documented in Figure 1, could be attributed to both weaker class altruism or stronger universal altruism among poor Americans.[22] In this section we argue that indirect

[22] The same result occurs in Question V80, where 66% and 63% of European voters with low and middle income, respectively, respond that poverty is the most serious problem. In the United States, the corresponding shares amount to only 58% and 51%, respectively.

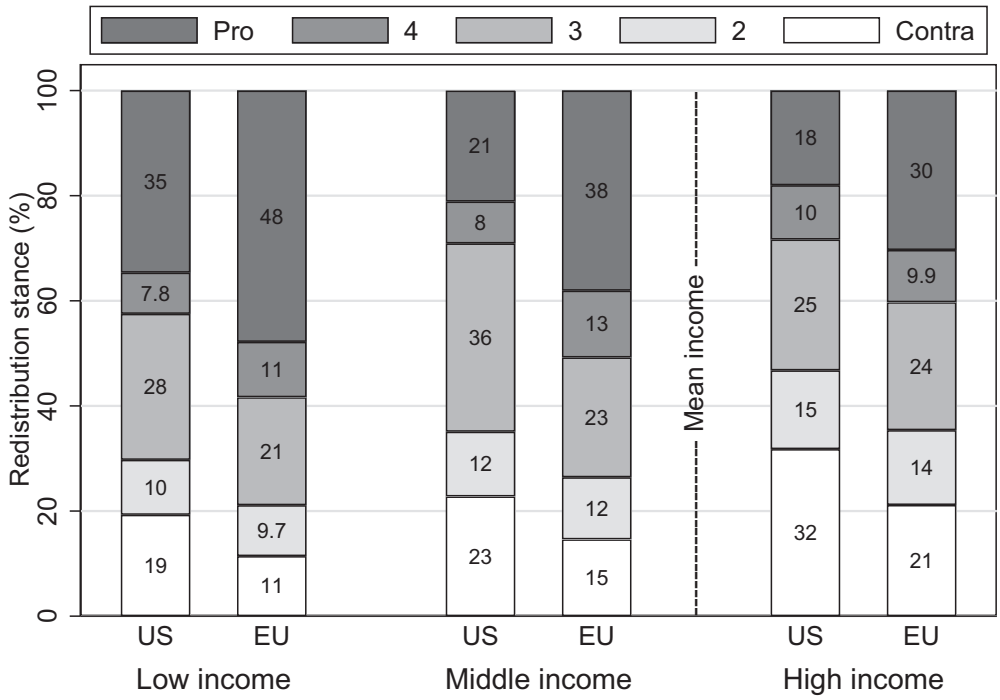

Fig. 2. *Voters' Redistribution Stance in the United States and the European Union.*
Notes: The EU countries in the survey are Cyprus, Estonia, Germany, Netherlands, Poland, Romania, Slovenia, Spain and Sweden. Low income is income deciles 1–3, middle income deciles 4–6, and high income deciles 7–10. Redistribution stance is Pro (5) for V96 $\in \{1, 2, 3\}$, 4 for V96 $= 4$, 3 for V96 $\in \{5, 6\}$, 2 for V96 $= 7$, and Contra (1) if V96 $\in \{8, 9, 10\}$. Only respondents that always or usually vote in national elections are considered.
Source: WVS 6, Question V96.

evidence for universal altruism among the poor can be gathered by looking at their redistribution stance.

Question V96 in the WVS 6 asks respondents to indicate, on a scale from 1 to 10, whether 'Incomes should be made more equal (1)' or whether 'We need larger income differences as incentives for individual effort (10).' In Figure 2 we illustrate that among low-income voters a solid majority of Europeans (59%, dark grey bars) support redistribution, while the support among Americans is only 43%. This modest support for redistribution, in particular among poor Americans, is at odds with in-group altruism, under which the poor should firmly support it. Instead, under universal altruism poor voters value the status of the rich, which can explain the modest support for redistribution in the survey. Interestingly, the lower support for redistribution in the United States compared to the EU could not be explained by lower inequality aversion alone. Suppose Americans had purely egoistic preferences, then poor voters in the United States should unanimously support income redistribution—and some degree of inequality aversion, in-group or in the population as a whole, would only reinforce it. This support for redistribution can only be mitigated if the poor have concerns for rich voter's average consumption, as in our

formulation of universal altruism.[23] Of course, some poor voters may still be in-group altruistic, in which case higher ethnic fragmentation of the poor in the United States may also contribute to the observed differences in the redistribution stance.

Furthermore, Figure 2 confirms our earlier conjecture that a higher share of rich US voters opposes redistribution (47%, light grey bars) compared to the EU (35%). This is consistent with our discussion in the previous section, that the stronger class altruism (or, weaker universal altruism) of rich Americans is associated with a weaker preference for redistribution.

4. Conclusion

Why do the tax rates vary considerably across modern democracies, such as the United States and countries of the EU? While economic mechanisms do not seem to play the major role in the divide between the United States and Europe, we find that political and behavioural differences are an important part of the explanation. We focus our analysis on the role of altruistic preferences in the political process. In line with social identity theory we allow altruism to be directed to specific social groups and assume that the altruistic motive depends positively on the identity group's average consumption and negatively on its consumption inequality. We then show how differences in altruism and self-identification drive the variation in the equilibrium tax rate and the level of redistribution. Finally, we document evidence on the pattern of altruism in survey data and show that, through the lens of our model, the pattern is consistent with the observed differences in tax rates in the United States and the EU.

There are several possible extensions of this research that could be explored in future work. In our framework, we have assumed that all additional heterogeneity of voters is summarised in the ideological bias, which is orthogonal to ethnicity and income. It would be interesting to explore self-identification along more dimensions such as age, gender, religion and occupation. Furthermore, we have focused the analysis on a single policy instrument in the form of a redistributive income tax. In our probabilistic voting framework further policy instruments such as public good provision or public debt issuance could be introduced. This extension allows to study political conflict beyond the income dimension, for example, between left- and right-leaning voters (Müller *et al.*, 2016), or young and old voters (Song *et al.*, 2012).

Another interesting avenue would be to investigate the role of the altruism in networks on the tax rate—for example, using data on local communities. Such an analysis could use some of the elements developed in Ghiglino and Goyal (2010) and insights from the empirical literature, as in Côté *et al.* (2015).

Finally, in this paper, the income distribution and the social identity groups are exogenously given. In a more comprehensive model, these dimensions could co-evolve and, ultimately, their dynamics depend on the tax rate. Besley and Persson (2019) explores this avenue in the context of identity politics and a promising line of research would be to integrate social identity dynamics into our model.

[23] This view is supported in Klor and Shayo (2010) who provide experimental evidence that the concern for the social identity group's status often dominates inequality aversion and that the social identification with rich groups is particularly strong. A potential driver of the observed difference in the redistribution stance could be the higher social mobility in the United States, as discussed in Alesina *et al.* (2001). If poor Americans expect higher income growth in the future, they are more likely to identify with the population as a whole, including the rich, and more likely oppose redistribution (Alesina and La Ferrara, 2005).

Appendix A. Mathematical Appendix

A.1. Proof of Lemma 1

Let $z \in \{1, 2\}$ be an indicator for party z and $\mu_z \geq 0$ the multiplier for the positivity constraint, $\tau_z \geq 0$. Recall that the parameter restriction, $E^g \leq 1/2$, ensures that any voter (and therefore both parties) prefer a tax rate strictly below one, so we can ignore the upper bound, $\tau_z \leq 1$. In (3) and (4) the first-order conditions (FOCs) for a maximum of P_z with respect to τ_z are then

$$\begin{aligned} 0 &= \psi\phi \sum_{g\in\mathcal{G}} \sum_{(e,i)\in g} \lambda^{e,i} \left[(1 + A^g)[1 - C'(\tau_z^*)]\bar{y} - \left[y^i + A^g(\bar{y}^{a(g)} - E^g I^{a(g)}(y))\right]\right] + \mu_z \\ &= [1 - C'(\tau_z^*)]\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g) - \sum_{g\in\mathcal{G}} \lambda^g \left[(1 + A^g)\bar{y}^{a(g)} - A^g E^g I^{a(g)}(y)\right] + \frac{\mu_z}{\psi\phi} \end{aligned}$$

$$\mu_z \tau_z^* = 0.$$

The second-order condition for a global maximum is satisfied

$$-\psi\phi C''(\tau_z^*)\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g) < 0,$$

since $C''(\cdot) > 0$. Using that $\sum_{g\in\mathcal{G}} \lambda^g \bar{y}^{a(g)} = \bar{y}$, for $a(g) \in \{g, \mathcal{U}\}$, the FOCs can be rearranged to yield

$$C'(\tau_z^*) = 1 - \frac{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)\bar{y}^{a(g)}}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} + \frac{\sum_{g\in\mathcal{G}} \lambda^g A^g E^g I^{a(g)}(y)}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} + \frac{\mu_z}{\psi\phi} \tag{A1}$$

$$\mu_z \tau_z^* = 0. \tag{A2}$$

Since (A1) and (A2) are symmetric and characterise the unique maximum for both parties, it follows that $\tau_1^* = \tau_2^* = \tau^* \in [0, 1)$ and $\mu_1 = \mu_2 = \mu \geq 0$. Using this in (A1) and (A2) yields the characterisation stated in the lemma.

A.2. Proof of Proposition 1

The interior equilibrium tax rate with class altruism is given by

$$\tau^* = (C')^{-1}\left(1 - \frac{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)\bar{y}^g}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} + \frac{\sum_{g\in\mathcal{G}} \lambda^g A^g E^g I^g(y)}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)}\right).$$

We now prove part (a) of the proposition: the derivative with respect to A^r yields

$$\frac{d\tau^*}{dA^r} = -\frac{1}{C''(\tau^*)} \frac{\lambda^r}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} \left(\frac{\lambda^p(1 + A^p)[y^h - \bar{y}^p]}{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} + \frac{\lambda^p A^p E^p I^p(y)}{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)}\right) < 0,$$

where we used the facts that $I^r(y) = 0$ and $\bar{y}^r = y^h > \bar{y}^p$. Similarly, the derivative with respect to A^p yields

$$\frac{d\tau^*}{dA^p} = \frac{1}{C''(\tau^*)} \frac{\lambda^p}{\bar{y} \sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} \left(\frac{\lambda^r(1 + A^r)[y^h - \bar{y}^p]}{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)} + \frac{(1 + \lambda^r A^r)E^p I^p(y)}{\sum_{g\in\mathcal{G}} \lambda^g(1 + A^g)}\right) > 0.$$

Thus, the tax rate is indeed decreasing in the altruism of the rich and increasing in the altruism of the poor.

Next, we prove part (b): the derivative with respect to the inequality aversion of the poor is given by

$$\frac{d\tau^*}{dE^p} = \frac{1}{C''(\tau^*)} \frac{\lambda^p A^p I^p(y)}{\bar{y} \sum_{g \in \mathcal{G}} \lambda^g (1 + A^g)} > 0.$$

This completes the proof of the proposition.

A.3. Proof of Proposition 2

Under the conditions stated in the proposition, the interior equilibrium tax rate with universal altruism of the rich and in-group altruism of the poor is interior and given by

$$\tau^* = (C')^{-1} \left(1 - \frac{\bar{y} + \lambda^p A^p (\bar{y}^p - E^p I^p(y)) + \lambda^r A^r (\bar{y} - E^r I^{\mathcal{U}}(y))}{\bar{y} \sum_{g \in \mathcal{G}} \lambda^g (1 + A^g)} \right) > 0, \tag{A3}$$

where we used the fact that $\sum_{g \in \mathcal{G}} \lambda^g \bar{y}^g = \bar{y}$. To see that $\tau^* > 0$, replace $\bar{y}^p$ in (A3) with $\bar{y}$. In this (hypothetical) case, the function argument is already strictly positive, so it must remain strictly positive when $\bar{y}^p < \bar{y}$ is in place. This tax rate τ^* is strictly greater than the interior equilibrium tax rate that results under class altruism of the rich

$$(C')^{-1} \left(1 - \frac{\bar{y} + \lambda^p A^p (\bar{y}^p - E^p I^p(y)) + \lambda^r A^r y^h}{\bar{y} \sum_{g \in \mathcal{G}} \lambda^g (1 + A^g)} \right),$$

since $-\lambda^r A^r (\bar{y} - E^r I^{\mathcal{U}}(y)) > -\lambda^r A^r y^h$. Trivially, τ^* is also strictly greater if the equilibrium tax rate under class altruism of the rich is equal to zero. This completes the proof of the proposition.

A.4. Proof of Proposition 3

The equilibrium tax rate with universal altruism is given by

$$\tau^* = (C')^{-1} \left(\frac{\sum_{g \in \mathcal{G}} \lambda^g A^g E^g}{\sum_{g \in \mathcal{G}} \lambda^g (1 + A^g)} \frac{I^{\mathcal{U}}(y)}{\bar{y}} \right) > 0.$$

We first prove parts (a) and (b) of the proposition: let $g \neq k \in \{p, r\}$. The derivative of the tax rate with respect to A^g is then given by

$$\begin{aligned} \frac{d\tau^*}{dA^g} &= \frac{1}{C''(\tau^*)} \frac{\lambda^g}{\sum_{h \in \mathcal{G}} \lambda^h (1 + A^h)} \left(- \frac{\sum_{h \in \mathcal{G}} \lambda^h A^h E^h}{\sum_{h \in \mathcal{G}} \lambda^h (1 + A^h)} + E^g \right) \frac{I^{\mathcal{U}}(y)}{\bar{y}} \\ &= \frac{1}{C''(\tau^*)} \frac{\lambda^g}{\sum_{h \in \mathcal{G}} \lambda^h (1 + A^h)} \left(- \frac{\lambda^k A^k E^k}{\sum_{h \in \mathcal{G}} \lambda^h (1 + A^h)} + \left[\frac{1 + \lambda^k A^k}{\sum_{h \in \mathcal{G}} \lambda^h (1 + A^h)} \right] E^g \right) \frac{I^{\mathcal{U}}(y)}{\bar{y}}. \end{aligned}$$

Thus, $d\tau^*/dA^g < (=)(>) 0$ if and only if

$$E^g < (=)(>) \frac{\lambda^k A^k}{1 + \lambda^k A^k} E^k = \widetilde{E}^k.$$

As is formally stated in Corollary 2, this condition is always satisfied with $>$ if both social groups have the same income inequality aversion, $E^g = E^k > 0$.

Proof of part (c): it is straightforward to verify that $d\tau^*/dE^g > 0$. This completes the proof of the proposition.

A.5. Proof of Proposition 4

The equilibrium tax rate *without* ethnic fragmentation, when $a(p) = p$, can be written as

$$\tilde{\tau}^* = (C')^{-1}\left(1 - \frac{\bar{y} + \left(\sum_{e\in\{v,w\}} \lambda^{ep}\right) A^p \left[\bar{y}^p - E^p I^p(y)\right] + \lambda^r A^r \left[\bar{y}^{a(r)} - E^r I^{a(r)}(y)\right]}{\bar{y}\sum_{g\in\mathcal{G}} \lambda^g (1 + A^g)}\right),$$

where $a(r) \in \{r, \mathcal{U}\}$ since we allow for class or universal altruism among the rich. Under the same parameterisation, the equilibrium tax rate *with* ethnic fragmentation among the poor is given by

$$\tau^* = (C')^{-1}\left(1 - \frac{\bar{y} + \sum_{e\in\{v,w\}} \lambda^{ep} A^p \left[\bar{y}^{ep} - E^p I^{ep}(y)\right] + \lambda^r A^r \left[\bar{y}^{a(r)} - E^r I^{a(r)}(y)\right]}{\bar{y}\sum_{g\in\mathcal{G}} \lambda^g (1 + A^g)}\right).$$

Since $(\sum_{e\in\{v,w\}} \lambda^{ep})\bar{y}^p = (\lambda^{v,m} + \lambda^{w,m})y^m + (\lambda^{v,l} + \lambda^{w,l})y^l = \sum_{e\in\{v,w\}} \lambda^{ep}\bar{y}^{ep}$, then we have $\tau^* < \tilde{\tau}^*$ if and only if

$$\sum_{e\in\{v,w\}} \lambda^{ep} I^{ep}(y) < \left(\sum_{e\in\{v,w\}} \lambda^{ep}\right) I^p(y). \tag{A4}$$

We now show that this inequality holds under the conditions stated in the proposition. The income inequality among the e-poor can be written as

$$\begin{aligned} I^{ep}(y) &= 1/\lambda^{ep} \sum_{(e,i)\in ep} \lambda^{e,i} |y^i - \bar{y}^{ep}| \\ &= -\frac{\lambda^{e,l}}{\lambda^{ep}}\left[y^l - \frac{1}{\lambda^{ep}}\left(\lambda^{e,l} y^l + \lambda^{e,m} y^m\right)\right] + \frac{\lambda^{e,m}}{\lambda^{ep}}\left[y^m - \frac{1}{\lambda^{ep}}\left(\lambda^{e,l} y^l + \lambda^{e,m} y^m\right)\right] \\ &= 2\theta^{ep}(1 - \theta^{ep})(y^m - y^l), \end{aligned}$$

where we use the fact that $\lambda^{e,l}/\lambda^{ep} = 1 - \lambda^{e,m}/\lambda^{ep} = 1 - \theta^{ep}$. Similarly, the inequality among all the poor can be expressed as

$$I^p(y) = 2\theta^p(1 - \theta^p)(y^m - y^l).$$

It is easy to verify that the inequality measure is maximal when the middle-income share in the group is 1/2, thus $I^p(y) > I^{ep}(y)$, $\forall e \in \{v, w\}$ since $\theta^p = 1/2$, $\theta^{wp} > 1/2$ and $\theta^{vp} < 1/2$. This implies that inequality (A4) holds and therefore $\tau^* < \tilde{\tau}^*$, which concludes the proof of the proposition.

University of Essex, UK & GSEM Geneva, Switzerland
Universidad Anáhuac México, Mexico
University of Essex & CEPR, UK

Additional Supporting Information may be found in the online version of this article:

Replication Package

References

Acemoglu, D. (2010). 'Institutions, factor pricing, and taxation: virtues of strong states?', *American Economic Review*, vol. 100(2), pp. 115–19.

Acemoglu, D. and Robinson, J.A. (2006). *Economic Origins of Dictatorship and Democracy*, Cambridge: Cambridge University Press.

Acemoglu, D. and Robinson, J.A. (2008). 'Persistence of power, elites and institutions', *American Economic Review*, vol. 98(1), pp. 267–93.

Akerlof, G. and Kranton, R.E. (2000). 'Economics and identity', *The Quarterly Journal of Economics*, vol. 115(3), pp. 715–53.

Alesina, A., Baqir, R. and Easterly, W. (1999). 'Public goods and ethnic divisions', *The Quarterly Journal of Economics*, vol. 114(4), pp. 1243–84.

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S. and Wacziarg, R. (2003). 'Fractionalization', *Journal of Economic Growth*, vol. 8(2), pp. 155–94.

Alesina, A. and Glaeser, E. (2004). *Fighting Poverty in the US and Europe*, Oxford: Oxford University Press.

Alesina, A., Glaeser, E. and Sacerdote, B. (2001). 'Why doesn't the US have a European-style welfare state?', *Brookings Papers on Economic Activity Fall*, vol. 2, pp. 187–277.

Alesina, A., Harnoss, J. and Rapoport, H. (2018). 'Immigration and the future of the welfare state in Europe', Working Paper, Paris School of Economics.

Alesina, A. and La Ferrara, E. (2000). 'Participation in heterogeneous communities', *The Quarterly Journal of Economics*, vol. 115(3), pp. 847–904.

Alesina, A. and La Ferrara, E. (2005). 'Preferences for redistribution in the land of opportunities', *Journal of Public Economics*, vol. 89(5–6), pp. 897–931.

Austen-Smith, D. (1996). 'Interest groups: money, information, and influence', in (D.C. Mueller, ed.), *Perspectives on Public Choice: A Handbook*, pp. 296–321, Cambridge: Cambridge University Press.

Bandiera, O. and Levy, G. (2011). 'Diversity and the power of the elites in democratic societies: evidence from Indonesia', *Journal of Public Economics*, vol. 95(116), pp. 1322–30.

Bénabou, R. and Tirole, J. (2011). 'Identity, morals, and taboos: beliefs as assets', *Quarterly Journal of Economics*, vol. 126(2), pp. 805–55.

Bénabou, R. and Tirole, J. (2016). 'Mindful economics: the production, consumption, and value of beliefs', *Journal of Economic Perspectives*, vol. 30(3), pp. 141–64.

Besley, T. and Persson, T. (2019). 'The rise of identity politics', Working Paper, London School of Economics.

Bourguignon, F. and Verdier, T. (2012). 'The simple analytics of elite behavior under limited state capacity', in (A.H. Amsden, A. DiCaprio and J.A. Robinson, eds.), *The Role of Elites in Economic Development*, pp. 251–80, Oxford: Oxford University Press.

Bourlès, R., Bramoullé, Y. and Perez-Richet, E. (2017). 'Altruism in networks', *Econometrica*, vol. 85(2), pp. 675–89.

Costa-Font, J. and Cowell, F. (2014). 'Social identity and redistributive preferences: a survey', *Journal of Economic Surveys*, vol. 29(2), pp. 357–74.

Côté, S., House, J. and Willer, R. (2015). 'Inequality, income, and generosity', *Proceedings of the National Academy of Sciences*, vol. 112(52), pp. 15838–43.

Dixit, A. and Londregan, J. (1998). 'Ideology, tactics, and efficiency in redistributive politics', *The Quarterly Journal of Economics*, vol. 113(2), pp. 497–529.

Evren, Ö. (2012). 'Altruism and voting: a large-turnout result that does not rely on civic duty or cooperative behavior', *Journal of Economic Theory*, vol. 147(6), pp. 2124–57.

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D. and Sunde, U. (2018). 'Global evidence on economic preferences', *Quarterly Journal of Economics*, vol. 133(4), pp. 1645–92.

Fehr, E. and Schmidt, K.M. (2006). 'The economics of fairness, reciprocity and altruism—Experimental evidence and new theories', in (S.C. Kolm and J.M. Ythier), *Handbook on the Economics of Giving, Reciprocity and Altruism*, pp. 615–91, Amsterdam: Elsevier.

Fowler, J.H. and Kam, C.D. (2007). 'Beyond the self: altruism, social identity, and political participation', *Journal of Politics*, vol. 69(3), pp. 813–27.

Gennaioli, N. and Tabellini, G. (2019). 'Identity, beliefs, and political conflict', Working Paper, CESifo.

Ghiglino, C. and Goyal, S. (2010). 'Keep up with the neighbours: social interaction in a market economy', *Journal of the European Economic Association*, vol. 8(1), pp. 90–119.

Grossman, G.M. and Helpman, E. (2020). 'Identity politics and trade policy', *The Review of Economic Studies*, article rdaa031.

Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E. and Puranen, B., *et al*. (2014). 'World values survey: round six—country-pooled datafile version', http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp. Madrid: JD Systems Institute.

Klor, E.F. and Shayo, M. (2010). 'Social identity and preferences over redistribution', *Journal of Public Economics*, vol. 94(3–4), pp. 269–78.

Kranton, R., Pease, M., Sanders, S. and Huettel, S. (2013). 'Identity, groups, and social preferences', Working Paper, Duke University.

Lee, W. and Roemer, J.E. (2006). 'Racism and redistribution in the United States: a solution to the problem of American exceptionalism', *Journal of Public Economics*, vol. 90, pp. 1027–52.
Lindbeck, A. and Weibull, J.W. (1988). 'Altruism and time consistency: the economics of fait accompli', *Journal of Political Economy*, vol. 96(6), pp. 1165–82.
Lindqvist, E. and Östling, R. (2013). 'Identity and redistribution', *Public Choice*, vol. 155(3–4), pp. 469–91.
Lipset, S.M. (1996). *American Exceptionalism: A Double-Edged Sword*, New York: W.W. Norton.
Luttens, R.I. and Valfort, M.A. (2012). 'Voting for redistribution under desert-sensitive altruism', *Scandinavian Journal of Economics*, vol. 114(3), pp. 881–907.
Müller, A., Storesletten, K. and Zilibotti, F. (2016). 'The political color of fiscal responsibility', *Journal of the European Economic Association*, vol. 14(1), pp. 252–302.
Persson, T. (2002). 'Do political institutions shape economic policy?', *Econometrica*, vol. 70(3), pp. 883–905.
Persson, T. and Tabellini, G. (2002). *Political Economics: Explaining Economic Policy*, Cambridge, MA: MIT Press.
Putterman, L., Roemer, J.E. and Silvestre, J. (1998). 'Does egalitarianism have a future?', *Journal of Economic Literature*, vol. 36(2), pp. 861–902.
Roemer, J.E. (1998). 'Why the poor do not expropriate the rich in democracies: an old argument in new garb', *Journal of Public Economics*, vol. 70(3), pp. 399–424.
Shayo, M. (2009). 'A model of social identity with an application to political economy: nation, class, and redistribution', *American Political Science Review*, vol. 103(2), pp. 147–74.
Shayo, M. (2020). 'Social identity and economic policy', *Annual Review of Economics*, vol. 12, pp. 355–89.
Song, Z., Storesletten, K. and Zilibotti, F. (2012). 'Rotten parents and disciplined children: a politico-economic theory of public expenditure and debt', *Econometrica*, vol. 80(6), pp. 2785–803.
Stichnoth, H. (2012). 'Does immigration weaken natives' support for the unemployed? Evidence from Germany', *Public Choice*, vol. 151, pp. 631–54.
US Census Bureau. (2019). '2019 Annual Social and Economic Supplement, Table HINC-06. Income Distribution to $250,000 or More for Households: 2018', Current Population Survey, Washington, DC.
Widerquist, K. (2003). 'Public choice and altruism', *Eastern Economic Journal*, vol. 29(3), pp. 317–37.
Wittman, D. (2005). 'Voting on income redistribution: how a little bit of altruism creates transitivity', Working Paper no. 586, University of California, Santa Cruz.