

Voting for Redistribution under Desert-Sensitive Altruism*

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Abstract

We endow individuals who differ in skills and tastes for working, with altruistic preferences for redistribution in a voting model where a unidimensional redistributive parameter is chosen by majority voting in a direct democracy. When altruistic preferences are desert-sensitive (i.e., when there is a reluctance to redistribute from the hard-working to the lazy), we show that lower levels of redistribution emerge in political equilibrium. We provide empirical evidence that preferences for redistribution are not purely selfish, and that desert-sensitive motivations play a significant role. We estimate that preferences for redistribution are significantly more desert-sensitive in the US than in Europe.

Keywords: Comparison between welfare states; desert-sensitivity; preferences for redistribution; voting model

JEL classification: D31; D63; D64; D72

I. Introduction

There is a large body of literature in which authors have attempted to explain the main determinants behind the differences in individuals' demands for redistribution (e.g., Piketty, 1995; Corneo and Grüner, 2000; Alesina *et al.*, 2001; Benabou and Ok, 2001; Fong, 2001; Alesina and Angeletos, 2005; Benabou and Tirole, 2006; Vigdor, 2006). These contributions help

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to elucidate the distinct social contracts between the US and the European Union (EU) and between the social democratic, liberal, and conservative welfare states within the EU. We aim to contribute to this body of literature by taking the model of optimal redistribution in the face of skill and preference heterogeneity as a starting point. However, rather than studying the normative question regarding how governments should redistribute incomes in this setting (e.g., Sandmo, 1993; Boadway *et al.*, 2002; Schokkaert *et al.*, 2004; Fleurbaey and Maniquet, 2006a; Luttens and Ooghe, 2007), the research question we address in this paper is, how can skill and preference heterogeneity affect the demand for redistribution under majority voting? In this respect, our paper closely corresponds to that of Hodler (2008), who has shown that differences in preference heterogeneity because of cultural dissimilarities or positive complementarities in leisure might explain differences in redistribution.

We believe that the contribution of our paper is threefold. First, voters are not purely egoistic in our model. Voters care about others in a mix between maximizing the total social surplus (a utilitarian concern) and helping the worst-off (a Rawlsian concern). However, in addition, voters possibly only care about others as long as these others show at least the same level of responsibility (i.e., the same taste for working) to generate their income. We denote such a selective concern “desert-sensitive altruism”, because this way of modeling ethical preferences for redistribution resembles the normative desert-sensitive prioritarian theory of distributive justice of Arneson (2007).¹ Second, voters face imperfect information because individual characteristics, such as skills and preferences, cannot be observed directly. This allows for the introduction of different beliefs that drive the demand for redistribution.² Third, we provide empirical evidence that preferences for redistribution are not purely egoistic, notably relying on the World Value Survey data. Using a representative sample that contains respondents from the US and the EU, we justify desert-sensitive preferences for redistribution.

¹ Note that our modeling of fairness concerns as desert-sensitive altruism differs substantially from the stochastic approach of modeling fairness concerns in Alesina and Angeletos (2005). In their model, the unfair component of income differences is a result of random noise; in our model, it is a result of differences in innate skills.

² The introduction of different beliefs that drive the demand for redistribution was initiated by Piketty (1995), who focused on the impact of individuals’ beliefs on the relative importance of effort and luck in generating income inequalities. Benabou and Tirole (2006) started from evidence that people need to believe in a just world in order to motivate themselves and their children towards exerting effort. However, in our model, note that beliefs are not formed about the relative importance of the different individual characteristics in the income-generating process. Rather, beliefs are formed about the relative proportions of individuals having specific individual characteristics.

Our main results are the following. Theoretically, we demonstrate that, in a voting model where a unidimensional redistributive parameter is chosen by majority voting in a direct democracy, desert-sensitive preferences for redistribution induce lower levels of redistribution in political equilibrium, when the median voter has a high taste for working. Empirically, we estimate that preferences for redistribution are significantly more desert-sensitive among individuals in the US than among individuals in the EU. This observation reflects less optimistic beliefs in the US, regarding the proportion of unemployed who are not lazy. Our regression results confirm that the higher desert-sensitivity of Americans significantly helps to explain the lower demand for redistribution in the US. Differences in desert-sensitivity also significantly help to account for the different social contracts that prevail within the EU. We find that the Nordic countries (characterized by a social democratic welfare state) show a higher demand for redistribution than other Western European countries, because of their more optimistic belief in the proportion of unemployed who are not lazy. This finding is consistent with the Nordic countries having higher levels of social capital, as measured by generalized trust and civic attitudes (Algan and Cahuc, 2009).

We believe that our paper is important for at least two reasons. First, the experimental evidence of Konow (2000) and Fong (2007) shows that, in the evaluation of different social states, individuals dislike utility differences that are a result of characteristics beyond the responsibility of the individual (e.g., innate skills, talents, parental background), whereas they are neutral towards utility differences that result from characteristics that are within the responsibility of the individual (e.g., effort, preferences, tastes). Furthermore, from their experiments, Charness and Rabin (2002) show that individuals make a trade-off between egoistic, utilitarian, and Rawlsian concerns. Our analysis theoretically extends this evidence from the laboratory to the voting booth, and therefore we offer a more realistic voting model that could be used as a benchmark for future research. Second, because we show that a lower level of redistribution might arise in equilibrium when the prevalent view of a society is that a large part of the unemployed are lazy, we explain a particular channel through which stigmatization of the poor might affect economic outcomes.

Our paper is organized as follows. In Section II, we present the model, and we introduce the different scenarios of altruistic preferences for redistribution. In Section III, we compare the different equilibrium levels of redistribution that emerge under these different scenarios. In Section IV, we deal with desert-sensitivity in practice, and we justify desert-sensitive altruistic preferences for redistribution empirically. In Section V, we summarize our major conclusions and we highlight different avenues for future research.

II. The Model

Individual Characteristics

To keep the analysis simple, all individuals can only differ in two attributes. The first is their productive skill level w : individuals are either “zero-skilled”, “low-skilled”, or “high-skilled” (i.e., $w \in W = \{w_0, \underline{w}, \bar{w}\}$, with $0 = w_0 < \underline{w} < \bar{w} \leq 1$). The second is their taste for working e : individuals are either “lazy” or “hard-working” (i.e., $e \in E = \{e, \bar{e}\}$, with $0 < e < \bar{e} \leq 1$). Hence, every individual belongs to one of six types $(w, e) \in W \times E$. Throughout the paper, we assume that W and E are fixed and given. We assume that the view of society is such that people believe that differences in w are linked to a genetic endowment, and thus that they fall beyond the responsibility of the individual. However, people (might) hold individuals responsible for differences in the preference parameter e (see below).³ We denote by p_{we} the proportion of individuals of type (w, e) ; $\sum_{(w,e) \in W \times E} p_{we} = 1$. Similarly, we denote by p_w the proportion of individuals with skill level w ; $\sum_{w \in W} p_w = 1$. We denote by p_e the proportion of individuals with a taste for working e ; $\sum_{e \in E} p_e = 1$. We assume that w and e are independently distributed; $p_{we} = p_w \times p_e$ for all $(w, e) \in W \times E$.⁴ We also assume that individuals know that w and e are independently distributed. We describe a generic economy by $\varepsilon = (p_{w_0}, p_{\underline{w}}, p_{\bar{w}}, p_e)$.

Private Preferences for Consumption and Leisure

The productive skill level defines gross income in the usual multiplicative way: for any type (w, e) , given an amount of labor $\ell_{we} \in [0, 1]$, gross income y_{we} equals $w\ell_{we}$.

The government redistributes income through a basic income–flat tax schedule. We denote the constant marginal tax rate as $\tau \in [0, 1]$ and the corresponding basic income as $B(\tau) = \tau y_a$, where $y_a = \sum_{(w,e) \in W \times E} p_{we} y_{we}$

³ This “responsibility cut” (Dworkin, 1981) is common in the theoretical literature on fair redistribution and the empirical literature on individual opinions on distributive justice (e.g., Fleurbaey and Maniquet, 2006b, and references cited therein). However, it could be argued that individuals should be held responsible for differences in w , because they differently invest in human capital, and that individuals are not responsible for differences in e that might result from having small children, being old, or having bad health. We want to stress that the qualitative results of our model do not change when the responsibility cut is reversed once the definition of desert-sensitive altruism is altered accordingly (cf. *infra*).

⁴ The independence assumption simplifies the technical aspects of the model. Moreover, by assuming independence, we make a clear distinction between responsibility and non-responsibility characteristics. The interpretation of holding individuals responsible for e becomes dubious when e is correlated with w , which is interpreted as a genetic endowment; we refer to Fleurbaey (2008) for an extensive discussion.

denotes average gross income. We denote median income by y_m . Consumption c_{we} equals $B(\tau) + (1 - \tau)w\ell_{we}$.

Taking the redistributive policy of the government (i.e., τ and $B(\tau)$) as given, labor supply is determined on the basis of private preferences. For analytical tractability, we discard income effects, and we follow Atkinson (1995) and Roemer *et al.* (2003) in assuming that, for any type (w, e), the quasi-linear preferences between c_{we} and ℓ_{we} take the form

$$u_e = c_{we} - \frac{1}{2} \frac{1}{e} \ell_{we}^2. \tag{1}$$

Hence, the taste for working defines the marginal rate of substitution between consumption and supplied labor.⁵

If we maximize equation (1) with respect to ℓ , for an individual of type (w, e), we obtain

$$\ell_{we} = (1 - \tau)we,$$

and thus the following gross income

$$y_{we} = (1 - \tau)w^2e,$$

and net income (=consumption)

$$c_{we} = B(\tau) + (1 - \tau)^2 w^2e.$$

The private preference satisfaction is measured by the indirect utility function

$$v_{we} = B(\tau) + \frac{1}{2}(1 - \tau)^2 w^2e.$$

Informational Structure of the Model

We assume that the individuals (and the government) only observe four different income classes – the unemployed (with $y_{w_0e} = y_{w_0\bar{e}} = 0$), the working poor (with $y_{w\bar{e}}$), the middle-class (with $y_{\bar{w}e} = y_{w\bar{e}}$), and the rich (with $y_{\bar{w}\bar{e}}$) – together with their respective proportions $p_{w_0e} + p_{w_0\bar{e}}$, $p_{w\bar{e}}$, $p_{\bar{w}e} + p_{w\bar{e}}$, and $p_{\bar{w}\bar{e}}$. The supports of w and e are known but w, e , and ℓ_{we} cannot be observed on an individual basis. As a result, types (w, e) and (\bar{w}, \bar{e}) can be inferred by observing $y_{w\bar{e}}$ and $y_{\bar{w}\bar{e}}$, respectively, but types (w_0, e) and (w_0, \bar{e}) , and also types (\bar{w}, e) and (w, \bar{e}) , cannot be distinguished, because $y_{w_0e} = y_{w_0\bar{e}} = 0$ and $y_{\bar{w}e} = y_{w\bar{e}}$, respectively.⁶ Individuals

⁵ The marginal rates of substitution for two types of individuals with different tastes for working are always a constant multiple of each other. Therefore, their indifference curves satisfy the (Spence–Mirrlees) single crossing property.

⁶ Boadway *et al.* (2002) also adopt an informational structure with an indistinguishable middle class, but their analysis does not feature the unemployed. Furthermore, the fact that types

know that w and e are independently distributed. By observing the unemployed, individuals can derive the marginal proportion $p_{w_0} = p_{w_0e} + p_{w_0\bar{e}}$. However, because of the informational structure of the model, the marginal proportions p_w , $p_{\bar{w}}$, p_e , and $p_{\bar{e}}$ cannot be inferred directly. We return to the formation of beliefs about these proportions in Section III.

Altruistic Preferences for Redistribution

We consider a direct democracy in which the redistributive parameter τ is chosen by simple majority voting. Individuals fully anticipate the disincentive effects of income taxation on labor supply. Individuals’ evaluations of alternative redistributive policies are based on additive extended indirect utility functions. Throughout the paper, we present different specifications of altruism, but the generic form follows the social welfare model of Charness and Rabin (2002). For an alternative approach, we refer to Tyran and Sausgruber (2006), who have studied voting for redistribution in a model where altruistic preferences are based on the difference aversion model of Fehr and Schmidt (1999).

We introduce the notation first, and then we define the desert-insensitive preferences for redistribution in three steps. The desert-sensitivity component is added afterwards. We denote by the vector $\mathbf{v} \equiv (v_{w_0e}, v_{w_0\bar{e}}, v_{we}, v_{w\bar{e}}, v_{\bar{w}e}, v_{\bar{w}\bar{e}})$ the type-profile of indirect utilities. Let \mathbf{v}^T be the transpose of \mathbf{v} . We consider two (possibly identical) types (w, e) and (w', e') . We denote by $\pi_{we,w'e'}$ the weight that an individual of type (w, e) assigns to the private indirect utility of an individual of type (w', e') . For any type (w, e) , $\sum_{(w',e') \in W \times E} \pi_{we,w'e'} = 1$. The vector $\pi_{we} \equiv (\pi_{we,w_0e}, \pi_{we,w_0\bar{e}}, \pi_{we,we}, \pi_{we,w\bar{e}}, \pi_{we,\bar{w}e}, \pi_{we,\bar{w}\bar{e}})$ collects the weights of type (w, e) . We assume that we can write $\pi_{we,w'e'}$ as

$$\pi_{we,w'e'} \equiv \frac{\delta_{we,w'e'} p_{w'e'}}{\sum_{(w',e') \in W \times E} \delta_{we,w'e'} p_{w'e'}}$$

where $\delta_{we,w'e'} \in \{0, 1\}$ is a dummy variable that represents the type-specific concern that individuals of type (w, e) have for individuals of type (w', e') . Let $\delta_{we} \equiv (\delta_{we,w_0e}, \delta_{we,w_0\bar{e}}, \delta_{we,we}, \delta_{we,w\bar{e}}, \delta_{we,\bar{w}e}, \delta_{we,\bar{w}\bar{e}})$ be the vector of the concern-parameters of type (w, e) .

As a first step towards defining the desert-insensitive preferences for redistribution, we introduce two extreme forms of altruism: utilitarian altruism and Rawlsian altruism. We qualify individuals as utilitarian altruist when they do not discriminate on the basis of private indirect utilities and when they take all other individuals’ private indirect utilities up in their

(\bar{w}, e) and (w, \bar{e}) are indistinguishable exemplifies the real-life problem for any policy-maker that incomes do not reveal personal characteristics.

own social indirect utility function. In this case, all concern-parameters take the value of 1, or $\delta_{we}^U = (1, 1, 1, 1, 1, 1)$ for all $(w, e) \in W \times E$. Let π_{we}^U collect the weights of type (w, e) when this type is utilitarian altruist. We qualify individuals as Rawlsian altruist when they do discriminate on the basis of private indirect utilities and when only individuals with the lowest private indirect utilities are taken up in their own social indirect utility function.⁷ In this case, $\delta_{we}^R = (1, 1, 0, 0, 0, 0)$ for all $(w, e) \in W \times E$, because it is easy to check that the unemployed have the lowest private indirect utility. Let π_{we}^R collect the weights of type (w, e) when this type is Rawlsian altruist.

As a second step, consider a social-welfare criterion of type

$$\Phi_{we} = \alpha \pi_{we}^U \mathbf{v}^T + (1 - \alpha) \pi_{we}^R \mathbf{v}^T,$$

where $\alpha \in [0, 1]$ is a parameter (which is the same for all individuals) that measures the degree of concern for maximizing the total social surplus versus helping those who are worst off.⁸

As a third step, we define type (w, e) 's desert-insensitive preferences for redistribution as a weighted sum of this social-welfare criterion and her own indirect utility:

$$V_{we}^{di} = \gamma v_{we} + (1 - \gamma) [\alpha \pi_{we}^U \mathbf{v}^T + (1 - \alpha) \pi_{we}^R \mathbf{v}^T]. \quad (2)$$

Here, $\gamma \in [0, 1)$ (which is the same for all individuals) measures how much a person cares about her own self-interest versus social welfare.

Now, we introduce the notion of desert-sensitivity. So far, we have qualified individuals as desert-insensitive because they do not discriminate on the basis of taste for working when taking up other private indirect utilities in their own social indirect utility function (in other words, the taste for working is treated, like productive skill, without discrimination). In contrast, we qualify individuals as desert-sensitive when they do discriminate on the basis of taste for working and when only the private indirect utilities of individuals with at least the same taste for working are taken up in their own social indirect utility function. Consider the desert-sensitive versions of utilitarian altruism and Rawlsian altruism. Under desert-sensitive utilitarian altruism, individuals care about the total sum of indirect utilities

⁷ Over the years, the ideas of Rawls have been reinterpreted by economists into utility terms (as we do here), although Rawls himself clearly never advocated this. He proposed that individual well-being should be measured in terms of primary goods rather than in terms of preference satisfaction.

⁸ By adding up the indirect utilities of individuals, we implicitly assume that utilities are cardinal-scale measurable and fully interpersonally comparable. Although this assumption is standard in the utilitarian approach of optimal taxation theory, it is clearly not innocuous. The consequences of relaxing this assumption have been abundantly discussed in (ordinal) Arrowian social choice theory; we refer to Fleurbaey and Hammond (2004) for an overview.

of all individuals who have at least the same taste for working. As a result, the vector of concern-parameters of lazy individuals does not change, compared to desert-insensitive utilitarian altruism. However, the vector of concern-parameters of hard-working individuals does change, because these individuals now exclude lazy individuals from their social indirect utility function. Hence, we obtain

$$\delta_{w_0e}^{dsU} = \delta_{we}^{dsU} = \delta_{\bar{w}\bar{e}}^{dsU} = (1, 1, 1, 1, 1, 1)$$

and

$$\delta_{w_0\bar{e}}^{dsU} = \delta_{\bar{w}\bar{e}}^{dsU} = \delta_{\bar{w}\bar{e}}^{dsU} = (0, 1, 0, 1, 0, 1).$$

Let π_{we}^{dsU} collect the weights of type (w, e) when this type is a desert-sensitive utilitarian altruist. Under desert-sensitive Rawlsian altruism, individuals care about those who are worst off, provided that the latter have at least the same taste for working. Again, only the vector of concern-parameters of hard-working individuals changes compared to desert-insensitive Rawlsian altruism. We obtain

$$\delta_{w_0e}^{dsR} = \delta_{we}^{dsR} = \delta_{\bar{w}\bar{e}}^{dsR} = (1, 1, 0, 0, 0, 0)$$

and

$$\delta_{w_0\bar{e}}^{dsR} = \delta_{\bar{w}\bar{e}}^{dsR} = \delta_{\bar{w}\bar{e}}^{dsR} = (0, 1, 0, 0, 0, 0).$$

Let π_{we}^{dsR} collect type (w, e) 's weights when this type is a desert-sensitive Rawlsian altruist.

Then, we define type (w, e) 's desert-sensitive preferences for redistribution as a weighted sum of a desert-sensitive social welfare criterion and her own indirect utility:

$$V_{we}^{ds} = \gamma v_{we} + (1 - \gamma)[\alpha \pi_{we}^{dsU} \mathbf{v}^T + (1 - \alpha) \pi_{we}^{dsR} \mathbf{v}^T]. \tag{3}$$

Finally, setting $\gamma = 1$, we define type (w, e) 's egoistic preferences for redistribution as

$$V_{we}^{ego} = v_{we}. \tag{4}$$

In the following, we denote by $\Xi = \{di, ds, ego\}$ the set of different scenarios of preferences for redistribution considered in this paper.

III. Political Equilibrium

We focus our analysis on economies where the median voter power goes to the middle class, and we assume that median income is strictly lower than average income in order to rule out corner solutions in the calculations of the preferred tax rates.⁹ We denote by \mathcal{E} the set of all economies that satisfy

⁹ Besides, we recall that it is a stylized fact of real-life income distributions that $y_m < y_a$.

Table 1. Preferred tax rates of middle types (\bar{w}, \underline{e}) and (\underline{w}, \bar{e})

$\tau_{w_e}^{i,\varepsilon}$	$\bar{w}\underline{e}$	$\underline{w}\bar{e}$
ego	$\frac{y_a - y_m}{2y_a - y_m}$	$\frac{y_a - y_m}{2y_a - y_m}$
di	$\frac{y_a - \gamma y_m - (1 - \gamma)\alpha y_a}{2y_a - \gamma y_m - (1 - \gamma)\alpha y_a}$	$\frac{y_a - \gamma y_m - (1 - \gamma)\alpha y_a}{2y_a - \gamma y_m - (1 - \gamma)\alpha y_a}$
ds	$\frac{y_a - \gamma y_m - (1 - \gamma)\alpha y_a}{2y_a - \gamma y_m - (1 - \gamma)\alpha y_a}$	$\max \left[0, \frac{y_a - \gamma y_m - \frac{(1 - \gamma)\alpha}{p_{w_0\underline{e}}^b + p_{\underline{w}\bar{e}}^b + p_{\underline{w}\bar{e}}} \left(p_{\underline{w}\bar{e}}^b y_m + p_{\underline{w}\bar{e}} y_{\underline{w}\bar{e}} \right)}{2y_a - \gamma y_m - \frac{(1 - \gamma)\alpha}{p_{w_0\bar{e}}^b + p_{\underline{w}\bar{e}}^b + p_{\underline{w}\bar{e}}} \left(p_{\underline{w}\bar{e}}^b y_m + p_{\underline{w}\bar{e}} y_{\underline{w}\bar{e}} \right)} \right]$

both assumptions. Under these assumptions, we show that the introduction of desert-sensitivity in altruistic preferences for redistribution decreases the amount of redistribution in the political equilibrium when the median voter is of the hard-working low-skilled type.

Preferred Tax Rates

We denote by $\tau_{w_e}^{i,\varepsilon}$ the preferred tax rate of an individual of type (w, e) under scenario $i \in \Xi$ in economy $\varepsilon \in \mathcal{E}$. The preferred tax rates follow from maximization of equations (2)–(4) with respect to τ . It is easy to check the following.

- (i) For all types, for each scenario, and for all economies in \mathcal{E} , the preferences for redistribution are single-peaked over the τ -dimension.
- (ii) For each scenario, the preferred tax rates of individuals of type (w_0, \underline{e}) are strictly larger than the preferred tax rates of individuals of type ($\underline{w}, \underline{e}$), and the preferred tax rates of individuals of type ($\underline{w}, \underline{e}$) are strictly larger than the preferred tax rates of individuals of type (\bar{w}, \underline{e}). That is, $\tau_{w_0\underline{e}}^{i,\varepsilon} > \tau_{\underline{w}\underline{e}}^{i,\varepsilon} > \tau_{\bar{w}\underline{e}}^{i,\varepsilon}$ for all $i \in \Xi$ and all $\varepsilon \in \mathcal{E}$.
- (iii) For each scenario, the preferred tax rates of individuals of type (w_0, \bar{e}) are strictly larger than the preferred tax rates of individuals of type (\underline{w}, \bar{e}), and the preferred tax rates of individuals of type (\underline{w}, \bar{e}) are strictly larger than the preferred tax rates of individuals of type (\bar{w}, \bar{e}). That is, $\tau_{w_0\bar{e}}^{i,\varepsilon} > \tau_{\underline{w}\bar{e}}^{i,\varepsilon} > \tau_{\bar{w}\bar{e}}^{i,\varepsilon}$ for all $i \in \Xi$ and for all $\varepsilon \in \mathcal{E}$.

In order to be able to provide a complete ranking of the preferred tax rates of different types for different scenarios, we focus on the middle class. For each scenario and for all economies in \mathcal{E} , Table 1 presents the preferred tax rates of types (\bar{w}, \underline{e}) and (\underline{w}, \bar{e}).

From the way we have defined the concern-parameters of the different types in the different scenarios, it is a matter of course that the preferred tax rates of the middle types (\bar{w}, \underline{e}) and (\underline{w}, \bar{e}) coincide in the egoistic scenario and in the desert-insensitive altruistic scenario,

and that the preferred tax rates of individuals of type (\bar{w}, \underline{e}) do not change between the desert-sensitive and the desert-insensitive altruistic scenarios. Let us focus on $\tau_{w\bar{e}}^{ds, \varepsilon}$ in Table 1. Here, $p_{w\bar{e}}^b$ denotes the beliefs of individuals of type (\underline{w}, \bar{e}) about the proportion of individuals of type (w, \bar{e}) in the population. Similarly, $p_{w_0\bar{e}}^b$ denotes the beliefs of individuals of type (w, \bar{e}) about the proportion of unemployed who are not lazy.¹⁰ Indeed, in the desert-sensitive altruistic scenario, individuals of type (w, \bar{e}) take up, in their social utility function, individuals of type (w_0, \bar{e}) , individuals of their own type (w, \bar{e}) , and individuals of type (\bar{w}, \bar{e}) . While they observe the latter's proportion $p_{\bar{w}\bar{e}}$, they only observe $p_{w_0} = p_{w_0\underline{e}} + p_{w_0\bar{e}}$ and $p_{\bar{w}\underline{e}} + p_{\bar{w}\bar{e}}$. Hence, they have to make an estimate of the proper proportions $p_{w_0\bar{e}}$ and $p_{\bar{w}\bar{e}}$. Because $p_{w_0\bar{e}}^b = p_{w_0}p_{\bar{e}}^b$, the belief of the marginal proportion of hard-working individuals in the population, $p_{\bar{e}}^b$, is especially important. Once the belief $p_{\bar{e}}^b$ is formed, the beliefs on the other marginal proportions $p_{\underline{e}}^b$, $p_{\underline{w}}^b$, and $p_{\bar{w}}^b$ follow directly, because $p_{\underline{e}}^b = 1 - p_{\bar{e}}^b$, $p_{\underline{w}}^b = p_{w\underline{e}}/(1 - p_{\bar{e}}^b)$, and $p_{\bar{w}}^b = p_{\bar{w}\bar{e}}/p_{\bar{e}}^b$, respectively. As a result, the belief $p_{\bar{e}}^b$ determines the belief $p_{w\bar{e}}^b = p_{\underline{w}}^b p_{\bar{e}}^b = p_{w\underline{e}}p_{\bar{e}}^b/(1 - p_{\bar{e}}^b)$ about the proportion of the middle class who are hard-working. How is the belief $p_{\bar{e}}^b$ formed? It is crucial to note that, because of the assumption that individuals know that w and e are independently distributed, $p_{\bar{e}}^b$ can only take two values: a correct belief, denoted by $p_{\bar{e}}^{b, \text{correct}}$ and a wrong belief, denoted by $p_{\bar{e}}^{b, \text{wrong}}$. More precisely, under the correct belief, it will hold that $p_{\bar{e}}^{b, \text{correct}} p_{w\underline{e}}/(1 - p_{\bar{e}}^{b, \text{correct}}) = p_{w\bar{e}}$, while under the wrong belief, it will hold that $p_{\bar{e}}^{b, \text{wrong}} p_{w\underline{e}}/(1 - p_{\bar{e}}^{b, \text{wrong}}) = p_{\bar{w}\underline{e}}$. In other words, under the correct belief, individuals correctly predict the true proportion of the middle class who are hard-working (and also the true proportion of unemployed who are not lazy). Under the wrong belief, individuals make a wrong prediction of the proportion of the middle class who are hard-working. This prediction coincides with the true proportion of the middle class who are lazy.¹¹ Note that $p_{\bar{e}}^{b, \text{correct}}$ coincides with $p_{\bar{e}}^{b, \text{wrong}}$ for those economies in which $p_{w\bar{e}}$ exactly equals $p_{\bar{w}\underline{e}}$.

The following lemma states, for every scenario considered, the ranking of preferred tax rates over the different types of individuals.¹²

¹⁰ We describe the unemployed of type (w_0, \bar{e}) as zero-skilled and not lazy, rather than zero-skilled and hard-working.

¹¹ Under the wrong belief, individuals also make a wrong prediction of the proportion of unemployed who are not lazy, but this prediction does not coincide with the true proportion of the unemployed who are lazy.

¹² If $\gamma = 0$ and $\alpha \in [0, 1]$, then $\tau_{w\underline{e}}^{di, \varepsilon} = (1 - \alpha)/(2 - \alpha)$ for all $(w, \underline{e}) \in W \times E$ and all $\varepsilon \in \mathcal{E}$. Note that if $\gamma = 0$ and $\alpha = 0$, $\tau_{w\underline{e}}^{di, \varepsilon} = \tau_{w_0\underline{e}}^{\text{ego}, \varepsilon} = \tau_{w_0\bar{e}}^{\text{ego}, \varepsilon} = 1/2$ for all $(w, \underline{e}) \in W \times E$, and that if $\gamma = 0$ and $\alpha = 1$, $\tau_{w\underline{e}}^{di, \varepsilon} = \tau_{w\underline{e}}^{\text{ego}, \varepsilon} = 0$ for all $(w, \underline{e}) \in W \times E$. Furthermore, if $\alpha = 0$, then $\tau_{w_0\bar{e}}^{ds, \varepsilon} = \tau_{w_0\underline{e}}^{ds, \varepsilon} = \tau_{w_0\underline{e}}^{di, \varepsilon} = \tau_{w_0\bar{e}}^{di, \varepsilon}$ and $\tau_{\bar{w}\bar{e}}^{ds, \varepsilon} = \tau_{\bar{w}\underline{e}}^{ds, \varepsilon} = \tau_{\bar{w}\underline{e}}^{di, \varepsilon} = \tau_{\bar{w}\bar{e}}^{di, \varepsilon}$ for

Lemma 1 (ranking of preferred tax rates). (i) $\forall \varepsilon \in \mathcal{E}, \forall \gamma \in (0, 1), \text{ and } \forall \alpha \in [0, 1], \tau_{w_{0\underline{e}}}^{di,\varepsilon} = \tau_{w_{0\bar{e}}}^{di,\varepsilon} > \tau_{w_{\underline{e}}}^{di,\varepsilon} > \tau_{w_{\bar{e}}}^{di,\varepsilon} = \tau_{w_{0\underline{e}}}^{di,\varepsilon} > \tau_{w_{0\bar{e}}}^{di,\varepsilon}$. (ii) $\forall \varepsilon \in \mathcal{E}, \forall \gamma \in (0, 1), \text{ and } \forall \alpha \in (0, 1], \tau_{w_{0\underline{e}}}^{ds,\varepsilon} > \tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{\bar{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon} > \tau_{w_{\underline{e}}}^{ds,\varepsilon}$ and $\tau_{w_{0\underline{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon} > \tau_{w_{\underline{e}}}^{ds,\varepsilon}$. (iii) $\forall \varepsilon \in \mathcal{E}, \tau_{w_{0\underline{e}}}^{ego,\varepsilon} = \tau_{w_{0\bar{e}}}^{ego,\varepsilon} > \tau_{w_{\underline{e}}}^{ego,\varepsilon} > \tau_{w_{\bar{e}}}^{ego,\varepsilon} = \tau_{w_{0\underline{e}}}^{ego,\varepsilon} > \tau_{w_{0\bar{e}}}^{ego,\varepsilon}$.

Proof: Recall that $\tau_{w_{0\underline{e}}}^{i,\varepsilon} > \tau_{w_{\underline{e}}}^{i,\varepsilon} > \tau_{w_{\bar{e}}}^{i,\varepsilon}$, and $\tau_{w_{0\bar{e}}}^{i,\varepsilon} > \tau_{w_{\bar{e}}}^{i,\varepsilon} > \tau_{w_{\underline{e}}}^{i,\varepsilon}$ for all $i \in \Xi$ and all $\varepsilon \in \mathcal{E}$. Obviously, $\tau_{w_{0\underline{e}}}^{i,\varepsilon} = \tau_{w_{0\bar{e}}}^{i,\varepsilon}$ for all $i \in \{di, ego\}$ and all $\varepsilon \in \mathcal{E}$. We need to show that $\tau_{w_{\underline{e}}}^{i,\varepsilon} \geq \tau_{w_{\bar{e}}}^{i,\varepsilon}$ for all $i \in \Xi$ and for all $\varepsilon \in \mathcal{E}$. We have already mentioned that $\tau_{w_{\underline{e}}}^{i,\varepsilon} = \tau_{w_{\bar{e}}}^{i,\varepsilon}$ for all $i \in \{di, ego\}$ and for all $\varepsilon \in \mathcal{E}$. It remains to show that $\tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{\bar{e}}}^{ds,\varepsilon}$, which amounts to showing that

$$y_a < \frac{P_{w_{0\bar{e}}}^b y_m + P_{w_{\bar{e}}} y_{w_{\bar{e}}}}{P_{w_{0\bar{e}}}^b + P_{w_{\bar{e}}} + P_{w_{\underline{e}}}} = RHS.$$

The result follows when noting that *RHS* calculates what is believed to be the average income of the hard-working individuals in the population. In this calculation, we exclude the proportions $P_{w_{0\underline{e}}}^b, P_{w_{\underline{e}}}$, and $P_{w_{\bar{e}}}^b$ of lazy individuals with incomes $y_{w_{0\underline{e}}} = 0, y_{w_{\underline{e}}}$, and $y_{w_{\bar{e}}} = y_m$, respectively. Because $y_{w_{0\underline{e}}} < y_{w_{\underline{e}}} < y_m$ and $y_m < y_a$ by assumption, it follows that $y_a < RHS$. Note that the result holds, irrespective of whether $P_{\bar{e}}^b$ is correct or wrong. A completely similar argument holds, to show that $\tau_{w_{0\underline{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon}$. However, we cannot straightforwardly compare $\tau_{w_{0\underline{e}}}^{ds,\varepsilon}$ with $\tau_{w_{\underline{e}}}^{ds,\varepsilon}$ and $\tau_{w_{\bar{e}}}^{ds,\varepsilon}$. This result can be understood by the fact that, when γ approaches 1 and tax rates converge to the egoistic scenario, then $\tau_{w_{0\bar{e}}}^{ds,\varepsilon} > \tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{\bar{e}}}^{ds,\varepsilon}$ because $\tau_{w_{0\bar{e}}}^{ds,\varepsilon}$ approaches $\tau_{w_{0\underline{e}}}^{ego,\varepsilon} = \tau_{w_{0\underline{e}}}^{ego,\varepsilon} > \tau_{w_{\underline{e}}}^{ego,\varepsilon} > \tau_{w_{\bar{e}}}^{ego,\varepsilon}$. However, when γ approaches 0 and desert-sensitivity plays a crucial role, then $\tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon} > \tau_{w_{0\underline{e}}}^{ds,\varepsilon}$. In this case, the fact that $\tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon}$ follows a similar argument as when explaining that $\tau_{w_{\underline{e}}}^{ds,\varepsilon} > \tau_{w_{\bar{e}}}^{ds,\varepsilon}$. ■

all $\gamma \in [0, 1)$. This illustrates that desert-insensitive Rawlsian altruism and desert-sensitive Rawlsian altruism yield identical preferred tax rates in our model. This is because the unemployed have the lowest private indirect utilities of the four income classes, and because a strictly positive proportion of the unemployed are not lazy. Under both scenarios, the preferred tax rate for any type maximizes a convex combination of its own private indirect utility and the indirect utility of the unemployed. Finally, if $\gamma = 0$ and $\alpha \in (0, 1]$, then $\tau_{w_{0\underline{e}}}^{ds,\varepsilon} = \tau_{w_{\underline{e}}}^{ds,\varepsilon} = \tau_{w_{\bar{e}}}^{ds,\varepsilon} > \tau_{w_{0\bar{e}}}^{ds,\varepsilon} = \tau_{w_{\bar{e}}}^{ds,\varepsilon} = \tau_{w_{\underline{e}}}^{ds,\varepsilon}$.

Ranking Condorcet Winner Tax Rates

We denote by $\tilde{\tau}^{i,\varepsilon}$ the Condorcet winner tax rate under scenario $i \in \Xi$ in economy $\varepsilon \in \mathcal{E}$. Note that we have assumed that the median voter belongs to the middle class in all economies in \mathcal{E} . Let $\mathcal{E}' \subset \mathcal{E}$ be the proper subset of economies where the median voter is a low-skilled hard-working type (\underline{w}, \bar{e}) . From Lemma 1, we can infer that $\mathcal{E}' = \{\varepsilon \in \mathcal{E} : p_{\underline{w}\bar{e}} + p_{\bar{w}\bar{e}} > 1/2 \text{ and } p_{\bar{w}\bar{e}} < 1/2\}$. We denote by $\mathcal{E}'' = \mathcal{E} \setminus \mathcal{E}'$ the complement set of economies where the median voter is a high-skilled lazy type (\bar{w}, \underline{e}) .

The following lemma provides a complete ranking of the Condorcet winner tax rates over the different scenarios for these two subsets of economies. The main result is that the introduction of desert-sensitivity in altruistic preferences for redistribution decreases the amount of redistribution when the median voter is a hard-working low-skilled type.¹³

Lemma 2 (ranking of Condorcet winner tax rates). $\forall \varepsilon \in \mathcal{E}'$ and $\forall \gamma \in [0, 1)$: (i) if $\alpha < y_m/RHS$, then $0 < \tilde{\tau}^{ego,\varepsilon} < \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{di,\varepsilon}$; (ii) if $\alpha = y_m/RHS$, then $0 < \tilde{\tau}^{ego,\varepsilon} = \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{di,\varepsilon}$; (iii) if $y_m/RHS < \alpha < y_m/y_a$, then $0 < \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{ego,\varepsilon} < \tilde{\tau}^{di,\varepsilon}$; (iv) if $\alpha = y_m/y_a$, then $0 < \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{ego,\varepsilon} = \tilde{\tau}^{di,\varepsilon}$; (v) if $y_m/y_a < \alpha$, then $0 < \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{di,\varepsilon} < \tilde{\tau}^{ego,\varepsilon}$.

$\forall \varepsilon \in \mathcal{E}''$ and $\forall \gamma \in [0, 1)$: (i) if $\alpha < y_m/y_a$, then $0 < \tilde{\tau}^{ego,\varepsilon} < \tilde{\tau}^{di,\varepsilon} = \tilde{\tau}^{ds,\varepsilon}$; (ii) if $\alpha = y_m/y_a$, then $0 < \tilde{\tau}^{ego,\varepsilon} = \tilde{\tau}^{di,\varepsilon} = \tilde{\tau}^{ds,\varepsilon}$; (iii) if $y_m/y_a < \alpha$, then $0 < \tilde{\tau}^{di,\varepsilon} = \tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{ego,\varepsilon}$.

Proof: From Table 1, it is straightforward to see how $\tilde{\tau}^{di,\varepsilon}$ and $\tilde{\tau}^{ds,\varepsilon}$ relate to $\tilde{\tau}^{ego,\varepsilon}$, depending on α for all $\varepsilon \in \mathcal{E}$. Note that we assume that $y_m < y_a$ and we check the Proof of Lemma 1 to see that $y_a < RHS$. The proof that $\tilde{\tau}^{ds,\varepsilon} < \tilde{\tau}^{di,\varepsilon}$ for all $\varepsilon \in \mathcal{E}'$ follows from: (i) noting that $\tau_{\underline{w}\bar{e}}^{di,\varepsilon} = \tau_{\bar{w}\bar{e}}^{ds,\varepsilon}$ for all $\varepsilon \in \mathcal{E}$; (ii) the Proof of Lemma 1, where we show that $\tau_{\underline{w}\bar{e}}^{ds,\varepsilon} < \tau_{\bar{w}\bar{e}}^{ds,\varepsilon}$ for all $\varepsilon \in \mathcal{E}$; (iii) Lemma 1 itself. ■

Explaining the Difference between the American and the European Social Contract

We present several explanations for why there is less redistribution in the US than in the EU, under the assumption that both the US and the EU belong to \mathcal{E}' . We provide empirical evidence for this assumption in Section IV (see footnote 18). By explaining the differences in equilibrium redistribution levels, we focus on, *ceteris paribus*, (i) voters being desert-sensitive versus voters being desert-insensitive, (ii) the differences in α ,

¹³ We continue to denote $(p_{\underline{w}\bar{e}}^b y_m + p_{\bar{w}\bar{e}} y_{\bar{w}\bar{e}}) / (p_{\underline{w}\bar{e}}^b + p_{\bar{w}\bar{e}}^b + p_{\bar{w}\bar{e}})$ by *RHS* (cf. Proof of Lemma 1).

(iii) the differences in p_e^b , provided voters are desert-sensitive, and (iv) the differences in γ .

First, the Condorcet winner tax rate will be lower in the US than in the EU, if Americans are desert-sensitive while Europeans are desert-insensitive.

Proposition 1 (being desert-sensitive or -insensitive leads to differences in redistribution levels). *If US and EU $\in \mathcal{E}'$, then $\tilde{\tau}^{ds, US} < \tilde{\tau}^{di, EU}$.*

Proof: The proof follows from Lemma 2. ■

Second, the Condorcet winner tax rate will be lower in the US than in the EU, if, compared to Europeans, Americans are more concerned about maximizing the total social surplus than about helping those who are worst off. This observation holds, irrespective of whether voters in both continents have desert-sensitive or desert-insensitive altruistic concerns.

Proposition 2 (differences in α lead to differences in redistribution levels). *If US and EU $\in \mathcal{E}'$ and if $\alpha_{US} > \alpha_{EU}$, then $\tilde{\tau}^{i, US} < \tilde{\tau}^{i, EU}$ for $i \in \{di, ds\}$.*

Proof: The proof follows from Table 1, because $\partial \tau_{\underline{w}, \bar{e}}^{i, \mathcal{E}} / \partial \alpha < 0$ for $i \in \{di, ds\}$, and from the fact that type (\underline{w}, \bar{e}) is the median voter in \mathcal{E}' . ■

Third, let us focus on the differences in p_e^b . In both continents, the desert-sensitive altruistic median voter has to form a belief about $p_{w_0 \bar{e}}^b = p_{w_0} p_{\bar{e}}^b$, the proportion of unemployed who are not lazy. We assume that $p_{\bar{e}}^{b, correct} \neq p_{\bar{e}}^{b, wrong}$, and we denote $\tilde{\mathcal{E}}' \subset \mathcal{E}'$ the subset of economies where the median voter is of type (\underline{w}, \bar{e}) and where $p_{\underline{w}, \bar{e}} \neq p_{\bar{w}, \bar{e}}$. Now, suppose that the median voter in the US is “pessimistic” about the proportion of unemployed who are not lazy. In our model, this coincides with choosing the lower value of $p_{\bar{e}}^b \in \{p_{\bar{e}}^{b, correct}, p_{\bar{e}}^{b, wrong}\}$. In other words,

$$p_{\bar{e}}^{b, US} = \min(p_{\bar{e}}^{b, correct}, p_{\bar{e}}^{b, wrong}).$$

However, suppose that the median voter in the EU is “optimistic” about the proportion of unemployed who are not lazy. In our model, this coincides with choosing the higher value of $p_{\bar{e}}^b \in \{p_{\bar{e}}^{b, correct}, p_{\bar{e}}^{b, wrong}\}$. In other words,

$$p_{\bar{e}}^{b, EU} = \max(p_{\bar{e}}^{b, correct}, p_{\bar{e}}^{b, wrong}).$$

When $p_e^{b,US} < p_e^{b,EU}$, then $p_{w_0\bar{e}}^{b,US} < p_{w_0\bar{e}}^{b,EU}$. When $p_e^{b,US} < p_e^{b,EU}$, then also $p_{w\bar{e}}^{b,US} < p_{w\bar{e}}^{b,EU}$.¹⁴ As a result, the Condorcet winner tax rate of the desert-sensitive altruistic scenario will be lower in the US than in the EU, as stated in the following proposition.

Proposition 3 (differences in p_e^b lead to differences in redistribution levels). *If US and EU $\in \tilde{\mathcal{E}}'$, if $p_e^{b,US} = \min(p_e^{b,correct}, p_e^{b,wrong})$, and if $p_e^{b,EU} = \max(p_e^{b,correct}, p_e^{b,wrong})$, then $\tilde{\tau}^{ds,US} < \tilde{\tau}^{ds,EU}$.*

Proof: The proof follows from Table 1 because $\partial \tau_{w\bar{e}}^{ds,\varepsilon} / \partial p_{w_0\bar{e}}^b > 0$ and $\partial \tau_{w\bar{e}}^{ds,\varepsilon} / \partial p_{w\bar{e}}^b > 0$ when $\tau_{w\bar{e}}^{ds,\varepsilon} \neq 0$. It also follows from the fact that type (\underline{w}, \bar{e}) is the median voter in \mathcal{E}' . ■

Fourth, the impact of γ on the Condorcet winner tax rate depends (i) on the value of α and (ii) on whether both continents are desert-sensitive or desert-insensitive. Roughly, the Condorcet winner tax rate will be lower in the US than in the EU, either if, compared to Europeans, Americans attach a higher weight to their egoistic concerns while being predominantly (desert-sensitive or desert-insensitive) Rawlsian in their altruistic concerns, or if, compared to Europeans, Americans attach a higher weight to their altruistic concerns while being predominantly (desert-sensitive or desert-insensitive) utilitarian altruist. The following proposition makes this observation more precise.¹⁵

Proposition 4 (differences in γ lead to differences in redistribution levels). *If US and EU $\in \mathcal{E}'$ and: (i) if $\alpha < y_m/RHS$ and if $\gamma_{US} < (>)\gamma_{EU}$, then $\tilde{\tau}^{i,US} > (<)\tilde{\tau}^{i,EU}$ for $i \in \{di, ds\}$; (ii) if $\alpha = y_m/RHS$ and if $\gamma_{US} < (>)\gamma_{EU}$, then $\tilde{\tau}^{di,US} > (<)\tilde{\tau}^{di,EU}$; (iii) if $y_m/RHS < \alpha < y_m/y_a$ and if $\gamma_{US} < (>)\gamma_{EU}$, then $\tilde{\tau}^{di,US} > (<)\tilde{\tau}^{di,EU}$ and $\tilde{\tau}^{ds,US} < (>)\tilde{\tau}^{ds,EU}$; (iv) if $\alpha = y_m/y_a$ and if $\gamma_{US} < (>)\gamma_{EU}$, then $\tilde{\tau}^{ds,US} < (>)\tilde{\tau}^{ds,EU}$; (v) if $y_m/y_a < \alpha$ and if $\gamma_{US} < (>)\gamma_{EU}$, then $\tilde{\tau}^{i,US} < (>)\tilde{\tau}^{i,EU}$ for $i \in \{di, ds\}$.*

¹⁴ In other words, the proposition also holds when assuming that the median voter in the US is pessimistic and the median voter in the EU is optimistic about the proportion of the middle class who are hard-working. However, we focus on the belief about the proportion of unemployed who are not lazy because, in Section IV, we are able to infer this belief from our dataset. Furthermore, note that because of the assumptions of our model, it is not possible that the median voter in the US is pessimistic about the proportion of unemployed who are not lazy but optimistic about the proportion of the middle class who are hard-working, or vice versa. Similarly, the median voter in the EU cannot be optimistic about the proportion of unemployed who are not lazy and be pessimistic about the proportion of the middle class who are hard-working, or vice versa.

¹⁵ If $\alpha = y_m/RHS$, then $\partial \tau_{w\bar{e}}^{ds,\varepsilon} / \partial \gamma = 0$. If $\alpha = y_m/y_a$, then $\partial \tau_{w\bar{e}}^{di,\varepsilon} / \partial \gamma = 0$.

Proof: The proof follows from Table 1 because $\partial\tau_{w\bar{e}}^{i,\varepsilon}/\partial\gamma > 0$ when $\tau_{w\bar{e}}^{i,\varepsilon} < \tau_{w\bar{e}}^{\text{ego},\varepsilon}$ and $\partial\tau_{w\bar{e}}^{i,\varepsilon}/\partial\gamma < 0$ when $\tau_{w\bar{e}}^{i,\varepsilon} > \tau_{w\bar{e}}^{\text{ego},\varepsilon}$ for $i \in \{\text{di}, \text{ds}\}$. It also follows from the fact that type (w, \bar{e}) is the median voter in \mathcal{E}' . ■

IV. Desert-Sensitive Altruism in Practice

In this section, we test empirically to what extent our theoretical model explains the differences in preferences for redistribution (i) between Americans and Europeans, and (ii) between Europeans living in different welfare states (social democratic versus liberal versus conservative).

Data

We use individual data on attitudes toward political redistribution from round 2 (1989–1993), round 3 (1994–1999), and round 4 (1999–2004) of the World Value Survey (WVS) and the European Value Survey (EVS), and from round 4 (2009) of the European Social Survey (ESS). We retain the US and the whole set of 16 Western European countries. Our empirical estimates are based on 26,482 observations (hereafter, our “sample”).¹⁶

The 16 Western European countries are representative of the three types of welfare states into which modern, developed, capitalist nations cluster according to Esping-Andersen (1990). Liberal welfare states are characterized by an emphasis on market outcomes with limited, but fairly universal, social-welfare spending. Countries that are classified as liberal are the Anglo-Saxon countries (among which Great Britain, Ireland, and the US are part of our sample) as well as Switzerland. Social democratic welfare states are characterized by a commitment to generous and universal social-welfare spending. The social democratic regime comprises the Nordic countries – Denmark, Finland, Iceland, Norway, and Sweden – which are all represented in our sample. Many scholars also place the Netherlands in this category (see Scruggs, 2006), as we do here. Conservative welfare states are characterized by “corporatism”. In this category, the generosity and coverage of social-welfare spending depends on the positions of individuals in the labor market, and notably on whether they belong to occupationally organized groups. Countries whose welfare regimes are typically designated as conservative are all included in our sample: Austria, Belgium, France, Germany, Italy, Portugal, and Spain.

¹⁶ The number of observations across countries are 1,355 for Austria, 1,527 for Belgium, 842 for Denmark, 1,362 for Finland, 777 for France, 4,576 for Germany, 527 for Iceland, 880 for Ireland, 1,321 for Italy, 759 for the Netherlands, 2,005 for Norway, 1,078 for Portugal, 3,852 for Spain, 919 for Sweden, 854 for Switzerland, 1,048 for Great Britain, and 2,800 for the US.

The answers to the survey question E037 constitute our dependent variable (hereafter, the “redistribution” variable) in the baseline model (see equation (5)). It represents individual preferences for political redistribution. Question E037 asks respondents to indicate, on a scale from 1 to 10, which of these two extremes they most agree with: “people should take more responsibility to provide for themselves” versus “the government should take more responsibility to ensure that everyone is provided for”. Perhaps this variable leaves some room for criticism, because arguably it captures a mix between support for redistribution and support for state intervention. The ESS survey provides our preferred variable (hereafter, the “tax/social benefit” variable). It asks individuals to indicate, on a scale from 0 to 10, which of these two extremes they most agree with: “government should decrease taxes a lot and spend much less on social benefits and services” versus “government should increase taxes a lot and spend much more on social benefits and services”. Unfortunately, because the ESS survey is only conducted in Europe and does not allow the recovery of individual income data, we can only partly rely on the tax/social benefit variable when we investigate differences among European welfare states.

We categorize our explanatory variables into three groups.

- (1) The variable “egoism” captures the self-interest incentive of individuals to support redistribution. It is based on question X047, which asks respondents to subjectively indicate the income decile of their household.
- (2) The variable “desert-sensitivity” is built on question E040. Question E040 asks respondents to indicate, on a scale from 1 to 10, which of these two extremes they most agree with: “hard work doesn’t generally bring success, it’s more a matter of luck and connections” versus “in the long run, hard work usually brings a better life”. If we assume income to be a key factor in obtaining success and a better life, this variable captures the relative importance of the belief that income differences are mainly a result of responsibility characteristics over the belief that income differences are mainly a result of non-responsibility characteristics.

Like Corneo and Grüner (2002), we distinguish two channels through which different beliefs, on the relative importance of responsibility characteristics versus non-responsibility characteristics in determining incomes, lead to different demands for redistribution. The ethical channel is based on the fact that if one’s entitlement to one’s income is strong, because incomes are mainly determined by responsibility characteristics such as hard work, then income inequalities are justified. People want to reward hard work. We believe that a natural way to bring this about is to drop lazy individuals from one’s altruistic

concerns, which is exactly what happens when preferences for redistribution are desert-sensitive. The efficiency channel is based on the fact that if hard work primarily determines incomes, one expects the incentive costs of redistributive taxation to be high, leading individuals to oppose redistribution. We control for the efficiency channel by introducing question E035 (hereafter, the “utilitarianism” variable). This question asks respondents to indicate, on a scale from 1 to 10, which of these two extremes they most agree with: “incomes should be made more equal” versus “we need larger income differences as incentives for individual effort”. Note that this variable allows us to capture the trade-off between Rawlsian and utilitarian altruistic concerns. However, once we control for the efficiency channel, the coefficient of the ‘desert-sensitivity’ variable not only reflects the importance of the ethical channel but also depends on the belief about the proportion of hard-working individuals in the population (and hence on the belief about the proportion of the unemployed who are not lazy).

We are unable to directly control for the belief about the proportion of the unemployed who are not lazy because the survey question that captures this belief is asked only in round 4 of the EVS/WVS, which does not include the question that we need to construct our “desert-sensitivity” variable. Nevertheless, we study differences in this belief alongside our regression analysis in order to better understand what the coefficient of our “desert-sensitivity” variable encompasses. The variable for “belief in proportion of non-lazy” is based on question C038. Question C038 asks respondents to indicate, on a scale from 1 to 5, their level of agreement with the following statement: “people who don’t work become lazy”.¹⁷ Finally, we explicitly create a variable called “work addiction”, in order to avoid that the “desert-sensitivity” variable captures the individual’s own taste for working. It is derived from answers, on a scale from 1 to 4, to the question A005: “how important is work in your life” (where 1 means “not at all important” and 4 means “very important”).¹⁸

¹⁷ The ideal statement would have been: “people who don’t work are lazy”. With question C038, there might arise an issue of causation, suggesting that, for example, the absence of job prospects makes individuals lazy. However, it is debatable whether laziness can ever escape the sphere of personal responsibility.

¹⁸ We also rely on this question to provide evidence that there is a majority of hard-working individuals in both the US and the EU samples (suggesting that $US, EU \in \mathcal{E}$). We estimate the “work addiction” variable in our sample, controlling for the respondent’s gender, age, employment status, and marital status, and for year- and continent-fixed effects. Our regression results show that the answer of the median respondent (characterized by the median gender, age, employment, and marital status) is 3.49 in the US and 3.57 in the EU. We omit the regression estimates for reasons of parsimony, but the results are available upon request.

Table 2. *Differences in the demand for redistribution, utilitarian altruistic concerns, and beliefs about the laziness of the unemployed: Europe versus US*

	Redistribution WVS/EVS 2 & 3	Utilitarianism WVS/EVS 2 & 3	Belief WVS/EVS 4
Female	0.086***	-0.113***	0.195***
Age	-0.004***	0.001*	-0.005***
Income	-0.040***	0.057***	0.039***
Married	-0.007	-0.014	-0.028
Employed	-0.299***	0.183***	-0.347***
Inactive	-0.226***	0.109***	-0.298***
US	-0.651***	0.222***	-0.090***
Year fixed effects	Yes	Yes	Yes
Pseudo- R^2	0.016	0.012	0.010
N	26,482	26,482	14,449

Notes: Ordered probit estimates with robust standard errors. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

- (3) We derive a set of socio-demographic variables reporting individuals' gender, age, employment status, and marital status.

EU-US Comparison

First, we provide evidence (i) that the demand for redistribution is lower in the US than in the EU, (ii) that Americans are more utilitarian in their altruistic concerns than Europeans, and (iii) that Americans believe that a higher proportion of the unemployed are lazy. Column 1 of Table 2 presents the results of an ordered probit model with robust standard errors and with the “redistribution” variable as the dependent variable. We control for gender, age, income, marital status, employment status, and year- and continent-fixed effects. The significantly negative coefficient of the *US* dummy (=1 for US individuals) confirms that the “redistribution” variable is lower for Americans than for Europeans. Standard computations of marginal effects show that the probability of choosing answer 1 (“people should take more responsibility to provide for themselves”) is equal to only 0.12 among Europeans, while it is more than twice as high among Americans. Similarly, while the probability of choosing answer 10 (“the government should take more responsibility to ensure that everyone is provided for”) is equal to only 0.02 among Americans, whereas it is more than three times as high among Europeans. Column 2 of Table 2 presents the results of an ordered probit model with robust standard errors and with the “utilitarianism” variable as the dependent variable. Using the same controls as before, the significantly positive coefficient of the *US* dummy demonstrates that Americans are more utilitarian in their altruistic concerns than Europeans. Column 3 of Table 2 presents the results of an

ordered probit model with robust standard errors and with the variable for “belief in proportion of non-lazy” as the dependent variable.¹⁹ Again, using the same controls, the significantly negative coefficient of the *US* dummy shows that Americans are less optimistic about the proportion of non-lazy individuals among the unemployed than Europeans.²⁰

Our aim is now to test how well our theoretical propositions explain the lower demand for redistribution among Americans. We consider the following baseline model

$$R_i = \mathbf{X}_i \beta + \epsilon_i, \quad (5)$$

where R_i is the “redistribution variable” and \mathbf{X}_i is a vector of explanatory variables. We specify this vector as

$$\mathbf{X}_i = (ego_i, ego_i * US, des_i, des_i * US, uti_i, wor_i, S_i, year, US),$$

where ego_i , des_i , uti_i , and wor_i are the “egoism”, “desert-sensitivity”, “utilitarianism”, and “work addiction” variables, respectively, S_i is a set of standard socio-demographic variables (gender, age, marital status, and employment status), and $year$ and US control for both year- and continent-fixed effects. We interact ego_i and des_i with the *US* dummy to test whether Americans and Europeans show different levels of egoism, and to test whether Americans are desert-sensitive while Europeans are desert-insensitive (or vice versa). Our baseline model is estimated as an ordered probit model with robust standard errors. Table 3 presents the results.

Three important conclusions can be drawn from Table 3.²¹

- (1) Egoistic concerns have a strong impact on the demand for redistribution in the US and the EU. The negative and significant sign of

¹⁹ Regressions are run on the countries that compose our sample, with the exception of Switzerland, Norway, and Austria (where question C038 was not asked). In other words, the original sample loses one country representative of each of the three groups of welfare states.

²⁰ We see two apparent explanations behind this result. First, the myth of the US being the “land of opportunity” has greatly entrenched its customs (for extensive discussions, see Alesina *et al.*, 2001; Alesina and Glaeser, 2004). Meanwhile, European perceptions are influenced by the historical (from medieval times up to the nineteenth century) division of society into classes, where birth and nobility were the main determinants of wealth and success. Second, the American belief in the unworthiness of the unemployed might reflect racial prejudice against the African American minority, who have a higher than average unemployment rate (for strong empirical evidence, see Luttmer, 2001; Roemer *et al.*, 2007).

²¹ Concerning socio-demographic variables, the results show that gender does matter, with men being significantly less supportive towards redistribution than women, which is a common empirical finding related to various theories (for a survey, see Waerness, 1987). We also find that older people are significantly less likely to support redistribution. This is also the case for the employed and the inactive, compared to the unemployed (who constitute the reference group for employment status).

Table 3. *Explaining the differences in the demand for redistribution: Europe versus US*

	Redistribution WVS/EVS 2 & 3
Egoism	-0.028***
Egoism*US	0.005
Desert-sensitivity	-0.080***
Desert-sensitivity*US	-0.059***
Utilitarianism	-0.049***
Work addiction	0.019**
Female	0.061***
Age	-0.003***
Married	-0.010
Employed	-0.242***
Inactive	-0.170***
US	-0.142
Year fixed effects	Yes
Pseudo- R^2	0.030
N	26,482

Notes: Ordered probit estimates with robust standard errors. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

the “egoism” variable suggests that Europeans who feel that they are net contributors to the redistribution process tend to oppose redistribution. A Wald test, showing that the sum of the coefficients of the egoism variable and the egoism * US variable is also negative and significant, confirms the same observation for Americans. However, the non-significant coefficient of the egoism * US variable indicates that the impact of egoistic concerns on individuals’ support for redistribution is not substantially different between Americans and Europeans. In our theoretical model, the impact of egoistic concerns is modeled using the parameter γ . Therefore, our empirical results indicate that Proposition 4 (which focuses on differences in γ) is not the main explanation for different demands for redistribution between the US and the EU.

- (2) Egoistic concerns are not the only driving force behind the demand for redistribution in the US and the EU. The significant and negative coefficient of the desert-sensitivity variable betrays that the ethical channel is important in explaining the demand for redistribution among Europeans. The significant and negative coefficient of the desert-sensitivity * US variable indicates that Americans are even more desert-sensitive than Europeans, and that the difference between the US and the EU is sizeable. We estimate that if Europeans were as desert-sensitive as Americans, then their probability to support answer 10 to the redistribution question would be divided by more than

two. Because our empirical results show no statistical differences in γ between the US and the EU, we believe that the difference in beliefs about the proportion of lazy individuals among the unemployed (and more broadly, in the whole economy) is the major driving force behind the difference in desert-sensitivity between the US and the EU. Therefore, we conclude that Proposition 3 (which focuses on differences in beliefs) is successful in explaining the difference between the social contract in the US and in the EU. Obviously, because we estimate that both Americans and Europeans are desert-sensitive, Proposition 1 (which focuses on being desert-sensitive versus being desert-insensitive) is not validated by the data. Finally, we would like to mention that desert-sensitivity is important both for individuals who gain and those who lose from redistribution, because the overall correlation between the egoism variable and the desert-sensitivity variable in our sample is low, although significant (i.e., 0.066). This suggests that people who dislike redistribution because of self-interest do not systematically rationalize their egoism by saying that anyone can get ahead in life if they work hard.

- (3) The significant and negative coefficient of the utilitarianism variable demonstrates that the efficiency channel is also important for explaining the demand for redistribution. Therefore, our empirical observation – that Americans are more utilitarian in their altruistic concerns than Europeans – provides support for Proposition 2 (which focuses on differences in the importance of utilitarian versus Rawlsian altruistic concerns).²²

Within-EU Comparison

Does our theoretical model also help to explain the differences in the demand for redistribution between various categories of social-welfare states within the EU? As with the EU–US comparison, first we empirically demonstrate differences (i) in the demand for redistribution, (ii) in utilitarian altruistic concerns, and (iii) in beliefs about the laziness of the unemployed. Column 1 of Table 4 presents the results of an ordered probit model with robust standard errors and with the tax/social benefits variable from the ESS as the dependent variable. We control for gender, age, income, marital status, and employment status. From the coefficients of the welfare-state dummies, we conclude that the demand for redistribution is highest in

²² Whereas the US dummy is significant in Column 1 of Table 2, not that it is no longer significant in Table 3. We interpret this result as additional evidence that the introduction of the ethical and the efficiency channels is important for explaining the different demands for redistribution in the US and the EU.

Table 4. *Differences in the demand for redistribution, utilitarian altruistic concerns, and beliefs about the laziness of the unemployed: European welfare states*

	Tax/social benefit ESS 4 (2009)	Utilitarianism WVS/EVS 2 & 3	Belief WVS/EVS 4
Female	0.026	-0.110***	0.026***
Age	0.004***	0.001	0.181***
Income	-0.002	0.060***	-0.006***
Married	0.026	-0.025*	-0.001
Employed	-0.171***	0.225***	-0.405***
Inactive	-0.130***	0.155***	-0.317***
Liberal welfare states	-0.290***	0.003	-0.280***
Conservative welfare states	-0.385***	-0.118***	-0.404***
Year fixed effects	No	Yes	Yes
Pseudo- R^2	0.010	0.012	0.020
N	15,828	23,682	13,324

Notes: Ordered probit estimates with robust standard errors. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

the social democratic countries and lowest in the conservative countries. We estimate that the social democratic countries are almost 2.5 and 2 times as likely as conservative countries and liberal countries, respectively, to fully agree with the view that the “government should increase taxes a lot and spend much more on social benefits and services”. Column 2 of Table 4 reports the results of an ordered probit with robust standard errors and with the utilitarianism variable as the dependent variable. Using the same controls and adding time-fixed effects, we conclude from the coefficients of the welfare-state dummies that the social democratic countries and the liberal countries do not significantly differ in their utilitarian altruistic concerns, but we find that both hold significantly more utilitarian altruistic concerns than individuals living in conservative countries. Column 3 of Table 4 reports the results of an ordered probit with robust standard errors and with the variable for “belief in proportion of non-lazy” as the dependent variable. Using the same controls, including time-fixed effects, we conclude from the coefficients of the welfare-state dummies that individuals living in social democratic countries and conservative countries hold the most optimistic and pessimistic beliefs, respectively, about the proportion of lazy individuals among the unemployed.

Can our theoretical propositions explain the distinct “Nordic social contract” of the social democratic countries? Table 5 presents the results of an ordered probit regression with robust standard errors and with the redistribution variable as the dependent variable, mimicking our baseline model described by equation (5) for European countries. As in the EU–US comparison, Propositions 1 and 4 are not validated by the data. The estimation

Table 5. *Explaining the differences in the demand for redistribution: European welfare states*

	Redistribution WVS/EVS 2 & 3
Egoism	-0.027***
Egoism*LIB	0.006
Egoism*CON	-0.001
Desert-sensitivity	-0.055***
Desert-sensitivity*LIB	-0.051***
Desert-sensitivity*CON	-0.029***
Utilitarianism	-0.048***
Work addiction	0.015
Female	0.066***
Age	-0.003***
Married	-0.002
Employed	-0.245***
Inactive	-0.158***
Welfare state fixed effects	Yes
Year fixed effects	Yes
Pseudo- R^2	0.025
N	23,682

Notes: Ordered probit estimates with robust standard errors. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

results show that individuals are desert-sensitive in all three welfare states, and that the impact of egoistic concerns on the demand for redistribution is not statistically different between the three welfare states. Again, because we do not find statistical differences in γ between the different welfare states, we believe that the significant and negative coefficient for the desert-sensitivity * LIB and desert-sensitivity * CON variables is consistent with the social democratic countries holding a more optimistic belief about the proportion of lazy individuals among the unemployed than the liberal countries and the conservative countries, respectively. The significant and negative coefficient of the utilitarianism variable demonstrates that the efficiency channel is also important in all three welfare states for explaining the demand for redistribution. Hence, as in the EU–US comparison, our empirical results provide support that Propositions 2 and 3 are successful in explaining the differences in social contracts between the European welfare states. We conclude that the higher demand for redistribution in the social democratic countries, compared to the liberal countries, mainly comes through the ethical channel, where the latter show more pessimistic beliefs about the proportion of lazy individuals. As for the comparison between the social democratic and conservative welfare states, the ethical and efficiency channels work in opposite directions. (i) Conservative countries show fewer utilitarian altruistic concerns than social

democratic countries, which has a positive effect on their relative demand for redistribution through the efficiency channel. (ii) However, conservative countries also show more pessimistic beliefs about the proportion of lazy individuals than social democratic countries, which has a negative effect on their relative demand for redistribution through the ethical channel. The fact that social democratic countries ultimately have a higher demand for redistribution than conservative countries suggests that the ethical channel might be stronger than the efficiency channel in determining the demand for redistribution.

V. Conclusions

Recently, an increasing number of theoretical articles have departed from modeling individuals' preferences for redistribution as purely egoistic. The inclusion of fairness concerns in voters' preferences is a promising research avenue from this perspective. However, fairness concerns can be modeled in many different ways. Experimental evidence suggests that fairness concerns are not unconditional, and that individuals are looking to reduce income inequalities induced by luck but, at the same time, they want to reward individual effort. Our main contribution is that the preferences for redistribution introduced in this paper extensively incorporate three of the main concerns that, besides egoism, have turned out to influence distributive behavior strongly: utilitarian altruism, Rawlsian altruism, and desert-sensitivity. Our framework allows us to study the demand for redistribution in an analytically tractable and empirically testable way. From our analysis, we have learned primarily that beliefs about the proportion of deserving individuals have a significant impact on the amount of redistribution in equilibrium. The important implication of our work is that governmental policies that aim to reduce discrimination, stigmatization, and racial prejudice might also reduce income inequalities.

We believe that our analysis can be extended in a number of promising ways. We highlight five possible avenues for future research.

- (1) An extensive empirical validation for altruistic preferences for redistribution, in general, and for desert-sensitive altruistic preferences for redistribution, in particular, needs to be developed. Such an analysis should not be limited only to the study of participants' behavior in an experimental setting, nor should it be solely based on the use of questionnaire data. However, if possible, it should focus more directly on actual voting behavior in real-world elections.
- (2) Where we have endowed all individuals with the same altruistic concern in our analysis, a straightforward extension would be to study the equilibrium outcomes resulting from the prevalence of different

altruistic concerns among the population. We refer to Galasso (2003) for a first characterization of politico-economic equilibria when purely selfish voters coexist with Rawlsian altruistic voters, and we refer to Cappelen *et al.* (2007) for an experimental study of pluralism in fairness ideals.

- (3) Another possible extension of our model would be to introduce dynamics, to study the endogenous formation of (desert-sensitive) altruistic preferences, and to analyze the (different) steady state(s) resulting from this process (for a first attempt, see Cervellati *et al.*, 2006).
- (4) We believe that by endowing individuals with altruistic preferences for redistribution, the qualitative results of positive voting models come closer to the recommendations of the normative, optimal, fair income tax literature. We refer to Schokkaert *et al.* (2004) for the derivation of optimal linear tax rates under a desert-sensitive social planner. In fact, the (hypothetical) benevolent social planner of normative analysis is replaced by ethically inspired median voters in our analysis.
- (5) Finally (and in full awareness of the technical difficulties this imposes), the development of models in which individuals with (desert-sensitive) altruistic preferences vote over non-linear income tax schedules would obviously be an improvement. See Kranich (2001) for an analysis with altruistic preferences over quadratic income tax schedules. For example, this would make it possible to study whether (desert-sensitive) altruistic individuals are in favor of welfare programs that subsidize the poor.

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