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ABSTRACT

When studying attitudes towards redistribution, surveys show that individuals do care about fairness. They also show that the cultural environment in which people grow up affects their preferences about redistribution. In this article we include these two components of the demand for redistribution in order to develop a mechanism for the cultural transmission of the concern for fairness. The preferences of the young are partially shaped through the observation and imitation of others' choices. More specifically, observing during childhood how adults have collectively failed to implement fair redistributive policies lowers the concern during adulthood for fairness or the moral cost of not supporting fair taxation. Based on this mechanism, the model exhibits a multiplicity of history-dependent stationary states that may account for the huge and persistent differences in redistribution observed between Europe and the United States. It also explains why immigrants from countries with a preference for greater redistribution continue to support higher redistribution in their destination country.

KEY WORDS

Redistribution, fairness, majority rule, social norms, endogenous preferences.

JEL

H53, D63, D72, D03

1 Introduction

When studying redistributive attitudes, in a departure from traditional economics, surveys show that individuals do care about fairness (Fong, 2001 ; Corneo and Grüner, 2002 ; Alesina and La Ferrara, 2005 ; Corneo and Fong, 2008 ; Alesina and Giuliano, 2011). More specifically, they underline that people tend to support greater redistribution if they believe that poverty is caused by factors beyond an individual's control, such as luck. The finding that social concerns matter in explaining redistributive attitudes is also supported by a growing number of lab experiments (Tyran and Sausgruber, 2006 ; Ackert et al., 2007 ; Hörisch, 2010 ; Durante et al., 2014). Putting this finding into an international context, Corneo (2001) shows that individuals in high-redistributive countries such as former West Germany exhibit a greater concern for fairness than individuals in low-redistributive countries such as the United States[1]. Furthermore, Luttmer and Singhal (2011) and Alesina and Giuliano (2011) show that, after controlling for individual characteristics, immigrants from countries with a preference for greater redistribution continue to give significant support to higher redistribution in their destination country. Accordingly, the intensity of the concern for others appears to some degree to be culturally shaped at young ages and to stop changing after reaching adulthood[2]. Understanding the development of an agent's preferences when young and the role of the cultural context are then of great importance in explaining individual demands for redistribution, and hence the diversity

[1] Twenge et al. (2007) explain for example that social exclusion elicits strong negative feelings that impair the capacity for empathic understanding of others, and as a result, decreases pro-social behaviour (see Gunther Moore et al., 2012, and Will et al., 2015, for neuroimaging evidence). To that extent, it is to be expected, as found in Corneo (2001), that fairness considerations are undermined in societies with high social exclusion (the poverty rate in 2013 was more than 17% in the United States compared with less than 10% in all the major euro area countries, except Italy ; OECD, 2017), and in turn that these countries do not promote redistributive policies fighting social exclusion. Note that the poverty rate is the ratio of the number of people whose income falls below the poverty line taken as half the median household income of the total population.

[2] Supporting this view, psychologists McCrae and Costa (1994) have shown that personality traits stop changing after age 30. See Roberts and DelVecchio (2000) for a discussion.

in redistributive policies in democratic countries.

Following robust empirical evidence that fairness and culture are two important components of redistributive attitudes, in this article we propose a mechanism for the cultural transmission of the strength of the moral norm or concern for distributive justice. Through oblique socialization, taste is shaped by the observation, imitation[3] and internalization of cultural practices. More specifically, we argue that the observation during childhood of redistributive policies that are far from what would be perceived as fair results in a weakened concern for distributive justice. To characterize the socialization process and the persistence of preferences over generations, deviating from the norm affects preferences with a delay of one generation. The moral cost of not supporting fair taxation is reduced when observing how the previous generation has collectively failed to implement a fair institution. Said differently, our mechanism states that being exposed to unfairness during youth reduces individual responsibility regarding moral duty.

As a first result of our mechanism for intergenerational and cultural transmission, assuming that the level of redistribution perceived as fair is higher than the level selfishly preferred, we explain that immigrants from countries with a preference for greater redistribution continue to support higher redistribution in their destination country because they have a stronger concern for distributive justice. This result is also consistent with the findings of Corneo (2001). As a second result, the persistent differences in redistribution between the United States and Europe are explained through multiple stable stationary states. Indeed, we show that if people are socialized in an environment where practices and institutions are close to (but lower than) what is perceived as fair, the redistributive institution and the concern for fairness co-evolve and are self-reinforcing such that the cultural transmission process ends with the implementation of the high redistribution level. By contrast, if people are socialized in an environment that is too far from what is perceived as fair, then observation that the moral norm does not prevail

[3]In the evolutionary literature, learning from others by imitation is a cheap and efficient way to acquire locally relevant information for adaptation. Accordingly, the propensities to learn and to imitate are part of an evolved psychology shaped by natural selection (Boyd and Richerson, 1985 ; Boyd et al., 2011).

in the society reduces individual responsibility regarding moral duty. In that case, the cultural transmission process ends with the implementation of the low redistribution level. At steady state, our model satisfyingly reproduces the fact that redistribution is higher in (continental) Europe than in the United States while market income inequality appears lower in the former.

This paper belongs to several strands of literature. At the micro level, it is related first to the literature on the interaction between social norms and individual behavior, which stresses that the incentive to behave in a certain manner depends on the degree to which we see others acting in this way. For example, in the literature on crime (see Funk, 2005), the strength of the social crime norm is measured by the moral costs that arise from committing a crime. Therefore, as is well established in this literature, if it is observed that many others are committing crimes, the remorse or guilt felt from breaking the social norm is weakened. In the same vein, in Lindbeck et al. (1999) the individual guilt and social stigma linked to living on benefits decreases with the number of beneficiaries in the society. In contrast with Funk (2005) and Lindbeck et al. (1999), in our setting the choice is not binary. Therefore, to identify the deviation from the moral norm we replace the fraction of deviators by the distance of the collective choice from the norm. This makes it possible to apprehend the intensity of the deviation from the norm more properly. In this first strand of literature, the social influence is generally associated with contemporaneous peer effects. It is thus distinguished from the growing literature on cultural transmission launched by Bisin and Verdier (2001), where culture refers to social norms that persist over long periods and across generations. On the relationship between culture and institutions investigated in this second strand of literature[4], our paper is most closely related to the work of Tabellini (2008). Here individuals respond to incentives but are also influenced by norms of good conduct inherited from earlier generations. This leads to multiple history-dependent steady states. If a norm of generalized morality initially prevails, then the economy converges to a steady state with high cooperation, and vice versa. Tabellini (2008) focuses on

[4] Algan and Cahuc (2009) and Alesina et al. (2015) investigate the relationship between the labor market institutions and respectively the civic virtue and the family values.

the transmission of values within the family (vertical socialization). In our paper, by assuming highly homogenous values at the regional level, parents have few incentives to transmit their values. We therefore specifically investigate the effect of the social environment in transmitting values (oblique socialization), taking into account that this cultural transmission channel cannot account for any behavioral persistence beyond the first generation of immigrants.

Finally, at the macro level, our paper also builds on the literature and extends the canonical model of Meltzer and Richard[5] (1981) to improve its main prediction that greater income inequality results in greater redistribution – a prediction that has only weak support in the data[6]. By stressing the importance of the concern for fairness, our approach is most closely related to the seminal paper of Alesina and Angeletos (2005). However, the mechanism we propose is structurally different. In Alesina and Angeletos (2005), Americans are supposed to support only weak redistribution because they believe that market outcomes are fair, i.e. determined by hard work rather than luck[7]. Indeed, in their framework, as the after-tax return to effort is expected to be high, they work hard and the market outcomes are effectively fair [8]. In other words, in Alesina and Angeletos (2005) differences in redistribution are sustained because beliefs about

[5]Its three dimensions have been extended : economic (Bénabou, 2000 ; Desdoigts and Moizeau, 2005 ; de Freitas, 2012 ; Bredemeier, 2014), political (Roemer 1998 ; Rodriguez, 2004 ; Iversen and Soskice, 2006 ; Campante, 2011) and behavioral (Bénabou and Ok, 2001 ; Bénabou and Tirole, 2006 ; Lind, 2007 ; Shayo, 2009 ; Cervelatti et al., 2010 ; Lindqvist and Östling, 2013). See Alesina and Glaeser (2004), Campante (2011) and Acemoglu et al. (2013) for overviews.

[6]See Perotti (1996), Gouveia M. and Masia (1998), Moene and Wallerstein (2001), de Mello and Tiongson (2006), and Iversen and Soskice (2006).

[7]Using World Values Survey data, Alesina, Glaeser and Sacerdote (2001) highlight that 54% of Europeans versus 30% of Americans believe that *luck rather than effort determines income.*

[8]Note that there is no consensus on the view that market outcomes are fairer in the US than in Europe. Certainly, as reported by Alesina and Angeletos (2005), the average worked time per employee is lower in Europe than in the US. However, nothing seems to support the popular belief that American society is more mobile than European societies. Björklund and Jäntti (1997) even show that intergenerational income mobility in Sweden is higher than in the United States. Piketty (1995) and Benabou and Tirole (2006) then explore the role of biased beliefs about social mobility to explain differences in redistribution.

fairness are self-fulfilled. In contrast, in our approach, the differences are sustained because the concern for fairness is endogenous and culturally shaped. The mechanism we propose provides then a new explanation for the huge and persistent difference in redistribution observed between Europe and the United States based on the intergenerational and cultural transmission of the strength of the concern for fairnesss.

The rest of the paper is organized as follows. We present in section 2 an endogenous mechanism for the formation of preferences based on oblique socialization. In section 3, based on this mechanism and assuming that the perception of the fair level of taxation is exogenous and unanimously shared in the population, we show that our model exhibits multiple stable stationary states consistent with the negative correlation between income inequality and redistribution encountered in the data. We also explain why immigrants from countries with a preference for greater redistribution continue to support higher redistribution in their destination country. In section 4, we extend and verify the robustness of our results by considering endogenous and heterogenous views of what is fair. We conclude briefly in the last section.

2 The social determinants of preferences

To characterize the socialization process, we consider an overlapping generations model in which each individual lives two periods : childhood and adulthood. People are educated and socialized during childhood, and through this process they internalize the cultural practices that will influence their behavior when they become adults. As adults, they work and consume in order to maximize their utility. Adult individuals also vote on income redistribution in the beginning of the period. In this way, they take into account the distortive effect of redistribution on work effort, as in the seminal paper of Meltzer and Richard (1981).

2.1 Inequity aversion

As underlined in the introduction, an abundant literature shows that people's demand for redistribution reflects that they do indeed care about the equity of market income distribution, where factors beyond one's control such as luck characterize the level of unfairness. Accordingly, following Piketty (1995), Alesina and Angeletos (2005) and Bénabou and Tirole (2006), we assume that the income of an adult at date t is determined conjointly by luck and by effort such that :

$$y_{it} = A_i e_{it} + \eta_i \tag{1}$$

where e_{it} denotes the person's chosen effort, $A_i \geq 0$ his talent or ability and η_i his luck (or bad luck). It is assumed that $\{A_i, e_{it}\}$ are private information to agent i. η_i is assumed unknown before the income distribution and such that $E_0[\eta_i] = 0$, A_i and η_i being independent and identically distributed (i.i.d) across agents. In other words, when deciding his work effort, an individual knows its return but can not know if he will be lucky or not. After the income distribution, η_i is assumed to be private information to agent i. We then associate any market income distribution at date t with a distribution perceived as fair by the population and with an optimal linear redistributive tax rate $\tau^f \in [0, 1]$ that would allow implementing the fair income distribution. In Alesina and Angeletos (2005), this level of redistribution is obtained endogenously and is at the basis of the multiplicity of equilibria. In contrast, for the clarity of our purposes, we will consider first that the level of redistribution perceived as fair is exogenous and unanimously shared in the population. We will investigate the limits of these assumptions in section 4. We then consider an extended version of the Bolton-Ockenfels model (2000) of distributive preferences in specifying the utility function as follows :

$$U_{it} = u_{it} - \varphi_t \left(\tau^f - \tau_t\right)^2 \tag{2}$$

where u_{it} denotes the private utility from personal consumption and the work effort, and $\varphi_t \geq 0$ the strength of the concern for fairness or inequity aversion that we assume was shaped during childhood.

Assuming as in Boldrin and Montes (2005) and Docquier et al. (2007) that children's consumption is part of their parents' consumption, we then specify the private utility as follows :

$$u_{it} = c_{it} - \frac{e_{it}^2}{2} \tag{3}$$

where c_{it} denotes household consumption (one adult - one child) at date t. The quadratic disutility of effort is for analytical simplicity. At each period t, the government redistributes the income according to a simple fiscal scheme characterized by a flat-rate tax τ_t and a lump-sum benefit provided to all adults. Assuming a balanced budget, each adult faces the following budget constraint :

$$c_{it} = y_{it}\,(1 - \tau_t) + \tau_t \bar{y}_t \tag{4}$$

where $\bar{y}_t$ denotes the mean income at date t.

2.2 Oblique socialization

To incorporate social forces into individual behavior, one privileged way is by considering the formation of agents' preferences[9]. Preferences are to some degree socially determined, so that agents internalize preferences that reflect the cultural practices of the society that they inhabit. Through oblique socialization, young individuals internalize, by imitation and learning, preferences that will influence their behavior when they become adults, which will explain the persistence of the cultural practices.

Assume then that the distributive preferences of an individual youth at date $t-1$ are influenced by the observation of the social environment and its degree of fairness. Denoting by

[9]See Postlewaite (2011) for an overview of the different approaches in the economic literature linking individual behaviors and social environment.

τ^*_{t-1} the effective level of taxation at date $t-1$ while τ^f is the level perceived as fair, we can characterize the social environment by the social distance to distributive justice

$$\mathcal{S}_{t-1} = \left[\tau^f - \tau^*_{t-1}\right]^2 \tag{5}$$

The higher $\mathcal{S}_{t-1}$, the more unfair the redistributive system perceived by the population. As the effective level of taxation τ^*_{t-1} results from a collective choice of the adults at date $t-1$ through voting, a significant $\mathcal{S}_{t-1}$ reveals a low weight attached to the moral norm adherence and a failure in implementing fair taxation. This low weight is therefore transmitted to the young generation through observation and imitation. Having been exposed to unfairness during youth reduces the concern for fairness. Denoting $\varphi_t = \Phi\left(\mathcal{S}_{t-1}\right)$, we will then assume in the following that $\Phi' \leq 0$. Our mechanism is closely related to that of Lindbeck et al. (1999) and Funk (2005), where the disutility of deviating from the norm is non-increasing in the fraction of deviators. However, in our setting the choice is not a binary choice between working full-time or living off benefits, as in Lindbeck et al. (1999), or following the law or committing a crime, as in Funk (2005). Therefore, to determine the deviation from the moral norm we replace the fraction of deviators by the distance between the collective choice and the norm. In addition, in our model, to characterize the socialization process, the impact on preferences of deviating from the norm applies with a delay of one generation. The moral cost of not supporting fair taxation is reduced when observing how the previous generation has collectively failed to implement a fair institution. Note that, contrary to Bisin and Verdier (2001) and Bénabou and Tirole (2006), the intergenerational cultural transmision mechanism that we underline occurs through passive observation and imitation of society at large, not through active efforts of the parents to transmit values. As highlighted by the empirical findings of Dohmen et al. (2012), those two aspects of the cultural transmission process are relevant in influencing child attitudes.

In light of these preferences, in the following section we study the resulting individual demands for redistribution and the policy that will be implemented in a democracy.

3 Redistributive policies in democracies

The economy is populated by a continuum of mass 1 of individuals at each generation endowed with utilities (2) and characterized by their specific effort e_{it}, their specific talent A_i and their specific luck η_i. As already mentioned, A_i and η_i are i.i.d across agents. The optimal effort resulting from the maximization of the expected utility $E_{0t}[U_{it}]$ is as follows :

$$e_{it} = A_i(1 - \tau_t) \tag{6}$$

As redistribution lowers the market return to effort, it reduces the effort. In addition, as the return to effort grows with ability, more talented individuals work harder. Considering eq. (6), the pre-tax income (1) of an adult at date t can be rewritten as :

$$y_{it} = a_i(1 - \tau_t) + \eta_i \tag{7}$$

where $a_i = A_i^2$. As the level of effort is reduced by redistribution, obviously the pre-tax income is also reduced.

3.1 The individual demands for redistribution

Consistently with our behavioral assumptions, an adult at date t will support the level of redistribution that maximizes his utility. Assuming that the vote occurs at the beginning of the period allows the person to take into account the distortive effect of redistribution on work effort and then on income. Accordingly, considering that he can fully anticipate his future effort choice as a function of the tax rate, the expected utility (before knowing his particular luck) defined by eqs. (2) and (3) can be written, using eqs. (4), (6) and (7), as :

$$E_{0t}[U_{it} |\ e_{it}(\tau_t)] = \frac{a_i(1 - \tau_t)^2}{2} + \tau_t \bar{a}(1 - \tau_t) - \varphi_t\left(\tau^f - \tau_t\right)^2 \tag{8}$$

where $\bar{a}$ denotes the mean a_i. Defining the demand for redistribution of an individual as the level of taxation that maximizes his utility (8) leads then to the following first order condition

$-a_i(1-\tau_t)+\bar{a}(1-\tau_t)-\tau_t\bar{a}+2\varphi_t\left(\tau^f-\tau_t\right)=0$. Therefore, as long as the second order condition $a_i-2\bar{a}-2\varphi_t\leq 0$ is satisfied, knowing that $\varphi_t=\Phi\left(\mathcal{S}_{t-1}\right)$, individual demands for redistribution at date t can be expressed as :

$$\tau_{it}=\begin{cases}\frac{\bar{a}-a_i+2\Phi(\mathcal{S}_{t-1})\tau^f}{2\bar{a}-a_i+2\Phi(\mathcal{S}_{t-1})} & \text{if } a_i-\bar{a}\leq 2\Phi\left(\mathcal{S}_{t-1}\right)\tau_t^f \\ 0 & \text{otherwise}\end{cases} \tag{9}$$

Considering the second order condition, assuming $\max_i\{a_i\}\leq 2\bar{a}$ is then a sufficient condition so that preferences are single-peaked in τ_t.

Individual demands for redistribution as specified in eq. (9) decrease with personal income, $\frac{\partial\tau_{it}}{\partial a_i}\leq 0$, and increase with the level of redistribution perceived as fair, $\frac{\partial\tau_{it}}{\partial\tau^f}\geq 0$. By exhibiting both selfish and fair motives, eq. (9) is consistent with empirical surveys (Fong, 2001 ; Corneo and Grüner, 2002 ; Alesina and La Ferrara, 2005 ; Corneo and Fong, 2008 ; Alesina and Giuliano, 2011).

Eq. (9) also reflects the fact that adults' demands for redistribution at date t are affected by the cultural environment in which they have grown up. More specifically, if the level of redistribution perceived as fair by an individual of type i is higher than the level of redistribution he would have chosen under the selfish motive, then the degree of unfairness in the environment when young will lower his demand for redistribution : $\tau^f\geq\left.\frac{\bar{a}-a_i}{2\bar{a}-a_i}\right|_{\max_i\{a_i\}\leq 2\bar{a}}\Leftrightarrow\frac{\partial\tau_{it}}{\partial\mathcal{S}_{t-1}}\leq 0$. Denote by $\tau_{a,t}$ the demand for redistribution of an individual of talent a at date t, and $\tau^s_{a_{\inf}}=\frac{\bar{a}-a_{\inf}}{2\bar{a}-a_{\inf}}$ the level of redistribution chosen under the selfish motive by the least talented individuals $\left(\text{as } a_{\inf}\geq 0,\ \tau^s_{a_{\inf}}\leq\frac{1}{2}\right)$. It then follows from eq. (9) that :

Proposition 1 *$\tau^f\geq\tau^s_{a_{\inf}}$ and $\tau^*_{t-1}\leq\tau^f$ yields $\frac{\partial\tau_{a,t}}{\partial\tau^*_{t-1}}\geq 0\ \forall a\,(\leq 2\bar{a})$.*

Following Proposition 1, if the fair level of redistribution is higher than the level selfishly preferred for all individuals $\left(\tau^f\geq\tau^s_{a_{\inf}}\right)$ and if the level of redistribution observed when young is lower than the fair level $\left(\tau^*_{t-1}\leq\tau^f\right)$, the specific effect of being an immigrant coming from a high redistribution country is then to support greater redistribution compared to native

individuals with the same talent a. Indeed, consider two representative individuals of talent a who have grown up at date $t-1$ in two different countries D and F characterized by $\tau_{t-1}^{*D} \leq \tau_{t-1}^{*F} \leq \tau^f$, everything else being equal. In that case, according to Proposition 1 we will observe $\tau_{a,t}^{F,D} \geq \tau_{a,t}^{D,D}$, where $\tau_{a,t}^{x,z}$ is the demand for redistribution of an adult of talent a at date t living in country z and having grown up in country x. From this perspective, if assuming $\tau^f \geq \tau_{a_{\inf}}^s$ and $\tau_{t-1}^* \leq \tau^f$, the demands for redistribution as expressed in eq. (9) are consistent with the empirical findings of Guiso et al. (2006), Alesina and Giuliano (2011) and Luttmer and Singhal (2011). Differently, assuming $\tau^f < \tau_{a_{\inf}}^s$ $\left(\text{while } \tau_{t-1}^* \leq \tau_{t-1}^f\right)$ would mean that less able immigrants, those whose levels of redistribution selfishly preferred are above the fair level, from countries with a preference for greater redistribution would tend to support fewer redistribution compared to native individuals with the same talent. Indeed, as they have been exposed to less unfairness during their youth, their concern for fairness is stronger and they promote the fair level of redistribution that is less than the one selfishly preferred. Assuming $\tau^f \geq \tau_{a_{\inf}}^s$ and $\tau_{t-1}^* \leq \tau^f$ is also consistent with the findings of Corneo (2001). Individuals in high-redistributive countries such as former West Germany exhibit a greater concern for fairness than individuals in low-redistributive countries such as the United States.

Two assumptions that have been made to obtain these results deserve attention. First, we assume that adult individuals vote on income redistribution in the beginning of the period, before deciding on their effort. Otherwise, i.e. if individuals do not take into account the distortive effect of redistribution on their work, it is well known that the selfish poorer-than-average individual ($y_{it} \leq \bar{y}_t$) supports a full income redistribution because he anticipates earning more from redistribution ($\tau_t \bar{y}_t$) than he contributes ($\tau_t y_{it}$). If the same poorer-than-average individual is purely fair ($\varphi_t \to +\infty$), he supports the taxation rate τ^f. In that case, it is easy to show that, still assuming $\tau_{t-1}^* \leq \tau^f\ (< 1)$, the result turns out to be in contradiction with empirical evidence for a significant part of the population : $\frac{\partial \tau_{y_{it} \leq \bar{y}_t, t}}{\partial \tau_{t-1}^*} \leq 0$. Second, unlike in our assumption, if individuals could have known from the beginning whether they will be lucky or not, a lucky individual, by being wealthier, would have supported less redistribution. From this perspective,

our assumption does not alter the qualitative result at the individual level while making the analysis at the collective level easier.

3.2 The majority rule

We now assume that, in a democracy, any policy to be implemented must be supported by a majority[10]. In our model, under the sufficient condition $\max_i \{a_i\} \leq 2\bar{a}$, preferences are single-peaked in τ_t. Thus the median-voter theorem applies. It follows from eq. (9) that the tax rate selected under majority rule can be expressed as[11] $\tau_t^* = \frac{\bar{a}-a_m+2\Phi(\mathcal{S}_{t-1})\tau^f}{2\bar{a}-a_m+2\Phi(\mathcal{S}_{t-1})}$, where a_m denotes the median a_i. Denote by $\Delta = \bar{a} - a_m$ an aggregate index of income inequality[12], and normalize $a_m = 2$ (without loss of generality). Assuming that the distribution of (squared) talents a_i is skewed to the right yields $\Delta \geq 0$ (so that the median income is lower than the average income as observed). Denote by $\tau^s = \frac{\Delta}{2(1+\Delta)}$ the tax rate selected under majority rule if individuals were driven only by their self-interest, i.e. if $\varphi_t = 0$. This *selfish* tax rate exhibits the standard Meltzer-Richard effect : as income inequality rises, the median voter is poorer compared with the average, and then supports greater redistribution : $\frac{d\tau^s}{d\Delta} \geq 0$. However, as noted in the introduction, income inequality is a poor predictor of redistributive policies. Differently, with fair motives, the dynamics of redistribution under majority rule can be expressed as a convex combination of the purely interested and the purely intuitively fair tax rates such that :

$$\tau_{t+1}^* = \xi_t \tau^s + (1 - \xi_t)\, \tau^f \tag{10}$$

where $\xi_t = \frac{1+\Delta}{1+\Delta+\Phi(\mathcal{S}_t)} \in [0, 1)$, $\tau_0 \geq 0$ and $\xi_0 = \frac{1+\Delta}{1+\Delta+\Phi\left(\left[\tau^f - \tau_0\right]^2\right)}$ given. ξ_t provides a measure of the proximity of the redistributive tax to the purely interested level (relatively to the purely fair level). From that perspective, it is worth noting that the proximity of the redistributive tax

[10] As put forward by Corneo and Neher (2014), democracies implement to a large degree the level of redistribution demanded by the median voter.

[11] We implicitly assume that an immigrant of the first generation cannot vote in his new country.

[12] In the empirical literature investigating the link between redistribution and income inequality, the Gini coefficient or the interdecile ratios are often favored to measure income inequality.

to the purely interested level increases as income inequality increases, $\frac{\partial \xi_t}{\partial \Delta} > 0$, and decreases as the concern for fairness increases, $\frac{\partial \xi_t}{\partial \Phi} < 0$. Assuming $\tau^s < \tau^f$ then yields :

Proposition 2 *If $\varphi = \Phi(\mathcal{S})$ is sufficiently high when τ^* approaches τ^f and sufficiently low when τ^* approaches τ^s, there exist multiple stable stationary states $\tau^*_{SS} \in \left[\tau^s, \tau^f\right)$.*

To explain this result, note that using eq. (5) we can redefine eq. (10) as $\tau^*_{t+1} = \Psi(\tau^*_t)$, where $\Psi(\tau^*_t) \equiv \frac{1+\Delta}{1+\Delta+\Phi\left(\left[\tau^f-\tau^*_t\right]^2\right)}\tau^s + \left(1 - \frac{1+\Delta}{1+\Delta+\Phi\left(\left[\tau^f-\tau^*_t\right]^2\right)}\right)\tau^f \in \left[\tau^s, \tau^f\right)$, $\tau^*_0 = \tau_0 \geq 0$ given, and $\Psi' \geq 0$ as long as $\tau^*_t \leq \tau^f$. Stationary states, defined by $\tau^* = \Psi(\tau^*)$, then lie necessarily between the selfish and fair tax rates : $\tau^* \in \left[\tau^s, \tau^f\right)$. In addition, stable stationary states are the ones where the graph of Ψ cuts the main diagonal from above, and unstable ones are those where it cuts it from below. Knowing that $\tau^s \leq \Psi(\tau^s)$ and $\tau^f > \Psi\left(\tau^f\right)$ yields that there exits at least one stable stationary state $\tau^*_{SS} \in \left[\tau^s, \tau^f\right)$. As exhibited in eq. (10), such a stable stationary state is as close to the fair tax rate as the concern for fairness φ is high. Reciprocally, by assuming that being exposed to unfairness during youth reduces the concern for fairness, the mechanism we are exploring states also that the concern for fairness increases as the tax rate becomes fairer : $\varphi = \Phi\left(\left[\tau^f - \tau^*\right]^2\right)$ where $\Phi' \leq 0$. Therefore, if $\lim_{\tau^* \to \tau^f,\ \tau^* < \tau^f} \Phi\left(\left[\tau^f - \tau^*\right]^2\right)$ is sufficiently high, there exists a stable stationary state close to the fair taxation. At the limit $\lim_{\tau^* \to \tau^f,\ \tau^* < \tau^f} \Phi\left(\left[\tau^f - \tau^*\right]^2\right) = +\infty$, it can be shown that $\tau^*_{SS} \to \tau^f$ $\left(\tau^*_{SS} < \tau^f\right)$. Reasoning similarly, it is obvious that a stable stationary state is as close to the selfish tax rate as the concern for fairness φ is low. If $\varphi = 0$, the unique stable stationary state is characterized by $\tau^*_{SS} = \tau^s$. Therefore, if $\lim_{\tau^* \to \tau^{s+}} \Phi\left(\left[\tau^f - \tau^*\right]^2\right)$ is sufficiently low, there exists a stable stationary state close to the selfish taxation. Accordingly, if both $\lim_{\tau^* \to \tau^f,\ \tau^* < \tau^f} \Phi\left(\left[\tau^f - \tau^*\right]^2\right)$ and $\lim_{\tau^* \to \tau^{s+}} \Phi\left(\left[\tau^f - \tau^*\right]^2\right)$ are respectively sufficiently high and low, there exist at least two stable stationary states. Indeed, as the graph of Ψ crosses the diagonal an odd number of times which may be greater than 3, the number of stable stationary states may be greater than 2 (we do not consider here the non-generic case of uncountable many crossings).

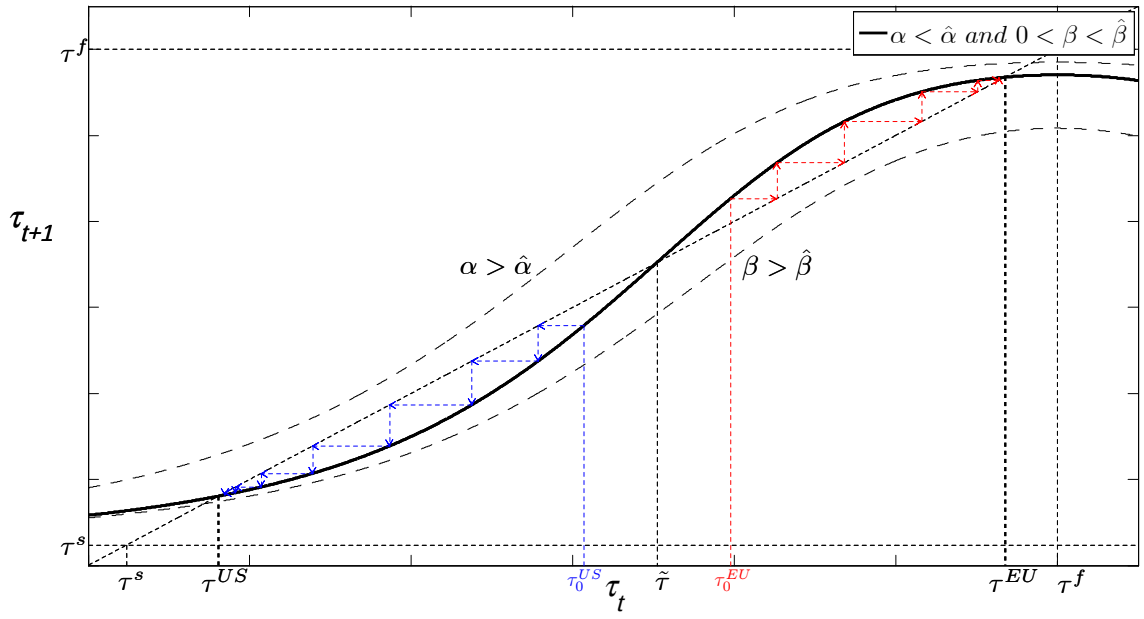

FIG. 1 – Multiplicity and history dependence of redistribution

If we want to restrict our attention to the case with only two stable stationary states, we need to assume, in addition, if Φ is of class C^2, that the equation $\Psi'(\tau) = 1$ has two roots in (τ^s, τ^f). Take for example the following function $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$, where α and β are two strictly positive parameters. As is obvious, the concern for fairness $\varphi = \frac{\alpha}{\beta+\left[\tau^f-\tau^*\right]^2}$ is high when τ^* approaches τ^f if $\frac{\alpha}{\beta}$ is high, and low when τ^* approaches $\tau^s < \tau^f$ if α is low. More formally, denoting $\frac{\hat{\alpha}}{\left(\tau^f-\tau^s\right)^2} = \frac{1+\Delta}{4}$ and assuming $0 < \alpha \leq \hat{\alpha}$, then there exists $\hat{\beta} > 0$ such that if $0 < \beta \leq \hat{\beta}$ the model exhibits two stable stationary states τ^{US} and τ^{EU}, where $\tau^s < \tau^{US} < \tau^{EU} < \tau^f$ (see Appendix B). Compared with Proposition 2, the condition $\Phi(\mathcal{S})$ is sufficiently high when τ^* approaches τ^f corresponds to $\beta \leq \hat{\beta}$ (and then $\frac{\alpha}{\beta}$ sufficiently high) and the condition $\Phi(\mathcal{S})$ is sufficiently low when τ^* approaches τ^s to $\alpha \leq \hat{\alpha}$. If we exclude an initial taxation $\tau_0 = \tilde{\tau}$[13], where $\tilde{\tau}$ is the unstable stationary state, we can then verify that the dynamics of redistribution is history-dependent if both $\alpha \leq \hat{\alpha}$ and $\beta \leq \hat{\beta}$ (Fig. 1).

[13] If considering that τ_0 is continuously distributed over $[0,1]$ or $\left[0,\tau^f\right]$, the event $\tau_0 = \tilde{\tau}$ has a probability of zero.

As illustrated in Figure 1, if at date $t = 0$ people are socialized in an environment where practices and institutions are close to but sufficiently lower than what is perceived as fair, $\tau_0 = \tau_0^{EU} \in \left(\tilde{\tau}, \tau^{EU}\right)$, then the level of taxation increases at date $t = 1$, $\tau_1^* > \tau_0$, such that the perceived unfairness of the institutions decreases, $\left[\tau^f - \tau_1^*\right]^2 < \left[\tau^f - \tau_0\right]^2$. The generation that is young at date $t = 1$ is socialized in an environment that is closer to the fair institution than was the previous generation. Hence, by being exposed to less unfairness, their concern for fairness increases and they will support an institution that will be closer to fairness at date $t = 2$. This cultural transmission process ends with the implementation of the high redistribution level characterized by the tax rate τ^{EU}. The redistributive institution and the concern for fairness co-evolve and are self-reinforcing such that $\lim_{t\to+\infty} \tau_t^* = \tau^{EU}$ and $\lim_{t\to+\infty} \varphi_{t-1} = \overline{\varphi}$. On the other hand, if the initial taxation is too far from what is perceived as fair such that $\tau_0 = \tau_0^{US} \in \left(\tau^{US}, \tilde{\tau}\right)$, the process is reversed and the concern for fairness as well as the level of redistribution decrease with time to stabilize towards their low levels $\lim_{t\to+\infty} \tau_t^* = \tau^{US} < \tau^f$ and $\lim_{t\to+\infty} \varphi_{t-1} = \underline{\varphi} < \overline{\varphi}$.

If the conditions for the existence of multiple stationary states are satisfied, persistent differences in redistribution can exist over long periods, as they are linked to different preferences for redistribution that are sustained by a process of cultural transmission. As underlined in Proposition 1, if the level of redistribution chosen under the selfish motive by the least talented individuals is lower than the level perceived as fair, $\tau^f \geq \tau^s_{a_{\inf}}$, this may explain why immigrants from countries with a preference for greater redistribution continue to support higher redistribution in their destination country. In addition, as a high level of redistribution lowers the level of effort in the economy, a high-redistribution country is characterized by a lower level of income inequality. Our model then also provides a rationale for the negative correlation between income inequality and redistribution that is encountered in the data.

Note importantly that all our results have been obtained while assuming exogenous, context-independent and unanimously shared levels of redistribution that are perceived as fair. However, as the level of effort decreases with redistribution, as shown by Alesina and Angeletos (2005), the importance of luck in the income determination increases, and we should observe a level

of redistribution perceived as fair that is lower in the low-redistribution stationary state than in the high-redistribution state. This suggests that the the fair level of redistribution depends on the perception of the economic environment that is influenced by the level of taxation. In addition, due in particular to different concepts of distributive justice, it is likely that individuals with similar information about the market outcomes will have different perceptions of the just level of redistribution in the country. In the next section, we investigate whether incorporating endogenous and heterogenous perceptions at the country level (ex post) and at the individual level (ex ante) fits with our mechanism of cultural transmission so as to explain the differences in redistribution observed between Europe and the United States.

4 Extensions

4.1 Endogenous perceptions

To characterize the level of redistribution that would be perceived as socially optimal, studies show that individual merit is an important principle at both the individual and aggregate levels. As shown by Alesina, Glaeser and Sacerdote (2001) for example, the belief that luck rather than effort determines income is a strong predictor of the national level of redistribution. Accordingly, by reducing the relative importance of luck in the income determination, more effort should lead to the perception of an income distribution whose unfairness requires a lower level of redistribution. From that perspective, as redistribution lowers the market return to effort and reduces effort as specified in eq. 6, one would then expect that the level of redistribution perceived as fair under the merit principle increases with the redistributive tax to be such that $\tau_t^f \equiv \mathcal{T}^f(\tau_t)$, where $\frac{d\mathcal{T}^f}{d\tau} \geq 0$, $\mathcal{T}^f(0) > 0$ and $\mathcal{T}^f(1) \leq 1$.

However, having endogenous rather than exogenous perceptions does not call into question the capacity of our mechanism to generate multiple stable stationary states. On the one hand, following Proposition 2, if the concern for fairness $\varphi = \Phi\left(\left[\mathcal{T}^f(\tau^*) - \tau^*\right]^2\right)$ is sufficiently low when the redistributive institution approaches the selfish level τ^s, there still exists a stable

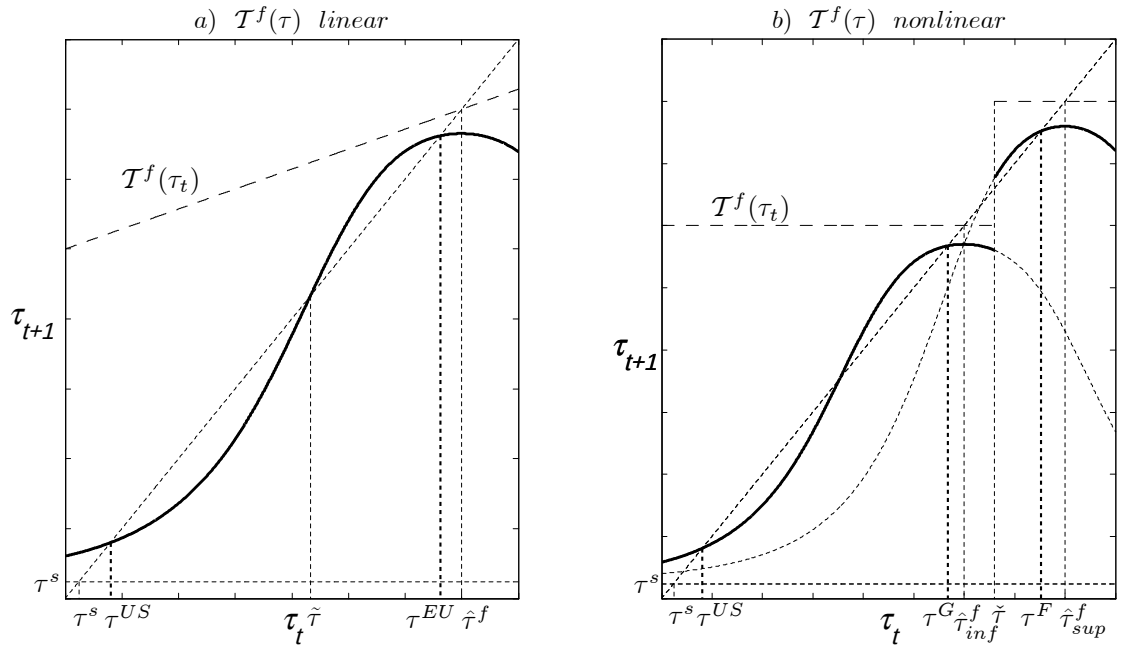

FIG. 2 – Multiplicity and endogenous perceptions

stationary state close to the selfish taxation. On the other hand, when the concern for fairness becomes high enough, maximizing utility (2) is close to minimizing the perceived unfairness of the redistributive institution that is measured by $\left(\mathcal{T}^f(\tau_t) - \tau_t\right)^2$. Define by $\hat{\tau}^f$ a level of purely fair redistributive taxation as a root of the equation $\tau = \mathcal{T}^f(\tau)$. It follows that if the concern for fairness $\varphi = \Phi\left(\left[\mathcal{T}^f(\tau^*) - \tau^*\right]^2\right)$ is sufficiently high when τ^* approaches $\hat{\tau}^f$, there exists a stationary state close to $\hat{\tau}^f$. As illustrated in Fig. 2a in which $\mathcal{T}^f(\tau)$ is assumed linear in the tax rate τ, $\hat{\tau}^f > \tau^s$ and $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$, the model continues to exhibit two stationary states $\tau^{US} < \tau^{EU}$ if α is low enough and $\frac{\alpha}{\beta}$ is high enough (see Appendix C).

Having endogenous rather than exogenous perceptions implies that the higher the level of redistribution, the higher the level of redistribution perceived as fair. If the model exhibits two stable stationary states $\tau^{US} < \tau^{EU}$, it then yields $\mathcal{T}^f\left(\tau^{US}\right) < \mathcal{T}^f\left(\tau^{EU}\right)$. As a consequence, if the level of redistribution selfishly preferred by the least talented individuals is lower than the level of redistribution perceived as fair in the low-redistribution country $\left(\mathcal{T}^f\left(\tau^{US}\right) \geq \tau^s_{a_{\inf}}\right)$ so that Proposition 1 holds, endogenous perceptions also yield that, compared with the previous section with identical and exogenous perceptions of the fair level of redistribution, an individual

socialized when young in a high-redistribution country will support less redistribution if he moves as an adult to a low-redistribution country (because the perceived inequity in the income distribution appears lower), while still supporting a higher redistribution in his destination country than do the natives.

Note that nonlinearities in the relationship between the level of redistribution perceived as fair and the tax rate may increase the numbers of stable stationary states. This is most obvious (but not necessary) if the equation $\tau = \mathcal{T}^f(\tau)$ exhibits multiple roots $\hat{\tau}_j^f$. Indeed, if the concern for fairness $\varphi = \Phi\left(\left[\mathcal{T}^f(\tau^*) - \tau^*\right]^2\right)$ is sufficiently high when the level of unfairness associated with the redistributive institution measured by $\left[\mathcal{T}^f(\tau^*) - \tau^*\right]^2$ approaches zero, there exists a stationary state close to each root $\hat{\tau}_j^f$. As illustrated in Figure 2b in which the level of redistribution perceived as fair under the individual merit principle is defined as $\mathcal{T}^f(\tau) = \begin{cases} \hat{\tau}_{\text{inf}}^f & \text{if } \tau \leq \check{\tau} \\ \hat{\tau}_{\text{sup}}^f & \text{otherwise} \end{cases}$, where $\tau^s < \hat{\tau}_{\text{inf}}^f < \check{\tau} < \hat{\tau}_{\text{sup}}^f \leq 1$, and $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$, if α is low enough and $\frac{\alpha}{\beta}$ high enough the model now exhibits three stable stationary states $\tau^{US} < \tau^G < \tau^F$ (see Appendix C). However, if one considers that τ^G and τ^F characterize the high levels of redistribution observed in Western Europe (for example public social spending amounts to 31.5% and 25.3% of GDP respectively in France and Germany in 2016; OECD 2017) and τ^{US} the low level observed in the United states (public social spending amounts to 19.3% of GDP at the same date), this nonlinear case does not challenge our mechanism explaining why individuals in high-redistribution countries exhibit a greater concern for fairness than individuals in low-redistribution countries. Indeed, we can see in Figure 2b that the countries characterized by the high levels of redistribution τ^G and τ^F have a quite similar small distance between their effective taxation and the fair one, $\left[\mathcal{T}^f\left(\tau^G\right) - \tau^G\right]^2 \approx \left[\mathcal{T}^f\left(\tau^F\right) - \tau^F\right]^2$, where the distance $\left[\mathcal{T}^f(\tau) - \tau\right]^2$ reflects the observed unfairness of the redistributive institution. To that extent, the redistributive institution characterized by the low level τ^{US} appears less fair, $\left[\mathcal{T}^f\left(\tau^{US}\right) - \tau^{US}\right]^2 > \left[\mathcal{T}^f\left(\tau^G\right) - \tau^G\right]^2$. In terms of our mechanism based on oblique socialization that states that being exposed to unfairness during youth reduces the concern for fairness,

it means that the concern for fairness is lower in the low-redistribution country than in the high-redistribution countries : $\varphi_{\tau^{US}} < \varphi_{\tau \in \{\tau^G, \tau^F\}}$.

Note also that nonlinearities in the relationship between the level of redistribution perceived as fair and the tax rate can generate multiple stationary states without our oblique socialization effect. For example, following eq. (10), there may exist two stationary states $\tau^{US} = \xi\tau^s + (1-\xi)\,\hat{\tau}^f_{\text{inf}}$ and $\tau^{EU} = \xi\tau^s + (1-\xi)\,\hat{\tau}^f_{\text{sup}}$, where $\xi = \frac{1+\Delta}{1+\Delta+\varphi}$, if $\tau^{US} \leq \check{\tau} < \tau^{EU}$. However, in such a specification, it is the endogeneity of the fair tax perception that leads to multiplicity, which is not the case of our mechanism as underlined by the exogenous or linear cases. In addition, without our oblique socialization effect, individuals in high-redistributive countries do not exhibit a greater concern for fairness than do individuals in low-redistributive countries. From these perspectives, our mechanism appears clearly different from the one proposed by Alesina and Angeletos (2005) based on the endogeneity of the fair tax[14].

4.2 Heterogenous perceptions

If individual merit appears to be an important principle to characterize the level of redistribution that would be perceived as socially optimal, its content may give rise to interpretation and then be perceived differently from one individual to another. Certainly, effort and hard work are associated with individual merit. Certainly, luck is seen as a unfair component of income. However, as noted by Schokkaert and Truyts (2014), income differences caused by ability or talent may be seen more or less fair according to whether talent is perceived as reflecting former investments in human capital or as innate and then beyond an individual's control. This ambiguity is revealed by several studies whose findings are contradictory. For example, Fong

[14] Abstracting from expectations, the tax level perceived socially as fair in Alesina and Angeletos (2005) is defined as $\mathcal{T}^f(\tau) = \arg\min_{\tau' \in [0,1]} \left\{ \int_i \left(u_i^d - u_i^f \right)^2 di \right\}$, where $u_i^f = A_i e_i(\tau) - \frac{e_i(\tau)^2}{2}$ denotes the level of utility perceived as fair for an adult of type i, and $u_i^d = [A_i e_i(\tau) + \eta_i](1-\tau') + \tau' A_i \bar{e}(\tau) - \frac{e_i(\tau)^2}{2}$ the effective level of utility after redistribution. This then yields $\mathcal{T}^f(\tau) = \frac{\sigma_\eta^2}{\sigma_\eta^2 + (1-\tau)^2 \sigma_a^2}$, where σ_η^2 and σ_a^2 denote respectively the variance of η and a. If asuming $\frac{\sigma_\eta^2}{\sigma_a^2} \leq \frac{1}{4}$, equation $\tau = \mathcal{T}^f(\tau)$ exhibits two or three roots and their model can have two stable stationary states if φ is large enough.

(2001) and Corneo and Grüner (2002) show on American data that individuals who think that income is determined by luck rather than individual effort and ability are more favorable to redistribution. In the same line, Rustichini and Vostroknutov (2014) show in the lab that merit is attributed only if effort or ability affect the outcome. By contrast, Isaksson and Lindskog (2009) show that in Denmark individuals who believe that people get rewarded for their ability and talent are more favorable to redistribution. These contradictory findings may suggest that the deservingness of income related to talent or ability can be perceived differently across individuals and across societies.

In addition, individual merit cannot sum up all the principles of distributive justice (see Konow, 2003, for an overview). Forsé and Parodi (2006) show for example that European countries share an identical hierarchy of moral principles : first, the guarantee of basic needs ; second, merit ; and less important, equality of income. Besides, Durante et al. (2014) show that social concerns with respect to redistribution include both the concern for fairness and a dislike of inefficiency that can be associated with the "greatest aggregate happiness", i.e. the utilitarian concept of social justice most closely associated with Bentham (see Konow, 2003). These findings suggest that the principle characterized by "everyone should get what they deserve" can conflict with other moral concepts in defining a socially just redistribution[15].

To the extent that the content of merit may be perceived differently from one individual to another and that different concepts of distributive justice may lead to the definition of different socially just levels of redistribution, it is likely that individuals with similar information about the market outcomes will have different perceptions of the just level of redistribution in the country. Accordingly, escaping from the assumption that the perception of the fair redistributive tax is unanimously shared in the population, assume that different perceptions may exist across

[15]In recent years, a great deal of literature has showed experimentally for example that conflicts between deontological principles (considering that the right to get what one deserves is a principle that should be applied to everyone belongs to a deontological conception of justice) and utilitarianism are a general feature of moral thinking (see Greene, 2008 ; Sinnott-Armstrong, 2008 ; Cushman and Young, 2009).

individuals[16]. More specifically, abstracting from the endogeneity of perceptions (see section 4.1), assume that τ_i^f is i.i.d across individuals, i.e. that each individual is associated with a perception τ_i^f irrespective of his own income[17]. The social distance between the perceived social optimal tax rate and the chosen one at date t, $\mathcal{S}_t = \int_i \left[\tau_i^f - \tau_t^*\right]^2 di$, can then be expressed as :

$$\mathcal{S}_t = \sigma_{\tau^f}^2 + \left[\bar{\tau}^f - \tau_t^*\right]^2 \tag{11}$$

where $\bar{\tau}^f$ and $\sigma_{\tau^f}^2$ denote respectively the mean and the variance of τ_i^f. $\sigma_{\tau^f}^2$ provides a measure of the degree of collective agreement to define $\bar{\tau}^f$ as the norm of fair redistribution. If $\sigma_{\tau^f}^2 = 0$, the perception of $\bar{\tau}^f$ as the fair redistribution is unanimously shared in the society. This is the case studied in section 3. By contrast, if $\sigma_{\tau^f}^2$ is high, $\bar{\tau}^f$ is of low significance in the population for defining a shared norm of fair level of redistribution. Therefore, everything else being equal, the social distance between the perceived social optimal tax rate grows with the variance of τ_i^f.

How does it impact our results ? If the distributions of a_i and τ_i^f are both symmetrical, the pivotal voter is the individual with the mean talent $\bar{a}$ and the mean perception $\bar{\tau}^f$ (see Di Tella and Dubra, 2013). The dynamics of redistribution is then written exactly as in eq. (10), except that $\tau^s = 0$[18] and that the fair level of redistribution previously shared unanimously is replaced by its mean $\bar{\tau}^f$. Following Proposition 2, the guarantee to obtain multiple stable stationary states requires then that the concern for fairness be sufficiently high when the redistributive institution approaches the level reflecting the collective norm of fairness $\bar{\tau}^f$. Therefore, as the diversity of perceptions measured by $\sigma_{\tau^f}^2$ increases the social distance to distributive justice and then lowers the concern for fairness, a too high $\sigma_{\tau^f}^2$ may prevent the existence of multiple stable stationary states[19]. The existence of multiple stationary states driven by our mechanism does

[16] In our setting all voters are equally concerned for others. Therefore, the heterogeneity we examine is different from the one in Dhami and al-Nowaihi (2010) in which a mixture of fair and selfish voters is considered.

[17] Supporting this assumption, Piketty (2003) has shown on French data that on average low-income and high-income individuals have similar socially-optimal levels of income inequality.

[18] In that case, $\tau^s = 0$ and the model can no longer exhibit the Meltzer-Richard effect.

[19] For example, if $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$, it yields straightforwardly from the proof in Appendix B that, if $0 < \alpha \leq \hat{\alpha}$,

not rely on the assumption that the perception of the fair redistributive tax is unanimously shared in the population, i.e. $\sigma^2_{\tau^f} = 0$, even if the degree of collective agreement to define $\bar{\tau}^f$ as the norm of fairness must be high enough.

Note that if $\tau_i^f \in [0,1]$, we can no longer assert that coming from a high-redistribution country is a sufficient condition to support a higher redistribution. In particular, if we consider an individual of type $\left(a_i, \tau_i^f = 0\right)$, the more intense the person's concern for distributive justice, the lower the support for redistribution. However, after controlling for observable individual characteristics, only types $\left(a_i, \bar{\tau}^f\right)$ are considered. Therefore, we only need to assume that, on average, the level of redistribution perceived as fair is greater than the level of redistribution selfishly preferred by the least talented individuals, $\bar{\tau}^f \geq \tau^s_{a_{\text{inf}}}$, to be consistent with the empirical literature.

5 Conclusion

If it is accepted that humans are driven solely by self-interest, Meltzer and Richard (1981) show that the level of redistribution in a democratic society is increased by inequality in the income distribution. However, this result has only weak support in the data. In this paper, we argue that the failure of the canonical model is due in part to its behavioral assumptions. Departing from traditional economics, empirical studies and individual surveys show that individuals do care about fairness in their demand for redistribution. These studies also show that the cultural environment in which individuals grow up affects their preferences about redistribution. We include these two components of the demand for redistribution in order to propose a mechanism for the cultural transmission of the concern for fairness. The preferences of the young are partially shaped through observation and imitation of others' choices in a way that is consistent with oblique socialization. More specifically, observing during childhood how adults

the model exhibits two stable stationary states τ^{US} and τ^{EU}such that $\tau^s\,(=0) < \tau^{US} < \tau^{EU} < \bar{\tau}^f$ only if $\sigma^2_{\tau^f} \leq \hat{\beta} - \beta$.

have collectively failed to implement fair redistributive policies lowers the concern for fairness when adult or the moral cost of not supporting a fair taxation. Based on this mechanism, and assuming that the perception of the fair level of taxation is exogenous and unanimously shared in the population, the model exhibits a multiplicity of history-dependent stationary states that may account for the huge and persistent differences in redistribution observed between Europe and the United States. It also explains why immigrants from countries with a high preference for redistribution continue to support higher redistribution in their destination country. These results have been shown to be robust for extended specifications of the perception of the fair level of taxation, in particular if they are heterogenous across individuals.

In the specifications that we have used, we have first considered childhood only as a passive period during which individuals are socialized and internalize cultural practices. However, childhood is also a crucial period during which individuals can actively invest in their human capital through effort at school. Knowing that effort at school depends on the expected return, which is negatively impacted by the future level of redistribution, introducing education explicitly in our model would result in a dynamic of redistribution that is driven not only by history but also by expectations. Second, we have considered socialization only through passive observation and imitation of the society at large (oblique socialization), and not through active efforts of the parents to transmit their values (vertical socialization). As mentioned in the introduction, by assuming highly homogenous values at the regional level in most of the article, oblique socialization is highly efficient so that parents have few incentives to transmit their values. However, in the last subsection 4.2, we have stressed that individuals could use different concepts of distributive justice to define their fair level of redistribution. From these perspectives, incorporating both investment in human capital and vertical socialization in the present analysis appears to be a promising avenue for further research.

Références

[1] Acemoglu D., Naidu S., Restrepo P. and Robinson J. (2013), Democracy, redistribution and inequality, NBER WP 19746.

[2] Ackert L., Martinez-Vazquez J. and Rider M. (2007), Social preferences and tax policy design : some experimental evidence, *Economic Inquiry*, 45(3), pp. 487-501.

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

[4] Alesina A. and Glaeser E. (2004), *Fighting poverty in the US and Europe : A world of difference*, Oxford University Press.

[5] Alesina A. and Angeletos G.-M. (2005), Fairness and redistribution : US versus Europe, *American Economic Review,* 95(4), pp. 960-980.

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

[7] Alesina A. and Fuchs-Schündeln N. (2007), Good bye Lenin (or not ?) : the effect of communism on people's preferences, *American Economic Review*, 97(4), pp. 1507-1528.

[8] Alesina A. and Giuliano P. (2011), Preferences for redistribution, in A. Bisin, J. Benhabib and M. Jackson eds. *Handbook of Social Economics*, North Holland Amsterdam, chap. 4, pp. 93-131.

[9] Alesina A., Algan Y., Cahuc P. and Giuliano P. (2015), Family values and the regulation of labor, *Journal of the European Economic Association*, 13(4), pp. 599-630.

[10] Algan Y. and Cahuc P. (2009), Civic virtue and labor market institutions, *American Economic Journal : Macroeconomics*, 1, pp. 111-145.

[11] Bénabou R. (2000), Unequal societies : income distribution and the social contract, *American Economic Review*, 90(1), pp. 96-129.

[12] Bénabou R. and Ok E. (2001), Social mobility and the demand for redistribution : the POUM hypothesis, *Quarterly Journal of Economics*, 116(2), pp. 447-487.

[13] Bénabou R. and Tirole J. (2006), Belief in a just world and redistributive politics, *Quarterly Journal of Economics*, 121(2), pp. 699-746.

[14] Bisin A. and Verdier T. (2001), The economics of cultural transmission and the dynamics of preferences, *Journal of Economic Theory*, 97, pp. 298-319.

[15] Björklund A. and Jäntti M. (1997), Intergenerational income mobility in Sweden compared to the United States, *American Economic Review*, 87(5), pp. 1009-1018.

[16] Boldrin M. and Montes A. (2005), The intergenerational State education and pensions, *Review of Economic Studies*, 72(3), pp. 651-664.

[17] Bolton G. and Ockenfels A. (2000), ERC : A theory of equity, reciprocity, and competition, *American Economic Review*, 90(1), pp. 166-193.

[18] Boyd R. and Richerson P.J. (1985), *Culture and the evolutionary process*, London : University of Chicago Press.

[19] Boyd R., Richerson P.J. and Henrich J. (2011), The cultural niche : Why social learning is essential for human adaptation, *PNAS*, 108(suppl. 2), pp. 10918-10925.

[20] Bredemeier C. (2014), Imperfect information and the Meltzer-Richard hypothesis, *Public Choice*, 159(3-4), pp. 561-576.

[21] Campante F. (2011), Redistribution in a model of voting and campaign contributions, *Journal of Public Economics*, 95(7-8), pp. 646-656.

[22] Cervelatti M., Esteban J. and Kranich L. (2010), Work values, endogenous sentiments and redistribution, *Journal of Public Economics*, 94, pp. 612-627.

[23] Corneo G. (2001), Inequality and the State : Comparing US and German preferences, *Annals of Economics and Statistics*, 63/64, pp. 283-296.

[24] Corneo G. and Fong C. (2008), What's the monetary value of distributive justice ?, *Journal of Public Economics*, 92(1), pp. 289-308.

[25] Corneo G. and Grüner H.-P.(2002), Individual preferences for political redistribution, *Journal of Public Economics*, 83, pp. 83-107.

[26] Corneo G. and Neher F. (2014), Democratic redistribution and rule of the majority, mimeo, March.

[27] Cushman F. A. and Young L. (2009), The psychology of dilemmas and the philosophy of morality, *Ethical Theory and Moral Practice*, 12(1), pp. 9–24.

[28] De Freitas J. (2012), Inequality, the politics of redistribution and the tax mix, *Public Choice*, 151(3-4), pp. 611-630.

[29] de Mello L. et Tiongson E. (2006), Income inequality and redistributive government spending, *Public Finance Review*, 34(3), pp. 282-305.

[30] Desdoigts A. and Moizeau F. (2005), Community membership aspirations : the link between inequality and redistribution revisited, *International Economic Review*, 46(3), pp. 973–1007.

[31] Dhami S. and al-Nowaihi A. (2010), Redistributive policies with heterogeneous social preferences of voters, *European Economic Review*, 54, pp. 743-759.

[32] Di Tella R. and Dubra J. (2013), Fairness and redistribution : comment, *American Economic Review*, 103(1), pp. 549-553.

[33] Docquier F., Paddison O. and Pestieau P. (2007), Optimal accumulation in an endogenous growth setting with human capital, *Journal of Economic Theory*, 134, pp. 361-378.

[34] Dohmen T., Falk A., Huffman D. and Sunde U. (2012), The intergenerational transmission of risk and trust attitudes, *Review of Economic Studies*, 79, pp. 645-677.

[35] Fehr E. and Schmidt K. (2006), The economics of fairness, reciprocity and altruism : experimental evidence and New Theories, in S.-C. Kolm and J. Mercier Ythier (Eds), *Handbook of the economics of giving, altruism and reciprocity, vol. 1*, North Holland/Elsevier, chap. 8.

[36] Fong C. (2001), Social preferences, self-interest, and the demand for redistribution, *Journal of Public Economics*, 82(2), pp. 225-246.

[37] Forsé M. and Parodi M. (2006), Justice distributive : la hiérachie des principes selon les européens, *Revue de l'OFCE*, 98, pp. 213-244.

[38] Funk P. (2005), Governemental action, social norms and criminal behavior, *Journal of Institutional and Theoretical Economics*, 161(3), pp. 522-535.

[39] Gouveia M. and Masia N. (1998), Does the median voter model explain the size of government ? : Evidence from the states, *Public Choice*, 97(1-2), pp. 159-177.

[40] Greene J. (2008), The secret joke of Kant's soul, inW. Sinnott-Armstrong (ed.), *Moral psychology* (vol. 3), Cambridge, MA : MIT Press, pp. 35–80.

[41] Guiso L., Sapienza P. and Zingales L. (2006), Does culture affect economic outcomes ?, *Journal of Economic Perspectives*, 20(2), pp. 23-48.

[42] Gunther Moore B., Güroğlu B., Op de Macks Z., Rombouts S., Van der Molen M. and Crone E., Social exclusion and punishment of excluders : neural correlates and developmental trajectories, *NeuroImage*, 59, pp. 708-717.

[43] Isaksson A.-S. and Lindskog A. (2009), Preferences for redistribution - A country comparison of fairness judments, *Journal of Economic Behavior & Organisation*, 72, pp. 884-902.

[44] Iversen T. and Soskice D. (2006), Electoral institutions and the politics of coalitions : why some democracies redistribute more than others, *American Political Science Review*, 100(2), pp. 165-181.

[45] Konow J. (2003), Which is the fairest one of all ? A positive analysis of justice theories, *Journal of Economic literature*, 41, pp. 1188-1239.

[46] Lind J. T. (2007), Fractionalization and the size of government, *Journal of Public Economics*, 91(1-2), pp. 51-76.

[47] Lindbeck A., Nyberg S. and Weibull J. (1999), Social norms and economic incentives in the welfare state, *Quarterly Journal of Economics*, 114(1), pp. 1-35.

[48] Lindqvist E. and Östling R. (2013), Identity and redistribution, *Public Choice*, 155(3-4), pp. 469-491.

[49] Luttmer E. and Singhal M. (2011), Culture, context, and the taste for redistribution, *American Economic Journal : Economic Policy*, 3(1), pp. 157-179.

[50] McCrae R. and Costa P. (1994), The stability of personality : observation and evaluations, *Current Directions in Psychological Science*, 3(6), pp. 173-175.

[51] Meltzer A. and Richard S. (1981), A rational theory of the size of government, *Journal of Political Economy*, 89(5), pp 914-927.

[52] Moene K. O. et Wallerstein (2001), Inequality, social insurance and redistribution, *American Political Science Review*, 95(4), pp. 859-874.

[53] OECD (2016), Poverty rate (indicator). doi : 10.1787/0fe1315d-en.

[54] Perotti R. (1996), Growth, income distribution and democracy : what the data say, *Journal of Economic Growth*, 1(2), pp. 149–187.

[55] Piketty T. (1995), Social mobility and redistributive politics, *Quarterly Journal of Economics*, 110(3), pp. 551-584.

[56] Piketty T. (2003), Attitudes vis-à-vis des inégalités en France : existerait-il un consensus ?, *Comprendre*, 4, pp. 209-241.

[57] Postlewaite A. (2011), Social norms and preferences, in A. Bisin, J. Benhabib and M. Jackson eds. *Handbook of Social Economics*, North Holland Amsterdam, chap. 2, pp. 31-67.

[58] Rodriguez F. (2004), Inequality, redistribution and rent-seeking, *Economics & Politics*, 16, pp. 287-320.

[59] Roemer J. (1998), Why do the poor do not expropriate the rich : an old argument in new garb, *Journal of Public Economics*, 70, pp. 399-424.

[60] Roberts B. and DelVecchio W. (2000), The rank-order consistency of personality traits from childhood to old age : a quantitative review of longitudinal studies, *Psychological Bulletin*, 126(1), pp. 3-25.

[61] Rustichini A. and Vostroknutov A. (2014), Merit and Justice : An expirimental analysis of attitude to inequality, *PLoS ONE* 9(12) :e114512, doi :10.1371/journal.pone.0114512.

[62] Schildberg-Hörisch H. (2010), Is the veil of ignorance only a concept about risk ? An experiment, *Journal of Public Economics*, 94, pp. 1062-1066.

[63] Schokkaert E. and Truyts T. (2014), Preferences for redistribution and social structure, DPS14.01, Center for Economic Studies, KU Leuven.

[64] Shayo M. (2009), A model of social identity with an application to political economy : Nation, class, and redistribution, *American Political Science Review*, 103 (2), pp. 147-174.

[65] Sinnott-Armstrong W. (2008), Abstract+concrete=paradox, in S. Nichols & J. Knobe (Eds.), *Experimental philosophy*, NY : Oxford University Press, pp. 209–230.

[66] Tabellini G. (2008), The scope of cooperation : values and incentives, *Quarterly Journal of Economics*, 123, pp. 905-950.

[67] Twenge J., Baumeister R., DeWall N., Ciarocco N. and Bartels M. (2007), Social exclusion decreases prosocial behavior, *Journal of Personality and Social Psychology*, 92(1), pp. 56-66.

[68] Tyran J.-R. and Sausgruber (2006), A little fairness may induce a lot of redistribution in democracy, *European Economic Review*, 50, pp. 469-485.

[69] Will G.-J., Crone E. and Güroğlu B., Acting on social exclusion : neural correlates of punishment and forgiveness of excluders, *SCAN*, 10, doi :10.1093/scan/nsu045.

Appendix A. Proof of Propositions

Proposition 1

From eq. (9) it follows that the preferred tax rate of an individual of talent a is as follows :

$$\tau_{a,t} = \begin{cases} \frac{\bar{a}-a+2\Phi(\mathcal{S}_{t-1})\tau^f}{2\bar{a}-a+2\Phi(\mathcal{S}_{t-1})} & \text{if } a-\bar{a} \leq 2\Phi\left(\mathcal{S}_{t-1}\right)\tau^f \\ 0 & \text{otherwise} \end{cases}$$

Accordingly, as $\mathcal{S}_{t-1} = \left[\tau^f - \tau^*_{t-1}\right]^2$ (eq. 5), it yields :

$$\frac{\partial \tau_{a,t}}{\partial \tau^*_{t-1}} = \begin{cases} -4\Phi'\left(2\bar{a}-a\right)\frac{\tau^f - \frac{\bar{a}-a}{2\bar{a}-a}}{\left(2\bar{a}-a+2\Phi(\mathcal{S}_{t-1})\right)^2}\left[\tau^f - \tau^*_{t-1}\right] & \text{if } a-\bar{a} \leq 2\Phi\left(\mathcal{S}_{t-1}\right)\tau^f \\ 0 & \text{otherwise} \end{cases}$$

As $\tau^f \geq \tau^s_{a_{\text{inf}}}$ yields $\tau^f \geq \frac{\bar{a}-a}{2\bar{a}-a}\ \forall\left(a_{\text{inf}} \leq\right) a \leq 2\bar{a}$, it follows that if $\tau^f \geq \tau^s_{a_{\text{inf}}}$ and $\tau^*_{t-1} \leq \tau^f$, $\frac{\partial \tau_{a,t}}{\partial \tau^*_{t-1}} \geq 0\ \forall\left(a_{\text{inf}} \leq\right) a \leq 2\bar{a}$.

Proposition 2

In the text.

Appendix B. The case with $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$

Let us define $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$ and $\delta_t = \tau^f - \tau_t^*$ the difference between the mean fair and the effective level of taxation. Assuming first that $\beta = 0$, the dynamics of redistribution expressed by eq. (10) can be rewritten as :

$$\delta_{t+1} = \frac{1+\Delta}{1+\Delta+\frac{\alpha}{\delta_t^2}}\left(\tau^f - \tau^s\right) \tag{12}$$

and stationarity is then defined by :

$$\delta^3 - \left(\tau^f - \tau^s\right)\delta^2 + \frac{\alpha}{1+\Delta}\delta = 0 \tag{13}$$

If $\frac{\alpha}{\left(\tau^f-\tau^s\right)^2} \leq \frac{1+\Delta}{4}$, eq. (13) exhibits three real roots $\delta_1^* = 0$, $\delta_2^* = \frac{\tau^f-\tau^s+\sqrt{\left(\tau^f-\tau^s\right)^2-\frac{4\alpha}{1+\Delta}}}{2}$ and $\delta_3^* = \frac{\tau^f-\tau^s-\sqrt{\left(\tau^f-\tau^s\right)^2-\frac{4\alpha}{1+\Delta}}}{2}$.

In addition, as $\frac{1+\Delta}{1+\Delta+\frac{\alpha}{\delta_t^2}}\left(\tau^f - \tau^s\right)$ is continuous and monotonous in δ_t^2, as $\frac{\partial\left[\frac{1+\Delta}{1+\Delta+\frac{\alpha}{\delta_t^2}}\left(\tau^f-\tau^s\right)\right]}{\partial\delta_t^2} \geq 0$, and as $\lim_{\delta_t^2\to 0}\frac{\partial\left[\frac{1+\Delta}{1+\Delta+\frac{\alpha}{\delta_t^2}}\left(\tau^f-\tau^s\right)\right]}{\partial\delta_t^2} = 0$, if $\frac{\alpha}{\left(\tau^f-\tau^s\right)^2} \leq \frac{1+\Delta}{4}$, there exist two stable stationary states characterized by $\left|\frac{d\delta_{t+1}}{d\delta_t}\right| \leq 1$ which are $\delta = \delta_1^*$ and $\delta = \delta_2^*$, where $\tau^s = \frac{\Delta}{2(1+\Delta)}$ and $\Delta = \bar{a} - a_m$. In addition, if $\delta_0 \neq \delta_3^*$, as long as $|\delta_0| < \frac{\tau^f-\tau^s-\sqrt{\left(\tau^f-\tau^s\right)^2-\frac{4\alpha}{1+\Delta}}}{2}$, $\lim_{t\to\infty}\delta_t = \delta_1^*$, otherwise $\lim_{t\to\infty}\delta_t = \delta_2^*$.

Equivalently, as $\delta_t = \tau^f - \tau_t^*$, we can assert that assuming $\frac{\alpha}{\left(\tau^f-\tau^s\right)^2} \leq \frac{1+\Delta}{4}$, $\tau_0 \neq \hat{\tau} = \tau^f - \delta_3^*$, if $\tau_0 \in \left]\tau^f - \delta_3^*, \tau^f + \delta_3^*\right[$ then $\tau_H = \lim_{t\to\infty}\tau_t^* = \tau^f$, otherwise $\tau_L = \lim_{t\to\infty}\tau_t^* = \frac{1}{2}\left(\tau^f + \tau^s - \sqrt{\left(\tau^f-\tau^s\right)^2 - \frac{4\alpha}{1+\Delta}}\right)$, $\tau_H > \tau_L$.

Besides, the dynamic process exhibits only one stationary state τ_L if β is large enough such that $\lim_{\beta\to+\infty}\xi = 1 \Leftrightarrow \lim_{\beta\to+\infty}\tau_L = \tau^s$.

As $\frac{\partial\xi}{\partial\beta} > 0$ and $\lim_{\tau^*\to\tau^f}\xi = 0$, it follows that if $\frac{\alpha}{\left(\tau^f-\tau^s\right)^2} \leq \frac{1+\Delta}{4}$ there exists $\hat{\beta} > 0$ such that if $0 < \beta \leq \hat{\beta}$ the model exhibits two stable stationary states τ^{US} and τ^{EU}, where $\tau^s < \tau^{US} < \tau^{EU} < \tau^f$. Defining the dynamics as $\tau_{t+1}^* = \Psi(\tau_t^*)$, $\hat{\beta}$ can be characterized by $\lim_{\beta\to\hat{\beta}}\Psi'\left(\tau^{EU}\right) = 1$ whereas $\lim_{\beta\to 0,\beta>0}\Psi'\left(\tau^{EU}\right) = \Psi'\left(\tau^f\right) = 0$.

Appendix C. Endogenous perceptions

The linear case

Define $\mathcal{T}^f(\tau) = \underline{\tau}^f + \left(1 - \frac{\underline{\tau}^f}{\hat{\tau}^f}\right)\tau$, where $0 < \underline{\tau}^f < \hat{\tau}^f \leq 1$, $\hat{\tau}^f$ being the only root of the equation $\tau = \mathcal{T}^f(\tau)$.

In that case, utility (2) becomes $U_{it} = u_{it} - \varphi_t\left(\mathcal{T}^f(\tau_t) - \tau_t\right)^2 = u_{it} - \varphi_t\left(\underline{\tau}^f + \left(1 - \frac{\underline{\tau}^f}{\hat{\tau}^f}\right)\tau_t - \tau_t\right)^2$. Defining $\breve{\varphi}_t = \left(\frac{\underline{\tau}^f}{\hat{\tau}^f}\right)^2 \varphi_t$ allows us to rewrite utility as $U_{it} = u_{it} - \breve{\varphi}_t\left(\hat{\tau}^f - \tau_t\right)^2$, i.e. as if $\hat{\tau}^f$ was an exogenous fair level of redistribution unanimously shared in the population. Therefore, it goes straightforwardly that the dynamics of redistribution can be expressed according to eq. (10) as $\tau^*_{t+1} = \breve{\xi}_t \tau^s + \left(1 - \breve{\xi}_t\right)\hat{\tau}^f$, where $\breve{\xi}_t = \frac{1+\Delta}{1+\Delta+\breve{\Phi}(\mathcal{S}_t)} \in [0,1)$, $\tau^*_0 = \tau_0 \geq 0$ given, $\breve{\Phi}(\mathcal{S}_t) = \left(\frac{\underline{\tau}^f}{\hat{\tau}^f}\right)^2 \Phi(\mathcal{S}_t)$.

Knowing that $\mathcal{S}_t = \left(\mathcal{T}^f(\tau_t) - \tau_t\right)^2 = \left(\frac{\underline{\tau}^f}{\hat{\tau}^f}\right)^2 \left(\hat{\tau}^f - \tau_t\right)^2$, if $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$, it follows that $\breve{\Phi}(\mathcal{S}_t) = \frac{\alpha}{\breve{\beta}+\mathcal{S}}$, where $\breve{\beta} = \left(\frac{\hat{\tau}^f}{\underline{\tau}^f}\right)^2 \beta$. Accordingly, we deduce from Appendix B that if $0 < \alpha \leq \hat{\alpha}$ then there exists $\hat{\beta} > 0$ such that if $0 < \breve{\beta} \leq \hat{\beta}$ the model exhibits two stable stationary states τ^{US} and τ^{EU}, where $\tau^s < \tau^{US} < \tau^{EU} < \hat{\tau}^f$, as illustrated in Fig. 2a.

The nonlinear case

Define $\Phi(\mathcal{S}) = \frac{\alpha}{\beta+\mathcal{S}}$ and assume that $\tau^f = \hat{\tau}^f_j$. It follows (see Appendix B) that if $0 < \alpha \leq \hat{\alpha}_j$, where $\hat{\alpha}_j = \frac{1+\Delta}{4}\left(\hat{\tau}^f_j - \tau^s\right)^2$, then there exists $\hat{\beta} > 0$ such that if $0 < \beta \leq \hat{\beta}$ the model exhibits two stable stationary states τ^{US}_j and τ^{EU}_j, where $\tau^s < \tau^{US}_j < \tau^{EU}_j < \hat{\tau}^f_j$, $\lim\limits_{\beta\to 0,\beta>0} \tau^{US}_j = \frac{1}{2}\left(\hat{\tau}^f_j + \tau^s - \sqrt{\left(\hat{\tau}^f_j - \tau^s\right)^2 - \frac{4\alpha}{1+\Delta}}\right)$ and $\lim\limits_{\beta\to 0,\beta>0} \tau^{EU}_j = \hat{\tau}^f_j$.

Consider now that perceptions are defined as $\mathcal{T}^f(\tau) = \begin{cases} \hat{\tau}^f_{\text{inf}} & \text{if } \tau \leq \check{\tau} \\ \hat{\tau}^f_{\text{sup}} & \text{otherwise} \end{cases}$, where $\tau^s < \hat{\tau}^f_{\text{inf}} < \check{\tau} < \hat{\tau}^f_{\text{sup}} \leq 1$. Therefore, if α is low enough and β low enough (such that $\frac{\alpha}{\beta}$ is high enough), there are four potential stable stationary states that are τ^{US}_{inf}, τ^{US}_{sup}, τ^{EU}_{inf} and τ^{EU}_{sup}. However, we deduce from $\frac{\partial \lim_{\beta\to 0,\beta>0} \tau^{US}_j}{\partial \hat{\tau}^f_j} = \frac{1}{2}\left[1 - \frac{\hat{\tau}^f_j - \tau^s}{\sqrt{\left(\hat{\tau}^f_j - \tau^s\right)^2 - \frac{4\alpha}{1+\Delta}}}\right] < 0 \left(\hat{\tau}^f_j > \tau^s\right)$ that, if β is low enough, then $\tau^{US}_{\text{sup}} < \tau^{US}_{\text{inf}} < \hat{\tau}^f_{\text{inf}} < \check{\tau} : \tau^{US}_{\text{sup}}$ cannot be a stationary states associated with

the fair level of redistribution $\hat{\tau}^f_{\text{sup}}$. Therefore, as illustrated in Figure 2b, if α is low enough and β low enough (such that $\frac{\alpha}{\beta}$ is high enough), the model exhibits three stable stationary states $\tau^{US} = \tau^{US}_{\text{inf}}$, $\tau^G = \tau^{EU}_{\text{inf}}$ and $\tau^F = \tau^{EU}_{\text{sup}}$ where $\tau^s < \tau^{US} < \tau^G < \hat{\tau}^f_{\text{inf}} < \tau^F < \hat{\tau}^f_{\text{sup}}$. Note that the observed levels of unfairness in the two high-redistribution countries are as follows : $\lim_{\beta \to 0, \beta > 0} \left(\hat{\tau}^f_{\text{inf}} - \tau^G \right)^2 = \lim_{\beta \to 0, \beta > 0} \left(\hat{\tau}^f_{\text{sup}} - \tau^F \right)^2 = 0$.

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