Wealth, economic shocks and preference for redistribution:

The security-income trade-off[1]

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Abstract

This paper builds a political economy model to analyze societies preferences for redistribution. Its main contribution is to highlight a "security-income trade-off" in citizens' preferences, a new contribution to the theoretic literature on preferences for redistribution. That trade-off is such that a society may display a typical Meltzer and Richard (1981) type of preferences whereby poorer citizens prefer bigger governments, or, conversely, the opposing ordering whereby poorer citizens prefer smaller governments. We highlight the role of risk aversion in that trade-off and find out that an economic crisis may trigger an ordering reversal in citizens' preferences for redistribution. We argue that such a preference reversal occurred in Brazil due to the 2008 World Financial Crisis and that such reversal helps explain the mass protests that took a million Brazilians to the streets in July 2013.

1. Introduction

Economists and political scientists alike have identified what appears to be a stylized fact that the size of government has grown steadily over the late 18th, the 19th and the 20th century (see, for example, Persson and Tabelini 2000, and Lindert 2004). Meltzer and Richards (1981) is one of the first articles to present a clear explanation for this growth in the size of the welfare state in OECD democracies. The main idea is a rather straightforward application of the median voter theorem taking into account the progressive extension of suffrage. Indeed, throughout the past two centuries consolidation of democracy was paired with higher contingents of citizens being franchised the vote. The new voters typically came from less

favored classes, with, on average, lower incomes than the previous voting classes. Therefore, the income of the new median voter dropped successively. The new median voter favored social programs more strongly than before because he understood that he would finance a smaller part of the corresponding expenditure, if compared to the previous, richer median voter. Finally, electoral competition induced politicians to seek the new median voter's support, fostering higher investments on social programs.

Lindert (2004) presents a very careful account of the main factors that affected the growth in the size of governments based on data coming from two different time periods: decennial data from 1880 to 1930 and annual data from 1962 to 1981. The 1880-1930 analysis highlights the role of increasingly democratic regimes, especially the switch from "elite democracy", where less than 40% of men were franchised the vote, to full democracy. When countries moved from elite to full democracy there was a clear increase in social spending.

More recent empirical work, however, appears to challenge that older stylized fact. According to Alesina and Giuliano (2009), for example, "The basic Meltzer-Richards model has received scant empirical support". Therefore, numerous empirical articles focused on understanding which factors may affect a citizen's preference for redistribution in addition to income (see, for example, Alesina and Giuliano 2009, and Rehm 2011). However, the literature is sparse when it comes to theoretic models that help understand differences in the preference for redistribution. Piketty (1995) presents a model of rational learning where citizens base their expected future income on their individual mobility experience, allowing for the coexistence of two different dynastic preferences: the ones that expect higher mobility and, therefore, favor smaller governments and the ones that expect lower mobility and, therefore, favor bigger governments. Benabou and Ok (2001) present the "prospect of upward mobility" (POUM) hypothesis. According to the POUM hypothesis, citizens care about future income as well as present income. If a poor citizen expects to have higher income in the future, then he may prefer small government today, in order not to have to pay for a large government tomorrow. Therefore, the POUM hypothesis suggests lower support for redistribution than Meltzer and Richard's model; however, under this hypothesis it remains true that poorer citizens prefer more government than richer ones. Finally, Moene and Wallerstein (2001, 2003) focus on the specific social policies in the presence of unemployment. According to their research, if public policy targets employed citizens, then an increase in inequality leads to higher support for that policy; however, if the policy targets the unemployed, then there is a preference reversal so that the higher the inequality, the less

social support for that policy. In particular, poorer citizens prefer lower amounts of unemployment insurance than richer citizens. Hereafter, we say that there is *preference-ordering reversal* or *switch* in this case.

In line with these works, the present article aims to understand on a theoretic point of view the delicate relationship between wealth, confidence in the economy, economic shocks and preferences for redistribution in a model where citizens are concerned with the risk of becoming unemployed, but, naturally, are also concerned about current income. Our main theoretic result shows that this relationship is not straightforward and depends basically on two aspects of individual's preferences. If individuals care most strongly about job security – the *security dominance* situation– then the poorer they are and the less confident in the economy they are, the more government they favor. This corresponds to the typical Meltzer and Richard (1981) framework. On the other hand, if individuals care most strongly about income –the *income dominance* situation– then there is preference-ordering reversal, so that the poorer they are and the less economic confidence they have, the less government they want. This is what we call "the security-income trade-off".

The security-income trade-off extends the preliminary results presented in Bugarin & Hazawa (2014) and is a new result in the literature. It shows that the one-way result in Meltzer and Richard (1981) may not always be true, as the work of Moene and Wallerstein also show. But differently from Moene and Wallerstein (2001, 2003), we show that a switch in preference ordering may happen within the same type of social policy: unemployment insurance. As a consequence, we challenge their interpretation based on the target population of the policy and conclude that whether citizens favor more or less government, as their income change, has more to do with risk aversion and changes in the distribution of unemployment risk in society, i.e., the confidence in the economy. In particular, we show that the same society may display a switch in citizens' preference ordering due to unexpected external shocks. We illustrate our theoretic predictions analyzing the case of Brazil before and after the 2008 international financial crisis.

Furthermore, the present article also analyzes additional factors that may affect citizens' support for redistribution. First we discuss what happens when there is an aggregate shock that affects overall confidence in the economy. In that case, we show that regardless of the *security-income* trade-off, the effect of an aggregate reduction in economic confidence in the economy is a higher focus on social policy. Therefore, society unambiguously favors bigger government if it suffers an aggregate shock that reduces overall economic confidence.

Conversely, the effect of an aggregate increase in economic confidence in the economy is a lower support for social policy.

Next we discuss the role of trust in the government and show that an overall reduction in trust in government competence or honesty leads society to support higher amounts of social insurance. The main rationale here is that a less competent or more corrupt government produces less public good (unemployment insurance) and, therefore, higher expenditure in public policy provision is needed in order to maintain a desirable level of public good production.

Finally, we discuss the possibility of a social bias that may change each citizen's valuation of the government output. A more "right-oriented" society may view government benefits as something similar to charity and, therefore, may find it somewhat shameful for the recipient. In that case, there will be an overall decline in support for redistribution. Conversely, a "left-oriented" society may view government benefits as an entitlement of citizens in a fair society. In that case, there will be an overall increase in support for redistribution. This is compatible with the idea of the "partisan theory", as presented in Hibbs (1977), for example.

The rest of the paper is organized as follows. Section 2 presents the political economy model and implicitly derives the preferred social policy of a generic voter. Section 3 analyses two extreme case and highlights that there may be preference ordering reversal in the sense that in one case poorer citizens support higher unemployment compensations than richer ones, whereas in the other case the richer citizens are the ones who prefer higher unemployment compensations. Section 4 presents the general analysis and discusses the *security-income* trade-off, showing than, depending on whether there is *security dominance* or *income dominance*, preferences for redistribution in a society may display the typical Meltzer & Richard (1981) ordering or, on the contrary, may display the opposite ordering, so that the richer citizens support higher unemployment benefit standards. Section 5 discusses the role of sudden changes in the economic environment and shows that there may be a preference ordering reversal for the same unemployment policy and within the same society as a consequence of an economic shock. Then, it illustrates such a switch in preference ordering based of values surveys conduced in Brazil around the 2008 international financial crisis. Section 6 discusses the effect of changes in the level of confidence in the government and the role of ideology on the support for redistribution. Finally, section 7 presents the main conclusions of the present research.

2. The political economy model

2.1. The primitives

There is a continuum of citizens of mass one and two periods. In period 0, citizens vote for a policy to be implemented in period 1. At the moment voter i takes his ballot, he holds a job which pays him a salary y_i. The distribution of wages among voters is described by a distribution function $F(y_i)$.

In period 1, citizen i may maintain his job or may loose it, in which case he receives no salary. The likelihood of keeping his job depends on the working of the economy and on his own characteristics, and is represented by a probability π_i. Therefore, there is a probability $1 - \pi_i$ that i will loose his job and receive zero wages in period 1.

The parameter π_i reflects consumer i's confidence in the economy and varies across individuals. The higher the value of π_i, the higher citizen i's confidence in the good performance of the economy, at least with respect to his ability to keep his job.

The policy to be implemented in period 1 regards the unemployment benefits, s, to be transferred to citizens who loose their jobs. The policy s is measured in per capita terms may depend on a citizen's wage before unemployment, in such a way that those who had higher wages before unemployment have higher benefits when unemployed.

In period 1 all citizens who maintain a job pay taxes[2] according to the same rate $\tau \in [0,1]$. The only role of government in the present model is to collect taxes τ to finance the unemployment benefits' policy s. However, there are two factors that affect the government ability to transform collected taxes into unemployment benefits. The first one is the cost of maintaining the tax collection system. That cost is modeled here as a coefficient $0 < \beta < 1$ that reduces total resources available for redistribution, in such a way that each dollar collected yields only $\beta < 1$ dollar to be used towards the unemployment benefit program.

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[2] The results of the present model would remain unchanged if one requires that those who receive unemployment benefit also pay taxes over these benefits.

The reduction of income associated with the parameter β is also a simplified way to reflect the incentive cost of taxation.[3]

The second factor to affect resources available for transfer is corruption, i.e., deviations of public resources in all of its different forms[4] (over-payments to competitive factors of production, fraud, illicit transfers, etc.). That factor is modeled here by a second coefficient $0 < \gamma < 1$ that reduces total resources available for redistribution, in such a way that each dollar collected net of the previous cost β yields only $\gamma < 1$ dollar to be used towards the unemployment social program.

Aggregating the two reducing factors we can say that if R is the total amount of resources initially collected by government, only $\gamma\beta R$ dollars will effectively revert to the unemployment insurance policy. Let $\delta = \gamma\beta$; then, $\delta < 1$ reflects government's inefficiency either due to administrative and incentive costs or to corruption[5]. The present model assumes that the parameter δ reflects citizen's trust in the government: the closer δ is to 1, the more society trusts the government's honesty and ability to collect taxes with low administrative and distortion costs; conversely, the lower δ is, the less citizens trust their government.

A citizen i has Von Neumann-Morgenstern utility function $u(w)$, where w is his wealth in period 1, which is a random variable assuming value $w = y_i$ with probability π_i –when he maintains his employment– and value s with probability $1 - \pi_i$ –when he looses his job.[6] The utility function $u(w)$ is assumed to be strictly increasing, strictly concave with Arrow-Pratt relative coefficient of risk aversion greater than 1[7].

Therefore, if policy s is to be implemented in period 1, financed by the tax rate τ, citizen i's expected utility is given below.

$$U_i(\tau, s) = \pi_i u\big((1-\tau)y_i\big) + (1-\pi_i)u(s) \qquad (1)$$

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[3] Taxation affects the trade-off labor-leisure in citizen's decision making and, thereby, reduces taxable income, as, for example, modeled in Meltzer & Richard (1981). However, for the sake of simplicity, our model does not explicitly include that trade-off.

[4] See, for example, Barro (1973) or Bugarin & Vieira (2008).

[5] The analysis would remain essentially unchanged if, instead of the multiplicative form $\delta = \gamma\beta$, we would have adopted a more general form $\delta = g(\gamma, \beta)$ where g is increasing in both arguments.

[6] For simplicity, the model assumes away the possibility of transferring income from period 0 to period 1 and focuses on period 1.

[7] Although there are several different estimates for the coefficient of relative risk aversion, the literature tends to support the proposition that it is higher than 1, with some estimates reaching two-digit figures. Friend and Blume (1975), for example, estimate it "on average well in excess of one and probably in excess of two". Choi and Menezes (1985) find example of a value higher than 59.

In period 0, each citizen votes for the unemployment policy that maximizes his expected utility, taking into consideration that the policy will be financed by income taxation. Equivalently, each citizen votes for the tax rate that maximizes his expected utility, taking into consideration that the collected tax will finance the unemployment benefits.

2.2. The expected government budget constraint

Since citizen i keeps his job with the probability π_i, the expected government revenue from taxes is given below.

$$\delta \int \pi_i \tau\, y_i dF_i = \delta \tau \int \pi_i\, y_i dF_i$$

Let $y = \int y_i\, dF_i$ be the average[8] income in the economy if there were no unemployment, i.e., in the hypothetical case of full employment. Naturally, $y > \int \pi_i\, y_i dF_i$, the average income of the actually employed citizens. Let $\pi = \frac{\int \pi_i y_i dF_i}{y} = \int \pi_i \frac{y_i}{y} dF_i$, then $0 < \pi < 1$. The parameter π can be interpreted as the average probability of keeping a job in society, weighted by wage relative to average wage. Therefore, we can write $\pi y = \int \pi_i\, y_i dF_i$ and the government's revenue can be simply rewritten as $\delta \tau \pi y$.

Government revenue is used to finance unemployment benefits. A citizen i's unemployment benefit is a weighted average of the mean income y and his before-unemployment wage y_i, with weight parameter $\xi \in [0,1]$, multiplied by a fixed amount s as expressed below[9].

$$s_i = [\xi y + (1 - \xi) y_i]s \tag{2}$$

Note that, if $\xi = 1$ then all unemployed citizens receive the same benefit sy. Conversely, if $\xi = 0$ then each unemployed citizen receives a proportion of her before-unemployment wage sy_i. In this model the weight ξ is assumed to be a given, fixed parameter whereas the proportion s is the public policy to be implemented.

Let now $\bar{\pi} = \int \pi_i\, dF_i$ be the non-weighted average probability of keeping a job. Then, the government expected expenditure is:

$$\int (1 - \pi_i)\, s_i dF_i = \int (1 - \pi_i)\, [\xi y + (1 - \xi) y_i] s dF_i = [\xi(1 - \bar{\pi}) + (1 - \xi)(1 - \pi)] sy$$

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[8] Here average income and total income are equivalent concepts because the population has mass 1.

[9] This specification of the unemployment insurance policy is more general than the one in Bugarin & Hazama (2014) and is in line with Moene & Wallerstein (2003).

Therefore, the expected budget constraint of the government can be written as follows.

$$\delta\tau\pi y = [\xi(1-\overline{\pi}) + (1-\xi)(1-\pi)]sy \tag{3}$$

Let $\lambda = \lambda(\pi, \overline{\pi}, \xi) = \xi(1-\overline{\pi}) + (1-\xi)(1-\pi)$. Then, equation (3) can be rewritten as:

$$\delta\tau\pi = \lambda s \tag{4}$$

2.3. Voter i's preferred policy

The government's budget constraint, (4), establishes the expected amount of benefits that can be distributed to the unemployed, s, given a tax regime τ as $s = \frac{\pi}{\lambda}\delta\tau$.

Therefore, voter i's maximization problem can be formulated as below.

$$\max_{\tau,s} U_i(\tau, s) = \pi_i u\big((1-\tau)y_i\big) + (1-\pi_i)u(s)$$

$$\text{subject to: } s = \frac{\pi}{\lambda}\delta\tau = \frac{\pi}{\xi(1-\overline{\pi})+(1-\xi)(1-\pi)}\delta\tau \tag{4}$$

Plugging in s into the objective function yields the reduced maximization problem below.

$$\max_{\tau} U_i(\tau) = \pi_i u\big((1-\tau)y_i\big) + (1-\pi_i)u\left(\frac{\pi}{\lambda}\delta\tau\right)$$

Hence, voter i's preferred tax rate must satisfy the following first order condition.

$$U_i'(\tau) = -\pi_i y_i u'\big((1-\tau)y_i\big) + (1-\pi_i)\frac{\pi}{\lambda}\delta u'\left(\frac{\pi}{\lambda}\delta\tau\right) = 0.$$

That condition can be rewritten as:

$$\frac{\pi}{\lambda}\delta u'\left(\frac{\pi}{\lambda}\delta\tau\right) = \frac{\pi_i}{1-\pi_i}y_i u'\big((1-\tau)y_i\big) \tag{5}$$

Therefore, voter i's preferred tax policy, τ_i, is the tax rate τ that solves equation (5).

Define $h(\pi_i) = \frac{\pi_i}{1-\pi_i}$ and $f(y_i) = y_i u'\big((1-\tau)y_i\big)$. Then, the RHS of (5) is simply $h(\pi_i)f(y_i)$, where the function $h(\pi_i)$ is clearly increasing in π_i.

Let us now analyze the function $f(y_i)$. Taking first order derivatives of f with respect to its variable y_i yields:

$$f'(y_i) = u'\big((1-\tau)y_i\big) + (1-\tau)y_i u''\big((1-\tau)y_i\big)$$

Now, note that $f'(y_i) < 0$ if and only if:

$$-\frac{(1-\tau)y_i u''\big((1-\tau)y_i\big)}{u'\big((1-\tau)y_i\big)} > 1 \qquad\qquad (6)$$

But the left hand side of inequality (6) is the Arrow-Pratt coefficient of relative risk aversion calculated at the wealth value $(1-\tau)y_i$, which, by hypothesis, it is greater than one. Therefore, $f(y_i)$ is a decreasing the function of y_i.

Therefore, the RHS of (5) is the product of an increasing function of π_i and a decreasing function of y_i.

In order to better understand the possible outcomes of the political economy model, in the following section we discuss the two extreme cases where either all citizens face the same probability of loosing their jobs or all citizens earn the same income.

3. The homogenous risk and homogeneous income extreme cases

3.1. The pure role of income

In order to determine how the preferred policy changes as y_i changes suppose now that all citizens face the same risk, i.e., $\pi_i = \pi, \forall i$. Then, the function $h(\pi_i) = h(\pi)$, does not change as the income y_i changes. Therefore, the RHS of (5) is a decreasing function of income.

In order to assess the effect of income changes on the preferences for redistribution, τ, suppose the income of exactly one citizen, y_i, increases. Since an individual citizen does not affect aggregate income, neither y nor π or λ change. In that case, if τ did not change either, then the left hand side (LHS) of (5) would remain constant whereas its RHS would decrease, which is a contradiction. Furthermore, if τ decreased; then the LHS of (5) would increase because u is concave and its RHS would decrease even further, which is another contradiction. Hence, it must be the case that i's preferred tax policy $\tau = \tau_i$ also increases with y_i.

Therefore, the richer a citizen is, the higher the amount of unemployment benefit he supports. This result opposes Meltzer and Richard (1981), which predict that poorer citizens favor bigger governments. One possible explanation for this outcome hinges on the fact that richer citizens loose more income than poorer citizens in case of job loss. Therefore, risk aversion would make then more concerned with the loss then lower wage citizens. Alternatively, low unemployment benefit means little insurance to a citizen that has high income, whereas it may mean reasonable insure to a low-income citizen.

Note that this result is also consistent with the findings in Moene & Wallerstein (2003). In their work, citizens have log-normal utility functions and also face the same risk, $\pi_i = \pi, \forall i$. Their Claim 2 states that if social policy is aimed at those who loose their jobs, such as unemployment benefits, then an increase in wage inequality reduces the level of benefits.

It is important to stress that in this situation citizens are identical with respect to risk, since they all face the same probability of loosing their jobs. However, since their wages are different, richer citizens end out preferring more social insurance against unemployment than poorer ones. In this case, risk is homogenously distributed in society, whereas income is not. Income is scarcer to the poor; therefore, they are less willing to contribute to the social policy with their income. Furthermore, risk aversion makes it more important for the rich to have higher amounts of unemployment insurance than to the poor.

3.2. The pure role of risk

Consider now the opposite case in which all citizens have the same wage, $y_i = y, \forall i$, but face different levels of risk, i.e., the probability of keeping one's job, π_i, differs among citizens. Therefore, the RHS of (5) is an increasing function of the security parameter π_i.

Suppose, furthermore, that the probability π_i of exactly one agent i increases. Then, the aggregate measures of risk do not change and, furthermore, $\bar{\pi} = \pi$ and $\lambda = 1 - \pi$. In that case, if τ did not change either, then the left hand side (LHS) of (5) would remain constant whereas its RHS would increase, which is a contradiction. Furthermore, if τ increased; then the LHS of (5) would decrease because u is concave and its RHS would increase even further, which is another contradiction. Therefore, it must be the case that i's preferred tax policy $\tau = \tau_i$ decreases with π_i.

Note now that, in spite of the fact that all agents have the same wage when employed, their expected wage when there is no social policy can be ranked according to the probability of being employed, i.e.,

$$\pi_i y > \pi_j y \Leftrightarrow \pi_i > \pi_j$$

Therefore, citizens can be ranked as "poorer" or "richer" according to their expected income and we can see that a result compatible with that of Meltzer and Richard's still holds in this context, i.e., the poorer a citizen is, in expected terms, the more social policy he favors. Alternatively, in spite of the fact that the ex-ante income is the same to all citizens, they differ

in their probability of loosing it. Therefore, those who face higher risks, the expected poorer citizens, want more social protection.

Note that this result contradicts Moene & Wallerstein (2003)'s Claim 2 when the probability of keeping one's job is not constant among all citizens.

Next section generalizes the findings in the extreme cases presented here to more general and natural hypotheses on the distribution of income and risk in society.

4. The general case: income and risk heterogeneity

Consider now the more general case in which both the wage and the probability of being unemployed vary in society. The empirical literature on labor points to the stylized fact that higher wages correspond to more skilled tasks, which, in general, are scarcer, and, thereby, more stable. Indeed, according to Diebold *et al.* (1994), for example, "[…]retention rates have declined for high school dropouts and high school graduates relative to college graduates[…]". More directly related to the present model, according to Rehm (2011), "[…] the risk of unemployment and income level are negatively correlated (mainly because education determines both variables)[…]". See also Faber (2011) and Moene and Barth (2012).

Therefore, we assume that the wage y_i and the security parameter π_i of a citizen i are positively correlated such that, as y_i increases, so does π_i.

In that case, looking back at the RHS of equation (5), we can see that an increase in citizen i's wage, y_i, brings about, on one hand, a decrease in function $f(y_i)$ but, on the other hand, an increase in the function $h(\pi_i)$.

Therefore, the combined effect of a change in wage and in the probability of keeping a job on citizens' preferences for redistribution will depend on which one of these two factors, $h(\pi_i)$, or $f(y_i)$, dominates. According to our findings in the previous section, we call $h(\pi_i)$ the *security factor* and $f(y_i)$ the *income factor*. The security factor, increasing in π_i, reflects citizens i's job security, whereas, the income factor, decreasing in y_i, reflects citizens i's income vulnerability.

Consider now two alternative hypotheses for the relative strength of each of these effects, which we assume to hold for the entire population.

4.1. Case 1: The security dominance environment

Assume that the changes in $h(\pi_i)$ dominate the changes in $f(y_i)$ in the sense that the composite function $h(\pi_i).f(y_i)$ is increasing in y_i. This is the hypothesis of *security dominance.*

Return now to equation (5). If y_i increases, then τ cannot remain constant, as the right hand side (RHS) of (5) would increase while its LHS would not change, a contradiction. Moreover, τ cannot increase. Indeed, if τ also increased, then the RHS of (5) would further increase (recall that u' is a decreasing function) whereas the LHS would decrease, another contradiction. Therefore, if y_i increases, then it must be the case that τ decreases for (5) to hold.

Therefore, under the hypothesis of *security dominance*, the richer a citizen gets, the less government he favors. Similarly, the safer his job, the less taxes he wants. Put in a different but equivalent way, when voters care strongly about loosing their jobs, then poorer citizens having less stable jobs favor more government.

This result is in line with the seminal article by Meltzer and Richard (1981), which predicts that poorer citizens favor bigger governments. Furthermore, given the relationship between income and job security, the present model also predicts that citizens facing higher risks of loosing their jobs also favor higher taxes. The findings in this case are equivalent to those obtained in the extreme case of homogeneous income, 3.2. However, this comparative statics depends crucially on the hypothesis of security dominance, as will become clear in the next section.

4.2. Case 2: The income dominance environment

Assume now that the changes in $f(y_i)$ dominate the changes in $h(\pi_i)$ in the sense that the composite function $h(\pi_i).f(y_i)$ is decreasing in y_i.

Review equation (5). If y_i increases, then τ cannot remain constant, as the RHS would decrease while the LHS of (5) would not change, a contradiction. Moreover, τ cannot decrease. Indeed, if τ also decreased, the RHS of (5) would further decrease (recall that u' is a decreasing function) whereas the LHS would increase, another contradiction. Therefore, if y_i increases, then it must be the case that τ increases for (5) to hold.

Therefore, under the hypothesis of income dominance, the poorer a citizen is, the less government he favors. Similarly, the riskier his job, the less taxes he wants to pay. The findings under the income dominance hypothesis mimic the ones found before in the extreme case of homogeneous risk, 3.1. One possible rationale for such preferences may come from the fact that the poorer a citizen is, the higher is the (opportunity) cost of paying taxes to the government, since the lower is his net income. Since the *income factor* dominates, the poorer citizens are not ready to accept that extra burden. Alternatively, high-income voters need higher insurance benefits in order to smooth consumption; therefore, in a highly risk-averse society, the rich citizens favor higher amounts for the unemployment insurance policy than the poorer ones.

This result is in opposition to Meltzer and Richard (1981), which predicts that poorer citizens favor bigger governments. It also partially supports Moene & Wallerstein (2003) in a more general context. A more careful comparison between this paper's results and those in Moene & Wallerstein (2003) will be presented in section 6. In the next section we present a specific parameterization of preferences and risks for which both the dominance and the security hypothesis may occur.

4.3. A numerical example

Consider the following parameterization of the primitives of the model.

Citizens' utilities are given by $u(y_i) = K - y_i^{-(R-1)}, R > 1$, where $K > 0$ is an upper bound for the citizen's utility and R is precisely the Arrow-Pratt coefficient of relative risk aversion of the citizen, as it can easily be verified.

Citizens' probabilities of keeping their jobs are given by $\pi_i = \alpha \frac{y_i}{\overline{y}}$, where $\overline{y}$ is the highest wage in society and the parameter $\alpha, 0 < \alpha < 1$ is the probability of securing the highest paid job, the highest possible value for π_i. Therefore, no job in 100% secure in this society, although the closest the parameter α is to 1, the more secure jobs are in general.

Under this parameterization, the RHS of equation (5) can be rewritten as below.

$$RHS(y_i) = (R - 1)(1 - \tau)^{(-R+1)} \frac{\alpha y_i^{(-R+2)}}{\overline{y} - \alpha y_i}$$

We wish to determine under which conditions $RHS(y_i)$ is an increasing function of y_i and under which conditions it is decreasing. Taking derivatives with respect to y_i yields:

$$RHS'(y_i) = \frac{y_i^{(-R+1)}}{[\overline{y} - \alpha y_i]^2} [(-R + 2)(\overline{y} - \alpha y_i) + \alpha y_i]$$

Therefore, the sign of $RHS'(y_i)$ is exactly the sign of $(-R + 2)(\overline{y} - \alpha y_i) + \alpha y_i$. Hence, we can easily check that following statements.

(i) If $1 < R < 2$, $RHS(y_i)$ is increasing in y_i and society preferences display *security dominance*, so that the richer a citizen is, the less he supports social policies.

(ii) If $R > 2 + \frac{\alpha}{1-\alpha}$, then $RHS(y_i)$ is decreasing in y_i and society preferences conform to the *income dominance* hypothesis, so that the poorer the citizen is, the less he favors social policies. For example, if $\alpha = 0.8$, i.e., the richest citizens has a probability of 80% of keeping his jobs, then, the *income dominance* hypothesis will be satisfied if $R > 6$. If α reduces to 0.5, then it is sufficient that $R > 3$ for *income dominance* to hold. Recall that Friend and Blume (1975), for example, estimate the coefficient of relative risk aversion "on average well in excess of one and probably in excess of two" and Choi and Menezes (1985) find an example of a value higher than 59.

In conclusion, in our simple parameterized model, the higher the absolute degree of risk aversion of agents, the more likely the richer voters will support higher unemployment benefit policies, which is a result opposite to Meltzer and Richard (1981).

4.4. The equilibrium tax policy

The previous analyses show that citizens' attitudes towards redistribution depend heavily on which of two factors –the security factor or the income factor– dominates voters' preferences. However, if either *security dominance* or *income dominance* holds for the entire society, then the Median Voter Theorem applies and the median voter's preferred policy is the Condorcet winner.

Therefore, whereas a society may turn to higher social insurance as the median voter gets poorer and has riskier jobs, a different society may, on the contrary, favor less public protection as the median voter's confidence in the economy plunges. The main theoretic contribution of this paper to the literature is pointing out that there are theoretical grounds for contradicting Meltzer and Richard (1981)'s results, complementing and shedding new lights on the findings of Moene & Wallerstern (2001, 2003). Furthermore, by showing that the same policy may gather very different supports from different societies, we show that it

becomes an empirical matter to find out how a society's preferences for redistribution changes as the median voter's income or job stability prospects change. The following section compares our findings with the recent literature.

4.5. A discussion on the POUM and on the policy target hypotheses

As discussed earlier, there is scarce theoretic literature to help understand the observed differences in preferences for redistributions among countries and, within a country, at different time periods. Benabou and Ok (2001) present the "prospect of upward mobility" (POUM) hypothesis, which suggests that if a poor citizen expects to have higher income in the future, then he may prefer small government today, in order not to have to pay for a large government tomorrow. The POUM hypothesis explains, for example, why countries such as the USA spend considerably less resources in social security if compared to similarly advanced economies in Europe. However, it preserves Meltzer and Richard (1981)'s main preference ordering, i.e., the poorer a citizen is, the more government he favors.

To the best of our knowledge, Moene and Wallerstein (2001, 2003) is the only research that finds the preference reversal that we highlight in our model, i.e., poorer citizens may prefer less social policy than richer ones. However, they argue that the reversal depends on the type of policy. More precisely, they find that "greater inequality increases support for welfare expenditures when benefits are targeted to the employed but decreases support when benefits are targeted to those without earnings"[10].

Our model analyzes precisely such an unemployment policy, aimed exclusively at the unemployed citizens, and finds that both the traditional Meltzer and Richard (1981)'s and the reversed preferences may hold. Therefore, our results challenge the interpretation advanced in Moene & Wallerstein (2001, 2003), which state that the difference in preferences for redistribution in society depends on whom the social policy is targeted to, i.e., to the unemployed or to the employed.

Our model shows that even if the policy is targeted to the unemployed, there could be an increase support for redistribution when expected inequality increases. Therefore, the reasons for a society to support more or less redistribution may be hidden behind a deeper veil than

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[10] Moene and Wallerstein (2001, 2003) present their discussion in terms of increase in inequality, rather than income. However, their proofs are based on variations of the median voter's income.

the simple clear-cut distinction between targeting the unemployed versus targeting the employed dimension.

5. Economic shocks and preference-ordering reversal

The present model adds to the literature on preferences for redistribution the possibility of reversed preference ordering in the sense that poorer citizens prefer less insurance compensation than richer ones. The main rationale for this outcome resides in the risk aversion of agents. Indeed, richer citizens may need higher compensations in order to smooth consumption throughout the different states of nature (employed & unemployed). Therefore, the unemployment risk structure in a society may affect and, at the end of the day, define the ordering of preferences in that society.

In our model, the parameter that incorporates risk is the probability of keeping one's job, π_i. Furthermore, the way to introduce an economic shock in the model is to change the distribution of risk $\{\pi_i\}$ in society. The purpose of this section is to investigate the effect of the distribution of risk $\{\pi_i\}$ on preferences for income distribution and determine how its change may affect the preference ordering for unemployment insurance. We start, in the next section, analyzing the equilibrium effect of a global shock to job security. Then we show, by means of an analytic example, how such a shock may bring about a reversal of preference ordering. Finally, we study surveys for Brazil to illustrate the effect of the 2008 global financial crisis on citizens' preferences for redistribution.

5.1. The role of aggregate consumer confidence

So far, this article's analyses focused on individual preferences, and the effect on preferences for redistribution of changes in the distribution of income and job security in society. In certain situations, however, there may be aggregate shocks that affect the entire society. The 2008 financial crisis, for example, reduced overall world trade, affecting job prospects for all individuals, most especially in countries that depend heavily on exports. This section aims at studying such a situation in which the entire society becomes less (or more) confident in the future of the economy.

According to the solution of voters' maximization problem we concluded that, if there is either *security dominance* or *income dominance* for all citizens in society, the Condorcet winner policy τ_M is the solution τ to the following equation, where we replaced y_i with the median salary y_M and π_i with the corresponding median probability of keeping one's job π_M in equation (5).

$$\frac{\pi}{\lambda}\delta u'\left(\frac{\pi}{\lambda}\delta\tau\right) = \frac{\pi_M}{1-\pi_M}y_M u'\big((1-\tau)y_M\big) \tag{7}$$

Suppose now that the entire society suffers a confidence shock so that, although higher paid workers retain higher probabilities of keeping their jobs, there is an overall reduction in job stability. This would happen, for example, during a sudden world crisis that affects an entire country's economic prospects. In the present framework, this could be modeled, for instance, by an overall shift in π_i, for example $\pi_i' = \pi_i(1-\varepsilon)$, for every citizen i, where $0 < \varepsilon < 1$ measures the magnitude of the shock. More generally, one could have heterogeneous effects of the shock on citizens, $\pi_i' = \pi_i(1-\varepsilon_i)$, as long as ε_i is decreasing in income y_i, i.e., lower paid jobs are more heavily affected by the shock. Suppose this shock affects only consumer confidence, i.e., the probabilities π_i, but do not affect the (ex ante, full employment) distribution of income, $F(y_i)$.

In that case, no matter which one of the two assumptions (risk or income dominance) holds, the median voter theorem applies and the median income citizen still determines the Condorcet winning policy according to (7). However, the overall reduction in economic confidence changed some of the parameters in equation (7).

The lower economic confidence does not affect $y = \int y_i \, dF_i$, however, it does reduce $\pi = \frac{\int \pi_i y_i dF_i}{y} = \int \pi_i \frac{y_i}{y} dF_i$ and $\overline{\pi} = \int \pi_i \, dF_i$. Therefore, it increases $\lambda = \xi(1-\overline{\pi}) + (1-\xi)(1-\pi)$ and reduces $\frac{\pi}{\lambda}$.

Let $g(\theta) = \theta u'(\theta\tau)$. Then, it can easily be seen that the hypothesis of high relative degree of risk aversion implies that g is a decreasing function. But the LHS of equation (7) is precisely $g\left(\frac{\pi}{\lambda}\delta\right)$. Therefore, the LHS of (7) increases as overall economic confidence decreases.

Consider now the equilibrium policy τ_M that solves equation (7). Since the LHS increased, τ_M cannot remain constant. If τ_M were to decrease, then the LHS would further increase,

whereas the RHS would decrease, which is a contradiction. Therefore, τ_M must increase for (7) to hold.

Therefore, if overall consumer confidence deteriorates, then society wants to increase taxation financing of unemployment benefits. Conversely, it is straightforward to check that if overall consumer confidence improves, then society unambiguously wants to reduce taxation financing of unemployment benefits. Note that these results are true regardless of which factor, the risk or the income factor, dominates voters' preferences.

5.2. Distribution of Risk and Preferences for Redistribution

This section explores the effect of the distribution of risk in society on the preference ordering for unemployment insurance, by means of a specific parameterization of our model. Suppose, as we did in section 4.3, that citizens' utilities are given by $u(y_i) = K - y_i^{-(R-1)}, R > 1$, where $K > 0$ is an upper bound for the citizen's utility and R is precisely the common Arrow-Pratt coefficient of relative risk aversion.

Suppose, however, that the risk structure in the economy is given by the more general form $\pi_i = \alpha \left(\frac{y_i}{\overline{y}}\right)^{\beta}$, where $\overline{y}$ is the income of the richest citizen and $\beta \geq 0$.

The parameter β reflect the level of risk inequality in society. In the extreme case where $\beta = 0$, there is complete risk equality, with all citizens keeping their job with the same probability α. As β increases, so does risk inequality. Indeed, the ratio of the expected income of a citizen with income y_i to the expected income of the richer citizen[11] is

$\frac{\pi_i y_i}{\overline{\pi}\,\overline{y}} = \frac{\alpha\left(\frac{y_i}{\overline{y}}\right)^{\beta} y_i}{\alpha \overline{y}} = \left(\frac{y_i}{\overline{y}}\right)^{1+\beta}$, which converges to 0 as β increases.

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[11] A similar expression holds for the comparison between two citizens with respective incomes y_i and y_j.

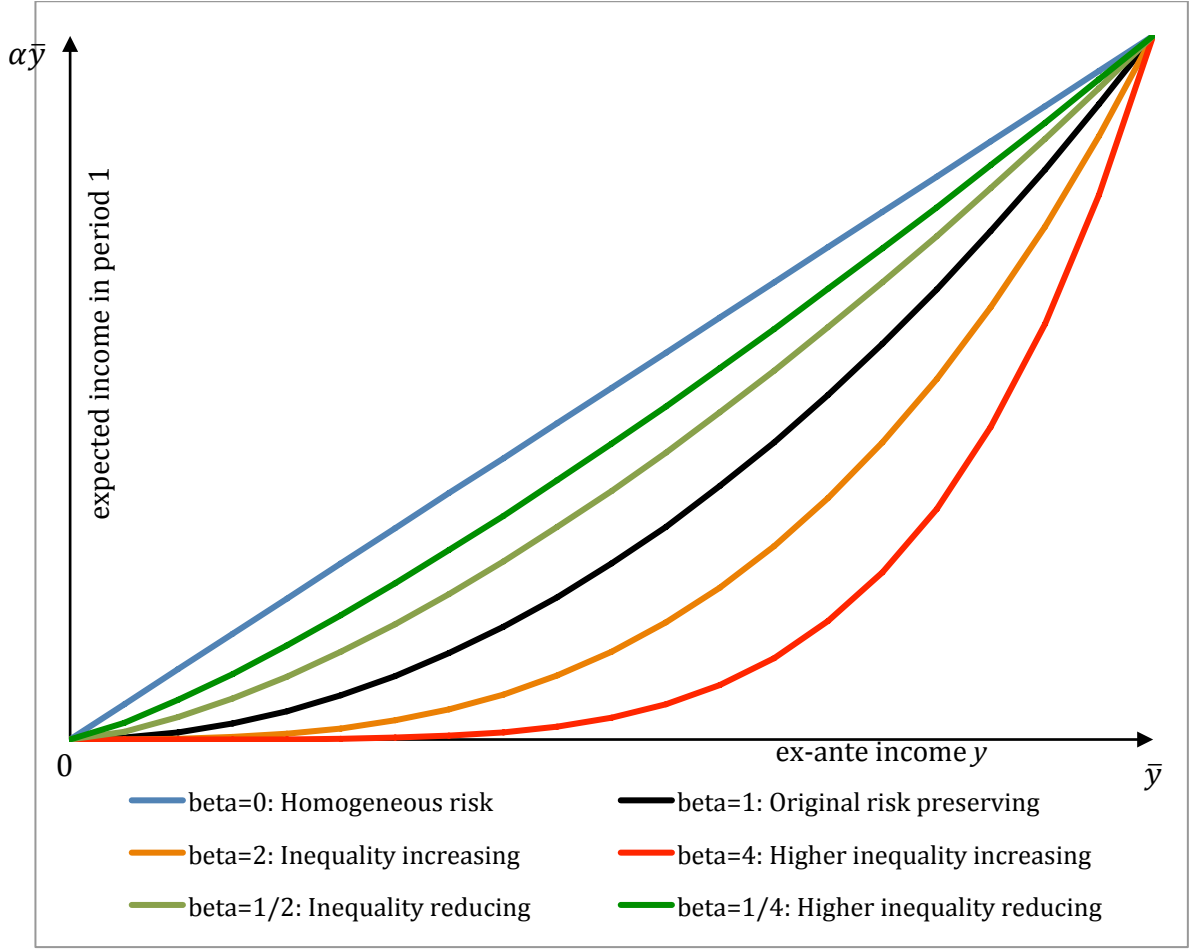Figure 1: The effect of economic shocks on the distribution of risk in society

Figure 1 illustrates the effect of the parameter β. The X-axis displays ex-ante wages, which vary from 0 to $\bar{y}$. The Y-axis displays the corresponding expected ex-post wages, which vary from 0 to $\alpha\bar{y}$. The case $\beta = 1$ corresponds to the absence of shock, so that the original distribution of risk is maintained. For $\beta > 1$ there is an increase in risk inequality and that increase is more pronounced the higher β is. We interpret that situation as a negative economic shock. Conversely, for $\beta < 1$ there is a decrease in risk inequality, which is more pronounced the smaller β is. We interpret that situation as a positive economic shock. The extreme case where $\beta = 0$ corresponds to the (theoretic) situation where all agents face the same probability $\pi_i = \alpha$.

Consider now the first order condition (5). Given the current parameterization, we can write its RHS as:

$$RHS(y_i) = h(\pi_i).f(y_i) = (R - 1)(1 - \tau)^{(-R)} \frac{\alpha y_i^{(\beta - R + 1)}}{(\bar{y})^\beta - \alpha y_i^\beta}$$

Taking derivatives with respect to y_i yields:

$$RHS'(y_i) = (R-1)(1-\tau)^{(-R)} \frac{\alpha y_i^{(-R+\beta)}}{[(\overline{y})^\beta - \alpha y_i^\beta]^2} \left[(\beta - R + 1)\left[(\overline{y})^\beta - \alpha y_i^\beta\right] + \alpha\beta y_i^\beta\right]$$

Therefore,

$$RHS'(y_i) > 0 \Leftrightarrow R < \beta + 1 + \beta \frac{\alpha y_i^\beta}{(\overline{y})^\beta - \alpha y_i^\beta}$$

Let $\mu(\beta) = 1 + \beta\left[1 + \frac{\alpha y_i^\beta}{(\overline{y})^\beta - \alpha y_i^\beta}\right]$. Then,

(i) If $R < \mu(\beta)$, there is *security dominance*;

(ii) If $R > \mu(\beta)$, there is *income dominance.*

Note now that, as β goes to infinity, so does $\mu(\beta)$. Now recall that the higher β is, the more inequality-increasing is the unemployment risk "technology". Therefore, the more inequality-increasing the distribution of risk in society is, the more likely it will display security dominance.

We are now able to evaluate the role of economic shocks. Suppose society is in a relative homogeneous risk situation at the outset. This may be due to a long period of economic growth that reduced overall unemployment risk. In the present model, this corresponds to small values of β. Then, it is likely that society displays *income dominance*. Suppose, furthermore, that the country is hit by a negative shock, which corresponds to an increase in β to $\beta' > \beta$. If β' is large enough, then society may turn to *security dominance.*
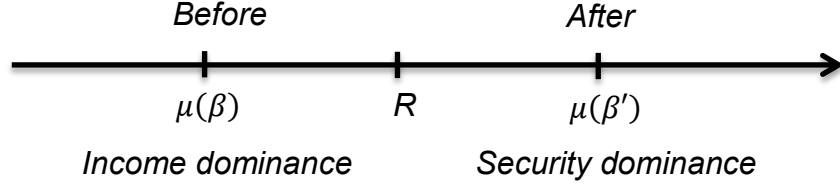
Therefore, a negative shock may generate a preference reversal, in such a way that before the shock the richer citizens supported higher unemployment insurance whereas after the shock the biggest supporters for unemployment insurance are the poorer citizens. Figure 2 below illustrates that situation.

Note that a symmetrical situation may arise in the case of a positive shock. In that case, the economic recovery may produce a reversal from a situation where the poorer citizens were the highest supporters of unemployment insurance to a situation where the richer citizens become the highest supports.

Finally, it may also be the case that the shock is not strong enough to produce any preference ordering reversal. Therefore, in addition to the preference ordering at a given point in time, also the dynamic of preference ordering becomes a matter of empirical research. In order to

illustrate these static and dynamic issues, the following sections analyze preference-ordering dynamics for the case of Brazil, based on social values surveys.

Figure 2: The effect of negative economic shocks on preference for redistribution ordering

5.3. Preferences for Redistribution in Brazil: the 2008 World Financial Crisis, preference-ordering reversal and the 2013 street protests

This section explores a series of public opinion surveys conducted by the Latin American Public Opinion Project (LAPOP), Vanderbilt University. Every two years the LAPOP carries out the Americas Barometer survey, which currently covers 26 nations including all of North, Central and South America, and the Caribbean, including Brazil. Five waves of surveys have been conducted for Brazil comprising the years of 2006, 2008, 2010, 2012 and 2014. In order to clearly distinguish the views of citizens on redistribution before and after the 2008 Financial Crisis, we analyze here the surveys corresponding to the years 2006 and 2014.

In order to test this paper model, as well as the theoretic predictions in Meltzer and Richard (1988), the main dependent variable must display the clear trade-off between public policy and taxation, i.e., the supply of public policy is financed by taxes. Fortunately, the Americas Barometer has, each year at least one question that makes such a trade-off clear. However, the questions are different in each one of the waves. We describe below the corresponding questions for the 2006 and the 2014 waves.

5.3.1. The dependent variable

The 2006 wave has a unique question that makes the tax-public policy trade-off clear. The question (PR7) is:

> "The government should provide less public services, such as health and education, in order to reduce taxes."

> There were five categorical answers, going from totally disagree to totally agree.

Furthermore, there was exactly one question (TD5) fitting our criterion in the 2014 wave:

"Would you be willing to pay more taxes than you currently so that these taxes would be used to distribute to the poorer citizens?"

There were 7 categorical answers, from "totally disagree" to "totally agree".

All the dependent variables were recoded in such a way that higher values mean higher support for redistribution. Therefore, for the 2006 dependent variable, the higher possible choice, 5, means "totally disagree", whereas for the 2014 dependent variable, the higher possible choice, 7, means "totally agree". Furthermore, the observations with "I don't know" or no answer were removed from the corresponding sample.

5.3.2. The main explanatory variables

Income: The income variable classifies respondents according to their household income brackets. We took the logarithm of these income classes.

Our expectation is that, if there is *income dominance*, there is a positive correlation between the income variable and the dependent variable, whereas if there is *security dominance*, then there is a negative correlation between these variables.

Lack of confidence in the economy: In the 2006 wave we can find the following question (VS6): "Are you worried about loosing your job in the next six months?" ((0) No, (1) Yes). We included that "fear of unemployment" variable as alternatives to income, following our model's hypothesis on the positive relationship between income and job security. Therefore, we expect a negative relationship between the dependent variable and the lack of confidence variable if there is *income dominance* and a positive one if there is *security dominance.*

5.3.3. The additional control variables

There is a whole range of additional control variables that could help explain preferences for redistribution either based on the extensions of our model (the trust in the government, the left-right ideological orientation of the respondent) as well as based on a multitude of empirical studies on the topic. Since the goal of this section is not to present a fully developed empirical study of the determinants for redistribution but rather an illustration of a possible preference reversal for the case of Brazil, we will

not comment nor discuss in great detail these additional variables. They are, however, quickly described below.

Gender, Age, Years of schooling, Frequency of usage of the world wide web, Being a recipient of the Bolsa Familia conditional cash transfer (CCT) program, religiosity of the respondent.

Geographic regions and size of the municipality where the respondent lives.

Trust in Brazilian institutions, satisfaction with the workings of democracy, evaluation of the level of democracy in the country, evaluation of the corruption level in the public sector.

Satisfaction with the performance of the Government, and with the performance of the President. Proxies for left or right ideology. Political interest and political sophistication (knowledge).

Interest in politics and knowledge about the length of the presidential term as a proxy for Political sophistication.

Finally: Two measures of general support for democracy.

5.3.4. The regressions' results: Preference-ordering reversal and the 2013 street protests

Due to the fact that the dependent variable changes in every wave, we run two different, independent regressions, one for year 2006 and one for the year 2014. Since the number of categories of the dependent variable also varied from five to seven, we decided to run robust ordinary least square (OLS) regressions[12]. The corresponding results are presents in Table 1.

When we analyze the regressions we can find a clear dynamic change in preference ordering. Indeed, for the initial year of 2006 we can see a positive correlation between the dependent variable and income significant at the 10% level. This supports the *income dominance* hypothesis: since Brazil was in a positive economic growth path, the

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[12] We also run ordered logit regressions that yielded similar results. However, the lack of overall support for the proportional odds ratio hypothesis suggested us to maintain the OLS approach. The logit regressions are available upon request to the authors.

poorer citizens did not seen to feel the need for such important provision of public good.

The country was severely hit by the international financial crisis in 2009, with null GDP growth. However, Lula government created a (artificial) warming of the economy, by reducing taxes on consumption goods and increasing government expenditure, which lead to a 7.5% growth in 2010. Such a GDP growth level had not happened in the country since the seventies and led many Brazilians to believe the international crisis had not reached the country, only to find out, in the following years, its real effects.

After the low growth of 2011, Brazilians became aware of the artificial growth of 2010. The 2014 surveys reflect its effect on the preference for redistribution ordering. Indeed, the regressions show now an inverse, negative correlation between the dependent variable and income, compatible with the *security dominance* hypothesis. In other words, the poorer a citizen is, the more government support he favors. This result, significant at the 1% level for the 2014 regression, suggests that a preference-ordering reversal has occurred, possibly because the poor citizens became aware of the severity of the world financial crisis and its damaging effects to the Brazilian economy, thereby, becoming more supportive of government programs.

Table 1 – Income, economic confidence, economic shock and preference for redistribution: Robust OLS regressions for Brazil, 2006 and 2014

Year	2006		2014	
The main explanatory variables				
Income (log)	0.2562	*	−0.3011	***
Fear of unemployment	-0.0108			
The basic controls				
Male (gender)	−0.0071		0.1356	
Age	−0.0004		−0.0140	***
Years of schooling	0.0104		−0.0147	
Web use frequency			−0.0116	
Bolsafamilia CCT recipient	0.1188	**	0.4387	***
Religiosity (Mass attendance)	−0.0230		0.0523	
The regional variables				
Northern region	0.2365		−0.1090	
Northeastern region	0.3691	***	0.6431	***
Centerwestern region	0.1528		0.6085	***
Southeastern region				
Southern region	0.4842	***	−0.5676	***
Municipality size	−0.0457		−0.0018	
The trust in institutions variables				

Trust in Brazilian institutions	−0.0442	*	0.1455	**
Satisfied with workings of democracy	−0.1233	*	−0.0672	
Level of BR democracy	−0.0631			
Corruption level in the civil service	0.0079			
The satisfaction with the government				
Goodgov (Government performance)	−0.0273		0.1530	***
Preseval (President's performance)	−0.0537		−0.0870	
The ideology variables				
GovOwnComp (Leftist ideology)			0.0380	
NoIntervention (Rightist ideology)	−0.2407	***		
Political participation				
Polint (Interest in politics)	0.0967	**	−0.0943	
KnowPR (knows length PR term)	0.1985		0.5189	***
Support for democracy				
Demsup (Supports democracy)	−0.0428	*	−0.0200	
Dembest (Democracy is best regime)	0.1653	*	−0.2142	*
Constant	5.0090	***	3.2128	***
R^2	15.79		14.11	

*:   Statistically significant at the 10% level
**:   Statistically significant at the 5% level
***: Statistically significant at the 1% level
Source: Authors' calculations

The federal government, however, may not have been able to produce the produce the improvement in public service standards that Brazilians were eager to receive. This mismatch between the citizens, who became increasingly eager for better public services, and the government that had spent all its fiscal surpluses in engineering the artificial growth spur of 2010, may have been the reason why over a million Brazilians went to the streets during the months of June and July 2013 to demonstrate against the rise of public transportation cost and the low quality of public services[13].

Regarding the additional control variables, there is strong support for redistribution from the part of recipients of the Bolsa Familia Conditional Cash transfers program, as well as from citizen living in the poorer Northeastern region. Support for redistribution also appears to be stronger among politically sophisticated citizens.

Conversely, older or right-oriented citizens, citizens satisfied with the workings of democracy in the country and those who generically support democracy tend to favor smaller governments.

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[13] See Bugarin and Costa e Silva (2014) for details on the 2013 street protests.

6. The role of trust in the government and political ideology

6.1. The role of trust in the government

In addition to the trade-off between risk and income, one may inquire if the level of trust in the government could also impact citizens' support for redistribution.[14] In the present study, the level of confidence in the government is modeled by means of parameter δ, $0 < \delta < 1$. The lower δ is, the less trusted the government is, whereas the higher that parameter is, the more trust there is in the government.

In this section we analyze the effect of a change in δ on the equilibrium redistribution policy τ_M. For a comparative static analysis, suppose that neither the distribution of income nor the risk probabilities change, but that the trust in the government, δ, reduces. This may happen for different reasons but are typically associated with unexpected events. For example, after the March 2011 Great Tsunami in Japan, there was a generalized reduction in the trust in the government due to its handling of the nuclear crises; according to an Associated Press (AP-GfK) poll held between July and August 2011, 82% of Japanese doubt that the government's ability to help them in the event of new disasters.[15] Similarly, the corruption scandal in the biggest Brazilian state company, the Petrobrás, in 2014, greatly reduced citizens' trust in their government. According to Brazilian DataFolha institute, the percentage of Brazilians that considered president Dilma's government "Bad" or "Very bad" increased from 25% in April 2014 to astounding 60% in one year later, in April 2015, after the corruption scandal.[16]

Consider again equation (7). The initial effect of a reduction in the parameter δ is an increase in the LHS of (7). Therefore, there must also be a variation in the RHS of (7), so that τ_M cannot remain unchanged. Suppose τ_M decreases. Then the LHS of (7) increases further, whereas its RHS decreases, which configures a contradiction.

Thus, it must be the case that τ_M increases. Therefore, when there is an aggregate shock that reduces overall trust in government, the median voter favors more redistribution. This may strike as an unexpected result. Indeed, the less society trusts the government, the more redistribution it favors. However, one can understand that result noticing that low trust in government means that society expects less public output with the same amount of taxation. Therefore, one way to compensate for the reduced public output is to increase taxation.

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[14] We are indebted to John Nash, Jr., for stressing this potential factor.
[15] See, for example, Telegraph, September 2, 2011. See also Economist, March 10, 2012. The poll press release can be accessed at http://www.ap-gfkpoll.com.
[16] DataFolha pool's press releases are available at http://datafolha.folha.uol.com.br/.

Suppose the shock is related to evidence of corruption. Then, if corruption suddenly increases in a country, which could happen, for example, if a more corrupt party takes office, then the popular pressure towards higher redistributions increases, which potentially brings about an additional source of instability in a possibly already unstable political environment perturbed by corruption. It comes as no surprise the fact that the year 2015 has been a year of successive strikes all over the country and most especially among civil service employees.

6.2. The role of political ideology

It is a stylized fact that different societies have distinct views on the role of government[17]. In particular, a more "right-oriented" society may view government benefits as something similar to charity and, therefore, may find it somewhat shameful for the recipient. Conversely, a "left-oriented" society may view government benefits as an entitlement of citizens in a fair society. The present section explores the effect of such political ideology bias on the preferences for redistribution. In our modeling strategy, this corresponds to including a new parameter, $\zeta \in \mathbb{R}_+$ in the agent's expected utility function (1), as shown below.

$$U_i(\tau, s) = \pi_i u\big((1 - \tau)y_i\big) + (1 - \pi_i)\zeta u(s) \tag{1'}$$

If $\zeta = 1$, then we are back to our original model where citizens attach the same value to consumption made possible by their own income or by government unemployment benefits. However, if $\zeta < 1$, then there is a ("right-oriented") bias whereby a citizen values more money earned by her own work than received by the government. Conversely, if $\zeta > 1$, then there is a ("left-oriented") bias whereby a citizen values more money transferred by the government than earned by her own work.

In that case, the corresponding first order condition for the median voter is:

$$\zeta \frac{\pi}{\lambda} \delta u'\left(\frac{\pi}{\lambda}\delta\tau\right) = \frac{\pi_M}{1 - \pi_M} y_M u'\big((1 - \tau)y_M\big) \tag{7'}$$

Then, the effect of political ideology is to multiply by ζ the left hand side of equation (7). Consider now a right-oriented society: $\zeta < 1$. Then, the LHS of (7) decreases. Therefore, τ must change. If τ were to increase, the LHS would decrease further whereas the RHS would

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[17] We are grateful to Kanako Yamaoka for this insight.

increase, a contradiction. Hence, τ must decrease. In other words, the median voter in a politically right-oriented society prefers less government intervention in the economy.

Conversely, it is trivial to show that in a left-oriented society in which $\zeta > 1$, the median voter prefers higher levels of public policy provision.

The result we find here is compatible with Hibbs (1977) theory of a partisan bias in the public policy, according to which left-wing parties prefer bigger governments whereas right-wing ones prefer smaller government. Furthermore, it explains why a country such as the USA supports less social policies than Europe, where social-welfare state ideology is more established. In other words, our model helps explain the USA-Europe debate presented in section 4.5, without having to appeal to the POUM hypothesis.

7. Conclusion

The present article tries to understand on a theoretic point of view the delicate relationship between wealth, economic confidence, economic shocks and preferences for redistribution. A first theoretic result shows that this relationship is not straightforward and depends basically on two aspects of individual's preferences. If individuals care most strongly about job security, then the poorer they are and the less confident in the economy they are, the more government they favor. On the other hand, if individuals care most strongly about income, then the poorer they are and the less economic confidence they have, the less government they want. These findings, which we call the "security-income trade-off" extends the preliminary results presented in Bugarin & Hazawa (2014) and represent a new contribution to the literature. It shows that the one-way result in Meltzer and Richard (1981) may not always be true, as the work of Moene and Wallerstein also show. But differently from Moene and Wallerstein (2001, 2003), we show that a switch in preference ordering may happen within the same type of social policy: unemployment insurance. As a consequence, we challenge their interpretation based on the target population of the policy and conclude that whether citizens favor more or less government, as their income change, has more to do with risk aversion and changes in the distribution of unemployment risk in society, i.e., the confidence in the economy. In particular, we show that the same society may display a switch in citizens' preference ordering due to unexpected external shocks. We illustrate our theoretic predictions analyzing the case of Brazil before and after the 2008 international financial crisis and find evidence that there was an preference-ordering reversal in Brazil due to the crisis, in

such a way that before the crisis there was income dominance, i.e., the poorer a citizen is the less government he favors, whereas after the crisis, citizens' preferences came to display security dominance, i.e., the poorer a citizen is, the more government she favors. In particular, the preference-ordering reversal may help explain the unprecedented mass protests that took over a million Brazilians to the streets during the month of July 2013.

Furthermore, the present article also analyzed what happens when there is an aggregate shock that affects overall confidence in the economy. In that case, regardless of the tradeoff job security-income, the effect of an aggregate reduction in economic confidence in the economy is a higher focus on social policy. Therefore, society unambiguously favors bigger government if it suffers an aggregate shock that reduces overall economic confidence. Conversely, the effect of an aggregate increase in economic confidence in the economy is a lower support for social policy. Therefore, society unambiguously favors smaller governments if it receives an aggregate shock that increases overall economic confidence.

In addition, our model helps explain how political ideology affects social preferences for redistribution in such a way that more right-oriented societies prefer smaller governments whereas more left-oriented ones prefer bigger governments.

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Appendix: The low relative risk-aversion benchmark

The *security-income trade-off* existence is a direct consequence of the assumption that the relative degree of risk aversion of citizens in higher than 1. Let us briefly discuss what would be the economic equilibrium in a society where citizens have low degree of relative risk aversion, more precisely, their degree of relative risk aversion is lower than 1.

Consider again the first order condition (5), which we reproduce here for the sake of clarity.

$$\frac{\pi}{\lambda}\delta u'\left(\frac{\pi}{\lambda}\delta\tau\right) = \frac{\pi_i}{1-\pi_i}y_i u'\big((1-\tau)y_i\big) \tag{5}$$

Then, the RHS of (5) can be written as $h(\pi_i)\,f(y_i)$ where $h(\pi_i) = \frac{\pi_i}{1-\pi_i}$ and $f(y_i) = y_i u'\big((1-\tau)y_i\big)$. The low risk-aversion hypothesis implies now that the function $f(y_i)$ is increasing in y_i. Since the function $h(\pi_i)$ is also increasing in π_i, and since π_i increases with income y_i, we conclude that the RHS of (5) unambiguously increases with income.

Suppose now an increase in income y_i of a single citizen. Then, the RHS of (5) increases. Since such an individual increase does not change the overall measurements π or λ, it must be the case that the preferred tax policy τ must change. If it increased, then the LHS would decrease and the RHS would increase further, a contradiction. Therefore, it must be the case that τ decreases. Hence, an increase in income reduces a citizen's interest for redistribution. In other words, the poor citizens unambiguously prefer more government than the richer ones, in perfect support to the classical theory in Meltzer & Richard (1981). In the language of our model, there is *security dominance*, in the sense that those who have less secure jobs, the poorer citizens, favor more government.

The present analysis confirms that there may only be a switch in preference ordering, so that richer citizens value unemployment insurance more than poorer ones, when the degree of (absolute) risk aversion is high enough (higher than 1). In particular, low risk-averse societies will always push elected politicians in the direction of bigger governments as the median voter income decreases, in accordance with Meltzer and Richard (1981)'s framework.