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Why is there so little redistribution?

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In democratic societies with skewed income distributions, simple political economy models predict that the poor will form a coalition to implement high taxes. I review this basic theory and some of its extensions. Then I discuss how we can test the model, and some common pitfalls, before I review the empirical findings. Generally, the empirical support for the theory is weak. I end with a review of selected parts of the literature that tries to explain this lack of empirical support.
JEL codes: D31, D72, H53

In democracies, politics is determined by the people. The income distributions is skewed to the right, so there are more poor than rich people, so the majority of poor would benefit from confiscating the rich. Why doesn't the poor vote for confiscatory tax rates, as this could clearly benefit a majority of voters?

The fear that the poor would expropriate the rich was one of the major arguments against extending the franchise to propertyless citizens in the 19th century. There were movements that argued that the right to vote was a right everybody should have. Yet, even radical thinkers advocated limiting the poor's influence on tax policies. John Stuart Mill (1861/1946, Ch VIII), for instance, argued that:

> *It is also important that the assembly which votes the taxes, either general or local, should be elected exclusively by those who pay something towards the taxes imposed. Those who pay no taxes, disposing by their votes of other people's money, have every motive to be lavish and none to economise. (...) It amounts to allowing them to put their hands into the people's pockets for any purpose which they think fit to call a public one.*

The rich had reason to fear. Little more than a century ago, social transfers were virtually nonexistent in about every country except for modest poor reliefs. Today, all democratic

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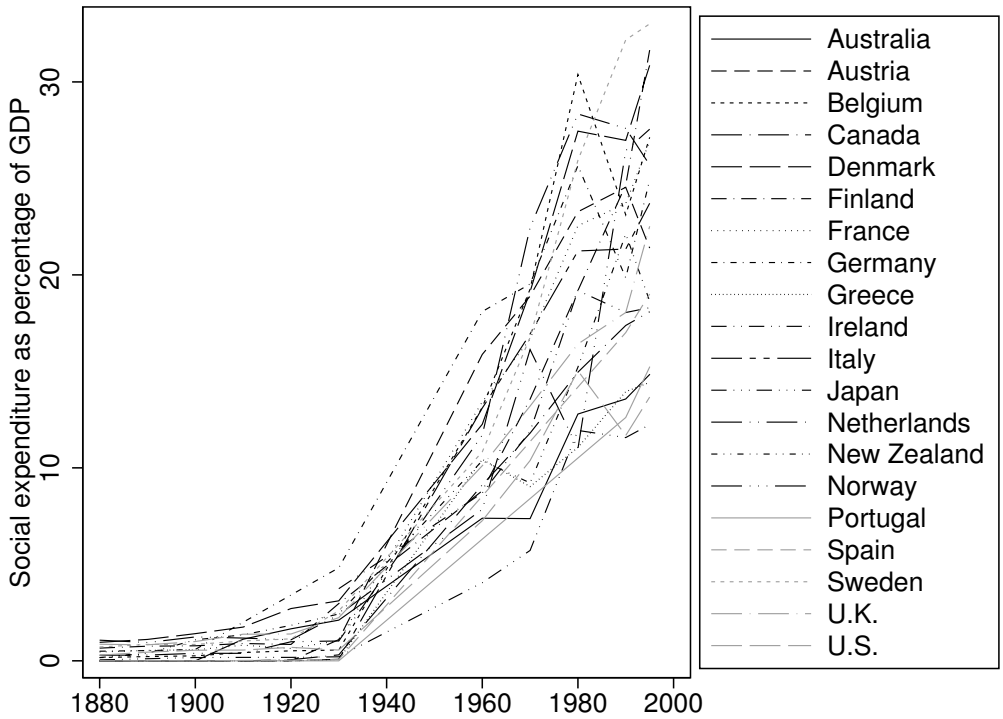
Figure 1. Evolution of social expenditure as a share of GDP. Source: Lindert (2004).



countries have well developed welfare states albeit of different sizes. This dramatic change is illustrated in Figure 1, which shows how the share of GDP used on social expenditure has changed over time for a number of developed countries. Starting close to zero for all countries in 1880, it has reached levels between 15 and 35 percent at the end of the 20th century.

In this paper, I start out by reviewing how contemporary political economists study and model the political process that determines the size of social transfers and discuss some extensions of the basic models. I then discuss how well the theory fits the data by drawing on a number of empirical studies. It turns out that the empirical performance of the basic model is quite poor. To accommodate this, a number of extensions that can make the model more realistic and fit the data better have been suggested. These extensions mainly attempt to explain why more inequality may not lead to higher political demand for redistribution. I review a selection of these approaches towards the end of the paper.

Why should we expect the poor to expropriate the rich?

Let us start by reviewing the baseline model of political determination of the size of public transfers in a democratic society set forth by Romer (1975), Roberts (1977), and Meltzer and Richard (1981). Romer (1975) was the first to study this question. In its simplest form, there is a linear tax rate that is determined by majority voting. We could of course also think of this as the outcome in a

Downsian (1957) model with two parties competing for office with tax policy the only cleavage. Romer (1975) imposed quite strong assumptions on preferences to get single peakedness, which is essential to apply the median voter theorem. Roberts (1977) showed that the tax preferences of the agent with median income would be a Condorcet winner under more general assumptions. Finally, Meltzer and Richard (1981) extended the analysis by studying the effect of an increasing in inequality, modelled as a mean preserving spread.

The basic model

Consider a society with a continuous population whose mass we can without loss of generality normalize to unity. Each agent receives an exogenous pre tax income y, and the distribution of incomes in society is described by a cumulative distribution function F. In all empirically observed income distributions, the mean income is above the median, so the distribution of income is skewed to the right. A linear tax t is levied on incomes and all collected revenues are used for uniform lump sum transfers. If average income in society is $\bar{y}$, then a total of $t\bar{y}$ is collected in taxes. To take into account possible dead weight losses from taxation, only $T(t)\bar{y}$, where $T(t) \leq t$, is left for transfers. To get the usual shape of the Laffer curve, we usually assume that $T(0) = 0$, $T'(0) = 1$, and $T''(t) \leq 0$. Now a person with pre tax income gets a post tax income $(1-t)y + T(t)\bar{y}$.

In its simples form, people only value own consumption, so their objective is to maximize their own post tax income. It is easily seen that the preferred tax rate is given by

$$t = \begin{cases} T'^{-1}(y/\bar{y}) & \text{if } y < \bar{y} \\ 0 & \text{if } y \geq \bar{y} \end{cases},$$

where T'^{-1} is the inverse of T'. As T'^{-1} is decreasing, the preferred tax is decreasing (or non-increasing) in income. In this simplified version of the model, preferences are also clearly single peaked when the utility function is increasing and concave.[1] Hence it follows from the median voter theorem that the only tax rate that will beat all other suggestions in pairwise voting, i.e. the only Condorcet winner, is the tax rate preferred by the median voter which in this case is the voter with median income as preferences are monotone in income. If the median income is y^m, then the chosen tax rate is given by $T'^{-1}(y^m/\bar{y})$.

Meltzer and Richard's (1981) innovation was to look at the comparative statics of the model. Particularly, it is easily see that as $T'' \leq 0$, the politically chosen tax rate is increasing in $\bar{y}/y^m$, the mean-median ratio. The intuition is simple. If the mean-median ratio is high, the median voter is poor relative to average income in society, so he has a lot to gain by taxing the rich a lot and looses little by being taxed herself as his pre tax income is low.

As a low median income relative to the mean is a sign of high inequality, Meltzer and Richard's result is often taken to say that ceteris paribus, we should expect to see more redistribution in unequal societies than in more equal societies.

The model also gives simple predictions for the effect of extensions of the franchise. With limited franchise, the right to vote is usually reserved mostly for the well off. The model set out above still applies, but the median voter is the voter with median voter

1. To see this, if the utility of consumption is given by the function u, then $du/dt = u'(T'(t)\bar{y} - y)$ and $d^2u/dt^2 = u''(T'(t)\bar{y} - y)^2 + u'T''(t)\bar{y} < 0$.

within the classes that have the right to vote. We would then expect $y^m/\bar{y}$ to be high, it may even be above unity so the chosen tax rate is zero. Extending the franchise implies an inflow of new, mostly poor voters, so the median income of voters decline. Then the chosen tax rate increases. This may be one explanation for the strong increase in social spending illustrated in Figure 1.

Extensions

The baseline model contains two elements that are on a reduced form, the deadweight loss of taxes-function T and the income distribution F. As the simplest version of the model does not have anybody responding to incentives, taxes would not have distortionary effects. But it is straightforward to extend the model to contain a labour supply decision so that higher taxes reduce labour supply below its optimal level.[2] Also we only assume that there is inequality without saying anything about the sources of inequality. The existence of inequalities is obvious from both casual and more elaborate observation. The exogeneity of income inequality might be thought about in different ways. It could be some skill or ability that affect income that this given by birth, but distributed unequally. A perhaps more satisfactory explanation is that it is given by history. If someone grows up in a rich home, he gets better and more education and hence enters the labour market with more human capital than someone from a poor home.

In the baseline version of the model, voters only take their own post tax income into account when casting their votes. This may be a too simplistic view of political behaviour, as there are clear indications that most voters have a broader view on the consequences of the implemented policy. Both a casual view at political propaganda ("Voting for us will be good for the economy", not "Voting for us will be good for your wallet"), and the mere fact that people actually vote, which is usually explained by recourse to civil duties, indicate that votes should be modelled as having a social conscience. A simple way to do this is along the lines of Lind (2004a), where I say that voters maximize a weighted sum of their own utility and utilitarian social welfare. This means that a voter's preferred tax rate is the rate that maximizes

$$\alpha u[(1-t)y + T(t)\,\bar{y}] + (1-\alpha)\int u[(1-t)\,x + T(t)\,\bar{y}]\,dF(x).$$

As the social conscience term is identical for all voters, the median voter is still the voter with median income. However, his preferred tax rate depends generally on the weight α. Galasso (2003) argues within a fairly similar framework that the median voter's preferred tax rate is increasing in his degree of altruism, but we need to impose stronger conditions to get this result.

The effect of increased inequality is straightforward to analyse. The standard way of implementing increased inequality is a mean preserving spread in the income distribution. If we impose the standard concavity assumption on individual utility functions, it follows directly from well known results from the theory of choice under uncertainty that if $\alpha < 1$, the preferred tax rate is increasing if there is a mean preserving spread in F (Rotschild and Stiglitz 1970).[3] This will be the case if the spread makes the

2. This is done for instance by Persson and Tabellini (2000: Ch. 6).
3. More formally, if we define M_y as the step function with $M_y(x) = 0$ for $x < y$ and $M_y(x) = 1$ for $x \geq y$, a voter's

median voter no better off than before. This is more general than in the basic case. There, a mean preserving spread reducing incomes below the median, but preserving the median to mean ratio, has no effect on politics. With this extension, it would. Furthermore, in the case where agents are perfect utilitarian altruists, so $\alpha = 0$, we still get that increased inequality increases the desired tax rate.

The baseline version of the model assumes that all agents vote, or at least that turn out rates are uniform across income groups. It is well known, however, that turn out rates tend to be higher among high income groups and more educated groups. Assume a fraction of agents with income votes. Then we would expect to be an increasing function. The decisive agent or median voter in this economy is the one with income satisfying

$$\int_0^{y\phi} \phi(y)\, dF(y) = \int_{y\phi}^{\infty} \phi(y)\, dF(y).$$

The more increasing ϕ is, the higher is the right hand side of this expression relative to the left hand side, so $y\phi$ is higher the more increasing ϕ is. As the preferred tax rate is decreasing in income, a richer decisive agents means that a lower tax rate is chosen. Hence the more turn out depends on income, the lower is the chosen tax rate.

Whereas the baseline model is strictly static, real world politics takes place in a dynamic world so the outcome of one election may affect the outcome of the next election. Different approaches have been suggested to incorporate dynamic aspects into models of voting over redistribution.

The simplest way is the one followed e.g. by most of the literature on a political economy channel between inequality and growth (Alesina and Rodrik 1994, Persson and Tabellini 1994). Here, there are no proper dynamics in the political process. In Alesina and Rodrik's (1994) version, although the model is dynamic, voting takes place at the beginning of history and the result is kept for all consecutive periods. In Persson and Tabellini's (1994) version, agents vote every period, but given their assumptions on the accumulation of capital, the tax rate in one period does not affect preferences and hence outcomes of later elections.

A theoretically more satisfactory approach is the one followed by Krusell, Quadrini, and Ríos-Rull (1997) and Krusell and Ríos-Rull (1999), who have explicit dynamic models with voting every period, capital accumulation, and fully rational forward looking agents. The disadvantage is that these models cannot be analysed analytically, but they can be studied using fairly standard numerical analyses. Although the conclusions they reach are more nuanced, the overall picture is to a large extent the same as in the basic model.

Finally, the basic model restrict political choices to linear tax schedules. This is in stark contrast to observed tax rules, which are progressive in almost all countries. The simple reason for this restriction is that the modelling gets much simpler. In a richer framework where non-linear taxes are allowed, the choice of tax schedule is multi-dimensional so the median voter theorem will generally not apply and voting cycles may easily arise. One way around this obstacle is to look at non-linear taxes chosen from specific sets of tax schedules. Cukierman and Meltzer (1991), for instance, consider the case of quadratic

preferred tax rate maximizes $\int u[(1-t)x + T(t)\bar{y}]\, d[\alpha M_y + (1-\alpha)F](x)$. Hence the preferred tax rate is increasing if we have a mean preserving spread in $\alpha M_y + (1-\alpha)F$.

tax schedules.[4] Imposing some conditions on the skewness of the income distribution and deadweight loss of taxation, they show that the preferred schedule of the agent with median income is a Condorcet winner, and also that the progressivity is increasing with a mean preserving spread of the income distribution. Carbonell-Nicolau and Ok (2005) study very general tax schedules, only restricting the tax rate to be continuous and lie in for all tax payers. The choice of a tax schedule is then a choice from the space of continuous functions. With two parties, there are no pure strategy equilibria, but they show that a mixed strategy equilibrium exists. Also, these strategies do generally not imply that politicians put all weight on progressive schedules, generally they will put positive weight on linear or regressive schedules as well.

Empirical evidence

The main prediction of the baseline model is that ceteris paribus, there should be more redistribution in unequal societies then in equal societies. Although the baseline model only allows inequality to be measured by the mean to median ratio, the extension to voters with a social conscience predicts that inequality more generally should increase redistribution.

This hypothesis has been tested empirically in a number of studies. The fundamental empirical strategy is to study either a time series within one country, a cross section of countries or regions within a country, or a panel of countries or regions. The researcher then has to find a measure of inequality I_{it} and a measure of redistribution or taxation R_{it}, and run a regression of the form

$$R_{it} = \alpha_i + \beta I_{it} + \gamma z_{it} + \varepsilon_{it},$$

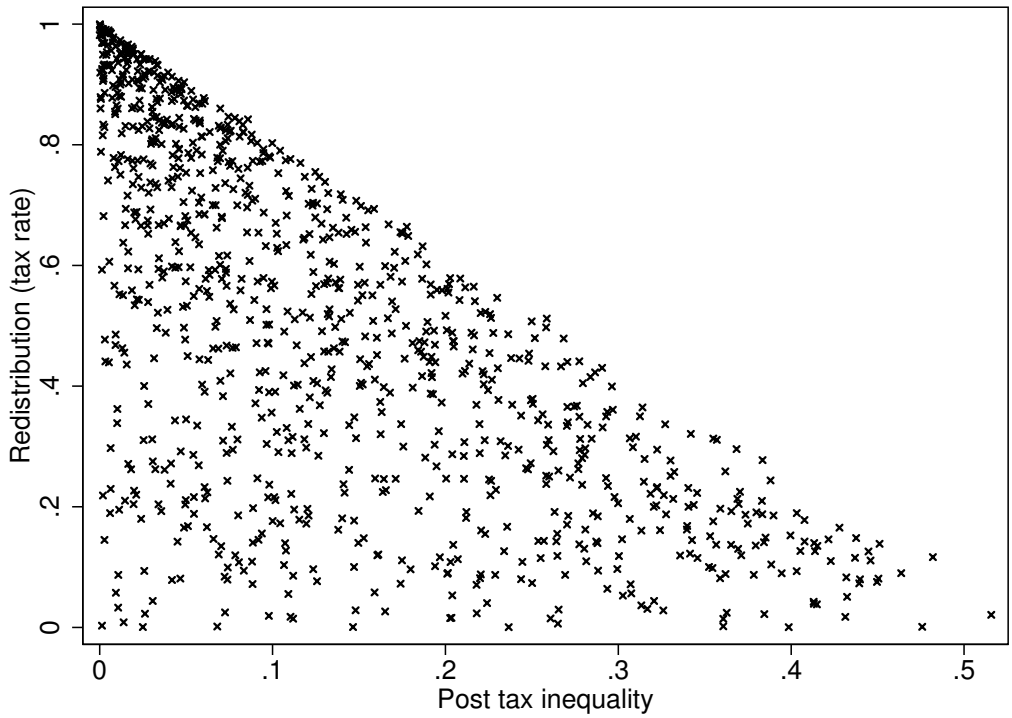
where z_{it} is a vector of control variables and ε_{it} a stochastic error term. A test of the theory is whether β is estimated as a significant positive parameter.

There are a number of potential pitfalls with this approach. First, in the cross section and panel data approaches, we take inequality measures from different units of observation. Hence we have to assure that these measures are comparable as inequality data from different sources may be based on different units of observation (individuals vs. households), different definitions of income, different survey outreaches (only urban areas vs. the whole country) and so on. As noted by e.g. Atkinson and Brandolini (2001), such problems are widespread in popular collections of data like the one compiled by Deininger and Squire (1996).

Second, the theory predicts that if inequality before tax is high, we should see much redistribution. However, most published data on inequality are one inequality after taxes and transfers. Using such data to proxy for pre tax inequality can lead to erroneous results as there is no clear prediction from theory that there should be any relationship between post tax inequality and the size of transfers, rather the opposite. To see this, consider a case where taxes are chosen independently of pre tax inequality, say chosen at random. Post tax inequality will then be high if pre tax inequality was high, but will be lower if taxes are high. As pre tax inequality and taxes are independent, we will see a negative correlation between post tax inequality and taxes, which here would be a measure of redistribution, i.e. a mechanical

4. They also restrict the allowed tax to imply a marginal tax rate in [0,1) for all agents, and disallow anyone paying more than 100% tax.

Figure 2.
The bias from using post tax data instead of pre tax data to explain redistribution



rejection of the model. Hence in addition to the usual attenuation bias from using post tax inequality as a proxy for pre tax inequality, there is also a negative bias in the estimate due to reverse causality.

To illustrate the effect, I generated 1000 societies, each with a log normal pre tax income distribution and inequality chosen at random. A tax, whose rate is a random draw from the unit interval, is introduced, and post tax income calculated. The tax is hence independent of pre tax income. A plot of the exogenous tax rate against post tax inequality is shown in Figure 2. It is clearly seen that although the tax rate, which here is a measure of the amount of redistribution, is drawn at random, there appears to be a negative relationship as high levels of post tax inequality only can be obtained if the tax rate is low. Consequently, even if the model is true, we may get a negative or zero correlation between redistribution and post tax inequality, and this cannot be takes as a rejection of the theory.

Early studies

The first econometric test of the theory was by Meltzer and Richard (1983). They had time series data on inequality and transfers for the US for the post war period. Using standard techniques, they found a significant negative relationship between inequality and redistribution, and interpreted this as support for the theory. Their measure of inequality was median/mean ratios calculated from data from the Social Security Bulletin, which only give a crude measure of income. Furthermore, the study has a number of econometric

shortcomings. As noted by Tullock (1983) and Rodríguez (1999), the data are non-stationary so OLS gives misleading inference. Using an extended sample and more appropriate techniques, Rodríguez (1999) cannot replicate Meltzer and Richard's original findings.

There are also a number of cross sectional studies, for instance Perotti (1996) and Lindert (1996). These studies use post tax inequality as their measure of inequality, and as explained above, this leads to a downward bias in the estimated relationship. This is also what is usually found. Hardly any studies find any robust positive relationship between inequality and redistribution, and most of the time they find no relationship at all.

Studies on local data

Moffitt et al. (1998) use a panel of US states instead of cross country data. Although their study is not directly aimed at testing the basic model set out above, it is still of interest for that purpose. They use the March supplement to the Current Population Survey (CPS), which contains detailed data on income, to construct measures of inequality. The specific measure they use is the weekly wage at the 25th percentile, when they also have average weekly wages as a control variable. The measure of redistribution in their study is the maximum allowance under the Aid to Families with Dependent Children (AFDC) program, one of relatively few measures of the magnitude of redistribution that is determined at the state level. They find a weak negative relationship between the two variables, contradicting the basic model. However, the importance of their finding for the model is weakened by their use of an unconventional measure of inequality and a very restrictive measure of inequality.

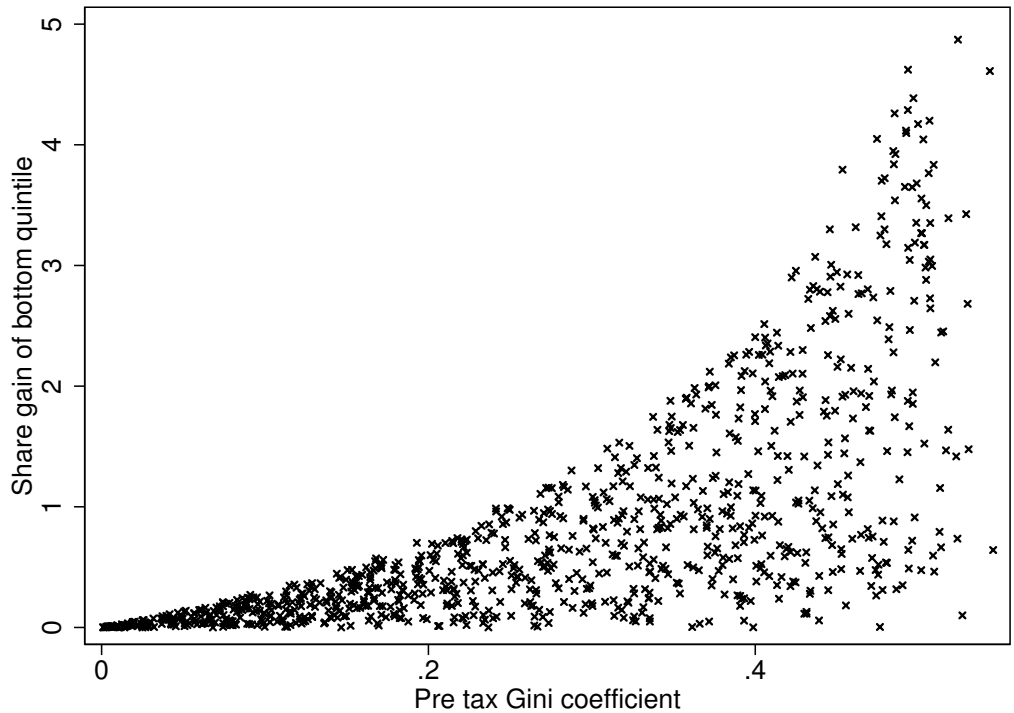
Gouveia and Masia (1998) also use a panel of US states. Their measure of inequality is the median to mean ratio of usual weekly earnings for employed males, taken from the CPS Outgoing Rotation Group. To measure redistribution, they use public provision of private goods, pure redistribution, and the two together. This measure is adjusted by one minus the dependency ratio to capture the effect of some agents being outside the labour force and hence not paying taxes. In all their specifications, they find that inequality has a negative effect on redistribution and public spending, i.e. they find no support for the model.

Borge and Rattsø (2004) use Norwegian local data, where they have data on the median to mean ratio of pre tax income for tax payers. They use this to explain the level of property taxation and poll taxes (mostly user charges of public utilities). They find that increased inequality leads to increased use of property taxation and reduced use of poll taxes, and interpret this as supporting the basic model.

Studies on cross country data

Milanovic (2000) use the Luxembourg Income Study (LIS) to construct measures of inequality on pre tax income. The LIS is a harmonized collection of micro data on income from a number of mostly rich countries, so we can also be fairly confident that the inequality measures derived from these data are comparable across countries. His measure of redistribution is the fall in inequality, as measured by the change in the share of income accruing to the bottom quintile and bottom half, before and after taxes and transfers. He regresses this on the Gini index of pre tax income, and finds a significant and positive coefficient in line with the predictions of the basic model. The drawback with this approach is that there is a possibility of a mechanic correlation between his measure of redistribution and inequality. To see this, consider the same procedure I used

Figure 3. Mechanical correlation in Milanovic's (2000) study

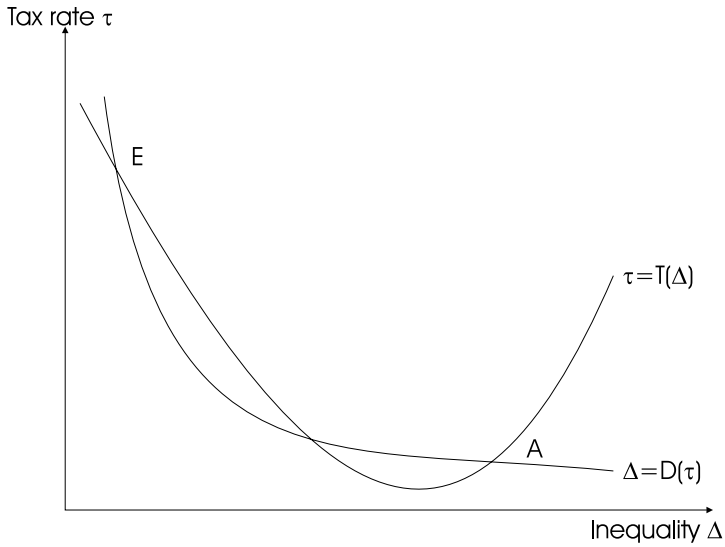


to construct Figure 2, where pre tax inequality and the tax rate are drawn independently, so the tax is independent of pre tax income. Still I find a strong positive correlation between pre tax inequality and Milanovic's measure of redistribution. Figure 3 shows why. For societies with low pre tax inequality, even a high tax has little effect on the share gain. In a more unequal society, this effect is potentially much stronger. This means that the share gain is close to zero for equal societies, but spans a wide positive interval for high inequality hence generating a positive correlation.

Finally, there are two studies by Moene and Wallerstein (2001, 2003) where they test the model on a panel of OECD countries. They have data on 90/10 differentials in weekly wages that they use as a measure of pre tax inequality. This is used to explain a wide range of measures of public expenditure. Their main conclusions are that there is no relationship between their measure of inequality and transfers to pension and health and a negative relationship between inequality and expenditure on income replacement and unemployment insurance. This seems to contradict the main theory, but they take it in support of their own alternative theory that we return to below. Although the basic model has inequality in total household income, and not individual weekly wages, this is unlikely to give very different results.

To conclude on the empirical studies, there is little support in favour of the basic model and some studies find the opposite sign on the effect inequality has on redistribution. Consequently, even if the model may not be

Figure 4. Equilibria in Bénabou's (2000) model



entirely wrong, it is incapable of explaining a large fraction of what is going on in the data.

Explaining why the basic model fails

Given the mediocre performance of the basic model, a number of scholars have attempted to derive extensions to the model so it can give a better picture of reality. A basic feature of most of these studies is an attempt to generate less support for welfare among the poor, or at least the middle class where the median voter would be, than the standard model predicts. If we look at the relationship between income and preferences for redistribution and its translation into voting behaviour, it is actually relatively weak. Using Norwegian election surveys, I have studied how much higher incomes reduce the support for redistribution and increases the propensity to vote conservative (Lind 2005). The simple correlations are quite strong; the support for the conservative party is almost double in top income quintile relative to the bottom quintile. However, this may be due to unobserved characteristics of the agents, such as social background. To correct for this, I use the panel structure of the data to introduce individual specific fixed effects. Doing this, approximately half of the effect of income on voting disappears, so it seems that the causal effect of high incomes in voting behaviour is relatively weak.

Multiple social contracts

One explanation for the lack of a positive relationship between inequality and redistribution has been given by Bénabou (2000, 2004), who argues that there my be multiple equilibria. In one equilibrium, there is little inequality and a high degree of redistribution, corresponding largely to the European model, and in one equilibrium there is little redistribution and high inequality, corresponding to the American model.

His approach is to extend the basic model to include inter-generational insurance, so redistribution has an insurance effect. Furthermore, there are incomplete credit

markets so redistribution may have a productivity enhancing effect. However, taxation also has an effect of reducing labour supply, hence reducing economic efficiency.

With these ingredients, we can generate the relationships depicted in Figure 4. The downward sloping curve D simply says that higher taxes reduce inequality as taxes are collected for redistributive purposes. The more interesting curve is T which gives the relationship between inequality and demand for redistribution. Bénabou shows that this curve can be U-shaped under reasonable conditions. In the basic model, this curve would be upward sloping for all levels of inequality. The upward sloping part of the curve comes from a similar effect in this model. But in this model it may also have a downward sloping part. The intuition is that at very low levels of inequality there is almost no distributional conflict, and all citizens agree to choose the optimal tax level to solve credit constraints. If inequality gets somewhat higher, then there are some rich agents who start loosing from redistribution and hence oppose it. This may reduce demand for redistribution. A crucial condition for this to hold is that the median voter has above median income, so we have to assume that turn out levels are higher among the rich than the poor though. Then we can get the demand for redistribution curve T to be U-shaped, giving rise to two stable equilibria A and E and one unstable equilibrium.

Prospects of upward mobility

Another explanation for large groups of poor opposing large redistributive schemes is Bénabou and Ok's (2001) "Prospect of upward mobility" (POUM) hypothesis, which essentially says that although a majority has income below average today, it could be that a majority rationally expect to have income above average next period. If policies are sufficiently persistent, this could lead voters with income below average, who in the simple model would benefit from higher taxes, to oppose taxes as their gain today is less than their loss next period. The crucial assumption for these expectations to be rational is that the income transition function, i.e. the mapping between income today and income next period, is concave. This means that expected income increases are larger if you are poor than if you are rich.

In the first period, agents receive incomes y according to some distribution with mean μ and median m. As usual, we assume that $m < \mu$. Call the transition function f. Then an individual with income y this period receives $f(y)$ next period. Assume for simplicity that the agent with mean income in the first period maintains his income, so $f(\mu) = \mu$. However, he will not be the person with mean income next period. As f is assumed to be concave, it follows from Jensen's inequality that next period's average income $Ef(y) < f(Ey) = \mu$. This implies that there is a group of voters with income today below μ who believe they will get income above $Ef(y)$ next period. This group may in theory include the median voter, who would then oppose redistribution. Bénabou and Ok (2001) also show that a similar reasoning holds if we allow the transition process of incomes to be stochastic and when we have more than two periods. One way to describe this approach is to say that they show that the American Dream under some conditions may be rational. Particularly, the more concave the transition function is, the easier it is that the median voter expects to have income above the average in the future. There is quite good empirical support for the hypothesis that expectations about a higher income affects preferences for redistribution (Alesina and La Ferrara 2005, Lind 2004b, Ravallion and Lokshin 2000). Whether these expectations are rational,

however, is not so easy to test. But there seems to be an effect that those who believe their economic situation are going to improve actually have higher income at the next election year (Lind 2004b).

Multidimensional politics

The basic model set out above was put as if voters were voting over tax levels directly. The standard way to rationalize this assumption is by recourse to a system with two parties who both propose platforms to maximize their probability of winning the election. We then have the result that both parties will propose platforms corresponding to the median voter's preferred policy (Downs 1957). However, a crucial assumption for this to hold is that tax policy is the only policy.[5] If this is not the case, the voting agenda will matter for electoral outcomes. Roemer (1998, 1999, 2001, 2004) has in a series of works attempted to construct models to capture this situation.

In his model, there are two parties, and each party has two factions, militants and opportunists.[6] Militants care only about ideology and choosing a platform as close as possible to an exogenously given policy whereas the opportunists only care about winning elections. Hence the opportunists correspond to the politicians in the standard Downsian model. The task is now to find a pair of platforms for the two parties that constitute a Nash equilibrium. With multi-dimensional policies, this will generally not exist unless there is also conflict within the parties. But in that case, Roemer has shown that what he calls political unanimity Nash equilibria (PUNE) exist under quite general conditions. The PUNEs are usually not unique, and there may be several hundred equilibria so it is not trivial to say what the effects of a change in the exogenous variables are. Roemer takes the average of these for his analyses.

To see how Roemer's approach may explain a reduced relationship between inequality and redistributive politics, consider a society with two cleavages, tax policy and one dimension we may call religion. For simplicity, say there are four types of voters, religious and non-religious left wing and religious and non-religious right wing, where left and right is taken with regard to economic policy. There is a left wing party that is non-religious and a right wing party that is religious. Ideally, the leftist party want to go for high taxes. However, by aiming for lower taxes, it may be able to attract some of the non-religious right wing voters if they put sufficient emphasis on religious questions. This tends to move both parties towards the centre of the political spectrum, and very high tax rates will not be chosen. The idea that religion may act against a strong leftist movement is not new, but the PUNE approach makes it possible to study multi-dimensional politics formally, in order to make the discussion clearer. The prediction that religion tend to reduce preferences for redistribution also seems to find empirical support. Chen and Lind (2005) find a strong correlation between religious activity and opposition to redistribution in a large number of countries. In a more direct test of the PUNE approach, Lee and Roemer (2005) find that "moral issues" to a large extent can explain the lack of economically motivated voting in the 2004 US presidential election.

5. We could in principle have more dimensions, but in such a way that voters are aligned equally in all dimensions. This is for most practical purposes an unrealistic assumption.
6. He sometimes also include a third group, reformists, who share characteristics with both groups. But this group turns out to be unimportant.

Race

Although religion is certainly an important second cleavage that may hinder redistribution, a more important cleavage is arguably race, particularly if we study the US. Roemer and Lee (2004) have extended the analysis above to race, and with a similar reasoning, find empirical support for bundling race and redistribution issues, hence limiting the support for redistribution. Roemer and van der Straeten (2004) find evidence of the same effect in Denmark.

Race can have other affects than simply making politics multidimensional. Austen-Smith and Wallerstein (2004) argue that affirmative action can in itself be an obstacle to universal social security. They present a model with good and bad jobs, and where affirmative action reserves a certain share of good jobs for the minority. In addition, there are universal transfers to everyone in a bad job. In a model of legislative bargaining, they show that a coalition between the rich and the minority that emphasizes affirmative action and downplays social security may arise.

Race may also play a role by reducing how closely knit the population is. In Lind (2004a), I present a model where people have social consciousness in the sense that their preferred tax rate is the optimum of a weighted average of their individual preferences and a utilitarian welfare function. However, voters feel more for people from their own race, so their utilitarian welfare function put disproportionately high weight on their race or group. If people put more weight on their own group, voters from the rich group will prefer lower taxes and agents from the poor group higher taxes. It turns out that under reasonable assumptions, the more weight people put on their own group, the lower is the aggregate demand for redistribution. Furthermore, in a society where social conscience is group biased, the effect of increased inequality may have different effects. Increasing inequality within groups has the same effect of increasing the support for redistribution as in the basic model. Increasing inequality between groups, however, has the opposite effect of reducing the support for redistribution. Using a panel of US states, I find empirical support for this hypothesis.

Redistribution versus social insurance

In the basic model, all transfers are universal and lump sum. In most modern welfare states, however, targeting of disadvantaged groups, particularly through social insurance, is an important feature. As some gain more than others from such schemes, the pattern of support for high spending is altered. Moene and Wallerstein (2001) present a model where the middle class moves between employment and unemployment through a stochastic process. At the beginning of time, they vote over both the size of redistributive schemes and the proportion of redistribution that should be targeted the poor. They find that increased inequality increases the median voter's preferred level of redistribution if redistribution targets the employed, but reduces his support if redistribution targets the unemployed. If the fraction of targeting and the total size of transfers are endogenous, which they model as a two step voting procedure, they find that increased inequality reduces the politically chosen size of transfers if initial inequality is below a certain threshold. Increased inequality has two effects in their model. First, as increasing inequality reduces the median voter's income, it increases his demand for universal redistribution exactly as in the standard model. But in their model, transfers also serve as insurance against income losses. And as insurance is a normal good, reduced inequality reduces the demand

for insurance. When initial inequality is below the threshold, the second effect dominates, and increased inequality reduces the support for redistribution.

The empirical support for this hypothesis is good. Using a panel of OECD countries, Moene and Wallerstein (2001, 2003) find that inequality has a significant negative effect on income replacement, unemployment, and other insurances. It has no significant effect on pension and health spending.

Conclusion

The median voter model to determine the size of redistributive transfers is one of the work horse models of modern political economics. A main prediction of the model is that we should see more redistribution in societies with high inequality. As the poor, who will constitute a majority, has more to win from taxing the rich the richer the rich are, this seems plausible from a theoretical point of view.

But a review of the empirical literature that has attempted to test this hypothesis shows that the support for the hypothesis is at best mixed. Although some studies find support for the hypothesis, there are also a number of studies that find the opposite relationship between inequality and redistribution.

In recent years, a number of scholars have tried to explain why there is so little redistribution, often under the heading of the "redistribution puzzle". Mostly, this is done by extending the model to give a theoretically sound explanation for why there is less relationship between income and preferences for redistribution than the simple theory predicts. So far, I do not think there is a clear consensus for why there is so little redistribution, and it is unlikely that only one of the explanations reviewed above should be the sole cause. Although some of the work on the redistribution puzzle include empirical tests, there has not so far been any good comparisons of the empirical performance of the different approaches. This is likely to be a fruitful area of research in the future.

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