Fractionalization and the size of government*

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Abstract

This paper studies the effect of fractionalization on the level of taxation and economic performance. Within a political economy model of tax determination, I study the effect of voters with a group-based social conscience. Voters care more about the well-being of those belonging to their own group than the rest of the population. I show that under fairly general assumptions, fractionalization reduces the size of government. I also show that because voters with partial social conscience have a bias towards what favour themselves in their preferences, fractionalization may in some cases serve as a counterweight and hence improve efficiency. Finally, I study how the party system affects this conclusion.

Keywords: Fractionalization, political economy, redistribution

JEL classification: D31, D72, E62, H20

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1 Introduction

It is a puzzle that countries with a highly unequal distribution of income and wealth on average have less redistribution and smaller governments than do more egalitarian countries. This is contrary to the conventional theoretical approach initiated by Romer (1975), Roberts (1977) and Meltzer and Richard (1981). They construct median voter models of redistribution where the size of government is increasing in the difference between the median voter’s income and the average of the economy. Since this difference is larger the higher the inequality is, we should observe more redistribution in unequal societies.

In the present paper, I present an explanation to this puzzle based on fractionalization. Economic studies of the effects of countries being fractionalized along ethnic, linguistic, religious and other lines have flourished the last years, mainly spurred by Easterly and Levine’s (1997) finding that fractionalization is correlated with low rates of economic growth. Although some of the most influential works have been based on studies of social conflict and lack of social capital (inter alia Benhabib and Rusticini 1996, Knack and Keefer 1997, 2000, Rodrik 1999), there are also some approaches based on political economy. Alesina, Baqir, and Easterly (1999) present a model of public provision of a differentiated public good. When the society is highly fractionalized, tastes for the different varieties of the public good differ much, and support for provision of the good declines. However, except for differences in tastes, all agents are equal so their model is not suitable to study how the income distribution affects public policy. Collier (2000, 2001) discuss this question, but his analysis is somewhat brief. I will also show that his conclusions does not necessarily hold in a more general framework.

I present a model in the tradition of Romer-Roberts-Meltzer-Richard tradition where a tax employed on redistribution is determined by popular vote. However, unlike the traditional model, I allow voters to have a social conscience in that they care about social welfare in addition to their private well-being. In itself, this extension does not change the main conclusions of the model. However, in fractionalized societies, it is natural to assume that agents care mostly about the welfare of those belonging to their own group, that is, agents have a group-bias in their social conscience.

In this framework, two persons with the same personal endowment, but one belonging to a rich and one to a poor group, have different preferences for taxation. The poorer the
group one belongs to, the higher is the preferred tax rate. This means that voters with the median preferred tax rate will have different endowments depending on which group they belong to. Consequently, we can no longer talk about the median voter as a single agent. Instead, there is a set of median voters, one from each group.

Higher fractionalization in the sense that people care more about their own group and less about the others tends to reduce the preferred tax rate for those voters who belong to a rich group. An increase in the degree of fractionalization therefore leads to a new set of median voters. Median voters who belong to a rich group now prefer lower tax rates and are replaced by poorer agents. Median voters who belong to a poor group are replaced by richer agents. I show that under general conditions, the result of this process is a political economic equilibrium where the chosen tax rate is lower. This is because the initial median voter from the poor group was in a higher income fractile within her group than the voter from the rich group. When the income distribution for each group is skewed to the right, this implies that the increase in the income of the median voters from the poor groups is larger than the decline in the income of the voters from the rich groups. Thus the tax rate preferred by the new set of median voters must be lower.

The framework also lends itself to study the implications of fractionalization on economic performance. Redistribution may permit poorer agents to undertake profitable investments that are impossible in an economy with a smaller government. Furthermore, if the marginal utility of money is decreasing, redistribution increases social welfare from a utilitarian perspective. Hence some redistribution is optimal unless it is very costly. A popular view is that fractionalization is detrimental to efficiency since it leads agents to put more weight on their own group and less on the welfare of society as a whole. However, since the median voter is poorer than the average in the economy, she may privately want to redistribute too much. In this case, fractionalization may increase social welfare because putting more weight on the group may act as a counter-weight to the private preference for high taxes.

Within this framework, there are two reasons why income inequality may be correlated with low redistribution. First, highly unequal societies are often also heavily fractionalized, and as I have argued, we can expect less redistribution in fractionalized countries. Furthermore, I show that in a fractionalized society, an increase in the income differential
between groups will tend to reduce the support for redistribution. The reasoning is quite similar to the one above; when the rich group becomes richer, their preferences for redistribution declines. Hence the new median voter from the rich group is poorer. Again, the decline in the income of the median voter from the rich group is smaller than the rise in the income of the median voter from the poor group. Then the new political equilibrium is a lower tax rate and less redistribution.

2 Baseline model

2.1 The non-fractionalized case

I consider an economy with a continuum of heterogeneous agents with mass normalized to one. Each agent has an initial endowment of a taxable capital good of which the distribution in the economy may be described by a cumulative density function $F$ with support $\Omega \subseteq \mathbb{R}_+$. Denote by $\bar{x}$ and $x_m$ the mean and median endowment. This capital good is used for production and yields a final utility given by a function $u$ which is assumed to be increasing and concave.\(^1\) There are imperfections in the credit market possibly due to information asymmetries or enforceability problems. One could model these imperfections explicitly, see e.g. Banerjee and Newman (1993), Aghion and Bolton (1997), and Bénabou (2001), this would obscure the main points of my analysis. Hence to simplify, I simply assume that there are no credit markets. In the absence of transfers, an agent with endowment $x$ reaches utility level $u(x)$, and under the assumption of a utilitarian social welfare function, social welfare equals $\int_{\Omega} u(x) \, dF(x)$. In this case there are two gains from redistribution. First, because the marginal product of capital is decreasing and credit markets do not exist, total production is increased by a more equal distribution of capital. This effect is similar to the one studied by Piketty (1997). Furthermore, it is natural to assume a decreasing marginal utility of money. Then the usual utilitarian argument implies that a redistribution from the rich to the poor increases total well-being in the society.

\(^1\)We might divide $u$ into two parts; production by some technology technology $h$ which is assumed to have standard neoclassical properties and preferences over the final good that may be described by an interpersonally comparable utility function $v$. Then we would have $u := v \circ h$. 

There is a government that redistributes resources before production takes place. Every agent faces a linear tax rate $\tau$ and receives a transfer $T(\tau) \bar{x}$ where $T$ is a function that represents the outcome of taxation. The function takes account of a possible deadweight loss. However, it is natural to assume that the loss is absent at $\tau = 0$ and increases as $\tau$ increases. Hence I will assume that $T$ satisfies $T(0) = 0$, $T'(0) = 1$, $T'(\tau) \leq 1$, and $T''(\tau) \leq 0$, that is, a concave Laffer curve.

The tax rate $\tau$ is determined as the outcome of a political process where the chosen tax rate corresponds to the one preferred by the median voter. The timing of the model is then the following:

1. Initial endowments received according to $F$
2. Voting over tax rate $\tau$
3. Taxation and redistribution
4. Production
5. Consumption

All agents care about their own utility at a given level of taxation. However, they also have a social conscience which implies that they care about the social welfare level. For a given mean income (tax base) $\bar{x}$, social welfare is given by

$$S(\tau, F) = \int_{\Omega} u[(1 - \tau) x + T(\tau) \bar{x}] dF(x). \quad (1)$$

The last argument of $S$ is an element from the space of income distributions. Notice that $S$ is linear in this element in the sense that for two functions $F_1$ and $F_2$ and two constants $a_1$ and $a_2$, $S(\tau, a_1 F_1 + a_2 F_2) = a_1 S(\tau, F_1) + a_2 S(\tau, F_2)$. I assume that an agent with initial endowment $x$ maximizes

$$U(x, \tau) = (1 - \alpha) u[(1 - \tau) x + T(\tau) \bar{x}] + \alpha S(\tau, F) \quad (2)$$

where $\alpha \in [0, 1]$ is a coefficient of social conscience. Consider the class of functions

$$D_x(y) = \begin{cases} 0 & \text{if } y < x \\ 1 & \text{if } y \geq x \end{cases}. \quad (3)$$
that is, the distribution of a degenerate random variable that equals \( x \) with probability one. We may also write \( D_x (y) = H (y - x) \) where \( H \) is the Heaviside function. Now, it is seen that \( U \) may be rewritten

\[
U (x, \tau) = (1 - \alpha) S (\tau, D_x) + \alpha S (\tau, F) = S (\tau, (1 - \alpha) D_x + \alpha F),
\]

where the last equality follows from the linearity of \( S \).

As a result, to study individual voting behaviour, we can restrict attention to the properties of \( S \). Before proceeding to the description on fractionalized societies, I will halt for a moment and explore some properties of the function that will come handy later on. For any distribution function \( G \), maximization of \( S \) with regard to \( \tau \) yields the first order condition

\[
S_\tau (\tau, G) = \int_\Omega u' [(1 - \tau) x + T (\tau) \bar{x}] [T' (\tau) \bar{x} - x] dG (x) = 0
\]

and the second order condition

\[
S_{\tau\tau} (\tau, G) = \int_\Omega u'' [(1 - \tau) x + T (\tau) \bar{x}] [T' (\tau) \bar{x} - x]^2 + u' [(1 - \tau) x + T (\tau) \bar{x}] T'' (\tau) dG (x)
\]

\[
< 0.
\]

This means that preferences are single-peaked, so we can always use the median voter theorem. We have for all \( x \) and \( \tau \)

\[
\frac{\partial}{\partial x} \{u' [(1 - \tau) x + T (\tau) \bar{x}] [T' (\tau) \bar{x} - x]\} = u'' [(1 - \tau) x + T (\tau) \bar{x}] [T' (\tau) \bar{x} - x] (1 - \tau)
\]

\[
- u' [(1 - \tau) x + T (\tau) \bar{x}],
\]

which is negative unless \( u'' \) is too large for high incomes\(^2\). We then have the following lemma:

**Lemma 1** If (7) is negative, then for two income distributions \( G_1 \) and \( G_2 \) where \( G_1 \) first order stochastically dominates \( G_2 \), we have \( S_\tau (\tau, G_1) \leq S_\tau (\tau, G_2) \).

\(^2\)This is equal to the derivative wrt. \( \tau \) of the marginal utility of money. There are two effects; increased taxes makes people keep less of an increase in income, but increased \( \tau \) makes the rich less rich, which increases their marginal utility of money.
Hence if $G_1$ first order stochastically dominates $G_2$, i.e. there is a larger fraction of the population with endowment below any value under $G_2$ than under $G_1$, then the optimal tax rate is higher under $G_2$ than under $G_1$ (remember that we keep $\bar{x}$ fixed). Since $(1 - \alpha)D_x + \alpha F$ first order stochastically dominates $(1 - \alpha)D_x + \alpha F$ if $x_2 < x_1$, a corollary is that the politically chosen tax rate is higher the poorer is the pivotal agent, a result that is identical to the case without social conscience.

Furthermore, we have

\[
\frac{\partial^2}{\partial x^2} \{u'[(1 - \tau)x + T(\tau)\bar{x}] [T'(\tau)\bar{x} - x]\} \\
= u'''[(1 - \tau)x + T(\tau)\bar{x}] [T'(\tau)\bar{x} - x] (1 - \tau)^2 \\
- 2u''[(1 - \tau)x + T(\tau)\bar{x}] (1 - \tau),
\]

which is positive if $u'''$ is positive. This is the case with both constant relative and absolute risk aversion. We then have the following result:

**Lemma 2** If (7) is negative and (8) is positive, then for two income distributions $G_1$ and $G_2$ with the same mean and where $G_1$ second order stochastically dominates $G_2$, we have

\[S_\tau(\tau, G_1) < S_\tau(\tau, G_2).\]

Hence if the income distribution in a society gets more unequal in the sense of a mean-preserving spread, the optimal tax rate increases. Furthermore, if $\alpha > 0$, the median voter also prefers a higher tax rate even in the case where $x^m - \bar{x}$ is unchanged.

Denote by $\rho$ the function that to any given income distribution assigns the optimal tax rate:

\[\rho(G) = \arg \max_\tau S(\tau, G).\]

Since $S$ is globally concave, this optimum is unique and given by the solution to (5). Now the socially optimal tax rate is $\rho(F)$ whereas the tax rate preferred by an agent with endowment $x$ is $\rho((1 - \alpha)D_x + \alpha F)$. Furthermore, the tax rate preferred by the median voter is found as

\[\rho((1 - \alpha)D_{x^m} + \alpha F) \text{ where } F(x^m) \geq \frac{1}{2}.\]

Since $F$ is a right-continuous functions and not a correspondence, I should write $x^m = \min \{x | F(x) \geq 1/2\}$ rather than $F(x^m) \geq 1/2$. However, for notational simplicity, I will use this slight abuse of notation. This is to account for situations where $F$ has a
mass point at \( x^m \). If this is not the case then \( F(x^m) = 1/2 \). It is clear that in general, \( \rho(F) \neq \rho((1 - \alpha) D_{x^m} + \alpha F) \). This bias is because the median voter maximizes

\[
S(\tau, (1 - \alpha) D_{x^m} + \alpha F) = S(\tau, F) + (1 - \alpha) [S(\tau, D_{x^m}) - S(\tau, F)] .
\] (10)

Consequently, the deviation from the optimal tax rate will depend on the magnitude of the term in square brackets which corresponds to the difference between the median voter’s personal utility of a given tax rate to the average utility of the same tax.

It is also clear that as \( \alpha \) approaches unity, the last term in (10) disappears and the politically chosen tax rate approaches the social optimum. We know that the politically chosen tax rate satisfies

\[
S_{\tau}(\tau, (1 - \alpha) D_{x^m} + \alpha F) = 0 .
\] (11)

Implicit differentiation of \( \tau \) with regard to \( \alpha \) yields

\[
\frac{\partial \tau}{\partial \alpha} = -\frac{1}{S_{\tau \tau}} (S_{\tau}(F) - S_{\tau}(D_{x^m})) \geq 0 \text{ as } \rho(F) \geq \rho(D_{x^m}) .
\] (12)

If \( \rho(F) < \rho(D_{x^m}) \), higher \( \alpha \) will make the median voter decrease her chosen tax rate as she cares more about what is optimal for society (\( \rho(F) \)) and less about what is best for herself (\( \rho(D_{x^m}) \)).

### 2.2 Fractionalized societies

Assume now that the society is divided into a number of mutually exclusive groups where an agent belonging to one group cares about her own consumption and the social welfare of her group, but ignores the welfare of those belonging to the other groups. For simplicity, assume that there are only two groups, \( A \) and \( B \); the results presented below also hold for a larger number of groups, but the analysis become more cumbersome. A proportion \( q \) of the population belongs to group \( A \) and the remaining \((1 - q)\) to group \( B \). The income distribution within those groups are described by \( F_A \) and \( F_B \) which are both assumed to have support \( \Omega \). Hence \( F = qF_A + (1 - q) F_B \) and

\[
\bar{x} = q \int_\Omega x dF_A(x) + (1 - q) \int_\Omega x dF_B(x) .
\] (13)

Now, the utility of an agent with endowment \( x \) belonging to group \( i \in \{A, B\} \) is given by

\[
U_i(x, \tau) = S(\tau, (1 - \alpha) D_x + \alpha F_i) .
\] (14)
As shown above, preferences are single-peaked and within one group, the desired tax rate is decreasing in \(x\). However, two persons with identical endowments, but belonging to different groups, will in general have different preferred tax rates. Hence it is insufficient to look at the initial endowments to find the median voter. In fact, we will have two median voters, one from each group. They have a common preferred tax rate, but in general their endowments will differ. The tax rate \(\tau\) chosen by the median voters satisfies

\[
\rho \left( (1 - \alpha) D x^m_A + \alpha F_A \right) = \rho \left( (1 - \alpha) D x^m_B + \alpha F_B \right) = \tau \tag{15}
\]

where \(q F_A (x^m_A) + (1 - q) F_B (x^m_B) \ni \frac{1}{2}\).

In general, we have \(F_A \neq F_B\). Then normally \(\rho (F_A) \neq \rho (F_B)\), so for any \(x\), we also have \(\rho ((1 - \alpha) D x + \alpha F_A) \neq \rho ((1 - \alpha) D x + \alpha F_B)\). This is because the person belonging to the richest group prefers a lower tax rate than the one belonging to the poorest group when there is some degree of social conscience towards one’s own group. Then it follows that \(x^m_A \neq x^m_B\), and the endowment is lowest for the one belonging to the richest group. Notice also that \(x^m_A\) and \(x^m_B\) does usually not correspond to the median endowment of the respective group, but is determined by the system (15).

How should we understand this group-restricted social conscience? If we view the social conscience as a result of reciprocity (Bowles, Fong, and Gintis 2001, Bowles and Gintis 2000), this may be a likely situation. One person’s caring for another is conditional on the other caring for the first as well. An equilibrium and focal point in this situation is that persons belonging to one group care about all the others in that group and no others.

It is difficult to compare (9) and (15) in the general setup. However, if we consider an intermediate case, we can gain some insights. Particularly, in most of the discussion, we are going to consider agents who prefer the tax rate

\[
\rho \left( (1 - \alpha) H x + \beta \alpha F_i + (1 - \beta) \alpha F \right)
\]

when the endowment is \(x\) and the agent belongs to group \(i \in \{A, B\}\). When \(\beta = 1\), we have the completely fractionalized case whereas the non-fractionalized corresponds to
$$\beta = 0.$$ Now, the politically chosen tax rate \(\tau\) satisfies

$$S_\tau (\tau, (1 - \alpha) D_{x_A^m} + \beta \alpha F_A + (1 - \beta) \alpha F) = 0$$

$$S_\tau (\tau, (1 - \alpha) D_{x_B^m} + \beta \alpha F_B + (1 - \beta) \alpha F) = 0 \quad (16)$$

$$q F_A (x_A^m) + (1 - q) F_B (x_B^m) \geq \frac{1}{2}.$$ 

This is a system of three equations that determine the tax rate \(\tau\) and the income of the two pivotal voters \(x_A^m\) and \(x_B^m\). I will label the parameter \(\beta\) the degree of fractionalization. An increase in \(\beta\) implies that agents put more emphasis on their own group and less on society as a whole. In extremely polarized societies, we might have \(\beta > 1\), that is, agents want to hurt persons from the other groups. However, it is probably reasonable to think of \(\beta\) to lie in the interval \([0, 1]\) in most cases. It is important to distinguish this parameter from the Herfindahl index of fractionalization often used in empirical analyses.

Although the analysis so far has assumed that \(F_A\) and \(F_B\) correspond to actual income distributions, this need not be the case. If we ignore equation (13), these cumulative income distributions may also include a subjective weighting of the different income groups. If for instance the true income distribution in group \(A\) is described by \(F_A\), but the \(As\) put more weight on the poor than the rich in their utility calculus, we may use \(F_A = \mu \tilde{F}_A\) instead of \(\tilde{F}_A\), where \(\mu\) is a decreasing function, in our analysis. As a matter of fact, what we have discussed as fractionalization so far may simply be a different opinion of weight.

We might have a situation where the income distribution in both group is described by \(x\), but where the two groups have different weighting functions \(\mu_A\) and \(\mu_B\) and hence judge social welfare relative to \(\mu_A F\) and \(\mu_B F\). However, in this situation there is no clear social welfare function. Consequently, I will continue the discussion as if \(F_A\) and \(F_B\) correspond to real income distributions.

### 3 A simple example

I will start by looking at a simplified version of the model where there are only two levels of initial incomes, high income \(x^h\) and low income \(x^l < x^h\). This means that the income distributions are step functions. The distributions differ in the proportion of rich to poor agents. Hence except pathological cases, the median voter will belong to a single group. Offhandedly, we might believe that an agent from a poor group always prefers a higher
tax rate than one from a rich group. Effectively, this will be the case if agents have a low
degree of social conscience and low group commitment. I will refer to this case as a class
society as political preferences are determined mainly by income. In contrast, there are
cases where the group biased social conscience is so strong that the poor agents from the
rich group vote for a lower tax rate than the rich agents from the poor group. We may
say that their altruism for the rich of their own group overrides their poverty on election
day. I will label this a class society.

To simplify notation, I will write \( \psi^j (\tau) = u \left[ (1 - \tau) x^j + T (\tau) \bar{x} \right] \) for \( j \in \{ l, h \} \). Fur-
ther, let the fraction of \( A \)s having high and low income be \( q^h_A \) and \( q^l_A \), whereas the same
proportions for the \( B \)s are \( q^h_B \) and \( q^l_B \). We may summarize it in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>Rich</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A )</td>
<td>( q^l_A )</td>
<td>( q^h_A )</td>
</tr>
<tr>
<td>( B )</td>
<td>( q^l_B )</td>
<td>( q^h_B )</td>
</tr>
<tr>
<td>( q^l )</td>
<td>( q^h )</td>
<td>1</td>
</tr>
</tbody>
</table>

In what follows, I will assume that there are a larger proportion of rich among the \( A \)s
than among the \( B \)s, that is \( q^h_A / q_A > q^h_B / q_B \). We consider the partially fractionalized case.

The four groups have preferences over the tax rate given by

\[
\begin{align*}
A & \quad S (\tau, (1 - \alpha) D_{x^l} + \alpha \beta F_A + \alpha (1 - \beta) F) \\
B & \quad S (\tau, (1 - \alpha) D_{x^h} + \alpha \beta F_A + \alpha (1 - \beta) F)
\end{align*}
\]

We may now rewrite each group’s maximand as \( \psi^l (\tau) + \psi^h (\tau) \) where the value of \( \psi \)
for the four groups is

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>Rich</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A )</td>
<td>( \psi^l_A = \frac{(1-\alpha)q_A + \alpha \beta q_A^l + \alpha (1-\beta)q^l q_A}{\alpha \beta q_A^l + \alpha (1-\beta)q^l q_A} )</td>
<td>( \psi^h_A = \frac{\alpha \beta q_A^h + \alpha (1-\beta)q^h q_A}{(1-\alpha)q_A + \alpha \beta q_A^h + \alpha (1-\beta)q^h q_A} )</td>
</tr>
<tr>
<td>( B )</td>
<td>( \psi^l_B = \frac{(1-\alpha)q_B + \alpha \beta q_B^l + \alpha (1-\beta)q^l q_B}{\alpha \beta q_B^l + \alpha (1-\beta)q^l q_B} )</td>
<td>( \psi^h_B = \frac{\alpha \beta q_B^h + \alpha (1-\beta)q^h q_B}{(1-\alpha)q_B + \alpha \beta q_B^h + \alpha (1-\beta)q^h q_B} )</td>
</tr>
</tbody>
</table>

When the \( A \)s on average are richer than the \( B \)s, \( q^l_A / q_A < q^l_B / q_B \) and \( q^h_A / q_A > q^h_B / q_B \).

Then the \( A \)s put less weight on \( \psi^l (\tau) \) than the \( B \)s among both the rich and the poor.

Furthermore, the poor \( A \)s put more weight on this term than the rich \( B \)s if

\[
\frac{(1-\alpha)q_A + \alpha \beta q_A^l + \alpha (1-\beta)q^l q_A}{\alpha \beta q_A^l + \alpha (1-\beta)q^l q_A} > \frac{\alpha \beta q_B^h + \alpha (1-\beta)q^h q_B}{(1-\alpha)q_B + \alpha \beta q_B^h + \alpha (1-\beta)q^h q_B},
\]

which holds iff

\[
(1 - \alpha) - \alpha \beta \left( \frac{q^l_B}{q_B} - \frac{q^l_A}{q_A} \right) > 0. \tag{17}
\]
This is the case if agents have a low degree of social conscience, a weak group-commitment, and the As are not much richer than the Bs. If (17) holds, we have what I labelled a class society above. If (17) does not hold, we have what I referred to as a group society since voting behaviour is determined by group membership.

When the As are richer than the Bs, we have

\[ q_A^l < q_A^h \quad q_A^h > q_A^l \]
\[ q_B^l > q_B^h \quad q_B^h < q_B^l \]

and then it is easily seen that \( \psi^j_A \) is decreasing and \( \psi^j_B \) increasing in \( \beta \) for \( j \in \{h, l\} \). Hence if the decisive voter belongs to group A, increased fractionalization will imply lower tax rates whereas a decisive voter from group B will give increased taxes. When \( q_A^h > 1/2 \) or \( q_B^l > 1/2 \) the high-income As or the low income Bs have the pivotal voter in all cases. This situation is relatively uninteresting, so I will disregard it. Then, if we have a class society, the median voter belongs to group A if \( q^l > 1/2 \). In a group society, the median voter belongs to group A if \( q_A > 1/2 \). This is illustrated in Figure 1, where the arrows indicate the effect of an increase in \( \beta \) on the tax rate when the decisive voter belongs to the group. As the figure is drawn, the decisive voter is a high-income B if we are in the class society and a low-income A in the group society. In this case, the size of government is decreasing in the level of fractionalization in the class society, but increasing in the level of fractionalization if the society is a group-society.

4 The size of government

Although the analysis becomes somewhat more involved, the case of continuous income distributions is more realistic and also provides additional insights. Assume that there are no "holes" in the income distributions, that is, \( F_A \) and \( F_B \) are strictly increasing on \( \Omega \) and that the two income distributions contain no mass points. Then there exist marginal density functions associated to \( F_A \) and \( F_B \), call these \( f_A \) and \( f_B \), that satisfies \( 0 < f_i(x) < \infty \) for all \( x \in \Omega \) and \( i \in \{A, B\} \). Furthermore, the last line of (16) simplifies to \( qF_A(x_A^m) + (1 - q)F_B(x_B^m) = 1/2 \). Differentiation of the system (16) with regard to \( \beta \)
yields

\[
S_{\tau\tau}d\tau + (1 - \alpha) \frac{\partial S_{\tau}(\tau, D_{x^m})}{\partial x^m_A} dx^m_A + \alpha S_{\tau}(\tau, F_A - F) d\beta = 0 \quad (18a)
\]

\[
S_{\tau\tau}d\tau + (1 - \alpha) \frac{\partial S_{\tau}(\tau, D_{x^m})}{\partial x^m_B} dx^m_B + \alpha S_{\tau}(\tau, F_B - F) d\beta = 0 \quad (18b)
\]

\[
q_{f_A}dx^m_A + (1 - q) f_B dx^m_B = 0 \quad (18c)
\]

For simplicity, let us first solve the system for \(\partial \tau/\partial \beta\) at \(\beta = 0\). When we focus on \(\beta = 0\), it is sufficient to require that \(F_A\) and \(F_B\) are strictly increasing on a neighbourhood of \(x^m\). Then we get

\[
\frac{d\tau}{d\beta} = -\frac{-\alpha}{S_{\tau\tau}(\tau, (1 - \alpha) D_{x^m} + \alpha F)} [w_A S_{\tau}(\tau, F_A - F) + w_B S_{\tau}(\tau, F_B - F)] \quad (19)
\]

where

\[
w_A = \frac{q_{f_A}(x^m)}{q_{f_A}(x^m) + (1 - q) f_B(x^m)}
\]

\[
w_B = \frac{(1 - q) f_B(x^m)}{q_{f_A}(x^m) + (1 - q) f_B(x^m)}.
\]

\(w_A\) and \(w_B\) are the weights the two groups get in the political process. It depends on their size, but also the fraction of the group that is close to the median voter.

When group \(A\) is richer than group \(B\) in the sense that \(F_A\) first order stochastically dominates \(F_B\), and since \(F = qF_A + (1 - q) F_B\), we have \(S_{\tau}(\tau, F_A) < S_{\tau}(\tau, F) < S_{\tau}(\tau, F_B)\). Hence we have \(S_{\tau}[\tau, F_A - F] < 0\), so

\[
\frac{\partial^2\tau}{\partial w_A \partial \beta} < 0 \quad \frac{\partial^2\tau}{\partial w_B \partial \beta} > 0 .
\]

That is, the higher is the weight on group \(A\) relative to the weight on group \(B\), the higher is the tendency for increased fractionalization to have a negative effect on the tax rate. At \(\beta = 0\), the median voter has the same endowment in both group \(A\) and \(B\). When \(\beta\) increases, the \(A\)-median voter will care less about group \(B\), and consequently prefer a lower tax rate whereas the \(B\)-median voter now cares less about group \(A\) and therefore prefers a higher tax rate. Consequently, as \(\beta\) increases, the median voter will be an \(A\)-agent with endowment \(x^m_A < x^m\) and/or a \(B\)-agent with endowment \(x^m_B > x^m\). If \(f_A(x^m)\) is small, \(|x^m_A - x^m|\) will be large relative to \(|x^m_B - x^m|\), so the \(A\)-median voter will be poor relative to the former median voter. Although she has a tendency to prefer low tax rates
since $\rho (F_A) < \rho (F)$, this tendency is weakened by her wish to have high transfers because she is poor.

Since we do not know the magnitude of $S_{\tau} (\tau, F_A)$ and $S_{\tau} (\tau, F_B)$, we cannot directly assess the effect on $\tau$. However, noticing that $F = qF_A + (1 - q) F_B$ and $w_B = 1 - w_A$, we get

$$w_A (F_A - F) + w_B (F_B - F) = (w_A - q) (F_A - F_B).$$

(21)

Furthermore, using the definition of $w_A$, we get the final result

$$\frac{d\tau}{d\beta} = -\frac{\alpha}{S_{\tau \tau}} q (1 - q) \frac{f_A (x^m) - f_B (x^m)}{q f_A (x^m) + (1 - q) f_B (x^m)} S_{\tau} (\tau, F_A - F_B).$$

(22)

In this expression $S_{\tau} (F_A - F_B) < 0$. Hence the sign depends on $f_A (x^m) - f_B (x^m)$. If there is more mass around the $A$-median voter than the $B$-median voter, the tax rate will decline. As mentioned above, if say $f_A (x^m)$ is large relative to $f_B (x^m)$, then $|x^m - x^m_A|$ is smaller than $|x^m - x^m_B|$, and then the $A$-median voter, who prefers a lower tax rate when the $As$ are the rich group, does not become much poorer than the original median voter. Hence she prefers a lower tax rate.

Consider the function

$$Z (\tau, F) = 1 - F (x) \text{ where } S_{\tau} (\tau, (1 - \alpha) D_x + \alpha F) = 0,$$

(23)

which gives the fraction of the population that prefers a tax rate below $\tau$ in the non-fractionalized case. We have similar functions for group $A$ and $B$ in the fractionalized case. The chosen tax rate in the non-fractionalized case $\tau_0$, is determined as $Z (\tau_0, F) = 1/2$. In the fractionalized case, the tax rate is determined by the equation

$$qZ (\tau, F_A) + (1 - q) Z (\tau, F_B) = 1/2.$$

In Figure 2, the density of $Z$ for $F$, $F_A$, and $F_B$ are drawn. The initial median voter from group $A$ prefers the tax rate $\tau_A < \tau_0$ in the fractionalized case. Hence a mass $Z (\tau_0, F_A) - Z (\tau_A, F_A)$ of $A$-voters change from being in favour of a tax rate above $\tau_0$ to a tax rate below $\tau_0$. This mass corresponds to the area $\mathcal{A}$. Similarly, a mass of $B$-voters corresponding to the area $\mathcal{B}$ used to be in favour of a tax rate below $\tau_0$, but now prefers a tax rate above. Hence the chosen tax rate will decrease if $q\mathcal{A} > (1 - q) \mathcal{B}$. This is the case if (22) is negative. It might seem odd that the sign does not depend on $q$. However,
since \( F = q F_A + (1 - q) F_B \), the functions \( Z (\tau, F_A) \) and \( Z (\tau, F_B) \) will be close when \( q \) is large. This effect perfectly offsets the effect of group \( A \) being numerically important.

It is also interesting to notice that the magnitude of the effect depends on the rate of fractionalization \( q (1 - q) \). It may seem strange that the size of each group does not matter for the direction of the effect of fractionalization on tax rates. However, these are already taken into account in \( F \). What is important for the effect on taxation is the influence of each group relative to the weight the social planner would put on each of them.

Whether \( f_A (x^m) - f_B (x^m) \) is positive or negative will depend on the shape of the income distributions and the endowments of the median voters. At \( \beta = 0 \), both median voters have the same endowment \( x^m \). However, since the \( A \)s are richer than the \( B \)s, the median voter from group \( A \) is in a lower income fractile than the one from group \( B \). If the shape of the distribution for the \( A \)s and the \( B \)s are relatively similar, this implies that \( f_A (x^m) - f_B (x^m) \) is positive. Particularly, if there is a \( \nu \) such that \( F_A (x^m) = F_B (x - \nu) \) for all \( x \) and these distribution functions are single peaked and skewed to the right, this is always true for \( \nu \) not too large. Although it is not difficult to find distributions such that \( f_A (x^m) - f_B (x^m) \) is not positive, I believe it is at least only slightly negative in most real world cases. As we shall see below, as \( \beta \) increases, the requirement for a negative effect on the tax rate is lower. A final argument in this direction is that voter turnout normally is positively correlated with income. This means that the real pivotal voter normally will have an initial endowment above what we should expect from a basic median voter framework.

If we look at the case \( \beta > 0 \), expression (19) becomes

\[
\frac{d\tau}{d\beta} = -\alpha \frac{\dot{w}_A S^A (\tau, F_A - F) + \dot{w}_B S^B (\tau, F_B - F)}{\dot{w}_A S^A_{\tau\tau} + \dot{w}_B S^B_{\tau\tau}}
\]

where

\[
S^i_{\tau\tau} = S_{\tau\tau} \left[ \tau, (1 - \alpha) D_{x^m_i} + \alpha \beta F_i + \alpha (1 - \beta) F \right], \ i \in \{ A, B \}
\]

and the weights on groups \( A \) and \( B \) have to be replaced by

\[
\dot{w}_A = \frac{s_A q f_A (x^m_A)}{s_A q f_A (x^m_A) + s_B (1 - q) f_B (x^m_B)} \quad \quad s_A = -\left( \frac{\partial^2 u((1-\tau)x^m_A + T(\tau)x)}{\partial x \partial \tau} \right)^{-1}
\]

\[
\dot{w}_B = \frac{s_B (1 - q) f_B (x^m_B)}{s_A q f_A (x^m_A) + s_B (1 - q) f_B (x^m_B)} \quad \quad s_B = -\left( \frac{\partial^2 u((1-\tau)x^m_B + T(\tau)x)}{\partial x \partial \tau} \right)^{-1}
\]
Now, expression (22) becomes
\[
\frac{d\tau}{d\beta} = -\alpha q (1 - q) \frac{s_A f_A (x_A^m) - s_B f_B (x_B^m)}{\hat{w}_A S_{\tau \tau}^A + \hat{w}_B S_{\tau \tau}^B} S_{\tau} (F_A - F_B). \tag{25}
\]

These expressions are quite similar to those above except that there is a new term in the weights for each group. For income levels that are relevant to the pivotal voters, the weight \(\partial^2 u ((1 - \tau) x_B^m + T (\tau) \bar{x}) / \partial x \partial \tau\), which is given by equation (7), is negative. Furthermore, it is seen from equation (8) that its absolute value is decreasing in \(x\) in most reasonable cases. If group \(A\) is richer than group \(B\), \(x_A^m\) is decreasing and \(x_B^m\) increasing when \(\beta\) is increasing. If the income distribution for both groups is single-peaked and \(x_i^m\) is to the right of the mode for \(i \in \{A, B\}\), then \(\partial \tau / \partial \beta\) is decreasing in \(\beta\). If it was negative at \(\beta = 0\), then fractionalization is always reducing the size of government. If \(\partial \tau / \partial \beta\) was slightly positive at \(\beta = 0\), the overall effect may also be negative since the derivative declines as \(\beta\) increases.

Finally, consider the case where say \(F_B\) is constant at \(x^m\), that is, \(f_B (x^m) = 0\). Then there is only one median voter belonging to group \(A\). It is also seen that (18c) reduces to \(dX_A^m = 0\), so (18a) simplifies to
\[
\frac{d\tau}{d\beta} = \frac{-\alpha}{S_{\tau \tau} (\tau, (1 - \alpha) D_{x^m} + \alpha F)} S_{\tau} (\tau, F_A - F),
\]
that is, the change in the tax rate is strictly in the direction desired by group \(A\). The reason is simply that in this society, the tax rate is entirely determined by the \(A\)-group, and a slight change in \(\beta\) does not change this situation. However, a non-marginal change in \(\beta\) may permit new coalitions to form and change this result. This case is in fact similar to the case of a mass point for group \(i\) at \(x^m\), i.e. \(f_i (x^m) \to \infty\), that was analysed in Section 3.

5 Fractionalization and economic efficiency

5.1 The simple case

The effects of fractionalization on taxes is interesting in itself. However, it is also interesting to study how fractionalization affects economic efficiency through the choice of public policy. Consider first the simple case with only two income levels studied in Section 3.
A benevolent social planner would put weight $\psi^* = q^l/q^h$ on the low-income group and weight unity on the high-income group. The inefficiency of the election-decided tax rate stems in the class society from the poor unduly neglecting the welfare of the rich and vice versa. In the group society, it stems from each group neglecting the welfare of the other. The magnitude of the inefficiency afflicted by the median voter, who puts weight $\psi$ on the low-income group, depends on the magnitude of $|\psi/\psi^* - 1|$. For all parameter values, $\psi_B^l > \psi^*$ and $\psi_A^h < \psi^*$. Since $\psi_B^l$ is decreasing and $\psi_A^h$ increasing in $\beta$, increased fractionalization is always detrimental for efficiency if the median voter belongs to one of these groups. In the other cases, things are a bit more complex. We have

$$\psi_A^l > \psi^* \iff (1 - \alpha) \frac{q_A}{q^l} - \alpha \beta \left( \frac{q_A^l}{q^h} - \frac{q_B^l}{q^l} \right) > 0$$

(26)

$$\psi_B^h < \psi^* \iff (1 - \alpha) \frac{q_B}{q^h} - \alpha \beta \left( \frac{q_B^h}{q^l} - \frac{q_B^h}{q^h} \right) = (1 - \alpha) \frac{q_B}{q^h} - \alpha \beta \left( \frac{q_A^l}{q^h} - \frac{q_A^l}{q^l} \right) > 0.$$

(27)

If the poor $A$s are the median voters, the an increase in $\beta$, which will decrease $\psi_A^l$, will increase social efficiency when (26) holds. Similarly, if the rich $B$s are the median voters and (27) holds, an increase in $\beta$, which will increase $\psi_B^h$ will enhance social efficiency and otherwise harm it.

In the case of the $A$s, if (26) hold, they put too much weight on the poor relative to the social optimum. An increase in the degree of fractionalization (increased $\beta$) will make the median voters care more about the $A$s than the $B$s. Since there are more rich $A$s than $B$s, this implies that they put less emphasis on the poor, and hence approaches the optimal weights. This is illustrated in Figure 3, where it is seen that maximization of a weighted average of the median voter’s private utility and the welfare of group $A$ leads to a better outcome than maximization of a weighted average of the private utility and social welfare even though the objective is maximization of social welfare.

What is striking in expressions (26) and (27) is that unless voters are pure altruists, these conditions will always be fulfilled for $\beta = 0$. This means that unless the median voter belongs to one of the extreme groups, some fractionalization is always good. However, the higher is $\beta$, the more likely it is that (26) and (27) don’t hold any more, so a very high degree of fractionalization is often not ideal neither. Also, as we shall see below, this result is an artefact of this particular economic structure and does not necessarily hold in the more general case. However, the lower is the degree of social conscience, the higher is
the bias of the median voter’s preferences towards her own needs, and the more useful is fractionalization to pull her preferences in the right direction.

5.2 The general case

Let us now consider the case of a general income distribution studied in Section 4. In the intermediary fractionalized case, the first order condition for a median voter from group \( A \) is

\[
S_{\tau} (\tau, (1 - \alpha) D_{x^m} + \alpha \beta F_A + \alpha (1 - \beta) F) = 0 =: S_{\tau} (\tau, F) + \Psi (\tau)
\]  

(28)

where

\[
\Psi (\tau) = (1 - \alpha) [S_{\tau} (\tau, D_{x^m}) - S_{\tau} (\tau, F)] + \alpha \beta (1 - q) [S_{\tau} (\tau, F_A) - S_{\tau} (\tau, F_B)],
\]  

(29)

and of course a similar expression holds for a median voter from group \( B \). The first term of \( \Psi \) is the effect of the median voter caring more about herself than other individuals in society and corresponds to the second term in (10), whereas the last term stems from the median voter caring more for group \( A \) than group \( B \). It is clear that the absolute value of the second term is increasing in \( \beta \). It is seen that for \( \alpha = 1 \), the first term disappears and it follows that fractionalization is necessarily bad. For \( \alpha = 0 \), on the other hand, fractionalization does not matter.

Differentiation of (29) with regard to \( \beta \) yields

\[
\frac{\partial \Psi (\tau)}{\partial \beta} = (1 - \alpha) \left[ \frac{\partial S_{\tau} (\tau, D_{x^m})}{\partial x_{m}^A} \right] \frac{dx_{m}^A}{d\beta} + \alpha (1 - q) [S_{\tau} (\tau, F_A) - S_{\tau} (\tau, F_B)].
\]  

(30)

Inserting (19) into (18a), we get at \( \beta = 0 \)

\[
\frac{dx_{m}^A}{d\beta} = \alpha \left[ \frac{\partial S_{\tau} (\tau, D_{x^m})}{\partial x_{m}^A} \right]^{-1} S_{\tau} [\tau, (w_A - 1) F_A + w_B F_B],
\]  

(31)

where I have assumed that \( f_A \) and \( f_B \) exist and are strictly positive in a neighbourhood of \( x^m \). Hence, at \( \beta = 0 \) we have

\[
\frac{\partial \Psi (\tau)}{\partial \beta} = \alpha q (1 - q) \frac{f_A (x^m) - f_B (x^m)}{q f_A (x^m) + (1 - q) f_B (x^m)} S_{\tau} [\tau, F_A - F_B].
\]  

(32)

It is also seen that at the chosen tax rate,

\[
\frac{\partial \Psi (\tau)}{\partial \beta} = -S_{\tau \tau} \frac{\partial \tau}{\partial \beta}.
\]
Following the discussion above, we should expect $\Psi(\tau)$ to be decreasing in $\beta$ in most reasonable cases. If $S_r(\tau, D_{x^m} - F) > 0$, i.e. the original median voter privately prefers a tax rate above the social optimum, then at least some fractionalization enhances the economic efficiency by lowering the tax rate. If the median voter prefers a tax rate that is too low, then fractionalization is detrimental to efficiency.

Consider the case of an $A$-voter; the case is symmetric for a $B$-voter. In most cases, the median voter privately prefers a higher tax rate than the social optimum, which corresponds to the first term in (29). However, the $A$s are richer than the $B$s, so if there is fractionalization, an $A$-median voter will care about the tax-averse $A$s rather than the whole of the population. This may then act as a counter-weight to the median voter’s preferences for a tax rate above the social optimum. This is illustrated in Figure 3. However, the median voter may also prefer a tax rate below the social optimum. In that case, the second term in (29) tends to increase this bias. A rise in $\beta$ has two effects. The $A$-median voter becomes poorer, and hence privately prefers a higher tax rate. At the same time, she puts more weight on the $A$s and less on the $B$s. This effect tends to reduce her preferences for high tax rates. It is impossible to say which effect dominates in the general case. Since the median voter could have preferences both above and below the social optimum, it is clear that there are both cases where increased fractionalization increases efficiency and reduces it.

6 Income distribution and the size of government

We can use the results obtained above to study the effects of increased inequality in fractionalized societies. Consider first the effect of increased intra-group inequality. Consider the completely fractionalized case given by the system (15). An increase in inequality may be studied as a mean preserving spread which is equivalent to second order stochastic dominance.. If the income distribution of group $i$ changes from $F^0_i$ to $F^1_i$, inequality has increased if $F^0_i$ second order stochastically dominates $F^1_i$. It follows that if the conditions for Lemma 2 hold, then the median voter of group $i$ now prefers a higher tax rate. Consequently, if inequality increases in one or both groups, the size of government increases. It is easily seen that if inequality increases in one group, it also increases in
society as a whole. Consequently, the median voter in group $i$ also prefers a higher tax rate in the partially fractionalized (and non-fractionalized) case.

These results are very similar to those found in the ordinary Romer-Roberts-Meltzer-Richard model. A more interesting case is that of increased inter-group inequality. For simplicity, assume that initially, both groups have the same income distribution $F$. In an increase in inter-group inequality is a situation where the groups $A$ and $B$ get the income distributions $F_A$ and $F_B$ where $F_A$ first order stochastically dominates $F_B$. For analytical simplicity, I will concentrate on a continuous transition between the two states where group $A$ has the income distribution $\gamma F_A + (1 - \gamma) F$ and $B$ the distribution $\gamma F_B + (1 - \gamma) F$. $\gamma = 0$ corresponds to the initial state and $\gamma = 1$ to the final state. Here, the politically chosen tax rate $\tau$ satisfies the following system that is relatively similar to those studied in Section 4:

$$S_\tau (\tau, (1 - \alpha) D_{x_A^n} + \gamma \alpha F_A + (1 - \gamma) \alpha F) = 0 \quad (33a)$$

$$S_\tau (\tau, (1 - \alpha) D_{x_B^n} + \gamma \alpha F_B + (1 - \gamma) \alpha F) = 0 \quad (33b)$$

$$q [\gamma F_A (x_A^m) + (1 - \gamma) F (x_A^m)] + (1 - q) [\gamma F_B (x_B^m) + (1 - \gamma) F (x_B^m)] \ni \frac{1}{2}. \quad (33c)$$

Assume as above that $F, F_A,$ and $F_B$ have marginal density functions in the interval $(0, \infty)$ for all incomes in $\Omega$. Then we may differentiate the system, which yields the solution

$$\frac{d\tau}{d\gamma} = \Xi \left\{ \frac{(1 - \alpha)}{s_A q \tilde{f}_A (x_A^m) + s_B (1 - q) \tilde{f}_B (x_B^m)} + \alpha q (1 - q) \left[ s_A \tilde{f}_A (x_A^m) - s_B \tilde{f}_B (x_B^m) \right] S_\tau (F_A - F_B) \right\}. \quad (34)$$

where

$$\Xi = - \frac{s_A q \tilde{f}_A (x_A^m) + s_B (1 - q) \tilde{f}_B (x_B^m)}{s_A q \tilde{f}_A (x_A^m) S^A_{x^m} + s_B (1 - q) \tilde{f}_B (x_B^m) S^B_{x^m}} > 0 \quad (35)$$

is a positive constant and the marginal densities found in equation (25) are replaced by weighted densities

$$\tilde{f}_i = \gamma f_i + (1 - \gamma) f, \quad i \in \{A, B\} \quad (36)$$

and

$$\Gamma = q (F_A - F) (x_A^m) + (1 - q) (F_B - F) (x_B^m). \quad (37)$$

The traditional Romer-Richard-Meltzer-Richard model is obtained by letting $\alpha = 0$. Then the effect on the size of government of an inter-group rise in inequality is given by the
sign of $\Gamma$, which corresponds to the effect of the change in the median endowment of the society when intra-group inequality rises. The sign of $\Gamma$ is uncertain\(^3\). At $\gamma = 0$, we have $\Gamma = 0$. It is also natural to expect that increased intra-group inequality will tend to decrease the median endowment in the economy. Then $\Gamma \geq 0$, and for $\alpha = 0$, increased intra group inequality tends to increase the size of government. If this occurs together with a intra-group increase in inequality, which increases the chosen tax rate, the result is very likely to be an increased tax rate.

When group $A$ is richer than $B$ in the sense that $F_A$ first order stochastically dominates $F_B$, it follows from Lemma 1 that $S_{\tau} [\tau, F_A] < S_{\tau} [\tau, F_B]$. Furthermore, as I argued above, it is probable that $f_A (x^m_A) > f_B (x^m_B)$. Furthermore, if the overall income distribution is single-peaked and skewed to the right, then $f (x^m_A) > f (x^m_B)$ and hence $\tilde{f}_A (x^m_A) > \tilde{f}_B (x^m_B)$. Then the square brackets in the second term in (34) is positive, so the second term is negative. This means that because the society is fractionalized, there is a tendency towards reduced tax rates when the inter-group inequality rises. If the rate of social conscience is not too low, we can expect a rise in inter-group inequality to reduce the size of government, also if there is a rise in inter-group inequality at the same time.

In the US, there has been a rise in both the inter- and intra-race inequality. The traditional model would then clearly predict more redistribution, contrary to what is actually observed. The present model, on the other hand, predicts two opposing effects for $\alpha > 0$. The intra-race rise in inequality tends to increase the preferences for a large public sector. However, since the whites are both the richest and the most numerous, a rise in inter-race inequality tend to lower the preferences for redistribution. If the last effect is the strongest, we can get the seemingly perverse effect that increased inequality may lead to a lower preferred size of government.

\(^3\)Note that

\[
\Gamma = q (1 - q) \left[ (F^b_B - F^a_B) - (F^b_A - F^a_A) \right]
= \int_{x^m_A}^{x^m_B} f_B (x) - f_A (x) \, dx.
\]
7 Fractionalization and the party system

Above, although I alluded to a Downsian party system, political parties were not discussed properly. For these results to hold, we either need the tax rate to be the only political issue or to be decided on independently of all other issues. However, this is highly unrealistic. In heavily fractionalized countries, ethnic parties seem to flourish. This indicates that other issue dimensions are important. Since there will usually be a number of other policy issues than the tax levels to which different ethnic groups have different opinions, this observation is unsurprising. Collier (2001) considers a model where members of one ethnic group always votes for her own group’s party, and where the party programs are determined within the ethnic group.

Assume now an extension of the model presented above where in addition to tax rates, voters have preferences for what I will label the ethnicity of the chosen policy. Ethnicity may include a range of choices regarding linguistic, religious, and moral questions as well as protection of minorities, and is assumed to be an element of some metric space. Let us now assume that a voter with endowment \( x \) and belonging to group \( i \) has a utility function

\[
V_i(\tau, E; x) = U_i(x, \tau) - \phi d(E, E_i) \tag{38}
\]

where \( d \) is a metric on the space of ethnic policies, \( E \) is the chosen policy, \( E_i \) is the ethnic policy preferred by group \( i \), and \( U_i \) is the utility function defined in (14). The parameter \( \phi \) indicates how important ethnicity-related issues are to voters. The model in Section 2 corresponds to \( \phi = 0 \), that is, a case where there are no differences between different ethnic policies that matters to voters. Collier’s (2001) analysis corresponds to \( \phi \to \infty \), where a voter could never vote for a party advocating the policies of other groups than her own. Some indifference curves for this utility function are shown in Figure 4, where for purposes of visualization, the space of ethnic policies is assumed to correspond to the real line. The curves are for an \( A \)-voter with preferred tax rate \( \tau^* \). She will prefer to vote for a party of her own ethnicity as long as it advocates a tax rate in the interval \((\bar{\tau}, \tau)\). If there are no parties of her own ethnicity within this interval, she may consider voting for a party of the other ethnicity. The higher is \( \phi \), the larger is the height of an indifference curve relative to its width. In the limiting case of \( \phi \to \infty \), the interval \((\bar{\tau}, \tau)\) would cover the real line whereas it would collapse to a single point as \( \phi \to 0 \).
If we allow for sequential voting, the effect of voting over $E$ will vanish independently of the voting order and the results obtained in previous sections persist. However, if we introduce simultaneous voting or a parliamentary system, this is generally no longer true. The utility function (38) implies preferences over two non-parallel political issues. Hence we can no longer use the median voter theorem, and in the general case, political equilibria will be unstable. The case of $\phi = 0$ is the one we have already studied. In the case of $\phi \to \infty$, we can imagine a four party system with two parties belonging to each group. All voters belonging to group $i$ will consider parties from the other group as worse than any $i$-party and hence the two $i$-parties will share the $i$-voters among themselves. It is then natural to use the median voter in each of the two groups, so the two $i$-parties will end up with the same program for a tax rate corresponding to the preferred tax rate of the median voter within group $i$. Since both $i$-parties have equal platforms, it is highly probable that they will form a governing coalition if their group is the larger. Regrettably, it follows that if there are more than two groups, parliamentary decision making is more complicated and less predictable. In the two-group case, the tax rate may be said to be determined by the preferences of the median voter of the largest group. Assume that group $A$ is the largest group and $x_{mA}$ is the median income in group $A$. Then the chosen tax rate in the case of partially fractionalized social conscience is $\rho \left( (1 - \alpha) D x_{mA} + \alpha \beta F_A + \alpha (1 - \beta) F \right)$. We see that most of the results of an increase in $\beta$ obtained in Section 3 still hold. However, since group $A$ is the sole decisive group, the value of $\beta$ does not influence the endowment of the pivotal voter, so the analysis is somewhat simpler. If group $A$ is the richest group, then an increase in $\beta$ will reduce the tax rate since all $A$-voters put more emphasis on the welfare of group $A$ which advocates a lower tax rate than group $B$. If the median voter’s privately preferred tax rate is above the social optimum, then an increase in $\beta$ is efficiency enhancing, otherwise it is not. This will depend on how large the income difference between group $A$ and $B$ are and how skewed the distributions are. Unfortunately, for the case of $\phi \in (0, \infty)$ there is no simple solution to the outcome of simultaneous voting. However, it is very likely that the outcome is somewhere between the two extreme cases.

If we look at stable democracies, it seems that most two-party systems, particularly the UK and the US, fit my initial model relatively well. This is also true for the Scandinavian
countries although one may argue that there is a rural-urban/religious issue that perturbs the system somewhat. In the latter case, however, the reason may be that the degree of fractionalization is limited and the difference between different groups is small. Some of the continental European countries, on the other hand, cannot be understood without taking group-specific policies into consideration. A common description of these polities is *verzuiling* (pillarization), a term mainly associated with Lijphart (1968). This means that every group has its own society within the society with proper organizations and of course political parties. This may seem to fit well to Colliers model. However, the result is generally not that the largest group can dictate the others. Rather, decision making is consensus based and minorities have constitutional protections.

8 Conclusion

We have seen that fractionalization may have a major impact on politics in democracies, and in most instances it tends to reduce the amount of redistribution. I have argued that this may be an important explanation why we often observe that severely unequal societies tend to have small governments. The reason is twofold. In the first place, fractionalized countries tend to have a more uneven distribution of income than does less fractionalized cases. This implies a negative correlation between inequality and the size of government. Furthermore, I have argued that increased inter-group inequality tend to reduce the support for redistribution in fractionalized societies. Hence if both inter- and intra-group inequality is increasing, this may lead to less support for public redistribution. Although most of the analysis was performed within a relatively simple model of policy determination, it seems plausible that most of the main conclusions also hold in richer models.

9 References


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