Voting over Redistribution: The Occurrence of Polarized Outcomes

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Abstract

The basic insight of the literature concerning the Median Voter Theorem and its applications, dating back to Black (1948), is that the policies implemented by di¤erent parties once in o¢ce should approach the median voter's preferred policy if they run in a single-dimensional and democratic electoral space. This strong prediction has been challenged in recent years using arguments related to the observation that usually the political spaces concern much more than one single dimension and that, once we consider such a space, the Median Voter Theorem cannot be applied. Our idea is that one can challenge the median voter predictions even if we keep considering just one single dimension. Infect also in electoral competitions characterized by a very important issue seen by voters as "salient" is almost impossible to observe in reality the convergence predicted by the Black's theorem. In the present model we introduce a simple assumption over the process of opinions' formation of the voters and we show as in equilibrium strategic considerations lead the parties to choose polarized platforms.

1 Introduction

In recent years there is an increasing agreement of the way one should approach the analysis of public policies. As Drazen (2000) pointed policy choices are not made by an hypothetical benevolent social planner, but by purposeful political agents participating in a well de…ned decision making process. The natural way to deal with such a situation is to combine economic theory with the analysis of alternative collective choice procedures.

This literature has particularly focused on the so called median-voter equilibria which apply to policy issues where disagreement between voters is likely to be one dimensional. In this kind of set up a political equilibrium selects the policy preferred by the voter with median preferences that turns out to be always the Condorcet winner, i.e. a policy that cannot be beaten by any other policy in a pairwise majority vote (see Downs (1957)).

One of the basic predictions of such an analysis is that the parties that run for an o¢ce will always announce platforms very similar among them and approaching the one preferred by the median voter. Therefore one should not observe slight di¤erences in actually implemented policy depending on what party wins the electoral competition.

One can challenge this strong prediction having a look on the outcomes of electoral competitions in the modern democracies. It is almost impossible to observe right and left parties proposing the same platform and usually the implemented …scal policies are quite di¤erent depending on what coalition get the o¢ce. The recent US election are an illuminating example: on the one hand G.W. Bush jr. proposed tax cutting and welfare reduction while A. Gore's platform focused on the defense of the actual budget surplus and the improving of the publicly …nanced health care. But there are a huge amount of concordant examples coming out also from European reality: one can think to the social security reform that Mr. Berlusconi wanted to apply in Italy in 1994 and to the reform implemented by Mr. Prodi in 1996[1] (the …rst proposed an almost immediately shift towards full-funded system while the second proposal was based on a 30 years transition and a mix between PAYG and full-funding).

On a theoretical ground these failures of median-voter predictions have been explained using arguments related to the observation that usually the political space concerns much more than one single dimension and that, once we consider such a space, the Black's theorem cannot be applied.

Our idea is that one can challenge the median voter approach even if we keep considering just one single dimension. Infect also in electoral competitions characterized by a very important issue seen by voters as "salient" (see Besley and Burgess (2000) for a discussion) is almost impossible to observe in reality the convergence predicted by the Downs theorem. Moreover, in our opinion, it is misleading to model the political competition as a "crazy" run of the parties towards the electors' positions; one should take into account the potential rule of the parties as opinion-makers.

In particular, in the present paper we develop a model of electoral competition over redistributive policies which presents very di¤erent insights with respect to the ones that are provided by the traditional median voter approach and in which the parties play an active rule in in‡uencing the voters' opinions. This assumption leads to a sort of polarization of the parties positions and we …rmly believe that this attitude of the parties is one of the characterizing features of modern democracies. We infect share the idea of Kalai-Kalai (1999) who point that in public debates, shared living accommodations, and many other types of interaction participants behavior is seen to polarize: even moderate individuals with similar preferences often take extreme, opposing positions in these settings.

In the second part of the present article we will present the model of electoral competition over redistributive policies that we employed. This model is based

[1] For a detailed description of Mr. Prodi's reform of the social security system see "Governare l'Italia" (Il Mulino, 1996).

on a very common economic set-up and takes into account partizan parties (that is, following the de…nition provided by Persson-Tabellini (1999), each candidate is solely motivated by his utility function); moreover we take into account the fact that voters could be in‡uenced by the parties' political campaign. We will show how an equilibrium which the policies announced by the two parties are very di¤erent is found and we study some particular cases. Then we will examine the role that the "in‡uentiability" of voters plays in the determination of the equilibrium policy. Finally, we will conclude with some suggestions for further research.

2 The Model

The model we develop is based on the benchmark provided by Meltzer-Richard (1981) . There is a continuum of individuals who di¤er in productivity, and therefore in earned income, and they choose their preferred combination of consumption and leisure. Not all the individuals work, but those who do pay a portion of their income in taxes. The choice between labor and leisure, and the amount of earned income and taxes, depend on the tax rate and on the size of transfer payments.

Now, our aim is to provide a positive description of the reality so we assume that the tax rate and the amount of income redistributed depend on the voting rule and the distribution of income. Moreover, as we will see in the following sections, we take into account partizan-candidate with their own utility function and we assume that voters are partially in‡uentiable by the candidates' platforms. These simply assumptions will lead to equilibrium results quite di¤erent to the standard results obtained in unidimensional political space (see Hotelling (1929) and Downs (1957)).

2.1 Economic Environment

The economy we consider has relatively standard features. There are a large number of individuals. Each treats prices, wages and tax rates as given, determined in the markets for goods and labor and by the political process respectively. Di¤erences in the choice of labor, leisure, and consumption and di¤erences in wages arises solely because of di¤erences in endowments which re‡ect di¤erences in productivity.

In this section we highlight the process trough which individuals choose the level of consumption and leisure taking as given the policies decisions on taxes and transfers.

The utility function of each agent is,

$$u_i(c_i; l_i) \tag{1}$$

We assume this function to be strictly concave in c and l. Consumption and leisure are normal goods and there is no capital and no uncertainty in the economy.

As we said we consider a framework characterized by heterogenous agents. The heterogeneity is given by the productivity x_i of each one of them, so that the pre-tax income of each individual is:

$$y_i(x_i) = x_i \cdot n_i(x_i) \tag{2}$$

Income is measured in units of consumption.

Tax revenues finance lump-sum redistribution of r units of consumption per capita. We consider proportional taxes which are levied on earned income so that the fraction of income paid in taxes net of transfers rises with income. The budget constraint that each individual faces is,

$$c_i(x_i) = (1 - t) \cdot x_i \cdot n_i(x_i) + r \tag{3}$$

where t is the proportional tax rate.

We can now state the maximization problem solved by the consumers.

$$\underset{c_i, l_i}{Max}\ u_i(c_i; l_i)$$

subject to the following two constraints

$$c_i(x_i) = (1 - t) \cdot x_i \cdot n_i(x_i) + r$$

$$l_i = 1 - n_i$$

The latter constraint obviously states that the agents divide their time between labor and leisure.

We can restate this problem as follows

$$\underset{n_i \in [0;1]}{Max}\ u[(1 - t) \cdot x_i \cdot n_i(x_i) + r; 1 - n_i]$$

the FOC for this problem is:

$$\frac{@u}{@n_i} = 0 \ \Rightarrow\ u_c \cdot (1 - t) \cdot x_i - u_l = 0 \tag{4}$$

The (4) determines the optimal labor choice $n_i[r; (1 - t) \cdot x_i]$. The choice turns out to depend only on the after tax wage, $(1 - t) \cdot x_i$, and on welfare payments r.

2.2 Political Preferences

To …nd the equilibrium in this economy we have now to characterize how taxes and transfers are chosen.

First of all let us assume that in each moment in time the Government budget is balanced and that all government spending is for redistribution. If per-capita income is $\overline{y}$, then

$$t \cdot \overline{y} = r \tag{5}$$

Letting $F(\cdot)$ represent the distribution function for individual productivity, per-capita productivity is obtained in the following way,

$$\overline{y} = \int_0^1 x \cdot n[r; (1 - t) \cdot x] \, dF(x) \tag{6}$$

Using equations (1), (4) and (5) we are now able to write down the indirect utility function for the consumer with respect to the tax rate,

$$u_i(t) = u_i[t \cdot \overline{y} + y_i \cdot (1 - t); 1 - n_i] \tag{7}$$

If the individuals were perfectly rational to evaluate their preferred tax rate we should maximize this indirect utility with respect to t. The FOC for this problem is

$$\frac{@u_i(t)}{@t} = 0 \Rightarrow \left[\overline{y} + \frac{@\overline{y}}{@t} \cdot t - y_i\right] \cdot u_c = 0$$

$$\Rightarrow t_i = \frac{(y_i - \overline{y})}{@\overline{y}/@t} \tag{8}$$

Since the derivative of per-capita income with respect to taxes is always negative (because of the distortionary e¤ects of taxation) equation (8) states that individuals with average income lower than the mean income would prefer a positive tax rate while individuals richer than the mean would prefer a negative tax rate. Note that once t is chosen r is automatically determined.

This would be the choice of each individual if his choice were totally independent on the platforms proposed by the parties. But, In the spirit of Kalai and Kalai (1999), we assume that the individuals are partially in‡uenced by the platforms that candidates present during their campaign. Formally we assume that the preferred tax rate of each individual is an average weight between the rationally chosen tax rate (derived by the (8)) and the arithmetic average of the platforms proposed

$$t_i^{\alpha} = \beta \cdot \frac{(y_i - \bar{y})}{\partial \bar{y}/\partial t} + (1 - \beta) \cdot \frac{t_R + t_L}{2} \tag{9}$$

where t_R, t_L represents the tax rates proposed by the parties and at which the parties are fully committed after the election (i.e. the platforms).

How will be select the tax rate, and so the transfers, by the society as a whole?

We assume that individuals vote to choose the implemented tax rate by universal suffrage with majority rule and since in our framework the condition to apply the median voter theorem are verified, i.e. unidimensional choice and single peaked preferences[2], the implemented tax rate will be the one preferred by the median voter.

By equation (8) we easily get what would be the tax rate preferred by a perfectly rational median,

$$\left(\bar{y} + \frac{\partial \bar{y}}{\partial t} \cdot t - y_m \right) \cdot u_c = 0$$

$$) \quad t_m = \frac{(y_m - \bar{y})}{\partial \bar{y}/\partial t}$$

But, in the light of our assumption about the influentiability of voters, the actually preferred tax by the median is

$$t_m^{\alpha} = \beta \cdot \frac{(y_m - \bar{y})}{\partial \bar{y}/\partial t} + (1 - \beta) \cdot \frac{t_R + t_L}{2} \tag{10}$$

2.3 Equilibrium Policy

To find what policy, i.e. what tax rate, will be chosen in equilibrium we have now to specify what will be the parties behavior during the campaign. In what follows we are going to assume that parties are fully committed to the platforms they announce during the campaign. Moreover, we consider partizan parties, that is parties that do not derive utility simply from the office they get. In particular, let us assume that the two competing parties have linear utilities and that they would like the median voter's opinion to be close to their opinion

$$U_R(t_m^{\alpha}) = - \left| t_R^{\alpha} - t_m^{\alpha} \right|$$

[2] First of all note that the only decision over which the individuals have to vote are the tax rate t (infact r is obtained automatically given the tax rate and the government budget constraint) so the political space is uni-dimensional. Moreover, the individuals indirect utility function (7) reflects single-peaked preferences over the tax rate (see Roberts (1977) for a discussion of this result).

$$U_L(t_m^*) = -|t_L^* - t_m^*|$$

where t_R^* and t_L^* are the preferred policies of the two parties. These utility functions have two interesting and realistic features: (i) the parties do care about their distance with respect to the median voter, so they are incentivated to attract voters and win the election, and (ii) they have an own preference on the policies, so they want to win the election to implement a policy not to different from their favorite one and not just to be in office.

Now we have all the elements to examine the political competition in our model. Infect this competition is represented by a simultaneous move game between the two parties in which the strategy of each player consists in announcing a platform. After this announcements the individuals vote and then the winner party implement its announced policy. It is important to remember at this stage that the winning party will be the one who announce a policy nearer to the one preferred by the median voter.

In what follows we are going to evaluate what will be the equilibrium of such a political game in two distinct cases: $t_R^* < t_L^* < t_m^*$ and $t_L^* > t_R^* > t_m^*$. The mechanism is the same also for situations in which the two ideal points of the party are located at different side with respect to the median ideal point but the two cases we present here are more illuminating to our end.

2.3.1 Case 1

Let us assume that $t_R^* < t_L^* < t_m^*$. What will be the Nash Equilibrium of the simultaneous move game played by the two parties in this case?

The strategy adopted in equilibrium by the Right party (R), that is the platform to which it commits, is $t_R = 0$, while the Left party (L) will choose a platform such that:

$$\alpha t_m + (1-\alpha)\frac{t_L}{2} = t_R^* + \frac{t_L^* - t_R^*}{2} + \frac{\varepsilon}{2}$$

$$\Rightarrow 2\alpha t_m + (1-\alpha)t_L = 2t_R^* + t_L^* - t_R^* + \varepsilon$$

$$\Rightarrow (1-\alpha)t_L = t_R^* + t_L^* - 2\alpha t_m + \varepsilon$$

$$\Rightarrow t_L = \frac{1}{(1-\alpha)}(t_R^* + t_L^* - 2\alpha t_m + \varepsilon)$$

as a consequence the median voter has the following preferred tax:

$$t^{\alpha}_{m} = \beta\phi\frac{(y_m - \bar{y})}{\partial\bar{y}/\partial t} + (t^{\alpha}_{R} + t^{\alpha}_{L} - 2\beta t_m + \varepsilon) \qquad (11)$$

and therefore she will vote for the Left party since:

$$|t^{\alpha}_{m} - t_L| < |t^{\alpha}_{m} - t_R|$$

Therefore the implemented policy will be t_L, because of full-commitment assumption, that does not coincide with the median voter favorite policy.

Proof: In this con…guration, none of the players can improve the outcome of the election relative to her own preferences. The Left party wins the election and obtains its maximal payo¤, since if it increases the tax rate proposed in its platform it will still win the election but its utility will be reduced while if it reduces the tax rate proposed it will loss the election and the …nal outcome will be $t = 0$. On the other hand, the Right party is already pushed to an extreme position and it cannot go further to in‡uence the decisive voter towards its position. Furthermore, every other con…guration is unstable because one of the parties will be able to unilaterally change her platform to move the median voter towards its position thereby increasing its payo¤..

Note that in equilibrium the platforms of the two parties do not coincide in contrast with the traditional results of the median voter literature and, for values of β su¢ciently low could be even more distant between them than their original positions. Moreover the actually implemented policy is di¤erent from the median voter's preferred policy. We call this result a "polarized outcome".

Remark: There is a caveat to the strong prediction that we have just stated. The result is true only when the following disequality is satis…ed

$$\frac{t^{\alpha}_{L} + t^{\alpha}_{R}}{2} > \beta t_m$$

That is for small values of β or for parties' ideal positions near to the one of the median voter.

2.3.2 Case 2

Let us now assume that $t^{\alpha}_{L} > t^{\alpha}_{R} > t^{\alpha}_{m}$.

In this case the party that has a natural advantage is the Right one (infect its position is nearer to the one of the median). In equilibrium the Left party will announce $t_L = 1$, while the Right party will choose a platform such that:

$$\beta t_m + (1 - \beta)\frac{t_R + 1}{2} = t^{\alpha}_{L} - \frac{t^{\alpha}_{L} - t^{\alpha}_{R}}{2} - \frac{\varepsilon}{2}$$

$$) \; 2\beta t_m + (1 - \beta)t_R + 1 - \beta = 2t^{\alpha}_{L} + t^{\alpha}_{L} - t^{\alpha}_{R} - \varepsilon$$

$$) \ (1 \ ¡ \ ®)t_R = \ t_R^¤ + t_L^¤ \ ¡ \ 1 + ® \ ¡ \ 2®t_m \ ¡ \ "$$

$$) \ t_R = \frac{1}{(1 \ ¡ \ ®)}(\ t_R^¤ + t_L^¤ \ ¡ \ 1 + ® \ ¡ \ 2®t_m + ")$$

as a consequence the median voter has the following preferred tax:

$$t_m^¤ = ® ¢ \frac{(y_m \ ¡ \ \overline{y})}{@\overline{y}=@t} + \frac{(1 \ ¡ \ ®)}{2} ¢ \frac{t_R^¤ + t_L^¤ \ ¡ \ 1 + ® \ ¡ \ 2®t_m + " + 1 \ ¡ \ ®}{(1 \ ¡ \ ®)}$$

$$) \ t_m^¤ = ® ¢ \frac{(y_m \ ¡ \ \overline{y})}{@\overline{y}=@t} + \frac{t_R^¤ + t_L^¤ \ ¡ \ 2®t_m + "}{2} \qquad (12)$$

and therefore she will vote for the Right party since:

$$jt_m^¤ \ ¡ \ t_R j < jt_m^¤ \ ¡ \ t_L j$$

Proof: same reasoning of case 1.

3 The rule of "In‡uentiability"

So far we developed the general case of our political competition model considering what we have de…ned "partially in‡uentiable median voter". This in‡uentiability is characterized by the parameter ® which tell us how important is for the voters their economic position (i.e. the rational choice) and how it is the ideology (i.e. the choice linked to the parties' claims about the society welfare). To better understand the role that this parameter plays in the model and to gain an intuition on the parties' behavior let us consider to very special case ® = 0.

In this case the rational component plays no rule in determining the median voter position so the Nash Equilibrium of the game will be totally independent with respect to the economic framework (heterogeneity does not matter). In particular what we get in this case is:

$$t_m^¤ = \frac{t_R + t_L}{2}$$

Take now for example in case 1 (the same reasoning is true for case 2). We have now that $t_R^¤ < t_L^¤ < t_m^¤$ and, in equilibrium, it will be $t_R = 0$ and the Left party wins election proposing,

$$t_L = (t_R^{¤} + t_L^{¤} + ")$$

It is now easy to give an intuition to "illuminate" this kind of result. If the Right party moves to 0 this means that it is changing the median position exactly $t_R^{¤}$ steps so the same, plus a little ", but in the opposite direction has to do its opponent to win. Now, the Right party cannot push more on its side the median voter so the Left party is the winner. As in the general case, every other point do not represent equilibria since one of the to party (the most distant from the median) can in‡uence the median and increase its payo¤.

4 Conclusion

How government spending and taxes are set is an open question for both economists and political scientists. Recent developments have led to a vision which points on the consideration that public policy must strike a balance between the con-‡icting interests of di¤erent voters. The con‡ict largely re‡ects socio-economic factors, deriving from di¤erences in income, age, employment status or geographical residence. In the simplest setting, these factors shape the distribution of voters' policy preferences which, in turn, are aggregated into public policy by the majority principle.

To model this kind of con‡ict the so called median-voter equilibria have been largely applied by both economists and political scientists. Such equilibria basically constitute the solution to an optimal taxation problem, given a very special social welfare function, where only the utility of median individual carries positive weight. The existence conditions for these equilibria may be stringent but there are policy issues, such as the size of broad redistributive programs, where it can be argued that voters disagreement tends to be aligned on a single dimension from, say, left to right.

In the present article we join this vision about the political scenario and about the so called "dictatorship" of the median voter but we also point on the empirical observation that the strong prediction about the convergence of parties platforms is absolutely disappointed in reality. How can we explain this sort of paradox?

Our idea is that what is missing in part of the literature about the positive analysis of redistributive policies is the emphasis on the active role that parties play as opinion-makers. In the present article we explicitly model this rule considering in‡uentiable voters (i.e. voters that are sensitive with respect to the platforms proposed during the electoral campaign). The fundamental result is that in equilibrium parties tend to polarize in order to attract the voters and to win the election so that the implemented redistributive policy will depend on what party will get the o¢ce and not simply on ex-ante distribution of voters.

In future we think that one should pursue this kind of analysis more fully to analyze the e¤ects of what we de…ned polarized behavior of the parties on other issues apart from the redistributive one; for example one could analyze

how such a framework changes the predictions of the traditional median-voter based models (see Alesina-Rodrik (1994)) in a dynamic framework where the policy issue is represented by taxes on capital and labor and where the political decisions can strongly a¤ect the long run growth performance of the economy. We do believe that this line of research can help to better understand the functioning of a modern democracy and the political strategies adopted by parties during the electoral campaigns.

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