

Poverty, Taxation and Governance

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Abstract

In a simple model based on political support approach, we show that poor and less egalitarian societies may impose lower tax rate contrary to the prediction of the median voter approach. This is consistent with the available empirical findings. In the framework developed in this paper the government can strategically design a weak governance system to promote informal activities for the poor. This constitutes an alternative redistributive strategy other than the standard tax-transfer policy. The government chooses the tax rate and the degree of governance simultaneously to maximize the average income of the poor in the informal sector of the economy who constitutes the majority and helps winning the election.

Key Words: Taxation, Inequality, Governance, Poverty.

JEL Classification Nos. H2,O17,P16

1. Introduction

In a review article in the *Journal of Economic Literature*, Saint-Paul (2000) makes a very interesting remark while commenting on two contemporary major works on political economy and macroeconomic policy by Persson and Tabellini (2000) and Drazen (2000). He questions the basic prediction of the median voter models, that more unequal societies should have higher taxes. Citing the example of Europe and Brazil, he argues that more egalitarian economies such as those in Europe have higher tax rates than Brazil, a far more unequal region. In this context one could cite Perotti (1996) who convincingly demonstrates the evidence against median voter type models. Modifications of the median voter approach have been discussed by Saint-Paul and Verdier (1996) to accommodate some of the empirical apprehensions against such an approach. In this paper we develop a simple political support model to argue that a society with lower income inequality and incidence of poverty is likely to choose higher tax rate than a society with greater income inequality and poverty, even if both of them are equally concerned about the social impact of poverty. This essentially builds on the idea that direct taxation is not the only mechanism for redistribution.

Typically in median voter models tax is the only instrument for redistributing income from the rich to the poor. But, there can be alternative instruments as well. In the developing world majority of workforce is employed in the informal sector, in activities, which are illegal or extralegal. Papers by Marcouiller and Young (1995), Choi and Thum (2004) and Marjit (2003) deal with the cases where government policies determine and interact with the size of the informal or shadow activities. Allowing extra legal activities to flourish or informal sectors to thrive may be a conscious strategy on the part of the government of a poor country, since it helps tackling the problem of unemployment and poverty. Such strategic negligence on the part of the government may be harmful to the environment for legitimate income generating processes. For example, allowing street vendors to congest the streets, ignoring illegal electric connections, allowing people to sleep on the pavements or on the railway platforms, slums to develop on public spaces,

all may constitute favor to the poor and needy. But some of them may actually hurt the legal income earners by creating negative externalities both in the production process as well as in public life. The simple model developed below allows two instruments in the hands of the government for redistribution- tax and governance. Relatively weak governance structure allows for extensive informality, which helps the poor, but hurts people with tax paying capacity, whereas strong governance protects the legal taxpayer, but increases the possibility of social unrest as the incidence of poverty and inequality increases. The cost of sustaining governance is financed by income tax. All the societies considered in the model with different poverty levels and different extents of income inequality face identical political support functions. They are two party democracies. Policies targeted to satisfy the preference of the median voter win the election. In a simply constructed model we show that there is a reasonable case for strong governance and high tax for the societies with lower incidence of poverty and lower income inequality. The weak governance level and lower tax rate are chosen in the societies with higher incidence of poverty and higher income inequality. If the government thinks that the effect of governance level on the informal income is not that strong, then also it chooses relatively higher level of tax rate and the governance level. We follow the standard “political support” approach of Stigler (1971) and Peltzman (1976). Interested readers may refer to Persson and Tabellini (2000), Hillman (2003) for a textual treatment of issues related to the median voter approach.

The paper is laid out as follows. The second section discusses the model and the results and the last section concludes.

2. Model and results

We consider a society that is divided between two classes of people: the rich and the poor. The classes are homogeneous in themselves. The entire rich population is employed in the formal sector while the entire poor population finds employment only in the informal sector of the economy. The earnings in the formal and informal sectors are unequal: the rich earns Y in the formal sector, while the informal income of the poor is given by $y < Y$. The income distribution is highly skewed: the number of poor in the

society n far exceeds the number of rich m . The poor wants the government to adopt policies that raises their per capita income level. We assume the society is a democracy with two political parties competing for election¹. The political competition in this society provokes the incumbent government as well as all the political parties seeking election to support the position of the poor. Therefore, the government adopts a redistribution strategy, which maximizes per capita income of the poor.

We assume the government has two instruments in its disposal to implement its objective of redistribution. One is the conventional tax-transfer policy. It taxes the rich through a system of income tax and transfers the proceeds to the poor. The other is rather unconventional and somewhat unique to the developing societies: the choice of quality of governance that takes care of issues like security of property right, recognition of contract in the eye of law, controlling social unrest, law and order etc. The weak governance structure results in informalization of the economy. The informality helps to raise the income earning capacity of the poor and to reduce the income earning capacity of the rich. Thus, it also redistributes.

The existence of informal sector implies that the poor in the informal sector cannot be taxed. We assume the income tax on the rich in the formal sector is proportional in nature. Suppose $t \in (0, 1)$ is the tax rate. This implies if the rich earns aggregate income Y , he/she pays tax revenue² tY . The total tax revenue collected mtY is used to finance the government expenditure including the transfer $S > 0$. Everyone in the society across the rich and the poor receives the transfer³. The index representing the quality of governance is denoted by g . The lower value of g represents greater degree of informalization. Both Y and y depend on g , while t affects only Y . The functional relations of Y and y with t and g can be written in the following way: $Y(g, t)$ where $\frac{\partial Y}{\partial g} > 0$ and $\frac{\partial Y}{\partial t} < 0$; $y(g)$ where $y'(g) < 0$. The argument forwarded above explains the signs

¹ The assumption of two political parties simplifies the analysis. The analysis of multi party political system is complex. See Myerson (1999) for details.

² We assume truthful reporting of income level. The post tax income is also positive.

³ We can think of the transfer as creation of impure public goods which is non-excludable but rival in nature like free roads, free health facilities etc. The marginal cost of provision of the public good is 1.

of $\frac{\partial Y}{\partial g}$ and $y'(g)$. On the other hand, the explanation of the sign of $\frac{\partial Y}{\partial t}$ is the following:

as we assume the substitution effect dominates the income effect in the labor-leisure choice of the rich as the tax rate rises, the wage income falls and the individual has less

incentive to earn. We make additional assumptions $\frac{\partial^2 Y}{\partial t^2} < 0$ and $\frac{\partial^2 Y}{\partial g^2} < 0$. We also

assume $\frac{\partial^2 Y}{\partial t \partial g} = \frac{\partial^2 Y}{\partial g \partial t} = 0$. Regarding the redistribution programme, we assume, it is not

radical enough to lift the poor to the echelon of the rich; leads only to marginal changes within the classes themselves.

Suppose $z(g)$ represents the cost of governance where $z'(g) > 0$ and $z''(g) > 0$. Formally, the government's problem is: the choice of $\{t, g\}$ subject to the budget constraint $mtY(g, t) = z(g) + S$ such that the per capita income of the poor $X = y(g) + \frac{S}{m+n}$ is maximized.

Substituting $S = mtY(g, t) - z(g)$ from the budget constraint in the objective function, the problem can be turned into an unconstrained optimization problem where the government

chooses $\{t, g\}$ to maximize $X = y(g) + \frac{1}{m+n} [mtY(g, t) - z(g)]$. Suppose $\{t^* > 0, g^* > 0\}$ represent the solution to the problem. Then, at the optimum the first order conditions for maximization are:

for maximization are:

$$Y(g^*, t^*) = -t^* \frac{\partial Y}{\partial t} \quad (1)$$

$$mt^* \frac{\partial Y}{\partial g} + (m+n) y'(g^*) = z'(g^*) \quad (2)$$

For the second order condition to be satisfied at the optimum it must be true that $[t \frac{\partial^2 Y}{\partial t^2} +$

$2 \frac{\partial Y}{\partial t}] < 0$ and $\Delta = [(t \frac{\partial^2 Y}{\partial t^2} + 2 \frac{\partial Y}{\partial t})(mt \frac{\partial^2 Y}{\partial g^2} - z''(g) + (m+n) y''(g)) - m(\frac{\partial Y}{\partial g})^2] > 0$. In

deriving the value of Δ we have used the assumption that $\frac{\partial^2 Y}{\partial t \partial g} = \frac{\partial^2 Y}{\partial g \partial t} = 0$. The

assumptions made previously about the slopes and curvatures of the $Y(g, t)$, $y(g)$ and $z(g)$ functions also ensure that $[t \frac{\partial^2 Y}{\partial t^2} + 2 \frac{\partial Y}{\partial t}] < 0$. We assume $\Delta > 0$ for convenience.

So, the second order condition is satisfied at the optimum.

Given m if n rises, poverty increases at the equilibrium distribution of income as the ‘head-count ratio’ of the poor increases in the society. If we think about the society without any redistribution schemes, then income inequality also rises as n rises. The first proposition of the model states the effect of the rise in poverty in a democratic society on its equilibrium choice of $\{t^*, g^*\}$.

Proposition 1: *The governments in democracies with higher level of poverty choose lower values of t^* and g^* .*

Proof: From equation (1) and (2) it follows:

$$\frac{dt}{dn} = \frac{y'(g)[\frac{\partial Y}{\partial g} + t \frac{\partial^2 Y}{\partial g \partial t}]}{\Delta} \quad (3)$$

$$\frac{dg}{dn} = \frac{-y'(g)[t \frac{\partial^2 Y}{\partial t^2} + 2 \frac{\partial Y}{\partial t}]}{\Delta} \quad (4)$$

Since $\Delta > 0$ from the second order condition the sign of $\frac{dt}{dn}$ is determined by the sign of

$[y'(g) (\frac{\partial Y}{\partial g} + t \frac{\partial^2 Y}{\partial g \partial t})]$ and the sign of $\frac{dg}{dn}$ is determined by the sign of $[-y'(g) (t \frac{\partial^2 Y}{\partial t^2} + 2$

$\frac{\partial Y}{\partial t})]$. Observe, by assumptions of the model $y'(g) < 0$, $\frac{\partial Y}{\partial g} > 0$, $\frac{\partial^2 Y}{\partial g \partial t} = 0$, $\frac{\partial Y}{\partial t} < 0$ and

$\frac{\partial^2 Y}{\partial t^2} < 0$. Therefore, it follows from equations (3) and (4) $\frac{dt}{dn} < 0$ and $\frac{dg}{dn} < 0$

respectively. Hence, the statement of the proposition follows. \square

Observe the more ‘unconventional’ redistributive instrument i.e. quality of governance plays a crucial role in the proof of proposition 1. The choice of lower quality of governance creates income-opportunity for the poor, which implicates $y'(g) < 0$. Because of the fact that $y'(g) < 0$ the government with its objective of maximizing per capita

income of the poor strikes a balance in its choice between the two instruments t and g . It chooses lower values for both as poverty and income inequality increases in the society. In absence of the instrument g , in similar situation one would expect the government with such an objective to choose a higher value of t , as the conventional political economy models would predict. The availability of the additional instrument for redistribution through the choice of the quality of governance changes the result. This largely explains the empirical findings that are in exception to the prediction of the conventional political economy models, where higher level of poverty and inequality goes hand in hand with higher tax rate.

So far we have not said much about inequality. A simple measure will be the relative average income of the rich vis-a-vis the poor. It can be shown that if n increases inequality goes up provided initially the rich has a higher average income. However, as g and t respond to a rise in n , there are various cross effects. A decline in total subsidy and a drop in t strengthen the rising inequality effect, but the rise in y through a fall in g weakens the inequality impact. One can show that if the response of y to g is really sharp, the initial rising inequality effect will be offset to some extent by alterations in g . Thus societies with very high n can reduce the degree of inequality by altering g . In fact very high n to start with means that the effect of the subsidy component will be negligible i.e. alterations in total value of tax revenue to be used as per capita subsidy will have little impact, then it is likely that the g effect will be dominant. The purpose of this work is to show how the income level of a typical poor is positively affected by a weak governance structure. That is why we abstract from the inequality impact. After all, the poor voter should care much more about individual income than the social measure of inequality.

The nature of informality is not the same in every society. In some societies the change in the governance level g has significant impact on the income of the informal sector, while in some others it does not have such a great impact. It can be argued that the societies in which the change in the governance level has negligible impact on the income of the informal sector, chooses higher level of governance and the tax rate.

Proposition 2: *The societies, in which the change in the governance level has negligible impact on the income in the informal sector, choose higher tax rate and the higher level of governance.*

Proof: If the change in the governance level has negligible influence on the income of the informal sector, in terms of our model, this implies $y'(g) \approx 0$. We compare the equilibrium choice of t^* and g^* of the two societies with $y'(g) < 0$ and $y'(g) \approx 0$. The equilibrium values of t^* and g^* satisfy equations (1) and (2) in the situation where $y'(g) < 0$. Given $t = t^*$ if $y'(g) \rightarrow 0$ equation (2) changes to:

$$A = mt^* \frac{\partial Y}{\partial g} - z'(g^*) > 0. \quad (5)$$

The previously chosen value of $g = g^*$ cannot be the optimum in such a situation. Suppose, $g = \bar{g}$ defines the new optimum. The value of \bar{g} must be chosen in such a way that $A = 0$. Observe, due to assumptions of the model $\frac{\partial A}{\partial g} < 0$. Therefore, it must be the case that $\bar{g} > g^*$.

As the value of g increases to g^* , given the assumptions of the model, from equation (1) it turns out:

$$B = Y(\bar{g}, t^*) + t^* \frac{\partial Y}{\partial t} > 0. \quad (6)$$

The previously chosen value of $t = t^*$ cannot be the optimum in such a situation. Suppose, $t = \bar{t}$ defines the new optimum. The value of \bar{t} must be chosen in such a way that $B = 0$. Observe, second order condition for optimization implies $\frac{\partial B}{\partial t} < 0$. Therefore, it must be the case that $\bar{t} > t^*$. This has a feedback effect on equation (5), which further boosts up the value of \bar{g} .

Hence the statement of the proposition follows. \square

Proposition 2 shows that in its choice of the tax rate and the governance level if the government does not take into account the effect of its choice of governance level on the informal sector income it chooses the higher level of governance and the tax rate.

There are situations when the government is constrained in its choice of tax rate. An example would be the behavior of the governments under the threat of capital flight. To retain the capital within their own jurisdictions the governments often compete with each other by lowering their tax rates. The next comparative static result of the model treats the tax rate as exogenous to the government's choice of governance level and tries to see the effect of lowering of the tax rate on its choice.

Proposition 3: *If the government is constrained in its choice of the tax rate, the stricter constraint implies the lower choice of the governance level.*

Proof: Suppose the government is constrained in its choice of the tax rate t such that in

its maximization of $X = y(g) + \frac{1}{m+n} [mtY(g, t) - z(g)]$ with respect to $\{\tilde{t} > 0, \tilde{g} > 0\}$

it is allowed to choose among the values of t satisfying the constraint $t \leq \hat{t}$. Then the Lagrange expression for optimization can be written as:

$$Z = y(g) + \frac{1}{m+n} [mtY(g, t) - z(g)] + \lambda [\hat{t} - t] \quad (7)$$

where $\lambda \geq 0$ stands for the Lagrange multiplier. The Kuhn-Tucker conditions for maximization imply at $\{\tilde{t} > 0, \tilde{g} > 0, \tilde{\lambda} \geq 0\}$ the following equations must be satisfied:

$$\frac{m}{m+n} [Y(\tilde{g}, \tilde{t}) + \tilde{t} \frac{\partial Y}{\partial t}] = \tilde{\lambda} \quad (8)$$

$$m \tilde{t} \frac{\partial Y}{\partial g} + (m+n) y'(\tilde{g}) = z'(\tilde{g}) \quad (9)$$

If the constraint $t \leq \hat{t}$ binds then $\tilde{\lambda} > 0$ which implies $\tilde{t} = \hat{t}$. Otherwise $\tilde{\lambda} = 0$ which implies $\tilde{t} < \hat{t}$. The case where $\tilde{t} < \hat{t}$ the choice of $\{\tilde{t} > 0, \tilde{g} > 0\}$ is guided by equations (1) and (2) already discussed above.

Suppose, the constraint binds and it is always $\tilde{t} = \hat{t}$. Then, we have the case of proposition 3. Now equation (8) loses its relevance. The choice of \tilde{g} follows equation (9) in the way given below:

$$m \hat{t} \frac{\partial Y}{\partial g} + (m+n) y'(\tilde{g}) = z'(\tilde{g}) \quad (10)$$

From equation (10) it follows:

$$\frac{\partial \tilde{g}}{\partial \hat{t}} = - \frac{m \frac{\partial Y}{\partial g} - mt \frac{\partial^2 Y}{\partial g \partial t}}{mt \frac{\partial^2 Y}{\partial g^2} - z'' + (m+n)y''}. \quad (11)$$

Since by the assumptions of the model $\frac{\partial Y}{\partial g} > 0$, $\frac{\partial^2 Y}{\partial g \partial t} = 0$, $\frac{\partial^2 Y}{\partial g^2} < 0$, $z'' > 0$ and $y'' < 0$

equation (11) implies $\frac{\partial \tilde{g}}{\partial \hat{t}} > 0$. Hence the statement of the proposition follows. \square

The intuition behind proposition 3 is straightforward. If the government is forced to lower the tax rate it is left with lower tax revenue for redistribution that hurts its chance of winning the election. Therefore, it lowers the governance level, which indirectly favors the redistribution towards the poor.

3. Outlines of Extensions: Different Types of Governance

As mentioned earlier different types of informal arrangements may affect the rich and the poor similarly or differently. Let us suppose that Y and y depend on g_1 , g_2 and g_3 with $\frac{\partial Y}{\partial g_1} > 0$, $\frac{\partial y}{\partial g_1} > 0$, $\frac{\partial Y}{\partial g_2} < 0$, $\frac{\partial y}{\partial g_2} < 0$ and $\frac{\partial Y}{\partial g_3} > 0$, $\frac{\partial y}{\partial g_3} < 0$. The last case is what we have analyzed in section 2. The new z can be simply stated as $z = z(g_1 + g_2 + g_3)$ with $z' > 0$ and $z'' > 0$. It is easy to check from (2) that g_2 will be chosen at the least possible level where as g_1 and g_3 are likely to have interior solutions. It becomes more complex with cross derivatives.

4. Conclusions

The paper constructs a political support model, which shows that “informality” of the economy can be a conscious choice of the society. The societies where the informal sector income significantly depends on the level of governance chosen by the government, the government chooses lower level of governance as well as the tax rate. As the poverty increases in the society, then again the government chooses lower level governance and the tax rate. The introduction of informal sector in the model plays a pivotal role in derivation of the results, which challenge the prediction of the conventional political economy models where more poverty and inequality in the society

implies higher tax rate is chosen at the political equilibrium. The model shows a way to capture more than one policy variables that are independent of each other in a political economy model of general interest politics. It also shows their interdependence in policy formulation. This closely relates to the empirical observations. In this paper we also consider the case where the government is constrained in its choice of tax policy⁴. We find as the constraint on the choice of the tax rate becomes more binding, the government reacts by choosing lower level of governance.

In this paper the dependence of the formal and informal income on the governance level has been captured in a particular way. The ‘governance’ has been conceptualized essentially as security of the taxpayer’s right over property and public life. The improvement in the governance level has a positive impact on the formal sector income and a negative impact on the informal sector income. However, the formal sector income and the informal sector income could show complementarities as well if the existence of informal sector helps the formal production process. In the developing economies with widespread informal sector empirical evidence on this is also abound where the presence of informal sector reduces the cost of production in the formal sector. In such a situation, lower governance level benefits both the formal sector and informal sector incomes. Following the logic of the model developed in this paper in such a situation the government should choose the lowest possible level of governance and the highest possible level of tax rate. In developing the model in this paper, it has been assumed the complementarities have been dominated by the substitution effect between the formal sector and the informal sector income. Possibly a richer model is able to accommodate both these effects to explain more clearly the observed choices of the governance level and tax rates in different societies. This remains as our future research agenda.

⁴ In situations like tax competition with other governments in order to prevent capital flight.

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