Democratization in Resource Dependent Economies:

A Theoretical Framework

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Abstract: Recent theories of democratization argue that social conflict over the *redistribution* of income is the key for understanding democratic transition and consolidation. The application of this approach for the explanation of the failure of transition to democracy and the stability of authoritarianism in rentier states, however, has provided ambiguous results. This paper, considers a situation in which social conflict is merely over the nature and the extent of the *distribution* of natural resource rents (thus conflict over the redistribution in non-resource sector of the economy plays no major role in the society). Building on Acemoglu and Robinson's theory of democratization (2006), the paper shows that anti-democratic effects of resource dependence are conditional. The results indicate that in equilibrium, different political outcomes including revolution, consolidated non-democracy, repression and democracy are possible. The extent of development in non-resource sector, the level of inequality and the magnitude of resource rent and its boom and bust, are structural determinants of political equilibrium.

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1. Introduction

Developing countries rich in natural resources, such as the Oil Exporting developing countries, are considered as the prime candidates of the phenomena known as the *Natural Resource Curse* in the literature. The curse refers to the debility of these countries in initiating a stable process of economic and political development. These societies suffer from low and fluctuating rates of economic growth, lack of economic diversification, rampant corruption etc. In political arena, as compared to other developing countries, most of them have authoritarian governments.

Although the literature on the impact of natural resource dependence on political regimes is not rich, but still there is not a consensus among the existing limited number of studies on the issue. Dunning (2007) for example, has built a theoretical framework based on Acemoglu and Robinson's model of democratization (2006) which shows that the conflict over the redistribution in non-resource sector of the economy and the conflict over the distribution of natural resource rents will determine the outcome of power struggle in the oil rentier states. In his model, to the extent that the presence of a natural resource sector reduces the redistributional conflict, it may contribute to higher probabilities of transition to democracy.

Morrison (2006) has examined the political impacts of resource dependence and foreign aids on the transition to democracy in a resource rich dictatorial society. He has concluded that natural resource revenues and aid would diminish the chance of democratization through reducing the need for the distribution by the rich. He has claimed, "When natural resource revenue and aid are quite high, redistributional theories of democratization [such as Acemoglu and Robinson's Model or Boix's (2003) theory] may be irrelevant, because the poor may no longer prefer a positive tax rate" (2006, p34).

In this paper the social conflict is solely over the *distribution* of natural resource rents which is the most important strategic factor in shaping political outcomes and this is the main departure of our work with earlier studies in this field. In fact, in our model, we deliberately neglect the taxation mechanisms, which are proxies for redistributional conflicts in the society, in other theories.

In building the model, we have tried to incorporate various causal mechanisms, which have been offered by the scholars as the mechanisms connecting natural resource revenues to the types of political regimes. Ross (2001) provides a complete taxonomy for these causal mechanisms. According to him, there are three main mechanisms which might explain three alleged links between oil exports and authoritarian rules: the rentier effect, the repression effect and the modernization effect.

The rentier effect includes taxation, spending and group formation effects and maintains the fact that the rentier states rely mainly on the natural resource rents in their budget as apposed to the tax income. This would lead the people to demand less accountability in their political behavior. Oil wealth may help the rentier states to finance greater spending on patronage and in this way it might dampen the pressure for democratization. Finally, the rentier effect declares that the financial strength of the rentier states may help them to prevent the formation of independent social groups that may be inclined to demand political rights.

According to Ross (2001), the resource revenues owned by the government enable it to finance high repressive apparatus with a subsequent effect on the consolidation of authoritarian rule. This is called repression effect. The modernization effect, based on famous claims of the modernization theories about the relation between economic and political development, maintains that the lack of modernized society in resource abundant countries may also explain the failure of democratic transition in these countries. On this basis, the economic resource curse should be held responsible of the political curse.

We have tried to include these causal mechanisms, in the simplest possible form within the framework of Acemoglu and Robinson's model of democratization. We believe that the main contribution of this model is to clarify further the existing ambiguous relationship between structural factors such as oil the rents and the level of inequality on the one hand and the strategic processes that may lead to regime change in oil rentier states on the other. Our model is another example of theories which try to make a conditional relation between income structure of the rentier states and their type of political regimes.

2. Natural Resources, Political Regimes and Options

Morrison (2006) has pointed out that redistributive theories of democratization have five common properties, the two of which are of primary importance for the purpose of this paper. First, in these theories political regimes are essentially a way of allocating resources in the society. Therefore, social conflict over political regimes is an indirect conflict over the nature and extent of resource redistribution in the society. Second, state is supposed to be extractive and the main source of income of the society is generated from domestic economy. In other words, political regime redistributes resources owned by social groups and individuals through taxation (and other kinds of redistributive policies) and does not have any independent resource of its own[2]. In this context, different social groups, for example poor or middle class, may be pro-democratic because democracy is a political setting that guarantees the process of income redistribution in their favor. In short, social struggle over political institutions is a conflict over income redistribution and each type of political regime represents a specific form of redistribution.

In contrast with a resource poor economy, externally obtained revenues from the export of natural resources, constitute a significant portion of government and society's income in a resource rich economy. State is rentier in these economies in that its main source of income is the external rent[3]. Therefore, it is reasonable to assume that in a rentier economy, conflict over political regime is in its nature, a conflict over the distribution of natural resource rents. In this paper, we define political regimes based on their implications for the distribution of natural resource rents. Moreover, rentier states generally have considerable financial independence from their societies, thanks to their ability to acquire the necessary funds from abroad. Thus, taxation mechanisms usually are not strong enough to be a significant part of the political process. This is why we have abstracted the taxation mechanism and its political implications.

[2] There are three other chrematistics of these models: first, these models generally assume that conflict over distribution and redistribution takes place between rich and poor groups. That is politically salient factions tend to be defined by their income. Second, the rich are in minority, and third, redistribution is considered to be transfers from rich to poor individuals (Morrison, 2006, pp 5-8).

[3] Beblawi and Luciani (1987)

Consider a society consisting of two groups, the political elites and the citizens. Total population is normalized to one, a fraction $1-\delta$ of which is the citizens and the remaining part δ is the population of the elites. The economy consists of two sectors: a natural resource sector that produces a constant flow of rent, we use r to refer to the value of this rent, and a non-resource sector which its mean income is denoted by $\bar{y}$.

Let us start by modeling nondemocracy. Nondemocracy is the situation of political inequality in which the minority or the elites hold de jure political power and pursue policies beneficial for themselves. Assume that in nondemocracy, the natural resource revenues go directly to the elites' coffer and they have discretionary power over the distribution of resource rent. Therefore, the elites constitute the rentier state. To be more specific, assume that the elites consume a fraction α of the rent and distribute a fraction $1-\alpha$ to the citizens and the elites' share of resource rent is relatively bigger than their population: $\alpha > \delta$. We use $V^e(N)$ and $V^c(N)$ to refer to the payoffs of the elites (e) and the citizens (c) from nondemocracy (N) respectively. These payoffs are as follows:

$$V^e(N) = (\frac{\theta}{\delta})\bar{y} + (\frac{\alpha}{\delta})r \quad (1)$$

$$V^c(N) = (\frac{1-\theta}{1-\delta})\bar{y} + (\frac{1-\alpha}{1-\delta})r \quad (2)$$

Here, θ is the elites' share of the non-resource sector, which we assume to be greater than their share of mean income of the non-resource sector ($\theta \succ \delta$).Thus, in this model θ and α are two measures of inequality. The former corresponds to the non-resource sector and the latter is resulted from the elites' discretion over the distribution of natural resource rent.

In modeling nondemocracy, we have assumed that the elites distribute some portion of the resource rent to the citizens, or *invest* some of their resource revenues in *political loyalty* of the citizens. As Wintrobe (1991) noted, loyalty is defined as a long-term "attachment" to the part of an individual to an organization or institution. As such:

> "The long-term attachment could be rationally motivated if the individual have some reason to believe that the organization will look after his or her interest in the future" (1991, p583).

The genuine function of these kinds of investment is to solve the "reciprocal problem of cheating" between the politicians and the citizens. To put this statement in a more convenient form for our argument, we could say that the purpose of the elites' investment in political loyalty of the citizens is to solve the "commitment problem" which is inherited in nondemocracy. When we consider democratization as a game, we have to deal extensively with the commitment problem arises in nondemocracies. We will see that the decision of the elites to invest in the loyalty of the citizens might save nondemocratic regime when it is threatened by a revolution.

Wintrobe (1991) suggests that two institutional mechanisms which engender loyalty are pork barrel projects and political patronage. The prominent feature of these institutional mechanisms is that although they produce products that are economically "wasteful" or inefficient, but they are rational and efficient investments in political markets because they help politicians to create loyalty among citizens and therefore consolidate their political power. Rentier states usually gain advantages from this kind of investment as the existence of the economic resource curse (e.g. large public sector and low rate of return to investment) suggests. In practice, rentier states distribute the resource rent in many ways: from direct distribution to mass of population and/or specific strategic groups (for example military and militia) to various types of indirect distribution including subsidization of goods like petrol and flour, employment in public sector (job patronage), pork barrel projects, and regulation of prices and entry to markets.

Now let us tackle with modeling democracy, which as compared to nondemocracy could be a more challenging task, in part because democracy is not the common type of political regime in rentier economies. However, our purpose here is not to specify the exact policies that democracy can bring about, nor it is to determine the precise payoffs of social groups under democratic political institutions. What is important in this framework is to evaluate the consequence of democratic regimes for the preferences of different social groups about the distribution of resource rent as compared to nondemocracy. For this purpose, the first and necessary step is to understand the balance of power between socioeconomic groups in democracy.

In contrast to nondemocracy, democracy is the situation of political equality. Policy is determined by one-person one vote, and because the citizens are in majority, they have more de jure political power under democratic political institution. Therefore, within the context of conflict over the distribution of resource rents, it is not far-fetched to assume that in democracy, the citizens use their political power to obtain more natural resource benefits. In a median voter model it could easily be seen that the median voter, who is one of the citizens, prefers the policy platform which distributes the total amount of resource rent to the citizens. Thus, in an unconstrained democracy, the minority would be completely deprived from resource endowments. Without loss of generality, however, we deliberately restrict the ability of democracy to carry out distributive policy by assuming that the political equality is translated into an economic one with respect to access to the resource rents, for example due to some constitutional constraint. Therefore, in democracy each member of society, regardless of being an elite or a citizen, possesses an equal amount of resource rent. This modification is in line with the proposals that most scholars have offered regarding the manner of utilization of the oil revenues (for example see Birdsall and Subramaninan; 2004). The only difference between our model and an unconstrained democracy is that here the elites are less anti-democratic.

With this premise, we define the payoffs of the citizens and the elites from democracy to be as follows:

$$V^e(D) = \frac{\theta}{\delta}\bar{y} + r \qquad (3)$$

$$V^c(D) = \frac{1-\theta}{1-\delta}\bar{y} + r \qquad (4)$$

In equations (3) and (4), $V^e(D)$ and $V^c(D)$ are the payoffs of the elites and the citizens from democracy (D) respectively.

Up To this point, we have constructed the basic settings for understanding social conflict in a rentier economy. In nondemocracy, the elites have discretionary power over the rent distribution and they choose policies that provide them with more natural resource benefits. In contrast, democracy is relatively more egalitarian in distributing the resource rent. Therefore, the citizens are pro-democratic because democracy takes care of their interests

better than nondemocracy and similar reasoning could apply to the elites being anti-democratic.

Nevertheless, in nondemocracy, the citizens by solving collective action problem can use their de facto political power to threaten the political regime. In Acemoglu and Robinson, this situation happens when the "revolution constraint" is binding. By staging a revolution, the citizens can eliminate the elites or their interests (or both) and the revolutionaries or the citizens will determine policies afterward. We assume that if revolution happens, the citizens would take control of the resource rent and distribute it among themselves with nothing being left for the elites. Following Acemoglu and Robinson, we assume that revolution imposes some costs including the destruction of a portion of the productive capacity of the non-resource sector –for example human and physical capital- and the cost of solving collective action problem. This cost is denoted by μ. We also assume that either revolution does not impose any cost on the resource sector or the potential costs are insignificant relative to the value of the resource revenues. Again, this assumption is not far-fetched because natural resources like oil for example, are usually located in remote areas and isolated from the rest of the economy. Moreover, labor forces of this sector have relatively a smaller size as compared to the size of total population. We use $V^e(R,\mu)$ and $V^c(R,\mu)$ to refer to the payoffs of the elites and the citizens from revolution respectively and R denotes revolution. These payoffs are:

$$V^e(R,\mu) = 0 \tag{5}$$

$$V^c(R,\mu) = \frac{1-\mu}{1-\delta}\bar{y} + \frac{r}{1-\delta} \tag{6}$$

As equation (6) shows, following revolution a fraction μ of the productive capacity of the non-resource sector is destroyed and the revolutionaries will take control the reminder of the non-resource sector ($1-\mu$). Equation (5) shows that the elites get nothing from the revolution and hence their payoff is equal to zero. Revolution is beneficial for the citizens whenever the payoff of revolution is greater than the payoff of tolerating nondemocracy. Therefore, the revolution constraint binds when $V^c(R,\mu) > V^c(N)$. Substituting equation (2) into (6), we could rewrite this inequality as follows:

$$\alpha > (\mu - \theta).\frac{\bar{y}}{r} \qquad (7)$$

Inequality (7) is the revolution constraint in a resource dependent economy. This constraint has important implications for our discussion. First, the revolution constraint is more likely to bind when society is more unequal (higher α and θ), and when the cost of revolution (μ) is relatively low. Second, higher mean income of the non-resource sector ($\bar{y}$), which can be taken as a proxy of the extent of development in this sector, contributes to a lower probability of revolution. Third, higher values of the resource rent make society more prone to revolution. The logic of these results is clear: higher inequality makes revolution more attractive for the citizens because they get a small fraction of the economy in nondemocratic rule. Higher cost of revolution, either for technological reasons or due to difficulty of solving collective action problem, makes revolution more costly for the citizens and hence they may prefer to maintain the status quo. The higher is the average income of the non-resource sector, the less the revolutionaries gain from revolution. This is because the cost of revolution is imposed solely on this sector. Finally, with higher resource revenues, the post-revolutionary society gets higher rewards from revolution. Note that in the revolution constraint (7), it is the relative size of the average income of the non-resource sector compared to the value of the resource rent, which is important. Therefore, a proportionate change in the size of two sectors leaves the revolution constraint unchanged.

It is worth to compare our revolution constraint with that of a non-rentier economy obtained by Acemoglu and Robinson (2006). If θ exceeds μ -a situation which corresponds to a binding revolution constraint in the non-rentier economy - the right-hand side of the inequality (7) becomes negative. If this condition holds, the revolution constraint would be definitely binding because the elites' share of the resource sector cannot be less that zero. This is an interesting point: if the cost of revolution (μ) is relatively low, or if the inequality arising from the non-resource sector is sufficiently high, then no matter how and to what extent the elites distribute the resource rent, it is rational for the citizens to trigger a revolution. For the same reason, it may be rational for the elites to prevent such an outcome by avoiding high inequality in non-resource sector or via hardening collective action on the part of the citizens.

3. Democratization in a Rentier Economy

We now have the necessary elements to consider democratization in a rentier economy within the framework of a game. Assume that in the initial condition the society is nondemocratic; there are two different groups in the society, the elites or the rentier state who decide about the distribution of natural resource rent and the citizens who have to negotiate with the elites in order to increase their share of the rent endowments. The structure of the game is similar to Acemoglu and Robinson's basic model of democratization as is shown by Figure (1).

The democratization game starts when citizens successfully solve their collective action problem and pose a revolutionary threat on nondemocratic elites. This happens when the revolution constraint or inequality (7) holds. Faced with the threat of revolution, the elites have three options: they can either try to save the nondemocratic regime by policy concession via more rent distribution among citizens (the branch of the game which is denoted by (ND) in Figure 1), or they can relinquish their de jure political power and create democracy (the branch which is shown by (D)), or finally they may be able to save the status quo by repressing the revolutionaries (or the citizens) which is denoted by R in the figure.

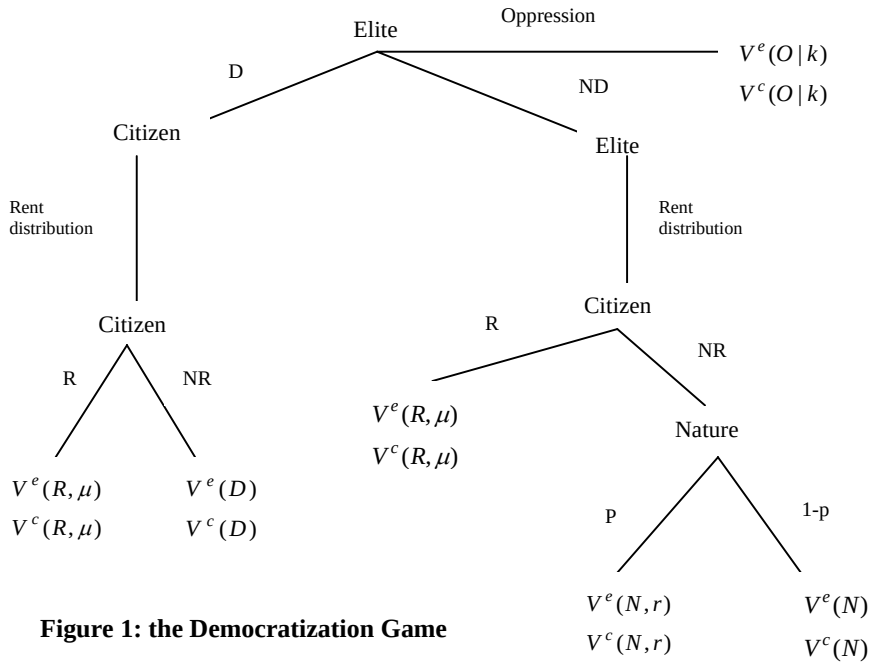

Figure 1: the Democratization Game

If the elites try to save the nondemocratic regime by distributing the rent among the citizens, the citizens can decide whether to continue revolting (R) or accepting the policy concession (NR). In considering the elites' offer, citizens consider the situation in which the threat of revolution is removed and there is no guarantee that the elites stick to their pledge. This is due to the difficulty of solving collective action problem inherited in revolution (Tullock, 1971). If the citizens accept the policy concession, then it is the nature who decides whether the elites renege on their promises or not. Here, nature refers to the ability of the political institutions in creating a credible commitment to future distributive policies. Assume that the elites stick to their promise with probability (p), and renege with probability (1-p). Therefore, (p) is a proxy for the ability of nondemocratic political institutions in solving commitment problem.

If the elites do not hold on their promises, then they can prevent revolution either by repressing the citizens or by creating democracy. If they transfer their political power to the citizens and create democracy, then the citizens decide about distribution of rent and there will be no commitment problem because the beneficiaries of the implemented policies and the policy makers are the same. However, in order to avoid the revolution, the democracy should be profitable enough as compared with revolution (or the revolution must be costly enough as compared to democracy). Therefore, after the citizens observe the elites' decision regarding their intention for the creation of democracy, they can accept this decision (NR) or continue revolting (R). Saving nondemocracy by policy concession and creating democracy are not the only options in front of the elites. They can also respond violently to the threat of revolution and repress the revolutionaries. In the game tree, this option is shown by *Oppression*. Following Acemoglu and Robinson, we assume that when revolution happens, it would be successful and when the elites decide to respond to the threat of revolution with repression, they will succeed in doing so.

We now try to solve the game by backward induction. Specifically, we want to find the Subgame Perfect Nash Equilibriums.

Let us start with the last subgame where the citizens decide whether to accept the elites' offer regarding more rent distribution. If the elites decide to quell the revolution by investing more on political loyalty of the citizens, the best policy they can deliver would be

the one that the citizens would have chosen as if they had the de jure political power. In our framework, this would be the policy that democracy delivers which is equivalent to equal access to rent endowment for all members of the society. Therefore, the payoffs of the constrained nondemocratic political system for the elites (e) and the citizens (c) would be as follows:

$$V^e(N,r) = (\frac{\theta}{\delta})\bar{y} + r \quad (8)$$

$$V^c(N,r) = (\frac{1-\theta}{1-\delta})\bar{y} + r \quad (9)$$

In equation (8) and (9), $V^e(N,r)$ and $V^c(N,r)$ are the payoffs of the elites and the citizens from constrained nondemocracy respectively. In considering policy concession that is offered by the elites, citizens take into account that the elites hold on their promises with probability (p), or renege and continue consuming relatively more portion of the rents with probability (1-p). We use $E^c(N,r)$ to refer to the expected payoff of the citizens from accepting the elites' offer. This payoff can be calculated as follows:

$$E^c(N,r) = p.V^c(N,r) + (1-p)V^c(N) \quad (10)$$

Substituting from equations (2) and (10), we can rewrite the above equation in a more convenient form:

$$E^c(N,r) = (\frac{1-\theta}{1-\delta})\bar{y} + [p(\alpha-\delta) + (1-\alpha)].\frac{r}{1-\delta} \quad (11)$$

With similar reasoning, the expected payoff of the elites from policy concession can be written as:

$$E^e(N,r) = (\frac{\theta}{\delta})\bar{y} + [\alpha - p.(\alpha-\delta)].\frac{r}{\delta} \quad (12)$$

The elites can prevent revolution by investing more on political loyalty of the citizens if and only if the expected payoff of the citizens resulting from more rent distribution is bigger than the payoff of the revolution or $E^c(N,r) \geq V^c(R,\mu)$. Considering equations (6) and (11), this inequality can be rewritten as:

$$p \geq p^*, \qquad p^* = \frac{\alpha - (\mu-\theta).\frac{\bar{y}}{r}}{\alpha-\delta} \quad (13)$$

If the elites' promise is credible enough, or if p exceeds p^*, then the elites are able to quell the revolutionary threats by investing more on loyalty of the citizens. Higher values of α, θ, r and δ contributes to higher levels of p^*, and therefore makes the creation of a credible commitment to future distributive policies for the elites harder. In contrast, an increase in the values of $\bar{y}$ and μ, contributes to lower levels of p^* and increases the ability of the elites to save nondemocracy by investing more on the political loyalty of the citizens.

Higher values of α means that the elites are consuming relatively a greater portion of the natural resource rent before the revolution becomes a serious threat. This makes it more difficult for the citizens to accept the policy concession due to the apparent weakness of the political institutions in creating a credible commitment to pro-majority policies. Therefore, the elites' capacity of saving nondemocracy with pro-loyalty investment policies is a function of their previous performance in distributing the natural resource rent. If the nature of political institutions allows them to consume relatively more share of the resource rents before the revolution becomes an effective threat, without any institutional change, it is likely that they can do the same after the threat of revolution is vanished. In this situation, it is unlikely that the citizens accept the elites' offer because without changing the nature of political institutions and the allocation of de jure political power, the elites can easily switch back to non-democratic policies after the threat of revolution is removed.

A higher value of θ, which corresponds to higher inequality in the non-resource sector of the economy, makes the policy concession more costly for the citizens. This is because the cost of revolution is imposed to the non-resource sector and when the citizens' share of this sector is relatively low, they can tolerate these potential costs more easily. Similarly, higher values of resource rents (r) increases the expected payoff of revolution compared to policy concession and therefore makes revolting a more attractive option for the citizens. The smaller the population of the citizens (or the bigger the size of elites' population - δ -) the harder it would be for the elites to save nondemocracy with policy concession. This is because the expected payoff of revolution for the citizens would be relatively higher when this payoff is distributed among a smaller size of population. Therefore, the revolutionaries

would have stronger incentives to replace the nondemocratic political institution with a revolutionary one. Higher values of $\bar{y}$ and μ, both contribute to a stronger nondemocracy because they represent higher cost of revolution.

Now assume that the promise of elites is not credible enough for the citizens $(p < p^*)$ and they cannot save the nondemocracy with policy concession. The other option for the elites in order to avoid the revolutionary outcomes is the creation of democracy. In this case, the citizens would have de jure political power for policy decisions and hence there will be no commitment problem. The payoffs of revolution for the elites and the citizens are defined in equations (3) and (4). Since the elites or their interest would be completely eroded as consequence of revolution $(V^e(R,\mu)=0)$, it is clear that they prefer democratization to revolution. Nevertheless, democratization can only prevent revolution if it provides greater benefits for the citizens compared to revolution or when:

$$V^c(D) \geq V^c(R,\mu) \qquad (14)$$

Substituting from equations (4) and (6), inequality (14) can be rewritten in a more convenient form:

$$\theta \leq \mu - \delta.\frac{r}{\bar{y}} \qquad (15)$$

Equation (15) indicates that the citizens would prefer a peaceful democracy to revolution when the cost of revolution is high enough, as compared with the existing inequality in the non-resource sector of the economy and the share of rent that they would miss if there were democracy. Equation (15) also indicates that when we compare a country which possesses resource rent with a country without it, other things being equal, the natural resource economy is more subject to revolution. This would be more likely, when the size of the population of elites is smaller and/or the value of natural resource rent is bigger.

The elites when face a challenge to their authority over the political institutions and the rent distribution, are able to use military, police, and security forces to suppress the source of the challenge. Whether they use repression to stop the challenge of revolution depends on the cost of using repressive apparatus as an instrument of political power. This cost includes the disruption in economic and social activities of the population, erosion of physical and human capital, financing repressive apparatus using resource and non-resource

revenues, and even the possibility of loosing international and local credibility and facing international isolation and sanctions. Therefore, in deciding about the use of repressive tools, rational elites compare the cost and benefits of repression. Here, for the sake of simplicity, we assume that the cost of repression is imposed solely on the non-resource sector of the economy and the resource sector is not influenced by this conflict.

Following Acemoglu and Robinson, we assume that repression destroys some portion of the productive capacity of the economy that is denoted by (k) which applies equally to the elites and the citizens. The payoffs of the elites ($V^e(O \mid k)$) and the citizens ($V^c(O \mid k)$) after repression are defined as follows:

$$V^e(O \mid k) = (1-k)(\frac{\theta}{\delta})\bar{y} + (\frac{\alpha}{\delta})r \qquad (16)$$

$$V^c(O \mid k) = (1-k)(\frac{1-\theta}{1-\delta})\bar{y} + (\frac{1-\alpha}{1-\delta})r \qquad (17)$$

Assume that the elites are able to prevent revolution with policy concession but in doing so they compare the outcome of policy concession with repression. The elites will use repression against opposition if the net cost of repression is less than that of policy concession or if:

$$V^e(O \mid k) > E^e(N, r) \qquad (18)$$

Plugging equations (12) and (17) into (18) we can extract the following inequality:

$$k < \hat{k} \quad \text{and} \quad \hat{k} = \frac{p.(\alpha - \delta)}{\theta.\bar{y}}.r \qquad (19)$$

If $k \geq \hat{k}$, repression is relatively costly for the elites and they prefer policy concession to repression and if $k < \hat{k}$, they use repression. Higher values of p, α and r would increase $\hat{k}$ with a subsequent increasing effect on the probability of the elites using repression. This is because the higher the value of the resource rent (r), the higher the value of the elites' share of these resources and the stronger the political institutions are in creating a credible commitment to future distributive policies (p) (for example due to the citizens' ability to overcome the collective action problem easily). In this case, the elites will loose more by choosing policy concession over repression and the harder it would be for them to cheat after the threat of revolution is vanished. In contrast, higher values of δ , θ and $\bar{y}$ would

decrease $\hat{k}$ which lowers the possibility of repression vs. policy concession. The higher the mean income of the non-resource sector and the higher the portion of this income that occurs to the elites, the more costly repression would be for the elites because the cost of repression is imposed on the non-resource sector of the economy. Small size of opposition (or high values of δ) means that it would be more efficient for the elites to commit to policy concession. This is because the value of the concession or the rent decreases as the size of opposition becomes smaller which would result a lower cost of repression for the elites and it would be more efficient for them to buy the opposition instead of repressing them.

The elites prefer repression to democratization if:

$$V^e(O \mid k) > V^e(D) \qquad (20)$$

By substituting equations (3) and (16) into (19) the following inequality would result:

$$k < \tilde{k} \qquad \text{and} \qquad \tilde{k} = \frac{(\alpha - \delta).r}{\theta.\bar{y}} \qquad (21)$$

If $k \geq \tilde{k}$, repression is relatively costly for the elites and they will democratize in order to avoid the revolution and if $k < \tilde{k}$ they prefer repression to democratization. The comparative static of inequality (21) is similar to inequality (19) –where the elites consider the trade-off between repression and policy concession- except for the fact that here the ability of political institution in creating a credible commitment to pro-majority policies does not play any role. This is due to our assumption that democratic political institutions do not suffer from commitment problem.

Up to this point, we have determined the players' strategies in every subgame of the democratization game and now we can add up these strategies in a proposition.

Proposition: There is a unique pure strategy Subgame Perfect Nash Equilibrium in the democratization game described in Figure (1) and it is such that:

- If $\theta > \mu$ (which means solving collective action problem is not so costly for the citizens), then no matter what the values of the other parameters of the model are, the revolution constraint binds, policy concession and democratization can not prevent revolution and in the equilibrium the citizens will revolt and the elites will use repression.

- If $\mu \geq \theta$ then:

a) If $\alpha \leq (\mu - \theta).\frac{\bar{y}}{r}$, the revolution constraint does not bind and the elites can stay in power without policy concession, democratization or repression.

b) If $\alpha > (\mu - \theta).\frac{\bar{y}}{r}$, the revolution constraint binds and:

1- If $p \geq p^*$ and $k \geq \hat{k}$, repression is relatively costly and the elites distribute more resource rent to stay in power.

2- If $p < p^*$ and $k < \tilde{k}$ or if $p \geq p^*$ and $k < \hat{k}$, then the elites use repression to save the nondemocracy and maintain power.

3- If $p < p^*$ and $k \geq \tilde{k}$, policy concession or more rent distribution is not enough to avoid revolution and repression is costly enough for the elites, so the elites democratize to prevent revolution.

This proposition shows that in equilibrium, there are a number of possible outcomes resulting from strategic interaction of the elites and citizens, including stable nondemocracy, constrained nondemocracy, revolution and repression. Structural factors such as the extent of inequality, the mean income of the non-resource sector of the economy, the status of the resource sector and its boom and bust, may play a major role in shaping the equilibrium of the power struggle among the nondemocratic elites -who constitute the rentier state- and the citizens. In the next section, we will study the comparative static of the result in more details.

4. Some comparative static results

In analyzing the political economy of the resource rich developing countries such as the most of the Middle East Oil Exporting Countries, the first and perhaps the most important question is that why the political regimes in these countries are less democratic than the rest of the world? Having noted to the above proposition, it becomes clear that there are different trajectories in the political path of the rentier economies, only one of which leads to democracy. The path that leads to democracy, according to the proposition, requires:

first, the citizens being able to solve the collective action problem successfully so that the revolution constraint becomes a serious threat in nondemocracy. Second, the promise of the elites regarding more investment on political loyalty of the mass of population or policy concession must not be credible enough to rule-out the revolutionary efforts. Third, repressing the opposition must be a costly option for the elites as compared with other alternatives. Even if all of these conditions hold, there is a possibility that democracy does not deliver the desired policy outcome from the point of view of revolutionaries. This corresponds to circumstances in which the inequality (15) does not hold. In this case, the equilibrium outcome of the game may be a revolutionary political regime instead of democracy. Therefore, in our framework, the lack of democracy in the resource rich developing countries might be due to the absence of at least one of the conditions mentioned above.

In carrying out comparative static analysis, we will restrict our attention to situations which result democracy; other political outcomes will be discussed if they can contribute to better understanding of democratization. We have also focused on three main structural factors of the model, namely the level of inequality, the mean income of non-resource sector (as a proxy of the extent of development in this sector), and the value of resource rents.

Let us start by comparative static analysis of the two measures of inequality. Our first proxy of inequality is the difference in access to the resource rent between the social groups α. First, Democratization requires the revolution constraint to be binding. Revolution constraint binds if α is grater than some threshold, namely α^R. We call this threshold as the revolution threshold. Second, policy concession or more investment in political loyalty of citizens should not be able to stave off the revolutionary threat. According to inequality (13), this requires α being greater than a certain amount which is shown by α^*. We name this threshold as the policy concession threshold. Finally, inequality in rentier endowment should not be so high that makes repression an attractive option for the elites. As shown in inequality (19), this requires α to be less than or equal to another threshold, the repression threshold, that is denoted by α^K. We can summarize these conditions as follows:

$$\alpha > \alpha^R, \quad \alpha > \alpha^* \text{ and } \alpha \leq \alpha^K \tag{22}$$

Inequalities (22) suggest that democratization is a feasible outcome only in some intermediate values of inequality in the distribution of resource rents.

Another measure of inequality in the model is θ which refers to the inequality arising from non-resource sector of the economy. First, for the revolution constraint (7) to be binding θ should be higher than a certain amount, which is denoted by θ^R. Second, the elites should not be able to buy the revolutionaries. This requires θ being greater than a certain threshold which is shown by θ^*. Third, democratization should be beneficial enough for the citizens as compared to revolution, or inequality (15) must hold. Therefore, θ should be less than its democratic threshold that is denoted by θ^D. If we calculate this threshold from inequalities (7), (13) and (15), we would find that $\theta^D > \theta^* > \theta^R$. For democratization to occur, repression must be costly enough for the elites as compared to democracy. As inequality (21) indicates, this requires θ to be greater than its repression threshold or θ^K. Therefore, the range of inequality in the non-resource sector of the economy, which is compatible to democracy, is obtained as follows:

$$\theta^* < \theta \leq \theta^D \text{ and } \theta \geq \theta^K \tag{23}$$

Thus, democratization is more likely in intermediate values of inequality. In other words, democratization might be the feasible outcome of the power struggle between the rentier elites and the citizens, when both measures of inequality – inequality in the non-resource sector of the economy and inequality in the distribution of resource rents – are in some specific ranges. An equal society remains nondemocratic because the revolution constraint does not bind, or due to the elites' ability to buy off the revolutionaries. On the other hand, if the elites' share of natural resource rents is high enough, they may prefer repression to democratization, and if the elite's share of the non-resource sector is considered to be insignificant, repression may be more cost effective option for them.

Therefore, starting from low levels of inequalities in which the revolution constraint does not bind, an increase in inequality increases the chances of democratization. As inequality increases further, repression becomes more attractive for the elites to save nondemocracy (in case of inequality in the distribution of rents), and high levels of

inequality in the non-resource sector, makes revolution more attractive for the citizens. These results are in line with the Acemoglu and Robinson's argument about the effect of inequality on democratization. They have suggested that there is an inverse U-shape relation between inequality and the probability of transition to democracy. The same relationship between inequality and the probability of transition to democracy in resource abundant economy can be inferred from our model.

To carry out comparative static analysis, we can calculate related thresholds of the mean income of the non-resource sector. The corresponding values of y from inequalities (7), (13), (17) and (21) which are referred to revolution, policy concession, democracy and repression thresholds of the mean income, are named y^R, y^*, y^D, y^K respectively. The results indicate that $y^D < y^* < y^R$. The ranges of $\bar{y}$ in which democratization is more likely to happen are:

$$y^D \le \bar{y} < y^* \text{ and } \bar{y} \ge y^K \qquad (24)$$

Therefore, starting from a situation where the revolution constraint does not bind, high levels of $\bar{y}$ might contribute to a more stable nondemocracy, because the revolution cost is imposed on the non-resource sector. Inequalities (24) indicate that democratization requires the mean income to be in some certain ranges. If the mean income remains at a relatively low level, the citizens might prefer revolution to democracy. However, high levels of the mean income may also contribute to a more stable nondemocracy because the revolution may not be a binding constraint or because the elites may be able to stave off the revolutionary threats by more investment on political loyalty of the citizens. Because repression destroys some portion of the productive capacity of the non-resource sector, relatively low levels of the mean income might make repression a more attractive option for the elites as compared to democratization.

These results are not fully compatible with the famous arguments of the modernization theories about the relationship between income and democracy (Lipset, 1959). Based on the observed correlation between income and democracy, modernization theories claim that only in a relatively wealthy society, transition to democracy is possible. Our results show that the effect of an increase in the mean income of the non-resource sector on democracy

is conditional. Depending on the other parameters of the model, an increase in the mean income may or may not contribute to higher probabilities of democratization.

Finally, we can calculate revolution, policy concession, democratic, and repression thresholds for the level of resource rents from inequalities (7), (13), (17) and (21) which are named r^R, r^*, r^D, and r^k, respectively. A comparison between these values indicates that $r^R < r^* < r^D$. Democratization is more likely when the level of resource rents matches the below ranges:

$$r^* < r \leq r^D \text{ and } r \leq r^K \quad (25)$$

A binding revolution constraint requires that the level of resource rents be higher than a certain threshold to make revolution an attractive option for the citizens. Therefore, starting from a situation in which the revolution constraint does not bind, an increase in the resource rents, or a boom in resource sector makes revolution and consequently democratization, more likely. A relatively high level of the resource rent also is needed when the citizens have to decide about accepting policy concession that is offered by the elites, or continue revolting. If the value of resource rent is relatively low, accepting policy concession might be more preferable than revolution. On the other hand, relatively high values of the rents might make revolution more beneficial for the citizens compared to democracy. Finally, high values of the resource rents may lead to repression because the relative cost of repression decrease as the value of resource rents increase. Again, it should be noted that democratic and anti-democratic effects of the resource dependence in this simple model depends on other structural factors of the model such as the inequality and the mean income of non-resource sector of the economy.

Thus, booms and busts of the resource sector may or may not contribute to a more stable nondemocracy. For example, assume a society with high levels of inequality in both sectors, with low mean income in non-resource sector and a relatively low level of resource rents, in which the revolution constraint is not binding. Now assume that a positive shock increases the price of the natural resource such as the oil price in the international market. The boom increases the value of natural resource income that enters the elites' coffers. As a result, the new situations might make revolution attractive for the citizens. If the revolution constraint binds, the elites may try to buy the political opposition by investing more on

their loyalty. If the elites can save nondemocracy with policy concession, the result would be a more constrained nondemocracy which probably suffers from economic resource curse because the new investment is likely to take place in the form of patronage policies, such as job patronage or pork barrel projects, which increases the size of state and lowers the rates of return on investments. If the political institutions cannot effectively commit to the new policy and if the values of resource rent considered by the revolutionaries are high enough, however, the citizens may reject this concession. In this situation, faced with the threat of revolution, the elites might try to democratize to avoid the revolution. Now, if the boom creates a significant increase in the natural resource incomes, the citizens may not even accept the generous proposition of the elites and eliminate them and their interests by mass mobilization. Similarly, the elites may resort to their last option and repress the citizens to save the nondemocracy.

Note that although we did not consider the difficulty of solving collective action problem for revolution, it is quite a challenging task for the citizens. The elites may indeed realize that the most effective way of saving nondemocracy is to prevent revolutionary threat from becoming effective. They can harden the collective action problem by constantly oppressing any potentially active political opposition. What is important in this respect is that these latter actions are all conditioned, at least to some extent, by structural factors of society. While solving the collective action problem for mass mobilization may be very hard in rentier economies, overcoming this problem for smaller groups of citizens may not be so hard. Smaller groups may be able to solve the collective action problem based on ethnic or religious identities much easier. In this case, a boom in natural resource revenue might encourage the rent-seeking behavior that might consequently make the economic resource curse more severe, or in the extreme may even lead to civil war.

The framework we developed in this paper may not be considered a comprehensive one at all. But its main strength, besides its simplicity, is that it shows the importance of structural factors in the strategic interaction between the rentier state and the citizens that may lead to political instability or consolidated nondemocracy. Local and international advocates of democracy seem to neglect the important role of these structural factors in shaping the political equilibrium of rentier states. This simple model allows us to be more

specific about the outcomes of polices designed to increase the chances of democratization in resource rich states.

5. Conclusion

This paper has examined the problem of political resource curse, which is represented by the stability of authoritarianism and the failure of democratization in a resource dependant economy. We have tried to incorporate causal mechanisms offered in the rentier states literature linking resource abundance to the type of political regimes, into a simple model of democratization. In our model, it is the social conflict over the distribution of natural resource rents which is at the heart of democratization process. If so, conflict over redistribution in non-resource sector of economy is, at best, of secondary importance. Therefore, taxation mechanism, which is a proxy of redistribution struggle between different socio-economic classes in other models, does not play a major role in this paper.

Building on Acemoglu and Robinson's (2006) theory of democratization, the main purpose of this paper has been to establish a simple framework for democratization in rentier states. We have clarified the effects of structural factors on strategic interaction between politically salient factions of the society which might lead to regime change. Morrison (2006) presents a simple framework of democratization in a resource rich economy in which natural resource revenues diminish the chances of transition via weakening the need for redistribution by the elites, Dunning (2007) on the other hand, maintains that if natural resource revenues lower the need for redistribution in non-resource sector, it might even increase the probability of transition and consolidation. In both models, however, redistribution takes place though taxation and transfer and hence, both models neglect the fact the taxation mechanisms are not significant determinants of the political performance in most of the natural dependent economies in general and the oil exporting countries in specific. We have shown that by conducting the focus of the social conflict on the distribution of natural resource rents, the implications of these theoretical frameworks may be quiet difference.

Political scientists have emphasized the importance of structural factors such as the extent of development of economy, poverty, inequality and the presence of a natural

resource sector in shaping political equilibrium. The main theoretical contribution of this paper is to put some of these structural factors into a simple and coherent and formal model of democratization. We have shown that how structural factors such as the extent of development in non-resource sector, the level of inequality, and the boom and bust of non-resource sector might change the incentive structure of different social groups to act strategically in favor of a specific political outcome. Our simple framework allows us to examine the possibility of revolution, repression and democratization in a rentier economy and provides some insight into the authoritarian stability prevalent in these societies.

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