POLITICAL DUTCH DISEASE

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April 10, 2003

Abstract

We consider a political environment with an elite and a populace, together with an economic environment with a productive sector and a rentier sector (e.g. a natural resource sector that produces a constant flow of rents per period). The elite's claim to resource rents is a function of the wealth it has inherited from the previous generation. We show that resource booms lead to the consolidation of the power of the elite. In addition, in contrast to the standard Dutch disease result, resource booms result in a slower growth rate only if the elite's bequest motive is weak.

I. INTRODUCTION

This paper investigates how political regimes are affected by sectoral shifts in the economy, in particular by an increase in the size of the natural resource sector. There is much evidence that, somewhat counter-intuitively, the discovery of a natural resource can lead to a decrease in the rate of economic growth. This phenomenon has been termed the *Dutch disease*. Less studied has been the empirical evidence that most long-standing authoritarian governments such as Libya and Iraq are sustained by natural resources rents. This phenomenon that we term *political Dutch disease* was first noticed by political scientists in the context of the Middle-East.

Previous empirical results by Wantchekon (1999) and Ross (2000) establish a positive correlation between resource dependence and authoritarian governments: controlling for GDP, human capital, income inequality, and other possible determinants, they find a robust and statistically significant association between resource dependence, as measured by the ratio of fuel and mineral exports as a percentage of total exports, and authoritarianism.

In this paper, we present a theoretical model which provides a framework for investigating how economic growth, the distribution of income, and the allocation of political power simultaneously evolve when resources are discovered. We find that resource abundance exacerbates income inequality between the populace and the political elite (a political oligarchy or a dictator). In the model, resource abundance increases income inequality due to a direct and an indirect effect. The direct impact is due to the elite's control over the government which allows it to obtain a larger share of the resource rent. The indirect impact is due to the economic decline associated with the Dutch disease, which increases income inequality because the benefits from growth are more evenly distributed than resource rents.

The elite's power derives from its control over the process of rent distribution. That is, the elite has the right to decide which proportion of the rents

2

goes to which segment within the populace. The elite inherits this right by virtue of being in control of the government at the time of the resource windfalls. We argue that resource abundance consolidates the elite's allocative power (distributive influence). This power leads to lobbying by members of the populace. This expenditure on lobbying or rent-seeking feeds back into the economic side of the model and reduces the rate at which human capital accumulates: unless the elite bequest motives are very strong, political considerations exacerbate the Dutch disease.[1]

The failure of resource-led growth has been extensively investigated in the literature. Case studies presented in Auty (1990) and Gelb (1988) show the adverse effects of resource abundance on growth. The most comprehensive and worldwide study is provided by Sachs and Warner (1997). They show that those countries with exports concentrated in the natural resource sector in 1970, tended to grow relatively slowly during the subsequent 20 years. The results hold even after controlling for initial income levels and trade policies, among other variables.[2]

Sachs and Warner (1997) provide a theoretical explanation of the Dutch disease by extending the endogenous growth model developed in Matsuyama (1992). There are three sectors in the model: a traded manufacturing sector, a non-traded service sector, and a traded resource sector. Endogenous growth

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[1] This assumption is consistent with the following observation made by Murphy, Shleifer and Vishny (1991): "In most countries, rent seeking rewards talent more than entrepreneurship does." More specifically, we assume that rent seeking could, for example, cause talented people to invest less in education and to join the military or become political activist.

[2] For example, resource-rich countries such as Nigeria, Argentina and Venezuela have been outperformed by resource-poor countries such as Korea and Taiwan. In particular, despite huge oil windfalls, Venezuela has suffered a decline in per capita output of 28% from 1970 to 1990 and Nigeria experienced an output contraction of 4.4% from 1980 to 1990.

arises because employment in the manufacturing sector generates improvements in human capital as a by-product. When resources are discovered, it raises the *level* of income for a number of periods. Part of this income is spent on the non-traded service sector, drawing resources away from manufacturing; increased demand for manufactures is satisfied through imports. The reduction in manufacturing employment reduces the *rate* of growth, due to the attendant decrease in the accumulation of human capital. While Sachs and Warner's model explains the sectoral shifts in the economy that could result from a natural resource boom, it neglects the importance of political regimes in this process.

Our paper is related to the literature on rent-seeking in the context of resource booms (Lane and Tornell [1996], 1999), Baland and Francois [2000], and Torvik [2002]) which attributes the Dutch disease to increased rent-seeking and a pernicious distributive struggle for resource rents by numerous and equally powerful groups, which results in a decline of the level of investment and in a lower growth rate.[3] In contrast with the literature, we consider rent-seeking not only as an occupational choice that affects income distribution and growth rate, but also a political choice that affects the nature of political regimes. The political elite in our model controls the government and faces no opposition. In addition, we assume that the claim to the resource rents of any generation of the elite is a function of the wealth it inherited from the previous generation. Thus, intergenerational income transfers are also transfers of power.

The paper also relates to the literature on inequality and democratization (Collier (1998), Acemoglu and Robinson (2001) and others) which suggests that high inequality induces popular pressure for democratic regime. Our results suggest that this conclusion might not hold when income inequality

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[3]Murphy et al (1993), Robinson (1994) and Acemoglu (1995) explain the rationale for extreme difference in levels of rent-seeking activities across countries.

is generated through natural resource wealth. For example, an abundance of natural resource revenues allows the elite to considerably increase spending on patronage. As result, the populace is likely to find rent-seeking more efficient than political unrest as a way to induce redistribution.

The paper contributes to the political science literature on "rentier" states which investigates the political implications of resource dependence (Mahdavy, 1970 and Beblawi and Luciani, 1987). A rentier state is characterized by a high dependence on external rents produced by a few economic actors. Rents are typically generated from the exploitation of natural resources, not from production (labor), investment (interest) or management of risk (profit). It is generally accepted that rentier states are prone to authoritarianism. Yates (1996), for example, observes that where "few control the inflow of economic rent," the inevitable result is "personal aggrandizement as the prerogative of political power" (p. 231). With specific reference to Venezuela, Karl (1997) associates the influx of petrodollars with consolidation of power by an increasingly centralized state. Indeed, in most resource-dependent nations, centralized governments maintain monopolistic ownership of the extractive sector.

A common conclusion of the rentier state literature is that rentier states tend to be autonomous in the sense that natural resource rents allow them to be more detached and less accountable since they do not need to levy taxes. Mahdavy (1970), Yates (1996) and Karl (1996) use this argument to explain the lack of pressure (from below) for democratic change in the Middle East. As Wantchekon (1999) explains, the "state autonomy" argument lacks empirical support and predictive power. First, the lack of pressure from below for democratic change is common to most developing countries (Diamond and Linz (1989)). Thus petrostates are no exception. Second, as Gwenn Okruhlik (1999) suggests, throughout the Middle-East and North Africa, in both oil and non oil states there are demands for social justice and political reforms (p.

5

296). In Saudi Arabia for example, political opposition to the ruling family is fueled by the fact that "prosperity of private citizens is dependent upon the acquisition of government wealth, with access to contracts, information, jobs in the public sector or infrastructure governed by family relations, friendship, religious branch and regional affiliation (p. 297).[4]

Since the state autonomy paradigm has limited empirical support, we adopt the "patron-client" paradigm, which focuses on the way in which resource abundance affects the ability of the elite to generate political support through spending on patronage networks. For instance, in Nigeria, more than half (55 percent) of oil rents accrue directly to the federal government, which is responsible for distributing an additional 35 percent of these profits to states (Khan (1994)) and in regional and ethnic competitions for oil revenues, which contributed to Nigeria's political system of institutionalized patronage (Bienen (1995)). In the Middle-East, Entelis (1976) and Anderson (1995)), find that oil wealth allows the government to strengthen political control by repressing or buying off political opposition.

The paper is organized as follows: Section II presents the basic model, and the equilibrium outcomes are discussed in Section III . Section IV concludes.

II. A SIMPLE MODEL
The Economic Environment: The Supply Side

The structure of the supply side of the economy follows closely Matsuyama (1992) and Sachs and Warner (1997). There are three sectors in the economy: a traded manufacturing sector, a non-traded service sector, and a traded resource sector. There is only one variable factor of production in the economy,

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[4]Waterbury (1994) went even further, claiming that "neither historically not in the twentieth century is there much evidence that taxation has evoked demands that governments account for their use of tax monies. Predatory taxation has produced revolts, especially in the countryside, but there has been no translation of tax burden into pressure for democratization, (p. 29)".

and its endowment is normalized to one. We denote by λ_t the proportion of this factor employed in the manufacturing sector at time t, and by h_t the stock of knowledge—or human capital—at time t. Production in the manufacturing and service sectors (m_t and s_t) have the following simple technologies:

$$m_t = h_t \lambda_t \tag{1}$$

$$s_t = h_t(1 - \lambda_t) \tag{2}$$

To simplify matters, the resource sector requires no inputs and produces a constant flow of R units of the natural resource per period. Manufacturing and resource goods sell in competitive world markets at exogenously given prices. We normalize both of these prices to unity. Because services cannot be purchased in world markets, its price, p_t, is determined by equating supply and demand.

Since we assume that the technology of production in both the manufacturing and service sectors are linear with respect to the variable factor, prices are completely determined by the supply side. Let w_t be the price of the factor of production. Profit in the manufacturing sector is $(h_t - w_t)\lambda_t$, while profit in the services sector is $(p_t h_t - w_t)(1 - \lambda_t)$. The first order conditions for profit maximization in the two sectors imply:

$$w_t = h_t \tag{3}$$

$$p_t = 1 \tag{4}$$

The Political Environment

There is one dynasty in the model: an *elite* (which can represent a political oligarchy or a dictator) and two non-dynastic identical groups, which together make up the *populace*. We think of the elite as a small ruling class. The

7

populace is meant to represent a large population. We separate the populace into two groups in order to allow issues of distribution to be modeled; these groups lobby the elite in order to obtain a greater share of the resource rent. The dynasty consists of a sequence of agents who live for one period. Successive members of this elite inherit wealth from the former generation and endow the next. This motive for bequest arises because the level of endowment for the next generation is assumed to enter the elite's utility function.

The Elite's Claim to Resources and the Elite's Power.

The political environment of the model is a dictatorship. The elite is assumed to control the government and to face no opposition.[5] We further assume that the elite's claim to resources depends on the size of its inheritance. This can be justified by noting that wealthier segments of the society either control the natural resource sector, or are better placed in the state apparatus and so have more direct access to the resource rents.[6] In either case, they are likely to reap a larger part of the benefits from the resources.

More precisely, the elite at time t inherits an amount e_t from generation $t-1$. This wealth allows the elite to claim of a fraction ϕ_t of that period's resource rent, R.

$$\phi_t = \phi(e_t) \tag{5}$$

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[5]Alvarez, Cheibub, Limongi and Przeworski (1997) defines a dictatorship as a political system in which either the chief executive or the legislature is not elected, or there only party.

[6]In all petrostates, the government or monarchy maintains explicit legal ownership of below-ground reserves irrespective of surface property rights. According to Kuwari (1970) the ruling shares of the total government expenditure is 25.7% in Abu Dhabi, 29% in Bharain, 32.8% in Quater and 12.0% in Saudi Arabia.

$$\phi \in [0,1], \quad \phi(0) = 0 \quad \text{and} \quad \phi(\infty) = 1 \qquad (6)$$

$$\phi' > 0 \quad \text{and} \quad \phi'' < 0 \qquad (7)$$

Since e_t directly determines the elite's access to resources rents, it is assumed to represent a measure of the elite's (political) power as defined by Dahl (1971). Indeed, according to Dahl, an allocation of income, wealth, status in a society is also an allocation of political resources which an actor can use to influence the behavior of other actors.

Also following Wintrobe (1998), we can also define power as degree of political control, which is achieved by repressing political opposition or buying loyalty of the citizens. In other words, the elite acquires its power by increasing its repressive power through spending on the military and the police on one hand and by increasing the degree of citizens's loyalty through redistribution. In that case, if the regime is mainly repressive, then it is clear that an increase in e_t leads to an increase of the elite's power. Of course, if the regime is not at all repressive, ϕ_t would be a decreasing function of e_t. We can however rule out this assumption by noting (as in Popper (1962)) that the main difference between a democracy and dictatorship is that as follows: while democracy derives its legitimacy from the people and is the only regime that make it possible for the ruled to dismiss a given government without bloodshed (by means of elections), an authoritarian government can only be dismissed through a revolution and political violence. As a result, dictatorships maintain themselves in power mainly through repression of political dissent.

Distributive Influence and Lobbying

Together, the two members of the populace receive the remaining fraction $1 - \phi_t$ of the resource rent R at time t. The distribution between them is

9

determined by the levels of lobbying or rent-seeking they undertake. The elite and the populace are thus involved in a "patron-client" relationship.[7] Let the levels of lobbying for the two groups which make up the populace be l_t^1 and l_t^2, respectively. Each unit of lobbying costs κ. A proportion σ_t is allocated to the first group in the populace; the other group receives $1-\sigma_t$. For concreteness, we assume that the elite chooses σ_t according to the following simple rule:

$$\sigma_t \;=\; \arg\max_\sigma \sigma^{l_t^1}(1-\sigma)^{l_t^2} \tag{8}$$

$$=\; \frac{l_t^1}{l_t^1 + l_t^2} \tag{9}$$

Thus the elite favors the group with the higher expenditure on lobbying. Given this rule, the first member of the populace solves the following maximization problem to obtain its optimal level of expenditure on lobbying:

$$\max_{l_t^1} \left(\frac{l_t^1}{l_t^1 + l_t^2} \right)(1 - \phi_t)\,R - \kappa l_t^1 \tag{10}$$

The other member solves the corresponding problem. The symmetric solution is:

$$l_t^1 = l_t^2 = \frac{(1 - \phi_t)\,R}{4\kappa} \tag{11}$$

Note that investment in lobbying determines (1) the allocation rule of the rents in the populace. and (2) the power of the elite thorough its effect on the elite wealth and hence its claim on resource rents. Lobbying could also

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[7] "Patron-client" relationship is understood as a personalized relationship between actors, or sets of actors commanding unequal wealth, status or influence, based on conditional loyalties and involving mutually beneficial transactions. The reciprocity is assured by the offer of material rewards and opportunities for social mobility in return for political support at the polls and elsewhere.

be linked to other forms of political support for the dictator such as "loyal-ty" (see Wintrobe) but that is beyond the scope of this paper. The model thus differs from differs from Lane and Tornell (1999), in which distributive conflict between several powerful groups over resource rents in the absence of property rights reduces growth.

Consumption and Endowment Decisions

At time t, the current generation of the elite has preferences over consumption of manufactures m_t, consumption of services s_t, and the endowment it leaves to the next generation e_{t+1}. We assume that the utility function of the elite, u, is Cobb-Douglas in m_t, s_t and e_{t+1} with α as the exponent on e, which measures the strength of the elite's bequest motive.

Note that the bequest motive will be strong (i.e. high α) in monarchies such as Saudi Arabia and Qatar where there is institutionalized system of power transfer from one generation of the elite to another. In contrast, the motive will be weak (i.e. low α) in countries such as Zaire, Nigeria or Venezuela, where there such system does not exist.

The elite solves the following problem:

$$\max_{m_t, s_t, e_{t+1}} \quad u\left(m_t, s_t, e_{t+1}\right) = m_t s_t e_{t+1}^{\alpha} \tag{12}$$

$$\text{subject to} \quad m_t + s_t + e_{t+1} = \phi\left(e_t\right) R + e_t \tag{13}$$

The only sources of income for the elite are resource rents and the endowment. Denote the consumption choices of the elite by m_t^E and s_t^E. We have:

$$m_t^E = s_t^E \quad = \quad \frac{1}{2+\alpha}\left[\phi\left(e_t\right) R + e_t\right] \tag{14}$$

$$e_{t+1} \quad = \quad \frac{\alpha}{2+\alpha}\left[\phi\left(e_t\right) R + e_t\right] \tag{15}$$

11

We now turn to the populace. Both segments of the populace solve the same problem. We again assume a Cobb-Douglas functional form in m_t, s_t.

$$\max_{m_t, s_t} \quad v(m_t, s_t) = m_t s_t \tag{16}$$

$$\text{subject to} \quad m_t + s_t + \kappa l_t = \tfrac{1}{2} h_t + \tfrac{1}{2}(1 - \phi_t)R \tag{17}$$

where l_t is given by (11). Note that in the symmetric political equilibrium, each group receives half of the populace's share of rents, $\tfrac{1}{2}(1 - \phi_t) R$. They also share the returns from the factor input.

For the both members of the populace, we have:

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\begin{aligned}
m_t^i = s_t^i &= \tfrac{1}{2}\left[\tfrac{1}{2}h_t + \tfrac{1}{2}\left[1 - \phi(e_t)\right]R - \kappa l_t^i\right] \\
&= \tfrac{1}{4}h_t + \tfrac{1}{8}\left[1 - \phi(e_t)\right]R
\end{aligned}
\tag{18}
$$

where l_t^i is given by the equation (11) above.

Human Capital Accumulation and Market Clearing

In the process of making manufactures—but not services—the stock of knowledge accumulates, causing production in both sectors to be more effective. Specifically, we assume that human capital grows according to the following:

$$h_{t+1} = h_t (1 + \lambda_t) \tag{19}$$

As Sachs and Warner (1995) point out, this is consistent with "the backward and forward linkages stressed by Hirshman (1958) et al., or the learning-by-doing stressed by...Matsuyama (1992)".

Equation (19), together with the market clearing condition for the services sector, complete this model. The market clearing condition for services is:

$$s_t^E + s_t^1 + s_t^2 = h_t(1 - \lambda_t) \tag{20}$$

Rearranging this condition, we have:

$$\lambda_t = 1 - \frac{1}{h_t}\left(s_t^E + s_t^1 + s_t^2\right) \tag{21}$$

12

We can substitute this into equation (19) to obtain an equation for the transition of h_t.

Therefore, the system of equations which describe the dynamics of the two state variables, h_t and e_t, are:

$$e_{t+1} = \frac{\alpha}{2+\alpha} \left[\phi\left(e_t\right) R + e_t \right] \tag{22}$$

$$h_{t+1} = 2h_t - \left(s_t^E + s_t^1 + s_t^2 \right) \tag{23}$$

Results

Proposition 1 (Effect of Change in R on Time Path of e_t: Political Dutch Disease) When the resource rent per period (R) increases, the level of endowment/power for the elite increases at all points in time $\left(\frac{de_t}{dR} > 0 \text{ for all } t \right)$. Thus, the elite's claim to resources (power) and the elite's consumption increases at all points in time $\left(\frac{d\phi_t}{dR} > 0, \frac{dm_t^E}{dR} > 0, \frac{ds_t^E}{dR} > 0 \text{ for all } t \right)$.

Proof. From equation (22):

$$\frac{de_{t+1}}{dR} = \frac{\alpha}{2+\alpha} \left(\left[\phi'\left(e_t\right) R + 1 \right] \frac{de_t}{dR} + \phi\left(e_t\right) \right) \tag{24}$$

where:

$$\frac{de_1}{dR} = \frac{\alpha\, \phi\left(e_0\right)}{2+\alpha} \quad > \quad 0 \tag{25}$$

$$\frac{\alpha\left[\phi'\left(e_t\right) R + 1\right]}{2+\alpha} \quad > \quad 0 \text{ for all } t \tag{26}$$

$$\frac{\alpha\, \phi\left(e_t\right)}{2+\alpha} \quad > \quad 0 \text{ for all } t \tag{27}$$

From (5) and (14), we know that ϕ_t, m_t^E, and s_t^E all increase in e_t. ∎

13

This result shows that resource booms lead to a higher level of income for the elite at all points in time (relative to the level in the absence of the resource rent). Because we identify the level of endowment as a measure of the elite's distributive power, this proposition suggests that resource booms lead to greater political power for the elite.

This proposition identifies the direct effect of a resource boom on the distribution of income between the elite and the populace. An indirect effect occurs through the accumulation of human capital. This is the subject of the next proposition.

Proposition 2 (Effect of Change in R on Time Path of h_t) When the resource rent per period (R) increases, the level of human capital decreases at all points in time $\left(\frac{dh_t}{dR} < 0 \text{ for all } t\right)$ if the elite's endowment motive (α) is sufficiently weak.

Proof. Substituting equations (18) and (14) into (23), and then differentiating:

$$
\begin{aligned}
\frac{dh_{t+1}}{dR} =\ & \frac{3}{2}\frac{dh_t}{dR} \\
& + \left[\frac{R\phi'\left(e_t\right)}{4} - \frac{R\phi'\left(e_t\right)+1}{2+\alpha}\right]\frac{de_t}{dR} \\
& - \frac{\phi\left(e_t\right)}{2+\alpha} - \frac{1-\phi\left(e_t\right)}{4}
\end{aligned}
\tag{28}
$$

Notice that:

$$
\frac{dh_1}{dR} = -\frac{\phi\left(e_0\right)}{2+\alpha} - \frac{1-\phi\left(e_0\right)}{4} \quad < \quad 0 \tag{29}
$$

$$
-\frac{\phi\left(e_t\right)}{2+\alpha} - \frac{1-\phi\left(e_t\right)}{4} \quad < \quad 0 \tag{30}
$$

$$
\frac{R\phi'\left(e_t\right)}{4} - \frac{R\phi'\left(e_t\right)+1}{2+\alpha} \quad < \quad 0 \tag{31}
$$

14

This last inequality holds for $\alpha < 2$. Together with the previous proposition, these inequalities imply the result. ∎

An increase in the resource rent R affects knowledge accumulation through its effect on consumption. An increase in R causes both the populace and the elite to consume more. Because services can only be produced domestically (while manufactures can be imported), the increase in consumption draws the factor input away from manufacturing. Knowledge is therefore lower at each point in time.

The above proposition states that a strong bequest motive on the part of the elite can mitigate the negative impact of resource booms on the level of human capital. A stronger bequest motive would lead the elite to spend a greater amount of any increase in R on its successor generation rather than on consumption of services, thus lessening the adverse impact on human capital. In addition, an increase in the elite's endowment will serve to transfer next period's resource rents from the populace to the elite. Since the elite has a bequest as well as a consumption motive, this will further reduce the impact on consumption of services and hence the impact on human capital.

The effectiveness of e in generating political power depends the strength of the opposition. If the opposition to the dictator is strong then

The proposition formalizes the indirect effect of an increase in R on income distribution. Since factor payments go to the populace, an increase in R can indirectly alter the income distribution in favor of the elite via the effect on human capital accumulation.

While an increase in resources raises the populace's current income and hence consumption, the above proposition suggests that it can negatively affect future consumption levels. The next proposition formalizes this idea.

Proposition 3 (Effect of Change in R on Time Path of s_t^i, m_t^i: Dutch

Disease) When the resource rent per period (R) increases, the populace's consumption initially increases $\left(\frac{ds_0^i}{dR} > 0, \frac{dm_0^i}{dR} > 0\right)$. If the elite's endowment motive is sufficiently weak, then this change in the level of consumption decreases over time; at some point the change may be negative $(\frac{ds_t^i}{dR}, \frac{dm_t^i}{dR}$ may be negative for some $t > 1$).

Proof.

$$\frac{dm_t^i}{dR} = \frac{1}{4}\frac{dh_t}{dR} + \frac{1}{8}\left[1 - \phi\left(e_t\right) - \phi'\left(e_t\right)\frac{de_t}{dR}R\right] \tag{32}$$

where:

$$\frac{dm_0^1}{dR} = \frac{1}{8}\left[1 - \phi\left(e_0\right)\right] > 0 \tag{33}$$

The result holds because $\frac{dh_t}{dR} < 0$ and $1 - \phi\left(e_t\right)$ is decreasing in t given the result of the previous proposition. ∎

The populace's consumption of manufacturing and services depend in large part on the its factor income which is determined by the level of human capital. If α is sufficiently small, then the previous proposition implies that the level of human capital will decrease at all points in time (relative to what it would otherwise have been) as a result of the increase in resource rent. This can imply that consumption for the populace becomes lower than it would otherwise have been. The resource rent also tends to decrease consumption via its effect through e_t.

Finally, we examine the effect of changes in R on the level of lobbying.

Proposition 4 (Effect of Change in R on Time Path of l_t^i) When the resource rent per period (R) increases, the level of lobbying initially increases $(\frac{dl_0^i}{dR} > 0)$. If ϕ' is small, then this change in the level of lobbying decreases over time; eventually the change may be negative $(\frac{dl_t^i}{dR}$ is decreasing in t and may be negative for sufficiently large t).

16

Proof.

$$\frac{dl_t^i}{dR} = \frac{1}{4\kappa} \left[1 - \phi(e_t) - \phi'(e_t) \frac{de_t}{dR} R \right] \tag{34}$$

where:

$$\frac{dl_0^i}{dR} = \frac{1}{4\kappa} \left[1 - \phi(e_0) \right] > 0 \tag{35}$$

For sufficiently small ϕ'', $\frac{dl_t^i}{dR} \approx \frac{1}{4\kappa} \left[1 - \phi(e_t) \right]$ is decreasing over time. ∎

An increase in the level of the resource rent has two effects on the level of lobbying. One the one hand, the prize to be shared among the two members of the populace and the elite is larger. On the other hand, the elite's share of resources is increased at all times $t \geq 1$. If ϕ' is small, then the second effect is negligible. The assumption the elite's claim function, ϕ, is concave then yields the required result.

III. CONCLUSION

In this paper, we investigate empirically the correlation between resource dependence and authoritarianism and then present a model that helps explain conditions under which resource booms not only lead to slower growth rate but also to the consolidation of a dictatorial regime. Our results contribute to a better understanding of the interaction between income inequality, democracy and growth in resource-rich countries. These results imply that the prevalence of non-democratic regimes in the Middle East as well as Northern and Sub-Saharan Africa may have as much to do with the structure of their economies than with religious, ethnic or cultural factors. As a result, economic reforms, especially properly designed ownership structure of the resource sector, could be the most effective way to promote democracy and economic development in resource-rich countries.

17

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18

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