The Perils of Unearned Income

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In addition to the internal risk of deposition, which is modeled using selectorate politics (Bueno de Mesquita et al. 2003), leaders risk being deposed by mass political movements such as revolutions. Leaders reward supporters with either public goods, which reward the whole of society, improve economic productivity, and increase the ability of revolutionaries to organize, or private goods. If confronted with a revolutionary threat then leaders respond by either suppressing public goods—which prevents revolutionaries organizing—or increasing public goods, so citizens have less incentive to rebel. Unearned resources, such as natural resource rents or aid, increase the likelihood of revolutionary onset and effect how leaders best respond to the threat. The results address the resource curse, the potentially pernicious effects of foreign aid and incentives to democratize.

Political leaders face threats to their tenure in office from political rivals within extant political structures and from revolutionary challenges which seek to overhaul the whole institutional framework. This paper explores how political institutions and the nature of government finance determine which policies best enable a leader to survive these threats to tenure. The model's results are discussed in light of a diverse range of phenomena, including the resource curse, the potentially deleterious consequences of foreign certain forms of aid for development and democratization.

Bueno de Mesquita et al.'s (2003) theory of selectorate politics provides the basis for political competition within extant political institutions. Leaders seek to survive in office. In common with many political economy models, policy is made for the benefit of those who govern, not those who are governed (Acemoglu and Robinson 2001, 2006; Coate and Morris 1999; Dixit, Grossman, and Helpman 1997; Padro-i-Miquel 2004). Leaders choose between a public goods or a private rewards policy focus depending upon how many supporters they need to survive in office (the winning coalition size, W). The model expands on selectorate theory by allowing public goods to improve the economic productivity of the citizens and enhance the ability of potential revolutionaries to organize mass movements against the government.

Governments obtain resources from two sources: taxation on productive economic activities and resources derived independent of the citizens' willingness to engage in the economy. I refer to the latter form of unearned resources as free goods. They are free in the sense that they do not require the citizens to work to provide them. Yet, this nomenclature is draped in irony. As we shall see, free resources often encourage leaders to curtail the citizens' political and personal freedoms. Natural resource rents and, to the extent that it is fungible (Feyzioglu, Swaroop, and Zhu 1998), foreign aid are common examples of free resources (Goldsmith 2001).

The analyses focus on how political institutions and the level of free resources influence whether the citizens are willing to support revolutionary movements and how leaders shift policy in response to such revolutionary threats. Absent a revolutionary threat, the results largely mirror those found by Bueno de Mesquita et al. (2003). In small, winning coalition-size systems leaders can most efficiently reward their supporters through private goods. As coalition size increases it becomes more expensive to reward supporters individually with private goods and so leaders shift the focus of their policies towards public goods provision. Winning coalition size determines the uses to which free resources are allocated. Given the private goods focus engendered in small coalition systems, the bulk of free resources are

captured as discretionary resources by the leader or doled out as private benefits for the leader's supporters. In contrast, in large coalition systems the political imperative is the production of public goods. In such systems free resources are predominately used to finance the provision of public goods. This enhances societal welfare and economic productivity. As a consequence, large coalition nations are more likely to convert the resource bonanza associated with the discovery of a readily exploitable natural resource or an influx of foreign aid into economic development and improvements in societal welfare than are nations with small coalition systems.

Winning coalition size determines the extent to which the average citizenry benefit from free resources. Coalition size determines whether free resources are spent to enhance societal well-being or used as rewards for the leader and her cronies. The average citizen benefits more from free resources under large coalition institutions than small coalition institutions. Therefore, as the level of free resources increases citizens become increasingly willing to support mass political movements, such as revolutions, which seek to replace the existing institutions with a more inclusive political system. Free resources increase revolutionary threats.

Public goods, particularly those such as government transparency and freedoms of association, enhance the ability of potential revolutionaries to organize against the government. Therefore, extant institutions, or more precisely the policy focus they engender, affect the likelihood of a revolutionary threat. Large coalition systems produce high levels of public goods. In such systems it is relatively easy for citizens to organize against the government, but they have relatively little interest in doing so since such systems already produce the public goods orientated policies which the citizens hope to obtain through revolution. At the other extreme, in very small coalition systems, leaders provide very few public goods. In such systems the welfare of citizens outside of the winning coalition is very low, and they would dearly like revolutionary change. Unfortunately for them, the low level of public goods makes coordination and enacting revolutionary change difficult. With little prospects of success citizens are unlikely to support revolutionary movements.

If a leader faces a revolutionary threat, then she can dissipate the threat in one of two ways: expansion or contraction of the public goods supply. First, she could expand the supply of public goods. Although this increases the ability of the citizens to organize against the government, it also makes retaining the existing system more attractive. Second, a leader could contract public goods provisions. This increases the citizens' desire for revolutionary change, but reduces their ability to coordinate and succeed. To dissipate a revolutionary threat leaders pick policies that effectively mimic the public goods policies of either a larger or a smaller winning coalition system in order to remove either the citizens' desire or their ability to rebel.

Institutions and the level of free resources determines which policy best enhances the leader's prospects for survival in the face of revolutionary threats. All else equal, leaders beholden to a relatively large coalition find policies that mimic larger coalition systems the more attractive response. While leaders in relatively small coalition systems better dissipate a revolutionary threat through the contraction of public goods. In addition to increasing the likelihood of a revolutionary threat, free resources also shape how a leader responds. One of the principal problems with suppressing revolutionary incentives via the contraction of public goods is that it simultaneously contracts the economy, and hence the government's access to revenues. Free resources offset this decline in revenues since they are relatively unaffected by declines in economic productivity. Free resources thus help facilitate contractionary responses to revolutionary threats (which their presence helped induce in the first place).

The results provide an explanation for the so-called resource curse, an empirical observation that nations highly endowed in readily exploitable natural resources, such as oil, perform worse than their contemporaries who lack these advantages, and why the curse is particularly malignant in nondemocratic systems (Gelb 1988; Humphreys 2005; Jensen and Wantchekon 2004; Ross 1999; Sachs and Warner 1995, 2001). The results also help inform the contemporary debate on foreign aid and whether increased aid, and which forms of aid, will lift poor nations out of poverty (Easterly 2002, 2006; Sachs 2005). The theory predicts which conditions are conducive to democratization and helps explain the competing claims of different theories of democratization (for example, Przeworski and Limongi (1997), Przeworski et al. (2000) and Boix and Stokes (2003)).

The paper proceeds as follows: The core economic and political building blocks of the theory are introduced. I introduce an infinitely repeated game and derive how a leader's choice of public and private goods is constrained by the need to survive the dual threats of internal political competition and

revolution. A proposition characterizes equilibrium polices, which fall into two cases. When leaders face no revolutionary threat, case 1, the logic devolves to Bueno de Mesquita et al.'s prior analysis of selectorate politics. Having briefly summarized these arguments, I examine the more interesting second case, in which leaders must also contend with revolutionary threats. I focus on examining how political institutions and access to free resources shape the occurrence of revolutionary threats and how leaders shift their policy provisions in response to such threats. In light of these results I discuss why free resources can be a blight rather than a blessing in terms of both policy provision and prospects for democratization.

A Model of Selectorate Politics and Revolution

Political Institutions and Policy Choice

A polity is composed on N citizens of which S, the selectorate, have an institutionalized say in who is leader. The incumbent leader, L, forms a coalition of W supporters chosen from the selectorate ($N \geq S$ and $W \leq S/2$). To survive in office she must maintain the support of this winning coalition. In each period of an infinitely repeated game the incumbent is matched against a political challenger, C, from within the extant political system and a revolutionary activist, A, who seeks revolutionary change. For technical convenience I assume infinite pools of challengers and activists.

In an attempt to gain their support, political leaders offer citizens a mix of (g) public and (z) private goods, subject to a budget constraint derived below.[1] Public goods have three roles. First, they provide direct benefits to all member of society. Second, they enhance the returns on economic activities since they enable people to more productively deploy their labor. Third, public goods make it easier for citizens to organize and coordinate, thus making mass political movements, such as revolution, more likely to succeed.

Citizens' Economic Choices

Each citizen's utility depends upon four factors: the level of public goods (g), government provided private goods (z), income (y), and leisure (l). Let $V(g, z, y, l)$ be the citizens' utility function, which is additively separable and concave in each component:

$V(g, z, y, l) = V^g(g) + V^z(z) + V^y(y) + V^l(l)$. In each period citizens allocate their unit of time between productive economic activities (λ) and leisure (l): $\lambda + l = 1$. The returns on economic effort depend upon the level of public goods within society, $f(g)$, where $f(g)$ is a continuous and increasing concave function. Healthy workers with access to communications and information can obtain higher returns from their efforts than can sickly, isolated, and ignorant workers. Specifically, if a worker allocates λ proportion of her time to economic activities in a society with g public goods and a tax rate of r then her retained income is $y = (1 - r)\lambda f(g)$.

Citizens maximize their economic well-being by choosing an optimal effort level/leisure trade-off: $l^\star = \arg \max V(g, z, y, l)$, where $y = (1 - r)(1 - l) f(g)$. $l^\star(g)$ defines the optimal leisure level given g public goods, which, assuming an interior solution, is given by the first-order condition $-(1 - r)f(g) V^y_y((1 - r)(1 - l)f(g)) + V^l_l(l) = 0$, where V^y_y and V^l_l correspond to partial derivatives of the components of the citizens' utility function associated with income and leisure. Public goods have both a direct and indirect effect on payoffs and productivity. Public goods improve productivity, which encourages citizens to work harder. Hence an improved supply of public goods improves the citizens' welfare directly, because they enjoy public goods, and indirectly because it improves their personal economic welfare.

Given the additive separability and concavity of the citizens' utility function, the citizens' payoff given optimal economic effort/leisure decision making can be written directly in terms of continuously increasing concave functions of g and z: specifically $V(g, z, (1 - r)(1 - l^\star(g))f(g), l^\star(g)) = v(g) + u(z)$, normalized such that $u(0) = 0$. Similarly, given the citizens' economic choices, each citizen's economic production is given by $\phi(g) = (1 - l^\star(g))f(g)$. Throughout the rest of this paper I utilize these induced utility and production functions.

Governments obtain revenues from free resources, such as natural resource rents, and from taxing the citizens' economic activities. The government is beholden to the economic consent of the citizens for the latter revenues (Levi 1988; McGuire and Olson 1996; Olson 1993); but not for the former. A government's total revenues are $R = R_0 + Nr\phi(g)$. The first term, R_0, refers to the level of free resources, that is revenues that do not depend upon taxing economic activities. The second term, $Nr\phi(g)$, is taxation from the taxing N workers at a rate of r given that they each produce $\phi(g) = (1 - l^\star(g))f(g)$. The important distinction to note is that while governments receive

the former income whether or not their policies encourage economic activity, the latter sources of income require the economic consent of the citizens.[2]

Government spending is subject to a budget constraint: $pg + Wz \leq R = R_0 + Nr\phi(g)$, where g and z represent the public and private goods provisions, p is the price of public goods and W, the size of the winning coalition, effectively acts as a price for private goods, as it describes the number of supporters who receive private goods.

Public goods affect the ease with which citizens can organize and coordinate. I model mass political movements as a proposal by an activist, A, to create a large coalition democratic system via revolution. In particular, I assume the activist proposes revising political institutions such that $S = N$ and $W = N/2$ and announces a coalition of size $N/2$ and public and private policy provisions. If the citizens decide to support the revolution, then it succeeds with probability $\rho(g)$. If the revolution is successful then the activist becomes the new leader under the revised institutional rules.

The ability of revolutionaries to organize is enhanced by the level of public goods. For instance, a citizen might wish to join an antigovernment demonstration in a neighboring town, but if she does not know about the protest or has no means to get there, then it is impossible for her to participate. Public goods, such as the free flow of information and an effective transport network, make it easier to coordinate antigovernment activities (Bueno de Mesquita and Downs 2006). Scholars such as Granovetter (1978), Kuran (1989, 1991, 1995), Lohmann (1994), and Oliver, Marwell, and Teixeira (1985) treat antigovernment protests and revolutions as tipping models. Citizens who are disenchanted with incumbent regimes readily join protests that already have high participation. Such large events are likely to be successful and their scale makes it unlikely that any individual will be picked out for punishment by the government. Yet to reach the tipping point where the vast majority of people are willing to join the protest, requires that the first few protesters or revolutionaries have confidence that there will be enough supporters for the movement to succeed; otherwise the revolutionaries are simply exposing themselves to government retribution. High levels of public goods within society increase the chances that revolutionaries can organize to gain enough momentum to reach the tipping point. Public goods are a double-edged sword. While they promote economic activity, they also make it easier for citizens to rebel.[3]

If a revolution occurs then all citizens pay a cost k. If the revolution succeeds, then the revolutionary activist becomes leader under democratic institutional arrangements. The citizens' continuation value associated with the game under postrevolutionary institutions is Q. If the revolution fails, then the citizens pay an additional punishment cost ω associated with government retribution.

Political Competition

Incumbents face political threats from both challengers within the political system and activists who seek to revise the entire system. To guarantee their primary objective of political survival, leaders need to offer their supporters sufficient rewards that they do not defect to a political rival and ensure that the citizens do not rebel. Once this survival constraint is satisfied leaders want to maximize the amount of discretionary resources at their disposal. Specifically leaders want to maximize the difference between revenues, R, and the amount they need to spend on public and private goods: $pg + Wz$. Bueno de Mesquita et al. (2003) use this difference as a metric for the ease of leader survival.

Following Bueno de Mesquita et al. (1999, 2002, 2003), leaders have idiosyncratic affinities over who they prefer to include in their coalition. In particular, I assume that once established in office, leaders form their coalition with those selectors with whom they have the highest affinity. To reflect that relatively less is known about political challengers than established incumbents, I assume that initially a politician's affinities are unknown. However, once a challenger attains office his affinities become revealed and he reorganizes his coalition around his highest affinity selectors. The revelation of affinities reflects the risks inherent for any supporter of defecting to a challenger. While a challenger needs the support of particular selectors to depose the incumbent, once established in office the new leader can, and typically does, realign his coalition. I assume that all possible affinity orderings over the selectors are equally likely. Under this assumption, the net effect of the revelation of affinities is that each selector has a W/S chance of being included in the challenger's long-term coalition.

I now specify an infinitely repeated game. All players have a common discount factor δ. The

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[2]The tax rate is assumed fixed. Bueno de Mesquita et al. (2003) endogenize this choice.

[3]Robinson (1999) treats government investment in a similar manner to which I treat public goods. He argues this leads to under investment in predatory states.

subscripts L, C and A indicate the decisions associated with each politician.

1) Coalition Nomination and Policy Proposals:[4]
The incumbent leader forms a coalition from the W selectors highest in her affinity ordering. A challenger, C, and a revolutionary leader, A, are randomly drawn from an infinite pool of potential challengers. From the pool of selectors, the challenger, C, nominates a coalition of size W that includes at least one member of L's coalition. The revolutionary activist, A, nominates a coalition of size $N/2$ that excludes members of L's coalition. The incumbent, challenger, and revolutionary activist each nominate provisions of public and private goods (g, z) subject to $g \geq 0$, $z \geq 0$ and the budget constraint, which is $pg + Wz \leq R_0 + Nr\phi(g)$ for the incumbent and challenger and $pg + \frac{N}{2}z \leq R_0 + Nr\phi(g)$ for the activist.

2) Revolution:
The $\frac{N}{2}$ citizens in A's coalition decide whether to rebel. If they do so then the revolution is successful with probability $\rho(g_L)$. If the revolution succeeds, then the activist becomes leader and institutional change occurs; otherwise the extant institutions persist.

3) Internal Political Competition:
If the incumbent survives the revolution in step 2, then the leader faces domestic competition within the extant institutions. The selectors choose between the incumbent and the challenger. If any selector within L's coalition chooses the challenger, then the incumbent is deposed; otherwise L defeats C's challenge.

4) Policy implementation and revelation of affinity:
The policy proposal of the selected leader is implemented and the affinity ordering of the leader, be she the original incumbent, the challenger, or the revolutionary activist, is revealed.

Internal Political Competition and Revolutionary Threats

I characterize a subgame perfect equilibrium in which the incumbent leader survives in every period by offering the policy provisions $(g^\star, z^\star)$ to the coalition of her W highest affinity members of the selectorate. This characterization depends upon two constraints derived from internal political competition and

[4]Bueno de Mesquita et al. (2002, 2003) examine optimal coalition choice. In light of their results, and for presentational simplicity, I specify coalition choice as part of the game form.

revolutionary threats: $chal(g^\star, z^\star) = 0$ and $rebel(g^\star) \geq 0$. Prior to stating the equilibrium conditions, I derive these constraints, and in the process of doing so, explain the logic of political competition. I restrict attention to stationary strategies, those in which players play the same way in every structurally identical setting. This restriction rules out strategies which condition on the time period or the previous history of play for instance. The results are illustrated using numerical examples in which $V(g, z, l, y) = \sqrt{g} + \sqrt{z} + \sqrt{l} + y$, $f(g) = (1 - l)\sqrt{g}$, $\rho(g) = 1/(1 + \exp(\frac{-g-12}{4}))$, $N = 1000$, $S = N$, $p = 100$, $\delta = 1/2$, $k = 2$, and $\omega = 2$.

Selectorate Competition

A political challenger (C) within the extant institutional setup seeks to become leader by offering policy provisions that attract members of the incumbent's coalition to defect. Given the budget constraint, $pg + Wz \leq R_0 + Nr\phi(g)$, and the need to form a coalition of size W, the highest reward that a challenger can offer potential defectors in the immediate period is given by policies $(\widehat{g}, \widehat{z})$, where these policies solve the following programming problem:

$$(\widehat{g}, \widehat{z}) = \arg\max_{g,z} v(g) + u(z) \text{ subject to } pg + Wz \leq R_0 + Nr\phi(g) \tag{1}$$

This optimization implies

$$\widehat{z} = \frac{R_0 + Nr\phi(\widehat{g}) - p\widehat{g}}{W}$$

and $\widehat{g}$ solves

$$v_g(\widehat{g}) + \frac{Nr\phi_g(\widehat{g}) - p}{W}u_z\left(\frac{R_0 + Nr\phi(\widehat{g}) - p\widehat{g}}{W}\right) = 0.^5$$

In attempting to come to power a challenger can offer a potential supporter rewards worth $v(\widehat{g}) + u(\widehat{z})$. However, the challenger can not commit himself to future policy. Once established in power and having learned his affinity ordering over the selectors, in all future periods, the challenger survives in office by forming a coalition with his W highest affinity selectors and offering them policy provisions (g^*, z^*). Since prior to revelation, all affinity orderings are

[5]The SOC

$$v_{gg}(\widehat{g}) + \frac{Nr\phi_{gg}(\widehat{g})}{W}u_z\left(\frac{R_0 + Nr\phi(\widehat{g}) - p\widehat{g}}{W}\right) + \left(\frac{Nr\phi_g(\widehat{g}) - p}{W}\right)^2 u_{zz}\left(\frac{R_0 + Nr\phi(\widehat{g}) - p\widehat{g}}{W}\right)$$

ensures this is a maximum.

equally likely, each selector has only a W/S chance of being included in the challenger's long-term coalition should he become established as leader. Although the challenger can offer a potential defector $v(\widehat{g}) + u(\widehat{z})$ in the immediate period to defect, he can only offer access to future private goods ($z^\star$) with probability W/S. With the complementary probability, $1 - \frac{W}{S}$, the selector is excluded from future coalitions and so receives no future rewards from private goods ($u(0) = 0$). The expected value of the best offer a challenger can credibly make is:

$$v(\widehat{g}) + u(\widehat{z}) + \frac{\delta}{1-\delta}\left(v(g^*) + \frac{W}{S}u(z^*)\right) \quad (2)$$

The incumbent has an incumbency advantage over the challenger with respect to the provision of future private goods. Since the incumbent's affinities are known, she can offer future private goods to her coalition with certainty. Selectors contemplating a defection to the challenger know that, once established in office, the challenger is likely to reorganize his coalition which potentially excludes them from the coalition in the future.

To maintain the support of her coalition against the threat of internal competition, the incumbent needs to ensure that she provides her supporters with rewards worth at least those of the challenger's best possible offer (equation 2). Specifically, $v(g) + u(z) + \frac{\delta}{1-\delta}(v(g^*) + u(z^*)) \geq v(\widehat{g}) + u(\widehat{z}) + \frac{\delta}{1-\delta}(v(g^*) + \frac{W}{S}u(z^*))$. Although the challenger might offer potential supporters more today, $v(\widehat{g}) + u(\widehat{z}) > v(g) + u(z)$, the incumbent offers greater expected private goods in the future, $\frac{\delta}{1-\delta}u(z^*) > \frac{\delta}{1-\delta}\frac{W}{S}u(z^*)$. Evaluated at stationarity, this constraint yields the following condition:

$$\begin{aligned} chal(g^*, z^*) &= v(g^*) + u(z^*) - v(\widehat{g}) - u(\widehat{z}) \\ &\quad + \frac{\delta}{1-\delta}\left(1 - \frac{W}{S}\right)u(z^*) \\ &= 0 \end{aligned} \quad (3)$$

The following definition is useful in the statement of equilibrium conditions:

$$\zeta(g) = u^{-1}\left(\frac{v(\widehat{g}) + u(\widehat{z}) - v(g)}{\left(1 + \frac{\delta}{1-\delta}\left(1 - \frac{W}{S}\right)\right)}\right),$$

where u^{-1} is the inverse function of u. Thus $\zeta(g)$ is the level of private goods required to satisfy selectorate competition given g public goods provision, i.e. $chal(g, \zeta(g)) = v(g) + u(\zeta(g)) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(\zeta(g)) = 0$.

Revolutionary Threats

Leaders also face revolutionary threats. The revolutionary activist, A, proposes a coalition of $N/2$ citizens (outside of L's coalition) and policy provisions (g_A, z_A). The best possible offer that the activist can offer his $\frac{N}{2}$ supporters in the immediate period is $v(\widetilde{g}) + u(\widetilde{z})$, where $(\widetilde{g}, \widetilde{z}) = \arg\max_{g,z} v(g) + u(z)$ subject to the budget constraint $pg + \frac{N}{2}z \leq R_0 + Nr\phi(g)$. In analogy to equation (1), $\widetilde{z} = \frac{R_0 + Nr\phi(\widetilde{g}) - p\widetilde{g}}{W}$ and $\widetilde{g}$ solves

$$v_g(\widetilde{g}) + \frac{Nr\phi_g(\widetilde{g}) - p}{N/2}u_z\left(\frac{R_0 + Nr\phi(\widetilde{g}) - p\widetilde{g}}{N/2}\right) = 0 \quad (4)$$

Should the revolution succeed, the citizens receive an expected payoff of Q associated with the continuation value of politics under the new institutional arrangements. Although not all revolutions end up creating stable democracy (Acemoglu and Robinson 2006), for the purpose of constructing examples in this paper I assume that, following a successful revolution, institutions change to $W = N/2$ and $S = N$. Under these new institutional rules, there is a SPE in which the activist becomes the new leader and survives in every subsequent period with the policy provisions (g_r^*, z_r^*). Since upon the revelation of the activist's affinities each citizen has one-half chance of being included in the activist's long-term coalition, $Q = \frac{1}{1-\delta}(v(g_r^*) + \frac{1}{2}u(z_r^*))$.[6]

If the citizens in A's coalition rebel, then they succeed with probability $\rho(g)$ and their payoff from a successful revolution is $-k + v(g_A) + u(z_A) + \delta Q$, where k is the cost of rebelling, $v(g_A) + u(z_A)$ reflects the value of the activist's policies in the current period and δQ is the discounted continuation value associated with political rewards after the revolution. If the revolution fails, then the rebels' payoff is $-k - \omega + v(g) + \frac{\delta}{1-\delta}v(g^*)$, where ω is the additional punishment cost from a failed revolution. The expected value of the activist's best possible offer is $(-k - \omega + v(g) + \frac{\delta}{1-\delta}v(g^*)) + \rho(g)(\omega + v(\widetilde{g}) + u(\widetilde{z}) + \delta Q - v(g) - \frac{\delta}{1-\delta}v(g^*))$. If they do not rebel, then citizens outside of the winning coalition receive a payoff of $v(g) + \frac{\delta}{1-\delta}v(g^*)$. Provided that this is at least as large as the expected value for rebelling, the incumbent prevents revolutions. This need to

[6]Not all revolutions result in successful democratization (Acemoglu and Robinson 2006; Przeworski and Limongi 1997; Przeworski et al. 2000). While the activist's motives to democratize are sincere while he is a revolutionary, once he is leader he prefers a smaller coalition system (Bueno de Mesquita et al. 2003; Chap. 8). This could be reflected by modeling coalition and selectorate size in post revolutionary institutions as a lottery and calculating Q accordingly.

forestall revolutions implies that stationary equilibrium policy provisions must satisfy the following constraint:

$$rebel(g^*) = k + \omega + \rho(g^*)\left(\frac{1}{1-\delta}v(g^*)\right.$$

$$\left. -\omega - v(\widetilde{g}) - u(\widetilde{z}) - \delta Q\right)$$

$$\geq 0 \qquad (5)$$

Policies for Survival

To guarantee her survival in office, the incumbent needs to satisfy constraints induce by selectorate political competition and revolutionary threats. These constraints, combined with stationarity and the first-order condition, $FOC(g^*, z^*) = v_g(g^*) + \frac{Nr\phi_g(g^*)-p}{W}u_z(z^*)$, which ensures the most efficient allocation of resources between private and public goods, allow a succinct characterization of policy provisions in equilibria in which incumbent leaders always survive.

Subject to surviving in office, the incumbent wants to maximize discretionary resources $R_0 + Nr\phi(g) - pg - Wz$, that is, the difference between revenues and expenditures. Therefore the equilibrium policies are characterized via the incumbent's programing problem: $\max_{(g,z)} R_0 + Nr\phi(g) - pg - Wz$ subject to $v(g) + u(z) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(z^*) \geq 0$ and $k + \omega + \rho(g)(v(g) + \frac{\delta}{1-\delta}v(g^*) - \omega - v(\widetilde{g}) - u(\widetilde{z}) - \delta Q) \geq 0$.

The equilibria divide conveniently into two cases. In the first case revolutionary threats do not impinge on the incumbent's policy choices. In the absence of a revolutionary threat the leader maximizes discretionary resources subject to the constraints of selectorate competition (equation 3). In this equilibrium, the ratio of public to private goods is determined by the first-order condition $FOC(g^*, z^*) = v_g(g^*) + \frac{Nr\phi_g(g^*)-p}{W}u_z(z^*) = 0$. In the second case revolutionary threats are binding, and the incumbent's policies are displaced away from the optimal mix of public and private goods described by $FOC(g^*, z^*)$. To dissipate the revolutionary threat the incumbent either increases the level of public goods to buy off potential revolutionaries or suppresses the level of public goods to prevent revolutionaries from effectively organizing.

Proposition: *In stationary subgame perfect equilibria in which incumbents always survive the incumbent's equilibrium policy provisions, $(g^\star, z^\star)$, are as follows:*
Let (g_1^*, z_1^*) solve $FOC(g_1^*, z_1^*) = v_g(g_1^*) + \frac{Nr\phi_g(g_1^*)-p}{W}u_z(z_1^*) = 0$ and $chal(g_1^*, z_1^*) = v(g_1^*) + u(z_1^*) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(z_1^*) = 0$.

Case 1: If $rebel(g_1^*) \geq 0$ then $(g^\star, z^\star) = (g_1^*, z_1^*)$.

Case 2: If $rebel(g_1^*) < 0$ then define $\overline{g}_2^*$ as the smallest $g > g_1^*$ such that $rebel(g) = 0$ and define $\underline{g}_2^*$ as the largest $g < g_1^*$ such that $rebel(g) = 0$. If $rebel(g_1^*) < 0$ then $(g^\star, z^\star)$ equals either $(\overline{g}_2^*, \zeta(\overline{g}_2^*))$ or $(\underline{g}_2^*, \zeta(\underline{g}_2^*))$, with the chosen policies being those which yield the highest discretionary resources, i.e. $(g^\star, z^\star) = (\overline{g}_2^*, \zeta(\overline{g}_2^*))$ if $R_0 + Nr\phi(\overline{g}_2^*) - p\overline{g}_2^* - W\zeta(\overline{g}_2^*) \geq R_0 + Nr\phi(\underline{g}_2^*) - p\underline{g}_2^* - W\zeta(\underline{g}_2^*)$.

Proof: The derivation of the constraints given by equations (3) and (5) ensure that the citizens and selectors' decisions are best responses given the policy offers of incumbents, challengers, and revolutionaries. Similarly, neither challengers nor activists can do better by picking policies other than those characterized by equations (1) and (4). It remains to be shown that the incumbent's policies are best responses.

Case 1, in which revolutionary threats are not binding constraints, is straightforward so we shall not elaborate greatly. The incumbent's programing problem is solved in the standard way, by forming a Lagrangian, $L = R_0 + Nr\phi(g) - pg - Wz + \lambda(v(g) + u(z) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(z^*))$. The first-order conditions, $L_g = Nr\phi_g(g) - p + \lambda v_g(g) = 0$, $L_z = -W + \lambda u_z(z) = 0$ and $L_\lambda = 0$ imply $FOC(g_1^*, z_1^*) = 0$ and $chal(g_1^*, z_1^*) = 0$. Via the Hessian $(-u_z(z)^2 Nr\phi_{gg}(g) > 0)$ we know the programming problem is globally concave.

Case 2: we now consider the more difficult case where $rebel(g_1^*) < 0$; revolutionary threats are binding constraints on the incumbent's policy choices. In order to guarantee survival the incumbent needs to ensure that $rebel(g^\star) \geq 0$ and $chal(g^\star) \geq 0$. We proceed by showing that if $rebel(g_1^*) < 0$ then both constraints bind with equality and the relevant solutions are those "closest" to g_1^*.

First, in equilibrium, $chal(g^\star, z^\star) = 0$. Suppose not, so that $chal(g^\star, z^\star) > 0$ and $rebel(g^\star) \geq 0$. Then there exists an alternative policy provision $(g^\star, z')$ that differs only in the private goods provision such that $chal(g^\star, z^\star) > chal(g^\star, z') \geq 0$ which improves the incumbent's discretionary resources by $W(z^\star - z')$. Thus $(g^\star, z^\star)$ can not be a best response.

Second, $rebel(g^\star) = 0$. Suppose to the contrary that $rebel(g^\star) > 0$ and $chal(g^\star, z^\star) = 0$. Suppose, without loss of generality, $g^\star < g_1^*$. Consider policies (g, z) such that $g^\star < g < g_1^*$, $k + \omega + \rho(g)(v(g) + \frac{\delta}{1-\delta}v(g^*) - \omega - v(\widetilde{g}) - u(\widetilde{z}) - \delta Q) \geq 0$ and $v(g) + u(z) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(z^*) = 0$. The incumbent's payoff from implementing these policies

in the immediate period is $\Omega = R_0 + Nr\phi(g) - pg - Wz$. As characterized in case 1, since Ω subject to $chal(g, z) = 0$ is globally concave with a maximum at g_1^*, $\frac{d\Omega}{dg} > 0$. Thus, $g^\star$ is not a best response since the incumbent prefers shift to the highest level of public goods subject to $k + \omega + \rho(g)(v(g) + \frac{\delta}{1-\delta}v(g^*) - \omega - v(\widetilde{g}) - u(\widetilde{z}) - \delta Q) \geq 0$. Therefore, $rebel(g^\star) = 0$. Further, given that $\frac{d\Omega}{dg} = Nr\phi_g(g) - p + W\frac{v_g(g)}{u_z(z)} > 0$ for $g < g_1^*$, $g^\star$ is the largest public goods supply less that g_1^* such that $rebel(g^\star) = 0$ (i.e. $\underline{g}_2^*$). Analogous arguments follow for $g > g_1^*$.

Finally, if both solutions $\overline{g}_2^*$ and $\underline{g}_2^*$ exist then the incumbent chooses between them on the basis of which maximizes her discretionary resources. Therefore the incumbent picks policies $(\overline{g}_2^*, \zeta(\overline{g}_2^*))$ if $R_0 + Nr\phi(\overline{g}_2^*) - p\,\overline{g}_2^* - W\,\zeta(\overline{g}_2^*) \geq R_0 + Nr\phi(\underline{g}_2^*) - p\,\underline{g}_2^* - W\,\zeta(\underline{g}_2^*)$ and vice versa.

The proposition establishes the incumbent's policy provision in stationary SPE in which the incumbent always survives. QED.

Policy and Survival Implications of Political Competition Absent A Revolutionary Threat

Political institutions shape the nature of public policy and the prospects of political survival. Absent a revolutionary threat, winning coalition size determines the relative mix of public and private goods. When coalition size is small, leaders can greatly reward their few essential supporters by supplying private goods. However, as coalition size becomes large, private goods become more thinly spread, and leaders can more efficiently reward their supporters through the provision of public goods. The larger the winning coalition becomes the greater the leader's focus on public, rather than private, goods. Lake and Baum (2001) and Bueno de Mesquita et al. (2003) find empirical evidence for this tradeoff. Persson and Tabellini (1999) and Lizzeri and Persico (2003) examine how, within democracies, political institutions affect public goods provisions.

The ease of political survival is conveniently conceptualized as the difference between revenues and what a leaders needs to spends to reward supporters $(R_0 + Nr\phi(g^\star) - pg^\star - Wz^\star)$. This measure of discretionary resources characterizes the amount of slack in the budget and therefore the amount of extra resources leaders have to compensate supporters for any errors or shocks. Political institutions affect the magnitude of a leader's discretionary resources, and, by extension, her ease of survival.

When supporters of the incumbent contemplate defecting to a challenger they jeopardize their access to future private goods. Once the challenger attains office he reorganizes his coalition. If a defector is replaced, then he loses access to private goods in the future. The importance of private goods as a reward mechanism and the risk of exclusion shape the loyalty of supporters to the incumbent. In large coalition systems, private goods are relatively unimportant and the probability of exclusion from future coalitions is relative low. Since neither the cost nor the risk of exclusion is high in large coalition systems, members of the incumbent's coalition have little loyalty towards the incumbent, who, as a result, can skim off few discretionary resources. In contrast, when coalition size is small, the focus on private goods provision makes the cost and risk of exclusion high. This induces a norm of loyalty and enables the leader to skim off discretionary resources for herself and still match the best possible offer of a challenger.

Large coalition systems most effectively promote economic activity and societal welfare. These systems predominately use free resources to fund the provision of public goods. In contrast, the private goods focus and the ability of leaders to skim off discretionary resources mean that in small coalition systems free resources are less effective at promoting economic development or societal welfare (Boone 1996). A comparison of Nigeria (a relatively small coalition system) and the United Kingdom (a large coalition system) provide illustration. Sala-i-Martin and Subramanian's (2003) analysis of Nigeria shows that despite US$350 billion of oil revenues since the mid 1960s per capita incomes remain almost unchanged and other measure show increasing poverty. In contrast, the United Kingdom has shown robust economic growth and reduction in poverty over the same period despite the discovery of North Sea oil. Foreign aid programs reveal similar comparisons, particularly when funds are channeled directly to recipient governments. Although Marshall aid given to the relatively democratic nations of Western Europe following World War II assisted economic recovery, by and large these successes have not be replicated elsewhere. Burnside and Dollar (2000) find the effective use of aid accompanies "good" policies. The quality of government policies figures highly in analyses explaining the relative development successes of East Asia and failures of Africa (Aoki, Kim, and Okuna-Fujiwara 1997; Campos and Root 1995; Rodrik 1995, 1996, 1998; Sachs and Warner 1997). It is relatively large coalition systems that create the political incentives for good policy and the successful deployment of aid resources.

Policy Choice and Survival In Light of Revolutionary Threats

The Occurrence of Revolutionary Threats

Large coalition systems are relatively more efficient than small coalitions at converting free resources into societal benefits and economic activity because free resources fund public goods rather than corruption, graft, and kleptocracy. From the perspective of citizens outside of the winning coalition, if the level of free resources rises, then the desirability of a large coalition system increases relative to a small coalition system: $\frac{d(v(\widetilde{g})+u(\widetilde{z})+\delta Q)}{dR_0} > 0$ implies $\frac{\partial rebel(g_1^*)}{\partial R_0} < 0$. This encourages the citizens to support revolution and so shifts the analysis of the policies that best enhance leader survival in office from case 1 to case 2.

Figure 1 graphically demonstrates, in terms of coalition size and free resources, the conditions under which revolutionary threats constrain a leader's policy choices. The lower region corresponds to case 1. In this region leaders pick policies to maximize their discretionary resources while matching the best possible offer from a challenger within the extant political rules. In contrast, in the upper region, if leaders follow the policy prescriptions of internal competition alone, then the citizens would rebel. In this region, leaders must also be mindful of revolutionary threats when formulating policy, case 2.

Free resources increase revolutionary threats as they increase the desirability of revolutionary change, as demonstrated empirically by Collier and Hoeffler (1998; see also Ron 2005). Coalition size also influ-
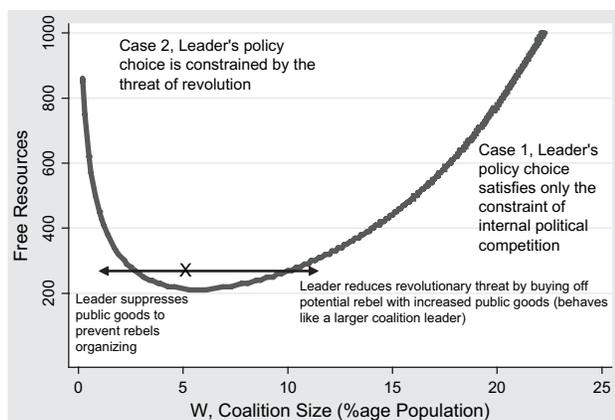
ences whether revolutionary threats affect a leader's policy choices. However, the effects of coalition size on the presence of revolutionary threats is non-monotonic. In the example illustrated in Figure 1 the citizens are more likely to rebel when the coalition size is about 6% of the population than if the coalition is either larger or smaller.

The citizens' decision to rebel is affected by two factors: the difference between their welfare under the current institutions relative to the welfare they expect under postrevolutionary institutions and the probability of the revolution succeeding. When coalition size is small, leaders provide few public goods. This leaves the citizens extremely dissatisfied with their lot relative to what they hope they could obtain under postrevolutionary institutions. This gives them a great desire to rebel. However, the citizens also factor the probability of success into their decision to rebel. When the coalition is small, leaders provide few of the public goods which help revolutionaries coordinate and organize. As a result, when W is small, citizens choose not to rebel; not because they don't want change, but because they are unlikely to succeed.

In large coalition systems, citizens are also unlikely to rebel, but for different reasons. Leaders in large coalition systems provide many public goods. This makes it relatively easy for revolutionaries to coordinate and organize. However, precisely because the leaders are already providing the high levels of public goods which the citizens expect to obtain under postrevolutionary institutions, the citizens have relatively little desire to rebel.

Coalition size has a nonmonotonic effect on revolutionary threats. An increase in coalition size results in policy provisions which make it easier for citizens to rebel but which simultaneously reduce their desire for change. I expect revolutionary threats to be relatively unlikely in either very small or very large coalition systems. However, precisely which configuration of political institutions makes revolution most likely depends upon parameterization and is therefore an empirical question.

Policy Responses to Revolutionary Threats

The provision of public goods plays a central role in creating revolutionary threats. The citizens desire revolution when the supply of public goods is low relative to the level the citizens expect to receive under postrevolutionary institution. Citizens can effectively rebel when the level of public goods enables revolutionaries to coordinate and organize a revolution. Leaders can suppress revolutionary urges

FIGURE 1   **The Presence of Revolutionary Threats in Terms of Free Resources and Coalition Size**

by either improving the supply of public goods, such that the citizens no longer desire revolution, or by suppressing the supply of public goods such that, even though the citizens become more desirous of change, they can not enact it. The intuition for this result can be seen by looking at the case of coalition size equal to 5% of the population and $R_0 = 250$ (which corresponds to about 12% of the total economy), marked as "X" in Figure 1. Since this case is in the upper area of Figure 1, the leader faces a revolutionary threat. However, if the leader shifted her public goods provisions to those commensurate with either a smaller or larger coalition system (that is move to either the left or the right in Figure 1), then the revolutionary threat would dissipate. I examine this case in further detail.

Figure 2 examines the incentives of the citizens to rebel and the incumbent leader's welfare as a function of the leader's provision of public goods, g. The "U" shaped curve is the constraint $rebel(g) = -k - \omega + \rho(g)(\omega + v(\widetilde{g}) + u(\widetilde{z}) + \delta Q - \frac{1}{1-\delta}v(g))$ as a function of public goods g. The "inverted U" shaped function is the incumbent's level of discretionary resources $(R_0 + Nr\phi(g) - pg - W\zeta(g))$, scaled by dividing by 100 so it fits on a similar scale, as a function of public goods provision. This level of discretionary resources is calculated by assuming that, for each value of g, the leader provides just enough private goods to satisfy internal political competition (i.e. $chal(g,z) = v(g) + u(z) - v(\widehat{g}) - u(\widehat{z}) + \frac{\delta}{1-\delta}(1 - \frac{W}{S})u(z) = 0$).

The central vertical line in Figure 2, at $g = 14.9$, represents the policy provision that maximizes the incumbent's discretionary resources while satisfying the constraints of internal political competition. Unfortunately, at this level of public goods the citizens would rebel, as demonstrated by the function $rebel(g)$ being negative. To forestall the revolution the leader needs to either make it harder for the citizens to succeed by suppressing the provision of public goods or increase the provision of public goods such that the citizens, although more likely to succeed, becomes less desirous of change. In this example, the leader needs to either suppress public goods provisions below $g = 13.3$ or increase them beyond $g = 19.5$. Although either of these solutions will dispel the revolutionary threat, the leader prefers the former to the latter solution as it enables her to retain greater discretionary resources.

Leaders can dissipate revolutionary threats via either the suppression or the promotion of public goods. Political institutions and the level of free resources affect which of these options the leader

FIGURE 2 Revolutionary Threats, Discretionary Resources, and the Provision of Public Goods
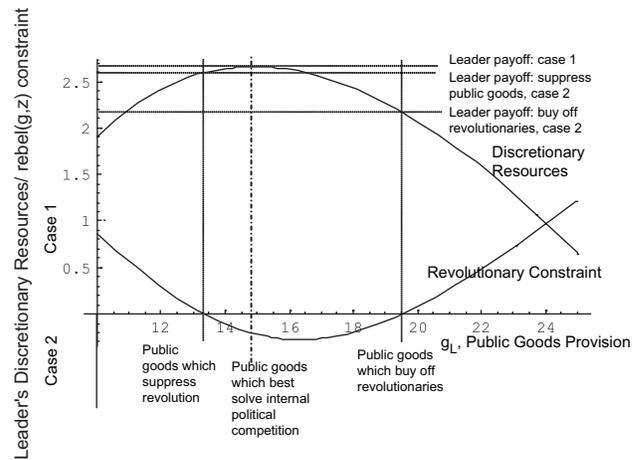
prefers. If a leader provides fewer public goods, then she must compensate her supporters with additional private goods. Her supporters need additional private benefits for two reasons. First, her supporters need to be compensated for the reduction in the direct benefits derived from public goods. Second the reduction of public goods reduces the returns on economic activity (Remmer 2004). The incumbent's supporters also need to be reimbursed for these losses. This need to compensate supporters with additional private goods makes the suppression of public goods particularly undesirable when the coalition size is relatively large, as a large number of supporters need additional private goods.

Another consequence of suppressing public goods is to reduce productive economic activities. As the returns to effort decline, the citizens do less work and tax revenues fall. Having to increase private compensations for the coalition during such a budget contraction makes public goods suppression relatively unattractive. Zimbabwe's President Robert Mugabe's destruction of urban housing and local markets and the forced dispersion of urban populations to isolated rural areas has helped insulate him from revolutionary threats.[7] Unfortunately, it has also damaged the economy and Zimbabwe, once Africa's second largest food exporter, faces starvation and bankruptcy.

High levels of free resources ameliorate the negative revenue consequences of public goods suppression. When a large proportion of government income is derived from aid or natural resources, the proportionate effect of public goods suppression on

[7]http://news.bbc.co.uk/1/hi/world/africa/country_profiles/1831470.stm

government revenues is smaller, which makes such an approach to dealing with revolutionary threats more attractive from the leader's perspective. In this context, free resources are doubly divisive. They simultaneously increase revolutionary threats and make public goods suppression the more attractive policy response.

Leaders in relatively small coalition systems with high levels of free resources are likely to promote their personal welfare and political survival by responding to revolutionary threats with the suppression of public goods. In contrast, leaders with relatively large coalitions are more likely to expand the supply of public goods in response to revolutionary threats.

The Perils of Unearned Income

The consequences of discovering a readily exploitable natural resources, or other forms of free resources, depend upon the institutional context. Figure 3 provides a pictorial summary of some of the main findings. The graph plots the provision of public goods for a relatively large ($W = 120$, upper lines) and relatively small ($W = 30$, lower lines) winning coalition systems against the level of free resources. Since economic activity and societal welfare are increasing in public goods provisions, graphs of these variables exhibit similar patterns.

These graphs illustrate three important relationships between free resources and political institutions. First, leaders in large coalition systems provide higher levels of public goods than leaders in small coalitions. Second, leaders in large coalition systems convert more of the free resources they receive into public goods than leaders in small coalitions. Third, when an increase in free resources creates revolutionary threats, leaders in large coalitions are likely to respond by increasing the supply of public goods while small coalition leaders are more likely to contract this supply.

The first two effects can be seen by comparing the provision of public goods at low levels of free resources, and hence absent a revolutionary threat. The larger coalition system provides both more public goods and converts increases in free resources into public goods at a faster rate than the small coalition system. That is, both the intercept and slope of the graphs are larger for the larger W case. As the level of free resources increases, leaders in both the relatively large and small coalition systems experience the onset of a revolutionary threat. The onset of this threat occurs at different levels of free resources depending upon the size of the coalition, as illus-

FIGURE 3 Public Goods Provisions, Free Resources, and Coalition Size
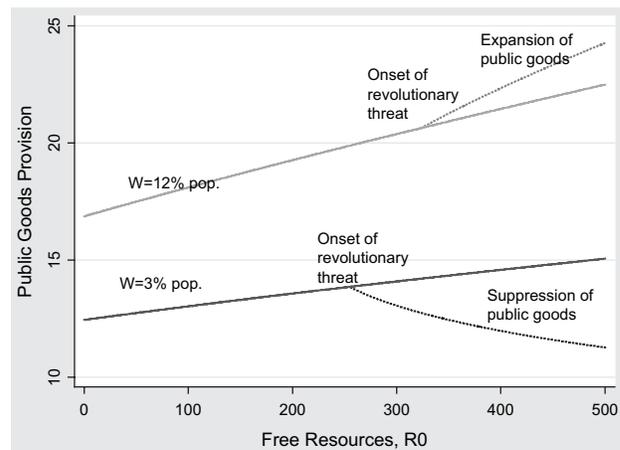
trated in Figure 1. The solid line illustrates the policy leaders provide absent the revolutionary threat (that is the case 1 optimal policies). Coalition size affects the leader's responses to revolutionary threats. In the relatively large coalition system, once the revolutionary threat binds the leader further increases the supply of public goods; this is shown by the dotted curve kinking upwards. In the smaller coalition system, the onset of the revolutionary threat leads to the suppression of public goods, shown by the dotted curve kinking downwards.

Types of Public Goods

To date I have made no distinction between different public goods. Indeed the formal model considers a single public good. In reality, governments provide many different public goods which differ in their effects on economic productivity and the ability of revolutionaries to organize. For instance, public health promotes economic productivity since healthy people work more effectively than sickly workers, but its direct role in coordinating revolutionary activities is less obvious. In contrast, government transparency and freedom of information contribute to both economic productivity and revolutionary success. Bueno de Mesquita and Downs (2006) distinguish between these types of policies as standard public goods and coordination goods. The logic of the model suggests political institutions and the level of free resources influence not just the level of public goods which leaders supply, but also the mix of these goods.

Standard public goods provide rewards for supporters, promote economic activity, and provide benefits to the citizens, but they do not facilitate

the coordination of revolutionary activities. However, coordination goods do. Leader in very large coalition systems face few revolutionary threats since the citizens already have the policy provisions they could hope to obtain through revolution. Such leaders choose the mix of goods that best provides rewards and promotes the economy. In smaller coalition systems the citizens desire institutional change. The nature of internal political competition encourages low overall levels of public goods, and the desire to minimize revolutionary threats causes leaders to prefer a mix of public goods with relatively few coordination goods. This has implications as to the relative success of foreign aid initiatives.

The willingness of small coalition leaders to supply standard public goods but not coordination goods suggests aid programs designed to enhance standard public goods provisions, such as vaccinations and other public health programs, are more likely to be successful than programs that promote freedom of information, government transparency, or coordination skills. While the later types of programs might be beneficial to the economy and public welfare, they endanger the incumbent's hold on power because they boost the prospects of revolutionary success. Rather than allow aid programs to improve the societal level of coordination goods, leaders better enhance their survival prospects by looting the resources of these programs for their enrichment and that of their supporters.

Institutional Change and Endogenous Democratization

I have not modeled the dynamic process that lead to the current institutional and social setting. Yet, the model offers insight into the dynamics of how current government choices affect future policymaking. If, for instance, a leader provides more education to promote economic growth, then in the future the literate citizens will find it easier to coordinate mass political actions. This has implications for future policymaking because the current flow of public goods influences the future stock of social capital. Once a leader embarks on a course of promoting public goods, the improvement in the ability of potential revolutionaries to organize means that, in the future, leaders will face revolutionary threats and find it increasingly difficult to suppress public goods.[8]

[8]Greif and Laitin (2005), in the their model of endogenous institutional change, consider how psuedo-parameters of the game change over time in response to past play in a manner akin to that described.

As the conditions under which leaders provide policy change, the desires and abilities of different actors to alter the rules of the game through institutional reforms also change. The theory considers only a single, revolutionary, mechanism for institutional change. Yet the theory offers a powerful lens through which to consider other forms of institutional change by characterizing the institutional preferences of different groups in society.

Absent a revolutionary threat, leaders want institutional changes that reduce coalition size. In contrast, those outside the winning coalition prefer increases in the inclusiveness of political institutions because of the public goods focus it induces. The preferences of the winning coalition are nonmonotonic and determined by two competing influences. First, an expansion of coalition size leads to a dilution of the private goods coalition members receive. Second, the weakened loyalty induced by an expansion of the winning coalition forces the leader to reduce her discretionary resources and to spend more on the coalition. When the coalition size is small the former effect dominates and coalition members have incentives to resist an expansion of the coalition. However, beyond a certain size, coalition members' preferences over institutional design switch from aligning with those of the leader to aligning with those of the citizens. These characterizations of preferences over institutions suggests the nature of changes in political institutions depends upon who gets to make decisions (Bueno de Mesquita et al. 2003).

With respect to internal political competition, the different elements of society never agree upon the direction of institutional change. Yet the presence of a revolutionary threat can produce concordance of institutional preferences. If leaders respond to revolutionary threats by increasing the provision of public goods (which is the likely response when R_0 is low and extant coalition size is relatively large), then it becomes increasingly difficult for leaders to reverse this course of action because the high provision of public goods leads to the gradual accumulation in the ability of the citizens to demand yet more public goods. Such trends lead to contradictory policy demands. The internal politics of small coalition systems require the incumbent to buy the loyalty of her coalition with private goods, yet revolutionary threats mean she must also provide relatively high levels of public goods. Effectively this leaves the leader with two different groups that need to be bought off with different types of goods. Democratization helps resolve these policy contradictions

since increases in coalition size shift the policy focus of the winning coalition closer to the policy goals of those outside of the coalition.

Revolutionary threats effectively cause leaders to mimic either smaller or larger coalition systems with respect to public goods provisions, as seen in Figures 1 and 2. As the stock of societal public goods grows and so the citizens can force the leader to mimic ever larger coalition systems, the simultaneous demands for private goods induced by internal political competition and public goods to buy off potential revolutionaries reduce the leader's discretionary resources below the level of discretionary resources that the leader could obtain in the large coalition system that she is mimicking. This is to say that while the leader can always better satisfy the *chal* constraint in a small coalition system, if the leader must satisfy both *chal* and *rebel* constraints then she might be worse off than satisfying the single constraint *chal* in a larger coalition setting. At this point all societal actors support democratization. Unfortunately free resources inhibit such transitions to democracy because they reduce the incentives for leaders to embark on the path of public goods liberalization by making public goods suppression relatively more attractive (Goldsmith 2001).[9]

This analysis of preferences over institutional design contributes to the literature on democratization. Much of the recent debate has centered around the findings of Przeworski and Limongi (1997) and Przeworski et al. (2000). They show that although both rich and poor nations transition to democracy, only poor democracies become nondemocratic again. Above an income level of $6000 per capita no democratic system became nondemocratic. More controversially Przeworski argues the probability of transitioning to democracy is independent of wealth. This latter claim has been challenged by, for example, Boix and Stokes (2003; Boix 2003). Consistent with earlier modernization theories (Lipset 1959; Moore 1966), they argue wealth increases the rate of democratization. The analysis here suggests that it is not income that drives institutional change, but whether this wealth is derived from free resources, such as natural resource rents or possibly foreign aid, that inhibit democratization, or from the accumulation of societal public goods which enhance both productive

economic activity and the citizens' ability to oppose the government.

Political leaders are not the guardians of the state; they are self interested actors who implement policies to secure their survival in office, not to promote societal welfare. Political institutions and the nature of government revenues determine which policies best enable leaders to survive political threats from within extant institutions and revolutionary threats that seek to recast political competition. By expanding the selectorate model of political competition and endogenizing the impact of public goods on economic productivity and the ability of revolutionaries to organize, the theory produces a general political economy with important and testable implications for development and democratization policy.

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[9]Acemoglu, Johnson, and Robinson (2001), Acemoglu and Robinson (2006), Acemoglu, Johnson, and Robinson (2001), and Engerman and Sokoloff (2002) show that extractive economic activities and poor income equality lead to the development of poor political institutions.

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