Enduring Rents*

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Abstract

Rent seeking is often studied with reference to a contemporaneous rent evaluated at a point in time. We study the social cost of rent seeking when rents endure over time, but may have to be re-contested because of imperfect rent protection, or may disappear because of deregulation. The present value of a contested rent measures the social cost of rent seeking, irrespective of imperfect rent protection and the prospect of deregulation. Rent seeking is discouraged by the inability of governments to commit to protect rents and by their inability to commit to rent-generating regulations and policies. Moreover, lasting deregulation can preempt a substantial fraction of the potential rent seeking cost.

Keywords: Rent seeking, contests, rent dissipation, deregulation, liberalization, commitment

JEL codes: D72.

1 Introduction

The focal question in the study of rent seeking is what is the magnitude of the social loss when resources are unproductively used in contesting rents. Answers are not straightforward because of the absence of empirical observations on resources used in rent seeking. The approach taken has been to attempt to infer the value of social losses from observed values of rents available to be contested. Initial studies pointing out the importance of rent seeking simply presumed complete rent dissipation and so took the value of observed rents to measure social losses of rent seeking (Tullock, 1967; Posner, 1975; Krueger, 1974;

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Cowling and Mueller, 1978). With competitive free entry into contests and risk neutrality, rent dissipation is indeed complete (Hillman and Katz, 1984). Rent dissipation is also complete in strategic contests when the rent-seeking contest takes the form of an all-pay auction (Hillman and Samet, 1987; Baye et al. 1996). If rent dissipation is complete, observed values of monopoly profits or protectionist rents can be added to the Harberger deadweight losses of resource misallocation to establish the complete social costs of rent creation. Likewise, complete social costs can be computed from observed rents for regulation of industry that inhibits competitive market entry, assignment of budgetary revenue, and personal benefits from political appointment.

The numerous studies of contestability of rents (see the overview by Congleton, Hillman, and Konrad, 2008) have typically investigated rent dissipation as if rents were created, contested, and dissipated at the same point in time. Rents however in general endure over time. At the same time, rights to durable rents are in general not everlasting. Rather, rents may be re-contested in the future. The rents themselves also need not persist indefinitely. Deregulation, liberalization, or reform of the government bureaucracy can eliminate rents, although after elimination a rent may be recreated at some future date. Rent seekers can be expected to be aware that rights to rents are imperfectly protected and that future policies may temporarily or permanently eliminate rents.

In this paper, we study rents that endure over time. We consider how imperfect rent protection and the possibility that rents may be eliminated and recreated in the future affect the social cost of rent seeking. We also consider how much of the social cost of rent seeking can be preempted by future institutional or policy change that allows permanent elimination of rents.

When future rights to rents are imperfectly protected and rents are not assured to persist, the value of a rent is discounted by the likelihood that the rent may need to be re-contested. Rent dissipation at the time at which the rent is initially created is consequently less than the present value of the rent. Evaluation of rent dissipation therefore requires recognition that rights to rents may only be imperfectly protected and that rents, rather than persisting indefinitely, may be temporarily or permanently eliminated by future

deregulation or liberalization. We introduce these time-related considerations into a model of rent seeking. We show that the present value of a rent at the time when a rent is created nonetheless measures total social cost due to creation of a rent. Rent dissipation becomes complete over the course of time as rents are re-contested.

If rights to rents were perfectly protected and rents were to persist indefinitely, the initial (and only) contest would evidently be for the present value of the indefinitely retained rent. Rents would then be contested and dissipated only at the time of initial creation. In that case, future rents are but transfers. As noted by Tullock, 1971), transfers that are not contestable have no social cost. With full protection of future rights to rents, resources used in rent seeking are then entirely sunk costs and cannot be affected by future deregulation or liberalization. With contemporaneous deadweight costs typically small and all social costs of rent seeking already incurred in the past, the basis is provided for a presumption of "disinterest in deregulation" (McCormick et al., 1984).[1]

Imperfect rent protection and the risk of elimination of rents, however, create prospects of social gain from deregulation and other liberalizing policy change. The degree of rent protection and promises made by governments not to deregulate in the future are attributes of political institutions. They reflect abilities of governments to commit. When rents endure over time, there are social benefits from a government's inability to commit not to allow a rent to be re-contested or not to eliminate rents in the future. When rights to rents are imperfectly protected and there is no assurance that rents will not disappear, we show that substantial parts of the potential rent seeking cost are preempted by future institutional reforms that do indeed permanently eliminate rents.

Persisting rents are therefore not irrelevant for social loss after the rents have been created. Rather, consequences for social loss persist over time, as do consequences for social gain from elimination of rents.

Section 2 introduces the model. Section 3 shows that, with imperfect rent protection and a risk of rent elimination, the present value of a rent at the time of creation nonetheless

[1]While deregulation or other policy reform in these circumstances could not recoup past sunk rent seeking losses, there would, of course, be distributional consequences of deregulation or liberalization (Cherkas et al., 1986; Crew and Rowley, 1988).

is the measure of social loss due to rent seeking. In other words, rent dissipation does not depend on either of these imperfections. Section 4 analyzes the benefits of lasting deregulation. Section 5 poses generalizations of the analysis and shows that neither institutional volatility nor asymmetric information about the intensions of policy makers are sources of under-dissipation. Section 6 introduces a specific class of contest success functions. It establishes a link between imperfect rent protection and the degree of under-dissipation for certain contest success functions. Concluding remarks are in section 7.

2 The model

We consider an economy with n risk neutral agents who compete to obtain a rent. The value of the rent is π per period and the same for all agents. The probability that agent i wins the rent is

$$q_i = q\left(y_1, ..y_i, ...y_n\right), \tag{1}$$

which is increasing in the resources used by agent i, y_i, and decreasing in the resources used by other agents. The rent seeking contest takes place though discrete time $t = 0, 1, 2, 3, ...\infty$. The future is discounted with the discount factor β.

The rent itself is enduring, but the property rights to the rent are insecure. This can be so for many reasons. For example, current governments cannot fully commit not to withdraw privileges in the future, nor can they tie the hands of future governments. To capture this, we assume that there is a probability p that the winner of the rent (called the incumbent) might lose the rent in subsequent periods. We interpret p as a measure of rent protection: if $p = 1$, the rent is fully protected and the winner of the rent in the first period has rights to it forever; if $p = 0$, the rent is not protected at all and is only won for one period at the time. An incumbent may lose a rent won in the past for two main reasons. Firstly, the government, which initially created the rent, may want to orchestrate a new contest to reassign the rent (Gradstein and Konrad, 1999). Secondly, the government may eliminate the rent all together, e.g., through deregulation of monopolies, through liberalization of trade or reform of the government bureaucracy. This would happen, for example, if a new government comes to power and deregulates an

industry, although the decision may be reversed by some future government. Specifically, in periods after the incumbent has lost the rights to the rent, a new contest is orchestrated with probability $1 - z$, while with probability z, the rent is eliminated for that period and thus not contestable. A higher z makes it less likely that the rent can be re-contested in periods after it is lost and liberalization, deregulation or, more generally, rent-destroying reforms are more enduring and less likely to be reversed. If $z = 1$, the loss of the rent is followed by permanent deregulation and the rent never again becomes contestable; if $z = 0$, the loss of the rent is followed immediately by a new contest and effectively no deregulation or liberalization is taking place; the rent is just reassigned. Alternatively, we can interpret z as an inverse measure of the government's commitment to rent-generating regulations and policies. The two parameters p and z are attributes of institutions that are common knowledge and reflect abilities of governments (understood as the creators of contestable rents) to commit.

The structure of the model is sketched in Figure 1 for the first three periods. When the rent is initially created in period 0, a contest takes place and the state of the economy is C (contest). After that, it is revealed whether the rent is protected or not. If it is, the winner – the incumbent – keeps the rent and the economy is in state M (monopoly) in period 1 and no contest takes place. If not, the rent is either reassigned though a new contest and the economy is in state C or the rent is deregulated and is not contestable and the economy is in state L (liberalization). The possible transitions from period 1 to 2 are indicated with dotted lines. We note that if the state is L at time 1, then the rent either continues to be deregulated (and the economy is in state L in period 2) or the rent is recreated and a new contest takes place in period 2.

The main question we are interested is: does imperfect rent protection ($p < 1$) and/or the government's inability to commit to rent-generating regulations and policies ($z > 0$) lead to under-dissipation of the rent? That is, does uncertainty about future rights to the rent reduce the social cost associated with its initial creation? While this is the primary question, it is also of interest to study the total rent seeking cost. Ultimately, rent seeking is costly because resources are being used unproductively. This reduces the productive

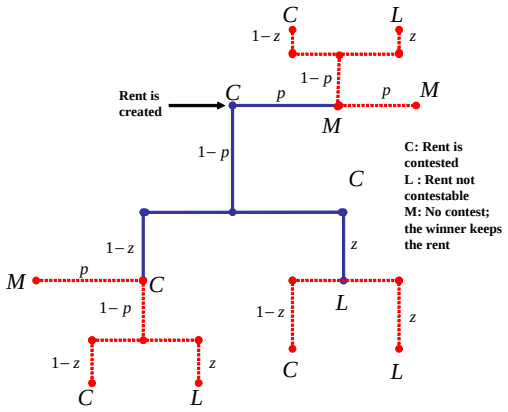

Figure 1: The structure of the model.

base of an economy and the scarce resources invested in winning rents reduce national income. The real cost of this reallocation of resources from productive to unproductive activities depends on the *total* rent seeking cost. In models in which the value of the contested rent is fixed, the dissipation rate and the total resources going into rent seeking are normally two sides of the same coin.[2] However, in our baseline model, variations in p and z affect the total rent seeking cost *independently* of the dissipation rate. It is, therefore, of interest to inquire how these factors increase or decrease the total social cost of rent seeking, and to ask how much of the total social cost of rent seeking, if any, can be preempted through permanent deregulation at some point in time after the rent has first been created.

3 Rent dissipation and the total cost of rent seeking

As long as rent seeking persists, there is a social loss due to contestability of the rent. Resource use in quest of the rent and rent dissipation ceases, as pointed out by Congleton (1980), only when a successful winner of the contest is announced. However, rights to a rent that has been won in the past may not be secure in the future ($p < 1$). Moreover, the rent may altogether disappear, perhaps to return at some further point in time ($z > 0$).

[2] Aidt (2002) discusses what happens when the size of the rent depends on the investments made by the contenders.

As noted above, we think of z as a measure of the government's inability to commit not to deregulate, while we interpret p as a measure of the security of the property rights to rents won in the past.

The model has three states of the world: $s_t \in \{M, C, L\}$. M is the state where the rent is maintained by the incumbent and is uncontested; C is the state where the incumbent loses the right to the rent but the rent is re-contested immediately; and L is the state where the incumbent loses the right to the rent and the rent disappears and so is not contestable in that period. We note that the contenders for the rent face three sources of uncertainty. There is uncertainty because of imperfect rent protection, as the winner of the rent in a given period will only keep the rent in the next and subsequent periods with probability p. Furthermore, whenever rights to the rent are lost, there is a risk (z) that a new contest will not take place and the rent is non-contestable, but if a new contest does take place, contenders are faced with uncertainty regarding the outcome.

To characterize the individually optimal rent seeking strategy of contender i, we construct the relevant value functions and look for Nash equilibria. First, suppose that $s_t = L$. Since no contest takes place in this state and any preexisting rights to the rent have been lost, the value function of contender i is

$$V_t^i(L) = \beta[zV_{t+1}^i(L) + (1-z)V_{t+1}^i(C)], \tag{2}$$

where $V_{t+1}^i(C)$ is the continuation value starting from a state where a contest takes place.

Next, suppose that $s_t = M$. We distinguish between the continuation value of the winner of the previous contest (w) and that of a contender who lost the previous contest (l). The value function for the winner is

$$V_t^{wi}(M) = \pi + \beta\left[pV_{t+1}^{wi}(M) + (1-p)[zV_{t+1}^i(L) + (1-z)V_{t+1}^i(C)]\right]. \tag{3}$$

The winner is successful in obtaining the rent in the current period and keeps it without a contest in the next period with probability p. With probability $1-p$, the winner loses rights to the rent. In this case, the rent disappears with probability z and no contest takes place, but with probability $1-z$, he competes again in an attempt to re-secure the

rent. The value function for a representative loser is

$$V_t^{li}(M) = \beta\left[pV_{t+1}^{li}(M) + (1-p)[zV_{t+1}^{i}(L) + (1-z)\,V_{t+1}^{i}(C)]\right]. \tag{4}$$

Each loser of a contest will with probability p continue being a loser next period simply because the rent stays with the incumbent. With probability $(1-p)(1-z)$, the rent becomes contestable again in the subsequent period and each (past) loser can compete to obtain it; with probability $z(1-p)$, the rent does not become contestable in the subsequent period.

When the state of the world is $s_t = C$ and a contest takes place, all contenders face an identical problem.[3] We can write the value function as:

$$\begin{aligned} V_t^{i}(C) &= q_{ti}\pi - y_{ti} + q_{ti}\beta\{pV_{t+1}^{wi}(M) + (1-p)\left[zV_{t+1}^{i}(L) + (1-z)\,V_{t+1}^{i}(C)\right]\} \\ &\quad + (1-q_{ti})\,\beta\{pV_{t+1}^{li}(M) + (1-p)[zV_{t+1}^{i}(L) + (1-z)\,V_{t+1}^{i}(C)]\}. \end{aligned} \tag{5}$$

In the current period, the expected gain is $q_{ti}\pi - y_{ti}$ where y_{ti} represents the rent seeking expenditure by contender i and $q_{ti}\pi$ is the within-period expected value of winning the rent. The future payoff depends on whether or not a contender has won the contest. If a contender wins, which occurs with probability q_{ti}, the rent is either kept or lost in the next period. A contender who lost the contest in period t, which happens with probability $1 - q_{ti}$, will continue to be a loser in the next period if the rent is protected, or is given a new chance to compete if the current incumbent loses rights to the rent, but only with probability $(1-z)$.

We can rewrite equation (5) to get

$$V_t^{i}(C) = q_{ti}\pi - y_{ti} + q_{ti}\beta p\left[V_{t+1}^{wi}(M) - V_{t+1}^{li}(M)\right] + K, \tag{6}$$

where $K = \beta(1-p)\left[zV_{t+1}^{i}(L) + (1-z)\,V_{t+1}^{i}(C)\right] + \beta pV_{t+1}^{li}(M)$ and is independent of the investments made by the contenders in period t. The difference between the continuation value of a winner and a loser in state M at time $t+j$ is

$$V_{t+j}^{wi}(M) - V_{t+j}^{li}(M) = \pi + \beta\left(V_{t+j+1}^{wi}(M) - V_{t+j+1}^{li}(M)\right). \tag{7}$$

[3] We treat contenders symmetrically in each contest. An alternative is to assume that the winner of the contest may have to fight again in the future to protect his rent, while past losers do not get to contest the rent in the future (Stephan and Ursprung, 1998).

Forward substitution yields that

$$V_{t+j}^{wi}(M) - V_{t+j}^{li}(M) = \sum_{k=0}^{\infty} (\beta p)^k \pi = \frac{\pi}{1-\beta p}. \tag{8}$$

Substituting this into equation (6), we get that the continuation value of a contender in state C can be written as

$$V_t^i(C) = q_{it}\frac{\pi}{1-\beta p} - y_{it} + K. \tag{9}$$

A Nash equilibrium of the contest played in state C at time t is defined as a vector of resources $\{y_{it}^*\}_{i=1}^n$ to be invested such that for each contender i, $y_{it}^* = \max_{y_{it}} V_t^i\left(C; y_{-it}^*\right)$, where y_{-it}^* denotes the vector of investments of the $n-1$ other contenders. We assume that there exists a unique Nash equilibrium in each contest and that the corresponding equilibrium strategies are played each time the state is C. Given that, equation (9) implies that $q_{ti} = q_i$ and $y_{ti} = y_i$ all t such that $s_t = C$ and that the equilibrium path of the economy must be stationary for any given contest success function. Using this observation, equations (2), (3) and (4) can be rewritten as

$$V^i(L) = \frac{(1-z)\beta V^i(C)}{1-z\beta} \tag{10}$$

$$V^{wi}(M) = \frac{\pi + \beta(1-p)(1-z)\frac{V^i(C)}{1-z\beta}}{1-\beta p} \tag{11}$$

$$V^{li}(M) = \frac{\beta(1-p)(1-z)\frac{V^i(C)}{1-z\beta}}{1-\beta p}. \tag{12}$$

We can use these expressions to solve equation (9) to get

$$V^i(C) = \frac{(1-z\beta)(1-\beta p)}{(1-\beta z p)(1-\beta)}\left(q_i\frac{\pi}{1-\beta p} - y_i\right). \tag{13}$$

It is well-known that the degree of rent dissipation depends on the particular attributes of the contest, including the properties of the contest success function, risk aversion, and the number of contenders. To isolate the effects of imperfect rent protection on the extent of rent dissipation from all these other influences, we begin by assuming conditions

such that one dollar of assured rent at a point in time attracts one dollar of resources in each contest, i.e., the expected present value of the rent, $\frac{\pi}{1-p\beta}$, is fully dissipated in each contest.[4] We consider a specific class of contest success function in section 6 and discuss how p and z might reinforce or weaken other reasons for under-dissipation. The value of the rent in each contest is larger than π unless the rights to the rent are lost with certainty in the period after the rent is won ($p = 0$). If rent protection is perfect ($p = 1$), the contenders effectively compete for the entire present value of the rent in the first period, as proposed by McCormick et al. (1984).

We want to know if imperfect rent protection and the risk that rents become non-contestable lead to under-dissipation of the rent. By assumption, whenever a contest takes place, resources equal to $\frac{\pi}{1-p\beta}$ are used in contesting the rent. Does that, in present value terms, lead to under-dissipation? The answer is, perhaps surprisingly, no.

Proposition 1 *Assume that rent dissipation is complete in each contest.*

1. *The present value of the resources attracted to rent seeking equals the present value of the contestable rent for all p and z.*

2. *The present value of resources attracted to rent seeking is*

$$R(z,p) = \frac{(1-z\beta)\,\pi}{(1-\beta)(1-\beta pz)} \tag{14}$$

and is increasing in p and decreasing in z.

Proof. Let $R(s_t)$ denote the present value of resources used up by rent seeking in state $s_t \in \{C, M, L\}$. The value of resources entering rent seeking is

$$R(C) = \frac{\pi}{1-\beta p} + p\beta R(M) + \beta(1-p)(1-z)R(C) + \beta(1-p)zR(L), \tag{15}$$

where

$$R(M) = \beta pR(M) + \beta(1-p)(1-z)R(C) + \beta(1-p)zR(L) \tag{16}$$

[4]See Hillman and Katz (1984), Hillman and Samet (1987) and Baye et al. (1996). There are various reasons for under-dissipation at a point in time: see the survey by Nitzan (1994) and the overviews by Mueller (2003), Hillman (2008), and Congleton, Hillman, and Konrad (2008). On the other hand, countervailing behavior or resistance through sabotage in contests can increase rent dissipation (Konrad, 2000).

and

$$R(L) = \beta z R(L) + \beta(1-z) R(C). \tag{17}$$

Solving this system of value functions yields:

$$R(C; z, p) = \frac{(1-z\beta)(1-p\beta)}{(1-\beta)(1-\beta pz)} \frac{\pi}{1-\beta p} = \frac{(1-z\beta)\pi}{(1-\beta)(1-\beta pz)}. \tag{18}$$

Since the rent π may not become contestable immediately after the incumbent's rights to it have been lost, the present value of the rent is not $\frac{\pi}{1-\beta}$ but is calculated as follows. Let $U(R)$ denote the present value of the rent in state $s_t = M$ and $s_t = C$ and let $U(L)$ be the present value in state $s_t = L$. The value of the contestable rent is, therefore,

$$U(R) = \pi + \beta p U(R) + \beta(1-p)(1-z) U(R) + \beta(1-p) z U(L), \tag{19}$$

where

$$U(L) = \beta(1-z) U(R) + \beta z U(L). \tag{20}$$

Solving these equations yields

$$U(R; z, p) = \frac{(1-z\beta)\pi}{(1-\beta)(1-\beta pz)}. \tag{21}$$

So, we conclude that

$$\frac{R(C; z, p)}{U(R; z, p)} = 1 \tag{22}$$

for all p and z ■

We interpret proposition 1 as a neutrality result: under the assumption that rent dissipation is complete in each contest, neither imperfect protection of enduring rents, nor the risk that rents become non-contestable affect the rent dissipation rate. That is, irrespective of whether the rent is extremely well-protected or not protected at all, or something in between, the sequence of contests over time initiated by the creation of the rent dissipates the present value of the rent completely.

To see the intuition behind this result, suppose that rents become contestable as soon as they are lost ($z = 0$). In each period in which a contest takes place, the contenders spend in total $\frac{\pi}{1-\beta p}$ – the present value of the rent discounted by the probability of keeping

the rent in the future. The ex ante probability that a contest takes place in a given period is $1-p$. Therefore, the present value of the resources spent on rent seeking is $\frac{\pi}{1-\beta p}+\beta\left(1-p\right)\frac{\pi}{1-\beta p}+\beta^{2}\left(1-p\right)\frac{\pi}{1-\beta p}+....$ This is precisely equal to the present value of the rent $\frac{\pi}{1-\beta}$ for any p. Hence, in response to imperfect rent protection, contenders spend less than $\frac{\pi}{1-\beta}$ in each contest, as the prospect of keeping the rent is uncertain. However, the part of the present value of the rent that is not dissipated in the first contest will be dissipated eventually in future contests and repeated competition for the rent dissipates it completely. In effect, this reflects a trade off between two conflicting forces, which is also considered by Gürtler (2007). On the one hand, the better protected the rent is, the more resource will be invested in rent seeking in each contest. On the other hand, contests become less frequent. In our model, the two effects net exactly out. The proposition shows that this fundamental result continues to hold when there is a risk that rents may not be contestable after they are lost ($z>0$). The reason is that during periods in which the rent is not contestable due to, for example, rent-destroying reforms, resources are not wasted on rent seeking.

While proposition 1 shows that a government's inability to commit to protect rents and/or to refrain from rent-destroying reforms does not matter for the rent dissipation rate, it is clear that the timing of dissipation is affected by both p and z. The timing pattern has two interesting implications. These are most clearly seen if we, again, assume that $z=0$. First, the degree of rent protection has intergenerational consequences. In particular, if $p=1$ so that commitment to rent protection is perfect, the entire present value of the rent is dissipated in the first period and thus borne by the current generation. If $p=0$ and government lacks any commitment power, π will be contested and dissipated each period. In this case, the social burden of rent seeking is shared equally among generations. Generally, the more secure are rights to a rent, the more infrequent are the contests and the more is dissipated in each contest. Second, $p<1$ is a reflection of a government's inabilities to grant lasting property rights to the rents it creates. Commitment to protection of rents may be more difficult in a democracy with frequent government changes and where current

governments cannot perfectly tie the hands of future governments[5] than in authoritarian regimes where rulers may be able to grant privilege more permanently. As a consequence, in authoritarian regimes we would expect greater contestability at the time rents are created, and a greater burden in terms of rent dissipation at that time. In democracies rent seeking will tend to be spread out more over time. Rent seeking expenditures are resources used unproductively. Insofar as diversion of resources away from productive use in the early stages of development has lasting effects, this observation provides yet another reason why many authoritarian societies have failed to develop economically.[6] This effect would be strengthen if the size of the rent in future periods were diminished endogenously by high initial levels of rent seeking under authoritarian rule.[7]

The second part of proposition 1 shows that the total rent seeking cost depends on p and z. This is because the *present* value of the contestable rent depends on the degree of rent protection and the risk of rent-destroying reforms.[8] These parameters are intrinsically linked to the nature of political institutions and politicians' ability to make commitments. Two important points can be made. First, political competition makes rents insecure. This is because future governments may re-open or re-orchestrate rent seeking contests and take away privileges bestowed in the past and policies favoring special interests. Political competition can also be the basis for expectations of rent-destroying reforms, e.g., if a more pro-liberalization government is expected to take office in the future. Political competition thereby reduces the total cost of rent seeking both by making rents less secure (lower p) and by creating expectations of (lasting) rent-destroying reforms (higher z). Second, much economic literature is concerned with inefficiencies that arise because government cannot commit. Interestingly, when rents endure over time, there are social benefits from a government's inability to commit. The benefits arise because of the inability to commit

[5] See, e.g., Persson and Svensson (1989).

[6] This for example happens if barriers are created to technological adoption (Parete and Prescott, 1994).

[7] We thank an anonymous referee for suggesting this possibility and for pointing out that there is less room in a democracy for rent seeking because of better protected property rights.

[8] We note that the comparative static results discussed below do not dependent on the assumption of full rent dissipation in each contest. They would hold for any contest success function that leads to under-dissipation in each contest as long as the total resources going into rent seeking are an increasing function of the value of the contestable rent.

to protect rents. This makes rent seekers less willing to invest resources to obtain the rent and reduces the overall social cost of rent seeking by reducing the value of the rents to be contested. Likewise, the inability to commit not to attempt to instigate rent-destroying reforms (high z), such as a liberalization of trade or deregulation of monopolies, decreases the social cost of rent seeking.

4 The benefits of lasting deregulation

How much of the total rent seeking cost can be preempted by *lasting* rent-destroying reforms (deregulation)? To answer this question, we define the gain from lasting deregulation ($GLD(p)$) as the difference between the discounted present value of rent seeking expenditures when there is no commitment to deregulation ($z = 0$) and a situation in which deregulation, when it happens, is permanent ($z = 1$), relative to the rent seeking cost without deregulation:

$$GLD(p) = \frac{R(0,p) - R(1,p)}{R(0,p)}, \tag{23}$$

where $R(z,p)$ is given in equation (14). We find:

Proposition 2 *The gain from lasting deregulation is*

$$GLD^{*}(p) = \frac{(1-p)\beta}{(1-p\beta)}, \tag{24}$$

which is decreasing in p.

Proof. The proposition follows immediately from equation (**??**) ■

A number of consequences follow from proposition 2. First, in societies where rent protection is perfect ($p = 1$), the present value of all future rents is dissipated completely in the first period, i.e., when the rent is first created. A rent seeking loss that is sunk cannot be recouped in any subsequent deregulation, which is the point that was made by McCormick et al. (1984). Second, in societies where rent protection is imperfect, there is, however, a gain from lasting deregulation, as the rent seeking cost is spread over

time and some of it can, in expectation, be recouped if society instigates appropriate institutional reforms. The gain is decreasing in rent protection (p). Accordingly, the incentive to create institutions that allow politicians to commit to lasting deregulation is stronger in societies where politicians cannot protect incumbents' rents very well. Insofar as democracy makes it harder for politicians to commit to rent protection, democratic societies face strong incentives to invest in institutions that allow them to commit to deregulation. To obtain a sense of how much of the potential rent seeking cost can be preempted by lasting deregulation, consider a society in which $\beta = 0.9$ and $p = 0.5$ such that rents are protected, on average, for 2 years. In this society, the gain from deregulation is about 81 percent. In contrast, in a society where $p = 0.75$ and rents are, on average, protected for 12 years, 69 percent can be preempted. Even when $p = 0.9$ and rents are protected, on average, for 90 years, the saving is still substantial, just under 50 percent. Thus, it is only when rents are extremely well protected (p close to 1) that lasting deregulation is of no value in preempting social costs of rent seeking; in all other cases, the prospect of preempting a large fraction of the potential rent seeking cost creates a substantial interest in deregulation. Of course, in addition to the rent seeking losses preempted, deregulation of monopolies and removal of trade restrictions also preempt deadweight loses.

5 Extensions and generalizations

Our analysis is based on a stylized model, but we believe that the main thrust of the argument can be generalized to more complex and realistic environments. Below we sketch two such generalizations.

5.1 Non-constant rent protection

We have argued that the degree of rent protection (p) derives from the commitment powers vested in political institutions. Since institutions tend to persist, it is, to a first approximation, reasonable to assume that the degree of rent protection is constant over time and known. However, proposition **??** generalizes to economies where the degree of rent

protection varies over time. To see this, suppose that p_t is drawn each period from a stationary distribution $G(p_t)$ with support on the unit interval and with $E(p_t) = \mu$.[9] At the beginning of each period and before any contest takes place, the contenders learn how well protected rents are going to be during that period (p_t). To determine the rent seeking strategies of the contenders, we calculate the expected present value at time t in state $s_t = C$ when the degree of rent protection for the period is p_t, denoted $E_t[V_t^i(C)|\, p_t]$. Noting that the environment is stationary from period $t+1$ onwards, we can write this as

$$E_t\left[V_t^i(C)\middle|\, p_t\right] = \frac{q_{it}\left(1-\beta\left(\mu-p_t\right)\right)}{1-\beta\mu}\pi - y_{it} + \beta E_t\left[V_{t+1}^i\left(C\right)\right], \tag{25}$$

where $E_t\left[V_{t+1}^i\left(C\right)\right]$ is the expected present value in state C at time $t+1$ as perceived at time t. The value of the rent depends on the realization of p_t and the expected benefit from winning the contest is increasing in the current level of rent protection.

The present value of the rent, of course, continues to be $\frac{\pi}{1-\beta}$. Maintaining the assumption of full rent dissipation in each contest, the expected value of the resources going into rent seeking is

$$E_t\left[R_t\left(C\right)\right] = \frac{\pi}{1-\beta\mu} + \beta\mu E_t\left[R_{t+1}\left(M\right)\right] + \beta\left(1-\mu\right)E_t\left[R_{t+1}\left(C\right)\right], \tag{26}$$

where $E_t\left[R_t\left(C\right)\right] = E_t\left[R_{t+1}\left(C\right)\right]$ and

$$E_t\left[R_{t+1}\left(M\right)\right] = \mu\beta E_t\left[R_{t+1}\left(M\right)\right] + \left(1-\mu\right)\beta E_t\left[R_{t+1}\left(C\right)\right]. \tag{27}$$

Combining these equations establishes that $E_t\left[R_t\left(C\right)\right] = \frac{\pi}{1-\beta}$.

It is natural to interpret the scenario with a constant and known p as one in which institutions persist for long periods of time, while the scenario in which p is different each period can be interpreted as a situation where institutions are very volatile. We may, therefore, conclude that neither imperfect rent protection ($p < 1$) nor institutional volatility (p random) are in themselves sources of under-dissipation of rents.

5.2 Learning about rent protection

Contenders rarely know precisely whether the government who create an enduring rent has the ability and intension to protect it in the future, but they may learn over time

[9] For simplicity, we assume that $z = 0$.

about these characteristics by observing the behavior of the government. Learning about rent protection raises many interesting questions, but the spirit of proposition **??** applies even with learning and asymmetric information.

To see why, consider the following example. Suppose that there are 3 periods, $t = 0, 1, 2$ and that there is free entry into rent seeking each period. With risk neutrality this leads to full dissipation of the rent in each contest and for each contender, it follows that the expected value of participating in a contest is equal to the outside option, normalized to 0.

Furthermore, suppose that there are two types of governments $\tau \in \{K, N\}$. Governments of type K are committed to letting the winner of the contest in period 0 keep the rent for ever. Governments of type N want to orchestra a new contest each period and does so for sure at time 2. In period 1, however, there is a probability that a government of type N pretends to be of type K and allows the incumbent to keep the rent. This probability is denoted ρ and is a simple way of capturing learning about the type of government.[10] Let the prior beliefs that the government is of type K be $\widehat{p}$. These beliefs are updated in period 1 after the state of the world, M (rent sustained) or C (new contest), are observed using Bayes' rule.

We solve this example backwards. In period 2, the incumbent keeps the rent if the government is of type K, while a contest reassigns the rent if the government is of type N. At the beginning of period 1, the contenders observe the state of the world $s_1 \in \{M, C\}$, but not the type of government. If $s_1 = M$, the winner from period 0 keeps the rent and contenders update their beliefs about the type of government. Bayes rules gives the posterior as

$$\upsilon = \Pr[\tau = K |\, s_1 = M] = \frac{\widehat{p}}{\widehat{p} + (1 - \widehat{p})\,\rho}. \tag{28}$$

Thus, as of period 1, the expected, discounted payoff of the incumbent is $\pi + \beta\upsilon\pi$, while

[10] Governments of type N might benefit directly from orchestrating new rent seeking contests (e.g. because different generations of politicians want to capture part of the rent seeking expenditure), but also benefit from being perceived to be able to make commitments (e.g., because it makes it easier get reappointed). This gives governments of type N an incentive to pretend to be of type K and we can interpret ρ as the strategy of type N in an un-modeled signalling game. $\rho = 0$ then corresponds to a separating equilibrium; $\rho = 1$ to a pooling equilibrium; and $\rho \in (0, 1)$ to a semi-seperating equilibrium.

that of a contender who lost the contest in period 0 is $0+\beta\left(1-\upsilon\right)\left(q_{2i}\pi-y_{2i}\right)$. With free entry in period 2, the expected surplus $\left(q_{2i}\pi-y_{2i}\right)$ must be 0. If $s_1=C$, it is deduced that the government is of type N and beliefs adjust accordingly. The expected payoff is $\left(q_{1i}\pi-y_{1i}\right)+\beta\left(q_{2i}\pi-y_{2i}\right)$, which again, because of free entry, is 0. In period 0, the expected payoff of contender i is

$$\left(q_{0i}\pi-y_{0i}\right)+\left(\widehat{p}+\left(1-\widehat{p}\right)\rho\right)q_{0i}\beta(\pi+\beta\upsilon\pi)+\left(1-\widehat{p}\right)\left(1-\rho\right)0, \tag{29}$$

which after substitution of equation (28) yields

$$q_{i0}\left(1+\beta\left(\widehat{p}+\left(1-\widehat{p}\right)\rho\right)+\widehat{p}\beta^2\right)\pi-y_{0i}. \tag{30}$$

Free entry (full rent dissipation) into each contest implies that the present value of resources going into rent seeking is

$$\left(1+\beta\left(\widehat{p}+\left(1-\widehat{p}\right)\rho\right)+\widehat{p}\beta^2\right)\pi+((1-\widehat{p})(1-\rho)\left(\beta+\beta^2\right)+\left(1-\widehat{p}\right)\rho\beta^2\right)\pi \tag{31}$$

which simplifies to $\left(1+\beta+\beta^2\right)\pi$. We note that this is precisely the present value of the rent, so we get full rent dissipation irrespective of ρ. We can, therefore, conclude that asymmetric information about the type of government and the associated incentive for the government to strategically misrepresent its type is not a source of under-dissipation.

6 Specific contest success functions and rent protection

In the analysis above, we did not specify the contest success function, but assumed that rent dissipation would be complete in each contest. The neutrality result – that the degree of rent dissipation is independent of p and z – reported in proposition 1 would, however, holds for any contest success function for which the contenders' equilibrium investments are linear functions of the value of the rent $(\frac{\pi}{1-\beta p})$ irrespective of whether dissipation is complete in each contest or not. Conversely, it follows from the analysis of the design of contests with short- and long-run contracts in Gürtler (2007) that the result does *not* hold

for contest success functions for which the equilibrium investments are non-linear functions the value of the rent.

To see this, suppose, as in Gürtler (2007), that the contest success function takes the following form:

$$q_{it} = \frac{f(y_{it})}{\sum_{i=1}^{n} f(y_{it})} \text{ if } \sum_{i=1}^{n} f(y_{it}) > 0 \tag{32}$$

and $q_{it} = \frac{1}{n}$ otherwise. The function f is strictly increasing.[11] Applying this contest success function, it is easy to verify that the total rent seeking expenditure wasted each time the state is C is

$$nh\left(\frac{n-1}{n^2}\frac{\pi}{1-\beta p}\right) \tag{33}$$

where $h(.) = \left(\frac{f}{f'}\right)^{-1}(.)$ is a strictly increasing function. Substituting this into equations (18) and (21), we find that the dissipation rate is

$$\frac{nh\left(\frac{n-1}{n^2}\frac{\pi}{1-\beta p}\right)}{\frac{\pi}{1-\beta p}}. \tag{34}$$

From this equation, we notice that irrespective of the properties of h, the rent dissipation rate is always independent of z. On the other hand, it is only independent of p when h is linear.[12] In particular, taking the derivative with respect to p yields

$$\frac{n\beta}{\pi}\left[h'(.)\frac{n-1}{n^2}\frac{\pi}{1-\beta p} - h(\frac{n-1}{n^2}\frac{\pi}{1-\beta p})\right]. \tag{35}$$

This derivative is negative (positive) if the function h is concave (convex). In other words, if h is concave (convex), better protection of rents (an increase in p) is associated with a decrease (an increase) in the rent dissipation rate.[13] This analysis shows that rent protection – the extent to which rents endure – may in specific circumstances affect the

[11] To insure a unique interior solution, it is sufficient to assume that

$$f'' \sum_{j=1}^{N} f(.) - (f'(.))^2 < 0.$$

[12] In the special case with $n \to \infty$ (which implies complete dissipation in each contest), we get that the rent dissipation rate is 1.

[13] Gürther (2007) explores the implications of this logic for the optimal choice of contract length and concludes that contracts should be short (rents should not endure) if the contest success function is convex and long (and allowed to endure) if it is concave.

rent dissipation rate. This happens when the the contest success function is such that the total rent seeking cost is a non-linear function of the value of the rent. In these cases, the degree of rent protection interacts with pre-existing reasons for under-dissipation of rents and may reinforce or weaken these reasons. It is also interesting to notice that an increase in p may reduce the rent dissipation rate, but at the same time increase the total rent seeking cost. This happens when the function h is concave.

7 Conclusions

Evaluations of social costs of rent seeking only at a point in time are appropriate if rents do not endure – or if rents do endure, but need to be continually re-contested. Rents are, however, often both enduring and re-contestable. Rents may also disappear in the future because of changes in government policies. As a consequence, rents are not, in general, completely dissipated at the time at which they are created. Yet, as we have shown, the *present value of a contested rent* remains the correct measure of social loss due to rent seeking. Since rent seeking activities are often unobserved while the value of rents can be measured, this is a useful identification principle. We have also shown that the total rent seeking cost is large in societies where rents are well protected and in which the government cannot commit to lasting rent-eliminating reforms. Institutional reforms that allow governments to commit to lasting deregulation or other rent-eliminating reforms can, with imperfect rent protection, preempt a substantial part of the potential social cost of rent seeking. The cost of rent seeking that is preempted supplements the social gains from deregulation through deadweight losses that are saved.

An additional interesting question concerns institutional design. Different institutional arrangements empower politicians and governments with different abilities to protect the rents of incumbents and to keep rent-creating legislation in place.[14] The choice of institutions, of course, depends on the objective function of the designer. Under the assumption that the government captures a fraction of the resources used in rent seeking, we may note

[14]See Gradstein (2004) for an interesting analysis of how and why institutions that protect property rights emerge.

the "optimal" institutional choice is to commit to full rent protection ($p = 1$) as this maximizes contemporary resource capture. Institutions that limit political competition are a means of such commitment. Absence of political competition in low-income countries where corruption is extensive is therefore consistent with high rent extraction and rent capture at the time at which rents are created.[15]

8 References

Aidt, T.S., 2003. Economic analysis of corruption: a survey. Economic Journal 113, F632-F652.

Aidt, T.S., 2002. Strategic political participation and redistribution. Economics and Politics 14, 19-40.

Baye, M.R., Kovenock, D., de Vries, C.G., 1996. The all-pay auction with complete information. Economic Theory 8, 362-380.

Cherkes, M., Friedman, J., Spivak , A., 1986. The disinterest in deregulation: Comment . American Economic Review 86, 559-563.

Congleton, R.D., 1980. Competitive process, competitive waste, and institutions. In Buchanan, J.M., Tollison, R.D., Tullock, G., (Eds.), Toward a Theory of the rent-seeking Society. Texas A&M University Press, College Station, pp.153-179. Reprinted in Congleton et al., 2008.

Congleton, R.D, A.L. Hillman and K.A. Konrad (Eds.), 2008. Forty years of research on rent seeking: An overview. In R.D. Congleton et al., The Theory of Rent Seeking: Forty Years of Research. Volume 1 Theory. Volume 2, Applications. Springer, Berlin.

Cowling, K. Mueller, D.C., 1978. The social cost of monopoly power. Economic Journal 88, 727-748. Reprinted in Congleton et al., 2008.

Crew, M. A., Rowley, C.K., 1988. Dispelling the disinterest in regulation. In Rowley, C.K., Tollison, R.D., Tullock, G. (Eds.), The Political Economy of Rent Seeking. Kluwer Academic Publishers, Boston, pp. 163-178.

Gradstein, M., 2004. Governance and growth. Journal of Development Economics 73,

[15] See Aidt (2003) for a discussion of the links between political competition and corruption.

505-518.

Gradstein, M., Konrad, K.A., 1999. Orchestrating rent-seeking contests. Economic Journal 109, 536-545. Reprinted in Congleton et al., 2008.

Gürtler, O., 2007. Short-term or long-term contract? A rent-seeking perspective. Governance and Efficiency of Economic Systems Discussion Paper no. 208. University of Bonn, Germany.

Hillman, A.L., 2008. Public Finance and Public Policy (2nd Ed.). Cambridge University Press, New York.

Hillman A.L., Katz, E., 1984. Risk-averse rent seekers and the social cost of monopoly power. Economic Journal 94, 104-110. Reprinted in Congleton et al., 2008.

Hillman, A.L., Samet, D., 1987. Dissipation of contestable rents by small numbers of contenders. Public Choice 54, 63-82. Reprinted in Congleton et al., 2008.

Konrad, K.A., 2000. Sabotage in rent-seeking contests. Journal of Law, Economics, and Organization 16, 155-65. Reprinted in Congleton et al., 2008.

Krueger, A.O., 1974. The political economy of the rent-seeking society. American Economic Review 64, 291-303. Reprinted in: Reprinted in Congleton et al., 2008.

McCormick, R.E., Shughart, W.F., Tollison, R.D., 1984. The disinterest in deregulation. American Economic Review 74, 1075-79.

Mueller, D.C., 2003. Public Choice III. Cambridge University Press, Cambridge UK.

Nitzan, S.I., 1994. Modelling rent-seeking contests. European Journal of Political Economy 10, 41-60.

Parente, S.L., Prescott, E.C., 2000. Barriers to technological adoption and development. Journal of Political Economy 102, 298-321.

Persson, T., Svensson, L., 1989. Why a stubborn conservative would run a deficit: policy with time inconsistency preferences. Quarterly Journal of Economics 104, 325-45.

Posner, R.A., 1975. The social costs of monopoly and regulation. Journal of Political Economy 83, 807-27. Reprinted in Congleton et al., 2008.

Stephan, J., Ursprung, H.W., 1998. The social cost of rent seeking when victories are potentially transient and losses final. In: Koch, Kl-J., Jäger, K., (Eds.), Trade, Growth,

and Economic Policy in Open Economies. Springer-Verlag, Berlin, pp. 369-380.

Tullock, G., 1967. The welfare costs of tariffs, monopolies, and theft. Western Economic Journal 5, 224-32. Reprinted in Congleton et al., 2008.

Tullock, Gordon, 1971. The cost of transfers. Kyklos 4, 629-643. Reprinted in: Buchanan, J.M., Tollison, R.D., Tullock, G., (Eds.), Towards a Theory of the Rent-Seeking Society. Texas A&M University Press, College Station, 1980, pp.269-282.