

# Rent Seeking in a Constitutional Context:

## Linkages and Constraints

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**Abstract:** The constitutional environment in which rent seeking takes place has significant effects on the extent of rent-seeking activities. It creates the rules that determine contest success functions, and it creates linkages among contests for political influence. The first half of the paper develops a theory of linked rent-seeking within a democratic context analogous to that of the United States. The analysis demonstrates that linkages imply that losses from rent-seeking contests are greater than implied by the analysis of any single contest. However, electoral competition, anticorruption laws, and cultural norms can reduce the effects of linkages in well-functioning governments. Preliminary statistical evidence using data from the United States is consistent with the main implications of the theoretical analysis undertaken. Total lobbying expenditures are more or less proportionate to the prizes at stake and are partly codetermined by linkages, but various norms and legal constraints reduce rent dissipation.

**Key Words:** Linked Contests, Rent Seeking, Rent Dissipation, Delegation, Political Economy of Public Policy, Interest Group Politics, Social Welfare

### I. Introduction

In practice, very few rent-seeking contests are the independent games routinely modeled in the theoretical rent-seeking literature. Most are embedded in political and social systems in which contests are linked in various ways. Linkages, for example, may affect the sizes of the prizes at stake or the manner in which one increases the probability of winning or sharing the prizes on offer. As a consequence, linkages influence the extent and types of efforts undertaken by rent seekers.

Many of these linkages—although not all—are consequences of the constitutional environment in which policy making takes place. Democratic constitutions all create polycentric systems of policymaking in which parliaments and an executive branch share

policymaking authority. Organizational decisions, in turn, routinely delegate significant policy-making authority to legislative committees and executive agencies. The same constitutions also empower citizens to petition the state to oppose or support various policy decisions. Insofar as the right to petition can be exercised at every policymaking and interpretive node in the governing system, the right to petition naturally enables rent-seeking to take place throughout the network of decisionmakers that ultimately determines which policies are adopted and how they are implemented.

Linkages arise because lobbying itself and the policy effects of lobbying often directly or indirectly affect the prizes (interests) at stake in other contests over other policies. Through these effects, networks of linked rent-seeking contests emerge within every liberal democracy.

This paper analyzes factors that affect the extent and nature of rent-seeking activities within such networks. Although the model of governance is highly simplified, it allows the effects of linkages between regulatory and expenditure decisions, and competition for offices to be systematically analyzed in a manner that has not been undertaken before. The model also takes account of factors that tend to reduce rent-seeking activities—factors that have generally been neglected in previous analyses of rent-seeking contests.

#### **A. On the Neglect of Political Institutions and Linked Rent-Seeking**

One might be tempted to think that such work has surely already been undertaken. After all the academic literature on rent seeking is by now approaching its sixtieth year and many dozens of papers on the theory or rent seeking have been published. Nonetheless, the rent-seeking literature has failed to take account of how linkages generated by polycentric policy making affect the extent and scope of rent-seeking activities. This is not to say that research has completely ignored the existence of linkages, but to say that very little research has been undertaken in that area. For example, a brief discussion of possible linkages is provided in Buchanan's short introductory piece on rent seeking in *Toward a Theory of the Rent-Seeking Society* (1980). In that piece, among other points, Buchanan briefly mentions that several levels of rent seeking exist, and that they tend to be linked with one another in

various ways.<sup>1</sup> A few years later, Hillman and Van Long (1987) analyzed rent seeking within hierarchical organizations. Their model demonstrates how various possibilities for rent-extraction within such organizations affects incentives to participate in a sequence of nested contests for positions throughout such governments. However, there was little follow up of their analyses, although both Buchanan's introduction and the Hillman and Van Long paper are widely cited.<sup>2</sup>

This general neglect of realistic political settings and linkages by most of the theoretical literature is evident in the two-volume collection of major contributions to the rent-seeking literature assembled by Congleton, Hillman, and Konrad (2008). None of the papers included in that collection examine choice settings in which individual rent-seeking contests are institutionally linked with others. The lack of interest in linked contests is further indicated by recent overviews of the rent-seeking literature. For example, neither Wärneryd (2019) nor Hillman and Van Long (2019) discuss how preexisting political institutions tend to affect rent-seeking contests and their associated losses.<sup>3</sup>

The focus of most theoretical work is on the mathematical properties of independent contests rather than on linked contests or contests that are embedded in realistic political institutions. The effects of institutions are only indirectly taken into account through the variation in assumptions about the relevant contest success functions.<sup>4</sup>

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<sup>1</sup> Buchanan's remarks on linkages were mentioned to me by my former colleague Bryan McCannon in an office conversation. We agreed that a paper was needed to explore such linkages and we began work on a joint paper. He subsequently dropped out of our joint project as he moved to another university to take up an administrative position. His comments and suggestions on early drafts were most appreciated.

<sup>2</sup> Konrad (2004) is a rare exception to that rule.

<sup>3</sup> The Hillman and Van Long paper can be regarded as an analysis of how rents are dissipated in a rent-extracting authoritarian regime. Further work on that political environment was undertaken by Congleton and Lee (2009).

<sup>4</sup> Examples of such mathematical papers that are weakly connected to this paper include: Rothschild and Scheuer (2016), a somewhat internally inconsistent paper on optimal taxation with Pigovian taxes for controlling rent-seeking in a unified single level contest; Sato (2003), who models fiscal competition for capital taxes with rent seeker influencing transfers—again a single level contest with many symmetry assumptions, which indirectly makes a case for centralized tax authority; and Glazer and Konrad (1999) who analyze how taxation affect the activity level of rent seekers, in a manner

## **B. Aims and Organization of this Paper**

This paper analyzes how the decision-making routines of liberal democracies affect the extent of resources invested in rent-seeking activities. It also provides some preliminary tests of the theory developed using data from the United States.

Part II develops a model of linked rent-seeking within a simplified democratic government in which significant delegated authority over regulatory decisions exists. That model illustrates why linkages exist between the regulatory decision and efforts to become chief regulators and also between regulatory policies and expenditure decisions even when the relevant decisions are determined by completely different groups of government officials. The model traces the effects of rent seeking over a single regulatory decision on contests to become pivotal regulators, on budget allocation, and contests to become pivotal decisionmakers in the budget allocation process. The purpose is to illustrate how linkages affect other contests and also how tax law and anti-corruption laws may reduce some of the effects of linkages.

Because an explicit function characterization of the contest success functions is used throughout part II, the results can be directly used as the basis for empirical analysis.<sup>5</sup> Part III provides evidence that the model developed can account for real-world phenomena using data on lobbying expenditures from the United States. Lobbying expenditures are roughly proportional to the prizes at stake—as implied by the analysis—but other factors (as also predicted) evidently inhibit the extent of rent seeking in the aggregate. Part IV summarizes the results and discusses the relevance of the analysis.

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similar to that developed in the level one contest in this paper, although it focuses on taxation of inputs rather than on profits from rent seeking as in this paper. Again, it is a one-level contest without significant institutional details. The only variation in institutions occurs implicitly through different assumptions about the tax instruments that can be employed by the exogenous government decision maker.

<sup>5</sup> The appendix develops a somewhat more general model to demonstrate that the results obtained using the Tullock Contest Success Function are qualitatively similar to those that would be obtained with more general models of linkages. Concrete functional forms, nonetheless, are often used in technical papers to increase mathematical tractability, as in the proof and lemma papers mentioned in footnote 4.

## II. A Model of Linked Rent-Seeking Contests in Democracies

In linked contests, the decisions and equilibria reached in one contest directly or indirectly affect those of at least one other contest. Linkages can be sequential (as in nested contests) or simultaneous. Linkages can be bidirectional or unidirectional. The links may generate effects on payoffs, contest success functions, and/or number and types of participants. The information possessed by players may be complete or limited in various ways. Their shared property is that linkages among contests imply that the equilibria of one or more contests affect the strategies that rivals in other contests adopt, which thereby affects the overall extent of rent-seeking activities within the system of linked contests. Such linkages may exist even when the individual contests involve completely different players, have completely different prizes, and rents are awarded via different contest success functions.

The linkages focused on in this paper are those that affect the “prizes” on offer in linked contests.<sup>6</sup>

### A. What the Theory Section Does and Does Not Do

The governing organizations focused on in this section of the paper are democratic ones in which policies are adopted in one of two ways. They may be adopted by assemblies of persons elected in fair, competitive, and open elections, or by government employees that have been delegated the authority to make policy decisions by elected officials.

The analysis does not attempt to characterize the overall equilibrium of a system of linked contests. The usual proofs of the existence of Nash equilibria in games with continuous strategy sets imply that an overall equilibrium exists. What is undertaken instead is a comparative statics exercise. The analysis tracks the effects of a new rent-seeking contest on a preexisting equilibrium of a system of linked contests. The “innovation” is assumed to be adopted by an unelected official, who may be the head of regulatory agency or simply a regulator with authority to determine how a regulation will be interpreted or enforced within

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<sup>6</sup> This effect can be said to alter the contest success function of the linked contests. Such effects are rarely modeled, because most papers focus on unlinked contests, and therefore assume a fixed and stable contest success function—e.g. payoff function—for the rent-seeking contest being modeled.

a particular industry, as in Pelzman (1976). Other possible intra-governmental innovations are also possible, but this case is sufficient to illustrate the effects of linkages within a democratic government that adopts public policy through both an elected assembly and a permanent bureaucracy.

The model developed illustrates linkages between four separate contests: the primary one among persons outside government to influence the agency or bureau's development of a new regulation. A secondary one among government employees to become heads of, or pivotal members of, the agency or bureau of interest. A third linkage is generated by the additional tax revenues generated by the effects of the regulatory agency's policies on industry profits. The latter tends to elicit additional competitive efforts in budgetary contests by other persons and organizations both inside and outside government to obtain a share of the new tax revenues. The leader or agenda setter of the elected assembly is the natural beneficiary of those rent seeking activities, which creates a fourth linkage. It intensifies competition to become leader of the relevant committee, assembly, parliament, or legislature.

Each of the linked contests involve distinct groups of rivals and persons who must be influenced to advance particular policy interests or to obtain positions of authority. The analysis undertaken is to a significant degree an exercise in analytical accounting. It traces the extent of rent seeking induced by a new regulatory contest from regulatory agency up through the hierarchy of governance to the top-level contests.

Although the analysis may appear to be a bit mundane and repetitive, it is important, because it reveals effects of linkages among contests that have passed largely unnoticed by students of rent seeking and governance. Other things being equal, the more linkages there are, the greater is the overall extent of rent-seeking losses (e.g. rent dissipation). However, the extent of those losses may be reduced through anti-corruption laws or the internalized norms of potential rent-seekers and pivotal policy makers. Some evidence of the latter is developed towards the end of the paper.

## B. Rent Seeking as Rent Sharing in the Primary Contest

The model begins with the political economy of regulation, which was the first area of applied interest group and rent-seeking research.<sup>7</sup> Firms that expect to be affected by an agency's rule making attempt to influence the choices of the agency's pivotal decisionmaker. They do so to increase their share of the industry profits generated by a new rule or ruling or to reduce their share of the losses.

Congleton (1980) and Long and Vousden (1987) demonstrate that Tullock's (1980) lottery characterization of winner-take-all rent-seeking contests can be reinterpreted as a contest in which each contestant's share of a prize increases with its own effort,  $E_i$  and falls with the efforts of the other contestants,  $s_i = \left( \frac{E_i}{\sum_{j=1}^N E_j} \right)$ . This share-effect is the usual result of efforts to influence regulatory decisions that influence the level or distribution of profits within an industry or market. The advantage of using the Tullock contests success function (TCSF) in this contest and the others developed below is that it is mathematically tractable, is familiar to most scholars of rent seeking, and has equilibrium properties that can be described with concrete algebraic representations. This allows the effects of linkages to be quickly and clearly characterized. It also allows the full accounting to be characterized as the sum of specific concrete functions that can be directly estimated using conventional statistical methods.

Assume that the number of firms (or other groups) seeking shares of the new rents is predetermined by the preexisting market structure which supports a finite number of profit-maximizing firms,  $N_I$ . Assume also that the market is Ricardian rather than Marshallian, and thus different implementations or interpretations of a regulation have different effects on the share of industry profits that individual firms realize. The TCSF implies that the typical firm's expected after-tax profit from participating in a contest over shares of the industry profits that are affected by the new regulation or ruling is:

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<sup>7</sup> See, for example, Stigler (1971, 1988) or Peltzman (1976). In the primary contest, it is assumed that Stigler is correct and thus most regulations tend to increase or redistribute the profits of firms in the industry regulated.

$$\pi_i^e = \left( \frac{E_i}{\sum_{j=1}^{N_1} E_j} \right) \Pi_1 (1 - t) - E_i C_1 \quad \text{for } i = 1, 2, \dots, N \quad (2.1)$$

$E_i$  is contestant  $i$ 's level of effort (number of lobbyists hired, white papers developed, advertisements posted, and dinners and other meetings hosted, etc.),  $C_1$  is the marginal cost of such efforts in the first-level contest,  $t$  is the marginal tax rate, and  $\Pi_1$  is the anticipated increase in industry profit to be shared among contestants.<sup>8</sup>

The mathematics of the Tullock contest success function (TCSF) implies that each rent seeker invests:

$$E^* = \left[ \frac{N_1 - 1}{N_1^2} \right] (1 - t) \Pi_1 / C_1 \quad (2.2)$$

at the symmetric Nash equilibrium. At this equilibrium, the prize is equally shared among the contestants, because they have all invested the same amount in the contest and their profits from participating are each:

$$\pi_i^{**} = [1/N_1] (1 - t) \Pi_1 \quad (2.3)$$

The total investment in rent seeking by all  $N$  participants is:

$$N_1 C_1 E^{**} = N_1 C_1 \left( \frac{N_1 - 1}{(N_1)^2} \right) [(1 - t) \Pi_1 / C_1] = \left( \frac{N_1 - 1}{N_1} \right) (1 - t) \Pi_1 \quad (2.4)$$

Total investment is proportional to expected after-tax profits. Primary rent seeking, thus, increases with the pre-tax profits at stake and falls as marginal tax rates increase, other things being equal.<sup>9</sup> As the number of firms participating in the rent-seeking contest increases, total

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<sup>8</sup> It is assumed that tax rates are determined in other unmodelled contests, that are remain in equilibrium. It is also assumed that the tax system, overall, is more or less flat with constant average and marginal rates. This is true of most VATs, sales taxes, property taxes and income taxes after their maxima are reached. Marginal tax rates are the ones that people respond to, so marginal rates are the ones mentioned in the prose. As noted in the introductory parts, the analysis focuses on comparative statics, rather than a general equilibrium.

<sup>9</sup> Tax rates are determined in other contests and reflect a preexisting equilibrium in that (or those) contest(s). They are thus exogenous to the primary contest being modeled. The model adopts Stigler's (1971) contention that most regulations tend to increase industry profits. It is such effects that generate most of the linkages in the model developed..



expenditures on rent seeking converges toward the value of the after-tax prize, which at the limit is the exact-dissipation case.<sup>10</sup>

### **C. Secondary Rent Seeking**

This is the point at which analysis of a primary rent-seeking contest normally stops—e.g. after describing the equilibrium of a single contest. However, rent-seeking efforts often generate benefits for others, some of which should be subtracted from the losses associated with efforts in the primary contest (Congleton, 1988). New rent-seeking efforts, for example, typically increase the demand for lobbyists and thereby at least temporarily raises their income. The efforts of lobbyists, in turn, normally provide some benefits to the pivotal decision makers who are the targets of their efforts. Otherwise, their activities would simply be ignored.

The additional benefits associated with positions of authority in regulatory agencies differ from those of lobbyists because the contests for such positions do not take place in normal labor markets. Rather, a relatively small number of persons are eligible for such offices (usually from within the bureaucracy and known to the persons who make such appointments). The additional benefits (or reductions in costs) associated with the new rent-seeking contest implies that rivals for such positions will compete somewhat more intensively to obtain those positions. The additional efforts to obtain positions of authority in the regulatory agency are termed secondary rent seeking herein.<sup>11</sup>

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<sup>10</sup> Hillman, with various coauthors, characterized mixed-strategy equilibria to winner-takes-all contests in which as many persons as wish can participate in the games of interest. In that context, he and his various coauthors find that, on average, contests tend to have equilibria in which rents are fully dissipated. This is an important result but is not applicable to the current setting where many of the contests are not open to all comers, partly for reasons outlined in Mitchell (2019). Moreover, in two of the contests modelled herein, the prize is shared rather than allocated to a single winner. Thus, the complete dissipation result of Hillman and Katz (1987) is a limiting case, rather than the most likely one in the present context.

<sup>11</sup> It may be argued that the additional income of lobbyists is part of the deadweight loss of rent seeking, insofar as higher salaries draw more time, energy, and talent into rent-distributing contests. Their time, energy, and talent could have been used in more productive enterprises.

In the long run, the increased demand for lobbyists can usually be satisfied without an overall increase in lobbyist salaries, and thus this effect is ignored here. The effect on regulators, in contrast,

Let  $\beta_2$  be the fraction of the primary rent-seeking efforts that benefits the pivotal policy maker. In well-functioning governments,  $\beta_2 < 1$ , because anticorruption laws and social norms reduce the extent to which rent-seeking activities can directly benefit the targets of those efforts. Bribery, for example, is normally illegal and deemed immoral, although modest gifts, travel, meals, or promises of future employment may be allowed. Other types of lobbying may reduce the cost of being the pivotal regulator by reducing their decision costs—as honest research or data collection by the rent-seekers would tend to.

The equilibrium in the primary game implies that the supplemental “income” ( $\Delta_2$ ) generated by the efforts of primary rent seeking can be characterized as  $\Delta_2 = \beta_2 \left( \frac{N_1 - 1}{N_1} \right) (1 - t) \Pi_1$ .

Persons in pivotal positions in regulatory agencies normally control or influence multiple policy decisions that elicit rent-seeking efforts. Thus, the entirety of the supplemental income and ego rents associated with their offices is larger than those produced by any single primary contest. The supplemental benefits that the regulator receives from the other rent-seeking activities are denoted as  $R_2$ . The unlinked sources of rents associated with the position of interest are, by definition, independent of those in the primary contest examined above, because the new primary contest does not affect the contest success functions or participants in the other contests. That is to say, if only a subset of the contests overseen by the official of interest are linked to the new primary contest, then the others are not.  $R_2$  thus reflects the preexisting equilibrium in those unlinked contests.<sup>12</sup>

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is for a single or small number of positions, that becomes more competitive as rent-seeking increases. Including the temporary effect on lobbyist salaries would simply increase the extent of dissipation over that modelled in this paper.

<sup>12</sup> It is possible that there are interdependencies among the rent-seeking contests than modelled. If so, linkages would be more important than implied in this analysis. Other linkages would, in effect, increase  $\Delta_2$  if they increase rent-seeking in other linked rent seeking contests. However, if the analysis of separate rent-seeking contests that dominates the rent seeking literature has any relevance to the real-world, unlinked (independent) games

What is of interest here is the extent to which the additional rewards generated by a new primary contest affects competition to become the decisive regulator.

The real income associated with the pivotal regulator's position is the sum of his or her after-tax salary and benefits derived from the rent-seeking activities of those subject to his or her agency's regulations,  $Y_2(1 - t) + R_2 + \Delta_2$ , where  $Y_2$  is the pivotal regulator's salary and  $t$  is the marginal income tax rate for that salary. The supplemental "income" of the pivotal regulator is assumed to be tax free, as would be the case when it consists of nonpecuniary benefits such as ego rents, useful information, intra-governmental support, or untaxed forms of income.

The contest to become the regulator of interest is a winner-takes-all contest, and the TCSF is again employed to characterize the expected rents associated with participating in the contest. One does not literally "purchase" such positions through competitive bidding, but competes for them with various activities, many of which resemble lobbying. Again, rent-seeking effort involves specific types of activities, rather than expenditures per se. Each of the  $M$  potential regulator's expected net benefit from office-seeking behavior,  $O_i$ , is:

$$Y_i^e = \left( \frac{O_i}{\Sigma O_j} \right) [Y_2(1 - t) + R_2 + \Delta_2] - O_i C_2 \quad \text{for } j = 1, 2, \dots, M \quad (3.1)$$

The mode of competition and the persons involved differ from those of the primary rent-seeking contest; thus, the marginal opportunity cost of the activities undertaken also differs from that of the primary contest and is represented as  $C_2$ . The linkage between the primary rent-seeking contest and the secondary contest to become the pivotal regulator is generated by  $\Delta_2$ .<sup>13</sup>

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must be presumed to exist and be commonplace. Additional linkages would tend to reinforce the conclusions reached in the model being developed.

<sup>13</sup> The secondary contest is assumed to be symmetric among the  $M$  persons qualified to participate; thus, common strategies are adopted at the Nash equilibrium. Given the assumed contest success function, each office seeker's best reply function is:

$$O^* = \left[ \frac{M-1}{C_2 M^2} \right] [Y_2(1 - t) + R_2 + \Delta_2]$$

The incremental increase in rent-seeking activity induced by the linkage with the new primary contest is thus:

$$\left(\frac{M-1}{M}\right) [\Delta_2] \quad \text{or} \quad \left(\frac{M-1}{M}\right) [\beta_2 \left(\frac{N-1}{N}\right) (1-t)\Pi_1] \quad (3.2)$$

An implication of equation 3.2 is that a ruling that attracts new rent-seeking efforts to a primary contest also tends to increase the intensity of competition for positions of authority in the regulatory agency. The Tullock CSF implies that it does so in proportion to the additional rents generated for the regulator, which are proportional to the stakes of the primary contest. However, the new rents associated with the regulatory office of interest fall as  $\beta_2$  decreases because of anti-corruption laws and supporting norms. The magnitude of the effect of the primary contest on the secondary contest thus falls as anticorruption laws or internalized norms reduce the extent to which rent seeking in the primary contest confers benefits on the relevant regulator(s).

Conversely, as  $\beta_2$  increases, the deadweight losses from rent seeking in the primary contest shift from the primary to the secondary contest (and other linked contests). Bribery, for example, implies that  $\beta_2=1$ . The usual method of calculating losses from rent-seeking activity considers bribes to be simple transfers and are not normally regarded to generate rent-seeking losses—although the policies adopted may generate Harberger-types of losses. However, linkages imply that such a conclusion is incorrect. Bribery simply increases the intensity of competition to occupy pivotal positions in the regulatory agency, a point noted in Hillman and Van Long's (1987) quite different characterization of intra-organizational rent seeking.

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At the full Nash equilibrium, each office seeker's investments maximize the expected net profit from their efforts:

$$O^{**} = \left[\frac{M-1}{C_2(M)^2}\right] [Y_2(1-t) + R_2 + \Delta_2]$$

and the total investment by office seekers is:

$$MC_2 O^{**} = MC_2 \left(\frac{M-1}{C(M)^2}\right) [Y_2(1-t) + R_2 + \Delta_2] = \left(\frac{M-1}{M}\right) [Y_2(1-t) + R_2 + \Delta_2]$$

#### D. Public Finance and Tertiary Rent Seeking

Additional linkages are created by a government's fiscal system—which may or may not have been adopted with its effects on rent seeking in mind. Whenever the rents that motivate a primary contest include increased taxable profits or revenues that are otherwise subject to taxation, there will be additional tax revenues for elected officials to allocate. Additional tax revenues tend to induce additional competition over the allocation of tax revenues. This level of rent seeking is referred to herein as tertiary rent seeking. Overall efforts on budgetary rent seeking, arguably, would tend to be little affected by primary rent seeking, because the budgetary contest tends to be the largest of the rent-seeking contests, and the incremental tax revenue generated by a single primary contest is likely to be relatively small compared to other sources of tax revenues. Nonetheless, a link exists and should be analyzed.

A government's budget in normal times is determined by tax revenues and routine deficit finance. Thus, a normal budget in a given year can be written as  $(1 + d)T$  where  $d$  is the normal rate of deficit finance and  $T$  is tax revenue in the year of interest. The tax base can be written as  $(Y_3 + R_3 + \Pi_1)$  where  $Y_3$  is the sum of all income earned in competitive markets,  $R_3$  is the sum of all taxable rents generated by market power under preexisting government rules, and  $\Pi_1$  is the taxable rent created by the new rule(s) in the primary contest. Tax revenue,  $T$ , is simply the overall tax base times the average tax rate,  $t$ .<sup>14</sup>

Let  $F_i$  be the effort of the  $i^{th}$  interest group to obtain a share of the tax revenues, and  $Q$  be the number of well-organized interest groups engaged in the grand budgetary contest. The types of rent-seeking activities undertaken again differ from those of the previous contests because of differences in the aims of those targeted by the rent seekers (reelection), the nature of the prize (government revenues), the process through which the allocative decisions are made, and the aims of the pivotal budget allocators. Neither the groups

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<sup>14</sup> The tax base tends to increase through Stigler regulatory effects on  $R_3$  and  $\Pi_1$  even when the magnitude of trade is reduced by the rents created. Consumer surplus is not taxed; rather it is revenues (with a VAT or sales tax) or net revenues (income) that are taxed.

lobbying for greater shares of tax revenues nor the persons that play pivotal roles in decisions to allocate those funds are the same as in the primary contest. Indeed, specialists in government budgetary legislation may be entirely ignorant of the source of the new revenues. Thus, rent-seeking activities and their opportunity costs differ from those in the other two contests and are denoted as  $C_3$ .

Again, the TCSF can be used to model the contest, which is a rent-sharing contest with a mathematical structure similar to the primary contest. In a symmetric contest, the share ( $S_i$ ) of new revenues obtained by group  $i$  is:

$$S_i = \left( \frac{F_i}{\sum_{j=1}^Q F_j} \right) [(1 + d)t(Y_3 + R_3 + \Pi_1)] - F_i C_3 \text{ for } j = 1, 2, \dots, Q \quad (4.1)$$

A bit of calculus and algebra allows the equilibrium lobbying expenditures and the increase in those expenditures generated by a new primary contest to be characterized.<sup>15</sup> The net increase in fiscal rent seeking induced by a new primary contest is:

$$\Delta_4 = QF_i^* C_3 = \left( \frac{Q-1}{Q} \right) (1 + d)t\Pi_1 \quad (4.2)$$

The tertiary rent-seeking efforts induced by a new primary contest are determined by average tax rates, average borrowing rates, the number of well-organized fiscal interest groups, and the profits associated with the with the first-level contest, as indicated by equation 4.2.

Note that an increase in average tax rates tends to decrease rent-seeking efforts in the primary contest but tends to increase efforts in the tertiary contest, as does the average degree of deficit finance.<sup>16</sup>

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<sup>15</sup> Given the assumed TCSF structure of the shares contest, the best reply function of a typical interest group that seeks to obtain a larger share of the “pie” to be divided up is:

$$F_i^* = \left( \frac{Q-1}{C_3 Q^2} \right) [t(Y_3 + R_3 + \Pi_1)(1 + d)]$$

The total expenditure on lobbyists devoted to this third level of rent seeking is thus:

$$QF_i^* C_3 = \left( \frac{Q-1}{Q} \right) (1 + d)t(Y_3 + R_3 + \Pi_1)$$

<sup>16</sup> It is interesting to note that a pragmatic rent-seeking model of budget allocation can have a clear equilibrium, although the pragmatic majoritarian model of budgetary allocation does not. Endless

### E. Agenda Control and Quaternary Rent Seeking

The increase in budgetary rent seeking, in turn, affects the rewards of the officials lobbied by the budget-seekers. As in the primary contest(s), rent-seeking activities in the tertiary contest that do not advance the interests of pivotal policy makers are unlikely to be effective. The persons targeted by lobbying efforts over budgets may receive various combinations of useful information, credible commitments of future political support, gifts, bribes, or employment opportunities for their friends and family. Again, the strategies available to rent seekers varies with anticorruption laws and also with norms of the persons targeted (and those of their supporters).

To sharpen the characterization of fourth level contest, the analysis assumes that there is a single pivotal tax revenue allocator (such as a prime minister, president, or pivotal member of the legislature, majority party, budget committee, or cabinet). That person is assumed to exercise agenda control or be the pivotal member on a budgetary committee.<sup>17</sup> As in the contest to be the head regulator, competition for such posts tend to be closed rather than truly open, and limited to a finite number,  $Q$ , of qualified candidates for such offices.

The contest for offices of great authority are winner-takes-all contests. It is modeled in the same manner as the level two contest. Again, there is an increase in rewards associated with a position of authority, and again there tend to be relatively small number of rivals for the position of interest, who in this case are usually senior elected government officials,

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majoritarian cycles are the predicted result of all “dividing the pie” contests decided via majority rule in the absence of mitigating institutions or norms. Glazer and Konrad (1999) examine the effects of taxes on rent-seeking inputs and find that it does not necessarily affect rent-seeking activities, but do not explore how the revenues generated affect rent-seeking at the expenditure-allocating level of government.

<sup>17</sup> Results developed in Congleton (1984), suggest that when a committee of budget allocators makes their decisions via majority rule, then lesser amounts may be invested in the tertiary contest, possibly much less. Only a majority of such budget allocators need be influenced in such settings, rather than all of them. The latter is one of several possible explanations for the relatively low rent-seeking expenditure evident in the lobbying data used in part III. This effect can be characterized with the  $\beta_4$  parameter below, although not fully. The assumption of a single agenda setter avoids this possibility, simplifies the analysis, and is widely used (often implicitly) in the rent-seeking literature.

rather than bureaucrats. Again, only some fraction,  $\beta_4$ , of the efforts of the tertiary rent seeking directly benefits the pivotal office holder. And again, qualifications and one's political and social networks limit entry into the contest. Thus, the persons competing for the most powerful offices differ from those of the level two contest.

As a consequence, the number of rivals ( $G$ ), the strategies of the rivals, and the marginal cost of seeking pivotal governmental offices ( $C_4$ ) differ from those of the other contests. The contests are linked rather than sequential or nested.

The expected net prize ( $W_i^e$ ) of the pivotal budget allocator is characterized by the salary of the relevant office,  $Y_4$ , and the fraction ( $\beta_4$ ) of the overall lobbying expenditures of the budget seekers that benefit the pivotal budget allocator. The expected net benefit,  $W_i^e$ , from a typical office seeker's investment  $E_j$  is:

$$W_i^e = \frac{E_i}{\sum E_j} [tY_4 + \beta_4 \left(\frac{Q-1}{Q}\right) (1+d)t(Y_3 + R_3 + \Pi_1)] - E_i C_4 \quad \text{for } j = 1, 2, \dots, G \quad (5.1)$$

The supplement generated by budget seekers is again assumed to be untaxed, as it would be if received as in-kind benefits such as ego rents associated with greater deference, honorary speaking engagements, campaign contributions, jobs for relatives, travel, or if the extra income received is illegal (as with bribery) and so not reported on required financial declarations or to the tax authorities.<sup>18</sup>

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<sup>18</sup> In a symmetric contest, the assumed TCSF implies that the career investment that maximizes a budget allocating office seeker's expected supplemental income is:

$$E^* = \left[ \frac{G-1}{C_4 G^2} \right] [tY_4 + \beta_4 \left(\frac{Q-1}{Q}\right) (1+d)t(Y_3 + R_3 + \Pi_1)]$$

The Nash equilibrium investment determines the expected net reward realized by office seekers. At the symmetric Nash equilibrium, each rival's office-seeking efforts are:

$$E^{**} = \left[ \frac{G-1}{C_4 (G)^2} \right] [tY_4 + \beta_4 \left(\frac{Q-1}{Q}\right) (1+d)t(Y_3 + R_3 + \Pi_1)]$$

And, thus, the total investment by the  $G$  contestants equals:

$$G C_4 E^{**} = \left(\frac{G-1}{G}\right) [tY_4 + \beta_4 \left(\frac{Q-1}{Q}\right) (1+d)t(Y_3 + R_3 + \Pi_1)]$$



The increase in high office-seeking activities induced by a new primary rent-seeking contest is:

$$\Delta_5 = GC_4E^{**} = \left(\frac{G-1}{G}\right)\beta_4\left(\frac{Q-1}{Q}\right)(1+d)t(\Pi_1) \quad (5.2)$$

Fiscal and political linkages generate additional rent seeking that is proportional to the profits created in the primary contest. The proportion varies with the average (or expected) levels of deficit finance and taxation, the extent to which rent seeking directly or indirectly increases the rewards of the relevant office,  $\beta_4$ , and the number of rivals for that office,  $Q$ .

Higher tax rates and borrowing rates increase the intensity of both tertiary and quaternary rent-seeking activities, although the former reduces primary rent-seeking efforts. The increment in fourth-level rent seeking is again proportional to the initial prize at stake.

#### **F. Linked Contests and the Extent of Rent Seeking**

The model developed above provides an internally consistent characterization of linkages among contests within a highly simplified constitutional democracy. Other secondary decisions in various committees and subcommittees within regulatory agencies and the legislature could be easily added to make the overall pattern of linkages more realistic, but the skeleton analyzed is sufficient to illustrate how linkages affect overall pattern and extent of rent seeking.

Even this very lean model of divided governance implies the existence of four linked contests. Two contests involve lobbying governmental officials by persons and organizations outside government, and two involve competition among officials within government for offices with significant authority over the matters that lobbyists hope to influence. The former are rent-sharing contests, and the latter are winner-take-all contests.

The linkages among the contests imply that systemwide rent-seeking efforts tend to be greater than that indicated by any single contest. In the model, the resources ultimately attracted to rent-seeking activities by a new primary contest add up to the following:

$$\left(\frac{N-1}{N}\right)(1-t)\Pi_1 + \left(\frac{M-1}{M}\right)\left[\beta_2\left(\frac{N-1}{N}\right)\Pi_1\right] +$$

$$\left(\frac{Q-1}{Q}\right)(1+d)t\Pi_1 + \left(\frac{G-1}{G}\right)\beta_4\left(\frac{Q-1}{Q}\right)(1+d)t(\Pi_1) \quad (6.1)$$

The second, third, and fourth terms are all greater than zero, which demonstrates that a narrow focus on primary rent seeking (characterized by the first term) understates the overall rate of rent dissipation associated with a new regulatory contest.

The beta terms demonstrate how the overall investment in those contests can be reduced by fiscal, legal, and cultural considerations that are usually neglected by models of rent-seeking contests. The beta terms are all exogenous to the contests modelled and capture the effects of relatively durable decision-making procedures, laws, and internalized norms that tend to reduce the effects of linkages. The beta terms, tax rates, and borrowing rates all affect the overall extent of rent-seeking activities.

As modeled, the rent seeking that takes place is incidental rather than of the rent-extracting variety. The right to petition elected governments together with the discretion of policy makers throughout government are sufficient to motivate significant rent-seeking efforts and create linkages. Rent-seeking contests do not have to be devised by rent-extracting officials to exist or have significant effects on the net benefits generated by public policies to be troublesome. The contests merely have to exist, and polycentric decision making and the right to petition government are sufficient to assure that at least some rent seeking takes place.<sup>19</sup>

### III. Some Preliminary Statistical Evidence of Linked Rent Seeking

The Tullock contest success functions used to characterize the equilibria of the four linked rent-seeking contests implies that increased rivalry in each of the linked contest is proportional to the size of the prize in each contest. This property and the additivity of rent-

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<sup>19</sup> A rent-extracting theory of the state implies that governing institutions would be designed from the top down to maximize rent seeking. Some of the implications of a rent-extracting state have been worked out by Applebaum and Katz (1987), McChesney (1997), Congleton and Lee (2009), and Congleton (2017). However, the empirical section of the paper suggests that this is unlikely to have been the case in the United States, because rent-seeking activities (as measured in by lobbying expenditures) are far lower than one would expect from a rent-extracting state. It is more likely to be incidental to other constitutional objectives including openness and assuring that citizens have the right to petition government for redress.

seeking efforts among contests implies that the usual linear specifications of most econometric models can be used to test the implications of the above analysis.

Data sets have recently become available that allow one to estimate some of the main implications of linked rent seeking contests. Unfortunately, the data sets are quite limited, which limits the econometric approaches that can be undertaken. Nonetheless, the TCSFs used above imply that straightforward linear estimation methods are likely to be sufficient to demonstrate the effects of both prizes and linkages on lobbying expenditures. The focus of the econometric analysis below is on the primary and tertiary contests.

However, in contrast to the model, the estimation begins with the tertiary contest, which is the largest of the four contests, and it is the one for which the best data is available.<sup>20</sup>

#### **A. Lobbying Expenditures and Discretionary Budgets**

The resources invested in the primary and tertiary contests are approximated by lobbying expenditures. Data on lobbying expenditures has recently become available because of the *Lobbying Disclosure Act of 1995*, which requires organizations to file reports that include their lobbying expenditures and particular policy interests. The website *Statistica* provides values for total annual expenditures on lobbyists based on those filings. There may well be other non-recorded expenditures, but data on lobbying expenditures is likely to be roughly

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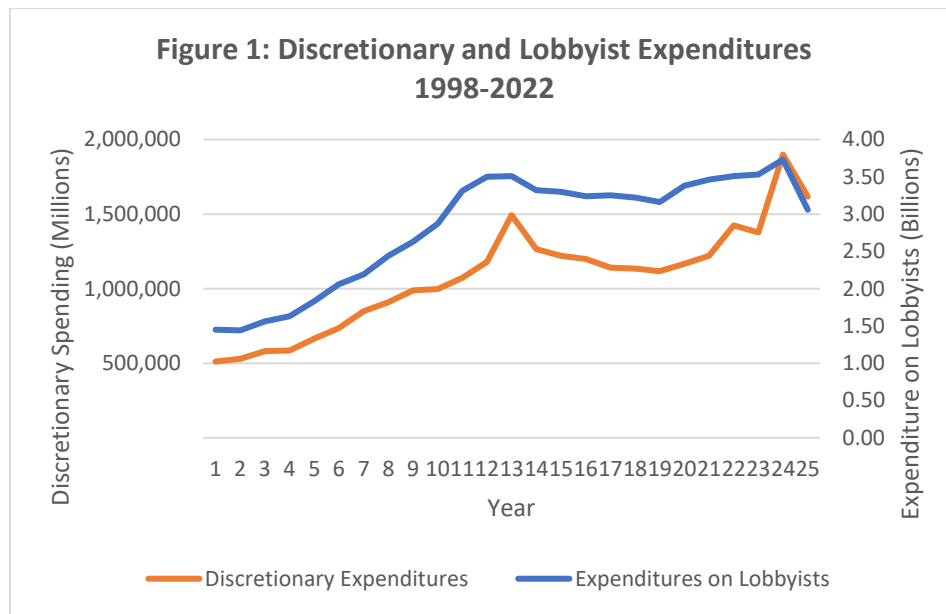
<sup>20</sup> Evidence that the quaternary relationships hold has been found in previous research. For example, Lott (2000) finds that campaign expenditures (level 4 contests) have the predicted pattern. Campaign expenditures in federal elections are correlated with the size of the federal budget, and electoral expenditures in state elections are correlated with the size of state budgets.

Wouters' (2020) analysis of policy-motivated spending by the pharmaceutical industry is also consistent with the above analysis. It provides evidence that an industry's spending on rent-seeking activities (including both lobbying and campaign contributions) expand when the stakes increase. He finds that pharmaceutical firms target campaign contributions at pivotal members of Congress and that expenditures on campaigns to block state referenda tend to spike in years when referenda include regulating drug prices (see his figure 3). Contributions rise more than tenfold in his examples from California, Missouri, and Ohio during critical years. Both are consistent with the causal relationships modeled in this paper.

proportional to other expenditures made by organized groups favoring particular policies or refinements of policies or at least be strongly correlated with their overall expenditures.<sup>21</sup>

### Some Visual Evidence

Rent-seeking models all assume that it is “the prize” that motivates rent-seeking expenditures, and thus in addition to lobbying expenditures, tests of rent-seeking models also require data on the prizes on offer. The portion of U. S. government expenditures that is most susceptible to bargaining and lobbying is called the discretionary budget. It is the part of the budget that is formally authorized each year, rather than being a joint consequence of past legislation and decisions made by those eligible for “entitlement” programs. (The non-discretionary budget includes major areas of expenditure such as social security, disability, and tax-financed healthcare expenditures.) The Office of Management and Budget has recently begun publishing data on the size of the discretionary budget. Only approximately half of annual outlays by the central government of the United States are discretionary.



<sup>21</sup> Rent-seeking of the “eligibility” type is associated with “connections,” where individuals spend much of a lifetime attempting to be eligible for various contests or to be taken seriously by officials. The cost of establishing such connections tend to be much greater than the direct expenditures on lobbying contests. These and such gifts as jobs for family members and promises of political support would not be counted in the lobbying data set. Thus, it should be acknowledged that the data and results, although useful, do not capture all the relevant expenditures.

Figure 1 plots these two time series of expenditures, which shows a clear correlation between the discretionary spending and overall lobbying expenditures ( $R=0.89$ ). That correlation implies that lobbying expenditures are approximately proportional to the size of the discretionary budget, as implied by the theoretical analysis of tertiary rent seeking. Both series are in nominal terms.<sup>22</sup> The period is one in which inflation was relatively modest. And, the best index to deflate the two expenditure series is not obvious. Changes in the magnitude of the discretionary budget and lobbying are clearly much greater than can be explained by inflation in this period.

Figure 1 also demonstrates that neither discretionary budgets nor lobbying expenditures are monotone increasing during the period data are available. Thus, the correlation is not entirely generated by trends. It is also noteworthy that lobbying expenditures are far less than the discretionary budgets, which implies that far less than exact dissipation takes place. This, in turn, suggests that monitoring by voters, internalized norms, anticorruption laws, the use of committees, limited numbers of politically active interest groups, and decision-making procedures significantly reduce direct rent-seeking expenditures relative to what it would have been without those constraints. The various “beta terms” in the model evidently are important.<sup>23</sup>

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<sup>22</sup> The decision to use nominal values was not taken lightly. It is not clear what the appropriate price index for lobbying is. And, dividing two series by two different variables that are correlated with one another may induce spurious correlation—just as leaving inflation in may. Fortunately, inflation was modest during most of this period, and the data plots make it clear that variations in expenditure levels were not driven entirely or mainly by trends in prices.

<sup>23</sup> The ratio of lobbying expenditures to the discretionary budget is about 1:500, which suggests that either extraordinary profits are limited, or the factors mentioned above greatly reduce expenditures on rent seeking. Relatively low rates of rent seeking would also occur if the profits realized by governmental contractors were only a bit higher than normal in the private sector. Relatively low premiums for government work (or subsidies) would tend to reduce lobbying efforts because it is only the extraordinary profits that are competed over in this manner.

### Indications of the Direction of Causality

Rent-seeking models generally imply that the causality runs from prizes to effort levels rather than vice versa. This implies that lobbying efforts tend to rise because of increases in discretionary spending rather than discretionary spending because of lobbying.

Granger causality tests are used to assess that hypothesis. Granger causality tests examine the extent to which one variable (X) can be predicted by past values of another variable (Y), and vice versa. If past values of Y can account for the future path of X, then Y is said to “Granger cause” X. Granger causality can be unidirectional (only from X to Y) or bidirectional. (occurring both from X to Y and from Y to X) or may not exist at all (e.g. causality may be rejected for both directions). Granger test statistics for Lobbying Expenditures and Discretionary Budgets are tabulated in table 1.

<b>Table 1: Pairwise Granger Causality</b>			
<b>Tests for Discretionary Budgets and Lobbying</b>			
(Sample: 1998–2022, Lags: 2)			
<b>Null Hypothesis:</b>	<b>Observations</b>	<b>F-Statistic</b>	<b>Probability</b>
Discretionary Budgets do not Granger Cause Lobbying Expenditures	23	12.7914	0.0003***
Lobbying Expenditures do not Granger Cause Discretionary Budgets	23	2.15756	0.1446

Note that the hypothesis that discretionary budgets do not Granger cause lobbying expenditures can be rejected at the .001 level of significance, but the hypothesis that lobbying efforts do not cause discretionary expenditures cannot be rejected at conventional levels of significance. The correlation of past discretionary budget levels on lobbying expenditures is very high relative to the variance of the error term. This result affirms the usual rent-seeking hypothesis.

## **B. Decomposing the Effects of Prizes on Lobbying Expenditures**

According to the model of linked rent seeking developed in Part II, aggregate lobbying efforts include efforts to obtain a larger share of discretionary budgets and efforts to induce favorable changes in regulations, with the former being increased by fiscal linkages between the primary and tertiary contests. If true, a statistical model that characterizes total lobbying expenditures as a function of both sorts of prizes will more faithfully explain the extent of lobbying than models that focused on tertiary or primary rent seeking alone.

To disentangle the two types of lobbying expenditures, an indicator of the “prizes” at stake in the primary contest is necessary. Several measures of the extent of economically relevant regulations have been tabulated by George Mason’s Mercatus Institute. The simplest of the measures is the word count of the Federal Register. Nearly every word in the register has economic consequences, and most are subject to revision. Thus, word counts can be used as a rough measure of the value of profits and losses being apportioned through regulation. The more words included in the register, the more opportunities there are to increase profits or diminish losses through regulatory reforms (e.g. through modest changes in the language of regulatory rulings and laws). Word counts of the Federal Register are published on the Mercatus Institute’s RegData website.

The small data set for aggregate lobbying expenditures limits the statistical methods that can be employed and also requires some discipline with respect to data mining. Thus, the models estimated are lean ones and only a handful of estimates were calculated. The functional forms examined, and variables included are those implied by the analytical models developed above.

The first four estimates ignore the presence of linkages and the possible simultaneous equation bias of estimates in such estimates. The last column uses two-stage least squares to untangle the effects of linkages, which will be relatively minor according to the model developed if spillover benefits among contests are relatively small, as suggested by figure 1. This effect is indicated by the small changes in coefficients in that estimate. All five estimates are broadly consistent with the implications of the rent-seeking model developed in the first

half of the paper. The coefficients all have the expected signs, and the F-statistics for the models estimated are all different from zero at the 0.001 level of significance.

	<b>Dependent Variable: Total Lobbying Expenditures</b> ( <i>Statistica</i> )				
	<b>OLS (1)</b>	<b>OLS (2)</b>	<b>OLS (3)</b>	<b>OLS (4)</b>	<b>TSLS (5)</b>
Constant	0.741 (3.29)***	-1.542 (-2.56)**	196.40 (2.39)**	201.92 (1.94)*	192 (1.97)*
Discretionary budget (OMB)	1.94E-06 (9.73)***	1.18E-06 (4.05)***	1.43E-07 (5.06)***	1.44E-06 (4.33)***	1.38E-06 (2.43)**
Total Words in Federal Register (GMU)		3.41E-08 (3.68)***	9.36E-08 (3.59)***	9.49E-08 (3.10)***	9.32E-08 (3.54)***
Incremental Words in the Federal Register (GMU)				-6.51E-09 (-0.08)	
Year			-0.101 (-2.41)**	-0.104 (-1.95)*	-0.099 (-1.99)*
F-Statistic	94.60***	112.72***	94.34***	67.25***	87.66***
Observations	25	24	24	24	24

A single asterisk (\*) denotes statistical significance at the 10% level, two asterisks (\*\*), at the 5% level, and three (\*\*\*) at the 1% level of significance.

The last four columns of the table take account of both primary and tertiary rent-seeking activities. They indicate that discretionary budgets are not the only determinant of lobbying expenditures. The difference between columns 1 and 2 suggests that lobbying takes place at several levels within the U.S. government, rather than solely at the budgetary or regulatory levels. The F-statistic for the column 2 model is substantially greater than that of first column. (The test statistic for the difference in fit for the column 1 and 2 estimates is 3.23, which is significant at the 6% level of significance.)

The model estimates of column 3 decompose the effects of regulatory and budgetary contests into trend and non-trend components. “Year” captures the shared trends in discretionary budgets and regulation that may be generated by technological advances, background economic growth, ideological trends, or political inertia. Note that this decomposition does not materially change the values of the coefficients estimated in



columns 1 or 2. It also is noteworthy that the trend coefficient is negative rather than positive within the sample period after accounting for budgetary and regulatory variation. This suggests that efforts to curtail rent-seeking are taking place, an example being the legislation that produced the data used in this study. Together with the results in column 2, the column 3 results suggest that the above-trend budgetary and regulatory possibilities elicit greater than average increases in lobbying efforts.

The fourth column tests the hypothesis that it is new regulatory language that is most contestable and so more likely to attract lobbying activity. This proves not to be the case or at least the effect is too small to be captured with the measure employed, given the extremely limited data available. Its coefficient has a positive sign, which suggests that new regulations have a somewhat larger effect on lobbying than average, but it is statistically indistinguishable from zero.

The linkages modeled in part II imply that discretionary budgets are partly driven by revenue effects associated with primary contests, which implies that the estimates in columns 1–4 are subject to simultaneous equation bias. To explore the extent of that bias, the last column provides a two-stage least squares estimate in which the discretionary budget is instrumented using the other three variables included in column 4. Significant changes in coefficient values would indicate the existence of significant simultaneous equation bias in the ordinary least squares estimates, which, given the extent of dissipation indicted by Figure 1, would conflict with the predictions of the model. The relatively small reduction in the coefficient for the discretionary budget suggests the presence of a small upward bias in the previous two estimates. It also suggests that part of the budgetary effect of the previous estimates was generated by the effects of the primary contests on tax revenues.

This effect is relatively small, which is consistent with the “incidental” rent-seeking model of linkages developed above. Relatively weak linkages tend to exist if the values of the relevant betas are small, rather than large as they would have been in a pure rent-extraction model. Weak linkages between the primary and tertiary contests would also occur if relatively small increases in tax revenues are induced by the primary contests (as, for example, would

be the case if the profits gained by the large firms engaged in lobbying are offset by reductions in the profits of smaller firms that do not).<sup>24</sup>

Overall, these statistical tests of the analysis of Part II imply that the TCSF provides a realistic characterization of lobbying activities in the United States. Although the empirical results are based on a small sample, the test statistics account for degrees of freedom, and the estimated coefficients are consistent with the theoretical analysis. Of course, mere correlations do not prove causality, but they can, as also true of the Granger tests, be suggestive, and supportive of causal inferences.

#### **IV. Some Conclusions: Rent Seeking in a Constitutional Democracy**

Rent-seeking is not simply another contest to be analyzed by applied mathematicians. It is not a parlor game or sporting event, but rather is part of the standing processes through which public policies are adopted. Governance, by its nature, creates numerous opportunities for persons inside and outside government to employ the coercive powers of government to advance individual and group aims. Such powers can create rents and extract rents. They may do so on a large or small scale according to the incentives and constraints of governmental decision makers.

The standing routines for policy making normally include practical and legal constraints on those decisions. Both the theory developed above, and the estimates reported suggest that both are important factors that largely determine the scope for rent seeking and the extent of rent-dissipation generated by the policy making process.

Contemporary democracies and other forms of divided governments include a variety of features that create both incentives for rent seeking and linkages among rent-seeking contests. Electoral processes create opportunities for organized groups to promise support for politicians and parties in exchange for governmental privileges or protection. After government officials are elected, they continue to be open to influence by persons outside

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<sup>24</sup> See Tullock (2001) for a discussion of the surprisingly high rate of return from rent seeking. See Hillman and Ursprung (2016) for a more complete discussion of why dissipation rates may be lower than implied by some strands of the rent-seeking literature.

governments. This is necessary, of course, for governance to take place because relatively small group of elected officials need information and advice about a wide range of topics to make reasonably good decisions. There is no single repository in which all such information can be accessed. Insofar as strategic efforts to manipulate policy makers or political gains to trade are possible, the result may be policies that create and/or extract rents.

The data on lobbying indicate that a non-trivial subset of individuals, firms, organized groups, and economic organizations invest resources to influence policy decisions about laws, taxes, and expenditures, because such policies affect their interests—as the data on lobbying suggests. Billions of dollars are spent lobbying the federal government of the United States every year and on the order of thirteen thousand registered lobbyists undertake those activities. Although the statistical results in the last section of the paper suggests that rent-seeking is reasonably well-controlled in the U. S., rent-seeking is not a negligible enterprise.

Although many possible methods of influence are illegal, numerous completely legal opportunities exist for influencing a government’s policy decisions. This is partly because of information costs. It is partly such costs that make elected officials (and their advisors) interested in the white papers and informed recommendations of interest groups. And it is informational and time constraints that induce elected officials to delegate considerable authority to unelected government employees and organize them into specialized bureaus and agencies of various types. Delegation allows advantages of specialization to be realized. It is largely for such reasons that various types of public hearings are conducted, where those most affected by a policy can testify for or against a particular policy and to suggest alternatives. In addition, various private meetings between those affected and those making the relevant policy decision often occur. Most of these activities are venues for various forms of rent seeking, although not all of them would count as lobbying expenditures.<sup>25</sup>

This paper has analyzed how linkages created by the internal workings of a contemporary democracy affect the extent of rent seeking, and also how restrictions on rent-

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<sup>25</sup> See, for example, Olson (2022), Tullock (2013), and Hillman and Ursprung (2016).

seeking strategies affect the extent and types of rent-seeking undertaken. The results suggest that linkages tend to increase the overall level of rent dissipation, while restrictions on bribery, gifts, norms, and decisionmaking procedures tend to reduce them. The overall scope of government expenditures and regulation tend to increase them.

That a nation's political system creates linkages that tend to increase rent-dissipation, and that anti-corruption laws and decisionmaking procedures that may reduce rent seeking have gone largely unanalyzed by the rent-seeking and rent-extracting literatures. Generally, the literature has examined rent-seeking contests in isolation, as independent contests, rather than imbedding them into a constitutional context. Political culture, in the form of internalized norms, may also reduce the level of rent seeking that takes place. Such effects were modeled with the various beta coefficients in the model.

The statistical analysis undertaken in part III of the paper provides evidence that linkages exist, and also suggests that the institutions and culture of the United States tend to inhibit rent seeking, although they clearly do not eliminate it.<sup>26</sup> Evidently, the anti-corruption laws and institutions favored by most voters tends to induce elected officials to adopt procedures and constraints that discourage rent seeking in the U. S. and in other reasonably well-functioning democracies.<sup>27</sup>

Such rent-seeking reducing laws and procedures do not work perfectly and vary among countries. Thus, analysis of rent-seeking remains important topics for both welfare

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<sup>26</sup> If electoral pressures are sufficient to produce incentives to reduce or minimize rent-seeking investments and associated losses, then steps to minimize the number of contestable prizes available might be undertaken, as would be the case under a generality rule (Buchanan and Congleton, 1998). The prizes that exist might be allocated by committees rather than department heads or committee chairpersons, in which case Congleton (1984) suggests tends to reduce rent-seeking expenditures. Alternatively, they might be allocated through multiple-stage contests, which Amegashie (1999) and Konrad (2004) suggest would also reduce rent-seeking efforts. Other procedures to limit the number of competitors in a given contest might also be adopted, which as noted by Mitchell (2019) and indicated by the mathematical properties of TCSFs, tends to reduce overall lobbying expenditures.

<sup>27</sup> If so, this may imply that the normative implications of the rent-seeking literature have had an impact on policy makers and/or voters. An instance of would include the legislation that indirectly produced the data used in the above statistical analysis.

economics and those interested in institutional reform; but they evidently work well enough that dissipation rates appear to be far less than one hundred percent in the United States.

### **Appendix: A More General Model of Linkages that Affect Prizes**

This paper has focused on a particular subset of linked contests, namely cases in which rent seeking in one of the linked contests affects the rewards of other contests. The analysis uses the Tullock's lottery model of rent-seeking which implies that the probability that a particular contestant wins the prize—or increases his, her, or their share of the prize—rises when his, her, or their group's own efforts increase relative to others. Most rent-seeking contest success functions are drawn from similar families of functions.

That the effect of linkages is not an artifact of the TCSF can be demonstrated by examining a more general model of two linked contests. Let  $\pi_i$  be the expected profit for participant  $i$  of participating in contest 2, which is linked to contest 1. Suppose that  $\Delta_2$  is the increment or decrement in the total prize in contest 2 generated by rent-seeking efforts in the first contest (contest 1). The prize in the second contest is  $R_2 + \Delta_2$ , with  $R_2$  being the part of the prize at issue in contest 2 that is not affected by efforts in contest 1. Denote  $E_i$  as the effort invested in the second contest by player  $i$ ;  $N_2$  as the number of rivals eligible to participate in the linked contest; and  $c(E_i)$  as the opportunity cost of the effort expended by player  $i$  in contest 2. Let  $P = p(E_i, \sum_{j \neq i}^{N_2} E_j, N_2)$  be the probability of winning or the share of the prize realized in the second contest. To distinguish linked contests from sequential contests, it is assumed that the two contests involve different players, somewhat different contest success functions and cost functions. Moreover, it is not necessary that contest 2 follow contest 1. It is sufficient that the effects of the linkage,  $\Delta_2$ , is well-understood or anticipated by the participants in contest 2. Contest 2 could occur prior to contest 1.

Given all the above, the expected net payoff of player  $i$  in contest 2 can be represented as:

$$\pi_i^e = p(E_i, \sum_{j \neq i}^{N_2} E_j, N_2)(R_2 + \Delta_2) - c(E_i) \tag{A.1}$$

Assume that the expected payoff function is twice differentiable and strictly concave. In that case, player  $i$ 's best reply function is determined by the first derivative of equation 1.1 with respect to player  $i$ 's effort level:

$$p_{Ei}(R_2 + \Delta_2) - c_{Ei} = 0 \equiv H \quad (\text{A.2})$$

Note, again, that it is particular types of efforts rather than expenditures per se that are decisive, although the cost of those efforts is not irrelevant. The implicit function theorem together with equation A.2 allows player  $i$ 's best reply function to be characterized as:

$$E_i^* = e(\sum_{j \neq i}^N E_j, N_2, R_2, \Delta_2) \quad (\text{A.3})$$

Equation A.3 implies that each player's best reply in contest 2 varies with  $\Delta_2$ , which is determined by strategy choices in a linked contest (contest 1). The overall effort level of contest 2 is thus affected by the equilibrium strategy choices of contest 1.

The effort level of each participant tends to increase with  $\Delta_2$  within the family of best reply functions characterized. The implicit function differentiation rule allows the effect of the linkage,  $\Delta_2$ , on each person's effort level to be characterized as:

$$E_{i \Delta_2}^* = H_{\Delta_2} / -H_{E_i}. \quad (\text{A.4})$$

Because the expected profit function is strictly concave,  $-H_{E_i} > 0$ , in which case, the numerator determines the sign of the derivative of interest. The numerator is  $H_{\Delta_2} = p_{E_i} > 0$ . Each participant's effort increases with the size of the prize in this family of contests, which is partly determined by linkages to other contests.

Whenever the efforts invested in contest 1 increase the payoffs in contest 2, the overall extent of rent seeking in the system of two contests increases. The extent of rent seeking induced by contest 1 is, thus, underestimated when only contest 1 is analyzed. The more linked contests of this variety that exist, the larger is the aggregate effect of linkages on the overall extent of resources invested in rent-seeking contests. Q.E.D.

## References

- Amegashie, J. A. (1999). The design of rent-seeking competitions: Committees, preliminary and final contests. *Public Choice*, 99(1), 63–76.
- Appelbaum, E. and E. Katz, 1987, “Seeking rents by setting rents: The political economy of rent seeking,” *Economic Journal* 97: 685–99
- Buchanan, J. M. (1980). Rent seeking and profit seeking. In Buchanan, J. M, Tullock, G. and Tollison, R. D. (Eds.). *Toward a theory of the rent-seeking society*, College Station, TX: Texas A&M Press.
- Buchanan, J. M, Tullock, G. and Tollison, R. D. (Eds.) (1980). *Toward a theory of the rent-seeking society*, College Station, TX: Texas A&M Press.
- Buchanan, J. M., & Congleton, R. D. (1998). *Politics by principle, not interest*. Cambridge UK: Cambridge University Press.
- Choi, S. G., and Storr, V. H. (2019). A culture of rent seeking. *Public Choice*, 181(1), 101–126.
- Congleton, R. D. (1980). Competitive process, competitive waste, and institutions. In J. M. Buchanan, R. D. Tollison, & G. Tullock (Eds.), *Toward a theory of the rent-seeking society*. College Station, TX: Texas A & M University Press.
- Congleton, R. D. (1984). Committees and rent-seeking effort. *Journal of Public Economics*, 25(1–2), 197–209.
- Congleton, R. D. (1988). Evaluating rent-seeking losses: Do the welfare gains of lobbyists count? *Public Choice*, 181–184.
- Congleton, R. D. (2019). The political economy of rent creation and rent extraction. *Oxford Handbook of Public Choice, Vol 1*: pp. 533–549.
- Congleton, R. D., & Hillman, A. L. (2015). *Companion to the political economy of rent seeking*. Cheltenham UK: Edward Elgar Publishing.
- Congleton, R. D., Hillman, A. L., & Konrad, K. A. (Eds.). (2008). *40 years of research on rent seeking*, Heidelberg, DE: Springer-Verlag.
- Congleton, R. D., & Lee, S. (2009). Efficient mercantilism? Revenue-maximizing monopoly policies as Ramsey taxation. *European Journal of Political Economy*, 25(1), 102–114.
- Glazer, A., & Konrad, K. A. (1999). Taxation of rent-seeking activities. *Journal of Public Economics*, 72(1), 61–72.
- Grossman, G. M., & Helpman, E. (1994). Protection for sale. *American Economic Review*, 84(4), 833.
- Hillman, A. L. and Van Long, N. (1987). Hierarchical structure and the social costs of bribes and transfers, *Journal of Public Economics* 34: 129–142.
- Hillman, A. L., & Ursprung, H. W. (2016). Where are the rent seekers?. *Constitutional Political Economy*, 27, 124–141.

- Hillman, A. L. and Van Long, N. (2019). The social costs of contestable benefits. In Congleton, R. D., Grofman, B., and Voigt, S., Eds. *The Oxford Handbook of Public Choice, Volume 1*, Oxford UK: Oxford University Press.
- Konrad, K. A. (2004). Bidding in hierarchies. *European Economic Review*, 48(6), 1301–1308.
- Long, N. V., & Vousden, N. (1987). Risk-averse rent seeking with shared rents. *The Economic Journal*, 97(388), 971–985.
- McChesney, F. S. (1997). *Money for Nothing: Politicians, Rent Extraction, and Political Extortion*. Cambridge MA: Harvard University Press.
- McCormick, R. E., Shughart, W. F., & Tollison, R. D. (1984). The disinterest in deregulation. *The American Economic Review*, 74(5), 1075–1079.
- Mitchell, M. D. (2019). Uncontestable favoritism. *Public Choice*, 181(1), 167–190.
- Olson, M. (1965). *The logic of collective action*. Cambridge MA: Harvard University Press.
- Olson, M. (2022). *The rise and decline of nations: Economic growth, stagflation, and social rigidities*. New Haven CT: Yale University Press.
- Peltzman, S. (1976). Toward a more general theory of regulation. *The Journal of Law and Economics*, 19(2), 211–240.
- Rothschild, C., & Scheuer, F. (2016). Optimal taxation with rent-seeking. *The Review of Economic Studies*, 83(3), 1225–1262.
- Sato, M. (2003). Tax competition, rent-seeking and fiscal decentralization. *European Economic Review*, 47(1), 19–40.
- Stigler, G. J., 1971. The theory of economic regulation. *Bell Journal of Economics and Management Science*, II, 3–21.
- Stigler, G. J. (Ed.). (1988). *Chicago Studies in Political Economy*. Chicago IL: University of Chicago Press.
- Tullock, G. (1980). Efficient rent seeking. In Buchanan, J. M, Tullock, G. and Tollison, R. D. (Eds.). *Toward a theory of the rent-seeking society*, College Station, TX: Texas A&M Press.
- Tullock, G. (2001). Back to the bog. In *Efficient Rent-Seeking: Chronicle of an Intellectual Quagmire* (pp. 59–63). Boston, MA: Springer US.
- Tullock, G. (2013). *The economics of special privilege and rent seeking* (Vol. 5). Heidelberg DE: Springer Science & Business Media.
- Wärneryd, K. (2019). The structure of contests and the extent of dissipation. In Congleton, R. D., Grofman, B., and Voigt, S., Eds. *The Oxford Handbook of Public Choice, Volume 1*, Oxford, UK: Oxford University Press.
- Wouters, O. J. (2020). Lobbying expenditures and campaign contributions by the pharmaceutical and health product industry in the United States, 1999–2018. *JAMA Internal Medicine*, 180(5), 688–697.