How Rent Seeking Can Promote Efficiency

Sam Bucovetsky Amihai Glazer

June 4, 2003

Abstract

If government offers a prize to firms, each may likely lobby to be the beneficiary. The heavy lobbying may signal to government that the prize is too large, inducing government to cancel the policy.

1 Introduction

We usually think of auctions, or of rent-seeking games, or of contests, as determining which person or group will be allocated a good or a prize. Under this view, some mechanisms turn out to be inefficient: the mechanism may fail to allocate the good to the person who most highly values it, or the potential recipients may devote excessive effort to obtaining the good. Much of the literature on rent seeking focuses on such excessive effort. Why such an inefficient mechanism should exist is puzzling. Indeed, with a large number of firms, or with an all-pay auction, rent dissipation can be complete: the aggregate amount firms spend on lobbying equals the value of the prize to the winning firm. So there is little justification for either firms, or government, or voters, to favor such mechanisms. A partial answer to the puzzle may lie in some social benefits arising from competition among firms to win the prize. In this paper we consider an informational benefit.

In particular, we explore the idea that government wants to avoid adopting a project if firms value the prize too highly. For example, firms may ask a government agency to provide import protection. Government may be unsure about the effects of such protection on consumer prices, and be more willing to grant protection if prices will rise little than if they will rise much.

One potential source of information to the government about the effects of the policy is the amount firms spend on lobbying to obtain protection: the more they lobby, the higher prices may rise. Similarly, government may be willing to grant a drug manufacturer immunity from damage suits if it believes that the damages are moderate, but not if they are extreme. Here again, government may rationally believe that the more firms lobby for the policy, the greater the benefits to the firms and the greater the harm to consumers. For another example, suppose government can offer to pay a given price for a given quantity of a good. If the price far exceeds the costs incurred by the firms, then we can think that the value of the prize is too high. If government is confident that the value of the prize is high, it can lower the price it offers to pay for a good, thereby increasing welfare by buying more units, or avoiding the deadweight loss of taxation necessary to raise the money, or using its revenue to support firms in other industries, or avoiding the political costs of allowing private firms to profiteer.

Similarly, suppose government owns a facility that produces a good or service that government needs. A private firm can operate the facility more efficiently than government can, but government is unsure about the potential monopoly power that could be exercised by a private owner (for example, the government may be unsure about the ease of entry into the industry). Government would therefore be more willing to sell the facility the less firms value owning it.

For a final example, suppose the marginal cost of public funds exceeds 1, and that the government owns some income–producing asset. Government may prefer to retain the asset, and so retain the income stream generated, even if private firms could operate the asset more efficiently. Thus, the government may want to hold onto the asset if its value is high, but let the private sector operate it if its value is low.

We will use this final example to present our formal model below. The applicability of the analysis, however, extends beyond this particular example. The only essential element is that the government prefers retaining the asset if its value to firms exceeds some threshold value, and otherwise wants to turn it over to the private sector.

The general idea here thus relates to the market for lemons—the more eager is a party to sell, the more cautious the buyer should be. We turn this around, by supposing that the more eager are firms to obtain some prize, the less willing should government be to give it. This contrasts with conventional

wisdom, which views lobbying as effective (why else would groups lobby?), and so when a group fails to get what it wants, we often read that "despite intense lobbying" government adopted or failed to adopt some policy. For example in 2001 NextWave, Verizon Wireless, and AT&T Wireless intensely lobbied Congress, but it refused to approve an agreement that would have paid NextWave to transfer spectrum rights to the other firms.[1] We would claim that the intense lobbying signaled that the agreement would excessively benefit the firms, and so that congressional support for the agreement declined *because* of the intense lobbying.

This reasoning, however, raises the puzzle of why firms would lobby if it hurts them. The following analysis, shows how. It turns out that under plausible circumstances, the government can benefit from the lobbying or rent-seeking activities of firms: extensive activity correctly signals a higher value of the prize to the firms. The government will use this information against firms, retaining the asset if both firms seek the asset. Nonetheless, firms may more likely make high bids when they know the asset is valuable.

2 Literature

Our paper looks at the information provided by lobbying or rent seeking. In our model the information is provided not by what firms say, but by the number of firms that lobby. Some other literature looks at the information provided by interest groups. The information can concern the importance of the problem a legislator is considering (Hansen (1991), Smith (1995)), the effectiveness of policy (Krehbiel (1991), Smith (1995)), and the electoral consequences of different policies (Kingdon (1984) and Hansen (1991)). Hansen (1991) supposes that reelection-minded legislators are unsure about the policy positions that would best help reelection. They therefore listen to interest groups with private information about constituency opinion, with the interest groups in turn persuading legislators that their political self-interest lies in taking group-friendly positions. Hansen also offers evidence that an organization is granted access by congressmen when it knows more than other

[1]See http://www.wirelessweek.com/index.asp?layout=article&articleid=CA 188950. The NextWave example illustrates, incidentally, the grave problems that can arise with auctions.

potential informants about constituent preferences, issues, and other representatives.

Smith (1984) considers legislators relying on informants who can quickly predict the political consequences of different actions. Hall (2000) argues that legislators give access to organized interests because of the informational subsidies groups provide: lobbyists selectively subsidize the information and legislative labor costs of members who already agree with them. In this way, lobbyists make it possible for a legislator to expend greater effort advancing a policy objective he shares with the group. Legislators in turn act as if they were acting on behalf of the group when they aim to benefit only themselves. Several other papers model legislators who are reelection seekers and who aim to take positions popular in their districts, and groups having private information about district opinion which they strategically transmit to influence the legislator (see Austen-Smith (1993), Austen-Smith and Wright (1992 and 1994), Rasmusen (1993), and Lohmann (1995 and 1998)). The information that legislators seek can also relate to the effects of policy (Lohmann (1995) and Wright (1996)).

Austen-Smith (1995) offers the explanation that contributions signal policy preference. In Lohmann (1995) interest groups pay a contribution to gain access and provide information to the policymaker. The policymaker knows the preferences of the interest groups, and will demand a higher contribution from a group in return for access the more distant are the preferences of the policymaker to those of the group. Glazer and Konrad (1995) consider a firm which lobbies for a tariff partly to signal to other firms that it has low costs, and thus to deter entry.

3 Assumptions

Government offers a prize to firms, without knowing its (common) value to them. Government does know that the value is either High (H) or Low (L), and that the prior probability that the value is High is π. The government values keeping the asset at G_H if its value to the firms is H and values retaining the asset at G_L if its value to the firms is L, with $G_H > H > L > G_L$.

In the "marginal cost of public funds" example mentioned in the Introduction, suppose that $1+m$ is the marginal cost of public funds, and that C rep-

resents the cost advantage of the private sector. Then $G_H = (1+m)(H-C)$, and $G_L = (1+m)(L-C)$, so that the inequalities of the previous paragraph hold if $mH > (1+m)C > mL$.

Each of two firms knows the value of the prize (which is the same for the two firms). Each firm chooses whether to lobby. A firm's fixed cost of lobbying is F.

Lobbying here involve no transfer to the government. The cost F represents expenditure of real resources. A firm which lobbies incurs this cost F whether or not it gets the prize.

If the government awards the prize and if only one firm lobbied, government awards the prize to the firm which lobbied. If the behavior of the firms was identical (both lobbied or neither did), and the government award the prize, then it assigns the prize with equal probability to each firm.

The firms make their lobbying decisions simultaneously, each aiming to maximize its expected profits. (Profits are the value of the prize, times the probability of being awarded the prize, minus any lobbying costs the firm incurred.)

Maximizing the government's expected payoff implies some threshold probability level $\bar{\pi}$. The government should award the prize only if the probability its value is high is $\bar{\pi}$ or less, where

$$\bar{\pi} \equiv \frac{L - G_L}{(L - G_L) + (G_H - H)}. \tag{1}$$

4 Perfect information

Consider first the simple situation with no uncertainty: the government and each of the firms knows that the value of the prize to a firm is V. Suppose that government then grants the prize to whichever firm lobbied more, or chooses between them with equal probability if the two firms chose the same lobbying activity. Is there an equilibrium in which neither firm lobbies? If one firm believes that the other firm will not lobby, then the firm in question will lobby if $V - F > V/2$, or if $F < V/2$. And is there an equilibrium in which both firms lobby? If one firm lobbies, then the other firm will lobby if $V/2 - F > 0$, or $F < V/2$. So if the government is known for sure to grant the prize to some firm, then equilibria with pure strategies exist: either $F < V/2$ and both firms lobby, or $F > V/2$ and neither firm lobbies.

Only in the unlikely case that F exactly equals $V/2$ will the equilibrium have mixed strategies. Thus, in general, the firms adopt pure strategies, which are uninteresting for our purposes.

5 Asymmetric information between firms and government

Consider next the more interesting case where government does not know the value of the prize to the firms, but each firm does. We aim to show that an equilibrium can exist in which each firm uses a mixed strategy, government grants the prize to no firm if both lobbied, grants the prize to the firm that lobbied if only one did, and grants the prize with equal probability to each of the two firms if neither firm lobbied.

To examine the possibility of such an equilibrium, consider first the behavior of firms given that government uses the strategy just described.

5.1 Decisions of firms

It is not obvious that more firms will lobby when the prize has high value. For by lobbying a firm increases its chance of winning the prize if the other firm did not lobby, but will lose the prize if the other firm did lobby. We consider the possibility of each firm adopting the identical mixed strategy, choosing to lobby with probability λ_i (i = High or Low) when the value of the prize is i.

These mixed strategies can maximize profits only if a firm is indifferent about lobbying. If the firm in question does not lobby, it wins the prize only if the other firm did not lobby, and government chooses the firm in question. The firm's expected profit is $(1 - \lambda_i)V/2$. If the firm does lobby then it wins the prize if the other firm did not lobby. (Recall that we are looking at a possible equilibrium in which the government awards no prize if both firms lobby). The firm's expected profit is $(1 - \lambda_i)V - F$. So the firm is indifferent between lobbying and not, or a mixed strategy can exist, if $(1 - \lambda_i)V/2 = (1 - \lambda_i)V - F$, or $\lambda_i = 1 - 2F/V$, which lies between 0 and 1 if $0 < F < V/2$. Thus a necessary condition for the existence of a Nash

equilibrium of this type is that

$$0 < F < \frac{L}{2}. \tag{2}$$

Notice also that λ_i increases with V: the firms will lobby with higher probability when the value of the prize is High than when it is Low. Thus, government can use the number of firms that lobbied as a signal of the value of the prize to the firms. It can be rational for the government to deny the prize if the number of lobbyists is large.

The expected profits of the firms for the given strategy of the government is

$$-2\lambda_i F + V(1 - \lambda_i^2). \tag{3}$$

Substituting for λ_i gives expected profits as $2F$.

Notice that if the fixed costs of lobbying are very low, then both λ_L and λ_H approach 1: lobbying activity would convey little information. Nonetheless, the government may learn enough from observing lobbying behavior, even when F is very small, to benefit from the proposed strategy of awarding the prize only if at least one refrained from lobbying.

5.2 Government's estimate of the value of the prize

We assumed that the government awards the prize only if the probability that its value is $High$ does not exceed a critical value, $\bar{\pi}$. Government uses the (common) prior belief π and its observation of the number of firms that lobbied to generate a posterior estimate of the probability that the value of the prize is $High$. Let the probability that a firm lobbies when it values the prize at i be λ_i. Then the posterior probability that the prize has $High$ value when n firms lobbied is π_i, with

$$\pi_2 = \frac{\pi\lambda_H^2}{\pi\lambda_H^2 + (1-\pi)\lambda_L^2} \tag{4}$$

and

$$\pi_1 = \frac{\pi\lambda_H(1-\lambda_H)}{\pi\lambda_H(1-\lambda_H) + (1-\pi)\lambda_L(1-\lambda_L)}. \tag{5}$$

If the firms choose the mixed strategies discussed in the previous section, so that $\lambda_i = 1 - 2F/V_i$, then we can rewrite (4) and (5) as

$$\pi_2 = \frac{\pi(H-2F)^2H^2}{\pi(H-2F)^2H^2 + (1-\pi)(L-2F)^2H^2} \tag{6}$$

and

$$\pi_1 = \frac{\pi L^2(H-2F)}{\pi L^2(H-2F) + (1-\pi)H^2(L-2F)}. \tag{7}$$

Equations (6) and (7) imply that both π_1 and π_2 increase with F. At the maximum value of F consistent with condition (2), $\pi_1 = \pi_2 = 1$. For lower values of F, π_2 always exceeds π_1. When $F = 0$, $\pi_2 = \pi$ and $\pi_1 = (\pi L)/(\pi L + [1-\pi]H)$. Figure 1 depicts π_2 and π_1 as functions of F when $H = 2$, $L = 1$, and $\pi = \frac{1}{2}$.

The interesting case to consider is when firms have an incentive to lobby, but not too great an incentive. Since government wants to award the prize only if it is not too large, and since it is reasonable to suppose that lobbying increases with the value of the prize, the potentially interesting cases to consider are that government awards the prize only if the number of firms that lobbied is less than or equal to n, with n having the value 0, 1, or 2. The values of 0 and 2 are uninteresting: both firms would always lobby or no firm would lobby, and thus lobbying activity gives no information. So the interesting case has government rationally choose to award the prize after no firm or one firm lobbied, but not to award the prize after both firms lobbied. That is, we ask whether the following inequalities can hold:

$$\pi_2 > \bar{\pi} > \pi_1. \tag{8}$$

The inequality $\pi_0 \leq \pi_1$ always holds. Therefore, an equilibrium will exist in which the government awards the prize unless both firms lobby precisely when condition (8) holds.

5.3 Existence of an equilibrium

The previous two sub–sections give necessary and sufficient conditions for the existence of a Nash equilibrium in which lobbying signals the value of the prize, and in which the government retains the prize if (and only if) both firms lobby.

Given the government's posited behavior, firms will lobby with probability λ_i when the prize has value i, with $0 < \lambda_L < \lambda_H < 1$, if and only if condition (2 holds). The government will choose to award the prize if and only if fewer than two firms lobby if and only if $\pi_1 < \bar{\pi} < \pi_2$, where π_2 and π_1 are defined by equations (6) and (7).

If the lobbying cost F is small, so that both λ_L and λ_H approach 1, then $\pi_2 \to \pi$, and $\pi_1 \to \pi L/(\pi L + (1-\pi)H)$.

At $F = 0$, the requirement that $\bar{\pi} < \pi_2$ is simply that $\bar{\pi} < \pi$: the government would want to retain the asset (or not award the prize) based on prior information. Not surprisingly, if the lobbying cost F is very low, observing both firms lobbying helps little in updating the government's prior belief. The requirement that $\bar{\pi} > \pi_1$ at $F = 0$ must also hold, so that the equilibrium will exist for low values of F whenever

$$\frac{L}{H} < \frac{\bar{\pi}}{(1-\bar{\pi})}\frac{(1-\pi)}{\pi} < 1. \tag{9}$$

Moreover, whenever the left inequality in (9) holds, then for some range of F this equilibrium will exist.

In the "marginal cost of public funds" example, the condition $\bar{\pi} < \pi$ is simply that $m[EV] > (1+m)C$, or that the value of keeping expected rents from the prize in the public sector exceed the cost disadvantage. The condition $\bar{\pi} > (\pi L)/(\pi L + [1-\pi]H)$, necessary for $\bar{\pi} > \pi_1$, becomes

$$mHL < (1+m)C[\pi L + (1-\pi)H]. \tag{10}$$

When $L = H$, condition (10) becomes $m[EV] < (1+m)C$. But whenever $H > L$, for some range of values of C and m (10) holds, and $\bar{\pi}$ still is less than π. For example, if L/H is sufficiently small, then condition (10) must hold.

In general, then, whenever the government prefers retaining the asset, based on its prior beliefs, if the variation in the asset's possible value is large and if lobbying costs are small, then lobbying has informational value. In such circumstances, observing exactly one firm lobbying is a very informative signal that the prize likely has a low value, enabling the government to transfer the asset to the private sector precisely when the government would most benefit from the transfer.

5.4 Interpretations

This paper offered a different interpretation of rent seeking, and more generally of lobbying. Rather than assume that government passively responds to political pressures, we explain how rent seeking can benefit government by providing information about the value of the prize it allocates. Even when extensive rent seeking causes government to award the prize to no one, each firm lobbies because it thereby increases the chance that it rather than the competing firm will win whatever prize is awarded.

We do not claim that ours is the universal explanation for rent seeking, or that rent seeking is the most efficient mechanism for revealing the firms' private information.[2]

But our model can explain why rent seeking is more efficient than the standard view presents, it can explain both when government does and does not award a prize (rather than assuming that it must award the prize to some firm), and it can explain that when excessive rent seeking induces government to cancel a program, firms may limit the amount of their rent-seeking activities.

[2]For example, consider a modified form of a second-price auction for the asset. Define S as any value that lies between $2L$ and let government retain the asset if the sum of bids is less than S. A Nash equilibrium is for each firm to bid L if the value is L, and to bid $S/2 > L$ if the value is H. The equilibrium would be revealing, though government might want to extract the price H after learning that the firms highly value the asset.

6 Notation

F Cost of lobbying

λ_i Probability firm lobbies when value of prize is i

π Prior probability that value of prize is $High$

References

[1] Austen-Smith, David (1993) "Information and influence: Lobbying for agendas and votes." *American Journal of Political Science*, 37: 799-833.

[2] Austen-Smith, David (1995) "Campaign contributions and access." *American Political Science Review*, 89(3): 566-581.

[3] Austen-Smith, David (1998) "Allocating access for information contributions." *Journal of Law, Economics, and Organization*, 14: 277-303.

[4] Austen-Smith, David and John R. Wright (1992) "Competitive lobbying for a legislator's vote." *Social Choice and Welfare*, 9: 229-257.

[5] Austen-Smith, David and John R. Wright (1994) "Counteractive lobbying." *American Journal of Political Science*, 38: 25-44.

[6] Callander, Steven (2002) "Bandwagons and momentum in sequential voting." Working paper, Kellogg Graduate School of Management.

[7] Glazer, Amihai and Kai Konrad (1995) "Strategic lobbying by potential industry entrants." *Economics and Politics*, 7(2): 167-179.

[8] Hall, Richard L. (2000) "Lobbying as legislative subsidy." Presented at the annual meeting of the American Political Science Association, Washington, D.C.

[9] Hansen, John Mark (1991) *Gaining Access: Congress and the Farm Lobby, 1919-81.* Chicago: University of Chicago Press.

[10] Kingdon, John W. (1984) *Agendas, Alternatives, and Public Policy.* Boston: Little, Brown, and Company.

[11] Krehbiel, Keith (1991) *Information and Legislative Organization.* Ann Arbor, MI: University of Michigan Press.

[12] Lohmann, Susanne (1995) "Information, access, and contributions: A signaling model of lobbying." *Public Choice*, 85: 267-284.

[13] Lohmann, Susanne (1998) "An information rationale for the power of special interests." *American Political Science Review*, 92(4): 809-827.

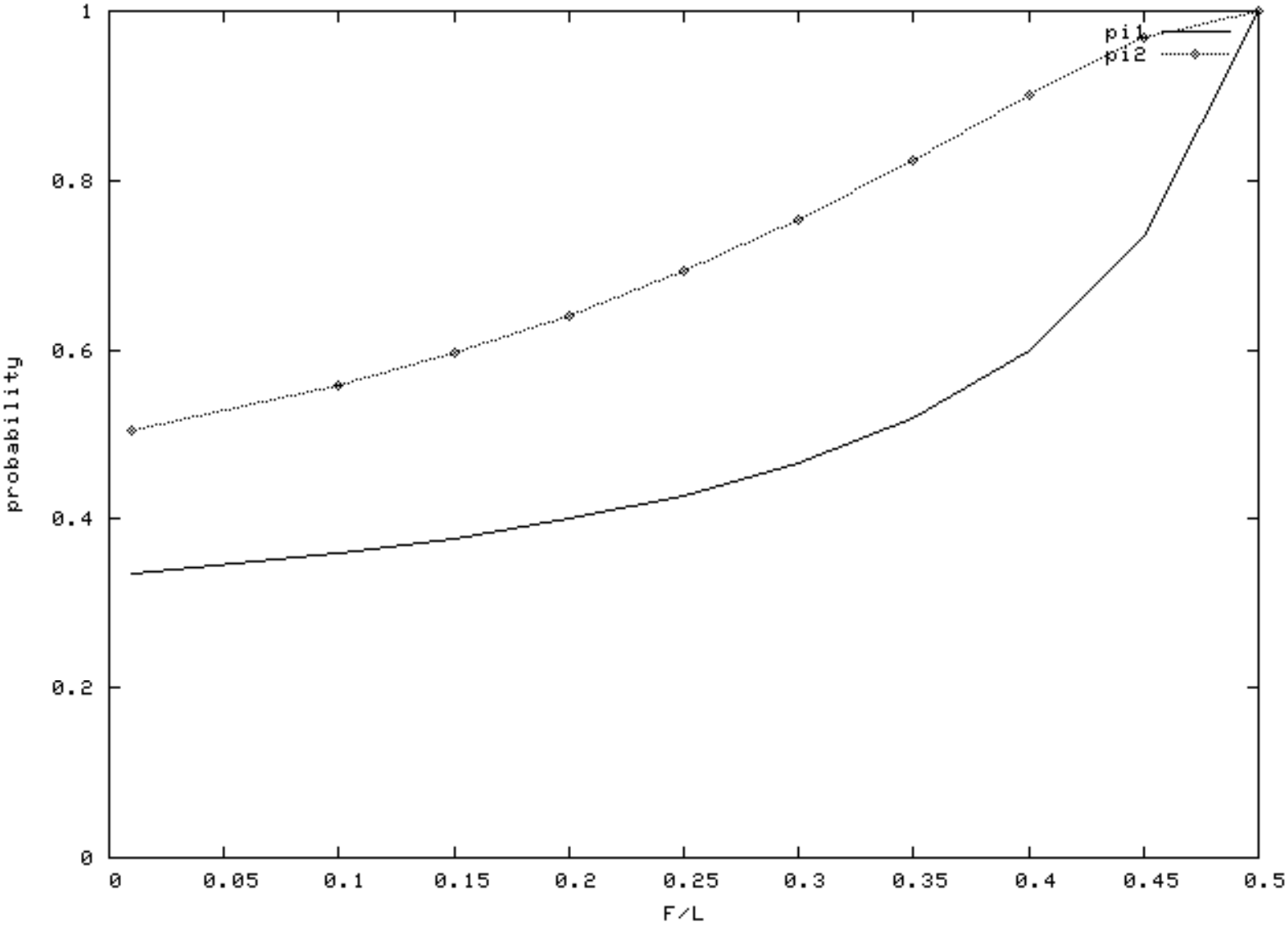
[14] Rasmusen, Eric (1993) "Lobbying when the decisionmaker can acquire independent information." *Public Choice*, 77: 899-913.

[15] Smith, Richard A. (1984) "Advocacy, interpretation, and influence in the U.S. Congress." *American Political Science Review*, 78: 44-63.

[16] Smith, Richard A. (1995) "Interest group influence in the U.S. Congress." *Legislative Studies Quarterly*, 20: 89-139.

[17] Wright, John R. (1996) *Interest Groups and Congress: Lobbying, Contributions, and Influence*. Boston: Allyn and Bacon.

Figure 1


pi1
pi2
probability
F/L
0
0.2
0.4
0.6
0.8
1
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5