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Matthias Dahm
Robert Dur
Amihai Glazer

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Abstract

This paper shows why a majority of legislators may vote for a policy that benefits a firm but harms all legislators. The firm may induce legislators to support the policy by suggesting that it is more likely to invest in a district whose voters or representative support the policy. In equilibrium, no one vote may be decisive, so each legislator who seeks the firm's investment votes for the policy, though all legislators would be better off if they all voted against the policy. Moreover, when votes reveal information about the district, the firm's implicit promise or threat can be credible. Unlike influence mechanisms based on contributions or bribes, the behavior considered is time consistent and in line with the observed small spending by special interests.

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Matthias Dahm
Department of Economics
University Rovira i Virgili
Av. de la Universitat 1
Spain – 43204 Reus
matthias.dahm@urv.cat

Robert Dur
Department of Economics
Erasmus University Rotterdam
H 8-15, P.O. Box 1738
The Netherlands – 3000 DR Rotterdam
dur@ese.eur.nl

Amihai Glazer
Department of Economics
University of California
USA – Irvine, CA 92697
aglazer@uci.edu

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1 Introduction

A special interest, which we will call a firm, is commonly viewed as incurring a cost when lobbying for a policy it favors. But the opposite view, pursued here, can also be fruitful: the voters or politicians seek a favor from the firm, paying for it by supporting a policy the special interest favors.

The behavior we consider was well captured by Lawrence O'Brien, who had served as Special Assistant to presidents John F. Kennedy and Lyndon B. Johnson, as Postmaster General of the United States, and as National Chairman of the Democratic Party. In an oral interview[1] he said

> The NFL [National Football League] enjoyed an excellent relationship with the Congress. Some of it was, however, on the basis of NFL expansion–where the NFL might locate in the future and the constant quest on the part of some members for a franchise location in their state... Over the course of time, expansion was effectively played off against legislation, to the benefit of the NFL...This was an internal matter in the Congress. The league operated directly with the Congress. They could pick their spots and they effectively utilized this leverage that they had... [They held off] decisions on franchises, because if you had a half a dozen to a dozen possible sites and that involved ten or twelve states, you were in a pretty good position.

The analysis below formalizes this idea, supposing that a legislator who votes for a policy a firm wants may thereby attract a firm's investment to his district. If no legislator is decisive, then a single legislator's vote does not determine policy, so that a legislator may vote for the policy the firm favors even if the policy adopted hurts all districts.

Such behavior can explain not only the existence of inefficient policies, but can also explain the puzzle of small spending, which was first discussed by Tullock (1972), who asked why campaign spending then was about $200 million, a sum dwarfed by the hundreds of billions of public spending and regulatory costs supposedly at stake.

Consider later data. In 1998 total contributions by Political Action Committees were only $220 million, of which 35 percent were by corporate PACs.[2]

[1] Transcript, Lawrence F. O'Brien Oral History Interview XVII, 12/17/86, by Michael L. Gillette, Internet Copy, LBJ Library.

[2] Milyo, Primo, and Groseclose 2000.

Further evidence on the limited importance of PAC contributions is given by McCarty and Rothenberg (1996), who analyze contributions from the largest PACs operating during the 1978-1986 election cycles; the mean of non-zero contributions was only $700 for corporate PACs.

Spending has of course increased over time. In the 1989-1990 election cycle, candidates running for the U.S. Senate and the U.S. House of Representatives spent a total of $283 million. Across all U.S. elections in 2004, total spending was about $4 billion.[3] Total spending in the 2010 midterm elections in the United State, including spending by political parties, congressional candidates, and independent groups, was about $4 billion.[4]

But not all this spending is by firms seeking special benefits, and this spending is trivial compared to federal spending on rescuing firms during the Great Recession, such as over $500 billion committed under the Troubled Asset Relief Program.[5]

Nor is there consistent evidence that contributions much influence how legislators vote. Some evidence for an effect is given by Stratmann (2005), who finds that an extra $10,000 in banking contributions increases the likelihood of a House member voting in favor of the banking industry by approximately eight percentage points. The timing of interest group contributions, with some coming just before important roll-call votes, also suggests that special-interest groups attempt to influence legislative voting.[6]

Other evidence is in sharp contrast. A review of nearly forty studies by Ansolabehere, de Figueiredo, and Snyder (2003) finds the estimated effects of campaign contributions to be either statistically insignificant or to have the wrong sign in roughly 75% of the cases. Regressions they estimate in which the dependent variable is the roll-call score produced by the Chamber of Commerce, and explanatory variables include corporate campaign contributions, show thin evidence that campaign contributions much influence congressional votes.

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[3]Stratmann 2005.

[4]Danielle Kurtzleben "$4 billion in election spending a drop in the bucket." *http* : *//www.usnews.com/news/articles/*2010/11/09/4 − *billion* − *in* − *election* − *spending* − *a* − *drop* − *in* − *the* − *bucket.html* downloaded December 29, 2010.

[5]Nor is the size of illegal contributions large. Investigations following the Watergate scandal found that twenty-one companies made illegal contributions in 1972, totaling only $968,000; the largest one was made by Northrop for a mere $150,000 (Alexander 1980).

[6]Stratmann 1998.

2 Literature

Special interest groups may influence legislators by buying influence and also by informing policymakers. Our analysis relates to both.[7]

2.1 Lobbies buy influence

A classic analysis of how special interests may influence public policy is Tullock (1980), who considers rent-seeking contests. In these contests policy makers are modeled through a contest success function which translates a special interest's spending on influencing policy to the probability that government adopts the policy it favors. This approach, as usually postulated, suffers from a commitment problem: once rent-seeking efforts are exerted, the utility-maximizing choice for a policymaker need not be to choose policy in accord with the probability specified by the contest success function.[8] Rent extraction (McChesney 1987), in which politicians obtain payments from a firm by threatening that in the absence of the payment the firm will be faced with costly taxes or regulations also suffers from a commitment problem—if the firm does not make the payments demanded, then, in the absence of reputational considerations, the government may not gain from imposing the costs on the firm.

A different approach considers menu auctions (see Grossman and Helpman 1994). The model is usually applied to determine the value of a continuous policy variable government will set in response to payment from firms in affected industries. Each firm is assumed to make an (implicit) offer relating prospective contributions to the policies chosen by the government. The government then sets a policy vector (Grossman and Helpman 1994 consider a set of import and export taxes).

This approach suffers from two weaknesses, that our approach overcomes. First, a menu auction effectively considers bribery, which in most democra-

[7] Other models that combine both strands of literature are Bennedsen and Feldmann (2006), and Dahm and Porteiro (2008a and 2008b). In these models special interests choose between providing policy-relevant information or engaging in non-informational influence activities (such as by making campaign contributions).

[8] Analyzing a game with two rent seekers, Corchón and Dahm (2010) show that some contest success functions can be derived as a utility-maximizing choice from a setting in which rent-seekers are uncertain about the type of politician. Corchón and Dahm (2011) derive contest success functions without the commitment assumption. See also the literature reviewed in these papers.

cies is illegal, and is often unpopular with voters. Second, it assumes that each firm can commit to a payment. But, of course, after the government sets policy, each firm would gain by reneging on the promised payment. Nor does it appear that policymakers punish special interests: McCarty and Rothenberg (1996) find that incumbents do *not* punish lobbying groups who had not supported them (or who had supported their opponents) in a prior election.

In a menu auction, firms commit to contingent payments, and in equilibrium pay the policy maker. A different strategy, examined by Dal Bó (2007), can have the firm influence policy while paying almost nothing: if a strong majority of legislators can be induced to vote for the firm's policy, then no legislator is decisive, and therefore each is indifferent between voting for and against the policy. The firm can then induce legislators to support it by committing to pay a legislator if and only if he casts a *decisive* vote in its favor.

Our paper builds on Dal Bó (2007) in examining behavior when a vote is not decisive. But we differ in several ways. We let a legislator's reward be the same when his vote is decisive as when it is not. In his paper legislators face a multilateral prisoner's dilemma, whereas in our paper they do not. We thus allow legislators to have greater incentives to cooperate (and to reject the firm's policy). Such cooperation makes it more difficult for a firm to get its way, and in this sense our paper offers a stronger result. Our stronger result comes, however, at the cost of more limited applicability because in general legislators do not have a dominant voting strategy. So in contrast to Dal Bó (2007) our result does not hold under sequential voting. Moreover, our analysis requires some different assumptions because it explores how politicians want to influence lobbyists rather than the other way around. As a result we consider time-consistent behavior, whereas Dal Bó has special interests that must commit to contingent payments.

2.2 Lobbies inform legislators

Our discussion of lobbying relates to literature which considers how lobbyists may inform policymakers. 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).

A legislator who is uncertain about what policy positions would best help reelection may listen to interest groups with private information about

constituency opinion, with the interest groups in turn persuading a legislator that his political self-interest lies in taking group-friendly positions.[9] Data indeed show that organizations are granted access by congressmen when the organizations know more than other potential informants about constituent preferences, issues, and other representatives.[10]

Relatedly, legislators may grant access to organized interests because of the informational subsidies groups provide (see Hall 2000): lobbyists selectively subsidize the information and legislative labor costs of members who already agree with them. Lobbyists can thus make it easier for a legislator to work more on a policy objective she has in common with the group. Legislators in turn act as if they were working for the group, when instead they work only to benefit themselves. The information that legislators seek can also relate to the effects of policy (Lohmann 1995, and Wright 1996).

We differ from this strand of the literature by looking at the opposite path, how votes inform firms. Empirical support for our assumption that policy can signal a jurisdiction's type appears in Raff and Srinivasan (1998), who suppose that a firm which is initially uncertain about business conditions in a host country may infer that a government which offers tax incentives signals favorable business conditions. The data they report are consistent with a signaling model which predicts that tax incentives correlate positively with country risk and with the degree of openness.

A firm could also become informed by asking each legislator whether his district favors the firm's investment. A legislator's answer is cheap talk (see Crawford and Sobel 1982), with information credibly revealed because no district has an incentive to lie. It is in the firm's interest, however, to invest preferentially in districts that support the policy the firm favors, as this allows the policy the firm favors to be approved. Suppose further that the firm will favor a district that votes for the tariff over a district which merely says that it wants the firm to invest in that district. Then it cannot be an equilibrium for districts to merely state that they favor the investment, rather than voting for it. For if fewer than a majority of districts vote for the tariff, then any one district which wants the investment strictly prefers to vote for the tariff rather than merely engage in cheap talk. And the same holds if a majority of districts vote for the tariff. Note further, that the firm

[9]For works arguing that special interests inform legislators about political consequences of legislative votes, see Smith 1984, Hansen 1991, Austen-Smith 1993, Austen-Smith and Wright 1992 and 1994, Rasmussen 1993, and Lohmann 1995 and 1998.

[10]Hansen 1991.

loses nothing by claiming that it will favor a district that votes for the tariff over a district that merely says it wants the investment. And so the firm's strategy is credible.

2.3 Local benefits

Our consideration of benefits to a district or group relates to work which supposes that a leader of a group can induce turnout by granting members of his group private benefits.[11] How legislators can obtain local benefits is discussed by Bernheim, Rangel, and Rayo (2006), who analyze legislative policy making when the default policy changes from period to period, and the agenda setter in each period offers a policy that depends on past policies. Under such conditions, a majority may support a pork-barrel policy that hurts almost every legislator. This result resembles ours in the sense that (almost) all legislators would be better off if there were no vote. However, the institution Bernheim, Rangel, and Rayo (2006) examine differs from ours, and so has different voting incentives. In particular, we let a legislator who votes for a tariff win a reward independently of whether the policy is adopted; that is not true in the pork-barrel setting. Another important difference is that, unlike us, Bernheim, Rangel, and Rayo (2006) assume that legislators vote sincerely, as if each was always pivotal. We allow a legislator to recognize that his vote may not be decisive.

3 Assumptions

There is one special interest, or firm. It favors a policy (say a tariff) that would give it a benefit of F, at a cost of C to each of the $n > 2$ districts. To make the problem interesting, suppose the net benefit of the tariff for society is negative: $F - nC < 0$. Indeed, we can make the stronger assumption that the tariff is bad even when confined to a mere majority of districts: $(n+1)C/2 > F$.[12]

[11] See Uhlaner (1989) and Schwartz (1987), who discuss a "local public benefit" to a group which increases with the number of votes the winner received from that group. Lapp (1999), however, testing the model, finds little empirical evidence that ethnic leaders can increase turnout among their followers.

[12] For brevity, we take n to be an odd number.

The firm contemplates an investment, say a new factory. In each district, voters, or their legislator, may view the investment as either good (giving a benefit of g) or as bad (imposing a cost of b).[13] Voters may favor the investment because it creates jobs or increases incomes. Voters may oppose the investment because of environmental concerns. Again, we are interested in situations with $C > g$: the benefit to the district from the investment is less than the cost to it of the tariff. Notice that this implies that voters would prefer that there were no vote on the tariff and no investment by the firm.

Denote the number of districts that favor the investment by m, where m is at least as large as a majority of districts plus one, or $m \geq 1+(n+1)/2$. To simplify the notation, the consequences of investment in a district is denoted by $\pi \in \{-b, g\}$. A legislator from a district with consequence g favors the investment; a legislator from a district with consequence $-b$ opposes it.

The firm prefers to invest in a district favoring the investment rather than a district opposing it. The firm, however, is initially unaware of the views in each district; it only knows the proportion $\gamma = m/n$ of districts favoring the investment, which is common knowledge. The legislator from each district knows whether he or his district would gain or lose from the investment.[14] This is a simple set-up in which the firm may learn from how a legislator votes. The information may refer to the preferences of voters, but the preferences of politicians might be more important. At the time of an election voters may not have thought about attracting a firm, and no polls were then taken on the subject. So a firm cares deeply about what the political class thinks—smart politicians can figure out what voters want, or a selfish politician may consider how an investment will change the composition of the electorate and so election outcomes.

For several reasons the firm may prefer to invest in a district favoring the

[13]The firm may invest with probability less than 1. The values of g and b can then be taken as expected values.

[14]In Subsection 6.1 we relax the assumptions that $m \geq 1 + (n + 1)/2$ and that the proportion of districts favoring the investment is common knowledge. We could also describe our setting as follows. First, nature assigns types to legislators (so that with probability γ a legislator favors the investment) and each legislator knows his type. This implies that m could be very low and our assumption on m just says that we focus on realizations in which m is high. Then, each legislator gets a perfect signal concerning the other legislators' types. The firm does not receive this signal. Under this interpretation Subsection 6.1 investigates robustness when neither legislators nor the firm receive a signal and $m \geq 1 + (n + 1)/2$ does not need to hold.

investment. The firm may want a favorable business climate, where it will face little litigation, will easily secure environmental and zoning approvals, and so on. Or the firm may prefer to locate in a district where many workers (and so, by implication many voters) would want to work at such a firm: it could then offer a lower wage, choose from a larger pool of workers, enjoy the productivity benefits of high morale, and so on. Moreover, empirical evidence shows that support from a local politician can much increase a firm's profits.[15] The behavior of the firm in our model thus differs from offering bribes. We usually think of a bribe as costly to the briber, whereas we have a firm take an action (invest in a district that favors it) from which the firm benefits.

Each legislator votes for or against the tariff. The tariff is adopted if a simple majority of legislators, with one legislator per district, votes for it.

The timing of the game is as follows:

1. Each legislator recognizes whether an investment by the firm would benefit or harm him.
2. A legislator votes for or against the tariff.
3. If a majority of legislators vote for the tariff, it is imposed.
4. The firm chooses where to invest, independently of whether the tariff is imposed.
5. Payoffs are realized.

4 Benchmark result

As in many other voting situations, the one studied here has many equilibria. One equilibrium is particularly compelling. Our approach is therefore to characterize this equilibrium quickly and to postpone the analysis of other equilibria.

To do so we simplify the analysis in this section in two ways. First, we assume that the firm infers that a legislator who votes for the tariff comes from a district which favors the investment; we check informally when this

[15] Faccio and Parsley (2009) show that the sudden death of a politician causes a 1.7% decline in the value of companies headquartered in the politician's home town. This decline is followed by a decline in the rate of growth in sales and a decline in access to credit.

inference is consistent with how legislators vote. This simplification allows us to look at Nash equilibria of a simultaneous voting game rather than at Perfect Bayesian equilibria of the whole game, and will be relaxed later (in Subsection 5.4).

Second, the focus is on a symmetric equilibrium with pure strategies. "Symmetry"here means that each legislator who favors the investment uses the same strategy as that used by the other legislators favoring the investment, and similarly for every legislator who opposes the investment.[16] The next section extends the analysis to consider asymmetric pure-strategy equilibria (in Subsection 5.1) and symmetric mixed-strategy equilibria (in Subsection 5.2).

Consider a legislator's voting decision. Denote by k the number of other legislators voting for the tariff, and remember that $\pi \in \{-b, g\}$ indicates the district's payoff from the investment. In two situations the legislator's vote is not pivotal, that is, the collective decision is independent of any one legislator's vote. And so in neither situation does the legislator's vote affect whether the cost C of the tariff is imposed. But a legislator who votes for the tariff may attract the firm's investment to his district.[17] In the first situation the legislator in question knows that, excluding himself, a majority of legislators vote against the tariff, that is, $k \leq (n-3)/2$.[18] Here a legislator strictly prefers voting for the tariff if and only if

$$\frac{\pi}{k+1} > \begin{cases} 0 & \text{if} \quad k > 0 \\ \frac{\pi}{n} & \text{if} \quad k = 0 \end{cases} \tag{1}$$

If all legislators vote against the tariff, the firm learns nothing, and chooses randomly where to invest.

In the second situation, the legislator in question knows that, excluding himself, a majority of legislators vote for the tariff, that is, $k \geq (n+1)/2$,

[16]Obviously, we do not require a legislator favoring the investment to use the same strategy as a legislator opposing the investment, with the labels 'voting for' and 'voting against' swapped.

[17]Strictly speaking, we assume that a district that does not want the investment cannot prevent the firm from locating in the district. Incorporating such a veto power, Proposition 1 below still holds, although the strategy of the legislators from districts that oppose the investment is then weakly dominant.

[18]Note that, by definition of n and k, $n-k-1$ other legislators vote against the tariff, which constitute a majority if $n-k-1 \geq (n+1)/2$, implying $k \leq (n-3)/2$.

implying that a legislator strictly prefers to vote for the tariff if and only if

$$\frac{\pi}{k+1} - C > -C. \tag{2}$$

Note that equations (1) and (2) are equivalent when $k > 0$. The intuition is, simply, that in either case the legislator is not pivotal and so all that matters is how his vote affects the legislator's expected benefit from the firm's investment. On the other hand, when $k = (n-1)/2$ the legislator's vote is pivotal and the legislator's vote matters for both the approval of the tariff and the firm's decision where to invest. Here a legislator votes for the tariff if and only if

$$\frac{\pi}{k+1} - C > 0, \tag{3}$$

or, since $k = (n-1)/2$, $2\pi/(n+1) - C > 0$. Intuitively, a pivotal legislator votes for the tariff only if possible gains from increasing the chance of attracting the firm's investment outweigh the cost of the tariff to his district.

Consider a legislator who dislikes the investment ($\pi = -b$). From the above equations (1), (2) and (3), we see that voting against the tariff is a strictly dominant strategy.

Now consider a legislator who favors the investment ($\pi = g$). By analogous reasoning, when $C/g < 2/(n+1)$, voting for the tariff is a strictly dominant strategy. For higher values of C/g voting for a tariff is not the dominant strategy.

Consider, however, the following voting profile in which each legislator who favors the investment votes for the tariff, and each other legislator uses his strictly dominant strategy to vote against the tariff. By our assumption on m, at least $(n+1)/2$ other legislators vote for the tariff. Therefore no legislator's vote is decisive and the trade-off in equation (2) is relevant. Hence, a legislator favoring the investment votes for the tariff. The result can hold even if the district gains very little from the investment, either because the benefits of the investment are small, or because only with small probability will the firm invest anywhere at all. Nor does the result require that each district whose legislator votes for the tariff have an equal chance of attracting the investment; the result does require that a district is more likely to attract the investment if its legislator votes for the tariff than if he votes against.

The legislators' votes are consistent with the firm's inference. If a legislator favoring the investment votes for the tariff, whereas a legislator opposing the investment votes against the tariff, then the firm will rationally conclude

that it would profit more by investing in a district whose legislator voted for the tariff than by investing in a district whose legislator voted against it. Thus, indeed, the firm is more likely to invest in a district whose legislator voted for the tariff.

Note also that it is not an equilibrium for all legislators to vote against the tariff: no legislator would be decisive, and a legislator could then attract the investment to his district by voting for the tariff (see equation (1) with $k = 0$).[19]

We summarize with

Proposition 1 *There exists a unique pure-strategy symmetric Nash equilibrium to the simultaneous voting game. In this equilibrium all legislators who favor the investment vote for the tariff; all other legislators vote against the tariff, and the tariff is approved. If the benefits to the districts that favor the investment is sufficiently high, that is, if* $C/g < 2/(n+1)$*, then this equilibrium is in strictly dominant strategies.*

Of course, after the tariff is adopted and the investment is made, legislators may want to end the tariff. The firm may therefore favor a policy which is not easily reversed; for example, the tariff may appear as an amendment to an international environmental treaty which imposes sanctions on non-complying countries, or control over trade barriers may be delegated to an agency which is expected to favor the firm. And if the firm is expected to make further investments in future periods, the logic presented here would also apply to votes on ending a tariff—the equilibrium may have a majority of legislators oppose ending a tariff.

Following the logic given by Grossman and Helpman (2005), the behavior we consider applies to majoritarian systems, where a legislator knows local conditions, and wants to benefit his own district. But it does not well apply to countries using proportional voting, where parties compete nationally. We would therefore predict higher tariffs in countries with majoritarian systems than in countries with proportional systems. That is the pattern found by Evans (2009) and by Hatfield and Hauk (2010) in their empirical studies. As a further test, our model would not predict high tariffs on agriculture, because agriculture does not move from district to district. And indeed,

[19]Besides the two voting profiles described above, two other symmetric strategy profiles are candidates for an equilibrium. Each, however, requires legislators who do not favor investment to use a strictly dominated strategy.

Evans and Obradovich (2009) find that majoritarian systems do not show a bias towards agricultural tariffs.

Measuring social welfare by the sum of the utilities of the districts and of the firm, we easily see that the outcome can be inefficient. In the unique equilibrium, a majority vote for the tariff—the firm gains F, while the districts collectively lose nC. The inefficiency arises because for efficiency the benefits and costs of the tariff matter (F and C), but in equilibrium each legislator bases his vote on his district's gain or loss from attracting the firm's investment ($\pi \in \{-b, g\}$). For the same reason, there might be an inefficient equilibrium in strictly dominant strategies.[20]

The preceding supposes that votes on the tariff allow the firm to benefit from matching the firm's investment location to a district favoring the investment. If the benefits from good matches are low as compared to the net costs of the tariff, then the inefficiency is not reversed.[21] We state this result with

Proposition 2 *If the welfare costs of the tariff are sufficiently high, that is if C is high in comparison to F, then the outcome of the collective decision is inefficient.*

5 Other equilibria

The benchmark result demonstrated the existence of an equilibrium in which the legislature adopts a tariff which all districts oppose. This section considers other equilibria. There can exist an asymmetric equilibrium in pure strategies in which the tariff is not adopted, and a sequential equilibrium in which the tariff is not adopted. An equilibrium exists in which legislators who dislike the investment vote for the tariff, and legislators who favor the

[20] To see that an equilibrium with a dominant strategy is compatible with an inefficiency, consider the example in which $g = F = 1$. It must hold that $F/n < C$ and $C/g < 2/(n+1)$. These expressions define a non-empty interval for C described by $1/n < C < 2/(n+1)$. But, of course, when the inefficiency becomes increasingly severe, the equilibrium is no longer in dominant strategies.

[21] This argument can be made precise. Denote by F^m the firm's benefits from a successful match. In the unique equilibrium, social welfare is $F - nC + F^m + g$. Suppose the alternative is that a vote on the tariff is not held, and that the firm decides randomly where to invest. Then $\gamma(F^m + g) + (1-\gamma)(-b)$. If $(1-\gamma)(F^m + g + b)$ is smaller than $-(F - nC)$, the inefficiency is not reversed.

investment vote against the tariff. And there exists a symmetric equilibrium in mixed strategies in which the tariff is adopted with positive probability. We discuss these possibilities below, but argue that the one established in Proposition 1 often describes reality: we do not argue that government will always adopt a policy that hurts all districts, but rather that under some plausible conditions it may.

5.1 Asymmetric pure-strategy equilibria

Equilibria with asymmetric pure strategies can appear when $C/g \geq 2/(n+1)$. To see this, consider the strategy profile where $k = (n-1)/2$ legislators favoring the investment vote for the tariff and all others vote against, so that the tariff is rejected. Here legislators opposing the investment use a strictly dominant strategy. The legislators voting for the tariff are not pivotal and following equation (1) behave optimally. A legislator favoring the investment and voting against the tariff is pivotal. As captured in equation (3), such a legislator also behaves optimally.

But even allowing for equilibria with asymmetric pure strategies, the solution in Proposition 1 remains an equilibrium and can explain why a legislature adopts an inefficient policy though lobbying expenditures are very low.

The relevant question is then which equilibrium is more likely to appear. We think it is the symmetric one, because in an asymmetric equilibrium legislators of the same type behave differently. The asymmetry requires explaining why some legislators can preempt others and free-ride on the negative vote of other legislators. In other words, asymmetric behavior by legislators should be based on some underlying asymmetry among legislators which should be modeled explicitly. A natural explanation would be a sequential voting procedure. We consider this institutional arrangement in Subsection 5.3.

5.2 Symmetric mixed-strategy equilibria

An equilibrium can also have each legislator who favors the investment vote for the tariff with positive probability less than one. By voting for the tariff he would trade off the increased chance of attracting the investment with the increased probability that the inefficient tariff will be adopted.

Consider a given legislator who favors the investment. Suppose that each of the other $m-1$ legislators favoring the investment votes for the tariff with probability x, and that all legislators opposing the investment vote against the tariff. If the legislator votes for the tariff, then for all realizations of the other legislators' mixed strategies his district has a chance of attracting the investment. Moreover, when enough legislators vote for the tariff, the cost C is incurred. More precisely, expected payoffs are given by

$$\sum_{k=0}^{m-1} \binom{m-1}{k} x^k (1-x)^{m-1-k} \frac{g}{k+1} - \sum_{k=\frac{n-1}{2}}^{m-1} \binom{m-1}{k} x^k (1-x)^{m-1-k} C.$$

On the other hand, a legislator who votes against the tariff would attract the firm's investment to his district only when all other legislators vote against. Here also the cost C must be incurred—but only when there are enough votes for the tariff excluding the legislator's vote. Expected payoffs are thus

$$(1-x)^{m-1} \frac{g}{n} - \sum_{k=\frac{n+1}{2}}^{m-1} \binom{m-1}{k} x^k (1-x)^{m-1-k} C.$$

A legislator favoring the investment is indifferent between voting for and against the tariff if and only if the expected benefits of attracting the firm's investment for all the possible realizations of the other legislators mixed strategies equal the expected benefits of voting against the tariff when the legislator is pivotal. Formally, we have that

$$(1-x)^{m-1} \frac{n-1}{n} g + \sum_{k=1}^{m-1} \binom{m-1}{k} x^k (1-x)^{m-1-k} \frac{g}{k+1}$$

must equal

$$\binom{m-1}{\frac{n-1}{2}} x^{\frac{n-1}{2}} (1-x)^{m-1-\frac{n-1}{2}} C.$$

Since this equation involves binomial coefficients, the general case is difficult to solve. But by fixing n and m we can solve explicitly for the symmetric mixed-strategy equilibria. We find that a mixed-strategy equilibrium exists only if C/g is sufficiently high. However, there then also exist two mixed-strategy equilibria (implying that the total number of symmetric equilibria is three).

The equilibria have very different comparative statics. For the first equilibrium (denoted by x_1), an increase in the ratio C/g reduces the probability

a legislator votes for the tariff; in the second equilibrium (denoted by x_2) the opposite holds.[22] Figure 1 shows these equilibria for $n = m \in \{3, 9, 25\}$. We see that, for these values, as n increases the mixed-strategy equilibria converge to zero and one, respectively.[23] Thus, even under the extension of mixed-strategy equilibria, with positive probability inefficient legislation is approved.

5.3 Sequential voting

When the benefits to the districts from the investment are sufficiently small compared to the cost of the tariff, the equilibrium is not in dominant strategies. In such a case, our result requires that voting be simultaneous, and this subsection shows that sequential voting can avoid inefficient collective decisions. We argue, however, that sequential voting is rare in practice.

Suppose that legislators vote in an exogenously given order. We find a subgame-perfect equilibrium by backward induction. Consider the legislator voting last. Depending how preceding legislators voted, either equation (1), (2), or (3) captures the voting situation. Notice that a legislator who opposes the investment strictly prefers to vote against the tariff. A legislator who favors the investment and is not pivotal votes for the tariff; otherwise he votes against.

Consider now the penultimate legislator. Anticipating the choice of the legislator voting last, the legislator votes for the tariff if he both favors the investment and his vote is not pivotal; otherwise he votes against. Since this

[22] It seems that x_1 is a more appealing equilibrium than x_2, because it is plausible that as legislation becomes more inefficient it is less often approved. There are further reasons to focus on x_1. Consider $n = 3$ and suppose x_1 and x_2 exist. Denote by $A(x)$ and $B(x)$ the expected payoffs from voting for and against the tariff, respectively, when the other two legislators vote for the tariff with probability x. We have that $A'(x) < 0$, $A''(x) > 0$, $B'(x) < 0$, $B''(x) < 0$, and $A(0) > B(0) > A(1) > B(1)$. Hence, $A(x)$ and $B(x)$ intersect twice (at x_1 and at x_2), and expected payoffs are strictly higher at x_1. Another reasoning could be based on a simultaneous version of Cournot's tatonnement process, adapted to symmetric mixed-strategy equilibria. Consider an equilibrium $\hat{x}$ to be (locally) stable if given a collective mistake in which everyone mixes with probability $\hat{x} + m$, where $m \in \{-\epsilon, \epsilon\}$ with $\epsilon > 0$. Then for all legislators $A(\hat{x} + m) > B(\hat{x} + m)$ if $m < 0$, and $A(\hat{x} + m) < B(\hat{x} + m)$ if $m > 0$. Similarly, consider an equilibrium $\hat{x}$ to be (locally) unstable if for some legislator the opposite inequality holds. Given how $A(x)$ and $B(x)$ intersect, x_1 is stable, whereas x_2 is unstable.

[23] Further simulations for higher n yield chaotic mixing probabilities, which could be due to rounding of values in the computer program Mathematica.

behavior holds for all legislators going backwards through the voting game, we see that no pivotal legislator votes for the tariff. All legislators favoring the investment vote for the tariff until just one vote is missing to approve the tariff. All other legislators vote against. Observe that when voting is sequential, at least one legislator is pivotal. This never happens under the simultaneous procedure.

It is also straightforward to see that this solution is unique. We summarize with

Proposition 3 *Under sequential voting there exists a unique subgame perfect equilibrium, in which the tariff is rejected. In this equilibrium, of the legislators favoring the investment, only the first* $(n-1)/2$ *in the voting order vote for the tariff; all others vote against.*

Sequential voting can avoid the inefficient collective decisions. But sequential voting appears rare. Even voting procedures that at first sight appear sequential are effectively simultaneous. For instance, the U.S. House of Representatives employs several voting procedures. Under the roll-call vote congressmen cast votes as their names are called. Since calling over four-hundred names is very time consuming, this method is rarely used. A similar method exists in the U.S. Senate. However, in both the House and the Senate under these procedures a vote can be changed while the vote remains open, so voting is effectively simultaneous.

5.4 The firm's beliefs about a district's type

We so far assumed that the firm infers that a district whose legislator voted for the tariff favors the investment. This assumption simplified the analysis by allowing us to look at Nash equilibria of the simultaneous voting game rather than at Perfect Bayesian equilibria of the whole game. This inference, however, is not the only possibility.

In a Perfect Bayesian equilibrium the legislators and the firm all behave optimally, given their beliefs about the others' actions; these beliefs are, in equilibrium, correct. Notice first that the equilibrium established in Proposition 1 is still an equilibrium when we endogenize the firm's beliefs in this way, because we already checked informally that the firm's inference is consistent with the voting behavior of the legislators.

But other equilibria exist. Consider the following possible equilibrium. All legislators who favor the investment vote against the tariff, while all others

vote for the tariff. The firm infers that a district whose legislator voted for the tariff opposes the investment, so that the firm invests in a district whose legislator voted against the tariff. Clearly, the firm's inference is consistent with the legislators' voting behavior. Moreover, given this inference and this voting profile, at least $1 + (n+1)/2$ legislators vote against the tariff. Therefore equation (1) becomes

$$0 \quad > \quad \frac{\pi}{h+1}, \tag{4}$$

where h is the number of other legislators who vote against the tariff. This inequality implies that all legislators behave optimally and that this profile is indeed an equilibrium. Moreover, this equilibrium is efficient.

Thus, depending on the beliefs of the firm, in one equilibrium the legislature approves the tariff, and in another equilibrium it does not. So in one sense the beliefs of the firm determine (partially) the equilibrium. Given that the firm wants the tariff, it has an incentive to manage legislators' beliefs so as to induce the inefficient equilibrium.

Another argument in favor of the equilibrium in Proposition 1 rests on the plausible belief that votes correlate with attitudes toward the firm due to other, unmodeled, aspects of the payoffs. Suppose legislators want to establish a consistent voting record reflecting the preferences of the district represented. Consider a legislator representing a district that opposes the investment who in the alternative equilibrium must vote in favor of the tariff. Such a vote in favor yields zero payoffs, while a vote against the tariff gives the benefit of a consistent voting record at the risk of attracting the firm to the district. If the former is high, the cost of the investment b is low, or many other legislators vote against the tariff, then a deviation from the alternative equilibrium is profitable, while the equilibrium in Proposition 1 is not affected.

6 Extensions

The existence of an equilibrium in which the legislature adopts a tariff which all districts oppose continues to hold under varying conditions. This section considers several extensions. We allow for each legislator to be unsure about the preferences of other legislators, for a district favoring the investment to offer additional incentives to the firm to invest there, for capital mobility, for

a secret ballot, and for retrospective voting. Under all these extensions, an equilibrium in which the tariff is adopted continues to exist. Thus, rather than giving new substantive results, this section shows that our conclusion is robust.

6.1 Uncertainty about other legislators' types

Here we extend the analysis to allow each legislator to be unsure about how many other legislators favor the investment. Let each legislator believe that any other legislator favors the investment with probability γ. In the following we establish values of γ for which it is an equilibrium for all legislators favoring the investment to vote for the tariff and for all others to vote against.

Consider a legislator who favors the investment. Suppose all other legislators favoring the investment vote for the tariff, while all other legislators use their strictly dominant strategy and vote against the tariff. A legislator who votes for the tariff trades off the increased chance of getting the investment with the increased probability that the tariff is approved and the costs C must be incurred. More precisely, expected payoffs are

$$\sum_{k=0}^{n-1} \binom{n-1}{k} \gamma^k (1-\gamma)^{n-1-k} \frac{g}{k+1} - \sum_{k=\frac{n-1}{2}}^{n-1} \binom{n-1}{k} \gamma^k (1-\gamma)^{n-1-k} C.$$

On the other hand, a legislator who votes against the tariff could attract the firm's investment only if all other legislators vote against the tariff. In addition, the cost C is imposed when even without the vote of the legislator in question a majority vote for the tariff; that is

$$(1-\gamma)^{n-1} \frac{g}{n} - \sum_{k=\frac{n+1}{2}}^{n-1} \binom{n-1}{k} \gamma^k (1-\gamma)^{n-1-k} C.$$

The legislator strictly prefers to vote for the tariff if and only if

$$0 < \Delta(\gamma) := (1-\gamma)^{n-1} \frac{n-1}{n} g + \sum_{k=1}^{n-1} \binom{n-1}{k} \gamma^k (1-\gamma)^{n-1-k} \frac{g}{k+1} - \binom{n-1}{\frac{n-1}{2}} \gamma^{\frac{n-1}{2}} (1-\gamma)^{\frac{n-1}{2}} C.$$

The following Proposition says that in many circumstances the previous inequality holds, implying that Proposition 1 is robust to the introduction of 'noise.'

Proposition 4 *For any C, g, and n, there exists a $\hat{\gamma} \in [1/2, 1)$ such that for all $\gamma \in [\hat{\gamma}, 1]$, it is an equilibrium for each legislator who favors the investment to vote for the tariff, while all other legislators vote against.*

Proof. Notice that $g(n-1)/n > g/n$ and $g/(k+1) \geq g/n$, for all $k = 1, 2, \ldots, n-1$. Hence,

$$\Delta(\gamma) \;>\; \frac{g}{n} \;-\; \binom{n-1}{\frac{n-1}{2}} \gamma^{\frac{n-1}{2}} (1-\gamma)^{\frac{n-1}{2}} \, C \;:=\; \hat{\Delta}(\gamma).$$

Notice that $\hat{\Delta}(\gamma)$ is continuous and differentiable. Moreover, it attains a unique minimum at $\gamma = 1/2$ and we have $\hat{\Delta}(\gamma = 0) = \hat{\Delta}(\gamma = 1) = g/n$. Suppose that $\hat{\Delta}(\gamma = 1/2) \geq 0$. Then choose $\hat{\gamma} = 1/2$. Suppose $\hat{\Delta}(\gamma = 1/2) < 0$. Then there exist two values, γ_1 and γ_2 with $0 < \gamma_1 < 1/2 < \gamma_2 < 1$, such that $\hat{\Delta}(\gamma_1) = \hat{\Delta}(\gamma_2) = 0$. In this case choose $\hat{\gamma} = \gamma_2$. *Q.E.D.*

6.2 Tax breaks and other inducements to invest

In our benchmark analysis, a legislator can attract the firm's investment only by voting for the tariff. But districts compete for investments in additional ways, for example, by giving tax breaks.

To consider such an extension, we suppose that a legislator's preferences or constituency may sometimes differ from that of a local official who engages in lobbying—the two types may be elected at different times, have faced different turnouts, or be elected from jurisdictions of different sizes. Let the firm prefer to invest in a district whose legislator and local officials all favor the investment. Such joint support may increase the firm's confidence that voters support the investment, or may be necessary for the firm to navigate political constraints. Moreover, if the legislator knows the attitudes of other officials in the jurisdiction, he will vote for the tariff only if the local official will also offer the firm benefits.

Thus, the firm will not invest in a district whose legislator voted against the tariff. Districts whose legislators voted for the tariff compete simultaneously with one another to attract the firm's investment. District i offers to pay the firm e_i if the firm locates in the district.

We find a subgame-perfect equilibrium by backward induction. Notice that in the last stage a district that opposes the investment sets $e_i = 0$, as incentives are costly. Denote the number of districts obtaining access and lobbying (actively) for the investment by l. Let the lobbying stage be described by the following assumption.

Assumption 1 *The lobbying stage has a unique symmetric equilibrium, with the following holding for each district which has access:*

- *A district favoring the investment exerts effort $e_i^*(g,l)$, with $\partial e_i^*(g,l)/\partial l > 0$, and obtains an expected payoff of $u(g,l) > 0$.*
- *A district opposing the investment exerts effort $e_i^*(-b,l) = 0$ and obtains an expected payoff of $u(-b,l) \leq 0$.*

Building on Yates (2011), who analyzes a winner pay contest and interprets his model as two states attracting a manufacturing plant through a package of tax and other incentives, we give an example which fulfills Assumption 1. Consider a district indexed by i; denote the sum of the efforts of the other districts by $E = \sum_{j \neq i} e_j$. Assume that after the competition each district's chance of attracting the investment is described by the simple ratio contest success function $e_i/(e_i + E)$.[24] In contrast, however, to a standard contest, only the district that attracts the investment incurs the cost of its effort (or pays the firm the incentive offered). Under these assumptions district i maximizes

$$\frac{e_i}{e_i + E}(g - e_i).$$

In the unique equilibrium with symmetric pure strategies of the contest game, a district that favors the investment chooses $e^*(g,l) = g(l-1)/(2l-1)$ and obtains an expected payoff of $u(g,l) = g/(2l-1) > 0$. A district that opposes the investment chooses $e^*(-b,l) = 0$ and receives $u(-b,l) = 0$.

Assume that the firm grants access in the second stage to all districts whose legislators voted for the tariff, because, on one hand, the firm will not invest in a district whose legislator voted against the tariff and, on the other hand, equilibrium effort in the third stage increases with the number of active competitors. If all legislators vote against the tariff, then the firm grants access to all districts.

[24] If all districts with access offer no incentives, we assume that all districts have the same win probability $1/h$, where h is the number of districts with access.

Such behavior implies that in the initial voting stage equation (1) becomes

$$u(\pi, l) > 0 \quad \text{if } k > 0 \text{ and} \tag{5}$$
$$\pi > u(\pi, m) \quad \text{if } k = 0, \tag{6}$$

where again k denotes the number of other legislators who vote for the tariff. On the other hand, equations (2) and (3), become

$$u(\pi, l) - C > -C \quad \text{and} \tag{7}$$
$$u(\pi, l) - C > 0. \tag{8}$$

Notice that for a legislator who opposes the investment, ($\pi = -b$), it is now a weakly (rather than strictly) dominant strategy to vote against the tariff, as a district can now signal its opposition to the firm's investment by setting $e_i = 0$ in the contest stage.[25]

Again we search for equilibria with symmetric pure strategies. We start with the voting profile in which all legislators favoring the investment vote for the tariff, and all others use their weakly dominant strategy and vote against the tariff. Consider legislators who favor the investment. By assumption at least $(n+1)/2$ other legislators vote for the tariff. Thus, no individual's vote is decisive and the trade-off in equation (7) is relevant. Because the district gains from access, its legislator does better by voting for the tariff than by voting against. The firm is strictly worse-off if access is allocated to fewer districts and would not invest in a district whose legislator voted against the tariff. As before the voting behavior is consistent with the firm's inference.[26]

As in the benchmark, it is not an equilibrium for all legislators to vote against the tariff. For if they did, a legislator who deviated by supporting the tariff would have his district the only one to gain access and would be sure of attracting the investment (see equation 6).

[25]Contrary to the benchmark, when $u(-b, l) = 0$ it is now an equilibrium for all legislators to vote for the tariff. A legislator who opposes the investment might vote for the tariff because his district does not compete actively at the lobbying stage and, thus, will not attract the firm's investment. Anticipating this, he is indifferent between voting for and against the tariff.

[26]Notice that even if at the last stage competition is very fierce and the firm can appropriate all the rent from matching to a district favoring the investment, it is still an equilibrium for a legislator who favors the investment to vote for the tariff. If the lobbying stage is modeled as a first-price auction, in the undominated pure strategy Nash equilibrium $u(g, l) = 0$, see Alcalde and Dahm (2011). That is, any one legislator gains nothing from voting against the tariff when a majority of other legislators vote for it, and might as well vote for it.

6.3 Capital mobility

A central assumption is that a firm can make a choice that benefits one district more than another. An obvious such choice is where to invest. We would then expect a firm to exert more political influence if capital is mobile than if it is not. We would not expect, for example, a mining company in Wyoming to threaten to move its mine to Rhode Island.

But whereas capital mobility within a nation can increase a firm's political influence, international capital mobility may reduce it. Consider outsourcing of call centers, and suppose that some districts in the country want to attract such jobs. If each district believes that the firm will find lower costs in India than anywhere in the U.S., no U.S. district could attract the jobs by supporting a policy the call-industry favors. Similarly, increased capital mobility across member states of the European Union should reduce the political power of special interests within each state, but increase the power of special interests when dealing with the European Commission or with the Council of Ministers.

It turns out that for this reasoning to hold it is crucial that no legislator can attract the investment by supporting the tariff. If—returning to the example of call centers—there is an arbitrarily small probability that the firm invests in the U.S., our result is robust.

Suppose a firm can invest in either of two countries, indexed by 1, 2. The countries vote simultaneously on the tariff and then the firm decides where to invest. The firm prefers to invest in a country that approved the tariff. So, if one country approves the tariff (denoted by A), while the other rejects it (denoted by R), investment probabilities p are 1 and 0, respectively. If both approve or reject the tariff, each has a strictly positive probability of attracting the firm's investment. So denoting by $d_i \in \{A, R\}$ the countries' decisions and by n_c the total number of districts in country c, we have

$$p_1 = \left\{ \begin{array}{rll} \hat{p}_1^A \in \left(\frac{1}{n_1+n_2}, 1-\frac{1}{n_1+n_2}\right) & \text{if} & d_1 = d_2 = A \\ \hat{p}_1^R \in \left(\frac{1}{n_1+n_2}, 1-\frac{1}{n_1+n_2}\right) & \text{if} & d_1 = d_2 = R \\ 1 & \text{if} & d_1 = A \text{ and } d_2 = R \\ 0 & \text{if} & d_1 = R \text{ and } d_2 = A \end{array} \right\}$$

and $p_2 = 1 - p_1$.

Consider the voting decision of a legislator in country i. Denoting by k_c the number of other legislators who vote for the tariff in country c, equations

(1), (2) and (3), become

$$p_i \frac{\pi}{k_i+1} > \left\{ \begin{array}{rll} 0 & \text{if} & k_i + k_j > 0 \\ \frac{\pi}{n_i+n_j} & \text{if} & k_i + k_j = 0 \end{array} \right\} \tag{9}$$

$$p_i \frac{\pi}{k_i+1} - C > -C \quad \text{and} \tag{10}$$

$$p_i \frac{\pi}{k_i+1} - C > 0. \tag{11}$$

Notice that when country j rejects the tariff, equations (10) and (11) coincide with equations (2) and (3). Note also that for a legislator who dislikes the investment ($\pi = -b$), it is now a weakly dominant strategy to vote against the tariff.

Consider again symmetric pure-strategy equilibria and start with the voting profile in which all legislators favoring the investment vote for the tariff, and all others use their weakly dominant strategy to vote against the tariff. Consider a legislator who favors the investment. By assumption, at least $(n_i + 1)/2$ other legislators vote for the tariff. Therefore no individual's vote is decisive and the trade-off in equation (10) is relevant. Since $p_i > 0$, for each legislator who favors the investment voting for the tariff is strictly better than voting against it. As before, this is the unique symmetric equilibrium and the voting behavior is consistent with the firm's inference.

Proposition 5 *There is a unique pure-strategy symmetric Nash equilibrium. In this equilibrium each legislator who favors the investment votes for the tariff; each other legislator votes against the tariff. Both countries adopt the tariff.*

Notice, lastly, that the introduction of capital mobility worsens the outcome compared to the benchmark. Both countries pass inefficient legislation, though the firm will invest in only one. Thus, capital mobility within a nation and international capital mobility can increase a firm's political influence and the inefficiency of political decisions.

6.4 Secret ballot

Capital mobility can also be used by a firm to overcome the difficulty that under a secret ballot it does not know how any one legislator voted.

Consider the setting of the previous subsection. Denote by h_c the number of legislators who vote for the tariff in country c. Contrary to the previous assumption, suppose that $\hat{p}_1 = h_1/(h_1 + h_2) = 1 - \hat{p}_2$, when $h_1 + h_2 > 0$ and $\hat{p}_1 = 1/2$ otherwise. Notice that Proposition 5 is not affected by this alternative assumption, if votes are public.

Assume that the greater the number of legislators who voted for the tariff, the more likely is the firm to invest in the country at all; for example as specified in $\hat{p}_1$. Because the firm does not know how any legislator voted, if the firm invests it chooses a location at random. Thus the greater the number of legislators who voted for the tariff, the greater the profitability of the investment for a district that favors the investment. Consider a legislator who wants the investment in his district. Increased support for the tariff increases the probability that any particular district will get the investment. It is not an equilibrium for all legislators who favor the investment to vote against the tariff. And it is an equilibrium for them to vote for.

6.5 Retrospective voting

Our approach can also work if voters vote for candidates retrospectively rather than prospectively. That entails less sophistication or strategic voting by voters, relying instead on the sophistication of elected officials who seek reelection.

Modify the previous assumptions by supposing that voters in a district are more likely to re-elect an incumbent the greater their welfare during his term before the election. Then in those districts where voters favor the investment the incumbent can increase his chances of winning re-election by voting for the tariff, thereby increasing the chances that the firm will invest in his district.

7 Conclusion

In contrast to standard approaches to lobbying which view special interests as seeking favors from voters or their representatives, we reversed this structure: we let legislators seek a favor from the firm and in return support a policy the firm favors.

This explanation of political influence has several attractive features. It is consistent with the observed low level of spending by firms on political

influence. It is consistent with firms obtaining benefits without the need to bribe legislators; the behavior explored here may dominate direct bribery not only because bribery is more costly and illegal. Indeed, a firm desiring to learn the political preferences of a district may not want to bribe the incumbent legislator. For if the firm did and he voted for the tariff, the firm would not learn whether his district favors the industry and the investment.

In contrast to standard theories of influence, the equilibria we described are time consistent—legislators may vote for an inefficient policy, and the firm can indeed have an incentive to invest in a district whose legislator voted for the tariff. An additional attraction of our approach is that it can apply to multi-dimensional policies, for instance several tariffs for different industries decided upon at the same time. Though the cost from a given tariff to a district may be higher when other tariffs are imposed, our results hold, since they hold for any level of these costs.

The behavior we described can apply to policies other than tariffs or to incentives other than new investment. What is important is that an outside party reward a vote for the policy. This outside party may consist of voters, when congressmen seek to establish a particular voting record in order to run for higher office. Our model then suggests that congressmen may vote for a policy which they prefer be rejected, and that all the congressmen would be better off if they jointly agreed to oppose the policy. Another example is a federal rescue program designed to save a firm threatened by bankruptcy. The favor that voters seek could then be to avoid closure of branches, that is, disinvestment rather than investment in the district.

A similar argument can apply to corruption. A corrupt mayor may tell each voting bloc or district that he will favor it if they vote for him, and otherwise will not. An equilibrium is for each district to support the incumbent, corrupt, mayor. For if any one district voted against the mayor, and the mayor had to prioritize service, then he may well give the district that opposed him a lower priority. The district would therefore not have affected the election, but would have hurt itself.

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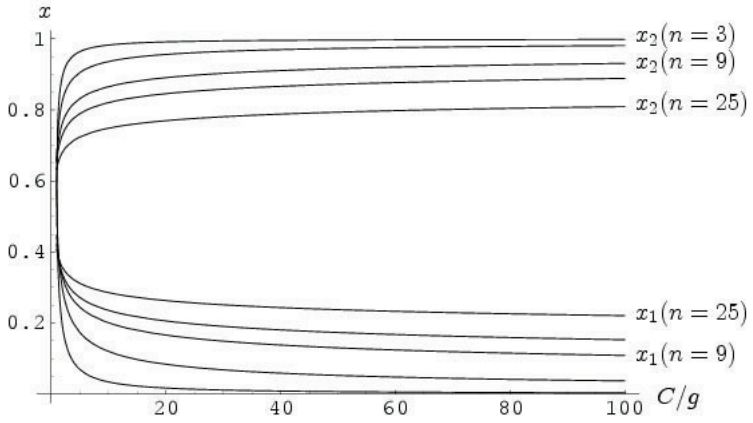

Figure 1: Mixed-strategy equilibria for $n = m \in \{3, 9, 25\}$.