

INTEREST GROUP ACTIVITY AND
GOVERNMENT GROWTH:
A CAUSALITY ANALYSIS
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The special interest group model of government, employed throughout public choice theory, models the outcomes of government as a function of special interest group activity. Early work in this area by authors such as Stigler (1971) and Peltzman (1976) focused on the role of interest groups in securing regulation beneficial to the regulated industry. Subsequent formulations—including McCormick and Tollison (1981), Yandle (1983), Mueller and Murrell (1986), Shughart and Tollison (1986), Becker (1983), Sobel (2004), and Holcombe (1999)—use the interest group model to explain not only a wide variety of individual government programs and policies, but also the overall growth of government spending.¹ Even the passage of child labor laws has been attributed to interest groups such as owners of steam-driven mills, physicians, and teachers.²

In contrast, the large literature on rent seeking beginning with the seminal paper by Tullock (1967), and continuing with the contributions of Krueger (1974) and Posner (1975), explains how interest

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¹See Ekelund and Tollison (2001) for a comprehensive review of this literature.

²See Marvel (1977); Anderson, Ekelund, and Tollison (1989); and Ekelund and Tollison (2001).

groups will expend resources to capture the economic rents created by government policies. In its most basic form, the argument goes that when a \$20 bill is up for grabs through a bidding process, the maximum amount of resources a group would devote to capturing that gain is \$20. Whether the rents *created by* government policy are over, under, or perfectly dissipated has been the subject of debate and exploration, but the general consensus is that the amount of rent seeking that is visibly measured is far less than would be expected given the size of government rents up for capturing (i.e., the “Tullock paradox”), although some of this differential may be explained by less visible and hard to measure in-kind rent-seeking activities.³ But merely the idea that rent-seeking activity falls below what would be expected *given* the transfers created by government implies a direction of causality in the opposite direction of the literature on the special interest group theory of government. Some extensions within this literature actually model government as trying to maximize the opportunities for politicians and regulators to “rent extract.”⁴ In this literature, governments pick policy targets and regimes that maximize the amount of rent seeking created by their actions.

Far from being a purely academic exercise, the ambiguity of the implied direction of causation between interest group activity and the size of government has both social and policy implications. On the policy side, reformers who want to slow the growth of government can be broken into two camps. The first is those who want to constrain interest group activity *as a route* to lowering government spending. Suggesting that campaign finance reform or PAC disclosure rules, for example, would be an effective way to help get government spending under control is an argument that takes for granted that it is the interest group activity that causes government spending. If the causality worked in the opposite direction, these types of reforms would be ineffective as the total rents created by policy would remain unchanged, and the means of competing for them would simply change to other avenues similar to how under rent controls side payments for items such as furniture could be used to compensate the landlord in alternate means. In other words,

³See Tullock (1980, 1989, 1997, 1998); Tollison (1982); Mateer and Lawson (1995); Mixon, Laband, and Ekelund (1994); Mixon (1995); and Sobel and Garrett (2002).

⁴See McChesney (1987), Shleifer and Vishny (1998), and Frye and Shleifer (1997).

if government spending causes interest group activity in the vein of the rent-seeking model, these reforms would simply be ineffective as they target the consequence not the cause. On the other side are those who suggest that we can curb interest group activity and rent seeking by limiting the power and spending of government through items such as constitutional restrictions, a line-item veto, or a balanced budget amendment, for example. By constraining government spending, this argument holds, there would be less interest group activity. But this conclusion relies on the direction of causality: if interest groups cause government, and not vice versa, the only means to constrain government is to first constrain interest group activity.

Nowhere is this causal distinction more blurred than in the current debates about the significant 25 percent increase in lobbying and interest group activity in the 2007–2010 period and how it relates to the federal government’s greatly expanded budget including the \$700 billion Troubled Asset Relief Program (TARP) program in October 2008, and the \$797 billion “fiscal stimulus” legislated in the 2009 American Recovery and Reinvestment Act (ARRA). Lobbying by the finance, insurance, and real estate sectors alone has been over \$450 million per year since 2008. The industry now has approximately 2,500 individual registered federal lobbyists and increased donations directly to federal political campaigns from \$287 million during the 2006 election cycle to \$503 million during the 2008 election cycle. Other sectors, such as energy, have followed similar paths of this period, with a 66 percent increase in federal lobbying expenditures, over 2,200 registered federal lobbyists, and increases in campaign contributions from \$51 million during the 2006 election cycle to \$81 million during the 2008 election cycle (Center for Responsive Politics 2013). Office space in Washington, D.C., has now become the highest priced in the country and many businesses have opened or moved their offices to the Washington, D.C., area, and the popular logic clearly relies on an argument that these responses have been *caused* by the expansion in government activity.⁵ Thus, while some argue that programs such as TARP have *caused* the increase in bank lobbying, others argue that it was the increase in bank lobbying that *caused* the passage of TARP (Allison 2013).

⁵See Cho, Mufson, and Tse (2009); Clabaugh (2010); and Lewis (2010).

Interestingly, while the so-called “Occupy Movement” and conservative/libertarian leaning scholars both argue against what they see as a large recent increase in bailouts and crony capitalism, the root cause each group identifies can be separated by the direction of causality. Followers of the “Occupy Movement” blame big, well-funded corporations and the political activity they fund for an out of control government, while the other side blames the out of control government for the rise in crony activity among firms.

The recent strand of literature on productive and unproductive entrepreneurship first elaborated by Baumol (1990, 1993, 2002), and expanded by Boettke (2001), Boettke and Coyne (2003), Coyne and Leeson (2004), and Sobel (2008), not only incorporates the government causes interest group logic, but provides it a theoretical underpinning. In this literature, the allocation of a society’s entrepreneurial talent between productive, market-based entrepreneurship and unproductive political and legal entrepreneurship (e.g., lobbying) is driven by the relative profitability of the two activities, which is a function of the quality of a country’s institutions. In countries with institutions providing secure property rights, a fair and balanced judicial system, contract enforcement, and effective limits on government’s ability to transfer wealth through taxation and regulation, the returns to unproductive entrepreneurship are low, while the returns to productive market entrepreneurship are high, thus causing fewer resources to be devoted toward interest group activity. In areas without strong institutions, entrepreneurial individuals are instead more likely to engage in attempts to manipulate the political or legal process to capture rents as the returns to unproductive activity are relatively higher. Again, in this literature it is the actions and undertakings of government that come first, and the amount of political interest group activity and lobbying is simply a consequence caused by the policies of government.

Of course, it is clearly possible that *both* are true—that is, bi-directional causality. Exogenous changes in government spending may subsequently cause changes in interest group activity, while exogenous changes in interest group activity may subsequently cause changes in government spending. This simultaneous equations-type logic implies a theoretical relationship similar to the relationship between club membership and output modeled in Buchanan’s (1965) “Theory of Clubs” in which there is an optimal membership for every given club output, and an optimal club

output for every given club membership size, and only one point at which both are simultaneously satisfied. Here, however, the argument would be that for every given level of government spending there is some optimal level of interest group activity that dissipates these rents, while for every given level of interest group activity there is a level of government spending produced by that special interest group activity, and an equilibrium would be reached at the point where both relationships are simultaneously satisfied. Under bidirectional causality, the problem of growing government and interest group activity can be effectively controlled by changes to either side, implying that constraints on government and restrictions on interest group activity both potentially can be effective tools.

In this article, we present a theoretical and empirical treatment of this issue of the direction of causality. We begin with the presentation of models that capture each side of the argument individually, and also a bidirectional simultaneous equation model. We then continue with an empirical examination of data on government spending and interest group activity to see if the nature of the causality can be identified empirically employing Granger Causality tests. We use data on total federal expenditures and two different measures of interest group activity, expenditures on lobbying, and the payroll of political organizations in Washington, D.C., and confirm the presence of a bidirectional causal relationship.

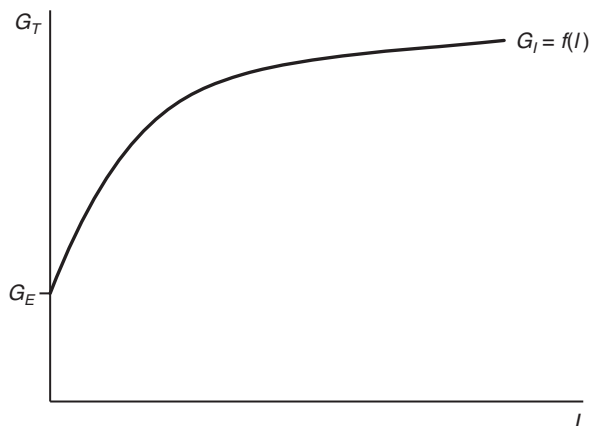
The Competing Models: A Theoretical Framework

In this section, we outline models for each of the three possibilities (two of one-direction causality, but with causality flowing in opposite directions, and a bidirectional simultaneous equation model).

The interest group causes government framework may best be thought of within a production function framework. That is, interest group activity is exogenous, and it produces government spending. In the remainder of this article, we use the notation I to refer to the value of resources devoted to interest group activity, and G_I to refer to the level of government action/spending caused by interest group activity. The production function approach may be thought of therefore as:

$$(1) G_I = f(I), \text{ where } G_I' > 0, \text{ and } G_I'' < 0.$$

FIGURE 1
INTEREST GROUP ACTIVITY PRODUCES/CAUSES
GOVERNMENT SPENDING



As with any production process, output increases with additional inputs, but at a decreasing rate, so therefore $G'_I > 0$, and $G''_I < 0$. In many respects, this can be viewed equivalently to Becker's (1983) formulation of the process of the production of political pressure. In Equation (1) above, G'_I is the marginal productivity of interest group activity in generating additional government spending or activity. G'_I itself is obviously a function of many well-known parameters including the cost of organizing, cost of controlling free-riders, the size of the group, and various aspects and legal limits on lobbying and campaign finance.⁶

Allowing for the possibility of other government spending that is not caused by interest group pressure, for example, "exogenous" noninterest group spending, denoted G_E , where $G_E \geq 0$, allows for a total level of government activity/spending of $G_T = G_I + G_E$. Graphically, this relationship is now depicted in Figure 1.

We now turn to the second case, in which government spending causes interest group activity per a rent-seeking-type model. In this framework, the level of interest group activity (I) is a function of the total level of government spending (G_T) such that:

$$(2) \quad I = f(G_T), \text{ where } I'_G > 0, \text{ and } I''_G < 0?$$

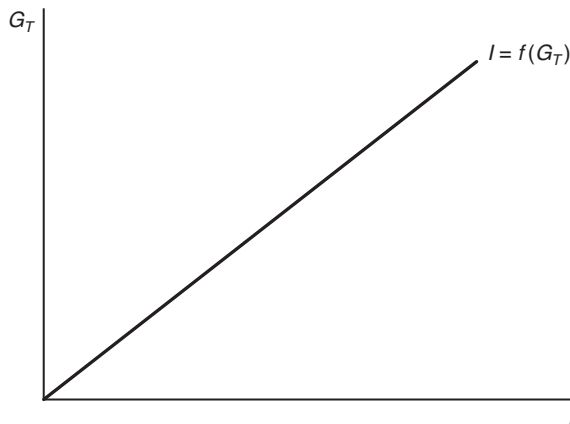
⁶See, for example, Olson (1965) and Becker (1983).

Interest group activity should be increasing in government spending, therefore $I'_G > 0$. The exact structure of this function, and the second derivative in particular, are not as obvious and deserve explicit discussion. Starting from a naïve view, let's assume that government spending is always fully and perfectly dissipated, such that if the government spends \$2 billion, then \$2 billion in interest group activity will be caused to dissipate or compete for the rent at stake. In this simple framework, $I = G_T$ and the two have identical values, implying a relationship depicted by a 45 degree line in a graph (and $I'_G = 1$). While there are many alternative theoretical game-theory models of the rent-seeking process, the most frequently used assumption is from the one-shot simultaneous move pure strategy Nash equilibrium in which each of the two players expends one-fourth of the total rent at stake, thus creating a total rent-seeking expenditure of all parties of one-half the total rent at stake.⁷ If one wished to use that assumption, the relationship depicted graphically would again be a straight line, but with a slope of one-half. In addition, using a formulation more closely related to Baumol (1990, 1993, 2002), one would want to specify that there should be some normal rate of return (zero economic profit) built into this relationship, in a present value form. This by itself would make the slope less than one as the investment must generate a normal rate of return at a minimum. Staying generalized, we assume nothing of the slope, but offer the possibility that the slope will depend on the rate of rent dissipation. Essentially, the line will be a line representing the level of interest group activity required such that the rent-seeking industry is in zero economic profit (risk-adjusted) equilibrium.

Complicating the relationship is that, viewed on a large scale, the rent-seeking industry may be either a decreasing cost, constant cost, or increasing cost industry. In the constant cost case, the line representing the relationship will be linear, $I''_G = 0$. However, if the industry is either an increasing or decreasing cost industry, then the relationship will be nonlinear. In the case of increasing cost, $I''_G > 0$ while in the case of a decreasing cost industry, $I''_G < 0$. While we allow for and consider all possibilities within our model, for current purposes, no loss of generality will result from continuing with the simple linear exposition that would be associated with a constant cost industry, and a constant ambiguous, but positive, slope in the

⁷See Godwin, López, and Seldon (2006) for a review.

FIGURE 2
GOVERNMENT SPENDING PRODUCES/CAUSES INTEREST
GROUP ACTIVITY



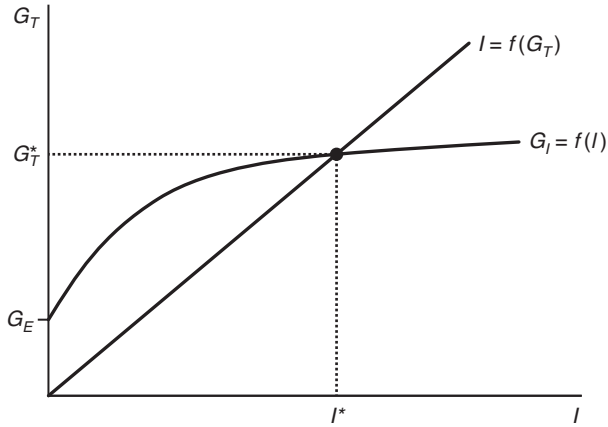
range 0 to 1. Such a relationship is illustrated in Figure 2. Note that we have set the intercept to zero in Figure 2, but that one could also include an intercept into this relationship, without altering the general results we derive.

The final possibility is the case of bidirectional causality. Here both relationships must be satisfied simultaneously. That is, the value of resources devoted to interest group activity that is required for the zero economic profit, rent-dissipation equilibrium *given* the level of government spending must also satisfy the condition that that level of government spending is the amount produced by that *given* level of interest group activity. This is equivalent to the framework of the model in Buchanan's (1965) "Theory of Clubs" in which there is an optimal club membership for every given level of club output, and also an optimal club output for every given club membership size, and only one point at which both are simultaneously satisfied. Graphically, this is shown in Figure 3 when the relationships from the two previous figures are combined.

To illustrate the nature of this bidirectional process, let's consider two situations in which the equilibrium relationship shown in Figure 3 is not satisfied. These are illustrated in Figure 4.

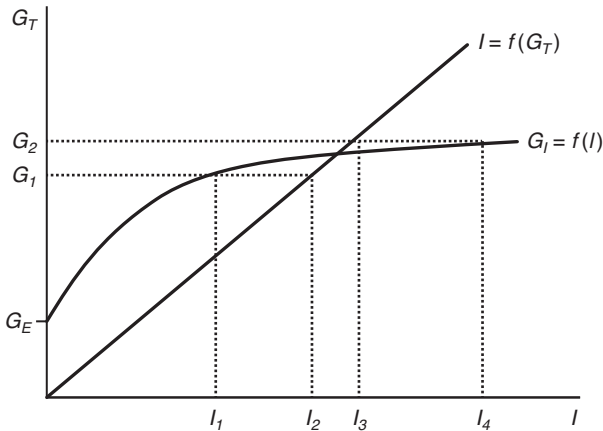
First, consider a level of interest group activity equal to I_1 . This level of interest group activity would produce a level of government

FIGURE 3
 BIDIRECTIONAL CAUSALITY EQUILIBRIUM



spending equal to G_I which can be found by moving up vertically to the line representing $G_I = f(I)$ and continuing horizontally to the left vertical axis at G_I . This is not an equilibrium, however, because at the level of spending G_I there is disequilibrium in the rent-seeking market in that there are excess economic profits. According to the rent-seeking relationship $I = f(G_T)$, the level of rent seeking required to appropriately dissipate (zero economic profit) that level of spending

FIGURE 4
 DISEQUILIBRIUM SITUATIONS



would be I_2 which can be found by moving horizontally from G_1 to the line representing the relationship $I = f(G_T)$. Therefore, due to the excess profits, additional interest group activity would enter the industry. Resources would move away from productive private market entrepreneurship into unproductive political entrepreneurship in the public sector. As this happens, it also produces additional government spending, and the movement continues until the equilibrium at the intersection of the two lines depicted in Figure 3 is achieved.

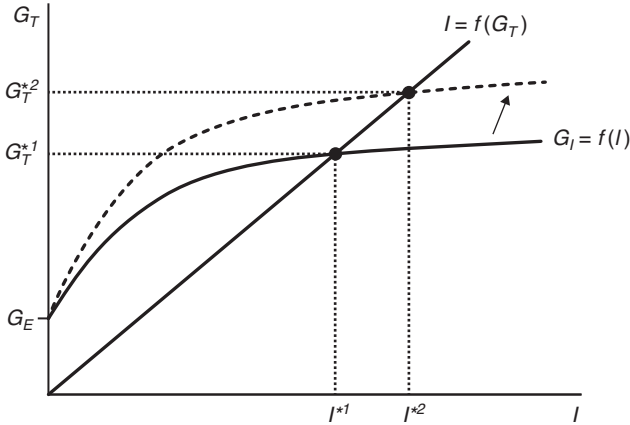
Similarly, consider a level of interest group activity equal to I_4 . This level of interest group activity would produce a level of government spending equal to G_2 . This is not an equilibrium because at the level of spending G_2 there is again disequilibrium in the rent-seeking market in that there are below-normal economic profits (i.e., economic losses). According to the rent-seeking relationship $I = f(G_T)$, the level of rent seeking required to appropriately dissipate (zero economic profit) that level of spending would be I_3 . Therefore, due to the losses, interest group activity would shrink, resources would move away from unproductive entrepreneurship back into productive entrepreneurship in the private sector. According to the production relationship, as the level of interest group activity falls, so does the level of government spending it produces, and the movement continues until the equilibrium at the intersection of the two lines depicted in Figure 3 is again achieved.

Using the Model to Understand Recent Expansions in Government Spending and Interest Group Activity

This model may now be used to illustrate and better understand the recent expansions in both government spending and interest group activity that occurred after the recent financial crisis, and resulting expansion in government spending. Rather than shifts of the curves, here because the y-axis intercepts are fixed by theory, changes are illustrated by alterations of the slopes of the two lines. We consider two cases. First, we consider the case of something happening to increase the marginal productivity of interest group activity at producing government spending (G'_I). As G'_I gets larger, the curve illustrating the $G_I = f(I)$ equation rotates upward as is shown in Figure 5.

In Figure 5, the marginal productivity of interest group activity at producing government spending has increased, rotating the line

FIGURE 5
 INCREASING MARGINAL PRODUCTIVITY OF
 INTEREST GROUP ACTIVITY



upward to the new one illustrated by the dashed line. This would result in both an expansion in government spending (from G_T^{*1} to G_T^{*2}) and an expansion in interest group activity (from I^{*1} to I^{*2}).

Are there reasons to believe that events have unfolded in recent years that have increased the productivity of interest group activity at producing spending? The most obvious chain of logic suggesting this has occurred is provided by the “Baptist and Bootleggers” model of Yandle (1983). That model argues that the simple economic interest of an interest group does not become salient or politically possible unless there is a “moral cover” to the story for providing the interest group benefits. The moral cover in recent years has been the political rhetoric of “too big to fail” and “Keynesian stimulus.” Giving billions in direct subsidies to individual businesses, from banks to energy and car companies, perhaps was only possible with the cover that these expenditures needed to be done to avoid economic collapse and to promote recovery.

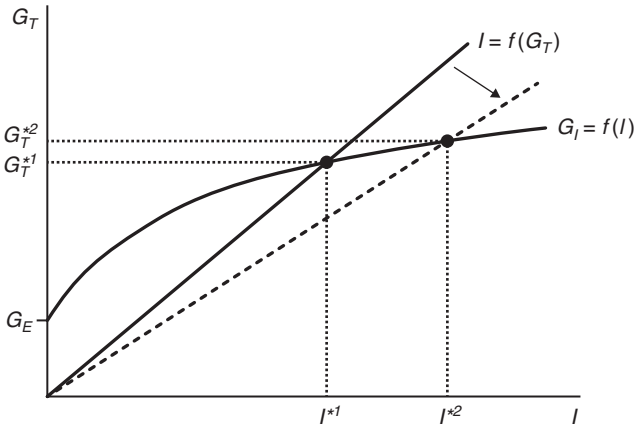
Interestingly, this line of logic helps to solve the mystery posed by Young (2013) in his policy analysis entitled “Why in the World Are We All Keynesians Again? The Flimsy Case for Stimulus Spending.” As he argues, the textbook macroeconomic literature on the eve of the financial crisis had pretty much settled on the idea that monetary policy was the more potent tool for macropolicy, and

that fiscal stimulus was far less potent, if effective at all. As an example, he points to a quote from Alan Blinder, the former vice chairman of the Federal Reserve's Board of Governors, who in 2004 concludes "virtually every contemporary discussion of stabilization policy by economists—whether it is abstract or concrete, theoretical or practical—is about monetary policy, not fiscal policy." Young (2013) even notes that some of the individuals involved in crafting and promoting the ARRA stimulus had done previous published research that would seem to argue for alternative policies that should have been followed instead. Nonetheless, his argument is simply that the shaky evidence for fiscal policy, in the past history of the United States, as well as the lack of potent current effects, and also in countries like Japan, clearly leaves one to wonder why Keynesian deficit spending has become so in fashion in recent years, despite the evidence of its ineffectiveness. The answer may very well be that these arguments provided the "Baptist/moral cover" for the special interest bootleggers to get government transfers purely in their economic self-interest. In other words, the fiscal crisis created a situation in which the lore of Keynesian stimulus became politically salient enough to allow passage of special interest spending that otherwise would not have passed without this moral cover story. In a nutshell, this Keynesian moral cover simply increased the marginal productivity of interest group activity at producing spending. If so, this would result in the change illustrated in Figure 5.

A related argument follows the logic of Clark and Lee (2003, 2005a, 2005b) who explain why and how special interest groups get better at lobbying through time (e.g., develop more human capital in lobbying as opposed to productive activity), contributing to government growth using a prisoners' dilemma model. As these interest groups form on specific issues (e.g., the banking interest groups energized in the recent financial crisis), through time their productivity grows with experience, and they may undertake actions beneficial for themselves (especially the leaders of these interest groups), even if the policies they pursue may not be in the best interest of the group they represent.

An alternative change that could produce the recent expansion in government spending and interest group activity would be a reduction in the slope of the other line, the one representing rent-seeking equilibrium, $I = f(G_T)$ as is illustrated in Figure 6.

FIGURE 6
DECREASING OPPORTUNITY COST OF
INTEREST GROUP ACTIVITY



If the slope were to fall, the line would rotate downward to the dashed line in Figure 6, producing both an expansion in government spending (from G_T^{*1} to G_T^{*2}) and an expansion in interest group activity (from I^{*1} to I^{*2}).

Are there reasons to believe that events have unfolded in recent years that have altered the zero economic profit (dissipation) equilibrium conditions in the market for interest group activity? Baumol's model of productive and unproductive entrepreneurship suggests that the amount of rent seeking is not simply a function of the profitability of rent seeking, but of the relative return from rent seeking *versus* the return from productive market activities. The financial crisis did significantly reduce profit margins, cause a reduction in private employment, displace resources, and shrink private markets. To the extent that the return in the private sector represents the opportunity cost of devoting resources to rent seeking, this lower private return should have been expected to result in a shift of resources into political entrepreneurship and rent seeking until the profitability of that activity was reduced to a level equal to the now lower profitability of private activity. That is, a recession-induced reduction in the profitability of private market activity should also result in an equilibrium reduction in the returns to rent seeking as well under the Baumol model. This reduced opportunity cost of resources devoted

to interest group activity would result in the exact change illustrated in Figure 6, with the slope of the $I = f(G_T)$ line, G' , falling.

The best way of understanding this link between a recession-induced reduction in private sector profitability and interest group activity is through a graph similar to how the mechanics of the incidence of the corporate income tax are often modeled. There are two sectors, here the private sector and the government sector (lobbying). There is a fixed stock of capital that will be allocated between the two sectors based on the rates of return. Assuming both have diminishing returns to investment, the allocation of capital between the two sectors can be illustrated graphically as in Figure 7.

In Figure 7, the length of the horizontal axis equals the total stock of capital. The “demand” for capital in the private sector (line D_P) on the left side of the graph is a line whose (diminishing) height shows that the return to capital in the sector falls with increased investment. A similar line from the right axis shows the diminishing returns to capital involved in lobbying / interest group activity in the

FIGURE 7
BAUMOL-TYPE ALLOCATION OF
CAPITAL (HUMAN & PHYSICAL)
BETWEEN PRODUCTIVE PRIVATE ACTIVITY AND
UNPRODUCTIVE INTEREST GROUP ACTIVITY

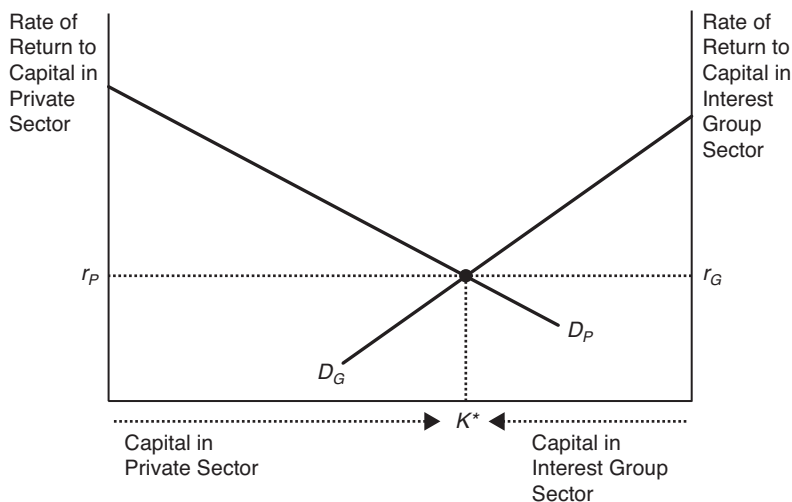
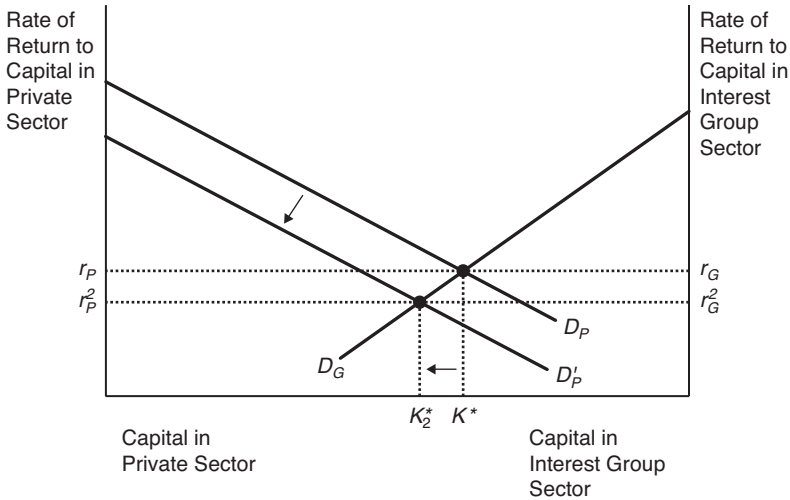


FIGURE 8
 RECESSION-INDUCED SHIFT OF
 CAPITAL (HUMAN & PHYSICAL) INTO
 UNPRODUCTIVE INTEREST GROUP



government sector (D_G). The allocation of capital between the two sectors (both human and physical) will be at an equilibrium where the two sectors, at the margin, are equally profitable for investing capital, at point K^* where $r_P = r_G$ in Figure 7 where the two curves intersect.⁸

Figure 8 shows how a recession-induced reduction in the return to capital employed in the private sector would impact this equilibrium. The curve showing the private returns would fall to D'_P . This will cause capital at the margin to flow into the higher returns in interest group activity in the government sector, pushing down returns in that sector as well, until a new equilibrium is restored at point K_2^* with a lower profitability in both sectors ($r_P^2 = r_G^2$), and a larger proportion of capital now in the interest group sector. This is

⁸While Baumol's original theory focuses on the allocation of human capital (e.g., entrepreneurial effort) between the sectors, Hall, Sobel, and Crowley (2010) extend this model to include both human and physical capital and provide evidence that the logic applies to both equally. We therefore treat the capital stock generally in the figures, and conjecture that both human and physical capital are shifted between the sectors in the general manor shown.

the fundamental change that causes and is reflected in the $I = f(G_T)$ line rotating downward, due to the lower slope, in Figure 6.

A final, and likely, possibility is that both of the changes in Figures 5 and 6, the higher productivity of interest group activity and the shift of resources into interest group activity caused by the recession, contributed to the recent expansion in both government spending and interest group activity. That is, perhaps both shifts happened, and reinforced each other to produce the expansions in government spending and interest group activity that have unfolded since the financial crisis.

As an important aside in terms of using the model, we also note that the shift represented in Figure 5 is how one would illustrate, more generally, learning effects in the model when interest group activity (or the government) is relatively new in a geographic area. As is suggested by authors such as Olson (1982), Johnson and Libecap (1994), and Browder (2015), the productivity of interest groups may rise with their tenure and experience with a newly formed government through time. In addition, closer in line with Browder is the idea that government's ability to create and extract rents may also grow through time as politicians learn how to better participate in this process of generating benefits to interest groups. These learning type effects, which are in keeping with work in both experimental economics and evolutionary biology, would result in an increase in the productivity of interest group inputs in producing each level of government spending. These type effects would be represented in a similar manner to the shifts shown in Figure 5.

Testing the Alternatives

The previous sections outlined a model that relied on the direction of causality between government spending and the value of resources devoted to interest group activity. While the rent-seeking model stresses how expansions in government spending result in more interest group activity to dissipate the rents, the special interest model stresses how increases in interest group activity produce expansions in government. There are three alternatives:

1. The value of resources devoted to interest group activity causes government spending.
2. Government spending causes the value of resources devoted to interest group activity.
3. Both (1) and (2) are true, and there is bidirectional causality.

In this section, we attempt to discern these alternatives empirically employing Granger-Sims causality tests. These tests, despite their drawbacks, essentially see, on average, which series moves “first” and which moves “second” in a time series framework.

Our Granger-Sims causality tests are conducted by estimating the following system of equations as a structural Vector Autoregression (VAR):

$$(3) \quad G_t = \beta_1 + \sum_{i=1}^r (\beta_{1i} \cdot G_{t-i}) + \sum_{i=1}^s (\alpha_{1i} \cdot I_{t-i}) + \varepsilon_{1t}$$

$$(4) \quad I_t = \alpha_1 + \sum_{i=1}^s (\alpha_{2i} \cdot I_{t-i}) + \sum_{i=1}^r (\beta_{2i} \cdot G_{t-i}) + \varepsilon_{2t}$$

where G is government spending and I is a measure of the value of resources devoted to interest group activity. We set up the null hypotheses that $\alpha_{1i} = 0$ and $\beta_{2i} = 0$, for all $i = 1$ to r, s . Intuitively, if the set of lagged values of I are jointly significant in the equation for G , then we can reject the null that I does not cause G , in favor of the alternative hypothesis that indeed I Granger-causes G (and vice versa). The optimal lags (r and s) are determined by using the Bayesian (Schwarz) information criterion (BIC) on the vector autoregressive equations, and the test of the joint significance of the lagged variables is performed using an F-test to determine if causality exists, and in which direction. All three alternatives are possible findings (only G Granger-causes I , only I Granger-causes G , or there is bidirectional causality and both are true).

Because our data are time series, we need to first ensure that our series are stationary. To test for unit roots, we employ two tests, the first of which is the Augmented Dickey-Fuller (ADF) test with the following regression specification:

$$(5) \quad \Delta y_t = \theta_0 + \gamma \cdot y_{t-1} + \sum_{i=1}^P \beta_i \cdot \Delta y_{t-i} + \varepsilon_t$$

where y is the variable of interest and P is the number of lags determined using the Bayesian (Schwarz) information criterion (BIC). The series is stationary if and only if $\alpha < 1$, which by Equation 2 is equivalent to a test for $\gamma < 0$, where $\gamma = (\alpha - 1)$. Because the standard t-statistic for γ is a test of $H_0: \gamma = 0$, a negative and significant t-statistic for γ implies that $\alpha < 1$, and the series is stationary. If the t-statistic for γ is not significant, the series is nonstationary. If the series is nonstationary, it must be first-differenced (annual change) and the ADF test performed again to ensure the resulting series is stationary. If it is not, the process continues until the order of differencing required to make the series stationary is found.

The second test we employ to check for stationarity is the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test based on the following test statistic:

$$(6) \quad \eta = \frac{\sum_{t=1}^T S_t^2}{T^2 \bar{\sigma}^2}$$

where $S_t = \sum_{s=1}^t e_s$ and $\bar{\sigma}^2$ is an estimate of the long-run variance of $e_t = (y_t - \bar{y})$. This Lagrange-multiplier test is intended to complement the Dickey–Fuller test. In the KPSS test, the null hypothesis is opposite to that in the ADF test; therefore, a statistically significant coefficient indicates the series is nonstationary and requires differencing (this process continues until the test statistic is no longer statistically significant.). The reason is, under the null, the long-run variance is a well-defined finite number, and the test statistic has a well-defined asymptotic distribution (but not under the alternative).

We conduct our empirical tests using measures of U.S. federal government spending and interest group activity targeted at federal legislation or in the Washington, D.C., area. Because government spending data is normally reported on a fiscal year basis, which would detract from the timing of the lag structure and possibly influence our results, we begin by estimating the models on calendar year federal spending data from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). The differences in what is and is not included in the BEA measure versus the federal budget are minor.⁹ In addition, we also estimate the models using the budget-based fiscal year data for comparison. We estimate our models using total federal expenditures (in billions), and all nominal values throughout our empirical analysis are converted to constant (real) 2012 dollars using the Consumer Price Index (CPI).

For measures of the value of resources devoted to interest group activity/rent seeking, we employ the only two dollar-based measures available, lobbying spending and the payroll of political/lobbying organizations located in the Washington, D.C.,

⁹For a full listing of the differences, see U.S. Department of Commerce, Bureau of Economic Analysis, Table 3.18B: “Relation of Federal Government Current Receipts and Expenditures in the National Income and Product Accounts to the Budget, Fiscal Years and Quarters.” Available at www.bea.gov/scb/pdf/2012/10%20October/1012_new_nipa_tables.pdf.

area. Annual data on lobbying spending (in millions) is obtained from The Center for Responsive Politics (www.opensecrets.org), and annual data on the payroll of lobbying/political organizations is obtained from The United States Census Bureau, County Business Patterns database (www.census.gov/econ/cbp), both series beginning in 1998. We recognize that this limits our number of observations to less than would be desired for both series (15), but given the sparse nature of data on interest group activity, we move forward as the model can be estimated efficiently with the small sample available. We include industry code 813xxx which was identified by Sobel and Garrett (2002) as a key industry subset expanded in state capital cities which is a reliable indicator of lobbying activity. Again, all nominal values are corrected for inflation to 2012 real dollars. Payroll (in millions) is a good measure of the value of labor resources employed in lobbying/rent seeking, and because labor is the variable input in the short run, it should rapidly reflect changes in the level of interest group activity making it very suitable for a time-based causality test.

First, we must ensure our series are stationary, and Table 1 presents the results of our unit-root/stationarity tests. All three of our main variables are found to be nonstationary in their levels form in both tests (ADF and KPSS), so all three are then converted to annual change versions (first differenced), and the resulting series are all stationary in both tests (ADF and KPSS). We therefore employ these first-differenced versions of our variables in our Granger-Sims causality tests.

With our transformed series, we perform the vector-autoregression-based systems estimation to test the direction of causality, and our results are presented in Table 2. The upper two rows of results show the results using total federal expenditures using the calendar year data, while the lower two rows of results show the results using the fiscal year data. The tests on the calendar year data indeed indicate bidirectional Granger causality for total federal spending and both measures of the value of resources devoted to interest group activity. This suggests that the theoretical model presented earlier, in which both have to be in simultaneous equilibrium, is the correct model.

While we believe the BEA data on federal spending by calendar year matches up with our measures of interest group activity more properly for a lag-based empirical test, we also perform our analysis

TABLE 1
UNIT ROOT TESTS

Variable	ADF	KPSS	Result
Variables in Levels			
Real Federal Expenditures	1.00	0.96***	Nonstationary
Real Lobbying Spending	-0.93	0.55**	Nonstationary
Real Payroll of Political Organizations in Washington, D.C.	-0.31	0.54**	Nonstationary
Variables in First-Difference (Change) Form			
Change in Real Federal Expenditures	-3.71***	0.18	Stationary
Change in Real Lobbying Spending	-3.45***	0.17	Stationary
Change in Real Payroll of Political Organizations in Washington, D.C.	-2.79**	0.10	Stationary

NOTES: ADF is the augmented Dickey-Fuller χ^2 test; KPSS is the Kwiatkowski, Phillips, Schmidt, and Schin (1992) test. The null hypothesis for the ADF test is nonstationarity (unit root), while the null hypothesis for the KPSS test is stationarity (no unit root). All tests include a constant, and lag length determined by BIC. Statistical significance as follows: * = 10 percent, ** = 5 percent, and *** = 1 percent.

on fiscal year spending data to check for robustness. The results using the fiscal year data (which, for the federal government, runs from October 1 of the previous year to September 30 of the year indicated by the fiscal year) is presented in the final two rows of Table 2. Using lobbying spending the model again supports bidirectional causality, but using the payroll of political organizations, one of the test statistics falls just short of the 10 percent normal threshold. Taken at face value, the final row of results indicate only one-way Granger

TABLE 2
GRANGER CAUSALITY TESTS

Variable	H ₀ : Government Spending Does Not Cause Interest Group Activity (<i>F</i> -statistic)	H ₀ : Interest Group Activity Does Not Cause Government Spending (<i>F</i> -statistic)	BIC	Lags	Result
Measure: Total Federal Expenditures (Calendar Year)					
Real Lobbying Spending	12.57***	3.43*	24.31	2	Bidirectional Granger Causality
Real Payroll of Political Organizations in Washington, D.C.	4.75*	4.92*	22.54	1	Bidirectional Granger Causality
Measure: Total Federal Expenditures (Fiscal Year)					
Real Lobbying Spending	6.49**	6.21**	24.76	2	Bidirectional Granger Causality
Real Payroll of Political Organizations in Washington, D.C.	7.41**	3.29	23.49	1	Government Spending Granger-causes Interests Groups (one way) [The significance level of the other was 10.7% for bidirectional causality.]

NOTES: All variables in first-difference (change) form for stationarity per unit root tests. The null hypothesis for the tests is NON-causality; therefore, significant test statistics imply there is causality. All tests include a constant, and lag length determined by BIC. Statistical significance as follows: * = 10%, ** = 5%, and *** = 1%.

causality running from government spending to interest group activity (supportive of the rent-seeking model but not the interest group model of government), however, the significance level of the one that is not significant at traditional levels is 10.7 percent, just slightly higher than the 10 percent normal threshold, suggesting the relationship is extremely close to bidirectional causality.

Thus, in three of the four models our data confirm the idea of bidirectional causality between government spending and interest group activity. Given the limited historical data available, however, which makes our sample size smaller than desired, the model does converge and estimate efficiently. We do hope future research will one day take advantage of the longer time series of data then available to confirm our results.

Conclusion

The interest group theory of government holds that the activities of well-organized interest groups produce government spending and policies. That is, government action is a result, or product, of interest group activity. The separate, but related, literature on rent seeking, to the contrary, stipulates that when government “rents” are available, interest group activity rises to dissipate, or compete over, these benefits created by government. In this later view, interest group activity is a causal result of government action.

Recent years have seen a massive expansion in both federal government spending and also of interest group activity. Since the financial crisis the U.S. federal government, through bailout and stimulus programs such as TARP and ARRA, has made available trillions in new spending benefitting well-defined interest groups and constituencies. Office space in Washington, D.C., is now the most expensive in the nation, and the measured lobbying activities at the federal level have risen by 25 percent, with some industries such as finance, insurance, and real estate now spending over \$450 million per year on lobbying (those industries are now represented by approximately 2,500 registered lobbyists). While some accounts of these events blame the increased lobbying activity on the expansions in government spending, an equally large number blame the increased government spending on the rising pressure of interest groups for new spending programs to aid in the economic recovery efforts.

Whether interest groups cause government spending, or whether government spending causes interest group activities, or both are true, is the central question in this paper. We present both a theoretical and empirical examination. Our theoretical models begin by graphically illustrating each of the three alternatives. A unified framework, within which causality runs in both directions, is best understood in a manner similar to Buchanan's "Theory of Clubs" model. We then use the model to illustrate recent events through the recession-induced reduction in private-sector profitability lowering the opportunity cost of lobbying, coupled with an increasing productivity of interest groups in producing government spending with a new Keynesian-themed "Baptist" cover for their bootlegging-based demands for government handouts.

We then perform empirical tests of the direction of the causality that confirm bidirectional causality. Specifically, we use Granger Causality tests to determine the causal relationships. We employ data on total federal expenditures and two different measures of interest group activity, expenditures on lobbying, and the payroll of political organizations in Washington, D.C., and confirm the presence of a bidirectional causal relationship. Thus, exogenous changes in government spending will produce changes in interest group activity, and vice versa. Government outcomes, and the level of interest group activity are simultaneously determined in a framework where both sides of the market must be in the equilibriums postulated by their respective theories (the interest group theory and the rent seeking theory). These results have important implications for those who would wish to curb the growth of government and reduce interest group activity and lobbying. Because of the bidirectional causality, the level of both activities may be curtailed by policy changes on either side of the equation. That is, reforms such as a balanced budget act that curb the growth in government spending will also reduce interest group activity, and policies that restrict interest group activity and lobbying (lobbying disclosure rules, donation limits, etc.) will also curb both interest group activity and the growth of government spending. Given the limited historical data available for our tests, however, we hope future research may employ longer samples to reestimate and confirm our findings.

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