Potential competition and public sector performance

Robert W. Helsley*, William C. Strange

Faculty of Commerce and Business Administration, University of British Columbia, 2053 Main Mall, Vancouver, B.C. V6T 1Z2 Canada

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Abstract

This paper considers the roles of actual and potential competition in private government formation. Higher public sector costs encourage formation. Public sector rent seeking discourages formation. Although aggregate welfare always rises, nonmembers may be harmed by private government, and this effect is larger the greater is the public sector cost disadvantage. The public sector may strategically choose to deter the formation of private government as in conventional models of entry. However, it may also make strategic choices that encourage a competing private government to form. Thus, mixed markets are fundamentally different than their purely private counterparts. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

This paper concerns privatization, and like most papers on this subject it must begin with a definition. In characterizing privatization, Vickers and Yarrow (1991) write that there are three kinds: “the transfer to the private sector of state-owned enterprises operating in competitive product markets . . .; the transfer to the private
sector of state-owned enterprises with substantial market power, and [the] contracting out of publicly financed services . . . to the private sector.”

In fact, there is another kind. It involves the creation of so-called ‘private governments,’ where a group of consumers joins together to tax itself in order to provide supplementary services or regulation. They are ‘private’ in that the policies are directed at an exclusive group. They are ‘governments’ in that their policies, and possibly their incentives as well, are like those of traditional public sector institutions. Pack (1992) estimates that there were 900 commercial private governments in various cities in the US in 1992. McKenzie (1996) estimates that there were 150 000 residential private governments in the US in 1993, containing a total of 32 million residents. These organizations provide policing, sanitation, and social services, and they collectively own and manage public facilities like parks and streets. An extreme instance of a residential private government is a gated community (Helsley and Strange, 2000). These communities provide their residents with additional security by denying access to the general public. Egan (1995) reports that as many as 4 000 000 people lived in gated communities in the US in 1995.

This paper considers the roles of actual and potential competition on private government formation. Our analysis addresses three very important questions. How does the possibility of private government formation influence the policies pursued by traditional governments? Is formation or its possibility efficient, or even welfare enhancing? How does the incentive system of the public sector influence its interaction with a private government?

We will answer these questions using a model that incorporates three important sources of dissatisfaction with the traditional public sector. One is heterogeneity in the demand for public services. Traditional governments are usually required to service the entire population, and this forces them to pursue a one-size-fits-all policy. Private government allows high demand consumers to supplement public expenditures. Another is that the public sector may have incentives that conflict with the objectives of the citizenry. Niskanen (1971) argues that bureaucracies may adopt budget maximization as their primary objective, sometimes called ‘expense preference’ behavior. There is evidence (some anecdotal) in support of this hypothesis. Wolfe (1993), pp. 73–74 reports that managers of Germany’s public television and telephone system have stated that their objective was to “raise rates and sales so as to maximize gross revenues,” and that in response to union pressures, British rail adopted an objective of “high employment per unit of service.” Romer and Rosenthal (1979) argue that the outcomes of school referenda in Oregon suggest that school boards seek to maximize their budgets.

Private government may also arise in response to response to cost differences between the public and private sectors. These differences might arise because of

1See Vickers and Yarrow (1991) for a clear and detailed discussion of the many reasons for privatization in general.
unionization or because older organizations produce at higher costs than newer ones. Or it may be that public provision is inherently more costly. Wolfe (1993) has compiled a meta-survey of the evidence on these cost differences for a wide range of public (and private) services, drawing from Borcherding et al. (1982), Fitzgerald (1988) and Osborne and Gaebler (1992). The Wolfe survey covers 23 separate activities, ranging from airlines to weather forecasting, and in virtually every case, private provision is shown to be less costly. Wilson (1989, pp. 350) summarizes part of this literature as follows: “There are at least fourteen studies comparing public and private trash collection in the United States, Canada, Switzerland and Japan; in eleven of the cases, private collection was more efficient... The cost of water, street cleaning, ship maintenance, housing construction, school bus operation, and railroad track repair were all lower when done by private firms rather than by government agencies.” More recently, López-de-Silanes et al. (1997, pp. 447–448) write that “private contractors use fewer people than governments do to provide the same service (Savas, 1987), pay 10–20% lower wages, and offer employee benefits that are sometimes orders of magnitude lower than those in government.”

Our analysis generates several interesting results. First, although private government is guaranteed to raise both member and aggregate welfare, it need not raise nonmember welfare. Paradoxically, lower nonmember welfare is more likely when the efficiency advantages of private government are greatest. When the public sector knows that some consumers are able to purchase services at a much lower cost, it may encourage them to do so by reducing its provision level. This may hurt nonmembers. This unhappy result (for nonmembers at least) is more likely to occur when the public sector places little weight on the size of its budget and instead is largely concerned with aggregate welfare. Thus, nonmembers might prefer that the public sector pursue an inefficient objective like budget maximization when the public sector must compete with a private government.

Second, individual consumer activism may be inefficient. Formation of a private government is almost certain to impact nonmembers. They may be better- or worse-off. This is ignored by members when they choose to be active. Furthermore, in some specifications of the activism decision, individual members may ignore each other in their activism decisions as well. This result is related to a conclusion reached by Grossman and Hart (1980) regarding the ability of takeovers to ensure efficient corporate governance. They note that since takeovers enrich all shareholders, the takeover is a public good, and so may be under-produced. This result is related to our analysis of activism, although the microeconomics of the interactions among agents and the nature of the inefficiency are different.

Third, whether or not a private government forms depends on public sector incentives, the cost difference between public and private provision, and on other parameters. When the public sector has strong expense-preferences or when the cost difference is small, there will be no room for private government, and it will
not form. Thus, in a model where privatization is endogenous, private government cannot discipline a rent-seeking public sector in the situation where the public sector incentives are most distorted. This is because if a private government were to form, the public sector would continue to spend so much that it would not pay to form a private government in the first place. Conversely, when the public sector has weak expense-preferences or when the cost difference is large, formation is inevitable. In these cases, formation does not depend on strategic interactions between the public sector and the private government.

The most interesting case is when the public sector must make a strategic decision regarding private government formation. In some situations, the public sector chooses a high level of output in order to deter formation. This kind of strategic deterrence is parallel to the analysis of entry in an oligopoly. This situation will arise when the public sector has strong expense preferences, but not so strong that formation never pays. But this is not the only possibility. In other situations, the public sector chooses a lower level of output in order to accommodate formation. This situation will arise when expense preferences are weak, but not so weak that formation is inevitable. This possibility is absent in the models of pre-entry behavior in industrial organization (i.e., Tirole, 1988). This is because they provide no model of the mixed public–private system that exists after private government formation, and they consider entry to be motivated only by profit, while the new private governments are likely to have different objectives.

In addition to drawing from the industrial organization and privatization literatures, this paper also builds on several papers in public economics. Our model is loosely related to the literature begun by Tiebout (1956) and Buchanan (1965) that deals with group formation and fiscal competition (see Wildasin, 1986). It is more closely related to some of our own work on private government (Helsley and Strange, 1998, 2000). The present model is quite different in its consideration of cost differences, mixed incentives, and potential competition.

The rest of the paper is organized as follows. Section 2 discusses the role of activism in the formation of private government. Section 3 considers a simultaneous game of actual competition between a private government and the public sector. Section 4 considers a sequential game with activism where potential competition matters. Section 5 concludes.

2. Activism

As discussed in the introduction, this paper is concerned with the effects of privatization, both actual and potential, on the public sector. The purpose of this section is to discuss the role of activism in the privatization process. By activism we mean the actions that citizens undertake to persuade the public sector to allow privatization to occur.

Activism involves several kinds of costs. The transactions costs of activism may
include the cost of organizing affected consumers and lobbying public sector decision makers. These transactions costs can be interpreted as the expense associated with arriving at an implicit contract between the public sector and consumers. Once the contract is agreed upon, its implementation may involve further outlays of capital, labor, or cash.

We illustrate the nature of activism through several examples. The first of these concerns the privatizing of once public streets by limiting access. This is different than the construction of new communities in that it involves privatizing what was once public. Blakely and Snyder (1997, pp. 105–108) discuss the attempt to gate the neighborhood of Whitley Heights in the hills above Hollywood. The Whitley Heights Civic Association received initial permission to build the gate in 1986, with fundraising complete by 1988, and final permits approved in 1990. After making changes to allow emergency vehicles to pass, the gate cost $350,000. All this activism ultimately came to naught in 1994 when the California Supreme Court refused to overturn an appellate court ruling that the gate was illegal. Private streets are not always illegal, however, with St. Louis a notable example of this kind of privatization of security provision.

A more successful instance of activism leading to privatization is the creation of Business Improvement Associations (BIAs) in British Columbia. These organizations are made up of firms and landowners who agree to tax themselves in order to pay for supplementary public services. The role of activism in creating BIAs is clear from the annual report of the Downtown Vancouver BIA (1997): “The DVBIA was created by City Council in 1990 at the request of the area’s business people and property owners.” Activism was also required at the provincial level, since enabling legislation was required in order to transfer the Crown’s power to tax to the quasi-public BIAs. In fact, activism is ongoing. The report goes on to state the DVBIA has “been able to increase the extent of programming activity by fundraising initiatives: the relentless pursuit of partnerships, sponsorships, and donations of services . . .” Although this kind of private government is new, it is not unique. There are four other BIAs in Vancouver, and, as noted in the introduction, estimates of the number of similar organizations in the U.S. – typically called Business Improvement Districts or BIDS – run to nearly 1000.

Another illustration of the role of activism in the formation of private government is the creation of crime prevention offices. These offices facilitate the exchange of information between residents and police, and they are pillars of the strategy of community based policing. In Vancouver, there are twenty crime prevention offices. Setting one up requires a lot of work. Activists must decide where the office should be located, and must obtain the office itself. After formation, the office requires substantial staffing by civilian volunteers. The office space itself must be donated. Although there has been no precise accounting of these costs, it is almost certainly the case that the annual opportunity costs of the labor and space required by these twenty offices must exceed one million dollars.

Activism is also involved in the creation of residential private government,
variously called homeowner associations or residential community associations see (Advisory Council on Intergovernmental Relations (1989)). These are groups of residents who levy fees in order to finance supplemental services (i.e., extra policing) or regulation (i.e., neighborhood level land-use bylaws). There are two ways that a residential private government of this kind can be formed. One is exactly parallel to the formation of a BIA, involving the agreement of its members. Another involves a developer. Effectively, the developer is an agent for the consumers who will occupy the development that is being created. The developer almost certainly requires permission for the project to go ahead, and winning this permission can require activism. One sort of activism cost is the provision of facilities that will be used by the general public. These can be quite large. For example, in order to win permission for a large mixed use project, the developers of the Coal Harbor project in Vancouver, have agreed to provide among other things a theater, a school, and an extension of the Stanley Park seawall. The developer will be compensated for these costs, of course, by the prices paid for the developed property. Thus, even when a developer is involved, the process of private government formation involves costly activism.

3. Competition between the private government and the public sector

3.1. Overview

This paper considers four related economic problems. The first is how competition between a private government and the public sector impacts the provision of a public service. The second is how political activism leads to the formation of private government. The third is how potential competition from a private government contributes to public sector reform. More specifically, we examine how potential competition from a private government affects the ability of the public sector to engage in rent seeking or expense preference behavior. The fourth is how the public sector responds to the threat of private government formation. In particular, we explore whether the public sector chooses a level of spending strategically to encourage or discourage private government formation. This section will be concerned with the first issue, while the others will be considered in Section 4.

It is worth pointing out in advance that this paper does not consider the role of exclusion in the formation or operation of a private government. However, this is an interesting and important issue. Epple and Romano (1998) show that private schools can effect exclusion using ability dependent prices. This is motivated by

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3See Altschuler et al. (1993) and Frieden and Sagalyn (1989) for other instances of exactions.
the contribution of high-ability students to group quality. Exclusion may also be in
the interests of members of the kinds of private government considered here. For
instance, a BIA may benefit an upscale retailer only if downmarket retailers are
excluded, and a gated community may add more to safety by excluding
households with teenagers. Private government exclusion is considered formally in
Helsley and Strange (2000). That paper shows that private governments may set
regulations whose effect is to exclude consumers who would make small
contributions to group quality. It also demonstrates that there will be a secession
effectuality, where agents at the margin of joining the private government do not
consider their effects on either the private government or the civic whole that they
leave behind.

3.2. Elements of the model

There are two types of consumers in the model: high type and low type. High
type consumers place a higher value on the collective good. They also take
individual actions that may cause a private government to form. Membership in
the private government is exogenously limited to high type consumers; low type
consumers remain in the public sector. This is equivalent to assuming that
consumers have sorted themselves into groups, perhaps by migration.\(^3\)

There are two institutions in the model: an incumbent public sector and a private
government. The public sector and the private government differ in several ways.
One is that they have different incentives. The private government maximizes the
welfare of its members. In contrast, the public sector has a mixed incentive
system: it is concerned with the welfare of the population, but it prefers to set a
high level of public spending. The public sector and the private government also
have different technologies. The per capita cost of the public service is higher in
the public sector than in the private government. Higher public sector costs may be
the result of unionization or regulations and restrictions that apply only to the
public sector.

In this section, we suppose that the private government forms and that resource
allocation is the Nash equilibrium of the following simultaneous game. The public
sector chooses a maximizing level of public provision taking the level of private
provision as given. The private government chooses a maximizing level of
provision taking the level chosen by the public sector as given.

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\(^3\)See Helsley and Strange (1998, 2000) for models of competition between the public sector and a
private government with endogenous membership and a continuum of consumer types. In these models,
there is a separating equilibrium where consumers above a critical type choose to join. The present
paper considers a private government of fixed size in order to focus more sharply on potential
competition and differences in costs and incentives.
3.3. Utility and welfare

Let \( g \) denote the level of public provision, and \( \gamma \) denote the level of the private supplement. The indirect utility of a high type consumer (henceforth a ‘member’) is

\[
v_M = v(g + \gamma) - (c + r)g - c\gamma.
\]

where \( v(\cdot) \) is the strictly concave subutility function for the public service, and \( c > 0 \) is the per capita resource cost of the public service. \( r > 0 \) is the additional per capita cost for services provided through the public sector. We assume that the total cost of the public service is proportional to membership. Its ‘publicness’ derives from the lack of exclusion (all members consume the same level).\(^4\) We also assume that the public service is financed through user charges equal to per capita costs. Differences in financing methods between public and private institutions are interesting and could be important, but they are not the focus of this paper.

The indirect utility of a low type consumer (henceforth a ‘nonmember’) is

\[
v_N = \theta v(g) - (c + r)g,
\]

where \( 0 < \theta < 1 \). Thus, nonmembers place a lower value on the public service.

There are \( M \) identical members and \( N \) identical nonmembers. The welfare of members is

\[
W_M = Mv_M = M(v(g + \gamma) - (c + r)g - c\gamma), \quad (3)
\]

the welfare of nonmembers is

\[
W_N = Nv_N = N(\theta v(g) - (c + r)g), \quad (4)
\]

and aggregate welfare is\(^5\)

\[
W = W_M + W_N. \quad (5)
\]

3.4. Nash equilibrium provision

We assume that the public sector’s objective is to maximize a weighted average of the welfare of the population and the level of public spending. The public sector chooses a nonnegative \( g \) to maximize

\(^4\)In this situation, it would be more efficient to serve all consumers privately. We assume that government exists for historical reasons and because it serves its own interests. Our paper should be seen as an investigation of the circumstances under which private government can discipline an inefficient public sector.

\(^5\)This specification implies that the difference between public and private provision is entirely a real resource cost. If instead part of the difference were a transfer, then welfare would need to reflect this. As long as a some of the cost difference is a pure production inefficiency, nothing fundamental in the paper would change.
\[ \Omega = \omega W + (1 - \omega)g \]  \hspace{1cm} (6)\]

treating \( \gamma \) as fixed. \( \omega \) is the weight that the public sector attaches to the welfare of the population.\(^7\) Note that the public sector’s objective function contains the welfare of private government members. Thus, the private government’s objective function is nested within that of the public sector.

The first order condition for this problem implies

\[ M\nu'(g + \gamma) + N\theta v'(g) = (M + N)(c + r) - \frac{1 - \omega}{\omega} \]  \hspace{1cm} (7)\]

indicates that \( g \) is chosen so that the aggregate marginal benefit of public provision equals the aggregate marginal cost minus an adjustment that reflects bureaucratic rent seeking or expense preference behavior. Higher public sector costs (higher \( r \)) lead to a lower level of public spending, while stronger expense preferences (lower \( \omega \)) lead to a higher level of public spending, other things being equal.

The private government does not engage in rent seeking; it chooses a nonnegative \( g \) to maximize \( W_{\mu} \), treating \( g \) as fixed. The first order condition for this problem implies\(^7\)

\[ \nu'(g + \gamma) = c \]  \hspace{1cm} (8)\]

indicates that the private government chooses \( \gamma \) so that the marginal benefit of the public service to a member is equal to the marginal cost. The next result is an important preliminary.

**Lemma 1.** Public and private provision are strategic substitutes.

**Proof.** (7) and (8) implicitly define the reaction functions of the public sector and the private government, respectively, in the game that determines provision if the private government forms. The slopes of these reaction functions are

\[ \frac{dg}{d\gamma} = - \frac{M\nu''(g + \gamma)}{M\nu''(g + \gamma) + N\theta v''(g)} \subseteq (-1,0) \]  \hspace{1cm} (9)\]

and

\[ \frac{d\gamma}{dg} = -1 \hspace{1cm} \Box \]  \hspace{1cm} (10)\]

\(^7\)\( \Omega \) is parallel to the objective function posited by Shapiro and Willig (1990). It has three virtues. First, it is simple. Second, it captures some of the complexity of public sector goals (Hart et al., 1997). Third, it is consistent with the idea there are limits on the ability of bureaucrats to extract rents (Tirole, 1994; Dixit, 1996).

\(^7\)The second order necessary conditions for the public sector’s problem and the private government’s problem are satisfied globally by the concavity of \( \nu(\cdot) \).
It is worth pointing out that the slopes of the reaction functions are such that a stable interior equilibrium is guaranteed to exist provided certain boundary conditions are met. We discuss these boundary conditions below. Reaction curves for the public sector and the private government are shown in Fig. 1.

Let $g^0$ represent the level of public provision if the private government does not form. Setting $\gamma = 0$ in (7) implies that $g^0$ satisfies

$$v'(g^0) = c^0,$$

where

$$c^0 = \frac{(M + N)(c + r) - \frac{1 - \omega}{\omega}}{M + N \theta}$$

Let $g^1$ and $\gamma^1$ represent the equilibrium levels of public and private provision if the private government forms. Substituting (8) into (7) and simplifying implies that $g^1$ satisfies

$$v'(g^1) = c^1.$$
where

\[ c^1 = \frac{(c + r)N + rM - \frac{1 - \omega}{\omega}N\theta}{N\theta} \]

(14)

(8) implies \( v'(g^1 + \gamma^1) = c \).

This notation helps us specify and interpret the boundary conditions on the reaction functions. The private government’s reaction function intersects both axes at \( \gamma(0) \) by (10). (8) implies \( \gamma(0) = v^{-1}(c) \). The public sector’s reaction function intersects the \( g \) axis at \( g(0) = g^0 \) where, from (13), \( g(0) = v^{-1}(c^0) \). A necessary condition for the existence of an interior equilibrium is \( \gamma(0) > g(0) \). Since \( v(\cdot) \) is strictly concave \( \gamma(0) > g(0) \) requires \( c^0 > c \). Letting

\[ \hat{c} = N(1 - \theta)c + (M + N)r - \frac{1 - \omega}{\omega} \]

(15)

(12) implies

\[ c^0 - c = \frac{\hat{c}}{M + N\theta} \]

(16)

Thus, for an interior equilibrium it is necessary that \( \hat{c} > 0 \).

The public sector’s reaction function intersects the \( \gamma \) axis at \( \gamma^+ \), where \( \gamma^+ \) is the level of the private supplement that completely crowds out public provision: \( g(\gamma^+) = 0 \). Setting \( g = 0 \) in (7) implies that \( \gamma^+ \) satisfies

\[ v'(\gamma^+) = c^+ \]

(17)

where

\[ c^+ = \frac{(M + N)(c + r) - \frac{1 - \omega}{\omega} - N\theta v'(0)}{M} = c + \frac{\hat{c} + N\theta(c - v'(0))}{M} \]

(18)

A necessary and sufficient condition for the existence of an interior equilibrium is \( \gamma(0) > g(0) \) (as discussed above) and \( \gamma(0) < \gamma^+ \). Since \( v(\cdot) \) is strictly concave, \( \gamma(0) < \gamma^+ \) requires \( c^+ < c \). (14) and (15) imply

\[ c^1 - c = \frac{\hat{c}}{\theta N} \]

(19)

Substituting (19) into (18) and simplifying shows that \( c^+ < c \) provided \( v'(0) > c^1 \). For now, we assume that this condition holds. This implies that \( g^1 > 0 \); the private government never completely crowds out public spending in equilibrium. This seems realistic. Even though private provision is less costly, there may be constitutional or legislative constraints that prevent the public sector from completely withdrawing from the market.
To complete the characterization of an interior equilibrium, note that (16) and (19) imply

\[ c^0 - c^1 = \frac{-M}{\theta N (M + \theta N)} \hat{c} \]  

(20)

Consequently, if there is a unique interior equilibrium, then (16), (19) and (20) imply

\[ g^1 + \gamma^1 > g^0 > g^1. \]  

(21)

Thus, at an interior equilibrium, the private government causes a reduction in public provision. In effect, the public sector’s best response to the existence of a private supplement is to download some of its spending onto the private government. However, the private supplement more than compensates for the reduction in public spending; consumption by high type consumers rises.

If \( g(0) \geq \gamma(0) \), on the other hand, then there is no room in the market for a private supplement: the public sector is providing more of the public service than even the high type consumers want. As a result, the best response of the private government is to provide \( \gamma = 0 \). In this case, rent seeking by the public sector effectively blockades private government formation. Formation is blockaded if \( c^0 \leq c \), or, from (16), if \( \hat{c} \leq 0 \). From (15), \( \hat{c} \leq 0 \) implies \( \omega \geq \hat{\omega} \), where

\[ \hat{\omega} = \frac{1}{1 + N(1 - \theta)c + (M + N)r} < 1 \]  

(22)

If the weight that the bureaucrat gives to the welfare of the population is smaller than \( \hat{\omega} \), so rent seeking or expense preference behavior is relatively strong, then public provision is so large that a supplementary private government would not choose a positive provision level. In the sequel, we will examine how the public sector might set the level of historical provision strategically to deter or encourage private government formation.

3.5. Welfare effects

Let \( v^1_M \) and \( v^0_M \) denote the equilibrium utility level of a member with and without a private government, respectively. From (1),

\[ v^1_M = v(g^1 + \gamma^1) - (c + r)g^1 - c\gamma^1, \]  

(23)

and

\[ v^0_M = v(g^0) - (c + r)g^0. \]  

(24)

The change in the welfare of members is
\[ \Delta W_{M} = M(v_{1M}^{u} - v_{0M}^{u}) \]
\[ = M(v(g^{1} + \gamma^{1}) - v(g^{0}) - (c + r)(g^{1} - g^{0}) - c\gamma^{0}) \]  

(25)

**Proposition 1.** Private government cannot decrease the welfare of members.

**Proof.** There are two cases to consider. First, if \( g(0) \geq \gamma(0) \) (so there is no room for the private government), then the private government sets \( \gamma = 0 \), and so does not affect welfare. Second, if \( g(0) < \gamma(0) \) and a unique interior equilibrium exists, then the change in the welfare of members is given by (25) with \( v'(g^{1} + \gamma^{1}) > v'(g^{0}) \). However, since \( v(\cdot) \) is strictly concave, \( v(g^{1} + \gamma^{1}) - v(g^{0}) > v'(g^{1} + \gamma^{1})(g^{1} + \gamma^{1} - g^{0}) \), and so, using (8), (25) becomes

\[ \Delta W_{M} > M(r(g^{0} - g^{1})) > 0 \]  

(26)

Member welfare rises in the second case both because members receive their preferred level of the public service, and because they receive a portion of their public service consumption through the less costly private government technology.

Let \( v_{N}^{u} \) and \( v_{N}^{0} \) denote the equilibrium utility level of a nonmember with and without a private government, respectively. From (2),

\[ v_{N}^{u} = \theta v(g^{1}) - (c + r)g^{1}, \]  

(27)

and

\[ v_{N}^{0} = \theta v(g^{0}) - (c + r)g^{0}. \]  

(28)

The change in the welfare of nonmembers is

\[ \Delta W_{N} = N(v_{N}^{u} - v_{N}^{0}) = N(\theta v(g^{1}) - v(g^{0}) - (c + r)(g^{1} - g^{0})) \]  

(29)

**Proposition 2.** Private government may increase or decrease the welfare of nonmembers.

**Proof.** Nonmember welfare rises provided \( \omega \) is not too large. If \( g(0) < \gamma(0) \) and a unique equilibrium exists, then the change in the welfare of nonmembers satisfies (29) with \( v'(g^{1} + \gamma^{1}) > v'(g^{0}) > g^{1} > 0 \) by (21). Since \( v(\cdot) \) is strictly concave, \( v(g^{1}) - v(g^{0}) > v'(g^{1})(g^{1} - g^{0}) \), and so, using (13) and (14),

\[ \Delta W_{N} > (\theta c^{1} - (c + r)N(g^{1} - g^{0}) = (1 + Mr - \frac{1}{\omega})N(g^{1} - g^{0}). \]  

(30)

Thus, for \( \dot{\omega} < \omega < 1/(1 + Mr) \), \( \Delta W_{N} > 0 \). Conversely, if \( \omega = \theta = 1 \), nonmember welfare will fall. The proof is parallel. Since \( v(\cdot) \) is strictly concave, \( v(g^{1}) - v(g^{0}) > v'(g^{0})(g^{1} - g^{0}) \). Using (11) and (12), gives
\[
\Delta W_h < (\theta c^0 - (c + r))N(g^1 - g^0)
\]
\[
= -\left( \frac{M(1 - \theta)(c + r) - \theta(1 - \omega)}{M + N\theta} \right)N(g^1 - g^0)
\]

The right side of (31) equals zero for \( \omega = \theta = 1 \). \( \square \)

Prior to private government, \( g \) is greater than the low-type consumers (nonmembers) would like it to be. There are two reasons for this. First, heterogeneity encourages the public sector to provide more than nonmembers prefer. Second, the tendency toward overprovision is reinforced by rent seeking. The intuition behind Proposition 2 is that if \( \omega \) is small, so the level of rent seeking is high, then \( g^0 \) is high, and nonmembers are forced to overconsume the public service. Then, since private government causes public provision to fall, private government may reduce or eliminate the forced overconsumption of nonmembers, causing the welfare of nonmembers to rise. On the other hand, if there is neither rent-seeking (\( \omega = 1 \)) nor heterogeneity (\( \theta = 1 \)), then \( g^0 \) is exactly the level that the nonmembers prefer. The creation of private government results in a reduction in \( g \), and so nonmembers are made worse-off in this case.

**Proposition 3.** Private government increases aggregate welfare.

**Proof.** Note that \( g^1 \) and \( \gamma^1 \) solve the program \( \max_{g, \gamma} \Omega \), while \( g^0 \) solves the program \( \max_{g, \gamma} \Omega \) s.t. \( \gamma = 0 \). Let \( \Omega^1 \) be the maximized value of the objective in the former case, and \( \Omega^0 \) be the maximized value of the objective in the latter case. By the Le Chatelier principle, we must have \( \Omega^1 \geq \Omega^0 \), that is, we must have

\[
\omega W^1 + (1 - \omega)g^1 \geq \omega W^0 + (1 - \omega)g^0,
\]

where \( W^1 \) and \( W^0 \) are welfare with and without private government, respectively. Then, \( g^0 > g^1 \) implies \( W^1 > W^0 \). \( \square \)

4. Activism, potential competition, and entry

4.1. Overview

Section 3 examined the implications of rent-seeking and cost differences for the outcome of fiscal competition between a private government and the public sector. This section extends the analysis in two ways. First, we model the formation of the private government as the outcome of endogenous political activism by high type consumers. Second, we consider actions that the public sector might take prior to the formation of a private government to impact the formation process. To extend our model in this way, we consider a three stage game:
Stage I. Historical provision. The public sector chooses $g$.

Stage II. Activism. Potential members of the private government engage in political activism, and the private government forms or does not.

Stage III. Private government provision. If the private government forms, it chooses $g$.

Essentially, this is a game of Stackelberg oligopoly (see Wildasin, 1991). Most importantly, once set, $g$ may not be adjusted. Thus the public sector knows that $g$ may affect both the activism choices of consumers and the private government’s choice of $\gamma$.

However, the game has a number of important differences from entry games in the Stackelberg tradition in industrial organization. Most importantly, the incumbent government has a mixed objective function, placing weight on both welfare and public expenditures. If the weight on welfare is sufficiently large, the public sector will welcome entry. This is obviously quite different from the attitude towards entry held by incumbent profit-maximizing firms.

The most important differences between this model and the simultaneous choice model from the last section are that formation is endogenous and that the public sector chooses $g$ prior to the determination of whether or not a private government will form. The solution to this game is found by backward induction. Stage 3 is easy to characterize: (8) characterizes the private government’s best-response to any $g$ that the public sector might choose. The analysis that follows focuses on the first two stages of the game.

### 4.2. Activism

Activism by high type consumers determines whether or not a private government forms. This activism might include organizing disaffected consumers, lobbying a politician or government agency, or developing and proposing enabling legislation. We assume that the private government forms if the aggregate level of activism exceeds some threshold level $A$.

By symmetry, the private government will form if each individual undertakes activism level $A/M$. Normalizing the cost per unit of individual activism to one, a member’s utility in this case is $v^1_M - A/M$. If the private government does not form, a member’s utility is $v^0_M$. Formation will occur provided the payoff to activism is nonnegative:

$$v^1_M - v^0_M - A/M \geq 0. \quad (33)$$

The welfare change caused by formation is $M(v^1_M - v^0_M) - A = \Delta W - A$. Activism is efficient if the private government forms if and only if it adds to welfare.
Proposition 4. Activism may be inefficient

Proof. There are two potential inefficiencies. First, suppose $\Delta W_M > A$. Then the private government forms, and the change in welfare is $\Delta W_M + \Delta W_N - A \geq \Delta W_N$. However, if $\Delta W_N < 0$ and sufficiently large in absolute value, then the private government may form even though it reduces welfare. Second, suppose, $\Delta W_M < A$. Then formation does not occur and the change in welfare is $\Delta W_M + \Delta W_N - A < \Delta W_N$. If $\Delta W_M > 0$ and sufficiently large, then the private government may not form even though it would enhance welfare. $\Box$

Inefficient activism arises from an externality between members and nonmembers. If private government decreases the welfare of nonmembers, then there may be too much activism in equilibrium. Conversely, if private government increases the welfare of nonmembers, then the level of activism may be too low.

Our model suppresses a number of other factors that might influence the process of private government formation. For example, we have assumed that only members engage in activism. If nonmembers were politically active as well, then their actions could reinforce or offset the actions of members, depending on whether private government increases or decreases nonmember welfare. Further, it may be more reasonable to view the outcome of the political process as uncertain. If individuals chose activism levels $a_i$, and formation occurred if $\sum a_i \geq A$, where $A$ is random, then the probability of success or formation would be $F(\sum a_i)$, where $F(\cdot)$ is the cumulative distribution function for $A$. In this setting, there would be an externality within the group of members – each individual would choose $a_i$ to maximize expected utility, ignoring the impact of her choice on other members. This externality would typically lead to inefficiently low levels of individual activism. The exception to this would be when there is a corner solution, with one agent setting $a_i$ so that formation is certain. This case would be more likely with heterogeneous agents, for instance when a department store and a fringe of small shopkeepers cooperate to form a business improvement association. As noted by an anonymous and helpful referee, this case has parallels to Coase’s (1974) classic analysis of lighthouses. In the absence of such a corner solution, however, there is a public good problem in activism that resembles the free rider problem in corporate governance and takeovers: individuals have incorrect incentives to work toward institutional reform.

Proposition 4 suggests that there might be a role for public policy to play in regulating the formation of private governments. However, our analysis shows that private government formation may impact the degree to which the public sector can pursue its mixed objectives. Thus, the public sector may be unwilling to adopt policies that would encourage activism. The next section examines how the public sector might pursue policies that encourage or discourage private government formation for strategic reasons.
4.3. Potential competition and public provision

In Stage I, the public sector commits to a level of spending that may subsequently impact activism, private government formation, and private provision. In setting \( g \), the public sector recognizes that it is in one of two situations. Either the \( g \) it sets gives high type consumers the incentive to create a private government or it does not. If there is no incentive to form a private government, the public sector sets \( g \) to maximize \( \mathcal{I} \) as defined in (6) with \( \gamma = 0 \). The first order condition for this problem is (11). Thus, when the public sector recognizes that it will not face competition from a private government it provides \( g^0 \), as in simultaneous move game from Section 3.

The other possibility is that the public sector recognizes that a private government will form. In this case, \( g \) is again set to maximize (6), except now \( \gamma \) is assumed to follow the private government’s reaction function \( \gamma(g) \) from (8). In the multistage game, it is possible that the public sector’s ability to influence \( \gamma \) through its choice of \( g \) might lead to a different \( g^1 \) than the value defined by (13). However, this is not the case. The first order condition for the public sector’s problem in the sequential game is

\[
\frac{d^2 \mathcal{I}}{dg^2} = 0
\]

Substituting \( \frac{d\gamma}{dg} = -1 \) from (10) we find that (33) reduces to (13), the first-order condition for \( g^1 \) in the simultaneous game. Thus, the level of \( g^1 \) chosen if formation is anticipated is exactly the level that is chosen in the simultaneous move game. This result is unexpected, and it certainly bears no resemblance to a standard Stackelberg oligopoly game. The source of the result is in the public sector’s objective function. Unlike the leader in an oligopoly game, the public sector’s objective function contains the private government’s objective function. Thus, maximizing \( \mathcal{I} \) generates a \( \frac{d\gamma}{dg} \) term that is multiplied by the private government’s first order condition.

4.4. Private government formation

Having characterized the public sector’s choice of \( g \) conditional on whether or not a private government forms, it only remains to determine if the public sector allows formation to take place. There are four situations that might arise. First, formation may be blockaded, as discussed in Section 3. For \( \hat{c} \leq 0 \) (see (15)), \( g(0) \geq \gamma(0) \), and there is no room for a private supplement. If the private government forms under these conditions, it will provide \( \gamma = 0 \). This implies that \( v_M^1 = v_M^0 \), and so the payoff to activism is \( v_M^1 - v_M^0 = A/M = -A/M < 0 \), and the
private government will not form. Fig. 2 partitions \((\omega,r)\)-space according to the public sector’s attitude toward entry. In Fig. 2, the locus labeled ‘B’ corresponds to \(\hat{c} = 0\). For all values of \((\omega,r)\) below the B-locus, entry is blockaded.

Second, formation may be inevitable. This will be the case if the payoff to activism is nonnegative when the public sector adopts the aggressive pre-formation posture of setting \(g\) to service the entire population. Formation is inevitable when

\[
v(g^0 + \gamma(g^0)) - c\gamma(g^0) - v(g^0) - A/M \geq 0.
\]  

(35)

In Fig. 2, the locus satisfying (35) as equality is labeled ‘E’. This locus is parallel to and higher than the B-locus. To see this, use (11) and (8), to write (35) as

\[
v(u^{-1}(c^0)) - cu^{-1}(c^0) \leq v(u^{-1}(c)) - cu^{-1}(c) - A/M.
\]  

(36)

Let \(c^*\) denote the value of \(c^0\) that satisfies (36) as an equality. Note that \(c^* > c\).

Using (16), \(c^0 = c^*\) implies \(\hat{c} = (M + N\theta)(c^* - c)\); this is the equation of the E-locus. For all values of \((\omega,r)\) above the E-locus, formation is inevitable.

Third, formation may be politically blockaded. This will be the case if the payoff to activism is negative even when the public sector is accommodating enough to set the level of \(g\) that would be chosen after formation. Formation is politically blockaded when

\[
v(g^1 + \gamma(g^1)) - c\gamma(g^1) - v(g^1) - A/M \leq 0.
\]  

(37)
In Fig. 2, the locus satisfying (37) as an equality is labeled ‘P’. This locus is also parallel to the B-locus, and it must lie between B and E. To see this, use (13) and (8) to write (37) as

\[ v(v'^{-1}(c^1)) - cv'^{-1}(c^1) \geq v(v'^{-1}(c)) - cv'^{-1}(c) - A/M \]  

Thus, \( c^1 = c^* \) satisfies (38) as an equality. Using (19), \( c^1 = c^* \) implies \( c = (N\theta)(c^* - c) \); this is the equation of the P-locus. For all values of \((\omega,r)\) between B and P, formation is politically blockaded: the benefit of formation to members does not outweigh the cost of activism.

The fourth case is the most interesting. If parameters are such that formation is neither inevitable nor politically blockaded then the public sector must make a strategic choice: either pick \( g^1 \) and accommodate formation or pick \( g^0 \) and deter it. This is the region of \((\omega,r)\) space between P and E in Fig. 2, the strategic region. In this region, members are willing to incur the costs of activism in order to create the private government should the public sector select \( g^1 \). By construction, \( g^1 \) maximizes \( \Omega \) for the public sector if a private government forms. However, in this region members would be unwilling to incur the costs of activism if the public sector were to choose \( g^0 \). And \( g^0 \) maximizes \( \Omega \) if a private government does not form. Thus, the public sector must choose between accommodation and deterrence according to which situation generates a higher \( \Omega \). Accounting for the resource cost of member activism, the net public sector payoff of accommodation is

\[ \Omega^1 - \Omega^0 - \omega A = \omega(\Delta W) + (1 - \omega)(g^1 - g^0) - \omega A \]  

**Proposition 5.** The public sector may strategically accommodate the formation of a private government. That the private government adds to welfare is a necessary but not sufficient condition for this to occur.

**Proof.** Because the last two terms in (39) are negative, accommodation can only occur if \( \Delta W > 0 \). However, if \( 0 < \Delta W < -((1 - \omega)/\omega)(g^1 - g^0) + wA \), then the public sector will deter formation even though the private government adds to welfare. \( \square \)

The five possible outcomes are illustrated in Table 1. The computations assume that \( v(G) = 10 + \ln(1 + G) \) and that \( \theta = 0.9 \), \( c = 0.1 \), \( r = 0.030 \), \( N = M = 50 \), \( k = 1 \), and \( A^* = 2 \). \( \omega \) takes on values from 0.2222 to 0.9. At \( \omega = 0.2222 \), formation is blockaded since \( \gamma = 0 \) even if a private government should form. At \( \omega = 0.3 \), formation is politically blockaded since the utility of an active member is negative when \( g = g^1 \) (it equals \(-0.0335432\)). At \( \omega = 0.5 \), formation is deterred because the public sector will select \( g^0 \) rather than \( g^1 \) (it gives a payoff of 531.776 instead of 530.932). At \( \omega = 0.8 \), on the other hand, formation is accommodated since it gives a higher value of \( \Omega \) (847.626 instead of 846.834). Finally, at \( \omega = 0.9 \),
Table 1
Simulations

<table>
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<th>(\omega)</th>
<th>(g^0)</th>
<th>(\gamma(g^0))</th>
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<th>(W^N(g^0))</th>
<th>(W)</th>
<th>(\Omega(g^0))</th>
<th>(\Delta \nu^H - A/M)</th>
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* Both panels assume that \(v(G) = 10 + \ln(1 + G)\) and that \(\theta = 0.9, c = 0.1, r = 0.030, N = M = 50, k = 1,\) and \(A = 2.\) In both panels, \(W^M, W^N,\) and \(W\) are from (3)–(5), and \(\Omega(g)\) is defined by (6). Panel-a gives solutions for \(g^0\) and \(\gamma(g^0)\) from (11) and (8). Panel-b gives solutions for \(g^1\) and \(\gamma(g^1)\) from (13) and (8). The last column of panel-a gives an individual consumer’s payoff from activism assuming that \(g = g^0\) from (35). The last column of panel-g assumes \(g = g^1,\) with the payoff from activism defined in (37).

formation is inevitable. Even if the public sector selects \(g = g^0,\) a member enjoys a net utility gain from activism (equal to 0.00214278).

There are two other points that Table 1 illustrates. First, for some parameter values there is inefficient deterrence of private government formation. At \(\omega = 0.5,\) welfare would rise if a private government were to form, but by setting \(g = g^0 = 6.91667,\) the public sector is able to forestall activism. The reason that it wants to do this is, of course, that it has strong expense-preferences. These outweigh the loss in welfare associated with the private government’s not forming. Second, in Table 1 the parameters are such that nonmembers always gain by the formation of a private government. As indicated in Proposition 2, this need not be the case. If \(\omega = \theta = 0.95\) for instance \(W^M = 528.452\) without private government and falls to \(W^N = 527.575\) with it.

4.5. Interpretation

The analysis of this game has some interesting implications for the economics of privatization. There are two ways to see the blocked formation case. One is that the expense preference of the public sector is sufficiently strong that there is no room for a private supplement even if it can be produced at less expense than the public sector’s output. In the most extreme case, even if privatization were realized, the public sector’s output is large enough that a supplement of zero would
be chosen. In the less extreme case, a positive supplement would be chosen, but the gains to members from formation do not justify the costs. An equally valid interpretation of the blockaded formation case is that the efficiencies realized by the private provider are not sufficiently large to outweigh the costs of creation. The analysis of the inevitable formation case is parallel. For a very high $r$, the efficiencies of privatization always leave room for a supplement. For a very high $\omega$, the public sector does not have a strong expense-preference, and so leaves a lot of room for the private government.

The case where the public sector must make a strategic choice is the most interesting one. Suppose that there was no potential for private government formation. In this case, the public sector would choose $g^0$. Now suppose that there is a potential for private government formation, with the public sector able to commit to a level of $g$ as in the multistage game discussed in this section. How would the public sector respond to this sort of potential competition?

There is an extensive literature considering how potential competition would affect the choices made by a private sector incumbent. For instance, Eaton and Lipsey (1980) show that an incumbent threatened by formation would replace its capital before it needed to, and Dixit (1980) shows that a threatened incumbent would choose a technology that involved inefficiently high fixed cost and inefficiently low variable cost. In both cases, formation reduces the incumbent’s payoff (profit), so it is willing to sacrifice in order to reduce the entrant’s post-formation payoff, and thus prevent the private government from forming.

The analysis of this section shows that potential competition has quite a different effect on a public sector incumbent. The source of this, of course, is the difference in objectives. It is normal for profit to fall when formation occurs, hence the aversion of private sector incumbents to the formation of a private government. The public sector incumbent has a mixed payoff function in our model. It maximizes a weighted sum of provision and welfare. Because the payoff function is mixed, there are two possible outcomes, rather than just one. If there is little efficiency to be gained from privatization or if the public sector has a strong taste for expenses, then the strategic choice will be to select $g^0$ and deter formation. This is similar in spirit of the effects of potential competition on a private sector incumbent.

This result is turned on its head if the gain from privatization is large or if the public sector places a large weight on welfare in its payoff function. In this situation, the public sector will respond to potential competition by selecting $g^1$ and thus leaving room for private government formation. This is a policy of strategic accommodation, and it is entirely different in spirit than the entry deterrence practiced by a private incumbent.

It is worthwhile discussing the role of activism costs in this game. Inspection of (35) and (37) reveals that absent activism costs, the P-locus and E-locus coincide, so there is no strategic region. This means that with zero activism costs, the public sector’s choice of $g$ for any parameter value is exactly the same for the sequential
and simultaneous games. This result is contrary to a comparison of simultaneous and sequential oligopoly models. It derives from the dependence of the leader’s payoff on the follower’s payoff, a reasonable assumption for a model of public sector behavior.

5. Conclusion

This paper has provided an equilibrium analysis of the formation of a private government and its effect on the traditional public sector. There are a number of important positive conclusions. Private government will be more likely to form the greater is the cost advantage it enjoys and also the greater is the weight that the traditional public sector places on consumer welfare. A larger cost advantage leads to a larger service level for the private government and a smaller one for the traditional public sector. Since this makes private government more attractive for its members, it also increases the amount of activism directed at the creation of private government.

Our model also helps to explain why privatization occurs in some areas but not in others. As discussed in López-de-Silanes et al. (1997), the pace of privatization is notoriously uneven. Our model suggests that variations in activism costs, provision costs, and public sector incentives could each lead to different equilibrium outcomes in otherwise similar places.

There are also some important normative results. Nonmembers may either gain or lose by the creation of a private government. They are more likely to gain if the public sector places a low weight on consumer welfare or if the cost difference is relatively small. Members always gain, however, and aggregate welfare is always larger. In light of the latter conclusion, it is unfortunate that private government formation is likely to be inefficient. Some of this is because activism is a public good, and therefore may sometimes be underprovided. Some of this is because the public sector commits to an output level that leaves so little room that the private government does not form. This sort of inefficient strategic deterrence is familiar from the industrial organization literature. This is not the only possibility, however. If the cost difference or the public sector’s weight on aggregate welfare is large enough, then there will be strategic accommodation of private government formation. In this case, the public sector responds to potential competition by setting an output level that leaves enough room for the entrant.

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