Intra-party Competition and Clientelism: An Analysis of Public Sector Employment in Argentina and Turkey

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“(in all modern parties) there is a continual latent struggle. Every oligarchy is full of suspicion towards those who aspire to enter its ranks, regarding them not simply as eventual heirs but as successors who are ready to supplant them without waiting for a natural death.” Robert Michels, Political Parties, 1962

Distribution of public jobs through political patron-client networks has been taking new forms as a result of the political and socio-economic changes in Argentina and Turkey. Earlier social science literature predicted that political and economic development and reduction in available public resources in developing democracies such as Argentina and Turkey, would result in the replacement of particularistic relationships such as patronage networks with more universalistic state-citizen relationships. However, in most such countries, violations of equal access to public resources and informal inequality in political rights have per-

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sisted. Such violations have significant consequences for the political legitimacy of democratic regimes that are still in the process of consolidation, and for the degree of inequality in the actual distribution of material resources. As such, it is necessary to analyze and understand the factors that shape these new forms of particularistic networks that have been emerging as a result of the changing political and socio-economic context.

Like all forms of patron-client relationships in democratic regimes, political competition affects the formation and functioning of patronage networks in public sector employment. However, until now the literature has focused solely on one aspect of such competition: inter-party (candidate) competition in general elections. (Kitschelt (2000), Brusco et. al (2001), Robinson and Verdier (2002), Medina and Stokes (2002), Wantchekon (2003), Calvo and Murillo (2004)) Yet, for analytical purposes, two separate stages of political competition in democracies can be distinguished: the general election and the candidate selection process. Neither of these stages should be ignored if the political and social factors that affect clientelism are to be understood. Moreover, in understanding how clientelism affects the distribution of public jobs, analyzing intra-party competition is especially important in the aftermath of the political and socio-economic changes that Argentina and Turkey have experienced since their transitions to democracy in 1983.

Even though the kind of political support that politicians and parties expect from the recipients of public benefits vary, the literature’s focus on general elections has led to an emphasis on only one kind of political support: votes in general elections. As argued by Mayhew (1986) the party organizations are involved in both processes of electoral politics, nominating and/or general elections.
elections in return for the distribution of material benefits. Yet, in the case of clientelism in public employment, allocating jobs to particular individuals in order to win their votes in a general election is an inefficient strategy. Limitations on the number of available jobs as a result of legislation introducing tenure⁴, privatizations, tight budgets resulting from wider economic crises, and related efforts to “reduce the state” have decreased the efficiency of this strategy.

Take, for example, the change in the total number of provincial personnel in Argentina between 1998 and 1999, years that saw both national and provincial elections, and compare this change with the differences in the number of votes received by the two leading parties. Table 1 shows that in Tierra del Fuego, a new public job was created for almost every 2 votes cast. However, at the other extreme, only 182 new jobs were created in Santiago del Estero, while the difference in the votes was 84672. Across provinces the average number of votes per new job was 85.7. These figures suggest that even if we assume that all the new employees were hired through clientelistic ties, and that the return for one job was more than one vote, mostly from the family members of the new employee, we can see that on average there are simply not enough jobs available for distribution to increase the number of votes in the elections to make a significant difference.

Yet interviews with politicians and public employees show⁵ that political hir-

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⁴The 1949 Argentine constitution gave all workers “stability.” According to the current national and provincial laws that regulate public employment, permanent staff have the right to “stability.” In Turkey, a detailed law on public employment was promulgated in 1965. Although this law (Law No. 657) has been modified over the years, civil servants (memur)’ “job security” has remained intact.

⁵The interviewees for the research of this project include politicians from two main parties in Argentina, UCR and PJ, as well as some smaller national and provincial parties from three
ings still take place throughout the public sector. If politicians cannot make an effective difference in election results, and if they cannot monitor the voting behavior of employees, why do they make an effort to allocate these public jobs to “selected” individuals with close political connections? I argue that the answer lies in the party dynamics in countries like Argentina and Turkey. The parties have a number of characteristics that shape the way electoral competition affects clientelism. These include: party financing, the role of party members and activists in campaigns for general and intra-party elections, and the rules for selecting candidates for public positions and party posts.

The president of the electoral tribunal of the Radical party in Chaco explained that the party lacks the financial resources to hire staff to run campaigns and do daily party work in most provinces, cities, and smaller localities. As the president of the deliberative council of the Pilar, in Buenos Aires argued, only in some exceptional places like the Federal Capital in Argentina do local politi-

6 Author’s interview, October 2003.
7 Author’s interview, October 2003.
8 Federal Capital refers to the City of Buenos Aires that hosts the federal government of provinces, Buenos Aires, Chaco and Córdoba. In Turkey, the interviewees were selected from six parties that have participated in government in the period from 1983 to 2004: JDP, RPP, DLP, MP, TPP and NAP. These politicians occupied positions either in the two provinces of Bilecik and Istanbul or in the national government and national party organizations. (See Appendix A for a list of all party abbreviations that are used.) For both countries the selected politicians have occupied various public and party offices at the federal, provincial and/or municipal level. The interviewed public employees include three bureaucrats (from the federal government) in Argentina and various employees at the national and municipal level in Turkey. More than thirty interviews in each country have been conducted in the period between May 2002 and May 2005. When I quote the interviewees, I refer to the title of their public or party position, except in very few cases where I directly state their names.
cians have the resources to run professional campaigns and utilize media. In most other localities, “house to house” and coffee-house visits, personal conversations, “caminatas” (walks), and rallies constitute the major part of political campaigns.

According to the former president of the Republican People’s Party in the city of Canakkale in Turkey, the party workers who participate in these activities are more likely to “expect something in return” especially in places where unemployment is high and average income is low, and one of the most important rewards is a job in the public sector. Party campaigns depend on volunteer activists, and most of the party workers who conduct the daily work of the party are unpaid. As the president of the electoral tribunal of the Radical party in Chaco stated, the party members, including himself, have other (mostly public) jobs in addition to their party positions. This accounts for terms like “ñoqui” in Argentina, which refers to public employees who show up at the workplace only at the end of the month to get their salaries.

This paper begins with a brief description of party financing, the role of party activists in electoral campaigns, and the processes for nominating candidates and selecting party officials in Argentina and Turkey. Then, using a game theoretic model, I analyze how, in a context shaped by these three aspects of parties, a potential rivalry between a leader and her followers in a party affects the distri-
bution of public jobs in the two-stage electoral competition. I demonstrate the
existence of an equilibrium wherein a follower limits his efforts to build personal
political loyalties through job distributions in order to signal to his party leader
that he is not a threat to her leadership. Two conditions under which this equi-
librium exists are of substantive interest: Only when the party’s or party leader’s
support is important for a follower’s reelection and when the leader’s support
to other party members carries risks for leadership take-over (when the leader is
moderately strong in the party) do followers have incentives to limit the level of
clientelism in public sector employment. I conclude the paper by offering some
thoughts about the role of internal party politics in clientelistic linkages.

1. Parties in Argentina and Turkey

1.1. Party Financing:

In both countries, as in other developing democracies, party finance is a widely
debated political issue. However, detailed budgetary data from political parties
and information about their campaign spending and resources are hard to find.
In interviews with politicians a recurring theme was the financial pressures on
parties, especially at the provincial and local level. A significant portion of party
resources in both countries comes from the national government. Argentina cre-
ated a Permanent Party Fund with the Organic Law of Political Parties (Law
No. 23,298.) This fund allows each party to accept federal government subsidies
in proportion to the number of votes they received in the most recent election.
In 1993 this amount was 2.5 pesos per vote, in 1997 one peso, and then a 2001
decree left the decision on the amount of subsidy to the discretion of the Ministry
of Interior.

In Turkey, national government subsidy of political parties was incorporated in
the party legislation when the Political Parties Law (Law No.2, 820) was changed in 1984 (Genckaya 2000). However, the legislation contained no details about the subsidy. The very limited information available about party budgets in Turkey reveals that state subsidies constitute a significant share of legally obtained resources. For example, in the six-month period between January and June 2004, state funds constituted 87.3 percent of the revenues of the JDP (The party that controlled the national government at that time.).\(^\text{12}\) Between June 2001 and August 2003, state subsidies constituted 80% of the revenue of the RPP, the party that received the second largest share of votes in the 2002 parliamentary elections (CHP Parti Meclisi Çalışma Raporu- RPP Party Congress Report.)

Yet, a significant difference between Argentina and Turkey concerns the way state funds are distributed throughout the different organizational levels of the party. While Turkish law does not specify how these resources must be used, Argentine legislation directs that 80% of the government subsidies must be distributed to district party organizations. In interviews with politicians from various parties in Turkey, party officials at the district level in Istanbul and Bilecik complained about the level of financial transfers from the central party offices. Moreover, politicians who have held administrative positions at the central party offices admitted that very few resources are distributed to the local offices. As a legislator from Istanbul and former member of the RPP national congress stated\(^\text{13}\), “Since there are no transfers of money from the national to the provincial party offices, candidates in the provinces run their campaigns with their own money.”

Again, the JDP’s 2004 budget shows that transfers to the lower levels of party

\(^{12}\)This information is available on JDP’s web-site, www.akparti.org.tr.

\(^{13}\)Author’s interview, February 2005.
organizations constituted only 33% of total spending. RPP transfers between 2001 and 2003, constituted only 16% of total spending. As these figures show, decentralized organs of Turkish political parties receive only a minor share of state support, the most significant funding source for political parties. Interviews with party officials at the provincial and department levels revealed that, while the provincial level organizations receive some support from the central administration, municipal level organizations are left almost totally on their own to generate resources. As a result, while the central party organizations can utilize professional campaign tools such as radio, TV and print commercials, local organizations have to rely largely on volunteers.

Although I could not access any detailed budgetary information on election campaigns in Turkey, some limited data exists for some cases in Argentina. The National Election Office of Argentina (Camara Electoral Nacional)\textsuperscript{14} publishes the information provided by some parties in some provinces on the internet. Also, the non-governmental organization Poder Ciudadano\textsuperscript{15} initiated a project to make campaign spending more transparent and asked candidates for local government office to report detailed information about their revenues and spending. Unfortunately, only a handful of candidates did so, but some helpful information can be gathered from this data.

The most striking aspect of the spending data in terms of the main question of this paper is that staff salaries do not appear in any of the campaign budgets. For example, the information provided by the mayoral candidate for Moron, Buenos Aires:\textsuperscript{14}

\textsuperscript{14}The information can be found on the web-site of the National Election Office of Argentina, www.pjn.gov.ar/cne.

\textsuperscript{15}The data on campaign spending is available on Poder Ciudadano’s web-site, www.poderciudadano.org.ar
Aires, (from Agrupacion Nuevo Moron, Martin Sabbatella) makes no mention of spending on personnel. Of the $47,841 spent in total, $5,000 was spent on the "placement of posters," which might have involved payments to some workers, and $2,500 on public transportation, which could have involved some payments to drivers. However, the bulk of the spending appears to have gone to printing and phone expenses. The line items for personnel in the PJ’s provincial organization budget in Buenos Aires, list “professionals of publicity agencies,” $193,600, and legal professionals, $4,700, out of a total budget of $3,040,260. The corresponding figures for UCR are: $7,501 for professional consultants out of a total budget of $337,226. These examples of campaign spending by provincial and local level organizations of Argentine political parties support the information provided by politicians in interviews that most participation in political campaigns is volunteer, at least in the formal sense.

1.2. Party Activists and Party Members:

The participation of party activists is crucial during both general election campaigns and internal party election campaigns. The significance of their participation increases as party organizations’ financial resources to hire professional labor for their campaigns decreases. As the discussion in the previous section illustrates, financial constraints force local and district level party organizations in Argentina and Turkey to rely heavily on volunteer activists for their campaigns. My interviews and newspaper coverage of the campaigns reveal that typical methods that politicians use to appeal to their electorate in both general and intra-party elections include house, village, association, and coffee house (in Turkey) visits, walks, and rallies.

According to the interviewees, although such "face to face" interactions are
very effective in appealing to the electorate and communicating their message, they are also very labor intensive. As one of the council members from PJ in La Matanza said\textsuperscript{16}, “We use all methods. House to house visits have turned out very well... [Party] militants are fundamental. Everyone that voluntarily wants to help the party is useful. Walking, visiting needs a lot of people. House to house [visits] need a lot of people.” As another council member from PJ, La Matanza, said\textsuperscript{17}, “The campaigns are done door to door. We go to four hundred thousand houses in La Matanza. [We use] about ten thousand militants (activists).”

Another method used in both countries is large public rallies where party leaders make speeches. However, the politicians who were interviewed disputed the effectiveness of these rallies. For example, a former governor of the province of Chaco argued that although rallies used to be very important, they are becoming less so with the growth of the media.\textsuperscript{18} Still, whenever they are held, the number of people who attend seems to be a critical signal of the parties’ or candidates’ strength. Again, as one of the council members from PJ, La Matanza, pointed out,\textsuperscript{19} “In La Matanza, a Peronist rally easily attracts thirty thousand people. More than fifty thousand people attended the recent rally at the central market. These are party members and supporters of the mayor.” In 1995 an estimated sixty thousand people attended one of the Peronist rallies where Eduardo Duhalde (gubernatorial candidate) spoke at the Gregorio de Laferrere Station, La Matanza. (La Nacion, November 19, 1995) These examples show how important the involvement of party activists is for these rallies, not only because of their

\textsuperscript{16}Author’s interview, October 2003.  
\textsuperscript{17}Author’s interview, October 2003.  
\textsuperscript{18}Author’s interview, October 2003.  
\textsuperscript{19}Author’s interview, October 2003.
actual participation, but also because of their role in mobilizing other supporters. (See Auyero 2001 for a meticulous analysis of such events and the role of party activists.)

Even though the participation of these party activists is sometimes truly volunteer, the literature on political parties recognizes the use of selective material incentives by politicians to motivate activists to work in electoral and party activities. (See Ware (1992, 1996) and Lawson (1980) on parties in industrialized democracies, Epstein (1986), Mayhew (1986), and Steed (1998) on parties in the US, Chubb (1982) and Zuckerman (1979) on Italian Christian Democrats, Coppedge (1994) on parties in Venezuela and Levitsky (2003) on the PJ, for example.) The works by Ware (1996), Epstein (1986) and Steed (1998) emphasize the decreasing role\(^{20}\) of material incentives for European and North American political party activists. Although there is no systematic work on the recruitment of party activists in Turkey, interviews with party officials and politicians who have held public office suggest that material incentives still play a significant role. In addition to the information provided by the interviews for the Argentine case, Levitsky (2003) has conducted some systematic analysis. According to a survey of Peronist “base units” (neighborhood organizations of the PJ, unidades basicas), selective material incentives have been significant in fostering activist participation in the PJ (Levitsky 2003, pp. 209). Given that political parties lack financial resources, especially at the provincial and local level, politicians resort to the distribution of public benefits, such as public sector jobs, when they are able to do so to encourage activist participation. As one party member from PJ,

\(^{20}\)An opposing view is introduced by Romelle, Farrell, and Ignazi (2005) who argue that European parties increasingly rely on “linkages by rewards.”
Chaco, said\textsuperscript{21}:

“Yes, in a campaign there is great participation of militants. Volunteer, yes. Some people have some salary from the legislature, or some contracted jobs in the government, or some substitute from Plan Trabajar\textsuperscript{22}. However, there are also some people who voluntarily dedicate hours by their own means. At least in Peronism. I think in Radicalism, no. Because they are in government. They manage all contracts, all positions. As such, they can pay their militants. Public employment works for the party.”

1.3. Candidate and Party Authority Selection:

In the previous two sections I gave examples of cases where parties in Argentina and Turkey utilize particularistic distribution of public jobs to motivate activist participation in campaigns for general and internal elections. Still, the way and degree to which parties and politicians make use of particularistic exchanges to run the party machine varies across and within countries. Internal competition for party and public positions is the main critical factor that affects how and to what extent politicians distribute public jobs to party activists. Even though politicians in the same party share some common goals (electoral, programmatic or ideological), they also compete with one another to control the party and win nomination for public office. Internal party politics are shaped by the formal and informal rules that govern the selection of candidates and party officials. This, in turn, leads to variations in the strategies politicians use to further their career goals, including the distribution of material benefits.

Therefore, in order to understand the interactions between politicians within

\textsuperscript{21}Author’s interview, October 2003.
\textsuperscript{22}Plan Trabajar is a targeted social assistance program.
the same party, it is important to understand how the party selects its candidates and officers. Rahat and Hazan (2001) distinguish four dimensions of the candidate selection process: the qualifications required of the candidates, the profile of the selectors, the geographic units of selection, and voting/appointment systems. These same dimensions also apply to the selection of party officers. There are important variations in these dimensions across parties in Argentina and in Turkey.

In Turkey, the law of political parties (Law No. 2,820) specifies in detail how parties should be organized and how they should select their officers. However, it leaves the decision of how candidates should be nominated up to the parties. According to the law of political parties, all parties have to organize at the neighborhood (mahalle), municipal (ilce) and provincial (il) levels. At each level, they choose the officers for that level and the delegates for the upper level. The national party convention is a key institution since it is where delegates chosen at the provincial convention choose the national officers, including the party leaders. Since Turkey has a parliamentary system, the party leader who is elected at the national convention is most likely to become prime minister in the event that the party wins the general elections.

The law of political parties authorizes the parties to choose their own nomination methods and no party statute defines a specific nomination method. The national party authorities may use any of the following methods: elite decision at the national level, elite decision at the provincial or local level, indirect assemblies where the delegates vote, or direct primaries where party members vote. This makes the national convention where the national party officers are chosen even more important. Since 1983, elite decision at the national level has become the most commonly used method. During the 1980s and in the first half of the 1990s
the RPP (and its predecessor, the SPP) used indirect assemblies to choose their candidates for general and local elections in some provinces. During this period, two center-right parties, the TPP and the Motherland Party, also used indirect assemblies to choose their candidates in some provinces. Since 1983, there has been only one direct primary: in the SPP in the 1987 general elections. Only party members could vote in primaries. However, elite decision at the national level and in some occasions elite decision at the local level for local candidates is the most common method parties use to select their national and local candidates.

As a result, although the party leaders are elected at national conventions, they are rarely replaced because of their control over candidate nominations and financial resources (party and public, when they are in office.) Indeed, only one party leader has been defeated between 1983 and 2005. (Yildirim Akbulut of the Motherland Party was ousted at a national convention by his rival Mesut Yilmaz, in 1991.) My interviews reveal that in the case of elite decision at the national level and in some cases elite decision at the local level for local candidates, party leaders either directly contact the delegates and use public resources to influence their decisions, or use intermediaries (local party bosses), usually the provincial president of the party or the legislators from that province, to preserve their leadership.

In Argentina, the Organic Law of Political Parties (Law No. 23,298) leaves it to the parties to decide how to choose party officers and candidates (except the candidates for the presidency and the national legislature.) Prior to the most recent presidential elections and national legislative elections of 2003, the law was changed (Law No. 25,611) to introduce simultaneous open primaries for candidates for the presidency and the national legislature. However, internal compe-
tition within the PJ led to a political challenge to this decision, which was later changed again by various decrees. Finally, legislation was passed to suspend the initial change and the National Congress of Parties was authorized to call for primaries. The district organizations could decide how to select national legislators. Provincial statutes establish selection methods for offices at the provincial level. Even though most provincial level party organizations use primaries as the nomination method, an alternative list does not compete in provinces and municipalities where the party has a dominant leader. For example, the Radical party in Chaco has reached an agreement on a consensus list for all the provincial level nominations since Angel Rozas won the internal elections against Leon’s internal list in 1995.

Even though the structure of two major parties in Argentina is similar to those in Turkey in that they are organized at the municipal, provincial and national levels, one crucial difference is that in two major parties, PJ and UCR, the delegates for the national convention are chosen through direct elections at the provincial level. Although the national officials of the UCR have more power than those of the PJ, provincial actors in all the Argentine parties, especially governors, are more independent from the national party leaders than their counterparts in Turkey (Levitsky 2003). Direct elections for national convention delegates, the selection of provincial candidates at the provincial level, and more financial resources at the provincial level make the provincial Argentine party organizations very powerful. (See Jones et al. 2001, Eaton 2003 and De Luca et al. 2002 on the

\[23\] The participation of the independents varies across periods and provinces. See De Luca et al. (2002) for further information on the use of primaries for selecting national legislative candidates in Argentina.
role of governors in Argentine political parties and political system in general.)

1.4. Internal Elections and Material Benefits:

The fact that the two countries, the parties, and the provinces all use different selection methods for candidates and party officers means that the protagonists in internal party contests, as well as the nature of the competition will likewise vary. In some provinces and parties, internal elections are held to select both candidates for public office and for party posts. In others, they are used only to elect party officials. Public jobs might be distributed in order to influence the voting decisions of the electors whether these internal elections involve the participation of delegates, party members or independents. As many interviews with Turkish politicians revealed, when the number of selectors is low, as in the case of indirect assemblies with delegates, the exchange of material benefits might be more efficient from the perspective of the competitors.

When both party members and independents can vote, as Domingo Cavallo said “The primaries are like general elections.”24 However, one main difference is that the turnout in Argentine primaries has, in general, been very low. Even though it is hard to get systematic data on turnout in primaries, some information is available for 1999 UCR primaries for municipal offices in Chaco25, and some information on turnout in the 1991 municipal level primaries for Peronist candidates in the province of Buenos Aires was published in the Argentine newspaper, La Nación. This data shows that the turnout for Radical primaries for municipal office in Chaco in 1999 ranged from a low of 23 percent to a high of 57 percent,

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24Author’s interview, April 2004.
25The data on turnout and results of UCR primaries for selecting candidates for municipal offices in April 24th, 1999 was made available by the director of ECOMCHACO.
with an average of 34 percent. In the province of Buenos Aires, the available figures for the Peronist primaries in 1991 show that turnout was within the 25 to 50 percent range.

These examples show that candidates can actually affect the primary results by mobilizing their supporters. Therefore, party activists must be mobilized to participate in campaigns, as well as on primary election day itself. This gives candidates for party posts additional incentives to distribute material benefits like public jobs to activists so they will work for them in both the internal and general elections. Since both participation in electoral campaigns and in mobilization efforts are observable services, monitoring problems that make the exchange of material benefits for political support less efficient from the perspective of the provider are also solved.

2. Ambiguity about Intentions behind Particularistic Exchanges and Patronage Jobs as Signals:

The discussions in the preceding sections of this paper show that politicians have different reasons for distributing material benefits in exchange for political support. In return for distributing benefits, politicians might be expecting votes in general elections, votes in direct primaries and indirect assemblies, as well as participation in electoral campaigns and in mobilization efforts. All politicians need to form a network of supporters in order to win public office and in some cases particularistic distribution of material benefits is a useful tool to build political loyalties.

However, from the observers’ perspective, it is not clear why politicians engage in particularistic networks with citizens by distributing jobs. The politician might be allocating these public jobs just to mobilize activists and increase his party’s
vote share in the general elections, but he might also be seeking to build an 
independent power base for himself in order to move up in the party hierarchy. 
As a result, politicians who hold more senior positions in the party hierarchy and 
who are uncertain about the ambitions of rank and file members might be alarmed 
by the level of clientelistic networks formed in such a member’s electoral district. 
In this interaction between the politicians of the party hierarchy, the number of 
patronage jobs that are distributed in the public administration of the lower level 
politician’s electoral districts serves as a useful signal to the senior politicians 
about the former’s ambitions. The following section uses a game theoretic model 
to analyze the factors that lead to variations in the interactions between politicians 
of the same party and hence variations in the formation of networks of supporters 
through particularistic distribution of public jobs.

3. Model:

In this paper I introduce a general model that analyzes the interaction of two 
actors who compete within the same party. One of the players (Leader) is a 
politician with a higher, more valued position. This position can either be an 
elected public office or a party position. The player can be an individual or a 
faction (collective actor) in the party that dominates a party organization such 
as the national council. The second player (Follower) is another politician from 
the same party with a lower, less valued position. Again, this can be an elected 
public office or party position. The model can be applied to the analysis of 
various empirical cases. Elsewhere (Kemahlioglu 2005) I analyze provincial level 
public employment in Argentina and Turkey where the model is applied to the 
political relationship between governors and the national party leader in the case 
of Argentina and the relationship between important legislators and the national
party leader in the case of Turkey\textsuperscript{26}.

The key idea of the model is that there is a potential rivalry between these two politicians for the leadership of the party. The politician with the lower level position might want to replace the politician with the higher (more valued) position or form an opposition movement with others in the party to challenge the current party leadership. All leaders maintain their power in the party by forming alliances with other party members who have strong positions within the party and with the general public (Panebianco 1988.) However, these alliances last only as long as those who are not the leaders are insufficiently independent to challenge the leaders. One politician expressed this point many others alluded to: “In politics, today’s friends are tomorrow’s enemies\textsuperscript{27}.” Thus, the tension in the interaction between these two players derives from the fact that the higher level politician prefers the other politician to have sufficient public support to benefit the party as a whole, but not so much that he can challenge the leader’s own position. The ability and the incentive of the lower level politician to challenge his superior depends, in turn, on his ambitions and the level of support he has in the party and with the general public.

Since the leader does not know for certain whether the follower aspires to challenge her leadership, their interaction is modeled as an incomplete information game. As I have discussed in the previous section, the leader infers information about the followers’ intentions from the number of patronage jobs that are distributed in his district (the signal). Since the follower uses these jobs to build

\textsuperscript{26}A second level of analysis is the municipal administration where in Argentina the relevant political interaction is between mayors and the governor and in Turkey between mayors and important legislators as well as the mayor of "Grand City", if applicable. (Kemahlioglu 2005)

\textsuperscript{27}Author’s interview, October 2003.
support, and since distributing these jobs is costly for him, the level of patronage jobs distributed is a costly signal of his ambitions (type). The costs of distributing patronage jobs can be financial and/or electoral. Indeed, the resulting fiscal problems are very likely to hurt the politician electorally. In response to the follower’s action, that is, the new information provided by the number of patronage jobs about the follower’s ambition, the leader decides whether to support the follower. Since the leader wants the follower to be successful in the general elections because her reelection will benefit the party, the leader has an incentive to support the follower. However, if the follower has adequate political backing in the party and if his intention is to challenge the leader’s power, the leader risks her own position in the party.

The nature of the leader’s support and effectiveness vary according to the case that is analyzed. Support might be financial or symbolic. According to the information provided by the interviews with politicians, financial support can include campaign contributions and if the leader is holding public office, public investments such as building infrastructure like roads and bridges as well as public credit to the administrative unit of the follower. In Turkey, where leadership support is necessary to be nominated for a public position, support is crucial for the follower’s reelection if the follower is unlikely to switch to another party. Most of the interviewees claimed that symbolic support in the form of joint participation in rallies or on posters is valuable if the leader has name recognition and is popular. The electoral chances of the follower and his potential to replace the leader are influenced by this support from the leader as well as the number of patronage jobs that he distributes.

3.1. Basic Structure:
The setup of the game is as follows. Nature moves first and determines the follower \((P_F)\)'s type \(t \in \{C, A\}\) where \(C\) denotes “challenger” type and \(A\) denotes the “apathetic” type. Let \(p(t)\) denote the probability of \(P_F\) being type \(t\). Then, knowing his own type, \(P_F\) chooses the level of jobs \((x)\) that he distributes to increase his support. Let \(x\) denote the proportion of citizens that receive jobs in the public sector as a result of a particularistic exchange with the politician. The politician \((P_F)\) can establish such exchanges with the whole labor force in the district and \(x\) would equal 1. Or the politician does not hire anyone through clientelistic exchanges, and then \(x\) would be equal to 0. Therefore, formally, \(x \in [0,1]\). \(P_F\) pays a cost for these “clientelistic” hirings in the public sector, \(c(x)\), and \(c(x)\) is a function that increases with \(x\) at an increasing rate. That is, the first order partial derivative, \(c_x > 0\) and second order partial derivative \(c_{xx} > 0\).

Observing the level of jobs, but lacking information about the type of the lower level politician \((P_F)\), the leader \((P_L)\) decides whether to support \(P_F\). That is, \(P_L\) chooses \(s \in S = \{0, 1\}\) where \(s = 1\) denotes supporting and \(s = 0\) denotes not supporting. (This can be a continuous variable as in the case of investments, but here I focus the analysis on the case where \(s\) is discreet.) The number of jobs that are distributed \((x)\) and whether the higher level politician supports the lower level politician \((s)\) affect the probability that the lower level politician will win the general elections and the probability that the lower level politician will replace the higher level politician. Let

\[
\pi(s, x) \text{ be the probability of } P_F \text{ successfully replacing } P_L, \\
\tau(s, x) \text{ be the probability of } P_F \text{ winning the elections (In some cases where the candidates are chosen by the party leaders and the options of switching to another }
\]
party or running as an independent candidate do not exist, \( \tau = 0 \) if \( s = 0 \) and 

\[ \theta(s, x) \] be the party’s vote share in the follower’s district.

The payoffs that the players receive are defined as follows: The follower wants to win the general election for her lower level position and gets utility \( M \) if she wins this position. Depending on her type, that is, if she is a challenger, she wants to replace the leader and get the higher level position. Let the utility that she gets from taking over the leadership be \( R \). The leader \( (PL) \) wants to keep her higher level position and gets utility \( Q \) if she keeps it. \( PL \) also wants to increase the party’s vote share in the follower’s district and gets utility \( G \) from the party’s electoral results in the district.

Therefore, the utility functions of the players are:

\[ U_{PF} = \tau(s, x)M + \pi(s, x)R - c(x) \text{ where for } t = A, \pi = 0. \]
\[ U_{PL} = \theta(s, x)G + [1 - \pi(s, x)]Q \]

where the first order partial derivatives are:

\[ \tau_x > 0, \tau_s > 0 \]
\[ \pi_x > 0, \pi_s > 0 \]
\[ \theta_x > 0, \theta_s > 0 \]

To simplify the analysis, I assume linear functional forms for \( \tau(s, x) \), \( \pi(s, x) \), and \( \theta(s, x) \):

\[ \pi(s, x) = \alpha_1 s + \alpha_2 x \text{ where } \alpha_1 s + \alpha_2 x \leq 1 \]
\[ \tau(s, x) = \sigma_1 s + \sigma_2 x \text{ where } \sigma_1 s + \sigma_2 x \leq 1 \]
\[ \theta(s, x) = \beta_1 s + \beta_2 x \text{ where } \beta_1 s + \beta_2 x \leq 1 \]

I also assume the following function for the costs from patronage: \( c(x) = \nu x^2 \).

(See Table 2 for a summary of exogenous parameters.)

As such, the vote share of the party in the district and the probabilities of
reelection and leadership replacement increase with support from the leader \((s)\) and the level of jobs \((x)\). The relative rate of their effect depends on, \(\beta_{1,2}, \sigma_{1,2}\), and \(\alpha_{1,2}\). Therefore, we get:

\[
U_{PF}^t = (\sigma_1 s + \sigma_2 x)M + (\alpha_1 s + \alpha_2 x)R - vx^2
\]

\[
U_{PL} = (\beta_1 s + \beta_2 x)G + [1 - (\alpha_1 s + \alpha_2 x)]Q
\]

3.2. Equilibria:

Without any interactions with \(P_L\), the follower in the party would choose to provide the level of \(x\) that maximizes his utility function. Let \(x_t^*\) be the value of \(x\) that maximizes \(P_L^t\)'s utility function, \(x_t^* = \arg \max U_{PF}^t\). Then, we get the following lemma.

Lemma 1. \(x_C^* = \frac{\sigma_2 M + \alpha_2 R}{2\nu}\) and \(x_A^* = \frac{\sigma_2 M}{2\nu}\).

Proof. See Appendix B.1. □

As expected, given the utility function of the follower, without any interactions with the party leader the “challenger” politician would choose to provide higher numbers of jobs to build support in the party and public. This is true because the challenger type follower gets additional utility from taking over the leadership and the number of jobs that he distributes, \(x\), increases his probability of leadership take-over. The critical question is whether the competition with the party leader can induce the “challenger” to behave in another way.

Before analyzing the game under incomplete information I will present the solutions for the complete information game where \(P_L\) knows whether \(P_F\) is a challenger type or not. This analysis will show us that if the leader knows the follower’s ambitions about leadership, she would not be able to credibly condition her support to the follower based on the level of patronage in the follower’s district and hence the interaction between two politicians would not be able to induce
lower levels of particularism in public employment.

Under complete version of the model we can use backwards induction to find the equilibria:

*Lemma 2.* $P_L$’s best response strategy to $P_F$ is:

\[ s^*_P(x) = \begin{cases} 1 & \text{if } t = C \text{ when } \frac{G}{Q} \geq \frac{\alpha_1}{\beta_1} \\ 0 & \text{if } t = C \text{ when } \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \\ \end{cases} \]

\[ s^*_P(x) = \begin{cases} 1 & \text{if } t = A \text{ when } \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \\ 0 & \text{if } t = A \text{ when } \frac{G}{Q} \geq \frac{\alpha_1}{\beta_1} \\ \end{cases} \]

Proof. For the case when $P_F$ is a challenger, that is $t = C$, when $s = 1$, the utility of $P_L$ is $U_{PL} = (\beta_1 s + \beta_2 x) G + [1 - (\alpha_1 s + \alpha_2 x)] Q$ and when $s = 0$ the utility of $P_L$ is $U_{PL} = (\beta_2 x) G + (1 - \alpha_2 x) Q$

\[ U_L(s = 1) \geq U_L(s = 0) \text{ only when } \frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}. \]

For the case when $P_F$ is not a challenger, that is $t = A$, when $s = 1$, the utility of $P_L$ is $U_{PL} = (\beta_1 s + \beta_2 x) G + Q$ and when $s = 0$ the utility of $P_L$ is $U_{PL} = (\beta_2 x) G + Q$

Therefore, $U_L(s = 1) \geq U_L(s = 0)$ is always true given that by assumption $\beta_1 s > 0$ and $G > 0$. \(\square\)

From Lemma 2 we see that, when the follower is a “challenger” type, the leader’s decision to support the follower depends on four variables: the value that the leader attaches to the party’s vote share in the district, the value of maintaining her leadership, the effectiveness of leader’s support for leadership takeover, and the impact of the leader’s support on the party’s success in general elections. If the effectiveness of leader’s support for leadership takeover is sufficiently large, then the leader withdraws her support from the follower.

Given the best response of the leader, $P_F$ chooses the value of $x$ that maximizes his utility:
Proposition 1: \( P_F \)'s best response action at the first stage is

\[
x^* = \begin{cases} 
\frac{\sigma_2M + \alpha_2R}{2\nu} & \text{if } t = C \\
\frac{\sigma_2M}{2\nu} & \text{if } t = A 
\end{cases}
\]

Proof. Lemma 2 implies that \( P_L \)'s best response strategy to \( P_F \) when \( P_F \) is of the “challenger” type depends on condition, \( \frac{G}{Q} \geq \frac{\alpha_1}{\beta_1} \).

Since the level of \( x \) does not have an impact on \( P_L \)'s best response strategy, \( P_F \) chooses the level of \( x \) that maximizes his utility function, which gives the same equilibrium value of \( x^*_t \) as in \( P_F \)'s maximization of his utility without any interactions with \( P_L \). (See Appendix B.1. for the solution of this optimization problem.)□

Therefore, under complete information, the follower’s choice of \( x \) (the number of patronage jobs) is the same as it would be without any interactions with the party leader. When the follower is a challenger type the leader would benefit from Player 1 distributing fewer jobs when \( \beta_2G < \alpha_2Q \). However, the leader cannot credibly threaten to cut down on support to force Player 1 to distribute fewer jobs. When the follower is of the apathetic type, the leader’s utility is maximized when \( x = \frac{\sigma_2M}{2\nu} \), that is at the value of \( x \) that maximizes the follower’s utility.

Therefore, the analysis of the complete information game shows that when the leader knows the follower’s type, the interaction with the leader has no impact on the follower’s choice of \( x \), the number of patronage jobs that he distributes in his electoral district.

In the incomplete information version of the game the leader does not know the follower’s type, but can infer information about it through the follower’s signal, the number of patronage jobs. In Appendix B.2 I derive formally all the
possible equilibria of the model. Here I present and discuss the existence of one equilibrium wherein the challenger type follower pools on the action of the apathetic type follower and distributes fewer jobs than he would have done without any interaction with the leader or under the complete information game. In the analysis, I employ the concept of perfect Bayesian equilibrium. To make the discussion of the analysis easier, I assume that $P_L$’s prior belief about $P_F$’s type is equal to 1/2. ($p(t = C) = 1/2$)

Let $x'$ be the level of $x$ that is chosen by the “challenger” and “apathetic” type follower. By definition of pooling equilibria, the leader does not infer any additional information about the type of the follower from observing $x$. Therefore, the updated beliefs are $\mu^*(C; x = x') = 0.5$ and $\mu^*(A; x = x') = 0.5$. Let $q$ be $P_L$’s belief that $i = C | x > x'$.

**Lemma 3.** Given the updated beliefs, the leader’s best response to $z^*(x' | t) = 1, \forall t$ is:

- when $\frac{G}{Q} \geq \frac{a_1}{\beta_1}$, $r^*(s = 1 | x) = 1 \forall x \in X$
- when $\frac{a_1}{\beta_1} < \frac{G}{Q} < \frac{a_1}{\beta_1}$, $r^* = \left\{ \begin{array}{ll} 0 & \text{if } x > x' \\ 1 & \text{if } x \leq x' \end{array} \right.$
- and when $\frac{a_1}{\beta_1} \geq \frac{G}{Q}$, $r^*(s = 0 | x) = 1 \forall x \in X$

Proof. See Appendix B.2.□

From Lemma 3 we can see that if the condition, $\frac{a_1}{\beta_1} < \frac{G}{Q} < \frac{a_1}{\beta_1}$, is met, the leader’s decision to support the follower depends on the level of $x$. This means that in the incomplete version of the game, the leader can credibly threaten to cut down on her support to the follower if $x > x'$. However, this happens only under the condition, $\frac{a_1}{\beta_1} < \frac{G}{Q} < \frac{a_1}{\beta_1}$.
Proposition 2. Pooling equilibria exist where
\[ \frac{\alpha_1}{\beta_1} < \frac{G}{Q} < \frac{\alpha_2}{\beta_1} \] and \( \sigma_1 M - \frac{\alpha_1^2 R^2}{4\rho} + \alpha_1 R > 0 \) (two conditions)

\[ r^* = \begin{cases} 
  s = 0 & \text{if } x > x'' \\
  s = 1 & \text{if } x \leq x'' 
\end{cases} \]

\[ z^*(\forall t \in \{C, A\}, x = \frac{\sigma_2 M}{2\nu}, r^*(x)) = 1 \]

and

\[ \mu^*(C \mid x = \frac{\sigma_2 M}{2\nu}) = 1/2 \]

Proof. See Appendix B.2. □

The existence of a pooling equilibrium where both types choose \( x = \frac{\sigma_2 M}{2\nu} \) implies that under the two conditions specified in Proposition 2, the follower of “challenger” type chooses a level of \( x \) that is lower than the number of jobs he would have distributed without any interactions with the leader and with competition under complete information. This is the most critical implication of the game theoretic analysis because it suggests that under some conditions the competition between the leader and her follower within the party leads to lower expected levels of patronage in public sector employment if the leader does not have complete information about the follower’s ambitions for leadership.

We know from Lemmas 2 and 3 that under some condition that relates how much the leader values the party’s vote shares in the district and her own leadership, to the impact that her support has on vote shares and leadership takeover (the conditions are \( \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \) and \( \frac{\alpha_1}{2\beta_1} < \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \) respectively for the complete information game and pooling equilibria), the leader is better off supporting only the “apathetic” type. Since under complete information the leader knows the follower’s type, the leader’s best response action does not depend on the follower’s action, the number of patronage jobs. Hence, the leader cannot credibly threaten
to withdraw her support from the follower and the follower has no incentives to cut down on patronage in order to get the support of the leader.

However, under incomplete information, if \( \frac{\alpha}{2\beta_1} < \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \), the leader can credibly condition her support on the level of patronage jobs (the follower’s signal) and the “challenger” type follower can make the leader support her by reducing the level of patronage jobs in his district to “apathetic” type’s level, that is by pooling on the “apathetic” type’s actions. Yet, a second condition, \( \sigma_1 M - \frac{\sigma_2 R^2}{4\nu} + \alpha_1 R > 0 \) must be fulfilled in order for the follower to have the incentive to reduce the number of jobs in order to get the support of the leader.

These two conditions of existence for the pooling equilibria are important to analyze because they define the characteristics of party politics that lead to the lower expected levels of patronage in public sector employment. From \( \frac{\alpha}{2\beta_1} < \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \), we can see that the leader would be able to credibly threaten to withdraw her support from the follower only if her support has intermediate levels of impact on leadership takeover (that is, only if \( \alpha \) has intermediate values.) If her support is so effective that a follower would almost certainly replace the leader after getting the leader’s political or financial backing, the leader would never decide to support the follower. Therefore, the follower, by reducing the number of patronage jobs, would not be able to change the decision of the leader and induce her to support him. On the other hand, if the leader’s support has no or very small impact on leadership turnover, then the leader would always prefer to support the follower in order to increase the vote share of the party in the follower’s district. This would lead to the same outcome of high patronage because the follower would again have no incentives to cut down on the distribution of jobs in order to change the leader’s action.
The effectiveness of the leader’s support for leadership competition would, in turn, be influenced by the strength of the leader in the party. If the leader is in a dominant position, she would be able to maintain her leadership even if she gives support to the “challenger” followers. Therefore, her support would have no effect on the leadership turnover. On the other hand, if the leader is very weak, then supporting the followers would carry a very high risk for her leadership in the party and she would prefer never to support the followers. Therefore, only when the leader is moderately strong in her party, her decision to support the follower can be influenced by the signal the follower sends about his ambitions.

However, a “challenger” type follower would not always have this incentive to send a signal of an “apathetic” type to the leader by constraining the number of patronage jobs. Only if the second condition, \( \sigma_1 M - \frac{\alpha_2 R^2}{4\nu} + \alpha_1 R > 0 \), is met, the follower would trade-off jobs for the leader’s support. From the analysis of this condition, we can see that when the leader’s support is important for the follower’s reelection chances (that is, when \( \sigma_1 \) is sufficiently high) the follower would distribute fewer patronage jobs in order to signal to the party leader that he has no ambitions for taking over her leadership so that the leader would then decide to support the follower.

As this discussion shows, from the analysis of the two conditions for the existence of pooling equilibrium, the following hypothesis follows:

Hypothesis 1. Lower expected levels of patronage in public employment in the follower’s district is reached when

(a) the leader is moderately strong in the party; and

(b) the party (leader)’s support is important for the follower’s reelection.

In addition to this main result, the outcome level of patronage jobs in this equi-
librium, $\frac{\sigma_2M}{2\nu}$, implies that the level of clientelism in public employment increases when distributing jobs is a more effective strategy for increasing politicians' share of votes in general elections even though the follower's choice on the signal does not depend on how much she benefits electorally from distributing patronage jobs ($\sigma_2$). (This can be seen from the condition, $\sigma_{1,n}M - \frac{\alpha_{2,n}R^2}{\nu_2} + \alpha_{1,n}R \geq 0$.)

4. Conclusion:

Politicians and parties can build networks of supporters by forming particularistic relationships with citizens through the exchange of public material benefits. This strategy usually turns out to have social costs because it creates economic inefficiencies and leads to inequalities in the short-term allocation of resources. It also limits the long-term opportunity of citizens to make programmatic demands from the state, and the consequent beliefs of citizens in the political system's legitimacy.

In order to understand why such a socially costly form of politician-citizen relationship persists, the literature has focused on the role of elections in democratic systems and the availability of public and private economic resources. One conclusion that can be drawn from these preceding analyses is that the mechanisms behind these particularistic exchanges vary according to the nature of the benefit that is exchanged. When we focus on one of the most cited type of benefits in the literature, public jobs, we see that we must look at internal party competition, in addition to inter-party competition in general elections, if we are to understand the mechanisms of how politicians exchange public jobs in a particularistic manner to build political support in developing democracies like Argentina and Turkey.

This is due to the following: Economic changes that these countries have been experiencing have reduced the public resources politicians can use in these partic-
ularistic exchanges. Manipulating public sector employment is particularly costly due to the large public deficits that form one of the major factors leading to economic crises. Higher economic costs of expanding the public sector in order to create jobs that can be distributed particularistically to citizens force the politicians to be more strategic about who these citizens are and what the politicians expect from them in return.

Beyond voting for the party (politician) in general elections (which is not easily verifiable), those who receive public jobs are expected to mobilize supporters for elections, participate in electoral campaigns, and vote in internal elections. Financial limitations force parties to depend on the participation of party activists and members in local campaigns as well as party activities. Therefore, politicians allocate public jobs to mobilize party members for these activities. In addition, methods of candidate and party selection that are not truly participatory allow politicians to use public resources such as employment to change the results of internal elections.

The final outcome of the number of jobs to be distributed in order to build support is a result of the intersection of the factors that are related both to competition between parties and competition within parties. Since party actors are dependent on one other for electoral success individual politicians have incentives to restrict their use of public jobs to build political support. In competitions for party leadership, the uncertainty concerning politicians’ intentions to compete for the leadership and ambiguity about motivations behind the distribution of jobs to build support, whether for internal competition or for party’s electoral success, might limit patronage jobs.

The politician who needs the leader’s support for her reelection has incentives
to restrict her efforts to build patronage networks in order to signal to the leader that she is not a threat. Since exchanging jobs for support is an easily observable activity that might trigger the leader’s suspicion, politicians who need the leader’s backing might under some conditions have the incentives to reduce patronage. The model’s results show that such incentives exist when the party leader’s support is important for the politicians’ electoral chances and when the leader’s support has intermediate levels of impact on internal competition.

From a broader perspective, these results imply that internal party competition has the potential to contain the proliferation of patronage in public sector employment. However, some conditions are necessary for this desired outcome: The party should have a significant effect on the electoral chances of individual politicians and party leadership should be open to competition. The leader’s support would affect leadership turnover only when there is real competition in the party; that is when the leader is moderately strong in the party. As a result, we would expect politicians to have the incentive to reduce their patronage networks when parties play a significant role in elections and when leaders are moderately strong in their parties.
Table 1. Effectiveness of Distributing Jobs for Votes (1999 elections)

<table>
<thead>
<tr>
<th>Provinces</th>
<th>1998 number of employees</th>
<th>1999 number of employees</th>
<th>difference in votes of two leading parties</th>
<th>difference in the number of employees</th>
<th>new jobs/vote</th>
</tr>
</thead>
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<tr>
<td>buenos aires</td>
<td>365,939</td>
<td>404,655</td>
<td>284,265</td>
<td>38,716</td>
<td>7.34</td>
</tr>
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<td>catamarca</td>
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<td>22,963</td>
<td>12,531</td>
<td>818</td>
<td>15.32</td>
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<tr>
<td>chaco</td>
<td>40,637</td>
<td>41,776</td>
<td>147,593</td>
<td>1,139</td>
<td>129.58</td>
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<td>25,444</td>
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<td>572</td>
<td>44.48</td>
</tr>
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<td>688</td>
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<td>85.71</td>
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</tbody>
</table>

* For these cases I used the presidential election results because gubernatorial elections were not held.

Sources: The election results were obtained from Camara Nacional Electoral (National Electoral Chamber of Argentina.) The data on public employees is provided by ProvInfo (Provincial Database of Ministry of Interior.)
Table 2. Summary of Exogenous Parameters

$\sigma_1$ - effectiveness of leader’s support ($s$) for follower’s reelection
$\sigma_2$ - effectiveness of distributing jobs ($x$) for follower’s reelection
$\alpha_1$ - effectiveness of leader’s support ($s$) for replacing the leader
$\alpha_2$ - effectiveness of distributing jobs ($x$) for replacing the leader
$\beta_1$ - effectiveness of leader’s support ($s$) for vote shares
$\beta_2$ - effectiveness of distributing jobs ($x$) for vote shares
$\nu$ - the rate of cost ($c$) from distributing jobs
$M$ - the value of reelection for the follower
$R$ - the value of leadership for the follower
$G$ - the value of vote share for the leader
$Q$ - the value of maintaining the leadership for the leader
Figure 1
Sequence of Actions in the Model

Nature chooses Follower’s type
Follower (P_F) chooses the level of x
Leader (P_L) decides whether to support the follower
**Appendix A. List of abbreviations**

ARI- Argentines for a Republic of Equals (Argentina por una República de Iguales)

JDP- Justice and Development Party (Adalet ve Kalkınma Partisi, AKP)

DLP- Democratic Left Party (Demokratik Sol Parti, DSP)

MP- Motherland Party (Anavatan Partisi, ANAP)

NAP- Nationalist Action Party (Milliyetçi Hareket Partisi, MHP)

PJ- Peronist Party (Partido Justicialista)

RPP- Republican Peoples Party (Cumhuriyet Halk Partisi, CHP)

UCR- Radical Party (Union Civica Radical)

SPP- Social Democratic People’s Party (Sosyaldemokrat Halk Partisi, SHP)

TPP- True Path Party (Dogru Yol Partisi, DYP)
Appendix B.

Appendix B.1

The follower maximizes his utility function with respect to $x$ and subject to following conditions: $\sigma_1 s + \sigma_2 x \leq 1, \alpha_1 s + \alpha_2 x \leq 1$

When $t = C$

$$\arg\max_x [(\sigma_1 s + \sigma_2 x)M + (\alpha_1 s + \alpha_2 x)R - vx^2] = \sigma_2 M + \alpha_2 R - 2vx = 0$$

$$2vx = \sigma_2 M + \alpha_2 R$$

$$x = \frac{\sigma_2 M + \alpha_2 R}{2v}$$

When $t = A$

$$\arg\max_x [(\sigma_1 s + \sigma_2 x)M - c(x)] = \sigma_2 M - 2vx = 0$$

$$2vx = \sigma_2 M$$

$$x = \frac{\sigma_2 M}{2v}$$

Appendix B.2 Formal derivations of equilibria under incomplete information:

Let $\mu : X \to \Delta(T)$ be the updated beliefs of $P_L$ about $P_F$’s type given $x$, where for a finite set $D$, $\Delta(T)$ denotes the set of probability distributions over $D$ and $\mu(t \mid x)$ is $P_L$’s belief about the likelihood that $P_F$ is type $t \in \{C, A\}$ given that $x$ is observed by $P_L$.

A strategy for $P_F$ is a function

$$z : T \to \Delta(X)$$

where $z(x \mid T)$ is the probability that $P_F$ sends the signal $x$ given that his type is $t \in \{C, A\}$. (In pure strategies $z$ is either 0 or 1.) Type $t \in \{C, A\}$ chooses $x \in X$ according to $z(.)$ if $z(x \mid T) > 0$. $x(t)$ denotes the choice of patronage jobs by type $t$.

The strategy for $P_L$ is defined by a function such that

$$r : X \to \Delta(S)$$
where \( r(s \mid x) \) denotes the probability that \( P_L \) takes action \( s \) upon observing \( x \).

Then a \textit{perfect Bayesian equilibrium} (PBE)\(^{29} \) of the game is a strategy profile \( r^*, z^* \) and posterior beliefs \( \mu(t \mid x) \) such that

\( \forall t, z^*(\cdot \mid t) \in \arg \max_x U_{P_F}(x, r^*, t) \)

\( \forall x, r^*(\cdot \mid x) \in \arg \max_s \sum_t \mu(t \mid x) U_{P_L}(x, s, t) \)

and

\( \mu(t \mid x) = \frac{z^*(x \mid t) p(t)}{\sum_{t \in \{C, A\}} p(t) z^*(x \mid t)} \)

if \( \sum_{t \in \{C, A\}} p(t) z^*(x \mid t) > 0 \),

and \( \mu(\cdot \mid x) \) is any probability distribution on \( T \)

if \( \sum_{t \in \{C, A\}} p(t) z^*(x \mid t) = 0 \).

**Pure strategy separating equilibria:**

Let the level of \( x \) that is chosen by type \( C \) be \( x' \) and the level of \( x \) that is chosen by type \( A \) be \( x'' \), then in separating equilibria \( x' \neq x'' \).

\textit{First, I consider the case where} \( x' > x'' \).

Since I am analyzing separating equilibria, trivially, the updated beliefs on the equilibrium path are \( \mu^*(C \mid x = x') = 1 \) and \( \mu^*(A \mid x = x'') = 1 \). For the follower’s actions that are off-the-equilibrium path (an action that is not chosen by the follower as part of her optimal strategy in the equilibrium, such as \( x' < x < x'' \)), Bayes’ rule cannot be used to update the leader’s beliefs. Any posterior beliefs are possible. In the rest of the analysis, for off-the-equilibrium path actions, I consider the beliefs \( \mu(C \mid x) = 1 \) for all \( x > x'' \) so that posterior beliefs are monotonic in \( x \).

\(^{29}\)I used the definition of PBE in Fudenberg and Tirole (1982) in the characterization of the equilibrium.
Then, expected payoffs from $P_L$’s actions are:

$$E(s = 1 \mid x > x'') = (\beta_1 s + \beta_2 x)G + [1 - (\alpha_1 s + \alpha_2 x)]Q$$
$$E(s = 0 \mid x > x'') = (\beta_2 x)G + [1 - \alpha_2 x]Q$$
$$E(s = 1 \mid x \leq x'') = (\beta_1 s + \beta_2 x)G + Q$$
$$E(s = 0 \mid x \leq x'') = (\beta_2 x)G + Q$$

$$E(s = 1 \mid x > x'') \geq E(s = 0 \mid x > x'')$$ if

$$(\beta_1 s + \beta_2 x)G + [1 - (\alpha_1 s + \alpha_2 x)]Q \geq (\beta_2 x)G + [1 - \alpha_2 x]Q$$

$$(\beta_1 s)G \geq (\alpha_1 s)Q$$
$$\frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}$$

and

$$E(s = 1 \mid x \leq x'') > E(s = 0 \mid x \leq x'')$$ when

$$(\beta_1 s + \beta_2 x)G + Q \geq (\beta_2 x)G + Q$$

$$(\beta_1 s)G \geq 0$$

Since by assumption $\beta > 0$ and $G > 0$, $(\beta_1 s)G \geq 0$ is always true.

Therefore, if $\frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}$, $r^*(s = 1 \mid x) = 1 \forall x \in X$.

Given $r^*(s = 1 \mid x) = 1 \forall x \in X$, what is $z^*(x \mid t)$?

$\forall t \in \{C, A\}$, $z^*(x \mid t) > 0$ only if $x \in \arg\max_{x \in X} U_{P_1}(t, x, r^*(x))$.

$$\arg\max_{x \in X} U_1(t = C, x, r^*(x)) = \arg\max_{x \in X} [(\sigma_1 s + \sigma_2 x)M + (\alpha_1 s + \alpha_2 x)R - \nu x^2]$$

$$x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}$$

$$\arg\max_{x \in X} U_1(t = A, x, r^*(x)) = \arg\max_{x} [(\sigma_1 s + \sigma_2 x)M - \nu x^2]$$

$$x = \frac{\sigma_2 M}{2\nu}$$

Since $\frac{\sigma_1 M}{2\nu} < \frac{\sigma_2 M + \alpha_2 R}{2\nu}$ the assumption that $x' > x''$ is fulfilled.

Therefore, we get a pure strategy separating PBE where

$$\frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}$$
\( r^*(s = 1 \mid x) = 1 \forall x \in X \)

\( z^*(t = C, x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}, r^*(x)) = 1, \ z^*(t = A, x = \frac{\sigma_2 M}{2\nu}, r^*(x)) = 1 \)

and

\[ \mu^*(C \mid x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}) = 1 \text{ and } \mu^*(A \mid x = \frac{\sigma_2 M}{2\nu}) = 1 \]

If \( \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \), \( r^* = \begin{cases} 
  s = 0 & \text{if } x > x'' \\
  s = 1 & \text{if } x \leq x'' 
\end{cases} = 1. \)

Given \( r^* = \begin{cases} 
  s = 0 & \text{if } x > x'' \\
  s = 1 & \text{if } x \leq x'' 
\end{cases} = 1 \), what is \( z^*(x \mid t)? \forall t \in \{C, A\} \), \( z^*(x \mid t) > 0 \) only if \( x \in \arg \max_{x \in X} U_{P_1}(t, x, r^*(x)) \)

The follower of type C either can choose \( x \) that maximizes her utility function when \( s = 0 \) which is

\[ \arg \max_{x \in X} U_1(t = C, x, r^*(x)) = \arg \max_{x \in X} [\mu(x)M + (\alpha_2 x)R - \nu x^2] \]

\[ x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \]

or choose \( x \leq x'' \) and get support \( s = 1 \).

The follower of type A would choose \( x \) that maximizes her utility function when \( s = 1 \)

\[ \arg \max_{x \in X} U_1(t = A, x, r^*(x)) = \arg \max_{x} [(\sigma_1 + \sigma_2 x)M - \nu x^2] \]

\[ x = \frac{\sigma_2 M}{2\nu} \]

Therefore, we get a pure strategy separating PBE where

\[ \frac{G}{Q} < \frac{\alpha_1}{\sigma_1} \]

\( r^* = \begin{cases} 
  s = 0 & \text{if } x > x'' \\
  s = 1 & \text{if } x \leq x'' 
\end{cases} = 1 \)

\( z^*(t = C, x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}, r^*(x)) = 1, \ z^*(t = A, x = \frac{\sigma_2 M}{2\nu}, r^*(x)) = 1, \)

\[ \mu^*(C \mid x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}) = 1, \mu^*(A \mid x = \frac{\sigma_2 M}{2\nu}) = 1 \]

and when \( U_1(t = C, x = \frac{\sigma_2 M}{2\nu}, s = 1) - U_1(t = C, x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}, s = 0) < 0 \).
The case where $x' < x''$:

Here I can no longer consider posterior beliefs that are monotonic in $x$. Since we are analyzing separating equilibria, trivially we know that $\mu^*(C \mid x = x') = 1$ and $\mu^*(A \mid x = x'') = 1$. However, for the inequalities $x < x', x > x''$ and the interval $x' < x < x''$ any posterior beliefs are possible.

Expected payoffs from $P_L$’s actions are:

\[
E(s = 1 \mid x = x') = (\beta_1 s + \beta_2 x) G + [1 - (\alpha_1 s + \alpha_2 x)]Q
\]
\[
E(s = 0 \mid x = x') = (\beta_2 x) G + [1 - (\alpha_2 x)]Q
\]
\[
E(s = 1 \mid x = x'') = (\beta_1 s + \beta_2 x) G + Q
\]
\[
E(s = 0 \mid x = x'') = (\beta_2 x) G + Q
\]
\[
E(s = 1 \mid x = x') \geq E(s = 0 \mid x = x') \text{ when } (\beta_1 s + \beta_2 x) G + [1 - (\alpha_1 s + \alpha_2 x)]Q > (\beta_2 x) G + [1 - \alpha_2 x]Q
\]

That is, $E(s = 1 \mid x = x') \geq E(s = 0 \mid x = x')$ when $\frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}$

and

\[
E(s = 1 \mid x = x'') \geq E(s = 0 \mid x = x'') \text{ when } (\beta_1 s + \beta_2 x) G + Q \geq (\sigma_2 x) G + Q
\]

That is, $E(s = 1 \mid x = x'') \geq E(s = 0 \mid x = x'')$ when $(\beta_1 s) G \geq 0$

Since by assumption $\beta > 0$ and $G > 0$, $(\beta_1 s) G \geq 0$ is always true.

Therefore, if $\frac{G}{Q} \geq \frac{\alpha_1}{\beta_1}$, $r^*(s = 1 \mid x) = 1$ where $x \in \{x', x''\}$. If $\frac{G}{Q} < \frac{\alpha_1}{\beta_1}$, $r^* = \begin{cases} 
\begin{align*}
 s & = 0 \text{ if } x = x' \\
 s & = 1 \text{ if } x = x''
\end{align*}
\end{cases}$

We still need to consider off-the equilibrium actions, $x < x', x > x'', x' < x < x''$. If we let the posterior belief of the leader that the follower is a challenger if $x < x'$ is observed be $\rho$, then $\rho$ can take on the value of only 1 since $x' < x''$ and the probability that the follower is of type A has to be zero.

Then, the expected payoffs from $P_L$’s actions are:
\[ E(s = 1 \mid x < x') = (\beta_1 s + \beta_2 x) G + [1 - (\alpha_1 s + \alpha_2 x)] Q \]
\[ E(s = 0 \mid x < x') = (\beta_2 x) G + [1 - (\alpha_2 x)] Q \]

Therefore, if \( \frac{G}{Q} > \frac{\alpha_1}{\beta_1} \), \( r^*(s = 1 \mid x < x') = 1 \). If \( \frac{G}{Q} < \frac{\alpha_1}{\beta_1} \), \( r^*(s = 0 \mid x < x') = 1 \).

If we let the posterior belief of the leader that the follower is a challenger if \( x > x'' \) is observed be \( \gamma \), then \( \gamma \) can take on the value of only 0 since \( x' < x'' \).

Then, the expected payoffs from \( P_L \)'s actions are:
\[ E(s = 1 \mid x > x'') = (\beta_1 s + \beta_2 x) G + Q \]
\[ E(s = 0 \mid x > x'') = (\beta_2 x) G + Q \]

Therefore, \( r^*(s = 1 \mid x > x'') = 1 \).

For an observed \( x \) in the interval \( x' < x < x'' \) let the posterior belief that the follower is of type \( C \) be \( \delta \). Then the posterior belief that the follower is of type \( A \) is \( 1 - \delta \).

Expected payoffs from \( P_L \)'s actions are:
\[ E(s = 1 \mid x' < x < x'') = \delta[(\beta_1 s + \beta_2 x) G + [1 - (\alpha_1 s + \alpha_2 x)] Q] + (1 - \delta)[(\beta_1 s + \beta_2 x) G + Q] - \delta(\beta_1 s + \beta_2 x) G - \delta Q \]
\[ = (\beta_1 s + \beta_2 x) G + [1 - \delta(\alpha_1 s + \alpha_2 x)] Q \]
\[ E(s = 0 \mid x' < x < x'') = \delta[(\beta_2 x) G + [1 - (\alpha_2 x)] Q] + (1 - \delta)[(\beta_2 x) G + Q] \]
\[ = \delta(\beta_2 x) G + [\delta Q - \delta(\alpha_2 x) Q] + (\beta_2 x) G + Q - \delta(\beta_2 x) G - \delta Q \]
\[ = (\sigma_2 x) G + [1 - \delta(\alpha_2 x)] Q \]

As such, \( E(s = 1 \mid x' < x < x'') \geq E(s = 0 \mid x' < x < x'') \)

when \( (\beta_1 s + \beta_2 x) G + [1 - \delta(\alpha_1 s + \alpha_2 x)] Q > (\beta_2 x) G + [1 - \delta(\alpha_2 x)] Q \)
\[ (\beta_1 s) G + [Q - \delta(\alpha_1 s + \alpha_2 x) Q] > [Q - \delta(\alpha_2 x) Q] \]
\[ (\beta_1 s) G - \delta(\alpha_1 s) Q > 0 \]
\[ \beta_1 G > \delta \alpha_1 Q \]

Therefore, if \( G > \frac{\delta \alpha_1}{\beta_1} \), \( r^*(s = 1 \mid x' < x < x'') = 1 \). If \( G < \frac{\delta \alpha_1}{\beta_1} \), \( r^* = \left\{ \begin{array}{ll}
0 & \text{if } x' < x < x'' \\
1 & \text{if } x' < x < x''
\end{array} \right. \)

To summarize, the best response of the leader to follower’s action is:

If \( G > \frac{\delta \alpha_1}{\beta_1} \), \( r^*(s = 1 \mid x) = 1 \) where \( x \in \{x', x''\} \), \( r^*(s = 1 \mid x < x') = 1 \), \( r^*(s = 1 \mid x > x'') = 1 \) and \( r^*(s = 1 \mid x' < x < x'') = 1 \).

Therefore, when \( G > \frac{\delta \alpha_1}{\beta_1} \), \( r^*(s = 1 \mid x) = 1 \forall x \). When \( \frac{\alpha_1}{\beta_1} > G > \frac{\delta \alpha_1}{\beta_1} \), \( r^* = \left\{ \begin{array}{ll}
0 & \text{if } x = x' \\
1 & \text{if } x = x''
\end{array} \right. \)

and \( r^*(s = 1 \mid x' < x < x'') = 1 \).

If \( G < \frac{\delta \alpha_1}{\beta_1} \), \( r^* = \left\{ \begin{array}{ll}
0 & \text{if } x = x' \\
1 & \text{if } x = x''
\end{array} \right. \)

Therefore, when \( G < \frac{\delta \alpha_1}{\beta_1} \), \( r^*(s = 0 \mid x < x') = 1 \), \( r^*(s = 1 \mid x > x'') = 1 \) and \( r^*(s = 1 \mid x' < x < x'') = 1 \).

Given these best response actions of the leader, what is \( z^*(x \mid t) \)?

\( \forall t \in \{C, A\}, z^*(x \mid t) > 0 \) only if \( x \in \arg \max_{x \in X} U_{P_1}(t, x, r^*(x)). \)

When \( G \geq \frac{\delta \alpha_1}{\beta_1} \),

\[ \arg \max_{x \in X} U_1(t = C, x, r^*(x)) = \arg \max_{x \in X} [(\sigma_1 s + \sigma_2 x)M + (\alpha_1 s + \alpha_2 x)R - \nu x^2] \]

\[ x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \]

\[ \arg \max_{x \in X} U_1(i = A, x, r^*(x)) = \arg \max_{x} [(\sigma_1 s + \sigma_2 x)M - \nu x^2] \]

\[ x = \frac{\sigma_2 M}{2\nu} \]

However, since \( \frac{\sigma_2 M}{2\nu} < \frac{\sigma_2 M + \alpha_2 R}{2\nu} \) the assumption that \( x' < x'' \) is not fulfilled.

Therefore, a pure strategy separating PBE where \( x' < x'' \) cannot exist when \( G \leq \frac{\delta \alpha_1}{\beta_1} \).
When \( \frac{\alpha_1}{\beta_1} > \frac{G}{Q} \geq \frac{6\alpha_1}{\beta_1} \), \( P_F \) either chooses \( x \neq x' \) and gets \( s = 1 \) or chooses \( x = x' \) and gets \( s = 0 \).

Since for type \( A \) his utility is greater when \( s = 1 \), \( P_F^A \) chooses \( x \neq x' \). \( P_F^C \) gets \( s = 0 \) if he chooses \( x = x' \) and gets \( s = 1 \) when he chooses \( x \neq x' \). Therefore, if his utility is higher when he deviates from equilibrium level \( x, x' \), and gets \( s = 1 \), there is no pure strategy PBE under these conditions. If his utility is higher when \( s = 0 \) and \( x = x' \), he chooses \( x \) that maximizes his utility function, \((\sigma_2 x)M + (\alpha_2 x)R - \nu x^2\), which is \( x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \). \( P_F^A \) chooses \( x < x' \) or \( x \geq x'' \). \( P_F^C \) gets \( s = 0 \) if he chooses \( x = x' \) and gets \( s = 1 \) when he deviates from his equilibrium behavior. Therefore, if his utility is higher when he deviates from equilibrium level \( x, x' \), and gets \( s = 1 \), there is no pure strategy PBE under these conditions. If his utility is higher when \( s = 0 \) and \( x = x' \), he chooses \( x \) that maximizes his utility function, \((\sigma_2 x)M + (\alpha_2 x)R - \nu x^2\), which is \( x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \). \( P_F^A \) chooses arg max \( x \in \chi U_1(t = A, x, r^*(x)) = \arg \max_x [(\sigma_1 s + \sigma_2 x)M - \nu x^2] \) given that it is not equal to \( x' \). Therefore, \( P_F^A \) chooses \( x = \frac{\sigma_2 M}{2\nu} \). However, since \( \frac{\sigma_2 M}{2\nu} < \frac{\sigma_2 M + \alpha_2 R}{2\nu} \) the assumption that \( x' < x'' \) is not fulfilled.

Therefore, a pure strategy separating PBE where \( x' < x'' \) cannot exist when \( \frac{\alpha_1}{\beta_1} > \frac{G}{Q} \geq \frac{6\alpha_1}{\beta_1} \).

When \( \frac{G}{Q} < \frac{6\alpha_1}{\beta_1} \), \( P_F \) either chooses \( x' \leq x \) and gets \( s = 0 \) or chooses \( x < x' \) or \( x \geq x'' \) and gets \( s = 1 \). Since for type \( A \) her utility is greater when \( s = 1 \), \( P_F^A \) chooses \( x = x' \) or \( x \geq x'' \). \( P_F^C \) gets \( s = 0 \) if he chooses \( x = x' \) and gets \( s = 1 \) when he deviates from his equilibrium behavior. Therefore, if his utility is higher when he deviates from equilibrium level \( x, x' \), and gets \( s = 1 \), there is no pure strategy PBE under these conditions. If his utility is higher when \( s = 0 \) and \( x = x' \), he chooses \( x \) that maximizes his utility function, \((\sigma_2 x)M + (\alpha_2 x)R - \nu x^2\), which is \( x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \). \( P_F^A \) chooses arg max \( x \in \chi U_1(i = A, x, r^*(x)) = \arg \max_x [(\sigma_1 s + \sigma_2 x)M - \nu x^2] \) given that it is not equal to \( x' \). Therefore, \( P_F^A \) chooses \( x = \frac{\sigma_2 M}{2\nu} \). However, since \( \frac{\sigma_2 M}{2\nu} < \frac{\sigma_2 M + \alpha_2 R}{2\nu} \) the assumption that \( x' < x'' \) is not fulfilled.

Therefore, a pure strategy separating PBE where \( x' < x'' \) cannot exist when \( \frac{G}{Q} < \frac{6\alpha_1}{\beta_1} \), either.
Since we covered all possible conditions for the posterior beliefs of the follower, there is no pure strategy separating PBE where $x' < x''$.

**Pooling equilibria:**

The first condition that must be satisfied is $x' = x''$

Therefore, for PBE to exist $z'(x' \mid t) = 1, \forall t$.

With the prior belief that $p(t = C) = 1/2$,

$$\mu^*(C; x = x') = \frac{1q(C)}{1q(C) + 1q(A)} = \frac{1 \times 0.5}{1 \times 0.5 + 1 \times 0.5} = 0.5.$$ 

Let $q$ be the probability that $t = C \mid x > x'$.

Then, the expected payoffs from $P_2$’s actions are:

$$E(s = 1 \mid x > x') = q[(\beta_1s + \beta_2x)G + [1 - (\alpha_1s + \alpha_2x)]Q] + (1 - q)[(\beta_1s + \beta_2x)G + Q]$$

$$E(s = 0 \mid x > x') = q[(\beta_2x)G + [1 - (\alpha_2x)]Q] + (1 - q)[(\beta_2x)G + Q]$$

For $E(s = 1 \mid x > x') \geq E(s = 0 \mid x > x')$, 

$$q[(\beta_1s + \beta_2x)G + [1 - (\alpha_1s + \alpha_2x)]Q] + (1 - q)[(\beta_1s + \beta_2x)G + Q] \geq q[(\beta_2x)G + [1 - (\alpha_2x)]Q] + (1 - q)[(\beta_2x)G + Q]$$

$$q(\beta_1s + \beta_2x)G + q[1 - (\alpha_1s + \alpha_2x)]Q + [(\beta_1s + \beta_2x)G + Q] - q[(\beta_1s + \beta_2x)G + Q] \geq q(\beta_2x)G + q[1 - (\alpha_2x)]Q + [(\beta_2x)G + Q] - q[(\beta_2x)G + Q]$$

$$q(\beta_1s)G + q(\beta_2x)G + qQ - q(\alpha_1s + \alpha_2x)Q + (\beta_1s)G + (\beta_2x)G + Q - q(\beta_1s)G - q(\beta_2x)G - qQ \geq q(\beta_2x)G + qQ - q(\alpha_2x)Q + (\beta_2x)G + Q - q(\beta_2x)G - qQ$$

$$- q(\alpha_1s)Q + (\beta_1s)G \geq 0$$

$$\beta_1G \geq q\alpha_1Q$$

$$\frac{G}{Q} \geq \frac{q\alpha_1}{\beta_1}$$

$$E(s = 1 \mid x \leq x') = 1/2[(\beta_1s + \beta_2x)G + [1 - (\alpha_1s + \alpha_2x)]Q] + 1/2[(\beta_1s + \beta_2x)G + Q] = (\beta_1s + \beta_2x)G + [1 - 1/2(\alpha_1s + \alpha_2x)]Q$$

$$E(s = 0 \mid x \leq x') = 1/2[(\beta_2x)G + [1 - \alpha_2x]Q] + 1/2[(\beta_2x)G + Q] = (\beta_2x)G +$$
\[ [1 - 1/2(\alpha_2 x)]Q \]

For \( E(s = 1 \mid x \leq x') \geq E(s = 0 \mid x \leq x') \)

\((\beta_1 s + \beta_2 x)G + [1 - 1/2(\alpha_1 s + \alpha_2 x)]Q \geq (\beta_2 x)G + [1 - 1/2(\alpha_2 x)]Q \)

\((\beta_1 s)G - 1/2(\alpha_1 s)Q \geq 0 \)

\[ \frac{G}{Q} \geq \frac{\alpha_1}{2\beta_1} \]

Therefore, if \( \frac{G}{Q} \geq \frac{\alpha_1}{2\beta_1} \), \( r^*(s = 1 \mid x) = 1 \) \( \forall x \in X \).

Given \( \mu^*(C \mid x') = 1/2 \) and \( r^*(s = 1 \mid x) \) \( \forall x \in X \), what is \( z^*(x, t) \) ?

\[ \forall t \in \{C, A\}, z^*(x \mid t) > 0 \text{ only if } x \in \text{arg max}_{x \in X} U_{P_1}(t, x, r^*(x)) \]

\[ \text{arg max}_{x \in X} U_1(t = C, x, r^*(x)) = \text{arg max}_{x \in X} [(\sigma_1 s + \sigma_2 x)M + (\alpha_1 s + \alpha_2 x)R - \nu x^2] \]

\[ x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \]

\[ \text{arg max}_{x \in X} U_1(t = A, x, r^*(x)) = \text{arg max}_{x \in X} [(\sigma_1 s + \sigma_2 x)M - \nu x^2] \]

\[ x = \frac{\sigma_2 M}{2\nu} \]

Since \( x(C) \neq x(A) \), we do not get a pure strategy PBE when \( \frac{G}{Q} \geq \frac{\alpha_1}{2\beta_1} \)

If \( \frac{\alpha_1}{2\beta_1} < \frac{G}{Q} < \frac{\alpha_1}{\beta_1}, r^* = \begin{cases} 
\text{s = 0 if } x > x' \\
\text{s = 1 if } x \leq x'
\end{cases} = 1 \) Given \( \mu^*(C \mid x') = 1/2 \) and \( r^* = \begin{cases} 
\text{s = 0 if } x > x' \\
\text{s = 1 if } x \leq x'
\end{cases} = 1 \), what is \( z^*(x \mid t) \) ?

\[ \forall t \in \{C, A\}, z^*(x \mid t) > 0 \text{ only if } x \in \text{arg max}_{x \in X} U_{P_1}(t, x, r^*(x)) \]

The follower of type C either can choose \( x \) that maximizes her utility function when \( s = 0 \) which is

\[ \text{arg max}_{x \in X} U_1(t = C, x, r^*(x)) = \text{arg max}_{x \in X} [(\sigma_2 x)M + (\alpha_2 x)R - \nu x^2] \]

\[ x = \frac{\sigma_2 M + \alpha_2 R}{2\nu} \]

or choose \( x \leq x'' \) and get support \( s = 1 \)

The follower of type A would choose \( x \) that maximizes her utility function
when \( s = 1 \)

\[
\text{arg max}_{x \in X} U_1(t = A, x, r^*(x)) = \text{arg max}_x [(\sigma_1 s + \sigma_2 x)M - \nu x^2]
\]

\[
x = \frac{\sigma_2 M}{2\nu}
\]

Therefore, we get a pure strategy pooling PBE where

\[
\frac{\alpha_1}{\beta_1} > \frac{G}{Q} > \frac{\alpha_1}{2\beta_1}
\]

\[
r^* = \begin{cases} 
  s = 0 & \text{if } x > x' \\
  s = 1 & \text{if } x \leq x' 
\end{cases}
\]

\[
z^*(\forall t \in \{C, A\}, x = \frac{\sigma_2 M}{2\nu}, r^*(x)) = 1
\]

and

\[
\mu^*(C \mid x = \frac{\sigma_2 M}{2\nu}) = 1/2
\]

when \( U_1(t = C, x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}, s = 0) - U_1(t = C, x = \frac{\sigma_2 M}{2\nu}, s = 1) < 0 \)

The condition, \( U_1(t = C, x = \frac{\sigma_2 M}{2\nu}, s = 1) - U_1(t = C, x = \frac{\sigma_2 M + \alpha_2 R}{2\nu}, s = 0) > 0 \)

is simplified as \( \sigma_1 M - \frac{\sigma_2 R^2}{4\nu} + \alpha_1 R > 0^{30} \)

If \( \frac{\alpha_1}{\beta_1} > \frac{G}{Q} \), \( r^*(s = 0 \mid x) = 1 \quad \forall x \in X \) and we do not get a pooling equilibrium.

(\text{Note: For general values of prior belief} p, \text{the condition is equal to:} \\

\[ E(s = 1 \mid x \leq x'') = p[(\beta_1 s + \beta_2 x)G + [1 - (\alpha_1 s + \alpha_2 x)]Q] + (1 - p)[(\beta_1 s + \beta_2 x)G + Q - p(\alpha_1 s + \alpha_2 x)Q] \]

\[ E(s = 0 \mid x \leq x'') = p[(\beta_2 x)G + [1 - \alpha_2 x]Q] + (1 - p)[(\beta_2 x)G + Q] = (\beta_2 x)G + [1 - p(\alpha_2 x)]Q \]

\[ (\beta_1 s + \beta_2 x)G + Q - p(\alpha_1 s + \alpha_2 x)Q > (\beta_2 x)G + [1 - p(\alpha_2 x)]Q \]

\[ \frac{G}{Q} > \frac{\alpha_1}{\beta_1} \]

\textbf{Semi-separating (hybrid) equilibria:}

\( P_F \) never randomizes because \( x = \frac{\sigma_2 M}{2\nu} \) always maximizes his utility.

\[
30(\sigma_1 s + \sigma_2 \frac{\sigma_2 M}{2\nu})M + (\alpha_1 s + \alpha_2 \frac{\sigma_2 M}{2\nu})R - \nu(\frac{\sigma_2 M}{2\nu})^2 - [(\sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu})M + (\alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu})R - 
\]

\[
\nu(\frac{\sigma_2 M + \alpha_2 R}{2\nu})^2] = \sigma_1 M - \frac{\sigma_2 R^2}{4\nu} + \alpha_1 R > 0
\]

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$P_F^C$ randomizes with $\omega$ to make $P_L$ indifferent between $s = 1$ and $s = 0$.

The updated beliefs are

$$\mu^*(C \mid x = \frac{\sigma_2 M}{2\nu}) = \frac{P(x=\frac{\sigma_2 M}{2\nu} \mid C)/2}{P(x=\frac{\sigma_2 M}{2\nu} \mid A)/2} = \frac{\omega/2}{\omega/2+1} = \frac{\omega}{1+\omega}.$$  

Then, the expected pay off that $P_L$ gets are:

$$E(s = 1 \mid x \leq x'') = \frac{\omega}{1+\omega}[(\beta_1 s + \beta_2 x)G + [1 - (\alpha_1 s + \alpha_2 x)]Q] + \frac{1}{1+\omega}[(\beta_1 s + \beta_2 x)G + Q] =$$

$$\frac{\omega}{1+\omega}G\beta_1 s + \frac{\omega}{1+\omega}G\beta_2 x + \frac{\omega}{1+\omega}Q - \frac{\omega}{1+\omega}Q\alpha_1 s - \frac{\omega}{1+\omega}\alpha_2 x Q + \frac{1}{1+\omega}G\beta_1 s + \frac{1}{1+\omega}\beta_2 x G + Q \frac{1}{1+\omega} =$$

$$G\beta_1 s + G\beta_2 x - \frac{\omega}{1+\omega}Q\alpha_1 s - \frac{\omega}{1+\omega}\alpha_2 x Q + Q$$

$$E(s = 0 \mid x \leq x'') = \frac{\omega}{1+\omega}[(\beta_2 x)G + [1 - \alpha_2 x]Q] + \frac{1}{1+\omega}[(\beta_2 x)G + Q] =$$

$$\frac{\omega}{1+\omega}\beta_2 x G + \frac{\omega}{1+\omega}Q - \frac{\omega}{1+\omega}\alpha_2 x Q + \frac{1}{1+\omega}\beta_2 x G + \frac{1}{1+\omega}Q$$

$$\beta_2 x G + Q - \frac{\omega}{1+\omega}\alpha_2 x Q$$

when $E(s = 1 \mid x \leq x'') = E(s = 0 \mid x \leq x'')$

$$G\beta_1 s + G\beta_2 x - \frac{\omega}{1+\omega}Q\alpha_1 s - \frac{\omega}{1+\omega}\alpha_2 x Q + Q = \beta_2 x G + Q - \frac{\omega}{1+\omega}\alpha_2 x Q$$

$$G\beta_1 = \frac{\omega}{1+\omega}Q\alpha_1$$

$$\omega = \frac{G}{Q\alpha_1 \beta_1 - G}$$

The leader randomizes with $\phi$

$$\phi[(\sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) M + (\alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) R - \nu(\frac{\sigma_2 M + \alpha_2 R}{2\nu})] + (1 - \phi)[(\sigma_1 s + \sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) M + (\alpha_1 s + \alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) R - \nu(\frac{\sigma_2 M}{2\nu})^2]$$

$$[(\sigma_1 s + \sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) M + (\alpha_1 s + \alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu}) R - \nu(\frac{\sigma_2 M + \alpha_2 R}{2\nu})] + (1 - \phi)(\sigma_1 s M + \alpha_1 s R) = [(\sigma_1 s + \sigma_2 \frac{\sigma_2 M}{2\nu}) M + (\alpha_1 s + \alpha_2 \frac{\sigma_2 M}{2\nu}) R - \nu(\frac{\sigma_2 M}{2\nu})^2]$$

$$[\sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu} R + \alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu} R - \frac{2\sigma_2 M + \alpha_2 R + \alpha_2 R^2}{2\nu}] = (\phi - 1)(\sigma_1 s M + \alpha_1 s R)$$

$$\phi = \frac{\sigma_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu} R + \alpha_2 \frac{\sigma_2 M + \alpha_2 R}{2\nu} R - 2\sigma_2 M + \alpha_2 R + \alpha_2 R^2}{(\sigma_1 s M + \alpha_1 s R)}$$
The possible outcomes of the incomplete information game as suggested by the pure strategy equilibria are summarized in Figure 2.

**Figure 2.**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Equilibrium 1</th>
<th>Equilibrium 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$G/Q \geq \frac{a_1}{\sigma_1}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M + a_2 R}{2\nu}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M + a_2 R}{2\nu}$</td>
</tr>
<tr>
<td></td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
</tr>
<tr>
<td>$\frac{q_01}{\sigma_1} &lt; G/Q &lt; \frac{a_1}{\sigma_1}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M + a_2 R}{2\nu}$</td>
<td>no pure strategy equilibria</td>
</tr>
<tr>
<td></td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
<td></td>
</tr>
<tr>
<td>$\frac{a_1}{2\sigma_1} &lt; G/Q &lt; \frac{q_01}{\sigma_1}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M + a_2 R}{2\nu}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M}{2\nu}$</td>
</tr>
<tr>
<td></td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
</tr>
<tr>
<td>$G/Q \leq \frac{a_1}{2\sigma_1}$</td>
<td>$a = C$, $x = \frac{\sigma_2 M + a_2 R}{2\nu}$</td>
<td>no pure strategy equilibria</td>
</tr>
<tr>
<td></td>
<td>$a = A$, $x = \frac{\sigma_2 M}{2\nu}$</td>
<td></td>
</tr>
</tbody>
</table>
References


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