ECONOMIC REFORMS, CONFLICT RESOLUTION AND LEADERSHIP QUALITY: A MODEL OF POLITICAL FAILURE

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Siddhartha Bandyopadhyay[†]

Dept of Economics

University of Birmingham

Birmingham B15 2TT, U.K.

e-mail: s.bandyopadhyay@bham.ac.uk

Mandar P Oak

Dept of Economics

Williams College

Williamstown MA 01267

e-mail: moak@williams.edu

ABSTRACT. We analyze an agency model of politics where the efficient policy depends on the leader quality as well as the state of the the economy, both of which are private information to the incumbent politician. Even though the polity gains from having an able leader, reelection concerns cause the incumbent's preferences to diverge from those of the population. Specifically, two types of distortions could arise - one, a low ability leader may try to mimic the high ability one; and two - the high ability leader may want to choose a suboptimal policy under the given state of the world. We look at voting strategies which cause low quality leaders to separate out from high quality ones. We compare this with strategies which cause pooling of types and find that when the rents from office are sufficiently high, the pooling equilibrium welfare dominates the separating one. However, pooling equilibrium has a credibility problem as the high quality leader may take actions which would reveal the type to the voters thereby making it optimal for voters to renege on their strategy. Specific applications discussed include economic reforms, conflict negotiation, and the role of the UN as a credible commitment agency. The results in the model give possible explanations of the cycle of violence in the Middle East as well as the 'hawkish' drift in politics especially in the war on 'terror'.

[†]Corresponding author. PRELIMINARY AND INCOMPLETE.

1. Introduction

The quality of leadership often plays an important role in various decisions made in a representative democracy. Elected leaders take decisions on behalf of the electorate that may or may not coincide with the electorate's desired policies. There are two primary reasons why such a political failure may happen. First, the politician may have policy preferences that differ from that of the electorate, say owing to his affiliation to a special interest group. Second, the politician may not have the requisite ability to make the right decision even if his interests are perfectly aligned with the population. We analyze how such divergence may lead to political failure and look at what kind of voting strategies by the population would lead to what kind of policy choice.

The fact that leadership ability matters in important policy decisions cannot be overstated. The war on terror, trade negotiations, privatisation and economic reforms are examples of policies, which if carried out properly, stand to benefit the public as a whole. However, the success of these policies depends crucially on the ability of the government to handle them. We often hear, for instance, how bad leadership led to the economic reform process being derailed in various developing countries or an inefficient policy being pursued too long. Latin America is a case in point where economic reforms have not done too well and heterodox interventionist policies have been tried for too long.[1] Critiques of the present Palestinian leadership blame it for the inability to stop the violence, even when they may not doubt its intentions to that effect. In a perfect world, where there are no gains to be had from office, less able leaders would voluntarily step down, making way for the most efficient leader available. Such occasions, like the election of Mr. Churchill as British Prime-minister

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[1]In particular, the heterodox policies pursued in Peru by Alan Garcia, from nationalizing banks to his indecision on painful economic choices (see Pastor and Wise (1992) and Stokes (1999) for details).

during World War II, are rare. As long as politicians get rents from being in office or have policy preferences which differ from the majority of the voting population, and there is a lack of credible information that could separate more able leaders from the less able, there are incentives for the less able leaders to hold on to office.

We study the implications of such political failure in two different scenarios. The first looks at political failure in a reforms context, reforms are better only under a good leader and that too if the state of the economy is conducive to reforms. The second scenario is in the context of a conflict between a state and a separatist group fighting over a piece of territory. We outline the model as well as discuss the related literature in the next section.

1.1. **Outline of the model and related Literature.** The fact that asymmetric information may cause political failure is recognized even by the Chicago school. However, this has been glossed over by them. There have of course been several papers outlining the type of political failure which arises as a result of asymmetric information about quality types. These are the so called 'incumbent challenger' models and have been used to describe a variety of scenarios constituting political failure. We now briefly describe our model before comparing it with the literature.

The scenario we start with is one of reforms vs. the status quo where reforms are potentially beneficial if enacted by a good (efficient) leader under state of nature which is conducive to reforms. Citizens and politicians differ in the information they have about the state of the economy as well as type of the politician. Thus, a politician knows both the state of the economy as well as his own type. Voters know only the distribution of types and the distribution over the states of the economy. They observe the policy choice made and try to infer whether the politician is high or low quality. Essentially, they have to adopt voting strategies, reelect the politician or replace him with a challenger whose type is unknown and assumed to be drawn from the same distribution of types. Different equilibria emerge, depending on the

particular voting strategy chosen, the magnitude of the rents from office and the differences in costs from having politicians of differing quality. We get multiplicity for a parameter range. In particular, beyond a certain rents from office only two kinds of equilibria are possible, none of which reveal the type of politician in office, one involves reforms being chosen always, in the other the status quo policy is always chosen.

The next section considers a somewhat different scenario where voters and politicians are equally ignorant about the state of the world, politicians still know their own type but there is no other differences in information. This model is couched in terms of a conflict negotiations scenario. We consider two groups of people, citizens (C) and protestors (P) with different preferences over a division of territory; citizens want to keep as much as possible for themselves, while protestors in turn also want as much as possible for themselves. The initial control over the land is with the citizen. Protestors come in varying types, i.e. they may be moderates or extremists of varying degrees. Essentially, this is denoted by the minimum amount of land that must be given for them to agree to the settlement. If the agreement is below their reservation level, they resort to terror tactics against the citizens which gives them (varying degrees) of moral satisfaction. The higher the number of such terrorists, the costlier (or more intense) is the terror attacks for citizens. Hence, citizens face a tradeoff between giving up less land and facing more intense terrorists. The quality of leadership in the citizen group is reflected in the cost that any particular division of territory causes (in terms of the intensity of the attack by dissatisfied outlaws on the citizens). In particular, we assume that a high quality leader (or politician) will be able to sustain lower cost for each division as compared to low quality leaders. There are many ways to justify this, higher ability may lead to be able to better anticipate terror attacks and thereby mitigate the impact of terror attacks. The inefficiency arises from the desire of politicians to remain in office (because of the rents generated from being in office) and hence under asymmetric information low ability

people may want to adopt policies which are suitable only for high ability people to improve their reelection prospects. As long as there is perfect correlation of the terror costs with the territory ceded this would naturally not work, people would be able to simply look at costs and identify each type. However, given that there is a certain amount of random behaviour by the protestors, voters receive noisy signals about politician types. Hence, voters would have to make inferences about the probability of the leader's quality from the cost faced and this in turn may lead to high ability leaders making inoptimal settlements to prevent low quality leaders from mimicking their action (separating equilibrium) or from low quality leaders copying the actions of high quality leaders in the hope that a favourable random shock would cause them to be re-elected.

We look at when voters are able to separate types and also when is it in their interest to do so. Thus, we characterize the separating and pooling equilibria of our model and find necessary and sufficient conditions for existence. We find that when the rents from office are fairly low truthful revelation is possible. Hence, monotonic voting strategies are optimal and implements the first best. However, as rents from office increase there does not exist a truth telling equilibrium. Instead, under monotonic voting strategies, the high quality politician has to act more and more 'hawkish' i.e. cede less and less territory to separate himself from the low quality politician. In other words, the division of land is not socially optimal. Surprisingly, a pooling equilibrium may turn out to do better. Clearly, pooling cannot be sustained with monotonic voting strategies. Instead, voters have to commit to not re-electing a politician if he deviates from a certain pre-specified policy. This seems a somewhat drastic strategy but if voters commit to this, a more moderate policy (division of land) is implemented and that dominates welfare under the (best) separating equilibrium. It is worth noting that even though voters can condition their strategies on both the policy chosen and the realization of costs, under separating equilibrium, information on costs will be ignored, while under pooling information on both policy and costs will be used.

Our paper can be usefully compared to similar papers in the literature. Incumbent challenger models come in a wide variety of forms, with the simplest involving pure selection strategies to weed out bad politicians. In such models, (see Barro (1973), Ferejohn (1986), Rogoff (1990) Persson, Roland and Tabellini (1997) for instance) cutoff strategies are usually optimal. Coate and Morris (1995) consider the issue of the form of transfers to special interest groups in an incumbent challenger framework. The formal model has similarities with ours. However, in their framework politicians do not essentially differ in ability but in their preference over the transfers they would like to make to special interest groups, in principle both politicians could have chosen the best outcome. Moreover, their model has two types of uncertainty, political uncertainty (type of politician is unknown) and uncertainty over the success of the project, both are necessary for their inefficiency result. In our model, only one type of uncertainty is enough for political failure. There are two other recent papers we should mention. One by Majumdar and Mukand (2003) look at when political failure in terms of too little or too much reform occurs, similar to our two type environment. Their politician quality has to do with undertanding the correct state of the world, our model on the other hand identifies politician quality with managing any potentially beneficial process better. Further, they get unique equilibria and in particular they do not examine how voting conservatism can lead to too little reform while voting strategies favouring reform can lead to too much reform. They also do not consider a scenario (as in our conflict application) where politicians know their own type but are not more adept at understanding the state of the world than the population at large.[2] A paper by Aidt, Dutta and Loukoianova (2003) examine political failure arising out of imperfect voter control but the problem in their paper does not arise from asymmetric information and their aim is to look at the mix of short term vs. long term public good that is provided because of imperfect electoral accountability.

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[2]The recent reports on the massive intelligence failure in Iraq seem testimony to the fact that leaders are often no better informed than ordinary citizens.

Clearly, our paper is also related to the vast literature on principal agent models as well as the large literature on optimal contracts (see Hart (1995) and Tirole (1999) for surveys of the incomplete contracts literature) and they are too vast to mention.

There are also recent papers which provide rational choice explanations of terrorism and the high cycle of violence. Mention may be made of the work by Pape (2003) and Berman (2003). None of these papers are however concerned with the political failure arising out of asymmetric information.

We outline the model in the next section as well as characterize the equilibria. The last section points to future research issues and concludes.

2. The Model of reforms

2.1. **Environment.** This is a finite multistage game. There are two types of politicians good (high quality) and bad (low quality), denoted by θ_i , $i \; \epsilon \; \{G, B\}$. The ex ante probability of each type of politician is p_G and $p_B = 1 - p_G$. A politician faces a choice of implementing one of two policies, a status quo policy x_s and a new policy (say reform) x_r. We assume that the net benefit of x_s does not depend on the type of politician and normalize the benefit from x_s to 0. The benefit of the policy x_r however depends on the politician type. It also depends on a state of nature random variable, say S_k where $k \; \epsilon \; \{h, l\}$ with $E(S_h) = \mu_h > E(S_l) = \mu_l$. and they occur with a probability q_h and $q_l = 1 - q_h$. This can be interpreted as the cost of undertaking the reformist policy and the high cost state of nature denotes that the expected costs are high, while the low cost state of nature denotes that the expected costs are low. The benefits from the policy are denoted by B. Specifically, let us denote by V_{ik} the expected benefit from x_r when the type of politician is i and the state is k.

Information

Politician knows his own type and the state of the world. Voter knows only distribution of types (p_G and $1 - p_G$) and probabilities over states of the world (q_h and $1 - q_h$). They also observe the policy choice and the realised cost of the policy.

Sequence of actions

At $t = 0$, politician observes the state of the world and chooses a policy which is observed by the voters.

At $t = 1$, costs are observed by voters.

At $t = 2$, voters decide whether to reelect the politician if he stands for reelection, or to elect a challenger of unknown type. If a politician is replaced or does not stand for reelection, he gets no benefit, otherwise he gets a benefit $a > 0$ from being in office.[3] Everyone receives payoffs from the policy, including the politician. The payoff to voters if a good (respectively bad) politician is in office is V_G (respectively V_B) with $V_G > V_B$. Note in general that this means that a good politician will lead to higher utility for the population than the bad politician. Further, assume that a bad politician will not voluntarily step down, in otherwords the rents from office are higher than the expected gain to the bad politician to having the average expected type in office, in other words assume that

$$a > p_G(V_G - V_B)$$

Payoffs

We make the following assumption on the costs:

$$V_{Gl} = B + \theta_H - \mu_l > 0$$

$$V_{Gh} = B + \theta_H - \mu_h < 0$$

$$V_{Bl} = B + \theta_L - \mu_l < 0$$

Hence, payoffs in expected terms to voters are contingent on both choice of policy and type of the politician. Ex ante payoffs are given by the expected value of payoffs in the two periods and expost payoffs are given by the sum of actual net benefits

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[3]This is a normalisation. We could have rents from office a in both periods.

in both periods. The payoff of a politician differs from the voter if reelected by the magnitude of the rents from office a.

Equilibrium

We will look for the (weak) Perfect Bayesian equilibrium of this game. In other words, we will look for the optimal policy choice by each politician type and voting strategies by the voters and apropriate belief structures to support them. It is useful to categorise the equilibria into three different categories, namely revealing (or separating), non revealing (or pooling) and partially revealing (or semi separating).

(1) Pooling

Consider the following rule by voters, replace a politician iff the reform policy is chosen, otherwise reelect him. In other words voters believe that if a politician chooses reforms he is a bad politician who is thrown out. The best response of both politicians will be to choose the status quo if

$$V_{Gl} + p_G V_G + (1 - p_G)V_B < a + V_G$$

or

$$V_{Gl} < a + (1 - p_G)(V_G - V_B)$$

This simply means that as long as the expected gains from implementing the reform policy in a good state is less than the gains from being in office and the loss from having a potentially bad type in office the next period, the high type will find it optimal to implement the status quo. It is a best response of voters to reelect given that each type plays their equilibrium strategies as they get exactly the same probability of either type if they threw the politician out of office. This is a completely non revealing equilibrium. We further check that there are no credible deviations. If the high type deviates and reforms, it will be optimal for the voter to reelect the politician provided that deviation cannot be made by the low type. A sufficient condition to ensure no deviation is that if a politician is reelected on choosing a reform policy, it is always in his interest to do so, hence deviation conveys no information to the voter. For this,

a sufficient condition is

$$V_{Bh} - p_G(V_G - V_B) < -a$$

In other words[4]

$$a > \max \{V_{Gl} - (1 - p_G)(V_G - V_B) - V_{Bh} + p_G(V_G - V_B)\}$$

Another non revealing equilibrium will be when both types choose reform under a low cost state and a status quo under the high cost state. This can be supported by a strategy by voters to reelect the reformist but not the politician who chooses the status quo. For this, we need two conditions, one for the good type and another for the bad type under the low cost state. For the good type under the high cost state of nature, we require that [5]

$$V_{Gh} + V_G + a < p_G V_G + (1 - p_G)V_B$$

or

$$a < -V_{Gh} - (1 - p_G)(V_G - V_B)$$

This simply means that the gains for the good type from staying in office next period is not greater than the loss from implementing the reform policy under the high coast state of nature. It is clear that voters are indifferent to either reelection or replacement as they get the (ex ante) probability of each type either way. Similarly, we need to see that the bad type will implement reform under the low cost state of nature. The condition for this is

$$V_{Bl} + a + V_B > p_G V_G + (1 - p_G)V_B$$

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[4]In general, we shall not be checking for credibility off equilibrium (in the spirit of Cho Kreps' intuitive criterion, see Cho and Kreps (1987)) as we do not require it for Weak Perfect Bayesian Equilibrium.

[5]It is enough to see that the inequalities are satisfied for the good type under the high cost state and the bad type under the low cost state.

or

$$a > -V_{Bl} + p_G(V_G - V_B)$$

This means that the rents from office should be higher than the loss from implementing the reform policy as well as the loss from having a bad leader (as opoosed to the population average) next period. In other words we get the following range for this equilibrium[6]

$$-V_{Bl} + p_G(V_G - V_B) < a < -V_{Gh} - (1 - p_G)(V_G - V_B)$$

For high rents from office another non revealing equilibrium would be one where both types choose a reform policy, this requires voting strategies of reelecting the type that chooses a reform and not reelecting a type that does not reform. We require that

$$a > -V_{Bh} - p_G(V_G - V_B)$$

for this to be non revealing. This means that the rents from office are high enough for the bad type to want to suffer the loss from the inoptimal policy under the high state of nature as well as the decreased utility from his own leadership the next period.

(2) Separating and semi separating based purely on policy choice

Consider the following rule by voters, replace a politician if the status quo policy is chosen, otherwise re-elect him. This can be partially revealing when the high type chooses a reform policy only under the low cost state and/or the low type chooses the policy only under the low cost state and will be fully revealing when the high type always chooses the reform.

Conditions for full revelation are that

$$V_{Gh} + a + V_G > p_G V_G + (1 - p_G) V_B$$

which means that the rents from office and the benefit from the high type continuing next period must exceed the loss from implementing the policy in the bad state of

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[6]Note this equilibrium is welfare dominated by an equilibrium where costs are used by the voters.

nature. for the high quality type[7] and

$$V_{Bl} + a + V_B < p_G V_G + (1 - p_G)V_B$$

for the low type. It is easy to see that this is optimal for the voters. If both types play different strategies, voters by changing their strategy will end up losing. If they reelect a low type that gives them a utility of $V_B < p_G V_G + (1 - p_G)V_B$ and if they throw out the high type they get $p_G V_G + (1 - p_G)V_B < V_G$

For partial revelation we need to consider two situations. One is where the low type chooses a reform policy in the low state of nature, the high type always reforms, the other is where the high type chooses a reform under the low cost state while the low type never chooses reform. To check for equilibrium, note that if politicians indeed followed this rule, it is easy to see that voters find this optimal as they reelect a person whose probability of being the high type is

$$\frac{p_G}{p_G + q_l(1 - p_G)} > p_G$$

when both types reform under the low cost state of nature. and similarly,

$$\frac{1 - p_G}{1 - p_G + q_h p_G} > 1 - p_G$$

implying that it is optimal for the politician who does not reform to be thrown out. The conditions for the politician to be playing the stated actions are

$$\max\left\{-V_{Bl} + p_G(V_G - V_B), -V_{Gh} + (1 - p_G)(V_G - V_B)\right\} < a < -V_{Bh} - p_G(V_G - V_B)$$

when the high type always reforms and the low type only under the low cost state. When the low type never reforms and the high type does so under the low cost state, we require that[8]

$$\min\left\{-V_{Bl} - p_G(V_G - V_B), -V_{Gh} - (1 - p_G)(V_G - V_B)\right\} > a$$

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[7]We need to check that the good politician finds it optimal to implement the policy only during the high cost state and the bad politician finds it optimal not to reform under the low cost state.

[8]The good type will obviously reform in the low cost state in this case.

(3) Semi separating with information on costs being used

The more interesting case is where a voter uses not just a policy choice but also the costs from the policy to decide on reelection. Now, clearly this can happen only for the reforms case in our model. Hence, the natural case to consider is the following rule by voters, replace a politician if the status quo policy is chosen, otherwise replace a politician if the net benefit is below b^*. We will solve for when such a strategy is optimal and the associated optimal b^*.[9]We denote by $p_{Grh}, p_{Brl}, p_{Brh}$ the probabilities of the reform being chosen by the good type under the high cost state, the bad type choosing the reform under the low cost stat and the bad type choosing the reform under the high cost state. For this to be an equilibrium, we need both types to choose the reform policy under at least one state of nature or randomize for the low type, otherwise, the information on costs would not be used. Clearly, there are restrictions on the admissible values that the randomization probabilities can take on. For example, if $p_{Brl} < 1, p_{Brh} = 0$. Here, we will simplify analysis by looking at a case where all types always reform.

We try to solve for the optimal actions of the voter and politician. Denote the distribution of net benefits by the following distribution functions F_{Gl}, F_{Gh}, F_{Bl} and F_{Bh}, the subscripts standing for type and state of the economy respectively.

Voter's utility in the second period is given by

$$\left[\sum (1 - F_{ij}(b))p_i q_j V_i + F_{ij}(b)(p_G V_G + (1 - p_G)V_B)\right]$$

This leads to a first period payoff of

$$\sum \int b F_{ij}(b)$$

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[9]It is possible that voters choose a strategy for relecting every leader who chooses the status quo and looks at costs to decide whether to reelect a politician who chooses reform but the (expected) gains from the reform policy are so high in the good state that the good politician chooses reform. This ensures that the low type does not try to reform and neither does the high type under a high cost state.

Differentiating with respect to b we get

$$\sum bF_{ij}(b^*) + \sum (1 - f_{ij}(b^*))p_i q_j V_i + f_{ij}(b^*)(p_G V_G + (1 - p_G)V_B) = 0$$

The voter will choose a startegy that maximizes the sum of the two. Without explicitly solving for b^*, we see that the cutoff will be increasing in p_G and decreasing in $V_G - V_B$. From the politician's angle, for this to be an equilibrium, the rents must be high enough for it to be worthwhile for all types to try and stay in office. It will be immediately apparent that this does better in expected terms than the non revealing equilibrium involving reforms by both types in the low cost state of nature. To see this notice that in the non revealing equilibrium, politicians never get thrown out, here both types get thrown out, assuming that the distribution of costs for the reform under both state of nature is lower for a good type, it is clear that the good type gets reelected with a higer probability than the bad type.

2.2. **Multiplicity and welfare properties of the equilibria.** What, if anything can we say about the nature of equilibria as the rents from office change? In other words, when do we get multiplicity and when do we get a unique equilibrium? can we say anything about the welfare properties of the different equilibria that can be supported?

First, as rents from office become high enough, two non revealing equilibria can be supported, one where both politicians pool on the reform policy and one where politicians pool on the status quo. Formally, we get the following result

Proposition 1. *If*

$$a > \max\{V_{Gl} - (1 - p_G)(V_G - V_B), -V_{Bh} + p_G(V_G - V_B)\}$$

there are two non revealing equilibrium, one where reform takes place in the firs period and one where reform never occurs in the first period, regardless of the state of nature. Expected welfare of the citizens under the equilibrium involving reform is greater than,

equal or less than that under the no reform equilibrium according to whether

$$p_G(q_l V_{Gl} + q_h V_{Gh}) + (1 - p_G)(q_l V_{Gl} + q_h V_{Bh}) \gtreqless 0$$

Proof. The first part follows from looking at the conditions for non revealing equilibria. The second part is obtained by comparing payoffs to the citizens. Under no reforms payoff is 0. Under reforms expected payoffs are given by the payoffs from the reforms under different states under a different quality of the politician in each stated weighted by the probabilities of each state and each type of politician. Clearly the expected payoff has to be positive for reforms to have higher expected welfare than status quo. ∎

The next thing we look at is the co existence of different kinds of equilibria. It is again easy to see that there is a range for the rents from office where the high type always reforms the low type never reforms. Clearly, when rents are low, we can get separating equilibria whereby each type plays different strategies. The set of semi separating and separating equilibria based on voting strategies involving cost are disjoint. However, multiple equilibria are possible when the rents are high enough for a non revealing status quo equilibrium but not high enough to induce a low type to play a strategy of reform under any state of nature. As the rents increase, we move from semi separation to partial separation and finally to pooling. We formalize this as follows.

Proposition 2. *If $max\left\{-V_{Gh} + (1 - p_G)(V_B - V_G), V_{Gl} + (1 - p_G)(V_B - V_G)\right\} < a < -V_{Bl} + p_G(V_G - V_B)$, we have multiple equilibria, in one equilibrium the high type adopts a reform policy and the low type never reforms while in another equilibrium, no type reforms.*

Proof. The inequality $a < -V_{Bl} + p_G(V_G - V_B)$ ensures that a bad politician never reforms. The inequality $-V_{Gh} + (1 - p_G)(V_B - V_G)$ ensures that a good politician is willing to choose a reform policy under any state in order to be reelected. Thus, this

establishes a separating equilibrium. The inequality $V_{Gl} + (1 - p_G)(V_B - V_G) < a$ ensures that a good politician is willing to choose a status quo policy if that ensures reelection. When both are satisfied, we get multiple equilibria. ∎

Proposition 3. *The set of semi separating equilibria and separating equilibria are disjoint. However, pooling and semi separating equilibria co exist either if $-V_{Gl} + (1 - p_G)(V_B - V_G) < a < \min \{-V_{Bl} - p_G(V_G - V_B), -V_{Gh} - (1 - p_H)(V_G - V_B)\}$ or $\max \{-V_{Gl} + (1 - p_G)(V_B - V_G), \max \{-V_{Bl} + p_G(V_B - V_G), -V_{Gh} + (1 - p_G)(V_G - V_B)\}\} < a < -V_{Bh} - p_G(V_G - V_B)$*

Proof. The fact that the set of semi separating equilibrium and separating equilibrium is disjoint follows from inspection of the incentive constraints. The multiplicity is by comapring the set of inequalities which need to be jointly satisfied as in Proposition 1. ∎

These propositions essentially characterize the set of equilibria as functions of the rents from office and the quality difference and benefit difference from implementing the different policies. As we see no equilibrium involves implementing the first best.

3. Conflict and political failure

In this section, we consider a scenario where politicians are no better informed about the state of the world than the voters. Hence, the only difference between a politician and a voter in terms of information is that a politician knows his own type. We use a similar environment to the previous section apart from making this important change in informational assumption. This seems to have particular applications in terms of conflict negotiation. A further change we make is to look at this in terms of dividing a piece of land (a pie) between two antagonistic groups. Hence, policies are continuous (rather than discrete as in the last section) in nature.

Formally, there are two groups- citizens C and protestors P. There is one policy parameter $y \in [0, 1]$ to be interpreted as the dimension of conflict between C and P.

Group C's preferences over the policy are represented by a utility function $u(|y|), u' > 0$. Each member l of group P must choose action $\alpha_l \in \{0, 1\}$ where 0 means staying with the State and 1 means becoming a terrorist. The payoff from becoming a terrorist is goven by t_l. Hence a member of P will become a terrorist if $t_l > u(|y - x_P|)$. Let $F(y)$ denote the number of people who will become terrorist if the policy implemented is y. Terrorists impose a cost on the members of group C through their violent acts. Hence, given the policy y the utility of a member k of the group C is $u(|y - x_C|) - c(y)$, where $c_k(y)$ denotes the expected harm caused by terrorism to citizen k. Note that the harm need not be actual personal harm to him, it is just the disutility caused by existence of terrorism against his State. Different people may view the harm differently- for instance, it is conceivable that the *hawks* have a higher threshold for sustaining harm while the *doves* have a lower threshold.

3.1. **Incorporating Political Failure.** For now we will assume that all members in group C are identical, i.e.they face the same costs from terrorism. However the amount of terrorism has a random component. In particular, a member l of group P will become a terrorist if $t_l - \lambda > u(|y - x_P|)$. Hence, $\lambda \in [\underline{\lambda}, \overline{\lambda}]$ denotes the propensity for terror, with a higher λ denoting atmosphere more conducive for terrorism.

Assume that the costs of terrorism to the society (i.e. to group C as well as P) depend upon y and upon the quality of the politician (θ), with higher quality meaning lower costs. They are sort of a summary measure of the politician's credibility with group P, the international community and so on. Then we could first try a simpler model than the above. Politician's type is unknown as before. Politician observes λ which is private information and chooses y. Depending upon his type, the society faces costs $c(y, \theta)$ and from that they try to infer his type. Of course the amount of terrorism is not observable, only its costs are felt so it is not possible for the society to perfectly deduce θ from observing y and c.

We can use this model to study conditions to study when a low quality politician has an incentive to be *hawkish* (i.e. choose a low y) and when he has the incentive to be *dovish*. Since a high quality politician imposes low cost from terror, he can afford to be "tough". However, a low quality politician may try to mimic him by acting tough as well. Hence semi-separating equilibrium may emerge. The intuition is, with a bad politician, there are going to be many more terrorists any way (since he lack credibility, say). The only way he can stay in office is by pretending a high λ and thereby choosing a high y.

The Model

The game played is as follows

t_1 - There is a politician of type θ in office. The politician's type, drawn from cdf $D(\theta)$, is not known to the public. The politician chooses policy $y \in [0, 1]$ which results in a level of terrorism $T(y)$, not observable to the public.

t_2 - Citizens face the cost of terrorism given by $K = C(T(y), \theta) + \lambda$, where λ is the noise term distributed according to cdf $G(\lambda)$. Let $E(\lambda) = 0$.

t_3 - Citizens vote on whether or not to keep the politician in office. If they decide to keep the politician in office, he gets an ego rent $a > 0$. If the politician is voted out, he is replaced by another politician drawn from distribution $D(\theta)$. The politician in office chooses a y and the game ends.

3.2. **Homogenous types.** Let us assume that each member of C as well as the politicians have the same preferences over y given by $u^C(y)$. Similarly, all the members of P have preferences $u^P(y)$.

An agent $i \in P$ will become terrorist if $u^P(y) < t_i$. Given that t is drawn from cdf $F(\cdot)$, the fraction of terrorists, $T(y) = Prob\{t > u^P(y)\}$, i.e., $1 - F(u^P(y))$. For example, if we assume that $t \sim \text{unif}\, [\underline{t}, \overline{t}]$ and $u^P(y) = -y^2$, we have

$$(1) \qquad T(y) = 1 - \frac{-y^2 - \underline{t}}{\overline{t} - \underline{t}} = \frac{y^2 + \overline{t}}{\overline{t} - \underline{t}}$$

Let $K(y, \theta, \lambda) = C(y, \theta) + \lambda$ denote the cost of terror faced by C. Hence, $E_\lambda[K(\cdot)] = C(\cdot)$

Assumption 1. $C((y), \theta)$ is increasing and convex in y and decreasing in θ.

These assumptions are self explanatory[10]. We will also need some conditions on the cross partials. See Lemma 1.

3.3. **The Benchmark case.** Suppose that a politician of type θ is in office and his type is known. Then he will just choose y that maximizes the expected utility to him (and therefore to C members). In particular he will solve,

$$\text{Max} \quad u^C(y) - C(y, \theta)$$

The first order condition is

$$u_y^C(y) - C_y(\cdot, \theta) = 0$$
$$(2) \qquad C_1(y, \theta) = u_y^C(y)$$

Hence we obtain $y^*(\theta)$, which is the full information, benchmark y chosen by a type θ politician.

Lemma 1. *Assume $C_{12} < 0$ then $y^*(\theta)$ is continuous and increasing in θ. Moreover, the utility of any citizen increases in θ.*

Proof. Total differentiation yields

$$C_{11}(y^*, \theta)dy + C_{12}(y^*, \theta)d\theta = u_{yy}^C dy$$

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[10]Since costs are increasing in T and T is increasing in y, we get C is an increasing function of y.

i.e.

$$(3) \qquad \frac{dy}{d\theta} = \frac{C_{12}}{u_{yy}^C - C_{11}}$$

Given the concavity of $u(\cdot)$ and convexity of C in y, the denominator is a negative number, Given $C_{12} < 0$ we have our result. It is trivially true that the citizens' expected utility is higher with a high type in office. ∎

Example 1. Suppose that $u^P(y) = -y^2, \quad u^C(y) = -(1-y)^2$ and $t \sim$ unif $[-1, 0]$

Then, from equation 1 we have, $T(y) = y^2$. Let C be given by

$$(4) \qquad C(y, \theta) = Ay^2(1 - \theta) = Ay^2 - Ay^2\theta$$

where $A > 0$ and $\theta < 1$. Verify that $C_y = 2Ay(1 - \theta) > 0$, $C_{yy} = 2A(1 - \theta) > 0$, $C_\theta = -Ay^2 < 0$ and $C_{y\theta} = -2Ay < 0$

Under the benchmark case, the politician solves,

$$\text{Max} \quad -(1-y)^2 - Ay^2(1 - \theta)$$

The FOC yield

$$2(1 - y) - 2Ay(1 - \theta) = 0$$

which, upon simplification gives us,

$$(5) \qquad y^*(\theta) = \frac{1}{1 + A - A\theta}$$

It is easy to see that y^* increases in θ.

Pooling Equilibrium

In the pooling equilibrium all types of politicians will choose the same y. Let there be finite quality types indexed t with p_t denoting the population probability. Let u_t^* denote the expected utility from having a type t agent in office in period 2. In context of the above example,

$$u_t^* = -(1 - y^*(t))^2 - 2Ay^*(t)(1 - t)$$

Let $G_t(\overline{K})$ denote the probability that $\lambda < \overline{K} - C(y, t)$. Note that G_t depends on y as well but since we are not varying y we will keep it suppressed for now.

Consider the following cutoff strategy for the citizens: Re-elect the politician if $K \leq \overline{K}$ and replace if $K > \overline{K}$. Citizen's expected payoff from such strategy is

$$(6) \qquad \text{Prob}\{K \leq \overline{K}\} \sum_t u_t^* \text{Prob}\{t | K \leq \overline{K}\} + \text{Prob}\{K > \overline{K}\} \sum_t u_t^* p_t$$

To understand the above equation note that given a cutoff $\overline{K}$, $\text{Prob}\{K \leq \overline{K}\}$ is the probability that the incumbent will be retained. Conditional upon being retained, the probability of his being type t is given by $\text{Prob}\{t | K \leq \overline{K}\}$ and in that case he will yield an expected utility of u_t^* in the next period. The total probability of a replacement is $\text{Prob}\{K > \overline{K}\}$, in which case the new politician is drawn and the expected utility will be $\sum_t u_t^* p_t$. Applying Bayes' Rule we can rewrite the above expression as

$$\text{Prob}\{K \leq \overline{K}\} \sum_t u_t^* \frac{p_t \, \text{Prob}\{K \leq \overline{K} | t\}}{\text{Prob}\{K \leq \overline{K}\}} + \text{Prob}\{K > \overline{K}\} \sum_t u_t^* p_t$$

which simplifies to

$$(7) \qquad \sum_t u_t^* p_t \, \text{Prob}\{K \leq \overline{K} | t\} + \text{Prob}\{K > \overline{K}\} \sum_t u_t^* p_t$$

Which can be further simplified to

$$(8) \qquad \sum_t u_t^* p_t G_t(\overline{K}) + \sum_t p_t [1 - G_t(\overline{K})] \sum_t u_t^* p_t$$

The citizens' problem is to choose a $\overline{K}$ to maximize the above expression. Let g_t denote the density function corresponding to the CDF G_t. Then the first order condition for maximization can be written as

$$(9) \qquad \sum_t u_t^* p_t g_t(\overline{K}) = \sum_t u_t^* p_t \sum_t p_t g_t(\overline{K})$$

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Only two types. Suppose that $t \in \{H, L\}$. To simplify notation, let $\sum_t u_t^* p_t = E$. Then, the above equation can be written as

(10) $$u_L^* p_L g_L(\overline{K}) + u_H^* p_H g_H(\overline{K}) = E[p_L g_L(\overline{K}) + p_H g_H(\overline{K})]$$

which, upon simplification, can be written as,

(11) $$\frac{g_L(\overline{K})}{g_H(\overline{K})} = \frac{p_H}{p_L} \times \frac{u_H^* - E}{E - u_L^*}$$

The above condition is very intuitive. To understand it, imagine that λ is normally distributed with mean 0. Then g_L and g_H will be bell curves around C_L and C_H, respectively. If p_L and p_H are $\frac{1}{2}$, then there is a unique $\overline{K}$ which satisfies the above condition- it is the $\overline{K}$ where the two curves intersect. Now suppose that E becomes very close to p_L, i.e., the replacement candidate is going to be of a lower expected quality. Then, the right hand side of the above equation goes up. For the left hand side to go up, we must increase $\overline{K}$- which makes perfect sense, you should now be reluctant to throw out the incumbents!

Also, the above approach is going to work only for CDFs which are differentiable and hence amenable to the FOC analysis.

Example 2. Let $\lambda \sim N(0, \sigma^2)$. Then we have

$$g_H = \frac{1}{\sqrt{2\pi\sigma^2}} e^{\frac{-(\overline{K} - C_H)^2}{2\sigma^2}}$$

$$g_L = \frac{1}{\sqrt{2\pi\sigma^2}} e^{\frac{-(\overline{K} - C_L)^2}{2\sigma^2}}$$

Using equation 11 and taking logs on both sides, we get

$$\frac{(2\overline{K} - C_H - C_L)(C_L - C_H)}{2\sigma^2} = \Phi(p_H, u_H^*, u_L^*)$$

i.e.

(12) $$\overline{K} = \frac{\Phi(p_H, u_H^*, u_L^*)\sigma^2}{C_L - C_H} + \frac{C_L + C_H}{2}$$

Lemma 2. *Suppose* (i) $\frac{g_L(x)}{g_H(x)}$ *is continuous and strictly in x increasing. Moreover, if (ii)* $\lim_{x \to -\infty} = 0$ *and* $\lim_{x \to \infty} = \infty$, *then for any policy choice y, there exists a unique cutoff strategy for the citizens.*

Proof. Follows from equation 11. ∎

Clearly if λ follows a Normal distribution, then the conditions in the above lemma are satisfied. The above condition (i) is the standard *(strong) monotone likelihood ratio property*. Condition (ii) is not very restrictive, it just helps us avoid corners that's all.

Pooling Equilibrium with Two Types. Equipped with the above example, we can now proceed to characterize the pooling equilibrium with two types and $\lambda \sim N(0, \sigma^2)$.

Definition 1. A Pooling Equilibrium for the above model is a pair $(\widetilde{y}, \widetilde{K})$, with the interpretation that politicians of both types choose policy $\widetilde{y}$ and citizens' re-election strategy is- re-elect only if $K \leq \widetilde{K}$, if

    (i) Given $\widetilde{y}$, strategy $\widetilde{K}$ satisfies condition stated in equation 12.

    (ii) Given citizens' strategy $\widetilde{K}$, for each type t there is no incentive to choose any y other than $\widetilde{y}$.

Condition (ii) is of course tricky. It depends upon what the citizens will believe if they see a y that deviates from $\widetilde{y}$.

We consider the following belief structure.

Suppose the citizens believe that the politician is of low type (type L) if the observed policy diverges from $\widetilde{y}$. In that case, condition (ii) boils down to making sure that each type t prefers $\widetilde{y}$ to the best policy he could have chosen, which is $y^*(t)$. Given the citizens' strategy $\widetilde{K}$, the probability of a type t incumbent getting re-elected is $G_t(\widetilde{K})$. So, a politician's expected payoff from choosing $\widetilde{y}$ must satisfy,

$$(13) \quad u^P(\widetilde{y}) - C(\widetilde{y}, t) + G_t(\widetilde{K})(a + u_t^*) + (1 - G_t(\widetilde{K})) \sum_s p_s u_s^* \geq u_t^* + \sum_s p_s u_s^*$$

(Note that the definition of u_t^* includes both the benefit from the policy and its expected cost.) It is immediately evident that equation (13) must be satisfied for sufficiently large a as long as $G_t(\widetilde{K}) > 0$. For brevity sake, let $u^P(\widetilde{y}) - C(\widetilde{y}, t)$ be denoted by $\widetilde{u}_t$. Then the above equation can be rewritten as

$$u_t^* - \widetilde{u}_t \leq G_t(\widetilde{K})[a + u_t^* - \sum_s p_s u_s^*]$$

Proposition 4. *There exist a pooling equilibrium as long as*

$$a \geq \frac{(1 - G_t(\widetilde{K}))u_t^* - \widetilde{u}_t + \sum_s p_s u_s^*}{G_t(\widetilde{K})}$$

Proof. See equation above ∎

Separating Equilibria. First we will look at conditions under which each type will implement its optimal policy and hence there will be a separation.

Separating Equilibrium under Optimal Policy Choice. Suppose that type H is choosing y_H^*, i.e., he is playing his optimal policy. When will a type L have an incentive to mimic him? Suppose that the citizens' beliefs are such that if the declared policy is greater than or equal to y_H^*, then they re-elect and if it is less than y_H^* then they replace. The expected cost from a type L choosing y_H^* is $C(y_H^*, L)$. Hence, type L's expected utility will be

$$u^C(y_H^*) - C(y_H^*, L) + a + u^C(y_L^*) - C(y_L^*, L)$$

A type L will mimic a type H if and only if the above expression is greater than his expected utility from choosing Y_L^*, which is

$$u^C(y_L^*) - C(y_L^*, L) + E$$

where E is the expected utility from both types choosing their optimal policies. The following lemma provides the necessary and sufficient conditions for existence of a separating equilibrium in which both types implement their optimal policy.

Lemma 3. *There exists a separating equilibrium with each type t choosing its ideal policy y_t^* if and only if $a \leq E - [u^C(y_H^*) - C(y_H^*, L)]$.*

Characterizing Separating Equilibria. Let us look at a separating equilibrium of the following type: H chooses a policy $\widehat{y} > y_H^*$ and L chooses y_L^* and citizens' beliefs are that a politician is of type $H(L)$ if his policy is $\geq (<)\widehat{y}$. Under the citizens' beliefs, a type H, if he chose y_H^* will be considered a type L. Hence, we must make sure that he does not have an incentive to do that. In other words, we must have

$$u^C(\widehat{y}) - C(\widehat{y}, H) + a + u^C(y_H^*) - C(y_H^*, H) > u^C(y_H^*) - C(y_H^*, H) + E$$

(14)
$$a > E - [u^C(\widehat{y}) - C(\widehat{y}, H)]$$

Similarly, to ensure that L does not want to mimic H by choosing $\widehat{y}$, we need

(15)
$$a < E - [u^C(\widehat{y}) - C(\widehat{y}, L)]$$

Since the RHS of equation (14) is strictly less than the RHS of equation (15) for any $\widehat{y}$, we know that there exist values of a for which $\widehat{y}$ describes a separating equilibrium.

Proposition 5. *Let $\overline{y}$ denote the upper bound on the policy space. Then for any a such that $a < E - [u^C(\overline{y}) - C(\overline{y}, L)]$, there exists a separating equilibrium. Moreover, the greater the value of a, the greater the $\widetilde{y}$ describing the separating equilibrium and hence lower the welfare in the separating equilibrium.*

Proof. Follows from the IC constraints. ∎

4. Discussion

We have outlined two simple models of political failure which arise because of quality differences among politicians who want to hold onto office because of the rents that come with office. Two different environments are studied, one in which the politician has an informational advantage about the state of the world and another

in which he does not. We see that when the rents from office are high pooling may do better than separating. However, pooling equilibria may not be credible (not intuitive as in Cho Kreps) as a high type may deviate to signal his type. In this context the role of a third party, the U.N. in conflict negotiation or the IMF in the management of the economy may have a positive role to play by acting as a commitment device. This is welfare improving as inoptimal policies by efficient leaders who try to signal their type can be stopped by prior commitments which these bodies can monitor.

Further work will examine whether having superior information by politicians on the state lead to more socially optimal policies or otherwise. We have in this model restricted attention to political failure because of rents from office. However, given that politicians care for ideology as well and there may be asymmetry of information about the true ideology of a leader, a second source of inefficiency can arise. Extensions of this work will examine what kind of political failure can arise because of that.

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