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Polarization, Candidacy and Advancement in Politics

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Polarization, Candidacy and Advancement in Politics

by

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This dissertation is dedicated to my parents, Waldron and Claudette Brown,

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Polarization, Candidacy and Advancement in Politics

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My dissertation focuses on the effect of several variables on two key forms of political participation – voting and candidacy. First, I examine how voter turnout is impacted by differences in the intensity of political beliefs across the electorate and the resulting impact on candidate issue choice. Next, I examine the role of term limits and political party recruitment policies in determining the quality of the political class. Finally, I examine the impact of term limits at the lower rungs of the political ladder on the quality of individuals seeking higher office.

In Chapter 2, I present a modified version of Downs' spatial model to analyze the effect on candidates' policy choices when there is a positive relationship between political extremism and conviction. I assume that alienation and lack of conviction affect voter turnout negatively. I find that the positive relationship

between political extremism and conviction leads candidates away from the center and describe the conditions under which segments of the electorate will abstain in equilibrium. Incorporating candidate asymmetry through differences in valence and campaign finances resulted in the strategy of the disadvantaged candidate being unrestricted. Meanwhile, the advantaged candidate can afford to be more centrist or extremist than his opponent in order to win the election.

In Chapter 3, I present a multi-period model analyzing the impact of political party recruitment and retention policies and the implementation of term limits on the quality of individuals seeking a career in politics. Candidates differ in political skill and their political skill directly affects the provision of a public good. Term limits lead to a restructuring of the timing of rewards for political careers. I find that term limits increase the probability of entry of those of lesser quality. Under certain conditions, term limits reduce the expected ability of those entering the political arena, as those of higher ability are more adversely affected by the restructuring of rewards.

In Chapter 4, I explore the extent to which term limits alter the average quality of office-seekers for higher-level political positions. In addition, I determine whether improvement in quality in upper level political positions comes at the expense of lower level positions. The results suggest that term limits on lower level elected offices reduce the expected political skill of officeholders at this level. Under limited circumstances, term limits will also reduce the expected political skill of those seeking upper level political positions. Under most conditions, term limitation at lower level offices lead to an improvement in the quality of elected officials in upper level offices.

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Chapter 1

Introduction and Overview

> "A well-functioning democracy calls for a confrontation between democratic political positions, and this requires a real debate about possible alternatives. Consensus is indeed necessary but it must be accompanied by dissent." - Chantal Mouffe

Any voluntary action taken by private citizens for the purpose of influencing public policy or electoral outcomes is a form of political participation (Verba and Nie, 1972 p.2). Certainly, the act of voting or running for public office would fall under this heading, with voting being one of the least costly forms of political participation for an individual and running for public office one of the most costly. The frequency of political participation varies amongst the types of activities and most notably across cultures and political systems. There is a substantial body of research aimed at explaining individual involvement in the political process. Many theories have been developed to explain why some individuals are politically active, while others are not. Yet, there is still no widely accepted theory to explain political participation in its various forms.

Political conflicts are as much about ideology as they are issues. Political

ideology – often viewed on a left-right continuum – is a set of ethical ideals and principles that explain how society should work and suggests the most appropriate methods of achieving the ideal social order. While a single left-right axis may seem insufficient in describing the existing variation in political beliefs, political conflicts tend to be organized on a one-dimensional axis. The intensity of political beliefs varies across individuals and we should expect an individual's understanding of political information to be influenced by their unique set of beliefs.

The quality of those individuals who run for and are elected to public office is an important issue for all democracies. Individuals enter politics for a variety of reasons – monetary rewards, power, the opportunity to showcase their talent, and the desire to implement certain policies, to name a few. Among these entrants, success hinges on their ability to navigate the political system. Political Skill is the ability to influence and win support from others – things that a modern political system requires and rewards. It is often seen as a strong predictor of career success both inside and outside of the political arena.

In my dissertation, I focus on the effect of several variables on two key forms of political participation – voting and candidacy. First, I examine how prospective issue voter turnout is impacted by differences in the intensity of political beliefs across the electorate and the resulting impact on candidate issue choice. How is the burden of voting shared among an electorate with members having different intensities of preferences? Next, I examine the role of term limits and political party recruitment policies in determining the quality of the political class. Do term limits encourage the creation of a mediocracy, that is, rule by the mediocre, in lieu of a meritocracy? Finally, I examine the impact of term limits at the lower rungs of the political ladder on the quality of individuals seeking higher office.

1.1 Polarization and Alienation

"Democracy is being allowed to vote for the candidate you dislike least." –Robert Byrne.

In the 2002 California gubernatorial elections, the incumbent, Gray Davis, was re-elected by a slender margin in an election marked by the lowest voter turnout in that state's gubernatorial history, opening the door for the recall that would follow. Davis and his opponent, Bill Simon, were ideologically polarized, if you believe the millions of dollars' worth of campaign advertisements. However, they shared one thing in common - high voter dissatisfaction, with polls showing that voters would prefer to have had other choices than Mr. Davis and Mr. Simon.

Since the 1970s, there has been a marked increase in the polarization of the policy positions of Democrats and Republicans in the U.S. (McCarty, Poole and Rosenthal, 2003). As ideological divisions deepened in the 1990s, once orthogonal debates morphed into conflicts along one-dimensional liberal-conservative axis (McCarty, Poole and Rosenthal, 1997). Some blame can be attributed to the recent tactics of the two main political parties. The 2008 electoral campaign seemed to signal a reversal of this polarization trend, with a noticeably greater participation by formerly disenfranchised members of the electorate.

Canadian politics has traditionally been less polarized than U.S. politics. However, a succession of unstable minority governments since 2004 has revealed a fracturing political consensus, and a polarization of political parties that appears to be getting worse. In many Western Democracies, including Canada and the United States, voter turnout has been on the decline for over a decade. The belief that low turnout represents a democratic crisis is widely held[1].

Why should we be concerned with polarization trends and alienation at the

[1] See Lijphart 1997 and Putnam 2000.

citizen level? Canadians should be concerned about the growing list of priorities and crises that remain unaddressed by national legislation. Polarization is partially to blame for the recent lack of policy-making in the area of environmental policy, complacency regarding foreign policy and the gradual shift away from fiscal conservatism. Meanwhile, in the U.S., polarization has lead to political paralysis, leaving issues such as health care, immigration policy, the impact of the aging U.S. population on Social Security, energy independence and climate change unresolved for more than a decade.

Turnout does not only affect which policy option is selected but also influences the policy options from which voters must choose. Citizens must not only choose for whom to vote but whether to vote at all. Previous research has shown that those who participate matter and that the level of voter participation influences public policy (e.g. Hill et al (1995), Fleck (1999)). Political alienation, defined as the perception of distance or a feeling of separation from political institutions and political leaders, representing a negative attitude or indifference, is a significant contributor to low voter turnout in elections[2]. Closely tied to the concept of alienation is that of political tolerance. Tolerance, as defined by Hinich and Ordeshook (1969), reflects the degree of separation between the ideal policy position of voters and their preferred candidates that voters are willing to abide, beyond which they feel alienated. The idea of alienation as a strategic consideration for politicians or political parties is not new[3].

Downs's (1957) seminal contribution to analytical political theory, the median-voter theorem, states that in a spatial model of electoral competition upon which two candidates compete by choosing their location on a single-dimensional issue space and voters have single-peaked preferences over the issue space, the median position can never be defeated in a majority rule contest. In other words, Down-

[2] See Nownes 1992 and Teixeira 1987, 1992

[3] See Hinich and Ordeshook (1969), Davis, Hinich and Ordeshook (1970).

sian theory implies the convergence of candidates' policies away from their own party base and toward the preferred policy of the median voter in the electorate.

A large body of theoretical work has advanced to explain the differences between the median-voter theoretical result and the empirical evidence of non-convergence to the "middle". The present school of thought suggests that convergence is highly unlikely. Often the theoretical work draws on countervailing forces that offset the pull to the middle, such as the candidates' own preferences, the desire to advance in the party pecking order, and the need to appeal to partisan voters in order to raise campaign funds. The empirical evidence for nonconvergence is compelling[4].

In the chapter "Platform Polarization and Voter Turnout," the main objective is to explain how an exogenously determined relationship between political extremism and rigidity, as well as the probability of abstention, affects the polarization of policy platforms and voter turnout. This chapter is motivated by two observations: (1) individuals holding relatively extreme political opinions tend to be more confident in their beliefs; and (2) individuals with such extreme beliefs appear to be more vocal and likely to participate in elections and other political activities.

In a modified version of Downs' spatial model, I analyze the effect on candidates' policy choices when there is a positive relationship between political extremism and conviction. I assume that alienation and lack of conviction affect voter turnout negatively. The main result implies that office-seeking candidates do best by catering to their partisan constituency and provides an alternative explanation for nonconvergence, without appealing to countervailing forces such as the candidates's preferences.

[4]See Poole and Rosenthal (1984); Snyder (1994); Erikson and Wright (1997, 2000); Adams, Bishin, and Dow (2004); and Lee, Moretti and Butler (2004).

1.2 Candidacy and Term Limits

> "Those who are too smart to engage in politics are punished by being governed by those who are dumber." - Plato

The debate over term limits, that is, limiting the number of terms in office served by elected politicians, has raged on over the years in many countries. Term limits come in various forms, and those in favor of term limits must specify the exact form they should take. Though proponents and critics of term limits tend to consider the behavioral effects, such as the impact on policy-making, it is on the compositional effects that I wish to focus.

Proponents of term limits often argue that term limits will reduce the influence of campaigning on elected officials as well as open up legislative offices to minorities and other under-represented groups, allowing for a greater influx of new ideas into legislatures. Opponents argue that term limits reduce the average experience of legislators and diminish a legislature's institutional memory. Crucial to this argument is the nature of the incumbent advantage, which reflects the fact that incumbents win substantially more than half of the time. On the other side, is the argument that term limits will eliminate the positive selection effects of incumbency – becoming an incumbent requires electoral success, and successful candidates will have a propensity to be of higher quality. Others argue that term limits decrease the desirability to pursue a long-term career in politics.

In the US, the debate has been primarily on whether limiting all legislative representatives to two consecutive terms in an office would improve the democratic process. In the US Federal government, only the President is limited by the constitution to two terms. US Senators may serve for an unlimited number of six-year terms, meanwhile US House Representatives may serve for an unlimited number of two-year terms.

At the state level, term limitation laws were adopted in 21 states and are still in effect in 15 states across the US with Idaho, Massachusetts, Oregon, Utah, Washington and Wyoming having repealed such legislation. Currently, 36 states have term limits of various forms for their governors. There is also much debate over whether all Representatives/Senators within the legislative body should be subject to the same restrictions. In the early 1990s, referenda on congressional term limits were voted on in 23 states.

In most of Latin America, politicians can only serve one term at a time in an elected office, with very few restrictions on serving a position for a second time, provided that it is not consecutive. For example, a politician would be free to serve as governor for one term, serve as senator for a subsequent term before returning to the position of governor for a second term. Constitutional amendments have been put forward, some passing, to relax these restrictions. In the 1990s, politicians and voters in countries such as Argentina, Brazil and Peru sought to change their constitutions to allow for re-election of presidents, arguing for continuity. There the debate is often prompted by the popularity of a particular President (for example, Fernando Henrique Cardoso of Brazil, Alvaro Uribe Velez of Colombia, and Hugo Chavez of Venezuela).

One key question to answer is whether term limits could achieve something that voters could not do for themselves? In a truly democratic process, voters should be able to rid themselves of substandard incumbents through the ballot box. Also, term limits would remove the ability of the electorate to retain popular and competent incumbents. Critics argue that such an important decision should not be separated from the electorate.

Proponents point to possible inefficiencies resulting from incumbent advantages – advantages that incumbents have in any re-election bid which are independent of their performance, competencies or policy positions relative to their

opponents. Palmer and Simon (2008) argue that the incumbent advantage is an amalgamation of the different entry barriers for new candidates and suggests that it may be a signal of electoral inefficiency. Incumbent advantages include greater access to sources for campaign funding, an already in place campaign organization and staff, and name-recognition. Over the last three decades, U.S. House Representatives have enjoyed a re-election rate above 90 percent. While the percentage is not as dramatic, Senate races still overwhelmingly favor the incumbent. Note however that these percentages do not take into account the number of Senators and House members who retired because they were not confident of being re-elected.

It is often argued that term limits would help to cure what Harry Truman referred to as "terrible legislative diseases" – "senility and seniority." It is suggested that term limits would bring new talent and experiences into the political sector, including those who otherwise would not consider a political career, and prevent "the fossilization of the key committees." In the 1990s, state legislative term limits resulted in increased turnover rates and a reduction in average tenure, with many representatives opting out early to run for higher office in anticipation of being forced out (Francis, Kenny, & Anderson, 2000).

With the increase in legislative turnover resulting from the implementation of term limits, supporters argue that term limits would create a class of "citizen legislators" so that those serving in legislatures would not spend their entire lives there. James Madison envisioned Congress as such a legislative body, where representatives would be "called for the most part from pursuits of a private nature and continued in appointment for a short period of office."

Countering this is the observation that experience is a valuable commodity in politics. Rookie representatives require time in office before mastering the various tasks required of them and the public good may be best served by a sys-

tem that allows for some continuity and accumulation of institutional memory in the legislative body. Term limits would remove the ability of the electorate to retain experienced politicians. In addition, the possibility of re-election on the horizon, it is argued, ensures accountability and helps to align the representative's interests with that of the electorate. The implementation of term limits, as argued by Alexander Hamilton, would result in "a diminution of the inducements to good behavior."

Term limitations are unlikely to be implemented in the U.S. Congress because of the U.S. Supreme Court's 1995 ruling that state-imposed term limits are unconstitutional[5]. However, if states were able to impose term limits on their congressional positions, this would lead to a redistribution of political power within Congress (Friedman and Wittman, 1995) and have implications for the class of individuals who would be attracted to these positions.

In the chapter "Candidate Recruitment under Term Limits," I present a multi-period model of candidate entry analyzing the impact of political party recruitment and retention policies and the implementation of term limits on the political skill of individuals seeking a career in politics, when political aptitude is valued in both the political and private sector. Depending on the retention policies of political parties and the effect term limits have on restructuring of rewards to a political career, term limits could reduce or improve the expected quality of entrants into the political arena.

In most countries, very few individuals start off their political careers at the top of the political ladder. Most successful politicians are not celebrities (former professional athletes or entertainers) nor do they rely on trust funds or billion-dollar corporate empires, but emerge at the highest levels after a determined progression through the political ranks. Often, much time is spent campaigning in local elections, before moving on to increasingly larger state or provincial

[5] *U.S. Term Limits, Inc. v. Thorton*, 514 U.S. 779 (1995)

districts, then to federal government legislatures or governorships, and then possibly to the executive office.

In the chapter "Candidate Ambition and Advancement Under Term Limits," I present a multi-period model of candidate entry into a two-tiered hierarchy of political positions, which explores the extent to which term limits alter the average quality of office-seekers who advance to higher-level political positions. The results suggest that term limits at the lower level political positions leads to the sacrifice of quality at the lower level in exchange for an improvement in the quality of candidates for upper level political positions.

Chapter 2

Platform Polarization and Voter Turnout

2.1 Introduction

Elections are the main means by which constituents hold their elected officials accountable for their policy decisions and performance while in office. Downs (1957) argued that there is a strong pull to the preferences of the median voter as both parties or candidates compete for the support of the median members of the electorate. If we agree with the main results of the Downsian framework, electoral competition should result in parties, candidates and policies that reflect the preferences of the median voter. In reality, parties and candidates fail to converge to the center and prior research has suggested many explanations.

Firstly, in most instances the position of the median voter cannot be precisely determined and there may exist a great deal of uncertainty on this position. Secondly, the primary system in the US Presidential and Congressional elections encourages candidates to cater to the more extreme preferences of constituents

who vote in the parties' primaries. Thirdly, the candidates themselves have preferences over the policies implemented and care about more than just winning elections. Fourthly, in many political environments participation is not mandatory but voluntary, and as a result candidates must specifically cater to the preferences of those who are likely to vote. Finally, voters not only look at the distance between their ideal positions and that of the candidates but also at their character and reputation when deciding to cast their votes so candidates need not race to the middle in order to capture the majority of votes. I propose an alternative explanation - that differences in the conviction with which voters hold their beliefs about the ideal policy position can lead to nonconvergence in candidates' policy platforms.

Several modifications of the Downsian model have shown that in two-party political systems, the policies chosen by parties or candidates need not converge to the most-preferred policy of the median voter. Alesina and Rosenthal (1995, 1996) and Faulí-Oller, Ok and Ortuño-Ortín (2003) provide alternative explanations for polarized policy platforms. For Alesina and Rosenthal, parties/candidates cannot make credible commitments to their proposed policies as the policy that is ultimately implemented results from compromise between the executive branch and the legislature. This gives candidates with preferences over the policy space incentive to choose radical policy positions. In Faulí-Oller et al, candidates can make credible commitments on their proposed policies and platform polarization results from the strategic delegation by parties to radical candidates when there is uncertainty about the distribution of voters' preferences.

The standard framework also assumes that regardless of the distance of voter positions to that of the candidates, voters never abstain, but still vote for the candidate that is closest to them. It does not leave room for the possibility that

extremist voters may become alienated if they feel that the available candidates are too centrist or that moderate voters may feel alienated by extreme candidates. Not only do individuals in society differ in their political ideology and opinions about parties and policies, they also differ in the strength of their convictions on those beliefs. While some individuals may be open to compromise as they are presented with new information, others are more uncompromising and confident in their beliefs. Given these two differences across individuals - ideology and conviction - the next question to ask is how are these two differences related? More specifically, are individuals with relatively moderate opinions less confident and more willing to compromise than individuals with an extreme political stance? In this paper, I ask the question "If extremism goes hand in hand with confidence, how does this affect candidates' strategies and voter turnout?"

Blomberg and Harrington (2000) argue that rigidity, defined as a lack of responsiveness to new information, and extremism are related. In their model there is initially no assumed relationship between any agent's policy preference or his rigidity. However, agents' updating their beliefs in response to receiving a series of publicly observable signals results in a positive correlation between extremism and rigidity. So, the probability that an agent is very rigid is greater among those agents with extreme views. The intuition behind this is as follows. When an agent receives new information, the only way in which that agent can persist with extreme views is if he had initially attached high confidence to those extreme views, i.e. his beliefs are rigid. If he did not attach high probability to them, he would have adjusted his beliefs towards that of the majority of agents upon receiving new information. So learning induces this positive correlation. However, their argument suggests that after receiving successive signals, every individual's estimate should converge, which we don't actually observe. On

the other hand, what is perceived as an extreme political stance changes over time. Blomberg and Harrington go on to test their hypothesis using data on the voting behavior (used as a proxy for beliefs) of members of the U.S. Congress and find that legislators with relatively extreme voting behavior in their early years in Congress were less likely to change their voting behavior over time.

A large body of theoretical and empirical research has been devoted to addressing an apparent paradox in the theory of political behavior. We still lack a satisfactory explanation of the paradox of voting using rational choice theory. Downs (1957) pointed out that a small positive cost of voting would usually exceed any benefits perceived by an expected utility maximizer. So, it was thought that the act of voting is characteristically irrational. In applying rational choice theory to electoral participation, in most cases the model predicts abstention. This lies in conflict with the large numbers of people who do vote in elections. Often, consumption benefits derived from the fundamental act of voting have been used to account for the nonzero voter turnout[1]. However, using consumptive benefits as an explanation of voter participation seems to render the use of rational choice models in this context uninteresting as it removes the decision to participate from politics. Modifications to the rational choice models have proven unsatisfactory or implausible for large electorates[2]. Also of interest is the large gap between the levels of voter participation that can be explained by the theory and the levels that we observe[3].

Rosenstone and Hansen (1993) present a compelling argument that campaigns are a major determinant of voter turnout. They argue "citizens participate in elections and government both because they go to politics and because politics comes to them". Their study is an example of those that stress the im-

[1] See Riker and Ordershook (1968).

[2] Ferejohn and Fiorina (1974), Ledyard (1981, 1984) and Opp (1986).

[3] Ledyard (1984) and Palfrey and Rosenthal (1983, 1985). Their models suggest a maximum of 3-5% turnout for a reasonably sized electorate, which lies in contrast to the 30% or higher observed in most elections.

portance of the mobilizing effects of political parties and candidate campaigns in determining turnout. My argument here is that candidates will not only battle over voter shares, but over turnout. The strategy is commonly referred to as "bringing out the base". Candidates must not only appeal to the preferences of the likely voters but must try to motivate those with policy preferences closer to their own to turnout while trying to suppress the turnout of their opponents political base. I propose that individuals abstain for two reasons. Individuals will abstain if they feel that their beliefs are not sufficiently represented by either candidate. They will also abstain if they do not feel confident in their opinions. Several studies have examined the effect of campaign spending on an individual's likelihood of voting and/or the effect of campaign spending at the aggregate level for statewide, congressional and state legislative contests. The majority of such studies find a positive relationship between campaign spending and voter turnout[4].

One could ask what is the importance of incorporating voter participation? One answer would be the possible impact of voter turnout on distributive policy. Previous research has highlighted the facts that those who participate matter and that levels of voter participation influence public policy. Hill et al (1995) provide evidence that welfare spending is positively correlated with the voter participation of lower income groups. Fleck (1999) finds that differences in turnout can result in significant differences in the allocation of resources across the electorate. Fleck modeled the effect of the level of voter turnout on the distribution of government funds. The model predicted that regions with higher voter turnout would receive more government funds, all things being equal,

[4]Caldiera (et al, 1985) make the case for the importance of political mobilization by candidates and political parties in convincing individuals to vote. They concluded that analyses of voter turnout that "omit political mobilization are partial and suspect". Cox and Munger (1989) and Gilliam (1985) examine the aggregate effects of spending for congressional elections, while Caldiera and Patterson (1983) examine the same question for state legislative contest.

regardless of whether politicians are primarily concerned with re-election or popular policy. Fleck found strong empirical support for the model's predictions.

Several papers analyze equilibrium when one candidate has a valence advantage. Ansolabehere and Snyder (2000) incorporate valence issues into a multidimensional spatial model and establish the conditions under which a pure strategy equilibrium exists. The candidate with the valence advantage, the winner, locates at the median while there are no restrictions placed on the strategies of the disadvantaged candidate. The model in this paper is more closely related to that of Berger, Munger and Pothoff (2000). In their model voters are uncertain about each candidate's policy position. When there is a candidate with lower variance in policy position, no equilibrium exists. However, if the policy position of the candidate with lower variance is fixed, then an equilibrium exists in which the higher-variance candidate diverges from the fixed platform position of the lower variance candidate. Also, the candidate with the lowest variance need not locate at the median of the distribution in order to win. In my model I assume that the uncertainty for voters does not lie with the policy position of the candidates but with their own preferred policy position. The result is the divergence in location of the two candidates even in the absence of valence issues. With the addition of valence issues and an advantaged candidate, I find that if we exclude equilibria in which either candidate plays a weakly dominated strategy, the advantaged candidate is able to locate more or less centrally than the disadvantaged candidate in order to win the election.

In this paper I investigate the properties of the equilibria in a variation of the simultaneous location game. The first objective of this paper is to analyze the effect on candidates' policy choices and voter turnout when there is a positive relationship between political extremism and conviction. Conviction is measured in terms of the confidence voters hold over their preferred policies, while extrem-

ism is measured in terms of the absolute distance of voters' preferred policies to that of the median voter. In my model, lack of conviction and alienation both affect turnout negatively. I assume that agents will abstain if they do not feel confident in their estimation of the right policy or when the candidates' policy choices are too distant from their own. Under these conditions, the positive relationship between extremism and conviction leads candidates away from the median of the electorate in their efforts to maximize vote shares. Rather than share a base by adopting the median position, each candidate distances himself from his opponent in order to establish his own base of voters. However, candidates do not locate at the extremes of the political spectrum either. The second objective of this paper is to analyze the role of campaign advertising as a secondary tool by which the candidates can distinguish themselves and their base of voters. Through campaign advertising, the candidate with the valence disadvantage can level the playing field providing he/she has sufficient campaign funds.

2.2 Model

In this model the electorate, I, is comprised of a set of voters who will select by popular vote a representative. There are also two candidates, L and R, competing in the election. Candidates are strictly office-seeking politicians and do not have preferred policies. The type of policy under consideration is objective in nature, affecting the entire electorate; such as national security or education. The utility of candidate $c \in \{L, R\}$ is

$$u_c = \begin{cases} V & \text{if } c \text{ wins the election} \\ 0 & \text{otherwise} \end{cases}, V > 0.$$

Each candidate announces his/her policy position on an unidimensional policy

space, $x_c \in X_c \subset X = [-T, T]$ where $T > 0$, before the election. For simplicity let us assume that candidate L's strategy space, X_L, is $[-T, 0]$ and that candidate R's strategy space, X_R, is $[0, T]$.

Voters on the other hand, care about the candidates' policy positions and their non-policy characteristics. These non-policy characteristics are easily verifiable in nature, such as a candidate's previous political performance. Let $\beta_c \in \{0, 1\}$ represent candidate c's non-policy characteristics. β_c, $c = L, R$, is observed by both candidates and by the voters, with 1 representing a favorable political history and 0 an unfavorable one. A voter's preferences are said to be extreme if his/her preferred policies differ significantly from that of the median preferred policy in the population. Second, a voter is defined as uncompromising if he assigns high confidence to his beliefs. Let the density function $f_i(x|\mu_i, v_i)$ denote voter i's beliefs over X, that is $f_i(x|\mu_i, v_i)$ represents voter i's beliefs about what is the best policy, where μ_i and v_i are the mean and variance of voter i's distribution, respectively. Let us assume that the μ_is are uniformly distributed across X. So voters can be identified by the location of their mean policy position, μ_i. Let m represent the agent with the median mean policy position in the population. Let μ_m be the mean of the median agent's distribution over X. Voter i is therefore considered extreme if $|\mu_i - \mu_m|$ is relatively large, and agent i assigns high confidence to his/her beliefs if v_i is relatively small. The distribution of the μ_is and f_is are both common knowledge between the candidates.

I assume that voter preferences are symmetric and single-peaked with respect to policies. Specifically, the utility received by voter i when candidate c wins and voter i considers x to be the best policy is $u_i(x_c, x) = u_o + \alpha\beta_c - (x_c - x)^2$. Given voter i's beliefs over X,

$$Eu_i(\mu_i, v_i, x_c) = \int u_i(x_c, x) f_i(x|\mu_i, v_i) dx$$

$$Eu_i(\mu_i, x_c) = u_o + \alpha\beta_c - v_i - (x_c - \mu_i)^2 \tag{2.1}$$

The differences in expected utility between candidate proposals if candidate proposals are (x_L, x_R)

$$Eu_i(\mu_i, x_L) - Eu_i(\mu_i, x_R) = \alpha(\beta_L - \beta_R) + (x_R - \mu_i)^2 - (x_L - \mu_i)^2 \tag{2.2}$$

$$Eu_i(\mu_i, x_L) - Eu_i(\mu_i, x_R) = \alpha(\beta_L - \beta_R) + (x_R - x_L)(x_R + x_L - 2\mu_i) \tag{2.3}$$

So in the absence of abstentions and campaign advertising, we have the standard model, yielding the median voter result.

Relationship Between Extremism and Conviction

For now, let $v_i \in \{0, v_m\}$ and p_i be the probability that $v_i = v_m$. If voters with extreme policy positions are more likely to possess greater conviction than moderate voters, then we would expect v_i to be negatively correlated with the absolute value of μ_i. If we compare two voters, say voter 1 and voter 2, and $|\mu_1| \leq |\mu_2|$ this would imply that $p_1 \geq p_2$. Suppose $p_i = p(\mu)$ is the probability that $v_i = v_m$ conditional on $\mu_i = \mu$, that is $p(\mu) = \Pr\{v_i = v_m|\mu_i = \mu\}$. So if $|\mu_1| \leq |\mu_2|$ then $p(\mu_1) \geq p(\mu_2)$. It follows that $E[v_i|\mu_i = \mu_1] \geq E[v_i|\mu_i = \mu_2]$ and that $\arg\max E[v|\mu] = \arg\max p(\mu) = 0$.

Now suppose instead that $v_i \in [0, v_m]$ and that $E[v|\mu] = v(\mu)$, that is, $v(\mu)$ is the expected variance of voters with mean μ. $v(\mu_i)$ is a continuously differentiable function on $[-T, 0) \cup (0, T]$ and

$$\frac{dv(\mu_i)}{d\mu_i} \geq 0 \; for \; \mu_i < 0 \text{ and } \frac{dv(\mu_i)}{d\mu_i} \leq 0 \; for \; \mu_i > 0 \tag{A1}$$

$$v(T) = v(-T) = 0, \text{ and } \quad v(0) = v_m \tag{A2}$$

so that $\arg\max_{\mu} v(\mu) = 0$. Functional forms for $v(\mu)$ that satisfy (A1) and (A2)

$$v(\mu) = v_m - \frac{v_m \mu^2}{T^2} \tag{F1}$$

$$v(\mu) = v_m - \frac{v_m |\mu|}{T} \tag{F2}$$

Now, if we make a stronger assumption that extremists possess more conviction in their political beliefs than moderates, we would expect v_i to be decreasing in $|\mu_i|$. I assume that $v(\mu)$ is no longer the expected variance of voters with mean μ but that $v_i = v(\mu_i)$ for all $i \in I$. The downside to this stronger assumption is that previously there was a positive probability that moderate voters could have lower variances, now I have ruled out the possibility that there are "experts" in the middle.

2.2.1 Voter Participation

I assume that voters will not vote for a candidate if they feel that this candidate's political views are too distant from their own. What if a constituent feels that neither candidate is close enough to their preferred policy? In this model,

I will incorporate the idea of political alienation by means of a participation constraint. Similar to Enelow and Hinich (1984), I assume that Voter $i \in I$ will abstain if his/her expected utility from the policy choice of his/her preferred candidate fails to exceed a certain positive threshold, that is,

$$E[u_o + \alpha\beta_c - (x_c - x)^2] < \underline{u} \tag{2.4}$$

$$\Rightarrow \int (x_c - x)^2 f_i(x|\mu_i, v_i)dx > \theta_c \tag{2.5}$$

where $\theta_c = u_o + \alpha\beta_c - \underline{u}$. θ_c can be interpreted as a tolerance parameter. If the above holds, voter i feels that candidate c is too distant and will not vote for him, or voter i does not feel confident enough of their estimate of the right policy to cast a vote. If the inequality holds for both x_L and x_R, then the voter will abstain. By contrast, the Downsian model assumes that voters never abstain regardless of the distance. They will decide whom to vote for based on the relative distance even when the difference between candidates is infinitesimal. So there are two sources of abstention in this model - alienation and lower precision of beliefs. However, in this model precision is not independent of alienation.

2.3 Equilibrium

2.3.1 Equilibrium when voters care only about policy

For this section I assume that the voters only care about the policy implemented and not about the candidates' non-policy characteristics, that is $\alpha = 0$ and

$\theta_R = \theta_L = \theta$. Since I have assumed that $x_L \leq 0 \leq x_R$, voter $i \in I$ will vote for candidate L if

$$v(\mu_i) + (x_L - \mu_i)^2 \leq \theta \quad \text{and} \tag{2.6}$$

$$\frac{x_L + x_R}{2} > \mu_i. \tag{2.7}$$

Voter i will vote for candidate R if

$$v(\mu_i) + (x_R - \mu_i)^2 \leq \theta \quad \text{and} \tag{2.8}$$

$$\frac{x_L + x_R}{2} < \mu_i. \tag{2.9}$$

Finally, Voter i will abstain if

$$v(\mu_i) + (x_L - \mu_i)^2 > \theta \quad \text{and} \tag{2.10}$$

$$v(\mu_i) + (x_R - \mu_i)^2 > \theta. \tag{2.11}$$

I also assume that if $v(\mu_i) + (x_c - \mu_i)^2 \leq \theta$ for $c = L, R$ and $\mu_i = \frac{x_L + x_R}{2}$, voter i will vote for either candidate with equal probability.

Each candidate wishes to maximize the probability that he is elected by maximizing the proportion of agents that will vote for him/her. Given any profile of policy positions (x_L, x_R), let B_L denote the set of voters voting for candidate L, that is $B_L = \{i \in I|\ v(\mu_i) + (x_L - \mu_i)^2 \leq \theta$ and $\frac{x_L + x_R}{2} > \mu_i\}$. Similarly, $B_R = \{i \in I|\ v(\mu_i) + (x_R - \mu_i)^2 \leq \theta$ and $\frac{x_L + x_R}{2} < \mu_i\}$. Given the shape of $v(\mu_i) + (x_R - \mu_i)^2$, B_L is an interval $[\underline{\mu}_L, \overline{\mu}_L]$ which will be defined below. Let $s(B_L)$ be the size of this interval. So if $\mu_i \in [\underline{\mu}_L, \overline{\mu}_L]$, then voter i will vote for candidate L. Similarly if $\mu_i \in B_R = [\underline{\mu}_R, \overline{\mu}_R]$ then agent i will vote for candidate R. Let $s(B_R)$ be the size of this interval. Let $A = \{i \in I|\ v(\mu_i) + (x_c - \mu_i)^2 > \theta$ for $c = L, R\}$, that is the set of voters who will abstain. Also let λ_{L1} and λ_{L2} be the roots of the equation $v(\mu) + (x_L - \mu)^2 - \theta = 0$ and λ_{R1} and λ_{R2} the roots of the equation $v(\mu) + (x_R - \mu)^2 - \theta = 0$. Let $\lambda_{c1} \geq \lambda_{c2}$ for $c = L, R$. Then $\underline{\mu}_L = \max\{\lambda_{L2}, -T\}$ and $\overline{\mu}_L = \min\{\lambda_{L1}, \frac{x_L + x_R}{2}\}$. Also $\underline{\mu}_R = \max\{\lambda_{R2}, \frac{x_L + x_R}{2}\}$ and $\overline{\mu}_R = \min\{\lambda_{R1}, T\}$. Using F1[5] gives us

$$\lambda_{c1} = \frac{2x_c + \sqrt{4x_c^2 - 4(1-a)(v_m + x_c^2 - \theta)}}{2(1-a)} \quad \text{and} \tag{2.12}$$

$$\lambda_{c2} = \frac{2x_c - \sqrt{4x_c^2 - 4(1-a)(v_m + x_c^2 - \theta)}}{2(1-a)} \qquad c = L, R \tag{2.13}$$

where $a = \frac{v_m}{T^2}$.

[5] Using F2 gives us $\lambda_{R1} = x_R + \frac{a}{2} + \sqrt{a(a + x_R) + \theta - \sigma_m^2}$, $\lambda_{R2} = x_R + \frac{a}{2} - \sqrt{a(a + x_R) + \theta - \sigma_m^2}$, $\lambda_{L1} = x_L + \frac{a}{2} + \sqrt{a(a - x_L) + \theta - \sigma_m^2}$, and $\lambda_{L2} = x_L + \frac{a}{2} - \sqrt{a(a - x_L) + \theta - \sigma_m^2}$.

So the size of the segment of the electorate voting for candidate c given (x_L, x_R) is

$$s(B_c|x_L,x_R)=\begin{cases}\overline{\mu}_c-\underline{\mu}_c & if \quad x_L<x_R\\ \frac{(\overline{\mu}_c-\underline{\mu}_c)}{2} & if \quad x_L=x_R=0\end{cases}, \qquad c=L,R \tag{2.14}$$

The probability that candidate c wins the election is

$$\pi_R(x_L,x_R)=\begin{cases}1 & if \quad s(B_L|x_L,x_R)<s(B_R|x_L,x_R)\\ \frac{1}{2} & if \quad s(B_L|x_L,x_R)=s(B_R|x_L,x_R)\\ 0 & if \quad s(B_L|x_L,x_R)>s(B_R|x_L,x_R)\end{cases} \tag{2.15}$$

That is, if $s(B_L|x_L,x_R) > s(B_R|x_L,x_R)$, candidate L wins the election and when the voter bases are of equal size, then either candidate has a 50% chance of winning the election.

Before we proceed we need to make some additional assumptions on $v(\mu)$, given the two functional forms to make our results interesting. Firstly, $v_m \leq \theta$, so that the median voter with $\mu_i = 0$, is either indifferent about voting and abstaining or prefers to vote for a candidate that announces $x_c = 0$. Secondly, $Ta < \sqrt{\theta}$ and $a = \frac{v_m}{T^2} < 1$, to rule out the possibility that some agents never vote under any circumstances. Finally $\sqrt{\frac{\theta - v_m}{(1-a)}} < T$, so that $\overline{\mu}_c < T$ and $\underline{\mu}_c > -T$ when $x_c = 0$, that is, extreme voters are alienated by centrist candidates.

Candidate R's expected utility given (x_L, x_R) is $E[u_R|x_L, x_R] = V\pi_R(x_L, x_R)$. Given the assumptions about the shape of $v(\mu) + (x_R - \mu)^2$, for any $x_L \in X_L$, there are at most two values of $x_R \in X_R$ such that $s(B_L|x_L, x_R) = s(B_R|x_L, x_R)$. Let $\widehat{x}_R(x_L) \leq \widehat{\widehat{x}}_R(x_L)$ denote these values[6]. It can be shown

[6] $\widehat{x}_R(x_L) = |x_L|$ and $\widehat{\widehat{x}}_R(x_L) \in [T - \sqrt{\theta - \sigma_0^2}, T]$ satisfies $T - \frac{\widehat{\widehat{x}}_R}{1-a} + \sqrt{\frac{\widehat{\widehat{x}}_R^2 a}{(1-a)^2} + \frac{\theta - \sigma_m^2}{1-a}} = s(B_L|x_L, \widehat{\widehat{x}}_R)$.

that for any $x_R \in (\widehat{x}_R(x_L), \widehat{\widehat{x}}_R(x_L))$, $s(B_L|x_L, x_R) < s(B_R|x_L, x_R)$. However when $x_L = \sqrt{\theta} - T$, $\widehat{x}_R(x_L) = \widehat{\widehat{x}}_R(x_L) = T - \sqrt{\theta}$. Figure 1 (in the Appendix) shows Candidate R's best response correspondence for all $x_L \in X_L$. Candidate L's best response correspondence follows a similar construction and is illustrated in Figure 2 (also in the Appendix). So we can define a Nash Equilibrium of the election game (with $\beta = 0$) as a (x_L^*, x_R^*) such that $\pi_c(x_c^*, x_{-c}^*) \geq \pi_c(x_c', x_{-c}^*)$ for all $x_c' \in X_c$, $c = L, R$.

Firstly, the policies chosen by the candidates will not converge to the center.

Proposition 1 *For any x_{-c}, $x_c = 0$ is never a best response for candidate c. $x_L = x_R = 0$ is not an equilibrium.*

Proof. Suppose $x_R = 0$ and $x_L \in X_L$. Using F1, this implies that $\overline{\mu}_R = \sqrt{\frac{\theta - v_m}{(1-a)}} < T$ and $\underline{\mu}_R = \max\{\frac{x_L}{2}, -\sqrt{\frac{\theta - v_m}{(1-a)}}\}$. Now in case (i) $\frac{x_L}{2} > -\sqrt{\frac{\theta - v_m}{(1-a)}}$, $\underline{\mu}_R = \frac{x_L}{2}$, which implies that the size of the segment of the electorate voting for candidate R is $s(B_R|x_L, x_R) = \sqrt{\frac{\theta - v_m}{(1-a)}} - \frac{x_L}{2}$ and for the size of the segment voting for candidate L is $s(B_L|x_L, x_R) = \frac{x_L}{2} - \underline{\mu}_L$. Suppose that $\underline{\mu}_L = \frac{x_L}{(1-a)} - \sqrt{\frac{x_L^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}}$ and candidate R shifted his/her policy position right to $x_R' = |x_L| + \varepsilon$. Then $\overline{\mu}_R' = \frac{x_R'}{(1-a)} + \sqrt{\frac{x_R'^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}}$ and $\underline{\mu}'_R = \frac{x_L + x_R'}{2}$. So $s(B_R|x_L, x_R') = \frac{-x_L + \varepsilon}{1-a} + \sqrt{\frac{x_R'^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} - \frac{\varepsilon}{2} > \frac{\varepsilon}{2} - \frac{x_L}{(1-a)} + \sqrt{\frac{x_L^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} = s(B_L|x_L, x_R')$ and R would win the election. Suppose that $\underline{\mu}_L = -T$ and candidate R shifted his/her policy position right to $x_R' = |x_L| - \varepsilon$. Then $s(B_R|x_L, x_R') = T + \frac{\varepsilon}{2} > T - \frac{\varepsilon}{2} = s(B_L|x_L, x_R')$ and R would win the election. Now in case (ii) $\frac{x_L}{2} < -\sqrt{\frac{\theta - v_m}{(1-a)}}$, $\underline{\mu}_R = -\sqrt{\frac{\theta - v_m}{(1-a)}}$, which implies that the size of the segment of the electorate voting for candidate R is $s(B_R|x_L, x_R) = 2\sqrt{\frac{\theta - v_m}{(1-a)}}$. Suppose, again, that that $\underline{\mu}_L = \frac{x_L}{(1-a)} - \sqrt{\frac{x_L^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}}$ and candidate R shifted his policy position right to $x_R' = |x_L| + \varepsilon$. Then $\overline{\mu}_R' = \frac{x_R'}{(1-a)} + \sqrt{\frac{x_R'^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}}$ and $\underline{\mu}'_R = \frac{x_R'}{(1-a)} - \sqrt{\frac{x_R'^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}}$.

So $s(B_R|x_L, x'_R) = 2\sqrt{\frac{(|x_L|+\varepsilon)^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} > 2\sqrt{\frac{x_L^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} = s(B_L|x_L, x'_R)$ and R would win the election. Suppose that $\underline{\mu}_L = -T$ and candidate R shifted his/her policy position right to $x'_R = |x_L| - \varepsilon$. Then $s(B_R|x_L, x'_R) = T + \frac{x_L+\varepsilon}{1-a} + \sqrt{\frac{x'^2_R a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} > T + \frac{x_L}{1-a} + \sqrt{\frac{x_L^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} = s(B_L|x_L, x'_R)$and R would win the election. So for any $x_L \in X_L$, there is always a strategy for candidate R that strictly dominates $x_R = 0$. The argument for candidate L is analogous. From this we can see that $x_L = x_R = 0$ is not an equilibrium. Specifically, $s(B_R|0,0) = s(B_L|0,0) = \sqrt{\frac{\theta - v_m}{(1-a)}}$ and if candidate R shifted to the right to $x'_R = \varepsilon$, $s(B_L|0,\varepsilon) = \frac{\varepsilon}{2} + \sqrt{\frac{\theta - v_m}{(1-a)}} < \frac{\varepsilon}{1-a} + \sqrt{\frac{\varepsilon^2 a}{(1-a)^2} + \frac{\theta - v_m}{(1-a)}} = s(B_R|0,\varepsilon)$. The candidates will not converge to the median. ■

For any given $x_R \in X_R$, if $x_L = 0$, candidate L can always do better by shifting his position to the left. The segment of voters that he/she loses to the right by doing so is outweighed by the segment of voters that he/she gains from the left as these agents have lower variances than those with $\mu_i = 0$. Also, the candidates do not locate at the extremes $(-T, T)$ in equilibrium.

Proposition 2 $(x_L^*, x_R^*) = (\sqrt{\theta} - T, T - \sqrt{\theta})$ *is the unique equilibrium of the election game (with* $\alpha = 0$*).*

Proof. First : For any $x_L \in X_L$ and $0 \leq x_R < T - \sqrt{\theta}$, $\lambda_{R1} < T$, so $s(B_R|x_L, x_R) = \lambda_{R1} - \max\{\lambda_{R2}, \frac{x_L+x_R}{2}\}$. In case $i)$ $\lambda_{R2} > \frac{x_L+x_R}{2}$, so $s(B_R|x_L, x_R) = \frac{\sqrt{4x_R^2 a + 4(1-a)(\theta - v_m)}}{1-a}$ which is strictly increasing in x_R. In case $ii)$ $\lambda_{R2} < \frac{x_L+x_R}{2}$, so $s(B_R|x_L, x_R) = \frac{x_R}{1-a} + \frac{\sqrt{4x_R^2 a + 4(1-a)(\theta - v_m)}}{2(1-a)} - \frac{x_L+x_R}{2} = \frac{x_R(1+a)}{2(1-a)} + \sqrt{\frac{x_R^2 a}{(1-a)^2} + \frac{\theta - v_m}{1-a}}$ which is strictly increasing in x_R. Second: For any $x_L \in X_L$ and $T - \sqrt{\theta} < x_R \leq T$, $\lambda_{R1} > T$, so $s(B_R|x_L, x_R) = T - \max\{\lambda_{R2}, \frac{x_L+x_R}{2}\}$. In case $i)$ $\lambda_{R2} > \frac{x_L+x_R}{2}$, so $s(B_R|x_L, x_R) = T - \left[\frac{x_R}{1-a} - \sqrt{\frac{x_R^2 a}{(1-a)^2} + \frac{\theta - v_m}{1-a}}\right]$ which is strictly decreasing in x_R and therefore $p_R(x_L, x_R)$ is strictly decreasing in x_R. In case $ii)$, $\lambda_{R2} < \frac{x_L+x_R}{2}$, so $s(B_R|x_L, x_R) = T - \frac{x_L+x_R}{2}$ which is decreasing in x. Similarly, $s(B_L|x_L, x_R)$ is strictly decreasing in x_L, when $\sqrt{\theta} - T < x_L \leq 0$

and strictly increasing in x_L when $-T \leq x_L < \sqrt{\theta} - T$. The best response correspondence for candidate R given the policy position of candidate L is

$$x_R^*(x_L) = \begin{cases} (\widehat{x}_R(x_L), \widehat{\widehat{x}}_R(x_L)) & if \quad x_L \in (\sqrt{\theta} - T, 0] \\ |x_L| & if \quad x_L = \sqrt{\theta} - T \\ (\widehat{x}_R(x_L), \widehat{\widehat{x}}_R(x_L)) & if \quad x_L \in [-T, \sqrt{\theta} - T) \end{cases}$$

The best response correspondence for candidate L given the policy position of candidate R is analogous.

$$x_L^*(x_R) = \begin{cases} (\widehat{x}_L(x_R), \widehat{\widehat{x}}_L(x_R)) & if \quad x_R \in [0, T - \sqrt{\theta}) \\ -x_R & if \quad x_R = T - \sqrt{\theta} \\ (\widehat{x}_L(x_R), \widehat{\widehat{x}}_L(x_R)) & if \quad x_R \in (T - \sqrt{\theta}, T] \end{cases}$$

■

In this equilibrium, extreme agents turnout to vote. If there are abstentions, they will come from the moderate agents in the population.

Proposition 3 *If $\frac{T(1+a)}{2} > \sqrt{\theta}$, there exists a segment of agents (in the middle) who will abstain. Moreover, as the normalized difference in confidence between the median and most extreme agents, $a = v_m/T^2$, increases, the size of the segment of agents who abstain increases with no impact on the candidates' equilibrium positions.*

Proof. f there is a segment of voters in the middle who will abstain, this implies that $\underline{\mu}_R^* \neq 0 \neq \overline{\mu}_L^*$ (i.e. $\lambda_{R2} > 0 > \lambda_{L1}$). So $\frac{x_R^*}{1-a} - \sqrt{\frac{x_R^{*2}a}{(1-a)^2} + \frac{\theta - v_m}{1-a}} > 0 \Longrightarrow x_R^* > \theta - v_m \Longrightarrow T + v_m > 2\sqrt{\theta} \implies \frac{T(1+a)}{2} > \sqrt{\theta}$. If $\frac{T(1+a)}{2} > \sqrt{\theta}$, then the segment of nonvoters, $[\overline{\mu}_L^*, \underline{\mu}_R^*]$ is non-empty with $\overline{\mu}_L^* = \frac{x_L^*}{1-a} + \sqrt{\frac{x_L^{*2}a}{(1-a)^2} + \frac{\theta - v_m}{1-a}}$ and $\underline{\mu}_R^* = \frac{x_R^*}{1-a} - \sqrt{\frac{x_R^{*2}a}{(1-a)^2} + \frac{\theta - v_m}{1-a}}$. Since $x_L = -x_R$, the size of the segment is $\underline{\mu}_R^* - \overline{\mu}_L^* = 2\lambda_{R2} = 2\left[\frac{x_R^*}{1-a} - \sqrt{\frac{x_R^{*2}a}{(1-a)^2} + \frac{\theta - v_m}{1-a}}\right]$. Substituting for x_R^*, $\underline{\mu}_R^* - \overline{\mu}_L^* = 2\left[\frac{T(1+a) - 2\sqrt{\theta}}{1-a}\right]$ which increases with a. ■

This proposition simply states that as extreme agents become more confident in their beliefs relative to moderate agents, the candidates' absolute distance from the center becomes more important and as a consequence a larger segment of moderate agents feel alienated. A larger θ, that is a higher tolerance for voters, lowers the closeness requirement for candidates to voters and the confidence requirement for voters to participate. So as θ gets large, we should expect a reversion to the median voter result. On the other hand, as θ decreases, and voters less tolerant, the candidate's optimal positions become more polarized and the segment of the electorate that abstains, increases[7].

2.3.2 Equilibrium when voters care about the candidates' non-policy characteristics

Now let us assume that $\alpha > 0$, that is, the voters not only care about the policy that is ultimately implemented but about the political history of the candidate elected. Since I have assumed that $x_L \leq 0 \leq x_R$, voter $i \in I$ will vote for candidate L if

$$v(\mu_i) + (x_L - \mu_i)^2 \leq \theta_L \quad \text{and} \tag{2.16}$$

$$\frac{x_L + x_R}{2} - \frac{\alpha(\beta_R - \beta_L)}{2(x_R - x_L)} > \mu_i. \tag{2.17}$$

[7] I would like to note that we would arrive at similar results if instead we assumed that the utility threshold by which voters choose whether or not to participate varied with the position of their preferred policy. More specifically, I could have assumed that voter $i \in \Psi$ would abstain if $(x_c - x_i)^2 > \theta(x_i)$ for $c = L, R$, where $\frac{\partial \theta}{\partial x_i} < 0$ when $-T \leq x_i < 0$, $\frac{\partial \theta}{\partial x_i} > 0$ when $0 < x_i \leq T$ and $\frac{\partial \theta}{\partial x_i} = 0$ at $x_i = 0$. Along with some additional assumptions on $\theta(x_i)$ we would get the divergence result.

Voter i will vote for candidate R if

$$v(\mu_i) + (x_R - \mu_i)^2 \leq \theta_R \quad \text{and} \tag{2.18}$$

$$\frac{x_L + x_R}{2} - \frac{\alpha(\beta_R - \beta_L)}{2(x_R - x_L)} < \mu_i. \tag{2.19}$$

Finally, Voter i will abstain if

$$v(\mu_i) + (x_c - \mu_i)^2 > \theta_c \quad \text{for } c = L, R \tag{2.20}$$

As before, λ_{c1} and λ_{c2} ($\lambda_{c1} \geq \lambda_{c2}$) denote the roots of the equation $v(\mu_i) + (x_c - \mu_i)^2 = \theta_c \quad$ for $c = L, R$. While the definitions of $\underline{\mu}_L$ and $\overline{\mu}_R$ remain unchanged, $\overline{\mu}_L = \min\{\lambda_{L1}, \frac{x_L+x_R}{2} - \frac{\alpha(\beta_R-\beta_L)}{2(x_R-x_L)}\}$ and $\underline{\mu}_R = \max\{\lambda_{R2}, \frac{x_L+x_R}{2} - \frac{\alpha(\beta_R-\beta_L)}{2(x_R-x_L)}\}$. Note that $\theta_L - \theta_R = \alpha(\beta_L - \beta_R)$. It can be shown, that as long $\beta_L = \beta_R$ and $\theta_L = \theta_R = \theta$, that is the candidates have equal valence, then $(\sqrt{\theta} - T, T - \sqrt{\theta})$ will be the candidates' policy positions in equilibrium. However when there is a candidate with an advantage, that is $(\beta_L, \beta_R) \in \{(1,0),(0,1)\}$, then the set of optimal strategies for the candidates changes. From this point onward, I will assume that candidate R is the advantaged candidate, so that $\beta_L = 0 < 1 = \beta_R$ and $\theta_R - \theta_L = \alpha$.

First, consider the strategies of the advantaged candidate, R. Let $\widehat{x}_R(x_L) \leq \widehat{\widehat{x}}_R(x_L)$ denote the values of $x_R \in X_R$ such that $s(B_L|x_L, x_R) = s(B_R|x_L, x_R)$[8].

[8] For example if $x_L \in (\sqrt{\theta_L - \sigma_0^2} - T, 0)$ then $\widehat{x}_R(x_L) = +\sqrt{x_L^2 - \frac{\alpha(1-a)}{a}}$ and $\widehat{\widehat{x}}_R(x_L)$ solves the equation $\frac{\widehat{\widehat{x}}_R}{1-a} - \sqrt{\frac{x_R^2 a}{(1-a)^2} - \frac{\theta_R - \sigma_m^2}{1-a}} = T - 2\sqrt{\frac{x_L^2 a}{(1-a)^2} - \frac{\theta_L - \sigma_m^2}{1-a}}$

As before, it can be shown that for $x_R \in (\widehat{x}_R(x_L), \widehat{\widehat{x}}_R(x_L))$, $s(B_L|x_L, x_R) < s(B_R|x_L, x_R)$ so that the best response set for candidate R given x_L is $(\widehat{x}_R(x_L), \widehat{\widehat{x}}_R(x_L))$. Given that $\theta_L < \theta_R$, there exists an interval of $x_R \in X_R$ such that $s(B_L|x_L, x_R) < s(B_R|x_L, x_R)$ for all $x_L \in X_L$. That is, there exists a set of policy positions for which candidate R always wins the election. Let $Z_R = (\widehat{z}_R, \widehat{\widehat{z}}_R)$ denote this interval[9].

$$\widehat{z}_R = \sqrt{(\sqrt{\theta_L} - T)^2 - \alpha \frac{(1-a)}{a}} \tag{2.21}$$

$\widehat{\widehat{z}}_R \in X_R$ is defined by the equation

$$\frac{\widehat{\widehat{z}}_R}{1-a} - \sqrt{\frac{\widehat{\widehat{z}}_R^2 a}{(1-a)^2} - \frac{\theta_R - v_m}{1-a}} = \frac{T(1+a) - 2\sqrt{\theta_L}}{1-a} \tag{2.22}$$

Now, consider the strategies of the disadvantaged candidate, L. For $x_R \in X_R \backslash Z_R$, there exists $x_L \in X_L$ that solve $s(B_L|x_L, x_R) = s(B_R|x_L, x_R)$, denoted $\widehat{x}_L(x_R)$ and $\widehat{\widehat{x}}_L(x_R)$, and when $x_L \in (\widehat{x}_L(x_R), \widehat{\widehat{x}}_L(x_R))$ $s(B_L|x_L, x_R) > s(B_R|x_L, x_R)$. However, when $x_R \in Z_R$, the best response set for candidate L is his/her entire strategy set X_L, since $\pi_L(x_L, x_R) = 0$ for all $x_L \in X_L$.

Proposition 4 *(x_L^*, x_R^*) is a Nash Equilibrium of the election game (with $\alpha > 0$) if and only if $x_R^* \in Z_R$ while the equilibrium strategy of the disadvantaged candidate is unrestricted. Also, the advantaged candidate can afford to be more centrist or extremist than his opponent and win the election.*

Note that for the disadvantaged candidate, $x_L = \sqrt{\theta_L} - T$ is the only strategy to survive iterated deletion of weakly dominant strategies. Now restricting focus to equilibria in which neither candidate plays a weakly dominant strategy, that is $x_R^* \in Z_R$ and $x_L^* = \sqrt{\theta_L} - T$, it can be shown that $\widehat{z}_R \leq T - \sqrt{\theta_R} \leq T - \sqrt{\theta_L} \leq$

[9] $\widehat{z}_R, \widehat{\widehat{z}}_R$ are the values of $x_R \in X_R$ such that $s(B_L|\sqrt{\theta_L - \sigma_0^2} - T, x_R) = s(B_R|\sqrt{\theta_L - \sigma_0^2} - T, x_R)$. $S(B_L)$ reaches its maximum at $x_L = \sqrt{\theta_L - \sigma_0^2} - T$.

$\widehat{\widehat{z}}_R$. In other words, the advantaged candidate can be closer to or further away from the mean policy position of the median voter and win the election. The size of the set Z_R varies with $\theta_R - \theta_L = \alpha$. As the importance of candidate valence to voters diminishes, $\alpha \to 0$, both $\widehat{z}_R$ and $\widehat{\widehat{z}}_R$ converge to $T - \sqrt{\theta_L}$.

2.4 Campaign Advertising

Campaign advertising is one of the many means by which candidates inform the electorate of their policy preferences. Campaign advertising can also affect voters' perceptions of candidates' honesty and competency. The information released by candidates during the campaign can be to the point or vague and imprecise. Not only will candidates differ on their preferred policies but they may also differ by reputation. One can argue that an incumbent's constituents will have a clearer picture of his/her views than they would a challenger who is new to the political arena. First, I look at an election game in which candidates spend campaign funds in order to improve their image, that is, affect their valence in the eyes of voters. The size of their respective war chests determines who has the advantage in the simultaneous move location game. Second, I will look at the election game in which candidates spend campaign funds in order to inform voters about their policy positions. The size of their war chests allows the candidates to reduce the variance associated with their policy choices.

2.4.1 Image Advertising

Let W_c denote the size of candidate c's campaign war chest. Let $u_i(x_c, x) = u_o + \alpha_0\beta_c + \alpha_c - (x_c - x)^2$ so that $Eu_i(\mu_i, x_c) = u_0 + \alpha\beta_c + \alpha_c - v(\mu_i) - (\mu_c - \mu_i)^2$. Suppose that $\alpha_c = h(W_c)$, where $h'(W_c) > 0$. This implies that $\theta_R - \theta_L = \alpha_0 + (\alpha_R - \alpha_L)$. Let (α_R, α_L) be the outcome of the candidates' fund-raising efforts and let $\gamma = \alpha_0 + (\alpha_R - \alpha_L)$. If $\gamma > 0$, it follows from our analysis in the

previous section that $\pi_R = 1$ and that there exists a set of equilibria in which $x_R^* \in Z_R(\gamma)$[10] and $x_L^* \in X_L$. Similarly if $\gamma < 0$, $\pi_R = 0$ and that there exists a set of equilibria in which $x_L^* \in Z_L(\gamma)$ and $x_R^* \in X_R$. Finally, if $\gamma = 0$ then $(x_L^*, x_R^*) = (\sqrt{\theta} - T, T - \sqrt{\theta})$. In the first stage, the disadvantaged candidate will have to raise substantially more campaign funds than his opponent in order to win. Also, if the valence-advantaged candidate has a larger war chest than his opponent, he can afford to be even more centrist or extremist than his opponent, as $\widehat{\widehat{z}}_R - \widehat{z}_R$ increases with γ.

2.4.2 Policy Advertising

Let $g_c(x_c|\tau_c, \mu_c)$ be the distribution of the candidate's preferred policy over X_c, where μ_c and τ_c are the mean and variance of candidate c's distribution, respectively. μ_c represents the policy that candidate c claims he/she will implement once elected while τ_c reflects voter uncertainty about what the candidate can and will do once in office. We could also interpret τ_c as a measure of the candidate's credibility.

Agent i's expected utility if candidate c wins the election after proposing policy x_c is

$$Eu_i(\mu_i, \tau_c, \mu_c) = \int_{X_c} \int_X u_i(x_c, x) f_i(x|\mu_i) g_c(x_c|\tau_c, \mu_c) dx dx_c \tag{2.23}$$

Substituting for $u_i(x_c, x)$, we get

$$Eu_i(\mu_i, \tau_c, \mu_c) = u_0 + \alpha\beta_c - \textstyle\int_{X_c} \int_X (x - x_c)^2 f_i(x|\mu_i) g_c(x_c|\tau_c, \mu_c) dx dx_c$$

$$Eu_i(\mu_i, \tau_c, \mu_c) = u_0 + \alpha\beta_c - v(\mu_i) - \tau_c - (\mu_c - \mu_i)^2 \tag{2.24}$$

[10] The set Z_R varies with γ. As γ diminishes so does the size of the set.

The differences in expected utility between candidate proposals if candidate proposals are (x_L, x_R)

$$Eu_i(\mu_i, \tau_L, \mu_L) - Eu_i(\mu_i, \tau_R, \mu_R) = \alpha(\beta_L - \beta_R) + (\tau_R - \tau_L) + (\mu_R - \mu_i)^2 - (\mu_L - \mu_i)^2 \tag{2.25}$$

Our voter participation constraint becomes

$$\int_{X_c} \int_X (x_c - x)^2 f_i(x|\mu_i, v_i) g_c(x_c|\tau_c, \mu_c) dx dx_c > \theta_c \tag{2.26}$$

where $\theta_c = u_0 + \alpha\beta_c - \tau_c - \underline{u}$. Once again, I assume that candidate R has the advantage in valence. So since $\mu_L \leq \mu_R$, voter i will vote for candidate L if

$$M = \frac{\mu_R - \mu_L}{2} - \frac{\alpha - (\tau_R - \tau_L)}{2(\mu_R - \mu_L)} > \mu_i \text{ and}$$
$$v(\mu_i) + (\mu_L - \mu_i)^2 \leq \theta_L$$

Agent i will vote for candidate R if

$$M = \frac{\mu_R - \mu_L}{2} - \frac{\alpha - (\tau_R - \tau_L)}{2(\mu_R - \mu_L)} < \mu_i \text{ and}$$
$$v(\mu_i) + (\mu_R - \mu_i)^2 \leq \theta_R$$

Finally agent i will abstain if

$$v(\mu_i) + (\mu_L - \mu_i)^2 > \theta_c \text{ for } c = L, R$$

As before, I define λ_{c1} and λ_{c2} ($\lambda_{c1} \geq \lambda_{c2}$) as before as the roots of the equation $v(\mu_i) + (\mu_c - \mu_i)^2 - \theta_c = 0$, $c = L.R$. Also, I redefine $\underline{\mu}_L = \max\{\lambda_{L2}, -T\}$ and $\overline{\mu}_L = \min\{\lambda_{L1}, M\}$. Also $\underline{\mu}_R = \max\{\lambda_{R2}, M\}$ and $\overline{\mu}_R = \min\{\lambda_{R1}, T\}$. So $s(B_L)$, the size of the interval $B_L = [\underline{\mu}_L, \overline{\mu}_L]$, is now a function of μ_L, μ_R, τ_R

and τ_L. τ_R and τ_L are functions of campaign advertising expenditures, that is, $\tau_R = \tau(W_R)$ and $\tau_L = \tau(W_L)$. Also, $\frac{\partial \tau_c}{\partial W_c} < 0$, that is a candidate's expenditure on advertising that promotes his/her own policy position reduces the size of the variance of the candidate's distribution. With $\theta_R - \theta_L = \alpha - (\tau_R - \tau_L)$, it is straightforward to see that the disadvantaged candidate will have to raise substantially more campaign funds than his opponent in order to reduce his variance enough to offset the valence gap to win the election. So if we view the advantaged candidate as an incumbent with a favorable political past facing a challenger, the challenger must be clearer and more outspoken about his policy position in order to improve his chances of electoral success - a difficult prospect for an inexperienced politician.

2.5 Conclusion

If we indeed live in a world were people with extreme political views are rigid in their beliefs and are more likely to participate in elections, this might be the reason why we do not observe purely centrist politicians. In this paper I have shown that under certain conditions a positive relationship between extremism and conviction can lead candidates away from the median of the electorate without appealing to divergence in candidates' preferences. They do not locate at the political extremes either. Rather than share a base by adopting the median position, the candidates mirror each other in distance from the median and establish their own base of voters. Incorporating candidate asymmetry through differences in valence resulted in the strategy of the disadvantaged candidate being unrestricted. Meanwhile, the advantaged candidate can afford to be more centrist or extremist than his opponent in order to win the election. Through campaign advertising, the candidate with the valence disadvantage can level the playing field providing he/she has sufficient campaign funds. It

would be interesting to see how the results would change if there was uncertainty about the mean policy position of the median voter or if asymmetries in voter preferences and confidence along the issue space were introduced. It might also be fruitful to extend the model to analyze the possible trade off between advertising expenditure on image versus political views.

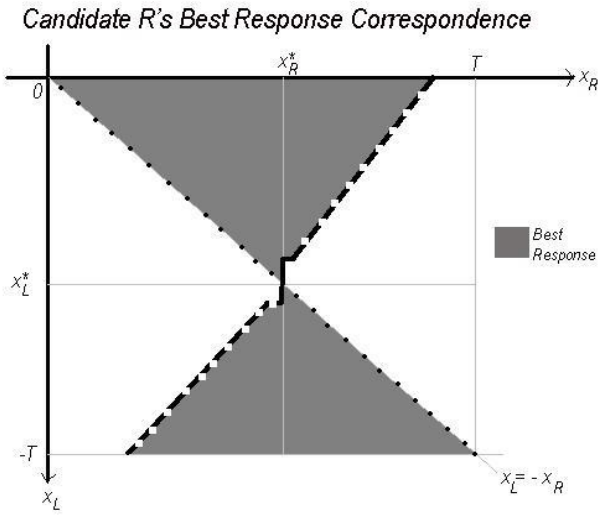
Candidate R's Best Response Correspondence
x_R^*
T
x_R
0
Best Response
x_L^*
$-T$
x_L
$x_L = -x_R$

Figure 1

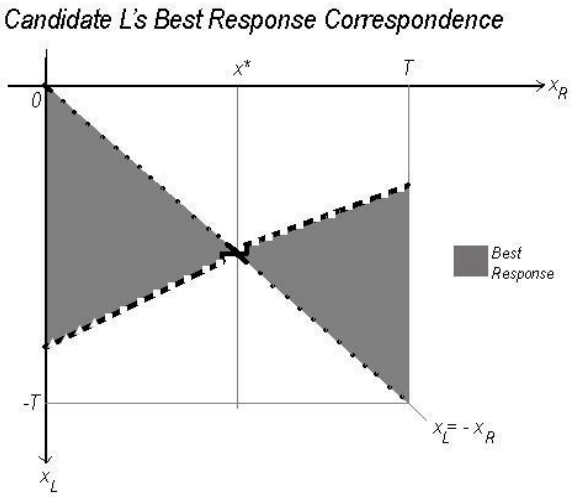
Candidate L's Best Response Correspondence
x*
T
x_R
0
Best
Response
-T
$x_L = -x_R$
x_L

Figure 2

Chapter 3

Candidate Recruitment Under Term Limits

3.1 Introduction

For many types of electoral offices the recruitment and retention policies of political parties play a key role in determining the quality of those eventually elected to serve. Potential politicians compare the returns to a career in public life to the returns of their other options. The attractiveness of the political arena along with the incentives provided by political parties affect the composition of the candidate pool from which voters select their elected officials. Term limits alter the returns to holding a particular office, thus affecting the career decisions of potential candidates. The interaction of term limits and the recruitment and retention policies of political parties will invariably impact the decision of individuals to seek public office.

Generally, the impact of term limits can be broken down into three forms - behavioral, institutional and compositional. The behavioral consequences of

term limits concern changes in the attitudes and priorities of legislators. Institutional consequences involve changes in the influence and balance of power of the various political actors, for example the relative power of the state legislature with respect to that of the executive branch. Finally, the compositional consequences involve the changes in the characteristics of individuals who seek and are elected to public office. Besides being an ongoing policy debate, term limits have been widely implemented. In the U.S., many state executive branches are term-limited positions.

This paper is primarily concerned with the compositional consequences of term limits on the quality of individuals who seek public office. Term limits reduce both the costs and benefits of being in office so the overall effect of term limits appears ambiguous. Individuals also differ in their benefits and costs of holding public office. Term limits could potentially magnify these differences. Another matter for consideration is the fact that term limits reduce the ability of voters to retain high-quality politicians.

The contributions of this paper are two-fold. First, I identify withing a stylized model the conditions under which term limits have positive effects on the quality or competence of those politicians who are recruited by parties to run for office. Specifically, I examine the reaction of would-be politicians to changes in the reward structure of the political sector due to term limits. Second, I examine the impact that differences in political party retention policies have on the effect that term limits have on the expected ability of those who choose political careers.

In the absence of term limits, I assume that incumbents enjoy an advantage over would be challengers, as their abilities are public knowledge. However, high-ability incumbents are not guaranteed retention by their political parties. Finally, political parties have better information about the ability of the candi-

dates than the electorate, and joining a political party increases the probability that an individual's ability will be revealed publicly. Term limits increase the probability of entry by those of lesser quality, and under certain conditions term limits reduce the average quality of those entering the political sector.

3.2 Related Literature

The model presented here is related to literature on citizen-candidates put forward by Osborne and Slivinski (1996), and Besley and Coate (1997). Besley and Coate provide the general framework for such models in which a community selects a single representative to choose policy for a single period and citizens differ by policy preferences, preferences over candidates and their competence. Their framework provides insight into questions of the number and characteristics of those who choose to run, the possibility of "spoiler" candidates and the quality of elected officials. Osborne and Slivinski focus on predicting the number of candidates who run for office under plurality rule and when there is a two-ballot run-off system. In both papers, candidates differ in their positions over a policy space.

The model presented is also related to that of Carillo and Mariotti (2001), Mao (2001), Chen and Niou (2005), Messner and Polborn (2004), and Caselli and Morelli (2004), the last two being single-period models. Carillo and Mariotti present a model in which the objectives of political parties and agents diverge, and the strategies of political parties provide an imperfect signal about the quality of candidates. Political parties may not choose the best available candidate, but chose the candidate with the highest probability of winning based on performance in the electoral campaign. The result is suboptimal politician turnover from the perspective of voters. In this framework, term limits increase the opportunity cost of keeping an incumbent, reducing conservatism in

candidate replacement.

Mao uses two alternative series of two-party campaign games - one with longer tenure and no term limits and another with a shorter tenure created by term limits - to explain the seemingly inconsistent behavior of voters who re-elect incumbents while supporting term limits. The total benefits derived from the incumbent is increasing in his/her seniority, however, after some point the average benefits derived by the incumbent's base of support declines as the incumbent seeks wider appeal. The incumbent's supporters thus vote for term limits because after this point the average benefits accruing to them dip below that which would be derived from a newcomer from the same political party as the incumbent. With a similar objective to Mao, Chen and Niou present a multi-period spatial model and conclude that term limits or the threat of term limits improves the responsiveness of politicians with respect to their policy platforms.

In Messner and Polborn's model citizens vary in competency and opportunity costs. They focus on the impact of office characteristics, such as wages and election costs, on entry decisions. Caselli and Morelli present a citizen-candidate model in which candidates differ in quality. Their key assumption is that low-quality candidates have lower market wages than high-quality candidates and thus have a comparative advantage in seeking public office. Both papers show that low-quality candidates are more likely to run for office. However, Caselli and Morelli's model does not allow those seeking office to internalize the effect of their running for office on the quality of the candidate pool since the quality of the candidate elected does not impact the quality of the public good provided.

Smart and Sturm (2006) present an infinite horizon political agency model consisting of both public-spirited and selfish politicians, in which two-term limits induce truthful behavior by politicians and raise expected welfare for voters

when discount rates are sufficiently low and the proportion of public-interested politicians is high. In Matozzi and Merlo's (2007a) reduced-form model of party recruitment of politicians, political skills are important in the public and private sectors, but are imperfectly observed by private sector employers. The informational asymmetry between parties and private sector employers results in an inverse relationship between the degree of transparency in politics and the average quality of politicians recruited by the parties. Thus increasing transparency is not welfare improving.

Reed and Schansberg (1994) and Franklin and Westin (1998) simulate the effect of term limits on average seniority and retirement rates. They conclude that term limits will reduce the average tenure and seniority of representatives, but the net effect on the attractiveness of holding office will be ambiguous and will depend on the relative size of the impact of shorter tenure and reduced influence of special interests versus the impact of shorter waiting times for committee and leadership positions. They also predict an increase in turnover rates and that groups with lower current turnover rates, such as minorities, will be disproportionately adversely affected by term limits. One major problem with their analysis, as is the case with Franklin and Westin, stems from their main assumption that election and continuation rates will remain constant at the levels of pre-term limit elections, when in fact term limits themselves could impact continuation rates. Also, it is not obvious that the influence of special interests will be reduced under term limits. There are opposing factors at work here. The impact of the increased inexperience of legislators relative to lobbyists must be weighed against the impact of lowering the obligations of the legislators to special interest due to shorter tenures.

Diermeier, Keane and Merlo (2005) examine returns to a career in the U.S. Congress using a stochastic dynamic model of optimal career choices.

Their model takes into account both pecuniary and non-pecuniary rewards from congressional experience, including post-congressional employment, while re-election probabilities do not depend on the policy choices of incumbents but on other characteristics. They argue that running for a particular office may be better understood as an intermediate objective to realize other goals and find that unobserved skills such as valence and charisma play an important role in electoral success. However, they find little evidence of a link between these unobservable political skills and the outside options of candidates. Their results suggest that term limits will result in early voluntary exit by incumbents and a reduction in the value of congressional seats, where those most negatively affected will be those with better political skills. Carey et al (2003) find that term limits have no effect on the demographic or ideological composition of the people elected to office.

3.3 Model

Each period, $t = 0, 1...$, a large community of infinitely living agents elects a public official to provide a public good. The public official is chosen from a set of candidates recruited by political parties each period. All agents discount time with the common discount factor $\beta < 1$.

3.3.1 Politicians

Each period t, a set M_t of agents of measure one become eligible to hold public office[1]. Prior to this, these individuals have been working in the private sector. Members of this set are henceforth referred to as politicians. Each politician has two periods of eligibility for public life. Politicians differ in their ability, represented by the parameter $\theta \in \mathbb{R}_{++}$. Let θ_k denote the ability of politician

[1] Many countries have minimum age of candidacy restrictions for elected government offices.

k, $k \in M_t$. θ has probability distribution $G(\theta)$ on $\mathbb{R}_{++}$, with $g(\theta)$ being the corresponding density function.

In a politician's first period of eligibility for public life, the skill of the politician is known to the politician but is imperfectly observed by private sector employers and the political parties prior to their recruitment. Politician k's private sector compensation, w_k, is perfectly observed by the political party but not by voters. The politician's private sector compensation represents an imperfect signal of the ability of the politician. Specifically, $w_k = \theta_k + \varepsilon$, where ε is a normally distributed random variable with $E[\varepsilon] = 0$ and $var[\varepsilon] = \sigma_\varepsilon^2$. We can interpret σ_ε^2 as a measure of the degree with which the market accurately accesses individual ability prior to public office eligibility. Let $L(w|\theta)$ be the conditional distribution of w given θ, and $l(w|\theta)$ the corresponding density function. It follows that w conditional on θ is normally distributed, so that $l(w|\theta)$ satisfies the monotone likelihood ratio property (i.e. if $\theta > \theta'$, then the ratio $l(w|\theta)/l(w|\theta')$ is strictly increasing in w). The probability of recruitment depends on the recruitment policies of the political parties which are discussed in the section 3.3.2.

If politician k is successfully recruited by political party p and becomes a candidate, he receives compensation w_p. If politician k is successfully elected to public office, k's ability is revealed publicly. If politician k is unsuccessful in the election, k's ability is revealed publicly with probability $\delta \in (0, 1)$. δ represents the informational benefit of electoral campaigns. Provided that k is retained by the party, the incumbent k must decide in the following period whether to seek re-election, or to return to the private sector. Whether k returns to the private sector or is successfully elected to a second term, k receives compensation θ_k. However, due to seniority in public office, k receives an additional payoff according to the function r for remaining in public office. The function r may

include non-pecuniary rewards, such as committee membership, positions of leadership and legislative achievements or any other rewards to seniority in the political sector. Specifically, $r(\theta) = c + d\theta$, where $c > 0$ and $d > 0$, that is the rewards of seniority are linear and increasing in ability. Also, I assume that $d > \frac{2}{\beta}$. Therefore, given the opportunity all incumbents wish to remain in office. Finally, I assume that there are no direct costs to running for office.

If k chooses not to join the party or is not recruited by the party, then k remains in the private sector during the first period of eligibility, forfeits eligibility in the next period and receives private sector compensation w_k in the first period of eligibility. In the following period, with probability γ, k's ability is revealed in the private sector and k receives compensation θ_k. Otherwise k continues to receive private sector compensation, w_k. I assume that $\gamma < \delta$, that is, the probability that an individual's true type is publicly revealed at the end of the period is greater if they choose the political sector than if they remained in the private sector.

Let $V(w, \theta)$ denote the present value of expected lifetime earnings for a politician if he remains in the private sector given private sector compensation w and ability θ. I assume that voters do not observe candidate abilities (except in the case of incumbents), nor do voters observe the private sector compensation of the candidates. That is, excluding incumbent politicians, voters view all other candidates as identical. Therefore the probability of electoral success in the first period of eligibility for any politician is independent of the politician's ability. Let π denote this probability. However, the probability that an incumbent politician is retained is very much dependent on the politician's revealed ability. Let $\eta(\theta_I)$ denote the probability that an incumbent is retained by his/her party and by the voters for a second term, given that the incumbent's ability is θ_I. Note that $\eta(\theta_I)$ will depend on both the retention policies of political parties,

as well as that of voters which will be discussed in sections 3.3.2 and 3.3.3, respectively. Let $\mu(\theta_I)$ denote the retention policy of a political party with an incumbent of ability θ_I, where $\mu(\theta_I) = 1$ denotes the party retaining the incumbent and $\mu(\theta_I) = 0$ denotes the party choosing to recruit a new candidate. Let $\sigma(\theta_I)$ denote the optimal retention strategy of voters when an incumbent of ability θ_I is retained, where $\sigma(\theta_I) = 1$ denotes voters reelecting the incumbent and $\sigma(\theta_I) = 0$ denotes voters electing the challenger. Therefore, $\pi = \frac{1}{2}$ in the absence of an incumbent, and $\pi = \mu(\theta_I)(1-\sigma(\theta_I))+\frac{1}{2}(1-\mu(\theta_I))$ when the other party has an incumbent with ability θ_I. Let $V_p(w, \theta)$ denote the present value of expected lifetime earnings for a politician if he chooses to join political party p given private sector compensation w and ability θ. Finally, let $V(\theta) = V(\theta, \theta)$.

It can be shown that

$$V(w, \theta) = \frac{w + \gamma\beta V(\theta)}{1 - \beta(1 - \gamma)} \tag{3.1}$$

where

$$V(\theta) = \frac{\theta}{1 - \beta} \tag{3.2}$$

Finally,

$$V_p(w, \theta) = w_p + \beta \left[\pi \left(V(\theta) + \eta(\theta) r(\theta)\right) + (1 - \pi) \left(\delta V(\theta) + (1 - \delta) V(w, \theta)\right)\right] \tag{3.3}$$

The decision to enter the political sector for a policitian with ability θ, depends on whether the politician's private sector compensation is low enough. Specifically, if $w_k \leq \alpha(w_p + \pi\beta\eta(\theta_k)r(\theta_k)) + (1 - \alpha)\theta_k$ then politician k wishes to join party p, where

$$\alpha_1 = \frac{1-\beta(1-\gamma)}{1-\beta(1-\pi)(1-\delta)} \tag{3.4}$$

Given my assumptions on δ and γ, it can be shown that $0 < \alpha_1 < 1$. Let $w(\theta_k) = \alpha_1(w_p + \pi\beta\eta(\theta_k)r(\theta_k)) + (1-\alpha_1)\theta_k$. $w(\theta_k)$ represent the minimum wage politician k would need to receive in the private sector in order to wish to remain in the private sector. Also, $\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta)$ is the probability that an individual of quality θ would prefer to enter the political sector.

Effect of Term Limits on Political Ambition

In my model term limits reduce the eligibility to hold public office to one period. Therefore, there are no incumbents. This eliminates the existence of senior elected officials. For now let us assume that this also eliminates non-pecuniary rewards based on seniority. Let $V_p^L(w,\theta)$ denote the present value of expected lifetime earnings for a politician if he chooses to join political party p given private sector compensation w and ability θ when term limits are imposed. If term limits completely eliminate the benefits of seniority in holding public office, while still allowing the politician to reveal his/her true ability after serving one term then,

$$V_p^L(w,\theta) = w_p + \frac{1}{2}\beta\left[V(\theta) + \left(\delta V(\theta) + (1-\delta)V(w,\theta)\right)\right] \tag{3.5}$$

The decision to enter the political sector for a policitian with ability θ is altered. Specifically, if $w_k \leq \alpha_2 w_p + (1-\alpha_2)\theta_k$ then politician k wishes to join party p, where

$$\alpha_2 = \frac{1-\beta(1-\gamma)}{1-\frac{\beta}{2}(1-\delta)} \tag{3.6}$$

Now let us compare the decision to enter the political sector and run for an

open-seat elections with or without term limits. In the case of an open-seat, $\alpha_1 = \alpha_2$.

Proposition 5 *If term limits completely eliminate the benefits of seniority, then the imposition of term limits lowers the minimum compensation an eligible individual would require to remain in the private sector. Moreover, term limits would lower the probability politicians of all abilities wishing to enter the political sector. Among those individuals who would have been re-elected for a second term in the absence of term limits, the reduction in probability of entering the political sector is increasing in the ability of the politician.*

Proof. Let $w^L(\theta)$ denote the minimum compensation an individual with ability θ would need to remain in the private sector when term limits are implemented. First, $w(\theta) = \alpha_1(w_p + \frac{\beta}{2}\eta(\theta)r(\theta)) + (1-\alpha_1)\theta \geq \alpha_1 w_p + (1-\alpha_1)\theta = w^L(\theta)$. Now, $\Phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta)$ is the probability that an individual of quality θ would prefer to enter the political sector under term limits.

$w(\theta) \geq w^L(\theta) \Rightarrow \Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta) \geq 0$

Now for θ such that $\eta(\theta) = 1$,

$\frac{\partial}{\partial\theta}\left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta)\right]$

$= \alpha\left[\phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta)\left[\frac{\beta}{2}d - 1\right] + \phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta)\right] \geq 0$

Therefore, for θ, θ' such that $\eta(\theta) = \eta(\theta') = 1$, $\theta > \theta'$ implies that

$\Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta) \geq \Phi_{0,\sigma_\varepsilon^2}(w(\theta') - \theta') - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta') - \theta')$

■

The proposition states that of those politicians that would be retained by both voters and their political party, those of higher ability are more adversely affected by this particular restructuring of rewards in the political sector as a result of the implementation of term limits. Now suppose that term limits bring forward the benefits of seniority in holding public office, while still allowing the politician to reveal his/her true ability after serving one term then,

$$V_p^L(w,\theta) = w_p + \frac{1}{2}r(\theta) + \frac{1}{2}\beta\left[V(\theta) + \left(\delta V(\theta) + (1-\delta)V(w,\theta)\right)\right] \qquad (3.7)$$

The decision to enter the political sector for a policitian with ability θ is now $w_k \leq \alpha_1(w_p + \frac{1}{2}r(\theta_k)) + (1-\alpha_1)\theta_k$.

Proposition 6 *If term limits bring forward the benefits of seniority, then the imposition of term limits would raise the minimum compensation an eligible individual would require to remain in the private sector. Moreover, among those individuals who would not have been re-elected for a second term in the absence of term limits, the increase in the probability of entering the political sector is increasing in the ability of the politician.*

Proof. First, $w(\theta) = \alpha_1(w_p + \frac{\beta}{2}\eta(\theta)r(\theta)) + (1-\alpha_1)\theta \leq \alpha_1\left(w_p + \frac{r(\theta)}{2}\right) + (1-\alpha_1)\theta = w^L(\theta)$, therefore

$\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta) \leq 0.$

Now for θ such that $\eta(\theta) = 0$,

$\frac{\partial}{\partial\theta}\left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\right]$

$= -\alpha\left[\phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\left[\frac{d}{2}-1\right] + \phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta)\right] \leq 0$

Therefore, for θ, θ' such that $\eta(\theta) = \eta(\theta') = 0$, $\theta > \theta'$ implies that

$\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta) \leq \Phi_{0,\sigma_\varepsilon^2}(w(\theta')-\theta') - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta')-\theta')$

■

Proposition 6 states that of those politicians that would not be retained by either voters or their political party, those of higher ability are more positively affected by the imposition of term limits. The actual impact of term limits on the structure of these non-pecuniary rewards may lie somewhere in between these two cases. By eliminating a senior class, the elected officials may be forced to compete with a larger group of elected officials of similar rank. Therefore

the elected officials may on average receive less than $r(\theta)$ for holding office. Let $\lambda \in (0,1)$ denote the probability of an elected official receiving these rewards. λ, for example, may reflect the type of elected office (e.g. executive or legislative), size of the legislature, the number of available committee positions, or the level of competition for these rewards[2]. Incorporating λ,

$$V_p^L(w,\theta) = w_p + \lambda\pi r(\theta) + \beta\left[\pi V(\theta) + (1-\pi)\left(\delta V(\theta) + (1-\delta)V(w,\theta)\right)\right] \quad (3.8)$$

Now, $w(\theta) = \alpha_1(w_p + \frac{\beta\eta(\theta)}{2}r(\theta)) + (1-\alpha_1)\theta$ and $w^L(\theta) = \alpha_1\left(w_p + \frac{\lambda}{2}r(\theta)\right) + (1-\alpha_1)\theta$.

Proposition 7 *If term limits bring forward the benefits of seniority so that an elected official receives reward r with probability λ, then the imposition of term limits would raise the minimum compensation an eligible individual with ability θ would require to remain in the private sector if $\lambda > \beta\eta(\theta)$. Therefore, term limits would raise the probability of entering the political sector for this individual. However, if $\lambda \leq \beta\eta(\theta)$, then the imposition of term limits lowers the minimum compensation an eligible individual would require to remain in the private sector and lowers the probability of entering the political sector for this individual.*

How the restructuring of benefits of seniority affects the impact of term limits have on individuals of varying abilities depends on the retention policies of political parties and voters. Note that if $\lambda > \beta$, then the introduction of term limits would increase the probability of entering the political sector for individuals of all abilities. The relationship between $\eta(\theta)$ and θ is not necessarily monotone increasing. Two factors come into play. First the incumbent must be retained

[2]It an alternative model, r could be constant, with λ depending on the politician's ability.

by the incumbent party. There are reasons that a party may not wish to retain a high-ability incumbent. The party must weigh the net benefit of retaining the incumbent over the expected net benefit of a new recruit. New recruits may prove to be less expensive, with a higher net benefit than a high-ability incumbent. Similarly, the party may not wish to retain a low-ability incumbent. Second, the incumbent must be re-elected by voters. The incumbent's revealed ability must be higher than the expected ability of a challenger. This second factor obviously favours high-ability incumbents for re-election. The next section outlines possible recruitment and retention policies of political parties.

3.3.2 Political Party Recruitment and Retention

For simplicity, the recruitment policies of the political parties are exogenously determined. These policies take two forms in this paper. Let Ψ denote the set of private sector compensations, such that if $w_k \in \Psi$, a political party will wish to recruit politician k. Under the first policy, potential recruits are accepted by the party if their private sector compensation exceeds a cut-off, w^*, that is $\Psi = [w^*, \infty)$. In an alternative recruitment policy, potential recruits are accepted by the party if their private sector compensation falls within the interval, that is $\Psi = [\underline{w}, \overline{w}]$.

Let $f(\theta|w)$ denote the probability distribution of θ conditional on private-sector compensation w. That is,

$$f(\theta|w) = \frac{l(w|\theta)g(\theta)}{\int_\Theta l(w|\theta)g(\theta)d\theta} \tag{3.9}$$

Under the first recruitment policy, the expected ability of a new recruit would be

$$\overline{\theta} = \int_{\underline{w}}^{\overline{w}} \int_\Theta \theta \Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) f(\theta|w) d\theta dw \tag{3.10}$$

Under the second recruitment policy, the expected ability of a new recruit would be

$$\overline{\theta} = \int_{w^*}^{\infty} \int_{\Theta} \theta \Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) f(\theta|w) d\theta dw \tag{3.11}$$

Suppose that the retention policies of the political parties for incumbents, after their abilities have been publicly revealed take the form

$$\mu(\theta_I) = \begin{cases} 1 & \text{if } \theta \in [\theta_L, \theta_H] \\ 0 & \text{otherwise} \end{cases} \tag{P1}$$

where $\theta_H \geq \overline{\theta}$ under both recruitment policies.

Alternatively, suppose that the retention policies of the political parties for incumbents, after their abilities have been publicly revealed take the form

$$\mu(\theta_I) = \begin{cases} 1 & \text{if } \theta_I > \widetilde{\theta} \\ 0 & \text{otherwise} \end{cases} \tag{P2}$$

3.3.3 Voters

Voters care about maximizing the resources available for the provision of a public good. The ability and tenure of a politician directly affects the size of the effective budget the politician has for providing the public good in each period. Let m denote tenure, that is, the number of completed terms in office, where $m \in \{0, 1\}$. The ability of a politician is inversely related to the cost of providing the public goods. Specifically, if a politician with ability θ and tenure m is elected as the public official, the size of the effective per period budget is $B(\theta, m)$, where B is increasing in both arguments. Let $F_o(\theta)$ denote the distribution of abilities of candidates for an open seat election, with $f_o(\theta)$ the corresponding density function. Let θ_c denote the ability of the challenger in an

incumbent-challenger election. Let $F_c(\theta_c|\theta)$ denote the distribution of abilities of challengers for an incumbent-challenger election conditional on the incumbent having ability θ, with $f_c(\theta_c|\theta)$ the corresponding density function. $F_o(\theta)$ and $F_c(\theta_c|\theta)$ will of course depend on the recruitment policies of the parties during an open-seat election, and the challenger's party during an incumbent-challenger election, as well as the distribution of abilities for those eligible individuals who prefer to enter the political sector, as discussed in the previous sections[3].

Let $W(\theta)$ denote the expected discounted budget for the provision of the public good in the event of an incumbent-challenger election at the beginning of the period before the incumbent's party has made its retention decision when the incumbent is of ability θ. Let W_0 denote the expected discounted budget for the provision of the public good in the event of an open-seat election. With two new candidates contesting an open seat,

$$W_0 = \int_{\Theta} \left[B(\theta, 0) + \beta W(\theta)\right] f_o(\theta) d\theta \tag{3.12}$$

Also,

$$\begin{aligned} W(\theta) &= \mu(\theta) \int_{\Theta} \max\left\{B(\theta, 1) + \beta W(\theta), B(\theta_c, 1) + \beta W(\theta_c)\right\} f_c(\theta_c|\theta) d\theta_c \\ &\quad + (1 - \mu(\theta)) W_0 \end{aligned} \tag{3.13}$$

Voters will re-elect an incumbent if the incumbent's revealed ability is as least as high as $\widehat{\theta}$, where $\widehat{\theta}$ is such that

$$B(\widehat{\theta}, 1) = \int_{\Theta} \left[B(\theta_c, 1) + \beta W(\theta_c)\right] f_c(\theta_c|\widehat{\theta}) d\theta_c - \beta W_0 \tag{3.14}$$

[3] $\Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) \int_{\Psi} f(\theta|w) dw$ is the distribution of abilities of those entering the political sector and recruited by the political parties.

It can be shown that $\widehat{\theta} < \overline{\theta}$, that is the cut-off for the re-election for an incumbent is slightly less than the expected ability of a new recruit, because of the value that voters assign to tenure. So,

$$\sigma(\theta) = \begin{cases} 1 & \text{if } \theta \geq \widehat{\theta} \\ 0 & \text{otherwise} \end{cases} \tag{3.15}$$

3.4 Results

Suppose that the retention policy of the political parties for incumbents follows P1. Let $\theta^* = \max\{\theta_L, \widehat{\theta}\}$. Then the probability of retention of an incumbent with ability θ by his/her party and the voters for an incumbent of type θ is

$$\eta(\theta) = \begin{cases} 1 & \text{if } \theta \in [\theta^*, \theta_H] \\ 0 & \text{otherwise} \end{cases} \tag{3.16}$$

Proposition 7 can now be restated.

Proposition 8 *Suppose that $\lambda < \beta$. If term limits bring forward the benefits of seniority so that an elected official receives reward $r(\theta)$ with probability λ, then the imposition of term limits would lower the minimum compensation an eligible individual with ability $\theta \in [\theta^*, \theta_H]$ would require to remain in the private sector. Therefore, term limits would lower the probability of candidacy for these individuals. For eligible individuals with ability $\theta \in [0, \theta^*) \cup (\theta_H, \infty)$, then the imposition of term limits raises the minimum compensation these individuals would require to remain in the private sector and raises their probability of candidacy.*

Proof. First, for $\theta \in [\theta^*, \theta_H]$,

$w(\theta) = \alpha_1(w_p + \frac{\beta}{2}r(\theta)) + (1-\alpha_1)\theta \geq \alpha_1\left(w_p + \frac{\lambda}{2}r(\theta)\right) + (1-\alpha_1)\theta = w^L(\theta)$,

$\Rightarrow \left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta) - \theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta) - \theta)\right] \int_\Psi f(\theta|w)dw \geq 0.$

Now for $\theta \in [0, \theta^*) \cup (\theta_H, \infty)$,

$w(\theta) = \alpha_1 w_p + (1-\alpha_1)\theta \leq \alpha_1 \left(w_p + \frac{\lambda}{2} r(\theta)\right) + (1-\alpha_1)\theta = w^L(\theta)$,

$\Rightarrow \left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\right] \int\limits_{\Psi} f(\theta|w)dw \leq 0.$ ■

Proposition 8 implies that the implementation of term limits and the subsequent restructuring of rewards leads to more individuals of the highest and lowest abilities wishing to enter the political sector. The impact of term limits on the expected ability of those entering the political sector appears to be ambiguous, as it would depend on the distribution of ability types across the population. However, under certain circumstances[4], those of the highest ability benefit more from term limits. Under these conditions, term limits would improve the average quality of individuals seeking a political career.

Suppose that the retention policy of the political parties for incumbents follows P2. Let $\theta^{**} = \max\{\widetilde{\theta}, \widehat{\theta}\}$. Then the probability of retention of an incumbent with ability θ by his/her party and the voters for an incumbent of type θ is

$$\eta(\theta) = \begin{cases} 1 & \text{if } \theta \geq \theta^{**} \\ 0 & \text{otherwise} \end{cases} \tag{3.17}$$

Proposition 7 can be restated again.

Proposition 9 *Suppose that $\lambda < \beta$. If term limits bring forward the benefits of seniority so that an elected official receives reward $r(\theta)$ with probability λ, then the imposition of term limits would lower the minimum compensation an eligible individual with ability $\theta \geq \theta^*$ would require to remain in the private sector. Therefore, term limits would lower the probability of candidacy for these individuals. For eligible individuals with ability $\theta < \theta^*$, the imposition of term limits raises the minimum compensation these individuals would require to remain in*

[4] $\lambda < \frac{2}{d} \Rightarrow -\alpha\left[\phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta)\left[\frac{\lambda}{2}d - 1\right] + \phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\right] < 0$

the private sector and raises their probability of candidacy.

Proof. First for $\theta \geq \theta^{**}$,

$w(\theta) = \alpha_1(w_p + \frac{\beta}{2}r(\theta)) + (1-\alpha_1)\theta \geq \alpha_1\left(w_p + \frac{\lambda}{2}r(\theta)\right) + (1-\alpha_1)\theta = w^L(\theta)$,

$\Rightarrow \left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\right] \int_\Psi f(\theta|w)dw \geq 0.$

Then for $\theta < \theta^{**}$,

$w(\theta) = \alpha_1 w_p + (1-\alpha_1)\theta \leq \alpha_1\left(w_p + \frac{\lambda}{2}r(\theta)\right) + (1-\alpha_1)\theta = w^L(\theta)$,

$\Rightarrow \left[\Phi_{0,\sigma_\varepsilon^2}(w(\theta)-\theta) - \Phi_{0,\sigma_\varepsilon^2}(w^L(\theta)-\theta)\right] \int_\Psi f(\theta|w)dw \leq 0.$ ■

Proposition 9 implies that the implementation of term limits and the subsequent restructuring of rewards leads to more individuals of lower abilities wishing to enter the political sector, while reducing the probability of entry for individuals of higher ability.

3.5 Conclusion

When term limits completely eliminate the benefits to seniority, those of higher ability are more adversely affected and less likely to enter the political arena. In the early 1990's, reformists in several states in the U.S. were successful in passing referenda on term limits for their federal government legislators. Although these limitations were later ruled unconstitutional by the U.S. Supreme Court, had they remained in effect, one could argue that they would have put congressmen from these states at a disadvantage in gaining key committee memberships or chairmanships or some of the other perks often associated with a long tenure in Congress. The results in this paper suggest that the expected ability of individuals who would be attracted to serving in Congress for states with such term limitations would be adversely affected by term limits.

If term limits restructure rewards to a political career, such that those rewards previously reserved for senior public officials are attainable, or at least

partially attainable, then it is possible for term limits to lead to an improvement in the expected quality of those seeking entry to the political sector. However, even if such a restructuring were to occur, when political parties only place a lower bound on the ability of incumbents they wish to retain, the implementation of term limits will unambiguously reduce the expected ability of entrants into the political arena.

Chapter 4

Candidate Ambition and Advancement Under Term Limits

4.1 Introduction

Many electoral systems consist of several different levels of political positions, ranging from lower level positions such as municipal or provincial government legislators to upper level positions such as federal government legislators. Often, in order to increase the probability of holding an upper level political position one must be elected to and perform well in a lower level position. It seems intuitive that over time one should be better able to determine the quality of politicians the longer they hold their positions. Past outcomes become a better indicator of the ability of the incumbent. It becomes easier for voters to identify and remove politicians of lesser ability. Such an electoral system

should inherently favour high-ability politicians to advance to high-level political positions.

Generally, the impact of term limits can be broken down into three forms - behavioral, institutional and compositional. The behavioral consequences of term limits concern changes in the attitudes and priorities of legislators. Institutional consequences involve changes in the influence and balance of power of the various political actors, for example the relative power of the state legislature with respect to that of the executive branch. Finally, the compositional consequences involve the changes in the characteristics of individuals who seek and are elected to public office. Besides being a topic of policy debates, term limits have been widely implemented.

Potential politicians consider the returns to a career in public life to the returns of their other options. The attractiveness of the political arena along with the incentives provided by political parties affect the composition of the candidate pool from which voters select their elected officials. Term limits alter the returns to holding a particular office, thus affecting the career decisions of potential candidates. Term limits increase turnover and reduce the seniority of elected officials, and may reduce the time taken to advance up the political ladder.

This paper focuses on the impact of placing term limitations on lower level electoral positions on the career paths of politicians. Term limits reduce both the costs and benefits of being in office so the overall effect of term limits appears ambiguous. Individuals also differ in their political aptitude - the knowledge and skills that a political system rewards and requires. Term limits could potentially these magnify differences.

Another matter for consideration is the fact that term limits reduce the average seniority of politicians and the length of experience in politics for those

seeking higher level political positions.Specifically, this paper explores the extent to which term limits at lower level electoral positions alter the average quality of those who advance to higher level political positions.

For the most part, term limits improve the expected political skill of those seeking upper level political positions. However, under certain conditions, term limits can lead to a reduction in expected quality. Given the reduction in average seniority and the increase in turnover at the lower levels of the political hierarchy, this paper also analyzes the trade off between the quality of officeholders at the lower levels and the quality of office holders at the upper levels. The results suggest that term limits reduce the expected quality of those in lower level political positions, without guaranteeing an increase in expected quality at the upper level.

4.2 Related Literature

The model presented here is closely related to that of Harrington (2000), in which ambitious and myopic office-seekers climb an electoral system comprised of a hierarchy of offices. In that case, the purpose was to determine the extent to which purely office-seeking politicians could be distinguished from pure ideologues in upper-level political positions, with the main result that time and advancement to higher office may not reveal the true motivations of those who govern. Harrington does not explicitly model the choice to enter or exit politics, run for re-election or run for a higher level political position.

Inspiration was also gained from Matozzi and Merlo (2007b) which presents a model of career politicians and individuals with political careers. Career politicians are defined as those who enter politics solely motivated by non-pecuniary rewards, such as ego rents and legislative success. Individuals with political careers are those who eventually leave politics in order to pursue the rewards

of their political experience in the private sector. In their model individuals are heterogeneous on two dimensions of ability; political skills and ability in the private sector, with the two being positively correlated. In equilibrium, individuals with political careers have better political skills relative to career politicians, who in turn have better political skills than the average in the population.

The model presented here is also related to the literature on citizen-candidates put forward by Osborne and Slivinski (1996), and Besley and Coate (1997). Besley and Coate provide the general framework for such models in which a community selects a single representative to choose policy for a single period and citizens differ by policy preferences, preferences over candidates and their competence. Their framework provides insight into questions of the number and characteristics of those who choose to run, the possibility of "spoiler" candidates and the quality of elected officials. Osborne and Slivinski focus on predicting the number of candidates who run for office under plurality rule and when there is a two-ballot run-off system. In both papers, candidates differ in their positions over a policy space.

The model is also related to that of Carillo and Mariotti (2001), Mao (2001), Chen and Niou (2005), Messner and Polborn (2004), and Caselli and Morelli (2004), the last two being single-period models. Carillo and Mariotti present a model in which the objectives of political parties and candidates diverge, and the strategies of political parties provide an imperfect signal about the quality of candidates. Political parties may not choose the best available candidate, but chose the candidate with the highest probability of winning based on performance in the electoral campaign. The result is suboptimal politician turnover from the perspective of voters. In this framework, term limits increase the opportunity cost of keeping an incumbent, reducing the degree of party loyalty

to incumbents.

Mao uses two alternative series of two-party campaign games - one with longer tenure and no term limits and another with a shorter tenure created by term limits - to explain the seemingly inconsistent behavior of voters who re-elect incumbents while supporting term limits. The total benefits derived from the incumbent is increasing in his/her seniority. The incumbent's supporters thus vote for term limits because after this point the average benefits accruing to them dip below that which would be derived from a newcomer from the same political party as the incumbent. With a similar objective to Mao, Chen and Niou present a multi-period spatial model and conclude that term limits or the threat of term limits improves the responsiveness of politicians with respect to their policy platforms.

In Messner and Polborn's model citizens vary in competency and opportunity costs. They focus on the impact of office characteristics, such as wages and election costs, on entry decisions. Caselli and Morelli present a citizen-candidate model in which candidates differ in quality. Their key assumption is that low-quality candidates have lower market wages than high-quality candidates and thus have a comparative advantage in seeking public office. Both papers show that low-quality candidates are more likely to run for office. However, Caselli and Morelli's model does not allow those seeking office to internalize the effect of their running for office on the quality of the candidate pool since the quality of the candidate elected does not impact the quality of the public good provided.

Smart and Sturm (2006) present an infinite horizon political agency model consisting of both public-spirited and selfish politicians, in which two-term limits induce truthful behavior by politicians and raise expected welfare for voters when discount rates are sufficiently low and the proportion of public-interested politicians is high. In Matozzi and Merlo's (2007a) reduced-form model of party

recruitment of politicians, political skills are important in the public and private sectors, but are imperfectly observed by private sector employers. The informational asymmetry between parties and private sector employers results in an inverse relationship between the degree of transparency in politics and the average quality of politicians recruited by the parties. Thus increasing transparency is not welfare improving.

Reed and Schansberg (1994) and Franklin and Westin (1998) simulate the effect of term limits on average seniority and retirement rates. They conclude that term limits will reduce the average tenure and seniority of representatives, but the net effect on the attractiveness of holding office will be ambiguous and will depend on the relative size of the impact of shorter tenure and reduced influence of special interests versus the impact of shorter waiting times for committee and leadership positions. They also predict an increase in turnover rates and that groups with lower current turnover rates, such as minorities, will be disproportionately adversely affected by term limits. One major problem with their analysis, as is the case with Franklin and Westin, stems from their main assumption that election and continuation rates will remain constant at the levels of pre-term limit elections, when in fact term limits themselves could impact continuation rates. Also, it is not obvious that the influence of special interests will be reduced under term limits. There are opposing factors at work here. The impact of the increased inexperience of legislators relative to lobbyists must be weighed against the impact of lowering the obligations of the legislators to special interest due to shorter tenures.

On the empirical side, Diermeier, Keane and Merlo (2005) examine returns to a career in the U.S. Congress using a stochastic dynamic model of optimal career choices. Their model takes into account both pecuniary and non-pecuniary rewards from congressional experience, including post-congressional employment,

while re-election probabilities do not depend on the policy choices of incumbents but on other characteristics. They argue that running for a particular office may be better understood as an intermediate objective to realize other goals and find that unobserved skills such as valence and charisma play an important role in electoral success. However, they find little evidence of a link between these unobservable political skills and the outside options of candidates. Their results suggest that term limits will result in early voluntary exit by incumbents and a reduction in the value of congressional seats, where those most negatively affected will be those with better political skills. Carey et al (2003) find that term limits have no effect on the demographic or ideological composition of the people elected to office.

4.3 Model

Each period, $t = 0, 1...$, a large but finite number of individuals is born in a world consisting of two sectors - a market sector and a political sector. Each individual lives for two periods. Individuals are heterogeneous with respect to their abilities across three dimensions - political skill, $p \in [0, 1]$, market skill, $m \in \{0, 1\}$, and electability, $e \in \{0, 1\}$. These three abilities determine an individual's payoffs in both the political sector and market sector as well as his or her probability of electoral success. Individual types are defined by their ability profile $a = (p, m, e) \in [0, 1] \times \{0, 1\} \times \{0, 1\}$. Political skill is defined as the ability to influence, win support and interact well with others, and is crucial to success as a politician and legislator. Market skill is a measure of productivity in the market sector where $m = 1 (m = 0)$ denotes an individual with high (low) market skill. Electability is defined as a characteristic of the individual that allows him/her to appeal to a wide base of voters where $e = 1 (e = 0)$ denotes an individual with high (low) electability.

Let F be the distribution function of p, with f as the corresponding density function. In the beginning individuals receive a signal, $q = (\pi, \varepsilon) \in \{0,1\} \times \{0,1\}$, about their abilities in terms of political skill and electability, respectively. Although the individual does not receive a direct signal about his/her market skill, market skill and political skill are positively correlated. Specifically, the probability that an individual with political skill p has market skill $m = 1$, is equal to sp, where $s \in (0,1)$. Let $F(p|\pi)$ denote the distribution of p conditional on π, with $f(p|\pi)$ the corresponding density function. The probability that an individual receives a strong signal of political skill given that his/her true political skill is p, is increasing in p. Specifically, Prob$\{\pi = 1|p\} = \alpha p$ and $\alpha \in (0,1)$. Therefore,

$$\begin{aligned} f(p|\pi = 1) &= \frac{\alpha p f(p)}{\int_0^1 \alpha x f(x) dx} \text{ and} \\ f(p|\pi = 0) &= \frac{[1 - \alpha p] f(p)}{\int_0^1 [1 - \alpha x] f(x) dx} \end{aligned} \tag{4.1}$$

Finally, the probability that $\varepsilon = 1$, that is, an individual receives a strong signal of electability, given that his/her true electability is e, is increasing in e. Specifically,

$$\begin{aligned} \phi &= \text{Prob}\{\varepsilon = 1|e = 1\} > \text{Prob}\{\varepsilon = 1|e = 0\} = 1 - \tau \text{ and} \\ \tau &= \text{Prob}\{\varepsilon = 0|e = 0\} > \text{Prob}\{\varepsilon = 0|e = 1\} = 1 - \phi \end{aligned} \tag{4.2}$$

The market sector is perfectly competitive with individuals receiving wages

according to their productivity. The political sector is characterized by an electoral system that is a two-tiered hierarchy of political positions. These tiers or levels are numbered 1 and 2, where level 1 offices are a the bottom of the hierarchy and the level of entry for aspiring politicians. There are large number of lower level political positions and significantly fewer upper level offices. Politicians must have served one term in a lower level office in order to run for an upper level political position. An individual with electability $e = 1$, is successfully elected to a lower level position with probability $\partial \in (0, 1)$, and an upper level position with probability $\gamma \in (0, 1)$, where $\partial > \gamma$. An individual with electability $e = 0$ has zero chance of being elected to a political position. The probabilities ∂ and γ reflect the availability of and the nature of competition for lower and upper level political positions, respectively.

4.3.1 Timing

In the first period of their lives individuals must choose whether to enter the market sector or the political sector. For simplicity, I assume that if individuals choose the market sector in the first period, they will remain in the market sector for both periods of their lives. If they choose the political sector, they must campaign for a lower level political position. Over the course of the campaign, their electability is revealed. If they are successful, the individual spends the first term in a lower level political position. However, if they fail to be elected they must spend the remainder of their lives in the market sector. After serving one period in a lower level political position, an individual's political skill is publicly revealed and the choice must be made whether to exit the political sector for the market sector, campaign for an upper level political position or to spend another term in the current lower level political position. I assume that a politician running for a second term in a lower level political position is

re-elected with probability $\theta \in (0,1)$. Let $\overline{p}$ denote the expected political skill of a challenger for a lower level political position. In the absence of incumbent advantage, if voters only care about electing the candidate with the highest political skill, then

$$\theta = \begin{cases} 1 & \text{if } p > \overline{p} \\ 0 & \text{otherwise} \end{cases} \tag{4.3}$$

Although the individual still does not know his/her market skill after spending one period in the political sector, market skill m is positively correlated with political skill, p. So, being elected to one term in a lower level office is informative for prospects in both sectors. If the individual chooses to campaign for an upper level political position and is not successful, the last period of life is spent in the market sector.

For the rest of the paper, politicians will refer to those individuals who chose to campaign for lower level office in the first period, regardless of their success. I assume that all individuals discount time by the same discount factor, $\beta < 1$.

4.3.2 Market Sector

If individuals with market skill m choose the market sector in the first period they will remain in the market sector for both periods of their lives and receive a payoff each period according to the function $r_M^0(m)$, where the superscript 0 reflects zero political experience[1]. Diermeier, Keane and Merlo (2005) find that winning reelection in the House of Representatives for the first time significantly improves post-congressional earnings in the private sector. So in this model, experience in the political sector is assumed to enhance productivity in the market sector. Those with political sector experience are rewarded with a higher

[1] It would be reasonable to assume that individuals would be paid according to the expected market sector ability of those who choose the market sector exclusively.

market sector payoff in the second period of their lives should they choose to exit the political sector. Let $r_M^1(m)$ denote the second period payoff function in the market sector for an individual with market skill m who exits the political sector after the first period. Both functions are increasing in m. Specifically,

$$r_M^0(m) = \begin{cases} 0 & \text{if } m = 0 \\ w & \text{if } m = 1 \end{cases} \tag{4.4}$$

and

$$r_M^1(m) = \begin{cases} w' & \text{if } m = 0 \\ w'' & \text{if } m = 1 \end{cases} \tag{4.5}$$

where $0 < w < w' < w''$.

4.3.3 Political Sector

A politician with political skill p, who enters the political sector in the first period and is unsuccessful in getting elected returns to the market sector and receives a payoff each period according to the function $r_P^0(p)$. Politicians who are successfully elected to a lower level office in the first period receive a payoff in the first period according to the function $r_P^1(p)$.

Politicians who remain in lower level office for a second term receive an additional payoff to that received in their first term in office. Let $r_P^2(p)$ denote the second period payoff function for a second term in lower level office, where $r_P^2(p) \geq r_P^1(p)$ for all p. The difference can be interpreted as rewards associated with senority in the political sector at the lower level. All three functions $r_P^2(p)$, $r_p^1(p)$ and $r_p^0(p)$ are increasing in p. Also, I assume that $r_P^2(p) - r_P^1(p)$ is increasing in p. That is, the difference between second term payoffs and first term payoffs increases with level of political skill. Specifically,

$$r_p^0(p) = bp \tag{4.6}$$

$$r_p^1(p) = c + dp \tag{4.7}$$

$$r_p^2(p) = g + hp \tag{4.8}$$

where $0 < b < d < h$ and $c < g$. I assume that $h > s(w'' - w')$, that is, the marginal return to political skill is higher in the second term in a lower level political position than the expected marginal return to political skill in the market sector for an incumbent politician.

Finally, politicians who campaign for an upper level political position and are unsuccessful exit the political sector and enter the market sector where they a receive payoff according to the function $r_M^1(m)$. However, if the are successful in being elected to an upper level political office, they receive a payoff according to the function $r_U(p) = l + kp$, where $l > 0$ and $k > 0$. Also, I assume that $k > s(w'' - w')$, that is, the marginal return to political skill is higher in an upper level political position than the expected marginal return to political skill in the market sector for an incumbent politician.

4.3.4 Term Limits

In this model, the introduction of term limits for lower level political positions reduces the options of politicians for the second period of their lives. Rather than having three options after serving one term in a lower level political position, politicians are forced to give up their lower level office and either campaign for an upper level political position or enter the market sector.

4.4 Results

4.4.1 Advancement to Upper Level Politican Positions

Let $E_1(p)$ denote the expected utility derived by an incumbent in a lower level political office if the incumbent chooses to leave the political sector and enter the market sector . Let $E_2(p)$ denote the expected utility derived by an incumbent in a lower level political office if the incumbent chooses to seek re-election for a second term in the lower level political office. Finally, let $E_3(p)$ denote the expected utility derived by an incumbent in a lower level political office if the incumbent chooses to vacate the lower level position and campaign for an upper level position. Now,

$$E_1(p) = w' + s(w'' - w')p \tag{4.9}$$

$$E_2(p) = \theta\left[g + hp\right] + (1-\theta)E_1(p) \tag{4.10}$$

$$E_3(p) = \gamma\left[l + kp\right] + (1-\gamma)E_1(p) \tag{4.11}$$

Let p' denote the level of political skill such that $E_2(p') = E_3(p')$. Let p^* denote the level of political skill such that $E_1(p^*) = E_3(p^*)$.

$$p' = \frac{g - \left[\gamma l + (1-\gamma)\, w'\right]}{\gamma k + (1-\gamma)\, s(w'' - w') - h} \tag{4.12}$$

and

$$p^* = \frac{w' - l}{k - s(w'' - w')} \tag{4.13}$$

I restrict discussion to those equilibria in which all three options are chosen. This only occurs when $g > w' > l$, that is, the minimum payoff a politician can

receive from serving a second term at the lower level office exceeds the market sector wage for an incumbent politician with low market skill, which in turn exceeds the minimum payoff a politician could receive in an upper level office autonomous of political skill. Also, I restrict the values of the parameters such that $0 \leq p^* \leq 1$.

Proposition 10 *Suppose that* $g > w' > l$ *and* $h > \gamma k + (1-\gamma)s(w'' - w')$ *and* $p^* < \overline{p}$*, then incumbent politicians with political skill* $p \in [0, p^*]$ *will opt out of the political sector for the market sector. Also incumbent politicians with political skill* $p \in [p^*, \overline{p}]$ *will choose to campaign for an upper level political position. Finally, incumbent politicians with political skill* $p \in [\overline{p}, 1]$ *will seek re-election to a second term in their lower level political position.*

Proof. For $p \in [0, p^*)$, $p^* < \overline{p}$, therefore these individuals would not be retained by voters. Also

$(k - s(w'' - w'))p - (w' - l) < 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) < 0$

$\Rightarrow E_1(p) > E_3(p)$.

For $p \in (p^*, \overline{p})$, these individuals would not be retained by voters. Also

$(k - s(w'' - w'))p - (w' - l) > 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) > 0$

$\Rightarrow E_3(p) > E_1(p)$.

Finally, for $p \in (\overline{p}, 1]$, $E_2(p) = g + hp > w' + s(w'' - w')p = E_1(p)$

as $g > w'$ and $h > s(w'' - w')$.

Also, since $g > w' > l$ and $h > \gamma k + (1-\gamma)s(w'' - w')$ then

$g + hp > \gamma l + (1-\gamma)w' + [\gamma k + (1-\gamma)s(w'' - w')]\, p$

$\Rightarrow E_2(p) > E_3(p)$. ■

Proposition 10 states that if the marginal return to political skill from a second term is higher than the expected marginal return from campaigning

for an upper level office, then politicians with the highest political skill will remain in their lower level office for a second term. Of those who would not be successfully re-elected to a second term in lower level office, $p \in [0, \overline{p}]$, those with higher political skill, $p \in [p^*, \overline{p}]$, campaign for an upper level political position. The rest enter the market sector.

Under these circumstances, the imposition of term limits would not change the political skill set of politicians who would opt out of the political sector for the market sector after one term in a lower level position. However, removing the option for a second term in the lower level position would improve the expected political skill of politicians seeking upper level political positions.

Proposition 11 *Suppose that* $g > w' > l$ *and* $\gamma k + (1-\gamma)s(w'' - w') > h$ *and* $p^* < \overline{p} < p' \leq 1$*, then incumbent politicians with political skill* $p \in [0, p^*]$ *will opt out of the political sector for the market sector. Also incumbent politicians with political skill* $p \in [p^*, \overline{p}]$ *will choose to campaign for an upper level political position. Meanwhile, those with political skill* $p \in [\overline{p}, p']$ *will seek re-election to a second term in their lower level political position. Finally, incumbent politicians with political skill* $p \in [p', 1]$ *will choose to campaign for an upper level political position.*

Proof. For $p \in [0, p^*)$, $p^* < \overline{p}$, therefore these individuals would not be retained by voters. Also

$(k - s(w'' - w'))p - (w' - l) < 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) < 0$

$\Rightarrow E_3(p) < E_1(p)$.

For $p \in (p^*, \overline{p})$, these individuals would not be retained by voters. Also

$(k - s(w'' - w'))p - (w' - l) > 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) > 0$

$\Rightarrow E_3(p) > E_1(p)$.

For $p \in (\overline{p}, p')$, $g - [\gamma l + (1-\gamma)w'] > [\gamma k + (1-\gamma)s(w'' - w') - h]\, p$

$\Rightarrow g + hp > \gamma l + (1-\gamma)w' + [\gamma k + (1-\gamma)s(w'' - w')]\, p$

$\Rightarrow E_2(p) > E_3(p)$.

Also, $E_2(p) = g + hp > w' + s(w'' - w')p = E_1(p)$

Finally, for $p \in (p', 1]$, $E_2(p) = g + hp > w' + s(w'' - w')p = E_1(p)$ and

$g - [\gamma l + (1-\gamma)w'] < [\gamma k + (1-\gamma)s(w'' - w') - h]\, p$

$\Rightarrow E_3(p) > E_2(p)$. ■

Proposition 11 states that when the marginal return to political skill from a second term is lower than the expected marginal return from campaigning for an upper level office, then politicians with the highest political skill will campaign for an upper level political position. That is, of those who would be successful in a re-election bid in the lower level office, $p \in [\overline{p}, 1]$, only those of the highest political skill, $p \in [p', 1]$, campaign for the upper level political positions. Of those who would not be successfully re-elected to a second term in lower level office, $p \in [0, \overline{p}]$, those with higher political skill, $p \in [p^*, \overline{p}]$, will also campaign for an upper level political position. So, candidates for upper level political positions are drawn from $p \in [p^*, \overline{p}] \cup [p', 1]$.

Under these circumstances, the imposition of term limits would not change the political skill set of politicians who would opt out of the political sector for the market sector after one term in a lower level position. However, the impact on the expected political skill of politicians seeking upper level political positions by the removal of the option for a second term in the lower level position is ambiguous. If $\overline{p} - p^* > 1 - p'$, then the implementation of term limits lowers the expected political skill of politicians seeking upper level political positions. If $\overline{p} - p^* < 1 - p'$, then the implementation of term limits raises the expected political skill of politicians seeking upper level political positions.

Proposition 12 *Suppose that* $g > w' > l$ *and* $\gamma k + (1-\gamma)s(w'' - w') > h$ *and*

$\overline{p} < p^* < p' \leq 1$, then incumbent politicians with political skill $p \in [0, \overline{p}]$ will opt out of the political sector for the market sector. Also incumbent politicians with political skill $p \in [\overline{p}, p']$ will seek re-election to a second term in their lower level political position. Finally, incumbent politicians with political skill $p \in [p\prime, 1]$ will choose to campaign for an upper level political position.

Proof. For $p \in [0, \overline{p})$, these individuals would not be retained by voters. Also, since $p^* > \overline{p}$

$(k - s(w'' - w'))p - (w' - l) < 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) < 0$

$\Rightarrow E_1(p) > E_3(p)$.

For $p \in (\overline{p}, p')$, $E_2(p) = g + hp > w' + s(w'' - w')p = E_1(p)$ and

$g + hp > \gamma l + (1 - \gamma)w' + [\gamma k + (1 - \gamma)s(w'' - w')]\, p$

$\Rightarrow E_2(p) > E_3(p)$.

For $p \in (p', 1]$, $(k - s(w'' - w'))p - (w' - l) > 0$

$\Rightarrow l + kp - (w' + s(w'' - w')p) > 0$

$\Rightarrow E_3(p) > E_1(p)$.

And $g - [\gamma l + (1 - \gamma)w'] < [\gamma k + (1 - \gamma)s(w'' - w') - h]\, p$

$\Rightarrow E_3(p) > E_2(p)$. ■

Proposition 12 states that the marginal return to political skill from a second term is lower than the expected marginal return from campaigning for an upper level office, then politicians with the highest political skill will campaign for an upper level political position. All of those who would not be successfully re-elected to a second term in lower level office, $p \in [0, \overline{p}]$, choose to enter the market sector. Of those who would be successfully re-elected for a second term in a lower level position, $p \in [\overline{p}, 1]$, those with the least political skill, $p \in [\overline{p}, p']$, choose to seek re-election.

Under these circumstances, the imposition of term limits would improve the

expected political skill of politicians who would opt out of the political sector for the market sector after one term in a lower level position. However, removing the option for a second term in the lower level position would worsen the expected political skill of politicians seeking upper level political positions.

4.4.2 Candidate Entry

Let $EV(\pi, \varepsilon)$ denote the expected discounted payoff of entering the political sector for an individual receiving signal (π, ε). Let $E_4(\pi)$ denote the expected payoff of entering the market sector for an individual receiving political skill signal π. Finally, let $E_5(\pi)$ denote the expected payoff of entering the political sector but being unsuccessful in getting elected to a lower level political position for an individual receiving political skill signal π. Assume that p is distributed uniformly on $[0, 1]$, so that

$$f(p|\pi) = \begin{cases} \left[\frac{2}{2-\alpha}\right](1-\alpha p) & \text{for } \pi = 0 \\ 2p & \text{for } \pi = 1 \end{cases} \tag{4.14}$$

Then,

$$E_4(\pi) = \begin{cases} (1+\beta)\frac{sw}{3}\left[\frac{3-2\alpha}{2-\alpha}\right] & \text{for } \pi = 0 \\ (1+\beta)\,2\frac{sw}{3} & \text{for } \pi = 1 \end{cases} \tag{4.15}$$

and

$$E_5(\pi) = \begin{cases} (1+\beta)\frac{b}{3}\left[\frac{3-2\alpha}{2-\alpha}\right] & \text{for } \pi = 0 \\ (1+\beta)\,2\frac{b}{3} & \text{for } \pi = 1 \end{cases} \tag{4.16}$$

Suppose that only those receiving an electability signal $\varepsilon = 1$ have the option to enter the political sector. One explanation might come from the role of political parties in recruiting members. Suppose political parties, representing

the gatekeepers of the political sector, care only about electability, and observe ε for each individual. Given the probabilities ϕ and τ, it might be optimal for them to only select those with $\varepsilon = 1$ as party members and thus limit those able to campaign for a lower level political position. Consider the case in which those receiving signals $(0,1)$ and $(1,1)$ choose to enter the political sector, as would be the case if $EV(0,1) \geq E_4(0) \geq EV(0,0)$ and $EV(1,1) \geq E_4(1) \geq EV(1,0)$. In such a case, the expected political skill of a challenger for a lower level political position and the expected political skill of those elected to a first term in a lower level political position is $\overline{p} = \frac{1}{2}$. Now, consider the case in which only those receiving the signal $(1,1)$ choose to enter the political sector. In such a case, the expected political skill of a challenger for a lower level political position and the expected political skill of those elected to a first term in a lower level political position is $\overline{p} = \frac{2}{3}$. If only individuals with with signal $(0,1)$ find it optimal to enter then $\overline{p} = \frac{1}{3}\left(\frac{3-2\alpha}{2-\alpha}\right) < \frac{1}{2}$.

Let $\sigma_1(p) \in [0,1]$ denote the optimal strategy of an incumbent in a lower level political position to enter the market sector in the absence of term limits. Similarly, let $\sigma_2(p) \in [0,1]$ denote the optimal strategy of an incumbent in a lower level political position to campaign for a second term in the absence of term limits. Finally, let $\sigma_3(p) \in [0,1]$ denote the optimal strategy of an incumbent in a lower level political position to campaign for an upper level political position in the absence of term limits. Now, $\sigma_1(p) = 1$ denotes the decision to enter the market sector, $\sigma_2(p) = 1$ denotes the decision to campaign for a second term, $\sigma_3(p) = 1$ denotes the decision to campaign for an upper level office, and $\sigma_1(p) + \sigma_2(p) + \sigma_3(p) = 1$. Therefore, in the absence of term limits,

$$
\begin{aligned}
EV(\pi,1) \quad = \quad & \phi\delta\left[\int_0^1 [c+dp]\, f(p|\pi)dp\right] + \\
& \phi\delta\beta\int_0^1 [E_1(p)\sigma_1(p) + E_2(p)\sigma_2(p) + E_3(p)\sigma_3(p)]\, f(p|\pi)dp \\
& +\phi\,(1-\delta)\,E_5(\pi)
\end{aligned}
\tag{4.17}
$$

Let $EV^L(\pi,1)$ denote the expected discounted payoff of entering the political sector for an individual receiving signal (π,ε) in the presence of term limits. Let $\widehat{\sigma}_1(p) \in [0,1]$ denote the optimal strategy of an incumbent in a lower level political position to enter the market sector in the presence of term limits, where $\widehat{\sigma}_1(p) = 1$ denotes the decision to enter the market sector, $\widehat{\sigma}_1(p) = 0$ denotes the decision to campaign for an upper level office. Therefore, in the presence of term limits,

$$
\begin{aligned}
EV^L(\pi,1) \quad = \quad & \phi\delta\left[\int_0^1 [c+dp]\, f(p|\pi)dp\right] + \\
& \phi\delta\beta\int_0^1 [E_1(p)\widehat{\sigma}_1(p) + E_3(p)\,(1-\widehat{\sigma}_1(p))]\, f(p|\pi)dp \\
& +\phi\,(1-\delta)\,E_5(\pi)
\end{aligned}
\tag{4.18}
$$

Note that $EV^L(\pi,1) \leq EV(\pi,1)$ for $\pi \in \{0,1\}$, that is, term limits reduce the expected discounted payoff of entering the political sector for an individual receiving signal $(\pi,1)$. Also, given that $F(p|1)$ first-order stochastically dominates $F(p|0)$, $EV(0,1) \leq EV(1,1)$ and $EV^L(0,1) \leq EV^L(1,1)$.

Suppose that in the absence of term limits, it is optimal for individuals receiving signals $(0,1)$ and $(1,1)$ to enter. Then if $p^* < \frac{1}{2}$ and $h > \gamma k + (1 -$

$\gamma)s(w'' - w')$

$$\sigma_1(p) = \begin{cases} 1 & \text{if } p \in [0, p^*) \\ 0 & \text{otherwise} \end{cases} \tag{4.19}$$

$$\sigma_2(p) = \begin{cases} 1 & \text{if } p \in (\frac{1}{2}, 1] \\ 0 & \text{otherwise} \end{cases} \tag{4.20}$$

If $\frac{1}{2} < p^* < p' < 1$and $h < \gamma k + (1-\gamma)s(w'' - w')$ then

$$\sigma_1(p) = \begin{cases} 1 & \text{if } p \in [0, \frac{1}{2}) \\ 0 & \text{otherwise} \end{cases} \tag{4.21}$$

$$\sigma_2(p) = \begin{cases} 1 & \text{if } p \in (\frac{1}{2}, p^*] \\ 0 & \text{otherwise} \end{cases} \tag{4.22}$$

In the presence of term limits, the optimal strategy is

$$\widehat{\sigma}_1(p) = \begin{cases} 1 & \text{if } p \in [0, p^*) \\ 0 & \text{otherwise} \end{cases} \tag{4.23}$$

Assume that under term limits, payoffs are such that is it optimal for either individuals with signals $(0, 1)$ or individuals with signals $(1, 1)$, or both to enter the political sector.

Proposition 13 *Term limits can only lead to an improvement in the expected political skill of lower-level office holders if* $EV^L(0,1) \leq E_4(0) \leq EV(0,1)$ *and* $E_4(1) \leq EV^L(1,1) \leq EV(1,1)$. *Otherwise term limits lead to a reduction in the expected political skill of lower-level office holders.*

The only way that term limits can result in an improvement in the expected political skill of lower-level office holders is if it improves the expected political

skill of entrants to the political sector, since term limits removes the ability of voters to retain incumbents with high political skill for a second term. This can only occur when it is optimal for only individuals with signal $(1,1)$ to enter, raising $\overline{p}$ to $\frac{2}{3}$.

Now suppose that $E_4(0) \leq EV^L(0,1) \leq EV(0,1)$ and $E_4(1) \leq EV^L(1,1) \leq EV(1,1)$, so that individuals with signals $(0,1)$ and $(1,1)$ find it optimal to enter.

Proposition 14 *Suppose that $p^* < \frac{1}{2}$ and $h > \gamma k + (1-\gamma)s(w'' - w')$, then the implementation of term limits improves the expected political skill of those seeking upper level political positions at the expense of reduced expected political skill at the lower level political positions.*

In the absence of term limits, individuals of the highest political skill would seek re-election and raise the expected political skill at the lower level when we average over first and second term office holders. With term limits, those individuals that would have sought re-election are forced to campaign for upper level positions.

Proposition 15 *Suppose that $\frac{1}{2} < p^* < p' \leq 1$ and $h < \gamma k + (1-\gamma)s(w'' - w')$, then the implementation of term limits reduces both the expected political skill of those seeking upper level political positions and the expected political skill at the lower level political positions.*

Proposition 15 describes conditions under which the implementation of term limits would reduce the expected political skill at both levels of political positions.

4.5 Conclusion

The implementation of term limits on lower level elected offices reduces the expected political skill of officeholders at this level. Under limited circumstances, term limits will also reduce the expected political skill of those seeking upper level political positions. For the most part, term limitation at lower level offices lead to an improvement in the quality of elected officials in upper level offices. The impact of term limits depends on the differences between the marginal returns to political skill between upper and lower level political positions. If the marginal returns from a second term in a lower level position (e.g. rewards to seniority and higher probability of legislative success) are high enough relative to those at the upper level political positions or in the market sector, term limits will lead to an improvement in expected political skill at the upper level.

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