Information, polarization and accountability in democracy

Christian Schultz[*†]

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Abstract

This paper considers a society with uni-dimensional politics and voters with poor information about the economy. It compares three institutions: direct democracy, representative democracy, with short and long term lengths, respectively. Low uncertainty about the economy and high polarization of political parties make direct democracy optimal, otherwise representative democracy is best. Short term lengths make parties accountable and give voters the option to replace a party, which is good, but also make parties distort policy in order to win elections, which is bad. For high uncertainty and low polarization, the trade off favors of short term lengths, otherwise long.

Keywords: Accountability, constitutional design, voting, information, direct democracy, polarization.JEL: H1, H7, K4

1   Introduction

The proper degree of governmental accountability has been the subject of a large debate in recent years. At the same time many important policy decisions have been removed from the realm of representative democracy: congresses and parliaments. Direct democracy, which has a long history in Switzerland and several US states, has been used recently by several European countries in the process of ratifying the treaties of the European Union. In contrast, an important policy area as monetary policy has deliberately been allocated to central banks with high autonomy. Witness for instance the creation of the European Central Bank. Along with these developments, the possibility of voting through the internet has spurred interest in direct democracy. This begs the question: Which is the better way of making decisions for society?

Politics concerns many different issues, but here we will consider the case where the salient issue is redistribution policies, taxation or more generally the size of the welfare state. The paper provides a first take on the relative advantages of direct democracy, and representative democracy with and without accountability.

The analysis focuses on the fundamental trade-off between information and accountability. As Downs (1957) pointed out, the electorate at large has insufficient incentives to become informed about complicated issues in politics, the functioning of the economy etc. Politicians on the other hand are briefed by experts and bureaucrats and it is their job to gather information and take decisions. In short there is an asymmetry of information between the electorate and the politicians. This asymmetry of information speaks in favor of delegating decision making from the electorate to elected politicians.

Such delegation, however, raises problems of congruence of preferences and accountability becomes important. If voters are discontent with the elected politicians, they can vote them out in the next election. The term length is important here. If it is long this mechanism is not as powerful as if it is short. A very long term length resembels an independent agency or judicary. Whatever the politican chooses, he will not be ousted (in a foreseable furture). Various countries have chosen different term lengths. This begs the question: Should term lengths be short or long?

We consider a society with two parties motivated by ideology and power. When parties' ideologies are polarized, voters are faced with a non-trivial choice between left and right. This influences the value of accountability for the voters. If parties are polarized, one cannot just elect a "better" politician; as a left wing government will take over if a right wing government is voted out of office.

The choice of governance structure is a long run decision, written in the constitution. When it is decided, the economic conditions - the state of nature - can not be forecasted with certainty. This uncertainty is an important feature influencing the constitutional choice.

The paper provides a model where a constitutional stage is followed by two policy periods in which policy is determined through the governance structure chosen at the constitutional stage. Voters are uninformed about the state of nature as discussed by Downs, both at the constitutional stage and later when policies are going to be decided upon. We calculate expected utilities for all voters for each of three modes of governance: direct democracy and representative democracy with short term length (one period) and long term length (two periods). A short term length means that politicans are accountable, they can be voted out. A long term length means they are not,

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and in this sense it resembles an independent judicary or agency. As it turns out the ranking of all voters are the same in the model, so it makes sense to speak of a best mode of governance.

Direct democracy has the advantage that the preferences governing the choice of policy is the electorate's, or more precisely the median voter's. The more polarized are the parties the larger is this advantage. For sufficiently high degrees of polarization, direct democracy is the best governance structure for voters. The drawback of direct democracy is that the policy choice is uninformed. The more uncertainty about the state of the world, the less attractive is direct democracy. For higher degrees of uncertainty and lower degrees of polarization, representative democracy is best, and the choice is between short or long term length.

With a short term length, the governing party is accountable: It will be voted out if the electorate is not satisfied. Voters are prospective, they vote for the party they believe chooses a better policy for them in the following period. Hence they will vote out a right wing party if they believe that the state of the world favors left wing policies. For instance, if a voter believes that the government sector is very efficient in providing the benefits of the welfare state, medicare, schools etc. and that taxation is not particularly distortinary she will want to vote liberal, democrat or social-democrat rather, than conservative, whereas the opposite beliefs gives support for the conservatives. This is an advantage of a short term length. However, there is a flip side: The governing party is interested in reelection. Since it has information, the voters have not, its policy is a signal about the state of the world. It may therefore distort its policy in order to manipulate the beliefs of the electorate and become more popular. To be convincing, a right wing party has choose an even more rightist policy in some states of the world, in order to signal

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to voters that the state of the world really calls for right wing policies. We show that high uncertainty about the state of the world tends to make short term lengths preferable, since the option value associated with the possibility of electing another government becomes high. In contrast, high polarization of the parties tends to make long term lengths better. The reason is that the policy distortion associated with short term lengths becomes very large when polarization is high.

Clearly, voters receive information from many sources: newspapers, lobbyists, business, organized labor etc. These many and varied sources of information alleviates the asymmetric information problem. Still empirical assessments show that a large fraction of the electorate typically is poorly informed: As Bartels (1996) puts it "The political ignorance of the American voter is one of the best-documented features of contemporary politics ...". It is also true that much of the information in media is cheap talk, that "experts" often contradict each other and that the different interest groups provide conflicting information.

The relative virtues of different modes of governance have been considered before in the literature. Maskin and Tirole (2001) consider a model, where the salient issue is binary. The electorate's preferred policy depends on the state of the world, which is only known by politicians. Politicians do not belong to parties and may or may not have congruent preferences with the electorate at large. If the electorate decides to replace a politician in an election, the preferences of the new politician are chosen at random. So unlike in our framework, the policy space is binary and politicians are not ideologically different. Maskin and Tirole show that the better the electorate is informed about the state of the world, the more attractive is direct democracy. The choice between representative democracy, where the chosen politician can

be replaced, and "juridical power" where there is a very long term length depends on how eager the politician is to be reelected. Unlike our analysis this is an exogenous feature.

Alesina and Tabellini (2003) build on Holmstrom's (1999) carreer concern model. Bureaucrats seek to get good reputations for competency in order to increase future pay and career opportunities, politicians do it in order enhance voters' perception of his talent so that he be reelected. The different motivations give rise to different effort levels. Alesina and Tabellini then show (among other things) that politicians tend to be best for tasks which are non-technical. They also show that time-consistency problems tends to make bureaucrats more attractive. The driving force behind the results, the career concerns is different from the one explored in the present paper.

Hanssen (2002) studies the strategic choice of mode of governance by an incumbent government. An incumbent government may wish to delegate decision authority to an independent agency in order to raise the cost of changing a particular policy for a future government. Hansen shows that an incumbent government is more likely to establish an independent judicary if there is higher probability that it looses the next election and the polarization of politics is larger. In this way the current government ensures that policy also in the future is guided by preferences close to its own. These results are related to the results of Persson and Svensson (1989) and Tabellini and Alesina (1990) on the strategic choice of debt by incumbent governments facing possible defeat in coming elections. Hansson shows that his prediction is confirmed on data from American states. Hanssen's aim is different from ours. He considers strategic choice of institutions by an incumbent government and not optimal choice of constitutions by the electorate. He does not consider direct democracy.

Following the lead of Barro (1973) and Ferejohn (1986) a large literature considers rent seeking politicians and the disciplining effect of elections in representative democracy, see and Persson and Tabellini (2000) for a recent overview. In this vein Aghinon et al (2002) investigate a model where an elected politician has superior information and can promote and implement reforms. The politican may be good and promote reform but may also be bad and seek to grab rents. Whatever he promotes has to pass a referendum, so a (super) majority can block it. This gives a tradeoff at the constitutional stage, a smaller blocking majority makes it the more difficult for a bad politician to grab rents, but also more difficult to pass reforms. Aghinon et al then study the optimal choice of the size of the supermajority.

The importance of information and polarization for the functioning of representative democracy has been the subject of several papers. Schultz (1996) considers a model where parties are better informed about the state of the world than the electorate and commit to policies before an upcoming election. If parties' preferences are sufficiently polarized, the electoral competition will lead to inefficient equilibria, since the parties' policies do not reflect the state of the world. In Schultz (2002) the electorate is supposed to have inferior information about the state of the world *and* the preferences of the parties. When parties cannot commit to policies before an election this leads to policy distortions as the incumbent party seeks to manipulate the beliefs of the electorate. The distortion depends on the relative imporance of the two kinds of uncertainty: Uncertainty about preferences leads to a bias towards more centrist policies, while uncertainty about the state of the world leads to more extreme policies. Cuikerman and Tommasi (1998) consider a model with two kinds of uncertainty where parties commit to policies before an election. Under some circumstances this leads to situations where a left

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party most credibly can implement a rightist policy. Harrington (1993) and Letterie and Swank (1998) study a slightly different issue. In their papers the government is unsure about the state of the economy. The policies chosen then act as signals for the governments beliefs.

Kessler (2000) studies the relative merits of representative and direct democracy when voters and politicians initially are uniformed about the state of the world. She studies a one-period citizen-candidate model a la Besley-Coate (1997). There are no parties - and thus polarization of parties is not an issue - but policians are ordinary citizens who decide to run. In Kessler's model citizens can exert costly effort in order to become informed. Since ordinary voters have zero chance of being pivotal, they do not invest in information aquisition and the policy decision is uninformed under direct democracy. In contrast, the elected polician in representative democracy has incentives to gather information (for sufficiently low costs) and the policy choice will be informed. In this sense the model endogenizes and explains the asymmetric information Downs (1957) focussed on and I just assume in the present paper. Kessler also assumes that there is uncertainty about candidates' preferences. This induces a cost of representative democracy for the voters as the policy choice will be unpredictable. The optimal mode of governance then depends on which kind of uncertainty is the larger. Contrary to me, Kessler does not focus on polarization of parties and the policy distortion it leads to in representative democracies. Furthermore, she does not consider the effects of accountability per se, long term lengths are not considered. The cost of representative democracy in her setting exclusively stems from the uncertainty about the policians' preferences.

The remainder of the paper is organized as follows. Section 2 presents the basic model. Direct democracy is treated in section 3. Sections 4 and 5 discus

representative democracy with long and short term length respectively. The optimal mode of governance is derived in section 6. Some extensions and conclusions are provided in section 7.

2 Basics

Consider a society which after a constitutional stage 0 lasts two periods, 1 and 2. In periods 1 and 2 society has to choose a policy x, which can be ordered on a left-right dimension, $x \in \mathbf{R}$. There are two parties: a left party L and a right party R.

There are a continuum of possible states of the world, s, uniformly distributed on $[-\sigma, \sigma]$, where $\sigma > 0$. The state of the world is the same in the two periods. Voters are not informed about the true state of the world, but they know the distribution of s.

Voters all have quadratic utility functions on the policy chosen, x, and have different bliss points. All voters prefer a higher policy, the higher is the state of the world, s : Voter $a's$ bliss point is $a + s$. There are a continuum of voters, the median voter is voter 0 (with $a = 0$) .

If x_1 is chosen in period 1 and x_2 in period 2, and the state is s, the total utility for voter a from the two periods is

$$- (x_1 - a - s)^2 - \delta (x_2 - a - s)^2 ,$$

where the discount factor, δ, fulfills $0 < \delta \leq 1$.

As is clear from the utility function, the size of σ determines whether uncertainty about the state is important of not. If σ is very small, uncertainty is small, and it is not so important to tailor the policy correctly to the state. The opposite holds if σ is large.

Each of the parties, L or R, is headed by a political leader, who chooses the policy of the party. We assume that the political leader is purely ideological and only interested in policy[1]. The per period utility of the leader of party R is

$$- \left(x - \left(r + \left(1 - \phi \right) s \right) \right)^2$$

where $r + \left(1 - \phi \right) s$ is the bliss point of the leader in state s. Just like the voters the party is interested in the sum of discounted utility from the two periods.

The parameter ϕ is a measure of the *stubbornness* of the party. If $\phi = 1$ the party is extremely stubborn and locked into its platform, it will not change it in response to changes in s. If on the other hand $\phi = 0$, the party is as responsive as are voters. We assume that parties to some extent are ideologically locked into their position, $0 < \phi < 1$. This may be because parties are formed of people feeling strongly for politics. The parties may have a longer run perspective and be more strongly influenced by political philosophy and ideology than voters in the middle. It may also reflect, that the platform of a party typically depends on what is decided in conventions and programs and therefore moves more slowly. Whatever the reason, it implies that the bliss point of the median voter changes more as a function of the state than the bliss point of the parties so the median voter's vote will depend on the state of the economy, she will be a swing voter. Imagine that the middle voters believe that the government is very efficient in providing the benefits of the welfare state, they will then tend to vote left, while they will tend to vote right if they have the opposite belief.

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[1]At the expense of longer formulas one could easily add a term reflecting the benefit of power to the utility function, which was positive when the party is in office and zero otherwise.

Party L has a similar utility function, only difference is that r is replaced with $l < r$. For simplicity, we consider the symmetric case where $l = -r$. Hence, r is a measure of the polarization of parties. The larger is r, the more the bliss points of the two parties differ. In this paper we take the polarization of the parties as exogeneously given. Ideally, one would want to endogenize polarization and relate it to more basic political institutions. We will leave this for further research.

We assume that voters know the preferences of the parties. Clearly, one could also hold the view that voters may have difficulties in learning the preferences of politicians - in particular if the party has not held power for years. However we will assume that understanding the economy - the state of the world - is the most complicated and important issue and focus on this. For a treatment in representative democracy of the case where voters are uncertain both about the state of the world and the preferences of the parties, see Schultz (2002).

Contrary to the voters, the parties are informed about the state of the world, s. As discussed in the Introduction, parties are informed from experts, the governing party has direct access to the bureaucracy, the leaders of the parties are full time politicians whose job it is to gather the relevant information and take decisions. The electorate, on the other hand does not have as strong incentives to gather information.

We distinguish between three possible types of governance: Direct Democracy, DD, and Representative Democracy with a short and a long term length, RDS and RDL respectively. Under Direct Democracy the electorate in each period determines the policy, and we will assume that this implies that the median voter's preferred policy is chosen. Admittedly, this is perhaps a naive representation of direct democracy. In practice, direct

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democracy comes in many forms, depending on rules for agenda setting and amendments. The one chosen here could be seen as the archetypical and basic form for direct democracy, where parties and elected policitians have no influence. Under Representative Democracy with a long term length, the voters elect a party in the start of period 1. The party governs for both periods and chooses the policy in each period. Under Representative Democracy with a short term length a party is elected in the start of period 1. It chooses the first period policy, which is observed by the voters. A new election occurs in the start of period 2. The newly elected party then chooses policy for period 2.

In the sequel we will find the expected utility from each mode of governance evaluated at date 0 for an arbitrary voter a. As will be clear, the relevant trade offs are the same for all voters, regardless of their bliss point. They therefore all rank the different modes the same way and it is thus meaningful to speak of an optimal mode of governance.

3   Direct democracy

In direct democracy, DD, voters in each period choose the policy preferred by the median voter without knowledge of the state of nature. The median voter's expected utility in a period from policy x is

$$-\int_{-\sigma}^{\sigma} (x-s)^2 \frac{1}{2\sigma} ds.$$

The optimal policy for the median voter is therefore

$$x = 0.$$

From the point of view of voter a, the expected utility at date 0 from DD is therefore

$$u^{DD} = (1 + \delta) \int_{-\sigma}^{\sigma} -(-a-s)^2 \frac{1}{2\sigma} ds = -(1+\delta)\left(\frac{\sigma^2}{3} + a^2\right). \qquad (1)$$

We see that the more uncertainty about the state of the world given by the variance[2] - the less attractive is Direct Democracy.

4 Representative Democracy: long term length

When the term length is long, voters elect a party before date 1, which governs for both periods. The leadership of the party needs not worry about reelection and chooses its preferred policy, given knowledge of the state, regardless of the views of the voters. The median voter, who does not know the state of the world, is indifferent between the parties, we will assume this implies that each party wins with probability $1/2$. The expected utility for voter a from RDL is therefore

$$u^{RDL} = (1+\delta)\int_{-\sigma}^{\sigma}(-\frac{1}{2}\left(-r + (1-\phi)s - a - s\right)^2 - \frac{1}{2}\left(r + (1-\phi)s - a - s\right)^2)\frac{1}{2\sigma}ds,$$

which yields

$$u^{RDL} = -(1+\delta)\left(\frac{\sigma^2\phi^2}{3} + r^2 + a^2\right). \qquad (2)$$

The trade-off associated with a long term length is clearly reflected in this expression. The larger the expected degree of polarization is, the less attractive is RDL. The advantage associated with RDL is that the chosen policy reflects the state of the world, since it is known to the governing party.. The less stubborn the party is, i.e. the smaller ϕ is, the more will the policy reflect the state and the higher is the expected utility of the median voter.

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[2]Recall that when s is uniform on $[-\sigma, \sigma]$, then the variance equals $\frac{\sigma^2}{3}$.

5 Representative Democracy: short term length

With a short term length, the time line is as follows. In the start of period one an election is held. The winning party observes the state of the world and chooses first period policy. Voters observe this policy but it takes time for the effects of the policy to materialize so its utility consequence is only learned after the second election is held. For instance, the welfare effects of expanding health care comes after some while or similarly the effects of a major tax reform takes time to spell out. Since voters know that the governing party is informed about the state, they may change their belief about the state of the world after observing the policy. In the start of period two a new election is held. The new winner chooses policy for period two.

An equilibrium under Representative Democracy with short term length is a Perfect Bayesian Equilibrium of the game just described. In each period the winning party chooses the policy which maximizes its expected utility given the state of the world, the other party's strategy and the way voters form beliefs. Voters' belief formation may affect the probability of winning the next election and parties therefore have an interest in inducing "good" beliefs. Voters vote sincerely given their beliefs. In the first period they observe the policy and form posterior beliefs about the state of the world using Bayes' rule from the prior and the governing party's strategy.

Whether voters can infer the true state of the world after period one or not depends on the governing party's policy strategy, $x(s)$. If voters observe x and know that x is only chosen in state s, they can infer that the state is s. If x is chosen in many states, they can only infer that it is one of those states. As it turns out the first period strategy will be strictly increasing over some intervals of states, here voters can perfectly infer the state, and we say that

the strategy is separating in these intervals. If the strategy is separating on $[-\sigma, \sigma]$, we say the equilibrium is separating. If the policy is constant over an interval of states, we say that the strategy is pooling over this interval.

We find an equilibrium by solving the model backwards and first look at the second period. The second period is the last, so the parties have no reelection concerns and will choose their bliss points $r + (1 - \phi) s$ and $-r + (1 - \phi) s$, respectively. If party R wins its utility is therefore 0, while if L wins it is $-\left(-r + (1 - \phi) s - (r + (1 - \phi) s)\right)^2$. Party R's discounted gain from winning the election is therefore $\delta 4 r^2$. Party $L's$ gain from winning is the same. Voters understand that the parties will chose their bliss points in the second period. If voters' updated beliefs are that the state is uniformly distributed on an interval $[s_l, s_h]$, voter a perfers party R if

$$\int_{s_l}^{s_h} -\frac{1}{s_h - s_l} \left(r + (1 - \phi) s - a - s\right)^2 ds - \int_{s_l}^{s_h} -\frac{1}{s_h - s_l} \left(-r + (1 - \phi) s - a - s\right)^2 ds > 0$$

or

$$s^e \equiv \frac{s_h + s_l}{2} > -\frac{a}{\phi}$$

where s^e denotes the expected state. The median voter is decisive and party R wins if the expected state is positive. We will assume that the incumbent wins the election if the voters are indifferent. This tie-breaking rule simplifies a few steps in the proofs below, but has no impact on the results.

Since all agents, voters as well as parties, prefer higher policies in higher states, it is intuitive that in any equilibrium, the first period incumbent will not choose policies which are decreasing in s. This is indeed true as Lemma 1 says,

Lemma 1 *In any Perfect Bayesian Equilibrium the first period government's policy is non decreasing in s.*

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Proof. All proofs are in the Appendix. ∎

Let $s^e(x)$ denote the voters' expected state after observing x. Lemma 1 implies that if $x_2 > x_2$ both are equilibrium policies then $s^e(x_2) > s^e(x_1)$. For policies y, which are not equilibrium policies, expectations are not pinned down by Bayes' rule. We will assume that the voters' beliefs are reasonable in the sense that if x is an equilibrium policy and voters observe $y > x$ then $s^e(y) \geq s^e(x)$.

Since the first period incumbent has a strictly positive incentive to win the election, it has an incentive to manipulate the voters' beliefs, so that they will relect it. If voters believe that the state is negative party L will winn the election. If the state is negative, but close to zero, and party R is incumbent it has a strong incentive to act as if the state is positive so that it will be relected. This is done by choosing a higher policy, which the party finds optimal in higher states. This incentive prevents the existence of a completely separating equilibrium.

Lemma 2 *There is no completely separating equilibrum, where the voters learn s for all $s \in [-\sigma, \sigma]$.*

We thus have that in any equilibrium, there will be some $s's$, where the first period incumbent chooses the same policy. The next Lemma shows that there is only one value of the policy x for which pooling occurs and this occurs over an interval of states, outside this pooling interval, the equilibrium is separating.

Lemma 3 *If $s_1 < s_2$ and $x(s_1) = x(s_2)$ then $x(s) = x(s_1)$ for all $s \in [s_1, s_2]$.*

Furthermore if $x(s) = x_1$ for all $s \in [s_1, s_1']$ and $x(s) = x_2$ for all $s \in [s_2, s_2']$, then $x_1 = x_2$.

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When the party chooses the pooling policy it inflicts a first period loss on itself in all states (but one) of the pooling interval. The party accepts this loss as there is a gain from pooling, namely that it is going to win the election.

If the pooling interval is long, the difference between the bliss point and the pooling policy is large for some states. This gives a high loss, which can only be justified for the party, if the gain from winning is sufficiently large. The next Lemma exactly shows that the length of the interval is determined by the gain from winning the election. Furthermore it shows that the policy of the pooling interval equals the party's bliss point at the right (left) end of the interval for party R (L).

Lemma 4 *Let $[s_1, s_2]$ be the pooling interval. Then*

$x(s) = r + (1 - \phi) s_2$ *for $s \in [s_1, s_2]$ if R is incumbent*

$x(s) = -r + (1 - \phi) s_1$ *for $s \in [s_1, s_2]$ if L is incumbent and*

$s_2 = s_1 + 2r\sqrt{\delta}$

Outside the pooling interval, the equilibrium is separating. As party R looses for $s < s_1$, it chooses its bliss point in these states. In states $s \geq s_2$, $r + (1 - \phi) s > r + (1 - \phi) s_2$, so the party wins the election even if it chooses its bliss point for these s. This explains why there is only one pooling interval. Outside the interval pooling is either too expensive or the party wins anyway if it chooses its bliss point, so there is no need to pool.

In the pooling interval party R chooses a higher value of x than its bliss point. The reason is that if it chooses a lower policy, voters will infer that the state is low and then they will want to elect party L instead. In a similar manner party L distorts its policy downwards in order to win.

The pooling interval is situated around zero, but it cannot be pinpointed

exactly. Party R looses for $s < s_1$, where s_1 is the left end point of the pooling interval, so $s_1 \leq 0$ and it wins by choosing the pooling policy, so $\frac{s_1+s_2}{2} \geq 0$, using $s_2 = s_1 + \frac{2r\sqrt{\delta}}{1-\phi}$, this implies that $s_1 \geq -\frac{r\sqrt{\delta}}{(1-\phi)}$. When R is incumbent, we therefore have that the left end point s_1 fulfills

$$-\frac{r\sqrt{\delta}}{1-\phi} \leq s_1 \leq 0,$$

while if L is incumbent, the right end point s_2 fulfills

$$0 \leq s_2 \leq \frac{r\sqrt{\delta}}{1-\phi}.$$

Summing up, we now have

Proposition 1 *Assume party R won the first election.*

For any $s_1 \in \left[-\frac{r\sqrt{\delta}}{(1-\phi)}, 0\right]$ and $s_2 = s_1 + \frac{2r\sqrt{\delta}}{1-\phi}$ there exists an equilibrium, where its policy $x(s)$ fulfills

$$x(s) = \begin{cases} r + (1-\phi)s & \text{for} & s < s_1 \\ r + (1-\phi)s_2 & \text{for} & s_1 \leq s \leq s_2 \\ r + (1-\phi)s & \text{for} & s_2 < s \end{cases}$$

These are the only equilibria, when R is incumbent

If L won the first election, then for any $s_1 \in \left[-\frac{2r\sqrt{\delta}}{(1-\phi)}, -\frac{2r\sqrt{\delta}}{2(1-\phi)}\right]$ and $s_2 = s_1 + \frac{2r\sqrt{\delta}}{1-\phi}$ there exists an equilibrium, where its policy $x(s)$ fulfills

$$x(s) = \begin{cases} -r + (1-\phi)s & \text{for} & s < s_1 \\ -r + (1-\phi)s_1 & \text{for} & s_1 \leq s \leq s_2 \\ -r + (1-\phi)_1 & \text{for} & s_2 < s \end{cases}$$

These are the only equilibria, when L is incumbent.

In an equilibrium party R distorts the policy upwards in the pooling interval in order to make the voters' expected state is so high that the median

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voter votes for party R. For very high states this is unnecessary, for low states, the needed distortion in policy is so large that party R does not find it worthwhile, it chooses its bliss point and looses the election.

From the point of view of the median voter, the best equilibrium, when R is incumbent, is when the pooling interval has left endpoint $s_1 = 0$. In this equilibrium, there is a first period distortion, but the voters learn whether $s \gtrless 0$, so in the second period, the elected government is the most preferred by the median voter given the actual state. From the point of view of party R, however, the best equilibrium is the one where $s_1 = -r\sqrt{\delta}/(1-\phi)$, as it wins the second election in a larger set of states. Figure 1 illustrates the equilibrium, when R is the incumbent

6   The constitutional choice

In this section we consider the constitutional choice by comparing the expected utilities for the voters obtained under the different modes of governance. First consider Representative Democracy with a short term length. We focus on the equilibrium, which is best for the median voter, where the pooling interval $[s_1, s_2]$ has $s_1 = 0$ if R wins the first election and $s_2 = 0$ if L wins the first election, i.e. an equilibrium like the one illustrated in Figure 1. This equilibrium represent RDS at its best from the point of view of the median voter. As will be clear, this has no qualitative importance for the results.

At the first election, voters have no further information about the state so each party wins with probability $1/2$. At the second election, voters elect party L if $s < 0$ and party R if $s > 0$, and the incumbent - whoever it is -
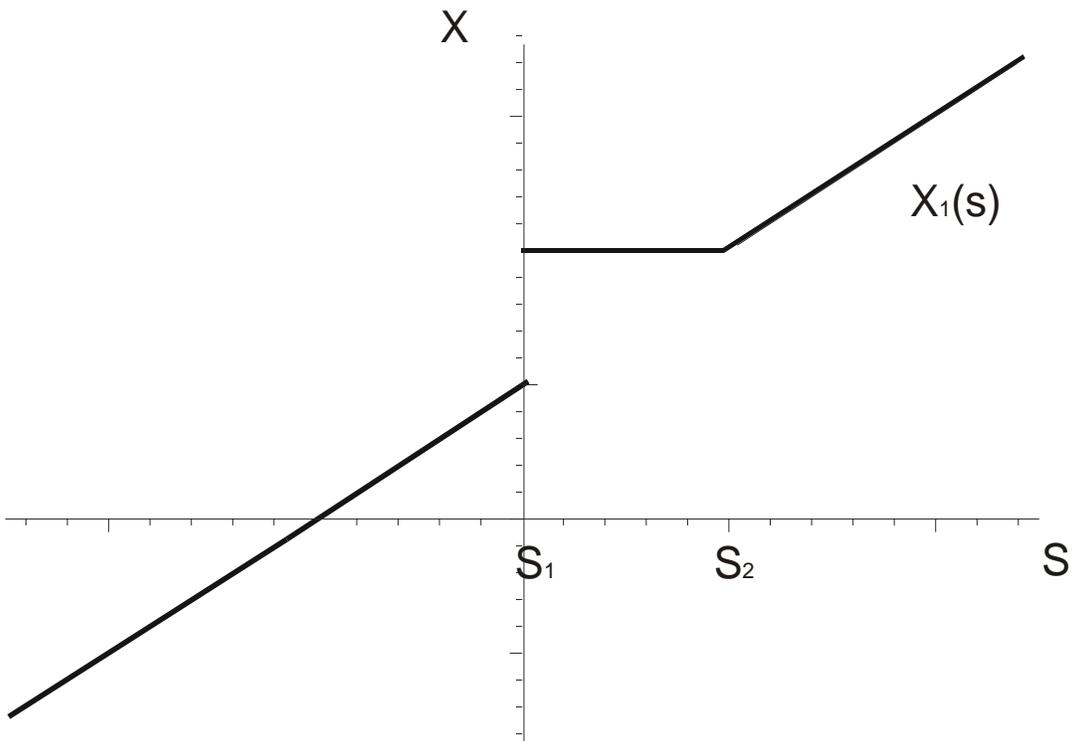
Figure 1: Equilibrium policy when R is incumbent

if $s = 0^3$. The expected utility in the second period for voter a evaluated at date 0 is therefore

$$\delta \left(\int_{-\sigma}^{0} -\left(-r + (1 - \phi) s - a - s\right)^2 \frac{1}{2\sigma} ds - \int_{0}^{\sigma} \left(r + (1 - \phi) s - a - s\right)^2 \frac{1}{2\sigma} ds \right)$$

$$= -\delta \left(\frac{1}{3} \sigma^2 \phi^2 + r^2 + a^2 - \phi r \sigma \right)$$

Comparing with RDL where the second period utility is given by (see 2)

$$-\delta \left(a^2 + r^2 + \frac{1}{3} \sigma^2 \phi^2 \right)$$

we see that the second period expected utility in RDS is higher than in RDL for all voters, and the difference is

$$\delta \phi r \sigma$$

This is the gain from accountability and arises form the fact that the voters can elect the government they prefer, when they learn the state under RDS, while this is not possible under RDL. We see that the higher is r the degree of polarization, σ the uncertainty about the state of the world and ϕ - the stubbornness of parties the more valueable is accountability.

When the term length is short, the policy will be distorted in the pooling interval. Outside the pooling interval, the policy will be the same regardless of the term length. Evaluated at date zero the difference in expected utility for voter a from RDL and RDS is therefore

$$\frac{1}{2} \int_{-x}^{0} -\left(-r + (1 - \phi) s - a - s\right)^2 \frac{1}{2\sigma} ds + \frac{1}{2} \int_{0}^{x} -\left(r + (1 - \phi) s - a - s\right)^2 \frac{1}{2\sigma} ds$$

$$- \left(\frac{1}{2} \int_{-x}^{0} -\left(-r + (1 - \phi)(-x) - a - s\right)^2 \frac{1}{2\sigma} ds + \frac{1}{2} \int_{0}^{x} -\left(r + (1 - \phi) x - a - s\right)^2 \frac{1}{2\sigma} ds \right)$$

[3]I claimed earlier that the tie-break rule saying that the incumbent wins if $s = 0$ does not matter for our results. Since $s = 0$ is a measure zero event, the expected utilities which we now calculate does not depend on this rule.

where $x = \frac{2r\sqrt{\delta}}{1-\phi}$. This equals

$$\frac{\delta}{(1-\phi)}\left(2 + \frac{4(1-2\phi)}{3(1-\phi)}\sqrt{\delta}\right)\frac{r^3}{\sigma}$$

Notice that both the size of the gain and the loss is independent of the identity of voter a. We then directly get

Proposition 2 *RDS is better for the voters than RDL iff the gain from accountability exceeds the loss from the first period distortion under RDS. This is the case when*

$$\frac{\sigma^2}{3} > \left(\frac{2}{3\phi} + \frac{4(1-2\phi)}{9(1-\phi)\phi}\sqrt{\delta}\right)\frac{1}{(1-\phi)}r^2 \tag{3}$$

Large uncertainty makes a short term length preferable, while the opposite is true for large polarization. Larger polarization actually both increases the gain and the loss, but the effect on the loss dominates.

The relative merits of DD and RDL are easily found using (1) and (2), which directly give

Proposition 3 *DD is better than RDL iff*

$$\frac{\sigma^2}{3} < \frac{1}{1-\phi}r^2 \tag{4}$$

It can quickly be verified that the right hand side of (3) is larger than the right hand side of (4) iff

$$\phi < \frac{4}{9}\sqrt{\delta} - \frac{1}{18}\sqrt{64\delta + 96\sqrt{\delta} + 9} + \frac{5}{6} \tag{5}$$

The right hand side of (5) varies inbetween 2/3 and 5/9 as δ varies between 0 and 1. Combining Propostions 2 and 3 now directly gives

Theorem 1 *If the degree of stubbornness is not high, i.e. (5) is fulfilled, then all voters find at date 0 that*

1. *DD is the preferred mode of governance if*

$$\frac{\sigma^2}{3} < \frac{1}{1-\phi}r^2$$

2. *RDL is the preferred mode of governance if*

$$\frac{1}{1-\phi}r^2 < \frac{\sigma^2}{3} < \frac{1}{\phi(1-\phi)}\left(\frac{2}{3} + \frac{4(1-2\phi)}{9(1-\phi)}\sqrt{\delta}\right)r^2$$

3. *RDS is the preferred mode of governance if*

$$\frac{1}{\phi(1-\phi)}\left(\frac{2}{3} + \frac{4(1-2\phi)}{9(1-\phi)}\sqrt{\delta}\right)r^2 < \frac{\sigma^2}{3}$$

Direct democracy is costly when voters are very uncertain about the state of the world. On the other hand it has the advantage that the policy choice is effectively made by the median voter, who chooses a middle of the road policy. Representative democracy has the advantage that the policy choice is informed. The problem is that the party choosing policy has biased preferences. The larger is polarization the more biased will the policy choice be. When the uncertainty about the state $-$ as given by the variance - is relatively low, relative to polarization, then DD is optimal. For higher uncertainties representative democracy is best and the choice is between short and long term lengths. This choice is determined by the relative sizes of the loss from the distortion associated with a short term length and the option value from having the possibility to replace the government. When uncertainty is large, the option value dominates, and a short term length, RDS, is optimal, when polarizatoin is large the opposite is true, the parties distort policies too much in RDS, and a long term lenght, RDL, is best.
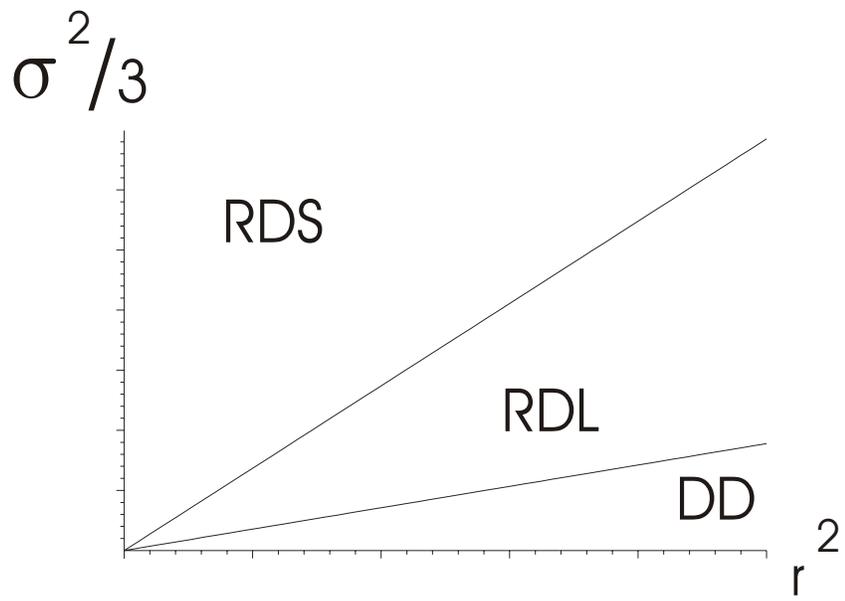
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Figure 2: The optimal mode of governance

Figure 2 illustrates Theorem 1, for the values $\delta = 1$ and $\phi = \frac{1}{4}$.

We have focussed on the equilibrium in RDS, which is best for the median voter's point of view. As should be clear, it would change nothing fundamentally if we instead focussed on another equilibrium, where the pooling interval was moved a bit. This would just change the exact location of the dividing line between RDS and RDL, the upper curve in Figure 2.

When the parties are very stubborn, the right hand side of (3) is smaller than the right hand side of (4) and a long term length will never be optimal. The choice is then exclusively between representative democracy with a short term length and direct democracy. The middle RDL area in Figure 2 vanishes. In this case the formulas become longer and we will not report them here. However, it is still true that RDS is best for high σ and low r, while DD is best otherwise.

7 Concluding remarks

The choice of constitution involves many considerations. This paper has focussed on two: The informational asymmetry between elected politicians and voters and the polarization of party politics. The informational asymmetry speaks in favor of delegating power to elected politicians, the polarization does the opposite. Delegated power may be with or without accountability. Accountability has a good side, voters have the option to replace a party a majority finds inadequate given the state of the world, while the problem is that politicians' eagerness to win elections make them distort policies in order not to reveal the true state of the world. It turns out that when the uncertainty about the state of the world is large the option value is most important and a short term length - implying accountability - is preferable.

When on the other hand the uncertainty is moderate, a longer term length is preferable. When uncertainty is very large, a basic democratic institution, Direct Democracy works best.

8 Appendix

Proof of Lemma 1. Let $s_2 > s_1$ and let e.g. $x_1 = x(s_1)$ and k_1 be the discounted period two expected utility consequence for the government from choosing x_1 in the first period. If the incumbent is party R, the optimality of x_1 at s_1 and of x_2 at s_2 yields

$$-(x_1 - r - (1 - \phi) s_1))^2 + k_1 \geq -(x_2 - r - (1 - \phi) s_1)^2 + k_2, \text{ and}$$
$$-(x_2 - r - (1 - \phi) s_2)^2 + k_2 \geq -(x_1 - r - (1 - \phi) s_2)^2 + k_1$$

(if L is incumbent r is exchanged with $-r$). Adding and rearranging yields

$$(x_2 - x_1)(s_2 - s_1)(1 - \phi) \geq 0$$

implying that $s_2 > s_1 \Rightarrow x_2 \geq x_1$. $\square$

Proof of Lemma 2.. Assume that party R is the incumbent, (if L is the proof is symmetric). From Lemma 1 we have that if the equilibrium is separating then party $R's$ first period policy $x(s)$ is strictly increasing in s. Party R will win the second election if $s \geq 0$ and loose otherwise. As it looses for $s < 0$, it will choose its bliss point in period 1 in these states. Consider $s = -\varepsilon$, where ε is small. If party R chooses $x(-\varepsilon)$ the first period, it looses the election, while it wins if it chooses $x(\varepsilon)$. As the gain from winning is $\delta 4r^2$, it has to be the case that

$$\lim_{\varepsilon \to 0} \left[-(x(-\varepsilon) - r - (1 - \phi)(-\varepsilon))^2 - -(x(\varepsilon) - r - (1 - \phi)\varepsilon)^2 \right] \geq \delta 4r^2,$$

otherwise party R will deviate from $x(-\varepsilon)$ to $x(\varepsilon)$. Since it chooses its bliss point for $s < 0$, we get

$$\lim_{\varepsilon \to 0} x(\varepsilon) \geq \lim_{\varepsilon \to 0} [r + (1 - \phi)\varepsilon] + 2r\sqrt{\delta} = r\left(1 + 2\sqrt{\delta}\right)$$

Consider $\varepsilon_2 > \varepsilon_1 > 0$, then party R wins both by choosing $x(\varepsilon_2)$ and $x(\varepsilon_1)$. Since the equilibrium is separating we have that

$$x(\varepsilon_2) > x(\varepsilon_1) > r\left(1 + 2\sqrt{\delta}\right)$$

For $\varepsilon_2 < \frac{2r\sqrt{\delta}}{(1-\phi)}$ we have that

$$r\left(1 + 2\sqrt{\delta}\right) > r + (1 - \phi)\varepsilon_2$$

But then party R prefers to choose $x(\varepsilon_1)$ in state $s = \varepsilon_2$: the first period utility is higher than if it chooses $x(\varepsilon_2)$ and it stills wins the election. This contradicts that the equilibrium is separating for all s.□

Proof of Lemma 3 The first statement follows directly from Lemma 1.

Look at the second statement. Again assume party R is incumbent. If the two intervals are overlapping, then $x_1 = x_2$. Suppose therefore that $s_1' < s_2$ and that $x_1 < x_2$. For $s \in [s_1, s_1']$, party R chooses x_1. There is at most one $s \in [s_1, s_1']$ where $x_1 = r + (1 - \phi)s$. This implies that party R must winn the second election after choosing x_1, otherwise it would be better to deviate to $r + (1 - \phi)s$ for s such that $x_1 \neq r + (1 - \phi)s$. This implies that $s^e(x_1) \geq 0$. By a similar argument $s^e(x_2) \geq 0$. Consider $s \in [s_2, s_2']$ for which $x_2 \neq r + (1 - \phi)s$. If $x_2 < r + (1 - \phi)s$ party R would be better off deviating to $r + (1 - \phi)s$, since $s^e(r + (1 - \phi)s) \geq s^e(x_2) \geq 0$, so the party would still win the election. If $x_2 > r + (1 - \phi)s$, the party can deviate to $x_2 - \varepsilon > x_1$. For small ε, this is a better first period policy and $s^e(x_2 - \varepsilon) \geq s^e(x_1) \geq 0$, so the party still wins the election. We conclude that $x_1 < x_2$ is not compatible with equilibrium.□

Proof of Lemma 4 Let $\bar{x} = x(s)$ for $s \in [s_1, s_2]$. Assume R is the incumbent, the proof for L is similar. When party R chooses $\bar{x}$, $s^e(\bar{x}) \geq 0$ and it wins the election. As x is non-decreasing

$$x(s) = r + (1 - \phi) s > \bar{x} \text{ for } s > s_2$$

and thus

$$\bar{x} \leq \lim_{s \downarrow s_2} r + (1 - \phi) s = r + (1 - \phi) s_2$$

On the other hand we also have that

$$\bar{x} \geq r + (1 - \phi) s_2$$

since otherwise the party can gain by deviating to $r + (1 - \phi) s_2$ at s_2. This gives a better first period policy and it still wins the election. In conclusion, $\bar{x} = r + (1 - \phi) s_2$.

For $s < s_2$ it must be the case that the party looses the election if it deviates to $x < \bar{x}$, otherwise it would do so. The lowest s for which the party will not deviate down to its bliss point when this implies that it looses rather than wins the solves

$$-(\bar{x} - r - (1 - \phi) s)^2 = \delta 4r^2$$

This implies that

$$s_1 = s_2 - \frac{2r\sqrt{\delta}}{1 - \phi}$$

□

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