Political Career Dynamics

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Abstract

How does political accountability shape the careers of politicians? We examine a model of accountability under repeated moral hazard, and study the career dynamics of incumbent politicians under the voter-optimal equilibrium. When discounting is low then stationary equilibria are optimal. But for higher rates of discounting, the equilibrium path features richer dynamics under which the re-election prospects of a politician improve with good performance and deteriorate with bad performance. First term politicians are among the most electorally vulnerable, while a politician that is able to succeed in office for a sufficiently long period of time becomes entrenched, never exerting effort and never being replaced. We show that entrenchment is a necessary consequence of providing politicians with the optimal incentives. In particular, we cannot conclude from the fact that a politician becomes entrenched that accountability was not at work.

JEL Classification Codes: C73, D72, M51.

Key words: principal-agent model; dynamic games; moral hazard; entrenchment; adverse selection; accountability

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1 Introduction

Eric Cantor represented Virginia’s 7th Congressional district from 2001 and rose quickly to become House majority leader in his sixth term in office. He had acquired national attention for his leadership in the national Republican party, and the work he had done in Congress. He was considered to be a likely future speaker of the House and someone who would remain a fixture of Washington society until retirement or death. But in 2014, the voters of his district denied him this legacy by replacing him with his primary challenger. The shock of Cantor’s primary defeat hit hard in Washington and the national media, with Gail Collins writing in the New York Times that “the House majority leader was tossed out of office Tuesday in an apocalyptic, stunning, incredible earthquake of an election in Virginia that has left the nation absolutely floored in shock.”

Cantor’s career in Washington contrasts with the careers of politicians who did eventually become entrenched in office—Beltway “lifers” like Strom Thurmond, Robert Byrd, Orrin Hatch, Jerry Lewis, Joe Biden, and Charlie Rangel. These politicians were able to make it through several terms, and some have even survived through some notable political scandals. Some held their seats for life, firmly secure in re-election, especially in the later part of their careers. Some have even passed their seats on to their family members, as in the case of the Dingells of Michigan: John Dingell, Sr., who served as a member of Congress from Michigan for 22 years and was succeeded by his son, John Dingell, Jr., in 1955, who in turn was succeeded by his wife, Debbie Dingell, in 2015, now totaling 87 years of Dingells in Congress.

The level of political entrenchment that the careers of these politicians reflect is rare, however. Most politicians retire or are booted out of office sometime in the middle or early part of their career. Data collected by Hibbing (1991) show that while incumbents do very well in general, first term members of Congress that are the most electorally vulnerable. Re-election probabilities among those seeking a new term are generally increasing in tenure but are relatively stable after the first term.\footnote{Hibbing finds that for the period 1946-1984, the re-election rate of freshman House members seeking re-election is 84%. The rate for sophomores jumps to 93% and is then relatively flat, never dropping below this rate, and climbs to 99% for those in their 14th term.}

In this paper, we study the link between political accountability and the career dynamics of incumbent politicians by re-examining the classical Ferejohn (1986) setting of repeated moral hazard. In each period of the model we consider, the politician in office privately observes the productivity level which takes a binary value, high or low. She then chooses her effort level from a bounded range. Effort along with productivity

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determines performance. Under the low productivity shock, failure is certain; otherwise, performance is increasing in effort. Crucially, the voter cannot tell whether a failure was due to low productivity or to low effort. The voter finally decides whether to retain the politician or to replace her with a new one, and the period ends.

We look at the voter-optimal equilibrium of this model. When the discount factor is high, then a stationary equilibrium is optimal for the voter and perfectly resolves the moral hazard problem, achieving the voter’s first-best payoff. For lower levels of the discount factor, however, the voter-optimal equilibrium is necessarily non-stationary, and displays a set of rich dynamics that corresponds with the idea of politicians having careers. In each term of office, the politician faces an equilibrium-prescribed level of effort. She either succeeds, i.e. delivers an outcome that is consistent with this effort level, or she fails. The consequences of success and failure depend on the continuation value with which she started her present term. Her continuation value improves with every success, and declines with every failure, with some caveats as follows.

On the path of play, the politician’s continuation value ranges in an interval from lowest to highest. Every politician starts her career in office at the lowest possible value in this range. A politician with the highest possible value can never fail, is always re-elected, and therefore exerts zero effort; such a politician has job “tenure.” Success results in certain re-election for all other values as well, and the politician starts her next term with a higher value. Failure, on the other hand, results either in removal from office, or retention at lower value. For a politician that started her current term at the lowest possible value, failure results in certain removal. For one who started her current term with a value that is higher than this but below a certain threshold, failure will result in the voter removing her from office with probability that is decreasing in her value. If she is retained she will start her next term at the lowest possible value, as if restarting her career from scratch. For an untenured politician who started the current term at a value that is above the threshold, failure results in the voter re-electing her, with a value that is lower than her current value, but not the lowest possible.

If the politician starts a term with a value that is above a certain threshold, then success in that term results in tenure. With enough consecutive successes her value can grow sufficiently that it crosses this threshold. The equilibrium path of play is unique and the necessary number of consecutive successes to achieve tenure is finitely bounded, so in any voter-optimal equilibrium, some politician will eventually be tenured.

We also explore three extensions of the model. In the first, we limit the degree to which politicians can become entrenched by assuming that the voter will renegotiate
away from the current equilibrium path if her value falls below a pre-specified (positive) threshold. The inability to tenure a politician is harmful to the voter’s interest, but the optimal equilibrium subject to this threshold has very similar dynamics to that of the baseline model with the exception that no politician is ever tenured on the path of play. In the second extension, we allow the politician to voluntarily retire if they encounter an opportunity outside of politics that pays more than their continuation value. We show that [TO DO: SUMMARIZE]. Finally, we consider an extension in which we add adverse selection to the baseline setting by assuming that politicians can be either “good” or “bad” types, that effort and ability are complements, and that bad types always fail. Political career dynamics in this extension are again similar to the one in the baseline model, except that the voter may now find it optimal to start a politician’s career at a continuation value that is higher than the lowest possible. The reason for this is that in the voter-optimal equilibrium, the voter cycles through politicians, removing them from office until he discovers a good type. Therefore, replacement now comes with the cost of having to wait longer until a good type is discovered and generates a success.

Theoretical work in political economy has largely ignored the way in which political accountability shapes political careers. Models in which politicians are unrestricted in the number of terms they can serve typically focus on stationary equilibria, following the early work by Ferejohn (1986) and Banks and Sundaram (1990, 1993). There is some work looking at political careers in models in which politicians serve only a restricted number of terms. For example, Ashworth (2005) studies a three-period career concerns model in which politicians allocate effort across different activities, examining how career stage determines this allocation. Mattozzi and Merlo (2008) study a two-period model in which politicians must decide whether to enter/remain in politics or work in the private sector. Schwabe (2009) allows politicians to serve an unrestricted number of terms, but restricts attention to a class of equilibria that are suboptimal for the voter. Anesi and Buisseret (2019) also allow for an unrestricted number of terms, and prove a folk theorem for a political accountability models with adverse selection and moral hazard.²

Our paper relates to prior work on repeated moral hazard, and is most closely related to papers that look at principal-optimal equilibria in settings where the principal is unable to finely adjust the agent’s compensation. This includes the prior work on delegation by Lipnowski and Ramos (2019), Li et al. (2017) and Guo and Hörner (2018), as well as other work in political economy including work on indirect control and war

²See Duggan and Martinelli (2017) and Ashworth (2012) for thorough surveys of the earlier work on political accountability.
by Padró i Miquel and Yared (2012) and Yared (2010), and a recent paper by Foarta and Sugaya (2019), who look at principal-optimal equilibria in an intervention game. In these contributions, as in our work, the standard recursive toolbox developed by Spear and Srivastava (1987) and Abreu et al. (1990) enables the future terms of a relationship to substitute for monetary incentives. Other related work in which these techniques have been applied include Fong and Li (2017), Clementi and Hopenhayn (2006), DeMarzo and Fishman (2007), Thomas and Worrall (1990) and Atkeson and Lucas (1992), which share with our work the feature that utility is imperfectly transferable due to limited liability, risk aversion, or other factors. In the case of our model, the principal has only the simple choice of whether to fire or retain the worker. This choice is the main incentivizing device in many other applications besides ours, where the remuneration of workers is fixed and does not vary with performance through options, bonuses, commissions, etc. 3

2 Model

There is a representative voter and an infinite pool of politicians. Time is discrete, with an infinite horizon and indexed by $t = 0, 1, 2, ....$ Each period starts with a politician in office. One of the politicians begins in office at date 0. A productivity shock $\theta_t$ is drawn independently from $\{0, 1\}$ and privately seen by the politician in office. The high productivity shock, $\theta_t = 1$, has probability $\mu \in (0, 1)$ and the low productivity shock, $\theta_t = 0$, has probability $1 - \mu$. After seeing the productivity level, the politician chooses how much effort to supply, $a_t \in [0, 1]$.

The voter then observes only her own payoff, the product $y_t = \theta_t a_t$, and decides whether to keep the politician in the job or fire her. We denote by $\rho_t$ the probability with which the politician is kept. If the voter fires the politician, she is replaced by someone from the pool, and never re-enters office in the future. 4 In each period $t$, the politician that is in office gets a payoff $1 - ca_t$ where $c > 0$ is the marginal cost of effort.

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3 In fact, the salaries of low- (and sometimes even high-) level staff even in some private corporations—not just nonprofit organizations and the public sector—are set according to a pre-specified pay-schedule and cannot be (easily) adjusted. Bosses control incentives only in the extent of job security that they provide. And while many such workers, particularly public sector bureaucrats, often have almost full job security and do not face a realistic threat of being fired, they still face the threat of being transferred to undesirable postings. Though these workers may be returned to desirable positions in the future, amending our model to allow this will be without loss for the principal’s utility; see footnote 4. So while the prominent application of our model is to positions of elected office, the model also applies to other settings in which this assumption applies.

4 The latter is without loss for voter utility. Specifically, for any equilibrium in which the a politician is re-elected after some delay, there is weakly better equilibrium in which this does not happen.
All agents that are not in office get 0. All individuals discount the future using a common discount factor, $\delta \in (0, 1)$, and we will express continuation values in terms of average flow payoffs. We look at perfect public equilibria of this model that are optimal from the perspective of the voter.

We will let an incentive-compatible (IC) policy be a strategy profile in the game described above, such that no agent has an incentive to deviate from her prescribed conditional effort choice at any history. In each period $t > 0$, we will use the term incumbent to refer to the politician in office in the previous period. For period $t = 0$, the incumbent is the initial politician.

First, note that it is strictly dominated for an agent to work when productivity is low, as that leads to an inferior outcome in the stage game, and does not affect the public outcome of the dynamic game. Thus when productivity is low, $\theta_t = 0$, the politician in office chooses to not exert any effort, $a_t = 0$. From now on, we will abuse notation, and interpret a politician’s choice at public history $h$ to be his choice at history $h$ conditional on a high-productivity shock in that period.

Also, note that if an equilibrium “prescribes” the politician to exert effort $a$ after a certain history $h$, then it is without loss of generality to assume that the voter’s strategy is constant for all outcomes $y \geq a$, and constant again for all outcomes $y < a$. Given the prescribed effort level $a$, we will refer to an outcome $y \geq a$ as a success and outcome $y < a$ as a failure. This implies that for an equilibrium-prescribed effort level, there are only two stage game strategies that the politician in office in a period $t$ will ever use: $a_t = a[h_t]$, where $a[h_t]$ is the prescribed effort level on the equilibrium path following history $h_t$, and $a_t = 0$. We refer to the former as the working strategy, and the latter as the shirking strategy. Naturally, different equilibria and different histories may lead to different prescriptions of effort along the path of play.

Finally, note that, as a benchmark, the voter’s first best payoff is $\mu$, and it obtains if and only if every politician in office exerts the highest effort, $a = 1$, every period.

### 2.1 Stationary Equilibria

Since we said that it is without loss to assume that the voter’s strategy at a certain history is a step function in $y$ with possible discontinuity only at the prescribed effort level at that history, a stationary equilibrium is parametrized by a stationary effort prescription.

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5Another assumption (also without loss of generality) is that if any outcome $y \not\in \{0, a\}$ is realized then the politician is replaced. The observable implications of this assumption are identical to the one we make since again the politician would therefore not choose any effort levels besides 0 or $a$. 

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and a stationary pair of firing probabilities \( \psi_0 \) and \( \psi_a \) such that the politician in office is removed with probability \( \psi_0 \) following \( y < a \), and removed with probability \( \psi_a \) following \( y \geq a \). The politician finds it optimal to exert effort \( a_t = a \theta_t \) in all periods \( t \), and the voter’s equilibrium payoff, \( \mu a \), is increasing in the prescribed effort level.

In addition, observe that \( \psi_0 = 1 \) or \( \psi_a = 0 \) without loss. If both \( \psi_0 \) and \( \psi_a \) were interior, then raising \( \psi_0 \) while lowering \( \psi_a \) so that the on-path firing rate remains constant would preserve the politician’s incentive to choose \( a \) rather than deviate to a period of shirking. As well, even if \( \psi_0 = 1 \), then lowering \( \psi_a \) would strengthen the politician’s incentives, by raising the value of working without changing the value of shirking. Therefore, we may take \( \psi_a = 0 \) without loss of optimality. The politician is thus retained for outcome \( a \) and fired with probability \( \psi_0 \) for outcome zero. Hereafter, we will drop the subscript and let \( \psi_0 = \psi \).

Facing a stationary firing rule, the politician’s best response is stationary. She either works for a value satisfying \( u_W = (1 - \delta)(1 - c \mu a) + \delta(1 - \psi(1 - \mu))u_W \) or shirks for a value satisfying \( u_S = (1 - \delta) + \delta(1 - \psi)u_S \). Putting these together, we have

\[
\frac{u_W}{u_S} = \frac{(1 - c \mu a)(1 - \delta) + \delta \psi}{(1 - \delta) + \delta \psi(1 - \mu)}.
\]

Work is incentive compatible for the politician if and only if this ratio \( u_W / u_S \) is at least 1—a condition that becomes easier to satisfy as \( \psi \) is raised. It is therefore optimal to set \( \psi = 1 \). In this case, the ratio is at least 1 if and only if \( ca \leq \delta \). Thus the optimal \( a \) is the smaller of 1 and \( \delta / c \). The key findings of this analysis are as follows.

**Proposition 1.** In a voter-optimal stationary equilibrium, for a politician in office in period \( t \), we have:

1. The politician chooses effort \( a_t = a \theta_t \), where \( a = \min\{1, \delta / c\} \).
2. The politician is fired if she fails \( (y_t < a) \) and retained if she succeeds \( (y_t \geq a) \).

The expected equilibrium payoff to the voter is \( \mu a = \mu \min\{1, \delta / c\} \), and therefore there is a stationary equilibrium achieving the voter’s first best payoff if and only if \( \delta \geq c \).

So far we have replicated the main features of the Ferejohn (1986) analysis, which also focuses on stationary equilibria and shows that they can be characterized by a cutoff retention rule. However, despite the environment being stationary, voter-optimal equilibria need not be stationary for values of the discount factor lower than \( c \).
2.2 Voter-Optimal Equilibria

In the previous section, we showed that if $\delta \geq c$ the stationary equilibrium achieves the voter’s first best payoff so for this case the stationary equilibrium is the voter-optimal equilibrium. In this section, we complete the characterization of the voter-optimal equilibrium by studying the case of $\delta < c$.

We take a recursive approach à la Spear and Srivastava (1987). It is immediate that there is an incentive compatible policy generating continuation value $u$ for the politician in office if and only if $u \in [1 - \delta, 1]$. The politician can guarantee herself a payoff of at least $1 - \delta$ by shirking indefinitely, and the maximum payoff of 1 can be obtained if she is always retained and exerts no effort in any period. Any value in the interval can be generated by randomizing between these two incentive compatible extremes—immediate replacement after the first term, and unconditional tenure.

Proposition 2. Suppose that $\delta < c$. In a voter optimal equilibrium, every first-term politician starts in office with continuation payoff $u = 1 - \delta$, and for any politician who starts any period $t$ with continuation payoff $u \in [1 - \delta, 1]$, we have:

1. The politician chooses $a_t = \theta_t a_u$, where $a_u = \min \left\{ 1, \frac{1-u}{(1-\delta)c} \right\}$.

2. Define the value

$$v_u = \begin{cases} 
\frac{1}{\delta}[u - (1 - \delta)(1 - ca_u)] & \text{if } y \geq a_u \\
\frac{1}{\delta}[u - (1 - \delta)] & \text{if } y < a_u
\end{cases}$$

If $v_u \geq 1 - \delta$, then the politician is retained with probability 1 at continuation value $v_u$ starting from the next period. If $v_u < 1 - \delta$, she is retained with probability $v_u / (1 - \delta)$ at continuation value $1 - \delta$ from the next period.

We now make a series of observations about this voter-optimal equilibrium. On the equilibrium path, the voter prescribes an effort level $a_u$ to the politician that the politician chooses when productivity is high; when productivity is low, the politician optimally chooses to not exert any effort. Note that if $u = 1$, the equilibrium prescribed effort level $a_u = 0$, so that the politician cannot fail. We say that a politician with continuation value $u = 1$ has tenure: she remains in office forever, independent of all current and subsequent outcomes, and therefore never exerts any effort.
Next, note that a politician that is successful is re-elected for sure, with a continuation value that is higher than her last period continuation value. Failure, on the other hand, results either in removal from office, or retention at a continuation value that is lower than the previous period continuation value. In particular, if \( u = 1 - \delta \) (which is the lowest possible continuation value for a politician currently in office, and the one at which every politician starts their career), then failure results in certain removal. If \( u \in (1 - \delta, 1 - \delta^2) \) then failure results in the politician being probabilistically retained, and if she is in fact retained, then she starts the next term at value \( 1 - \delta \), as if restarting her career from scratch. If \( u \geq 1 - \delta^2 \) and she fails, then she is retained for sure at a value that is lower than the one with which she started the term, but higher than the one at which she started her career.

Importantly, as a politician’s continuation value climbs with an increasingly long run of successes, it is possible for her to actually achieve tenure on the path of play. In particular, whenever the politician’s continuation value is above \( 1 - (1 - \delta)c \), then being successful in the current term results in tenure. This is because if \( u > 1 - (1 - \delta)c \) then the prescribed effort is \( a_u < 1 \), and hence \( v_u = 1 \) if the politician succeeds. (A related observation is that all untenured politicians that are more than one successful term away from tenure are prescribed the maximum feasible effort level of \( a = 1 \); and if a politician is only one successful term away from tenure, then they are prescribed an effort level that is either strictly less than 1 because \( u \) exceeds \( 1 - (1 - \delta)c \), or equal to 1 because \( u \) exactly equals \( 1 - (1 - \delta)c \).) The corollary below shows that with a long enough run of successes, the politician’s continuation value can indeed cross this threshold.

**Corollary 1.** Suppose that \( \delta < c \). Then there exist a sequence of cutoffs \( \{\frac{\delta}{1 - \delta^k + 1}\}_{k=1}^{\infty} \) such that if \( \frac{\delta}{1 - \delta^{k+1}} < c \leq \frac{\delta}{1 - \delta^k} \), then in the voter-optimal equilibrium, any politician who has \( k \) successes in a row will be tenured after her next success. If \( c > \frac{\delta}{1 - \delta} \) any politician that produces a single success in office will be immediately tenured.

**Proof.** A straightforward recursive calculation shows that if the politician starts with continuation value \( 1 - \delta \) then following \( k \) successes her continuation value will be

\[
u_k = 1 - \frac{1}{\delta^{k-1}} + \left(\frac{1}{\delta^k} - 1\right) c
\]
Thus $u_k \geq 1 - (1 - \delta)c$ if and only if $c \geq \delta / (1 - \delta^{k+1})$. Therefore, if $\frac{\delta}{1 - \delta^k} < c \leq \frac{\delta}{1 - \delta}$ then any politician with $k$ past successes will be tenured after her next success. If $c > \delta / (1 - \delta)$ then every politician will be tenured after her first success.

Because the sequence of cutoffs in the corollary converges to $\delta$, for any value of $c > \delta$ some politician will eventually achieve enough consecutive successes to become tenured. This result implies that the optimal way for the voter to incentivize effort in the early periods is to provide the politician with the promise of tenure. The promise is credible given that the voter can be punished for breaking the promise if the relationship stipulates that the continuation equilibrium has every subsequent politician exert zero effort and be replaced with certainty.

The corollary puts an upper bound on the number of consecutive successes needed for the politician to achieve tenure. But, in fact, a politician may achieve tenure with fewer than this number of consecutive successes if she has a sequence of successes following a failure that results in her being re-elected with a continuation value larger than $1 - \delta$. As we mentioned above, this case arises if the politician’s continuation value has climbed above $1 - \delta^2$. That said, for this to happen, it must be that the politician is not yet been tenured prior to this point. In particular, it is possible that the tenure threshold $1 - (1 - \delta)c$ described above is smaller than $1 - \delta^2$, in which case the politician could be tenured before she ever gets to experience a term in which she is re-elected for sure despite failing.

Figure 1 makes our observations concrete by depicting some simulated paths of the politician’s continuation value for various cases. The figure shows that some politicians have longer careers than others. Some achieve tenure quickly, others take longer, and still others may be removed from office before they make tenure. In the early stages of a politician’s career failure is more likely to result in the politician’s continuation value being “reset” to $1 - \delta$; failure later on is less likely to result in a reset. A politician is more likely to serve another term the more successful she has been in the past, but even politicians who start their careers with a good run may have short careers if they are unlucky enough to experience a sequence of bad shocks.

Finally, our observations about the path of play are not special features of the particular voter-optimal equilibrium characterized in Proposition 2. In fact, these observations are strengthened by the fact that all voter-optimal equilibria are equivalent in terms of the paths of play that they generate. We prove this in the appendix by observing
Figure 1: Simulated paths of continuation values for $\mu = 0.8$, $c = 0.9$, and $\delta = 0.85$; therefore, the important thresholds for continuation value are $1 - \delta = 0.15$, $1 - \delta^2 = 0.2775$ and $1 - (1 - \delta)c = 0.865$.

that the voter’s optimal continuation payoff as a function of the politician’s value $u$, is strictly concave on $[1 - \delta, 1]$. This then implies that the equilibrium actions solved for in Proposition 2 above are in fact uniquely optimal.

**Proposition 3.** If $\delta < c$, then every voter-optimal equilibrium generates the same distribution over the possible paths of play.

3 Extensions

3.1 Limiting Entrenchment

[TO BE WRITTEN]

3.2 Voluntary Retirement

[TO BE WRITTEN]

3.3 Adding Adverse Selection

[TO BE WRITTEN]
Appendix

A Proofs

[TO BE WRITTEN]

References


