On the optimality of entrenched lame ducks: an economic model of leadership and organizational change

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Abstract

We study the role of leaders in motivating people to follow their initiatives for organisational change. In our model, effective leaders are able to make changes because others will voluntarily agree to follow them. Ineffective leaders are unable to make changes because others will be unwilling to follow and will tacitly resist and block plans for change. We assume followers and leaders share the same objectives for successful change, but leaders have a limited tenure while followers are long lived. This time pressure for the leader can lead to outcomes in which followers are unwilling to follow as they do not believe the leader has a high chance of devising a successful strategy. This creates a lame duck leader, if the leader is entrenched and cannot be removed early. We show that entrenchment can nevertheless be optimal because it creates better incentives ex ante for both leader and followers. Key words: Leadership, entrenchment, authority. JEL numbers: D23, D72, D73, G30, M50.

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Remark

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1 Introduction

The purpose of the paper is to study leadership and organisational change, using a simple economic model. We use the model to study why it may be optimal to entrench a leader ex-ante, which leads to the ex-post possibility of a lame duck leader. However, the research is part of a wider agenda on change...
and leadership. In a previous paper (Dow and Raposo, 2005) we studied how incentive compensation for business leaders could distort firms’ strategies for change. More broadly, there are a host of important questions in organizational change: organization theory tends to the view that organizations display inertia and are generally slow to change, while economic theory has rarely been used to study change. In finance research, there are some important issues connected with change: why do companies restructure and what are the implications for shareholder value? These questions are relevant to research topics such as: conglomerates and the diversification discount; mergers; free-cash-flow theory; and overinvestment; and leveraged buyouts.

This paper models leadership with two key sets of assumptions: (1) only the appointed leader can lead, but this leadership is effective only if followers can be motivated to follow (2) the leader and the followers have the same basic aim – successful action – but the leader’s tenure is limited while the followers have a longer horizon.

Our first key assumptions contrasts with the standard view of leadership in Economics. The standard assumption is that leaders have authority by fiat, as in Hart and Holmstrom (2002); indeed they explicitly refer to their CEO as the “boss.” Although the boss has authority, he is not necessarily the best-informed person; hence, as in Dessein (2002) and Aghion and Tirole (1997) he may choose to delegate his decision making power. Our model shares the assumption that leadership is based on a formal role, but assumes the leader cannot command by fiat and can only become effective if others choose to follow. While research in sociology and management recognises the importance of followers, and the often voluntary nature of their behaviour, within economics research the assumption of voluntary followers is original to Hermalin’s (1998, 2003) work on leadership. There is also some similarity to social learning and related models where an agent’s actions influence the inferences of others about that agent’s ability, i.e. the precision of the signals he receives (Trueman, 1994, Prendergast and Stole, 1996).

Our second key assumption reflects our choice to focus on the simple, but we believe interesting case of shared objectives. Free-rider problems and other forms of conflicting objectives have been studied so exhaustively in economics that what we have chosen to focus on a different aspect of organisation theory. We believe because we believe it is realistic enough to be of interest, and at the same time is simple enough to allow interesting aspects of the problem to be analyzed in detail. Hermalin (1998, 2003) studies a team problem where leaders and followers share the firm’s profits, but also seek to reduce their own effort (hence a free rider effect). In common with Hermalin (1998, 2003) we rule

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1 We searched all journal articles on ECONLIT that contain the words “leader” or “leadership” in the title, and found exactly four articles in economics and finance journals that use these words in roughly the same sense used here (i.e. excluding “Stackelberg leader,” “price leader,” etc.). Three of these were not really economics papers however: two were articles on empirical tests of cognitive theory in the Journal of Business, while one was a paper on voter participation in elections in the American Economic Review. The fourth paper is Hermalin (1998).
out side-payments. In Trueman, the manager’s objective is the expectation of other agents perception of his ability. In Prendergast and Stole, the manager maximises a weighted average of this and the firms’ profits. Crawford and Sobel (1982) study the general problem of how congruence, or lack of congruence, in agents’ objectives distorts information transmission.

The basic model we study is an agency (moral hazard) problem. The leader receives signals (ideas, strategic plans) for action. The followers would like him/her to act only on when the signals are very signals but time pressure may cause him to lower his/her standards. If the leader is entrenched, he remains in office for a fixed term. We contrast this with an "agency" approach in which the followers can replace the leader when they want. We show that for the basic moral hazard problem, it is better to entrench the leader.

The model itself is more appealing when we combine the straight moral hazard problem with heterogeneity in leader types, although the results are not enriched. We show that the effect of introducing heterogeneity can introduce a trade-off, depending on the way good and bad leaders differ in terms of signal quality and frequency.

Two examples illustrate our model. First, imagine a military and political leader – the King – of a community under threat from a rival group. The King has information about the chance of a successful pre-emptive attack each period and can decide when to charge into battle. If his people follow and join the charge, the outcome may be victory or defeat. If they refuse to follow, the attack cannot succeed. The chance of victory is known only to the leader, so based on their estimate of this chance, the people decide whether to follow or not. If not, the leader becomes a lame duck serving out his reign and the followers simply mark time until he dies of natural causes and is replaced.

Second, consider the CEO of a firm that needs to make a big change, such as cost cutting or a merger. Although everybody agrees on the need for some kind of drastic change, only the CEO is able to work out a strategic plan and he has better information than others about the chances of success and the likely value-added of the plan. When the strategy is announced, the other senior managers and the other employees of the firm will decide whether to support his strategy wholeheartedly. If they don’t, the strategy will fail and the CEO will remain nominally in charge but in reality, will be lame duck until the end of his term.

The question both of these examples raise is – once a leader fails to attract followers, wouldn’t it be better to replace him immediately? We will show that, although better ex-post, in an ex ante sense such a policy would give change incentives for both leader and followers, leading to worse decisions and lower ex-ante utility. Entrenchment is optimal in this setting because it acts as a partial commitment device for followers that, in turn, improves the leader’s incentives.

Once we consider heterogeneity in leaders, the analysis becomes more complex. Depending on the nature of the differences between poor leaders and good leaders, inactivity could become a signal of either high or low ability. If it is a signal of low ability, there is a reason for removing leaders at an early stage. There is a trade-off between an incentive effect and an adverse selection
effect. Even so, if the frequency of poor leaders is small, entrenchment remains optimal.

2 The model

The game lasts for an unbounded number of periods. Followers may live for ever, but the leader lives for two periods and is then replaced with a new leader. The game ends either if the leader proposes action and is followed, or as a result of an exogenous event that occurs with probability \((1 - \alpha)\) each period (an attack from the enemy, or technological change that makes the firm obsolete).

In each period the leader can get a good signal (a good idea for attacking the enemy or changing the firm) with probability \(\varepsilon\) or a mediocre idea also with probability \(\varepsilon\). If the leader gets a good idea, his chance of success is \(p_H\) if he acts and is followed. Similarly, a mediocre idea has a chance of success \(p_L\) if the leader is followed \((1 > p_H > p_L > 0)\). Define \(p \equiv \frac{1}{2}(p_L + p_H)\).

At the start of each period, the leader may have an idea, which is privately observed. Simultaneously, the followers privately decide whether to follow him if he acts. Then if he acts, is followed, and succeeds, both leader and followers receive a payoff of 1 and the game ends. If he acts and is not followed, the leader receives a zero payoff and exits the game, and the followers receive 0 payoff for that period and then may continue to the next period when they get a new leader (unless, as occurs with probability \((1 - \alpha)\), the game ends as a result of the exogenous event). If he does not act, both leader and followers receive 0 payoff for that period and the game may continue to the next period (again, unless the game ends as a result of the exogenous event).

We call this the leadership model. We will compare it to the following alternative situations:

1. The first-best. Followers can choose the leader’s decision rule.

2. The short-term model. As in the leadership model, except that the leader is replaced every period.

3. The no-commitment model. As in the leadership model, except that followers can replace the leader in the second period if they decide not to follow him. The decision is made before they see whether the old leader has a signal; the new leader is installed immediately and may receive a signal for that period.

4. The authoritarian model. Followers always follow the leader: he has coercive power.

3 Equilibrium in the leadership model

Depending on the parameter values the model may have either a pure strategy equilibrium or a mixed strategy equilibrium; however, it is the mixed strategy equilibrium that is of interest for our analysis.\(^2\) It is natural for our model, with

\(^2\)The pure strategy equilibria are discussed in the appendix, together with a full characterization of the set of exogenous parameters where there is a MSE. Essentially however, the
its discrete parameter values, to have a mixed strategy equilibrium. It turns out that variants of the model with continuous distributions of the parameters, which would have pure strategy equilibria, are intractable.

If there is any chance of being followed at time 2, the leader will always act at time 2, regardless of his signal (it is a strictly dominant strategy). We will consider equilibria where the followers follow in the first period.\(^3\) Since he would be followed in period 1, the leader always acts on a good idea in that period (because his signal could not improve next period).

So, in mixed strategy equilibrium the leader uses a mixed strategy to decide to act if he receives a mediocre signal at time 1, and the followers use a mixed strategy to decide whether to follow at time 2. Let \(\gamma\) ("go") be the probability of the leader acting in the first period if his signal is \(p_L\) and \(\phi\) ("follow") be the probability of the followers following him in the second period. Then in the first period, because he is using a mixed strategy, the leader with a mediocre idea must be indifferent between acting and not acting:

\[
p_L = 2\alpha \varepsilon \phi
\]

The LHS is his expected payoff from acting immediately. As shown on the RHS, if he waits he will survive with probability \(\alpha\), get a signal with probability \(2\varepsilon\), the expected value of the signal is \(p\), and the chance of being followed next period is \(\phi\). Let \(V\) be the followers’ value in the first period of a leader’s term, and \(V’\) in the second period. Then:

\[
V’ = \max\{\alpha V, 2\varepsilon p + (1 - 2\varepsilon)\alpha V\}
\]

The payoff if they don’t follow is \(\alpha V\), while if they decide to follow and the leader acts (probability \(2\varepsilon\)), their expected payoff is \(p\) while if he doesn’t act it is \(\alpha V\). Since the followers are using a mixed strategy for period 2, they must be indifferent between following and not following, hence:

\[
V’ = \alpha V = p
\]

In the first period, followers’ expected payoff is

\[
V = \varepsilon p_H + \varepsilon \gamma p_L + (1 - \varepsilon (1 + \gamma))\alpha V’
\]

Substituting (3) into (4)

\[
\frac{p}{\alpha} = \varepsilon p_H + \varepsilon \gamma p_L + (1 - \varepsilon (1 + \gamma))\alpha p
\]

pure strategy equilibria will occur if either the good and bad signals are too similar (in which case the leader will always act) or too different (in which case he will never act on a poor signal in the first period.)

\(^3\) The general case where they may not always follow in the first period is worked out in the appendix, where we show this can only happen in the case of coordination failure where the followers never follow, and the leaders never act
Hence:
\[ \gamma = -\varepsilon p_L + \overline{p} (2\varepsilon + \alpha - \varepsilon \alpha - \frac{1}{\alpha}) \] (5)

From the leader’s IC condition we get
\[ \phi = \frac{p_L}{2\varepsilon \alpha \overline{p}} \]

For this equilibrium to exist, we require that the values for \( \phi \) and \( \gamma \) lie in the unit interval (since they are probabilities):
\[ \phi = \frac{p_L}{2\varepsilon \alpha \overline{p}} \leq 1 \] (6)
\[ \phi \geq 0 \] (7)
\[ \overline{p} (\varepsilon \alpha (2 - \alpha) + \alpha^2 - 1) > \varepsilon \alpha p_L \] (8)
\[ \frac{1 + \alpha}{\alpha} > 2\varepsilon \] (9)

Conditions (7) and (9) always hold. Condition (9) is \( \gamma < 1 \) and is true since \( \varepsilon < \frac{1}{2} \) (which implies the denominator of (5) is positive). Condition (8) is \( \gamma > 0 \). As shown in the appendix, if (6) or (8) do not hold we have a pure strategy equilibrium. In the main part of the paper, we shall assume these four conditions from now on. In particular, as will be seen below, (8) is the condition that followers prefer the leader to wait rather than acting on a mediocre idea.

**Proposition 3** (pressure to perform) The leader sets lower standards for action in period 2

**Proof.** In period 1, the leader will always act on a good idea but only sometimes act on a bad idea. The average quality of his ideas (when he acts) is \( \frac{p_H + \gamma p_L}{1 + \gamma} \) (which exceeds \( \overline{p} \)). Sometimes when he gets a mediocre idea he chooses to wait until the next period when he may get a better one. In period 2 on the other hand, he has nothing to gain from waiting so he always acts on any idea (average quality \( \overline{p} \)).

**Proposition 4** (lame ducks) The followers always follow the leader when he acts in period 1, but may refuse to follow in period 2.

**Proof.** The result has been shown above.

The reason for the result is that the leader’s standards are lower in period 2, so the followers may wait until the following period when they will get a new leader applying higher standards.

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4Intermediate steps in derivation are \(-\varepsilon \gamma p_L + \varepsilon \gamma \alpha \overline{p} = \varepsilon p_H + \alpha \overline{p} - \varepsilon \alpha \overline{p} - \frac{\overline{p}}{\alpha} \) and \( \gamma (-\varepsilon p_L + \varepsilon \alpha \overline{p}) = -\varepsilon p_L + \overline{p} (2\varepsilon + \alpha - \varepsilon \alpha - \frac{1}{\alpha}) \)
4 Benchmark Cases

We can now contrast the model with the different benchmarks.

4.1 First best

If the leader chooses the good ideas only, the followers’ per-period payoff is $\varepsilon p_H$ and their value is

$$\frac{\varepsilon p_H}{1 - (1 - \varepsilon)\alpha}$$

(10)

Likewise if the leader chooses all ideas, their value is

$$\frac{2\varepsilon p_L}{1 - (1 - 2\varepsilon)\alpha}$$

(11)

Hence the first-best value is

$$V_{FB} = \max\left\{ \frac{\varepsilon p_H}{1 - (1 - \varepsilon)\alpha}, \frac{2\varepsilon p_L}{1 - (1 - 2\varepsilon)\alpha} \right\}$$

(12)

**Proposition 5** (followers prefer mediocre ideas to be discarded) With the parameter values assumed above (conditions (6) to (9)), the followers prefer the leader to use only good ideas.

**Proof.** Rearranging the condition that

$$\frac{\varepsilon p_H}{1 - (1 - \varepsilon)\alpha} > \frac{2\varepsilon p_L}{1 - (1 - 2\varepsilon)\alpha}$$

we reach

$$\varepsilon p_H > (1 - \alpha + \varepsilon \alpha)p_L$$

(13)

This can be rewritten: $2\alpha \varepsilon p > p_L(1 - \alpha + 2\varepsilon \alpha)$, or $2\alpha \varepsilon p > p_L(1 - \alpha + \varepsilon \alpha) + p_L \varepsilon \alpha$. From (8) we have $2\alpha \varepsilon p > p_L(1 - \alpha^2 + \varepsilon \alpha^2) + p_L \varepsilon \alpha$, so it remains to show that $p_L(1 - \alpha^2 + \varepsilon \alpha^2) > p_L(1 - \alpha + \varepsilon \alpha)$. ie

$$\frac{p_L}{p_L} > \frac{(1 - \alpha + \varepsilon \alpha)}{(1 - \alpha^2 + \varepsilon \alpha^2)}$$

(14)

which follows because the RHS<1. □

4.2 Short-term model

There is replacement every period.

$$V_{ST} = 2\varepsilon p_L + (1 - 2\varepsilon)\alpha V_{ST}$$

$$V_{ST} = \frac{2\varepsilon p_L}{1 - (1 - 2\varepsilon)\alpha}$$
Proposition 6 (Short-term model worse than leadership model). The followers are worse off with replacement every period than with the leadership model:

\[ V > V_{ST}. \]

Proof. \( V > V_{ST} \) is equivalent to:

\[ \frac{1}{\alpha} > \frac{2\varepsilon}{1 - (1 - 2\varepsilon)\alpha} \]

i.e. \( 1 - (1 - 2\varepsilon)\alpha > 2\varepsilon\alpha \), which holds because \( \alpha < 1 \). ■

4.3 No-commitment model

The followers can decide to replace the leader after the first period. This seems like an advantage for them, since in the basic model when they decide not to follow in the second period, they have to wait and allow a period to elapse before picking the leader. Here they can replace him immediately. This seems like a relevant comparison because we allow the followers to eliminate the (costly) possibility of lame ducks.⁵

If the followers do follow in the second period, they obtain

\[ 2\varepsilon\varphi + (1 - 2\varepsilon)\alpha V_{NC} \tag{15} \]

If they replace the leader, they get \( V_{NC} \) right away. Hence

\[ V_{NC}' = \max\{2\varepsilon\varphi + (1 - 2\varepsilon)\alpha V_{NC}, V_{NC}\} \tag{16} \]

We will analyse this model further in the next section.

4.4 Authoritarian model

In the authoritarian model, the followers commit to following the leader whenever he acts (or alternatively he has power to coerce them). Ex-post they may regret this commitment, but because the leader knows he will be followed in period 2, he is less hasty in period 1 and hence will be less willing to act on a mediocre idea. This in turn makes the followers better off.

Proposition 7 In the authoritarian model, followers are better off than in the leadership model (but not as well off as in first-best):

\[ V_{FB} > V_A > V. \]

⁵We do not allow the replacement decision to be conditional on the leader's decision to act or not – this would give the followers two opportunities for a signal to arrive in the same period – the total probability of receiving a signal in the period would be \( 1 - (1 - 2\varepsilon)^2 \) instead of \( 2\varepsilon \).
**Proof.** If the followers commit to following the leader, he will either act only on $p_H$ in the first period, or use a mixed strategy. In the latter case he must be indifferent so $p_L = 2\alpha \varepsilon p$ which is a knife-edge condition on the exogenous parameters and can safely be ignored. In the former case, incentive compatibility for the leader requires $p_L < 2\alpha \varepsilon p$, which follows from our assumed condition (6), and so the values for the followers can be computed from

\[
V_A = \varepsilon p_H + (1 - \varepsilon) \alpha V_A'
\]

\[
V_A' = 2\varepsilon p + (1 - 2\varepsilon) \alpha V_A
\]

giving:\(^6\)

\[
V_A = \frac{1 + (1 - \varepsilon)\alpha}{1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2} [2\varepsilon p - \varepsilon p_L]
\]

From (3) $V_A > V$ is equivalent to

\[
\frac{1 + (1 - \varepsilon)\alpha}{1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2} > \frac{v}{\alpha}
\]

i.e.

\[
2\varepsilon p + 2\varepsilon p\alpha^2 (1 - \varepsilon) - \alpha \varepsilon p_L > v - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2
\]

leading to\(^7\)

\[
2\varepsilon p + \alpha \varepsilon p_L > v[1 - \alpha^2 (1 - \varepsilon)] + \alpha \varepsilon p_L
\]

which is condition (8). Next, to show $V_A < V_{FB}$, we need

\[
\frac{1 + (1 - \varepsilon)\alpha}{1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2} < \frac{\varepsilon p_H}{1 - (1 - \varepsilon)\alpha}
\]

i.e.\(^8\)

\[
[1 + (1 - \varepsilon)\alpha]p_L < \varepsilon \alpha p_H
\]

Now, from condition (8) we know $p_H \varepsilon \alpha > v[1 - \alpha^2 + \varepsilon \alpha^2]$ so (26) holds if:

\[
[1 - \alpha^2 + \varepsilon \alpha^2] > [1 - (1 - \varepsilon)\alpha]p_L
\]

But, we have already shown above (14) that this holds. \(\blacksquare\)

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\(^6\)Intermediate steps are: $V_A = \varepsilon p_H + (1 - \varepsilon) \alpha (2\varepsilon p + (1 - 2\varepsilon) \alpha V')$ and $V_A = \varepsilon p_H + (1 - \varepsilon) \alpha 2\varepsilon p$.

\(^7\)Intermediate steps are: $2\varepsilon p > \alpha \varepsilon p_L > v - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2$ and $2\varepsilon p > v[1 - \alpha^2 (1 - \varepsilon)] + \alpha \varepsilon p_L$.

\(^8\)Intermediate steps are:

\[
\frac{1 - (1 - \varepsilon)\alpha}{1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2} < \frac{\varepsilon p_H}{1 - (1 - \varepsilon)\alpha}
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon)\alpha p_H + p_H] < [1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2]p_H
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon)\alpha p] < [1 - (1 - \varepsilon)(1 - 2\varepsilon) \alpha^2] - 1 + (1 - \varepsilon)\alpha p_H
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon)\alpha \alpha] < [1 - (1 - 2\varepsilon) \alpha]p_H
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon) \alpha] < [1 - (1 - 2\varepsilon) \alpha]p_H + \varepsilon \alpha p_H
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon) \alpha] < \varepsilon \alpha p_H
\]

\[
[1 - (1 - \varepsilon)\alpha][2(1 - \varepsilon) \alpha] < \varepsilon \alpha p_H
\]
5 Optimal entrenched lame ducks

We now complete the investigation of the model with no commitment. In the leadership model, we have shown (proposition (4)) that sometimes the followers refuse to follow the leader in the second period, and he becomes a lame duck, simply waiting until his term of office expires. This is costly, and in that event the followers would be better off discarding the leader immediately and installing his successor – this is exactly what the no-commitment model allows them to do. However, if the leader anticipates this his incentives in the first period will be worse – if he receives a mediocre signal, he will be less willing to wait until the second period. We now show that this adverse incentive effect for the leader more than outweighs the benefits of more efficient replacement – in fact, the followers are no better off than in the short-term model where replacement is mandatory every period. Hence, it is optimal for the followers if the leader’s term of office gives him entrenchment rights allowing him to serve out his term even if he no longer attracts followers.

Proposition 8 (Optimal entrenched lame ducks). It is better for the followers if the leader has entrenchment rights, as in the leadership model, than if they can replace the leader at will in the second period, as in the no-commitment model. The no-commitment model gives them the same value as the short-term model.

**Proof.** We compute $V_{NC}$, the value for the followers, and show that it equals $V_{ST}$.

Suppose first that, in equilibrium, the followers use a mixed strategy for the replacement decision in the no-commitment model. Then they are indifferent and:

\[ V_{NC} = 2\bar{\tau} + (1 - 2\epsilon)\alpha V_{NC} = V_{NC} \]

Hence

\[ V_{NC} = \frac{2\bar{\tau}}{1 - (1 - 2\epsilon)\alpha} = V_{ST} \quad (28) \]

This shows the result. Now suppose the followers use a pure strategy for the replacement decision. If they decide always to replace, we are back in the short term case and indeed $V_{NC} = V_{ST}$. If they decide never to replace (we will show this is impossible), we have

\[ V'_{NC} = 2\bar{\tau} + (1 - 2\epsilon)\alpha V_{NC} \geq V_{NC} \quad (29) \]

Assume strict inequality (if not, then $V_{NC} = V_{ST}$ and we are done). If we consider the leader’s decision in period 1, it is the same as in the authoritarian model (he is always followed in the second period) so he waits if he gets a

\[ \text{9The followers would never refuse to follow and NOT replace, as this would give value } \alpha V_{NC} \text{ instead of value } V_{NC} \text{ for refusing to follow and replacing.} \]
mediocre idea. The follower’s payoffs then are the same as in the authoritarian model:

\[ V_{NC} = \epsilon p_H + (1 - \epsilon)\alpha V_{NC}' \]
\[ V_{NC}' = \epsilon p_L + \epsilon p_H + (1 - 2\epsilon)\alpha V_{NC} \]

The solution of this pair of equations has \( V_{NC} > V_{NC}' \), as can be shown as follows. Gaussian elimination gives:

\[ V_{NC}[1 - \alpha^2(1 - 2\epsilon)(1 - \epsilon)] = \epsilon \alpha(1 - \epsilon)p_L + \epsilon[1 + \alpha(1 - \epsilon)]p_H \tag{30} \]
\[ V_{NC}'[1 - \alpha^2(1 - 2\epsilon)(1 - \epsilon)] = \epsilon p_L + \epsilon[1 + \alpha(1 - 2\epsilon)]p_H \tag{31} \]

Subtracting one from the other, we see that \( V_{NC} - V_{NC}' \) is proportional (with a positive constant \( 1 - \alpha^2(1 - 2\epsilon)(1 - \epsilon) \)) to

\[ p_L(\alpha - \alpha \epsilon - 1) + p_H \alpha \epsilon \tag{32} \]

This is positive iff

\[ p_H \alpha \epsilon > p_L(1 - \alpha + \alpha \epsilon) \tag{33} \]

From (6) we have

\[ p_H \alpha \epsilon > p_L(1 - \alpha) \tag{34} \]

which implies the condition (33) so long as \( 1 - \alpha + \alpha \epsilon < 1 - \alpha \epsilon \), which follows from \( \epsilon < \frac{1}{2} \).

We have now shown \( V_{NC} > V_{NC}' \), which contradicts our earlier assumption that the followers choose not to replace the leader in the second period. ■

6 Comments, extensions

6.1 Heterogeneity

In our model, long contracts and entrenchment are favoured because they induce better behaviour from leaders – leaders are willing to wait longer for the most propitious moment for action. A standard argument against job security would be that leaders are heterogeneous, and a long contract gives less opportunity to sort out good from bad leaders, replacing the bad ones. Several papers have studied models in which agents/bosses/experts are assessed on the basis of their actions in early periods, and may then remain in office for further periods if successful.

In this section we discuss how adding heterogeneity would affect the conclusions of our model. However, the effect of heterogeneity is not unambiguous. For some specifications, inactivity signals a poor leader and hence the no-commitment model becomes more attractive for followers. For other specifications, inactivity signals a good leader and our conclusions remain. The difference turns on the type of heterogeneity. Signals are characterised by their overall frequency of arrival, and by the quality distribution of signals conditional
on arrival. A poor leader could have a lower chance of having an idea, but the same mix of good and bad ideas. Alternatively, a poor leader could have the same chance of having an idea, but the ideas he does have could be worse. In the former case, inactivity is a sign of a good leader and hence, heterogeneity does not make followers prefer non-entrenched leaders.

We consider three possible modifications to the analysis:

Case A) the weak leader has the same total chance of receiving a signal ($2\varepsilon$) but all his ideas are mediocre ($p_L$).

Case B) the weak leader has a lower chance of receiving a signal (total chance $\varepsilon$), but is equally likely to have a good or bad idea.

Case C) the weak leader has an $\varepsilon$ chance of $p_L$ (just like a good leader), and no chance of $p_H$.

In case A, inactivity is good. In case B the chance of action is less than epsilon, so activity is good. (good leader act with prob epsilon (1+gamma).

In case C, inactvity is bad.

6.2 Too little change?

I will compare the base model against the benchmarks to assess whether there is "too much" or "too little" change in equilibrium.

6.3 Transformational change: Coercion versus motivation

The economics literature typically assumes the CEO is a "boss" with coercive power; here we have taken the opposite point of view that leaders must motivate people to choose to follow them. The management/OB literature on leadership distinguishes between visionary leaders, or strategic leaders, and administrators. Routine administration may allow coercion of followers rather than requiring voluntary cooperation. It is when you make a really big transformation that you need followers. This may impose an extra constraint when deciding what contract (entrenchment rights) to set for the leader.

7 Appendix

7.1 PSE

It’s obvious that:

- the leader always acts at 2
- acts at 1 on $p_H$
- may or may not at 1 on $p_L$

(a) does act on $p_L$

IC for leader:

\[ p_L \geq 2\alpha_3\tau \]  

\[ (35) \]
Followers’ value function:

\[ V = 2 \varepsilon p + (1 - 2 \varepsilon) \alpha V' \]  

(36)

\[ V' = 2 \varepsilon p + (1 - 2 \varepsilon) \alpha V \]  

(37)

where \( V \) is the value at the start of period 1 and \( V' \) at the start of period 2.

Solution

\[ V = V' = \frac{2 \varepsilon p}{1 - \alpha (1 - 2 \varepsilon)} \]  

(38)

IC for the follower is always satisfied, this is easy to show.

(b) acts only on \( p_H \)

IC for leader:

\[ p_l \leq 2 \alpha \varepsilon p \]  

(39)

which is the opposite of (35). Followers’ value function:

\[ V = \varepsilon p_H + (1 - \varepsilon) \alpha V' \]  

(40)

\[ V' = 2 \varepsilon p + (1 - 2 \varepsilon) \alpha V \]  

(41)

solution:

\[ V = \varepsilon p_H + 2(1 - \varepsilon) \alpha \varepsilon p + \alpha^2 (1 - \varepsilon) (1 - 2 \varepsilon) V \]  

(42)

hence

\[ V = \frac{\varepsilon (p_H + 2(1 - \varepsilon) \alpha \varepsilon p)}{1 - \alpha^2 (1 - \varepsilon) (1 - 2 \varepsilon)} \]  

(43)

IC for the followers in period 2 is \( \overline{p} \geq \alpha V \), i.e.

\[ \overline{p} \leq \frac{\varepsilon \alpha p_L}{-1 + \alpha^2 - \varepsilon \alpha^2 + 2 \varepsilon \alpha} \]  

(44)

Characterization:

if (35) holds we have PSE case a

if (35) fails but (44) holds we have PSE case b

if (35) and (44) both fail we have MSE.

7.2 Coordination failure

As is standard, the model can have coordination failure whereby in equilibrium, followers decide not to follow because they do not expect the leader to act, and the leader does not act because he believes he would not be followed. We do not consider this possibility to be particularly interesting or relevant. However, for the sake of completely identifying all equilibria we do give the details here.

In the short-term model, this could occur. However, if there is a positive probability of being followed, the leader will act, while if there is a positive
probability he will act, the followers will follow. Hence the coordination failure can arise only with pure strategies.

Consider now the main model. Suppose the followers will follow with probability $\phi_1$ in period 1 and $\phi_2$ in period 2.\footnote{We assume these are uncorrelated. We also choose to write the mixed strategy as a behavioural strategy mixture. (ref.)} If both $\phi_1$ and $\phi_2$ are non-zero, condition (3) still holds ($V' = \alpha V$) and we have an analogous condition from period 1, $V = \alpha V'$. But these together imply that $V = 0$ hence there is no action at all in either period of the model – this is a contradiction because if $\phi_2 > 0$, leaders would act in period 2 and followers would get a strictly positive expected payoff.

If $\phi_2 = 0$, we have a coordination failure in the second period – nobody follows, and leaders never act. The first period then becomes like a one-period model, but with an alternating dead period corresponding to the second period of the leader’s tenure. If $\phi_2 = 1$, we have $V = \alpha V'$. This implies the first period follower’s value is lower than the second period’s. Now if we look at the expressions for the values:

(i) in case the leader always acts on an idea in both periods:

\begin{align*}
\bar{p} &= \alpha V' = V \quad (45) \\
V' &= 2\epsilon \bar{p} + (1 - 2\epsilon) \alpha V \quad (46)
\end{align*}

(45), together with $\bar{p} = V$, implies $V' = V[2\epsilon + (1 - 2\epsilon)\alpha] < V$, contradicting $V = \alpha V'$ which implies $V < V'$.

(ii) in case the leader leads only on $p_H$ in period 1:

\begin{align*}
p_H &= \alpha V' = V \\
V' &= 2\epsilon \bar{p} + (1 - 2\epsilon) \alpha V
\end{align*}

Similarly, we have $V' < V[2\epsilon + (1 - 2\epsilon)\alpha] < V$, again a contradiction.

(iii) in case he randomizes at period 1,

\begin{align*}
\frac{p_H + \gamma p_L}{1 + \gamma} &= \alpha V' = V \quad (47) \\
V' &= 2\epsilon \bar{p} + (1 - 2\epsilon) \alpha V \quad (48)
\end{align*}

We have $V' < V[2\epsilon + (1 - 2\epsilon)\alpha] < V$, again a contradiction.

To summarise, we have now shown there are no mixed strategy equilibria other than the one analyzed in the text, and the only coordination failure equilibria are: total breakdown in both periods, total breakdown in period 1, and total breakdown in period 2.
References


[17] Salanié, B. The economics of contracts


[19] Rey and Salanie 90, 92


