# Ownership, Investment and Governance: The Costs and Benefits of Dual Class Shares

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# Motivation

- Google Founders' IPO letter: "...In the transition to public ownership, we have set up a corporate structure that will make it harder for outside parties to take over or influence Google. This structure will also make it easier for our management team to follow the long term, innovative approach emphasized earlier. This structure, called a dual class voting structure...."
- Yet, a large part of the theoretical literature finds that dual-class structures suboptimal for the existing shareholders.
  - Optimality of one vote-one share $\Rightarrow$ Grossman & Hart (1988), Harris & Raviv (1988, 1989)
  - Why shareholders allow a dual-class recapitalization $\Rightarrow$ Ruback (1988)
  - Issuance of dual-class shares in IPO's $\Rightarrow$ Bebchuck and Zingales (2005)

# Objective of our paper...

- To further our understanding of the link between ownership structure, governance and the investment decision
  - Governance evolves as an endogenous shareholders' choice
  - Separation of cash flow rights and voting rights alleviates an under-investment problem
- Prior theoretical research concludes that dual-class share structure leads to lower efficiency in the market for corporate control
- Impact of separation of voting and dividend rights on a firm's investment decision has not been analyzed
- We analyze a firm facing a potential takeover threat from a rival firm with a manager-controlling shareholder
  - We develop our theory in a rational contracting environment with control rents.

# Main Intuition

- When a manager owns voting shares and
  - the firm issues new voting shares to finance a scale-expanding investment – the manager suffers dilution of his/her ownership position
  - This increases the risk that the manager can lose control of the firm
    - ★ Reduces his/her expected private benefits of control and expected wealth.
- Debt does not necessarily solve the underinvestment problem.
  - Debt often carries with it the risk of bankruptcy (consequently, loss of control) due to covenant violation.
- As a consequence, the manager may forgo some positive NPV investments in order to protect his control rights.
  - Under-investment can be extremely costly for the existing shareholders and reduces future dividends.
    - ★ Can non-voting shares play a positive role?

# Why Non-voting Shares?

- Potential benefits of non-voting shares
  - Non-voting shares allow a firm to raise investment funds
    - ★ without diluting the manager's control rights, or
    - ★ without issuing more debt which can require stricter covenants.
  - Hence, non-voting shares help to alleviate the under-investment problem.
  - Also, issuance of non-voting shares raise the takeover premium on existing voting shares conditional on a bid.
- Potential benefits of non-voting shares
  - Dividend dilution
    - ★ Non-voting shares do not get potential takeover premiums, hence a relatively larger number of non-voting shares must be issued to raise the same amount of investment funds.
  - Management entrenchment
    - ★ Private benefits plays a bigger role in the control contest – lowers probability of a takeover as lower "quality" managers can use their private benefits to thwart value enhancing takeover bids.

# Main Results...

- The issuance of non-voting equity can be optimal
  - when the benefits of higher investment outweigh the costs of managerial entrenchment and significant dividend dilution
- We obtain conditions under which it is optimal for firms to issue non-voting stock for both outside shareholders and the incumbent
- Our model produces new empirical predictions regarding
  - the relationship between firm valuation, and the likelihood of dual-class recapitalization, which are functions of
    - ★ incumbent management quality
    - ★ management ownership
    - ★ management private benefits

# Past empirical study...

- Empirical research is mixed. It reports both positive and negative abnormal announcement date returns for dual-class re-capitalizations
- Masulis, Wang & Xei (JF 2009) use U.S. dual-class companies to examine how divergence between insider cash-flow and control rights affects the extraction of private benefits.
  - They find as the divergence in rights becomes larger
    - ★ Average acquisition announcement return falls
    - ★ Average CEO compensation level rises
- Interestingly, they find that
  - between 1995 and 2003, for the 410 acquisition made by U.S. dual-class firms, the 5-day CAR is $+1.369\%$ for the acquiring firm.

# Our Firm

- A typical publicly traded firm
- Starts with one class of shares – the "commons."
  - $N$ common shares outstanding
  - Each common share has
    - ★ equal claim to cash flows
    - ★ equal voting rights.
  - All participants are risk-neutral
  - Discount rate is zero
  - All securities have prices equal to their expected payoffs
  - There are four players in our model
    - ★ The incumbent manager
    - ★ Existing outside shareholders
    - ★ Potential new investors
    - ★ Potential rival manager

# The Incumbent...

- The incumbent is the one who
  - Searches for new investment opportunities and conducts an initial evaluation of potential investments.
  - Chooses investment projects to undertake
- The incumbent maximizes the firm's market value as well as his own private benefits of control
  - The incumbent's public quality, $a_I$, and investment decision, $x$ determines a firm's value
  - The incumbent's ability to extract private benefits, $b_I$, and investment, $x$ determines his private benefits
    - ★ Private benefits reduce the firm's market value dollar for dollar
- The objective function, $w_I(\cdot)$, $a_I$ and $b_I$ are public knowledge
- The incumbent owns
  - a large minority block – $\beta N$ shares, where $\beta < 1/2$
  - is the largest shareholder, but is wealth constrained

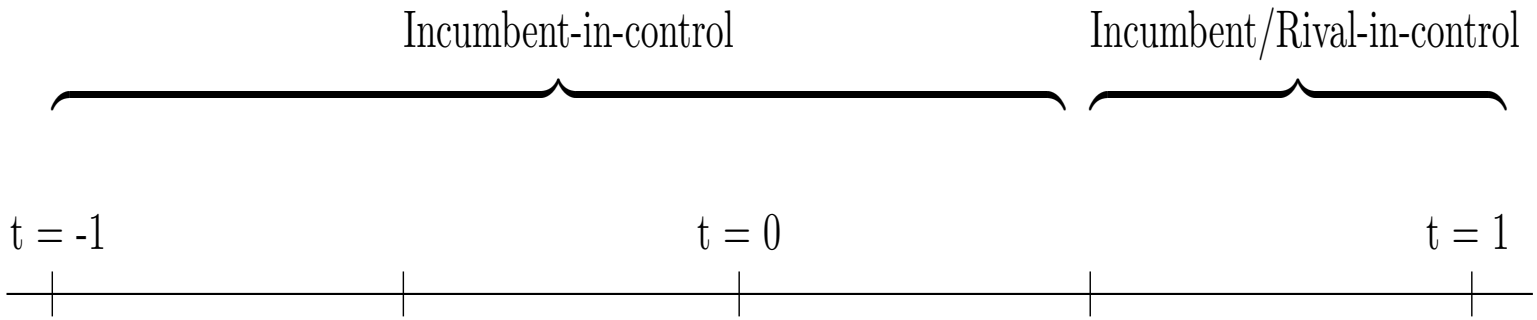
# Shareholders, Rival....

- A rival's abilities are unknown, the probability distribution of these abilities is publicly known
- Existing shareholders are the investors who own the firm.
- New investors buy securities that the firm issues to finance its new investments.
- Shareholders are able to influence broad corporate objectives through simple majority votes
  - Security types the firm can issue to raise fresh capital (choice of equity class)
  - Changes in control of the firm
- Each individual outside shareholder wants to maximize the value of his/her holdings.
- The rival offers to buy the firm, if he values the firm higher than the incumbent (public value plus value of the private benefits).

# Investment Opportunity

- Our firm faces an new investment opportunity.
- The new project generates
  - public value for the shareholders ($NPV > 0$) and
  - private benefit that accrues to the firm's manager.
- No internal financing or debt financing is available; hence, the firm needs to issue new shares to fund the new project.
- Incumbent decides on a firm's new investment level, $x$
- The realized value of the project is "Investment + NPV$_i$+ Noise" or $x + a_i\, P(x) + \varepsilon_x$
  - $P(x)$ is concave and differentiable with a unique maximum at $\bar{x}$
  - Manager-in-control
    - ★ Incumbent ($I$) or Potential rival manager ($R$)
    - ★ Productivity of managers vary: $a_i \in [0, 1]$ measures manager in control's ability to generate cash flows.

# Temporal Evolution of the Model



# Control Contest: If voting shares are issued..

- A change in control occurs when the rival can offer a higher per-share value to outside shareholders than the incumbent.
- If $n^1$ voting shares are issued to finance the investment, then the incumbent retains control if

$$\frac{FV_I}{N+n^1}+\frac{b_I\ a_I\ P(x)}{(1-\beta)\,N+n^1}\geqslant\frac{FV_R}{N+n^1}+\frac{b_R\ a_R\,P(x)}{(1-\beta)\,N+n^1}.$$

- Simplifying gives $a_I\left(1+\alpha\,\kappa^1\,b_I\right)\geqslant a_R\left(1+\alpha\,\kappa^1\,b_R\right)$
  - where $\kappa^1=\frac{N\,\beta}{(1-\beta)N+n^1}=\frac{\text{Incumbent's Voting Shares}}{\text{Outside Investors' Voting Share}}$.

# Control Contest: If non-voting shares are issued..

- A change in control occurs when the rival can offer a higher per-share value to the outside shareholders than the incumbent.
- If $n^0$ nonvoting shares are issued to finance the investment, then the incumbent retains control if

$$\frac{FV_I}{N+n^0}+\frac{b_I\ a_I\,P(x)}{(1-\beta)\,N}\geqslant\frac{FV_R}{N+n^0}+\frac{b_R\ a_R\,P(x)}{(1-\beta)\,N}.$$

- Simplifying gives $a_I\left(1+\alpha\,\kappa^0\,b_I\right)\geqslant a_R\left(1+\alpha\,\kappa^0\,b_R\right)$
  - where $\kappa^0=\frac{N\,\beta+n^0}{(1-\beta)N}=\frac{\text{Incumbent's Voting Shares+Non-Voting Shares}}{\text{Outside Investors' Voting Shares}}$

# Control Contest: Endogenous takeover bounds..

- We can solve for the minimum ability of any potential rival to extract private benefits ($b_R$), such that the incumbent retains control.

$$\underline{b}_R^j = \frac{1}{\kappa^j}\left(\frac{a_I}{a_R} - 1\right) + b_I \frac{a_I}{a_R}, \quad j = 0, 1,$$

- For any given values of the public qualities of the incumbent and rival ($a_I$ and $a_R$ respectively) and private benefit parameter of incumbent ($b_I$),
  - if any potential rival's ability to extract private benefit, $b_R$ is less than $\underline{b}_R^j$, then the incumbent retains control;
  - otherwise, potential rival gains control.

# Control Contest: Endogenous takeover bounds..

- Rivals with public quality $a_R$ higher than $\bar{a}_R^j$ can gain control of the firm regardless of their private benefits (i.e., even if $b_R = 0$)

$$\bar{a}_R^j = a_I(1 + \alpha\,\kappa^j\,b_I)$$

- Rivals with public quality lower than $\underline{a}_R^j$ cannot gain control, even if he has the highest possible ability to extract private benefits

$$\underline{a}_R^j = \frac{a_I(1 + \alpha\,\kappa^j\,b_I)}{1 + \alpha\,\kappa^j} = \frac{\bar{a}_R^j}{1 + \alpha\,\kappa^j}$$

# Effect of Investment on Control Contest

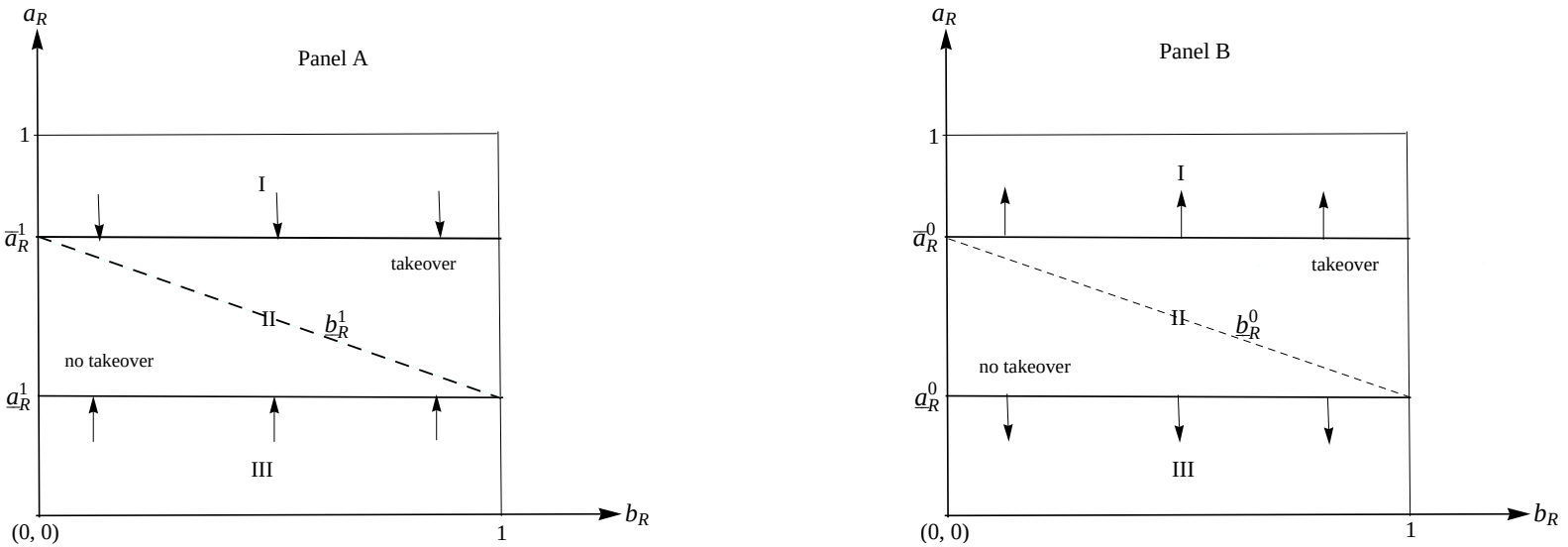



Figure: Panel A depicts the case when the incumbent issues voting shares to fund the investment. Panel B depicts the case when the incumbent issues nonvoting shares to fund the investment. In panel A, region II gets squeezed, whereas in panel B region II expands. Thus, private benefit plays a more important role in a control contest if non-voting shares are issued to finance new investments as opposed to voting shares.

# Decision Problem

- The incumbent manager's decision problem

$$\max_{x} \left[ N \beta V_D^j(x) + \phi^j b_I \; P(x) \right].$$

- The existing shareholder's decision problem

$$\max_{j=0,1} V_1^j\left(\hat{x}^j\right).$$

- Both the manager and the outside shareholders are assumed to be interested in maximizing their expected wealth.

# Probability of Incumbent Retaining Control

- Endogenous likelihood of incumbent manager retaining control if he invests $x$ is

$$\begin{aligned}\phi^j &= \int_0^{\underline{a}_R^j}\int_0^1 db_R\, da_R + \int_{\underline{a}_R^j}^{\bar{a}_R^j}\int_0^{\underline{b}_R^j} db_R\, da_R \\ &= \left(a_I(1+b_I\, k^j\alpha)\,\frac{\log(1+k^j\,\alpha)}{k^j\alpha}\right).\end{aligned}$$

- The first term is where the rival's public quality is very low and the rival has no hope of gaining control regardless of his ability to extract private benefits.
- The second term is where the rival's public quality is such that the incumbent retains control only if the rival's ability to extract private benefits is lower than $\underline{b}_R^j$.
- Otherwise, rival gains control.

# Numerical Example 1

**Table I**

| Initial number of shares outstanding 100; incumbent manager owns 50 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Existing Firm Value | | Investment Opportunity | | | | | Number of New Shares Issued |
| Public Value | Private Value | Investment | Incumbent Manager | | Rival Manager | | |
| | | | Addition to Public Value | Addition to Private Value | Addition to Public Value | Addition to Private Value | |
| 2.00 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 1.00 | 1.10 | 0.06 | 1.18 | 0.00 | 50.00 |
| 2.00 | 0.20 | 2.00 | 2.12 | 0.07 | 2.20 | 0.00 | 100.00 |

# Numerical Example 2

**Table II**

| Voting Rights Ownership and Probability of Retaining Control under Different Types of Equity Financing and Different Investment Levels | | | | |
|---|---|---|---|---|
| Investments | Voting Shares Issued to Finance New Investment | | Nonvoting Shares Issued to Finance New Investment | |
| | Managerial Ownership of Voting Rights | Probability of Retaining Control | Managerial Ownership of Voting Rights | Probability of Retaining Control |
| 0.00 | 50.00% | 1.00 | 50.00% | 1.00 |
| 1.00 | 33.00% | 0.95 | 50.00% | 1.00 |
| 2.00 | 25.00% | 0.79 | 50.00% | 1.00 |

# Numerical Example 2

**Table III**

| Payoff of Incumbent Manager and Outside Shareholders' under Different Types of Equity Financing and Different Investment Levels | | | | |
|---|---|---|---|---|
| Investments | Voting Shares Issued to Finance New Investment | | Nonvoting Shares Issued to Finance New Investment | |
| | Manager's Payoff | Outside Shareholders' Payoff | Manager's Payoff | Outside Shareholders' Payoff |
| 0.00 | 1.2000 | 1.0000 | 1.2000 | 1.0000 |
| 1.00 | 1.2990 | 1.0520 | 1.3100 | 1.0500 |
| 2.00 | 1.2817 | 1.0684 | 1.3300 | 1.0600 |

- For investment of \$1 the public value: $2 + (0.95 \times (1.1 - 1) + 0.05 \times (1.18 - 1)]$ or 2.104.
- For Investment of \$1 the private benefit is $0.95 \times 0.26$ or 0.247.
- The value of the incumbent's stake if he invests \$1.00 is $0.5 \times (2.104) + 0.247$ or 1.299.
- For the investment level \$1.00, the shareholders' expected wealth is $0.5 \times 2.104$ or 1.052.

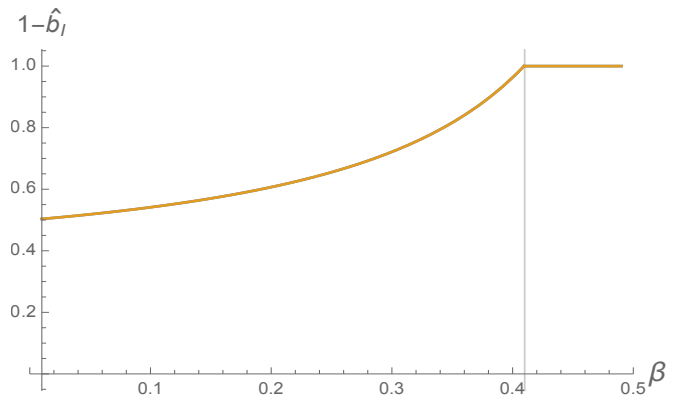
# Numerical Example 3

- From the table it can be seen that there are situations in which it is value increasing for outside shareholders to allow the incumbent to issue non-voting shares to finance investments.
- This increases the outside shareholders' wealth from \$1.052 to \$1.06.
- This is true regardless of the fact that non-voting shares are likely to entrench the incumbent and prevent better rivals from taking over the firm.
- The difference in the value of the shares owned by the existing outside shareholders when voting and non-voting shares are used to finance the investment is a cost of entrenchment
  - For investment level \$1, the costs entrenchment is \$1.052 − \$1.05 = \$0.002 per dollar of investment.

# Underinvestment...

When the incumbent manager is forced to use voting shares to fund all new investments and he has a strictly positive $\beta$ so that new investment dilutes his voting power, then the incumbent manager forgoes some positive NPV projects if his ability to extract private benefits $b_I \geqslant \hat{b}_I$, where

$$\hat{b}_I = \min \left[ \frac{\beta + \frac{2(1-\beta)^2 \, log\left(1+\frac{\beta}{1-\beta}\right) - \frac{2(1-\beta)^2}{\beta}}{\beta^2}}{2(1-\beta) - \frac{\beta^2}{1-\beta}}, 1 \right]$$




As incumbent's ownership increases, likelihood of underinvestment decreases. For more than 39% ownership, incumbent will never underinvest.

# Why an incumbent may underinvest?

- Managers with a relatively high ability to extract private benefits, $b_I \geqslant \frac{1}{2}$, may under-invest if forced to issue voting shares to fund the new projects.
- MAXIMIZE Manager's Expected Wealth = MAXIMIZE Expected Dividend + Expected Private Benefit
- Expected Private Benefit = Probability of Retaining Control $\times$ Private Benefit of Control
- If $b_I$ is large $\Rightarrow$ the private benefit of control is large AND probability of retaining control decreases in the level of investment
- Level of Managerial Ownership
  - Zero ownership ($\beta = 0$) $\Rightarrow$ No dilution in ownership $\Rightarrow$ full investment
  - Incumbent's ownership rises ($\beta > 0$), which
    - ★ impact of ownership dilution increase leads to more underinvestment
    - ★ loss of dividends per share leads to less underinvestment

# When do outsider shareholders like nonvoting shares?

- For a level of private benefit extraction by the incumbent, the outside shareholders prefer the investment to be financed with nonvoting shares,

$$1-\frac{P(x)}{P(\bar{x})} \geqslant \frac{a_I^2\, b_I(2+b_I(2\,\beta+1)-2\,\beta)}{2\,a_I(1-\beta)^2\,(1-b_I)-(a_I-a_I\,\beta(1-b_I))^2+(1-\beta)^2}.$$

- Cost of allowing the manager to issue lower priced non-voting shares
  - Lower per share dividend, since $n^0(x) \geqslant n^1(x) \Rightarrow$ dividend dilution.
  - Low likelihood of control change, since the probability of retaining control after issuing zero-voting shares to fund the new investment is weakly $>$ the probability of retaining control after issuing voting shares to fund the new investment.
- Benefits to allowing the manager to issue non-voting shares
  - Higher investment in positive NPV projects.
  - Higher takeover premiums, conditional on a takeover (for voting shares)
- Shareholders will voluntarily allow the incumbent to issue non-voting shares even if the under-investment is small

# Control Inefficiencies are Real!

- The minimum public quality of the incumbent manager required for him to retain control of the firm is lower in firms financed with dual-class shares.

# Conclusions

- If a firm, with positive NPV projects, requires equity financing to undertake new investments, then separation of the vote and dividend claims at times is optimal. Raising equity capital has two effects:
  1. Firm value increases since positive NPV projects are funded
  2. Proportion of voting shares owned by the manager decreases, increasing the likelihood that he loses control.
- A manager, who values control, finds it optimal to forgo some positive NPV projects.
  - Non-voting shares can alleviates this control related under-investment problem.
- Outside shareholders, at times, may find non-voting share issuance attractive, because
  - The benefits of more profitable investments and a higher expected takeover premium outweighs the costs of managerial entrenchment.
- Finally, our results generalize to low voting shares instead of zero-voting shares.