

# What Makes Firms Issue Death Spirals? A Control Enhancing Story

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# **What are Death Spirals?**

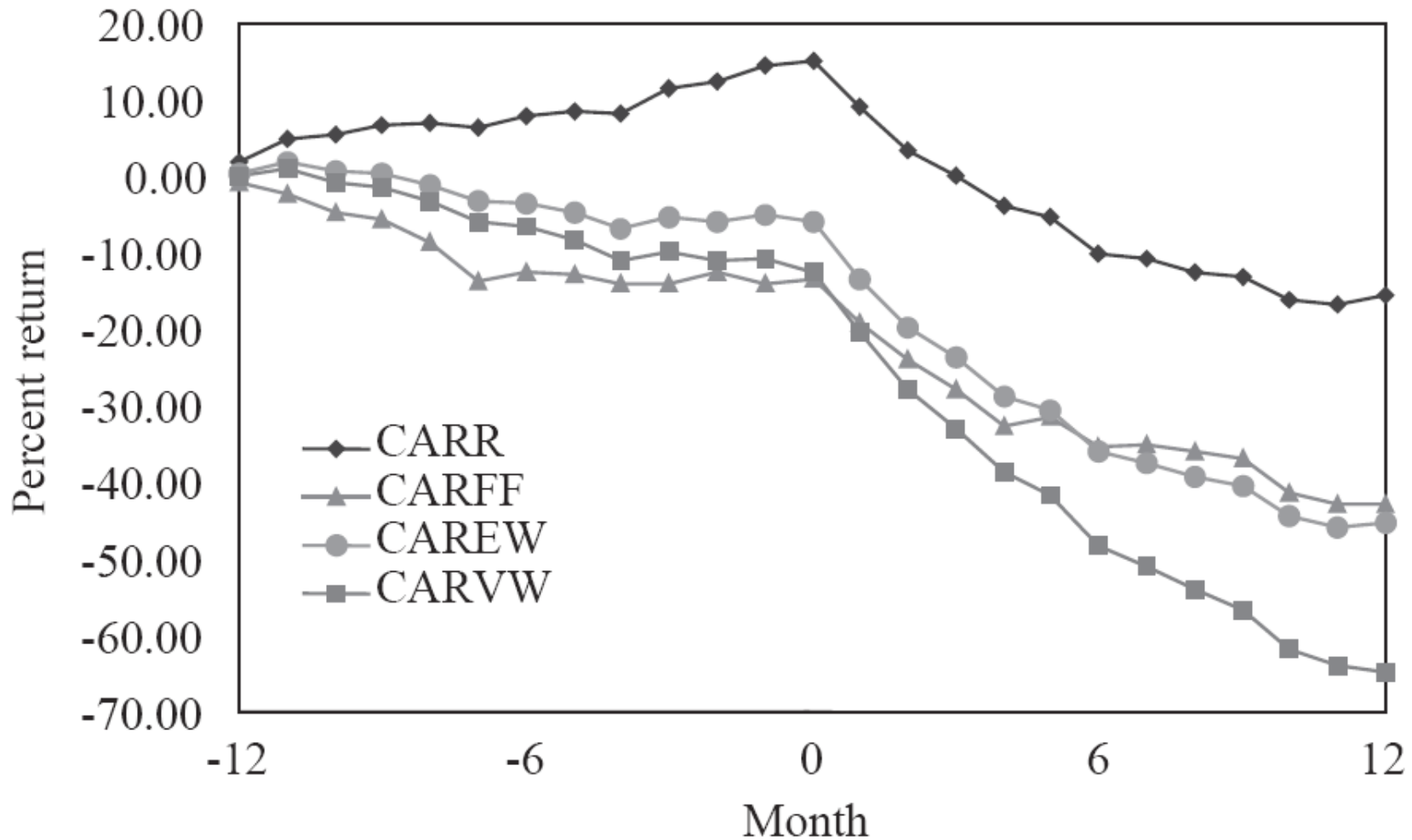
## ■ Conventional CBs or BWs

- Conversion (or exercise) price is fixed

## ■ Death Spirals

- Conversion (or exercise) price is floating
- Essence: converts not into a fixed number of shares, but into shares with a fixed value (that is, the more the share price falls, the more shares that the death spiral holder is entitled to)
- Many names: floating-priced convertibles, toxic convertibles, floorless convertibles, future-priced convertibles, discounted convertibles, structured PIPEs, or junk equity
- Effect: solves the adverse selection problem (death spiral holder does not share the pain of share price fall; issued when overvalued)

# What happens to the share price?



Source: Hillion and Vermaelen (JFE, 2004)

- They are back
  - Structured PIPE deals: US\$0.2 billion (2003) → US\$14 billion (2008) [source: Sagient Research]
- Found even outside the US
  - Japan: moving strike convertible bonds (MSCBs)
  - Korea: CBs or BWs with a re-fixing option clause
- Similar feature (protection from share price fall) shows up in other transactions
  - Merrill Lynch's deal with Temasek of Singapore in Dec. 2007 (Temasek gets compensated if any new equity offering by Merrill Lynch is done at a lower price)

# Existing Literature

- Hillion and Vermaelen (2004, JFE) basically supports the following two hypotheses
  
- Last resort financing hypothesis
  - Firms have no other means of raising capital
  - Poor operating performance
  - Also supported by Brophy, Ouimet, and Sialm (RFS)
  
- Faulty contract design hypothesis
  - Contract itself is designed by fault
  - Not obvious why managers would approve its issuance; need to introduce agency problem
  - Some contractual features exacerbate the stock price decline

# Motivation

# Case of Doosan

- In July 1999, Doosan Corporation issued a bond with floating-priced warrants (USD 100 million); it was an overseas public issuance, but it was prearranged so that warrants are detached immediately after the issuance and mostly sold to the members of the controlling family
- One year after (in July 2000), the debt was paid back
- In subsequent years, share price dropped which lead the exercise price to fall from the original level of KRW 50,100 in July 1999 to KRW 9,460 in October 2002
- If the family members (mostly fourth generation) fully exercised their warrants in October 2002 they could have increased the family ownership of Doosan Corporation from 15.7% to 39.1%

- In October 2002, this scheme was uncovered by Center for Good Corporate Governance (CGCG), which lead Financial Supervisory Service (FSS) to investigate on the matter
- In February 2003, the controlling family announced that they would voluntarily void their entire holdings of Doosan Corp. warrants
- Peoples Solidarity for Participatory Democracy (PSPD) reported that at least 16 other companies have issued similar death spirals; among these, there are four cases where the controlling family later voluntarily redeemed all of their warrants
- Are death spirals issued to enhance the controlling shareholder's influence over its business group in which the issuing firm is a member or to transfer the control over the issuing firm to the controlling shareholder's heir?...control enhancing or control transferring hypothesis

# Testable Hypotheses

- Main challenge
  - No data available that tells us whether the controlling party holds death spirals
- Can provide only indirect evidence
  - That is, develop a number of hypotheses that are consistent with the control enhancing and transfer hypothesis, but not with the last resort financing hypothesis, and see what the data tells us

- Hypothesis consistent with both hypotheses
  - H1: Issuance of death spirals are followed by significant **NEGATIVE** abnormal returns
- Hypotheses that support one over the other
  - H2: Death spiral issuers are **NOT** firms with poor operating performance at the time of issuance
  - H3: Operating performance of death spiral issuers **DOES NOT** deteriorate over time

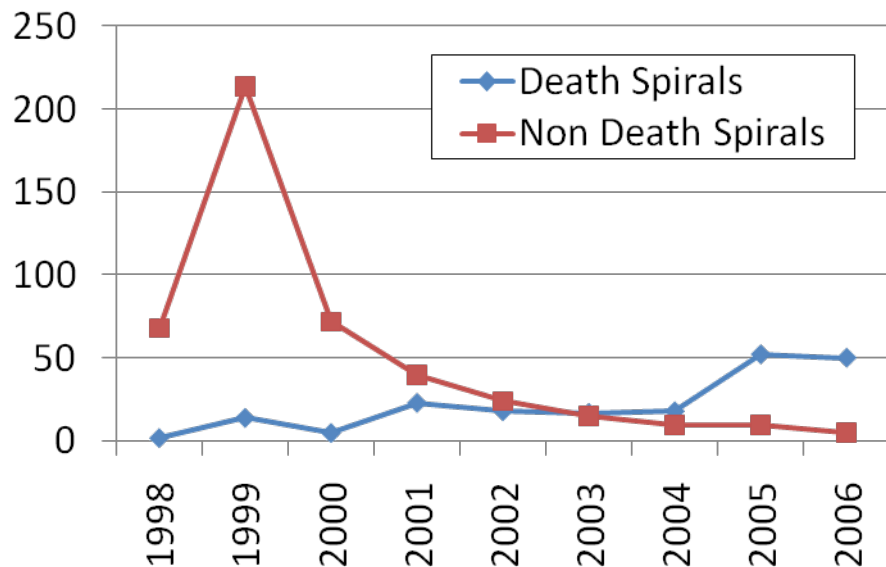
- Hypotheses regarding a subsample of firms more likely to have issued death spirals for a control motive
  - Death spiral issuers, where control is preserved within the family, even after the death spiral issuance
  - H4: Exhibit SUPERIOR operating performance compared to death spiral issuers where family loses control
  - H5: Ownership held by controlling party DOES NOT decrease after death spiral issuance
  - H6: Number of shares held by controlling party INCREASES (controlling for mechanical changes)
  - H7: Controlling party holds hybrid securities after death spiral issuance

**Data**

- Sample period: Jan. 1998 - Dec. 2006
- Sample firms: all non-financial firms listed in the Korea Stock Exchange (KSE)
- Hybrid Securities issuance data
  - Death spirals AND non death spirals
  - Manually searched 'Korea Stock Market Daily'
  - Announcement date, expiration date, type (CB vs. BW, private placement vs. public offering, domestic vs. overseas), amount, etc.
- Sample size
  - All hybrid securities: 657 issues by 288 distinct firms
  - Death spirals: 199 issues by 126 distinct firms

# Results

# Summary Statistics

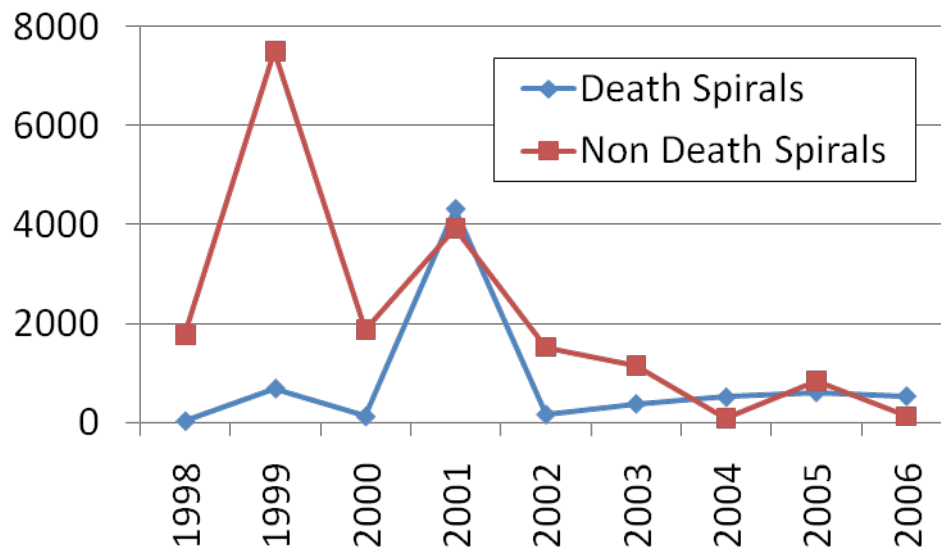


## No. of issuances

Death spirals: 199  
 Non death spirals: 458

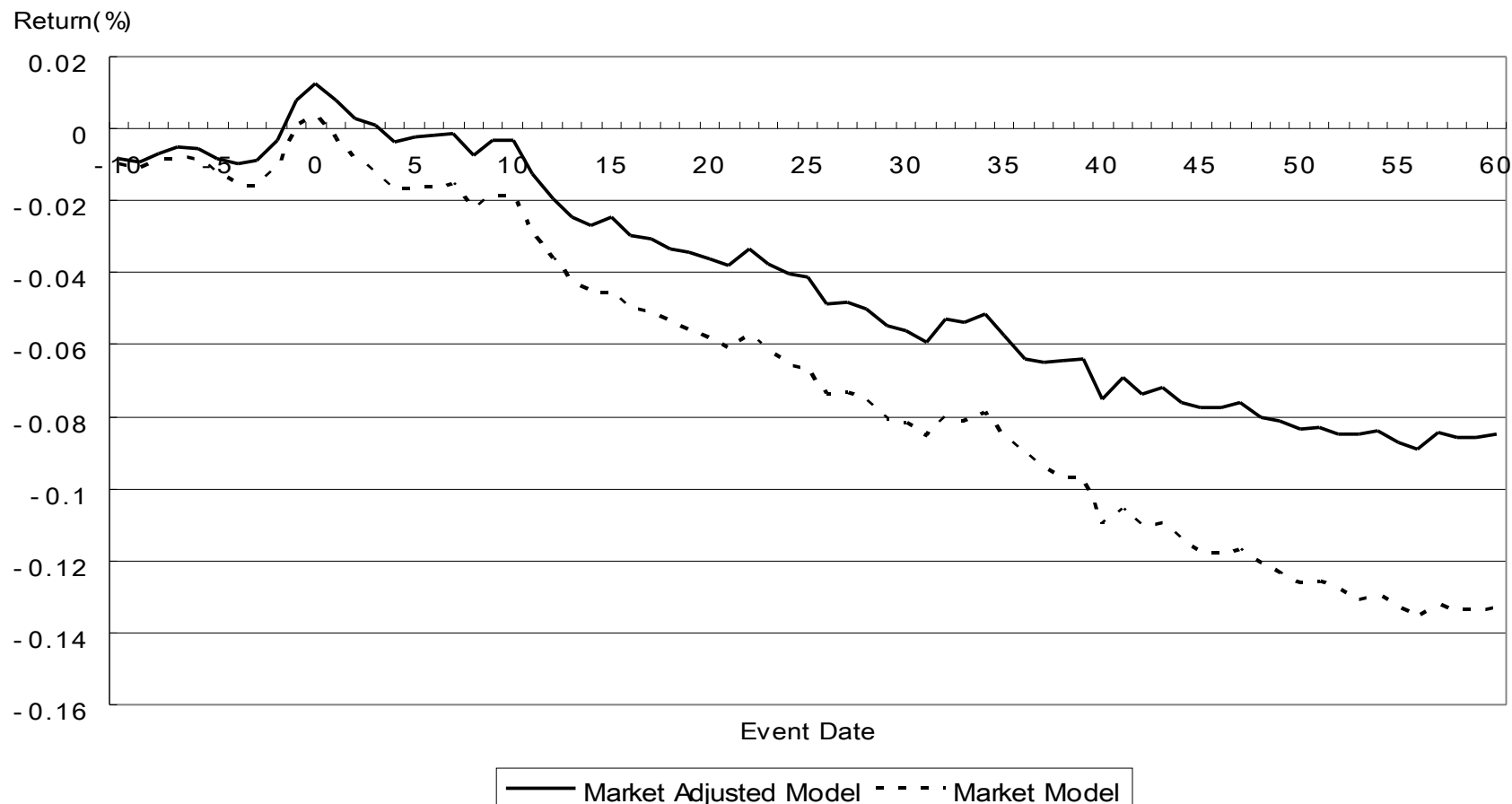
## Proceeds raised (billion KRW)

Death spirals: 7,294  
 Non death spirals: 18,875



# H1: Stock Market Reaction

Share price falls, but not as severe as in the case of US (30% over a 3-months period)



# H2: Operating Performance at Issuance

Dependent variable: 1 if death spiral issuing firm and 0 if non death spiral issuing firm

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Tobin's $q$	0.4874 (0.1430)	0.5041 (0.1367)	0.4923 (0.1419)	0.4829 (0.1489)	0.5456 (0.1166)	0.4835 (0.1486)	0.5370 (0.1475)	0.6524 (0.1204)
EBITDA/Assets		0.3617 (0.8006)						0.8159 (0.6353)
Net Income/Sales			-0.0048 (0.7310)					-0.1838 (0.1416)
Net Income/Assets				0.0226 (0.8926)				4.1893 (0.3195)
(R&D + CAPEX)/Assets					-2.2091 (0.3741)			-2.6419 (0.2984)
Cash flow/Asset						0.0165 (0.9159)		-3.1855 (0.4643)
Interest Coverage							-0.0183 (0.0369)	-0.0223 (0.0223)
Other controls	Y	Y	Y	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R square	0.38	0.38	0.38	0.38	0.38	0.38	0.39	0.40

( ): p-values

Other controls: leverage, size, return volatility, and age

# H3: Operating Performance over Time

Median values

Fiscal Year	EBITDA/ Assets	EBITDA/ Sales	Net Income/ Sales	Net Income/ Assets	CF/ Assets	No. of Firm-Years
-1	2.898	3.388	0.785	0.713	1.390	155
0	2.008	2.327	0.476	0.478	0.979	157
1	1.055	1.725	0.193	0.255	0.438	149
2	1.910	2.284	0.805	0.535	1.235	105
3	4.733	4.772	1.400	1.427	2.597	62

Fiscal Year	(R&D+CAPEX)/ Assets	ADV/ Sales	Market/ Book	Tobin's <i>q</i>	No. of Firm-Years
-1	2.501	0.148	0.863	0.965	155
0	2.556	0.153	1.081	1.041	157
1	3.038	0.142	0.904	0.985	149
2	2.506	0.105	0.805	0.999	105
3	2.911	0.129	0.954	1.022	62

None of them are negative at the time of issuance  
None of them dramatically fall, improve significantly at +3  
At fiscal year +2 (+3), we exclude issuers in 2006 (2005 and 2006)

# H4: Family Control Preserved vs. Not Preserved

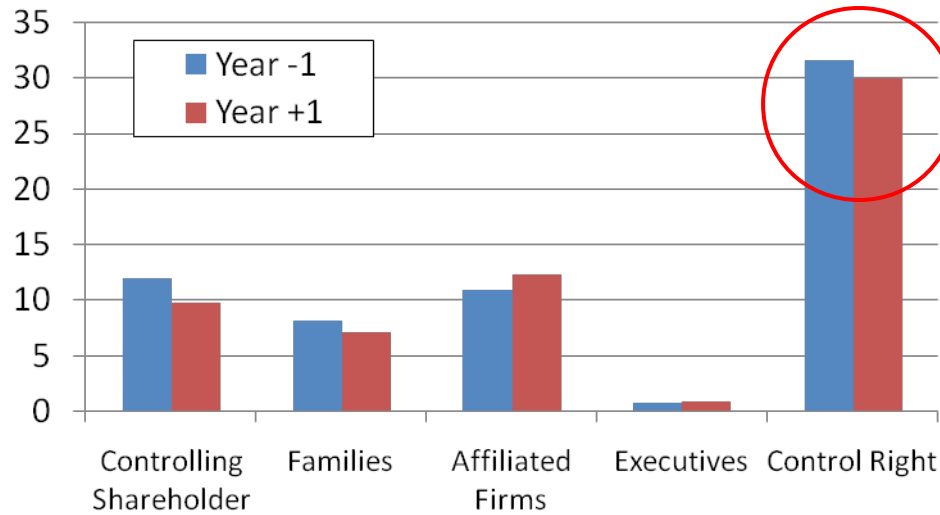
Median values at the time of issuance

		EBITDA/ Assets	EBITDA/ Sales	Net Income/ Sales	Net Income/ Assets	CF/ Assets	No. of Firm-Years
Death Spirals	Preserved	5.497	6.167	1.857	1.181	2.797	73
	Not	-0.298	-0.207	-10.546	-8.005	-10.206	45
Non Death Spirals		4.727	6.167	0.537	0.346	1.177	313

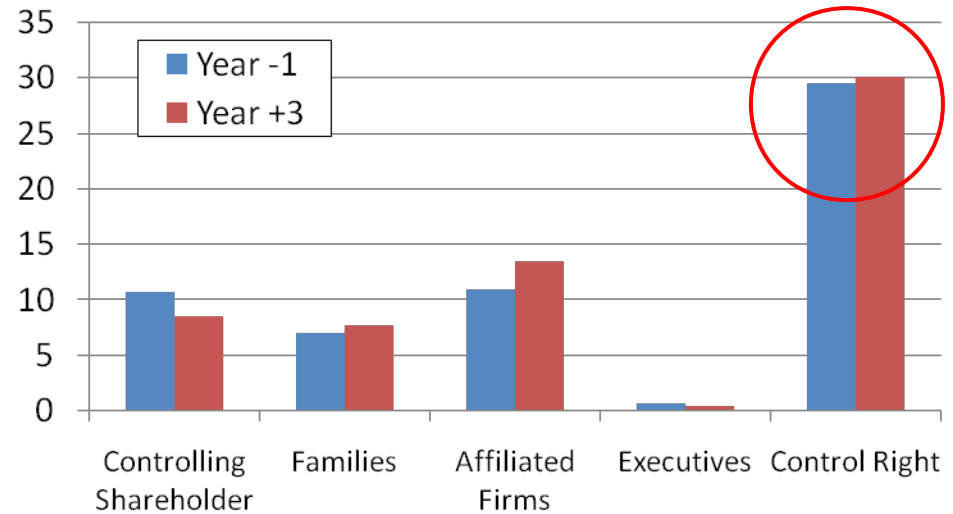
		(R&D+CAPEX)/ Assets	ADV/ Sales	Market/ Book	Tobin's <i>q</i>	No. of Firm-Years
Death Spirals	Preserved	3.111	0.077	0.565	0.865	73
	Not	3.090	0.268	0.971	0.992	45
Non Death Spirals		0.128	0.128	0.655	0.913	313

# H5: Ownership Held by Controlling Party



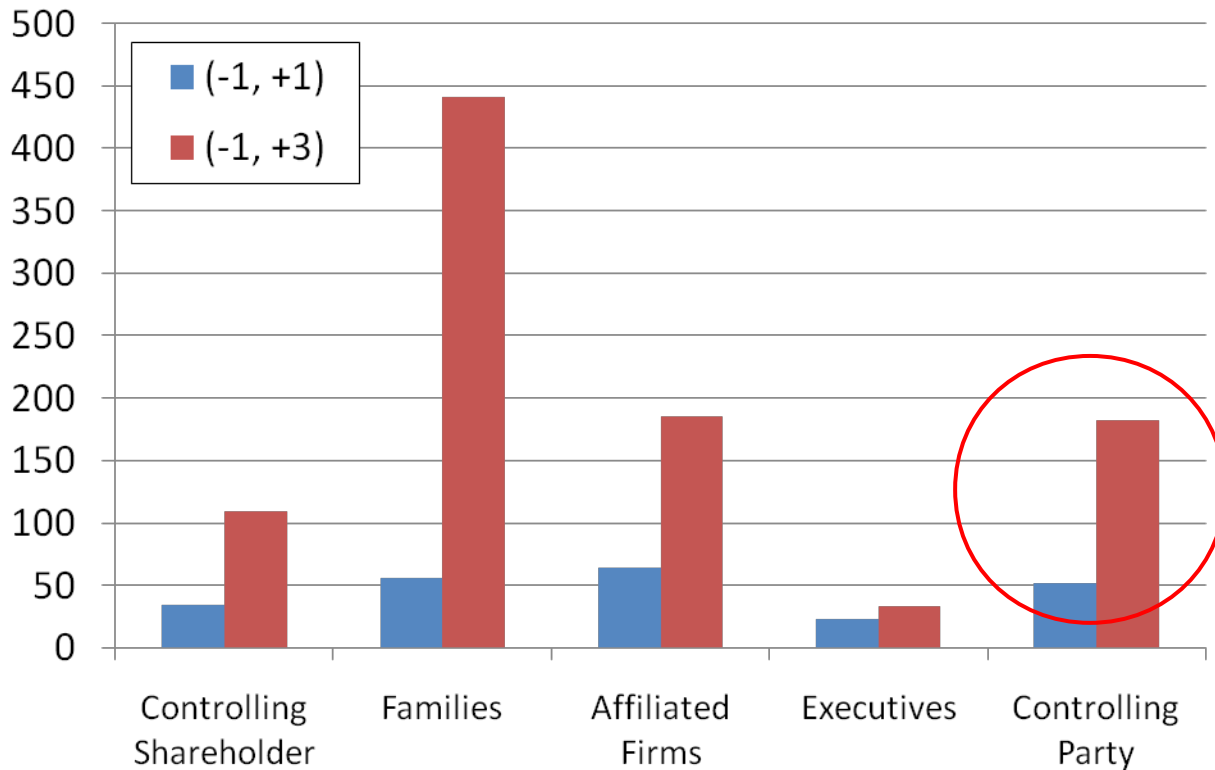
No. of firms = 110

No. of firms = 48



# H6: No. of Shares Held by Controlling Party

- ❖ Mean increase in no. of shares held (%)
- ❖ Exclude mechanical changes such as stock splits, reserve splits, stock dividends, and reduction in paid in capital
- ❖ Include changes driven by subscription to rights offering, conversion of hybrid securities, and purchase of stocks from other shareholders



# H7: Hybrids Held by Controlling Party

- ❖ Number of firms, where any member of the controlling party holds hybrid securities after the death spiral issuance
- ❖ Hybrid securities: CB, BW, and warrants

