Capital Structure - Evidence

■ **Historical Trends**

Table 1. Flow of Funds Data: Precentage of Total Financing Accounted for by Particular Sources of Funds, U.S. Nonfinancial Corporations

Period	Total Debt	Short-Term Debt	New Stock Issues	Internal Funds
1901-12	31	8	14	55
1913-22	29	17	11	60
1923-29	26	4	19	55
1930-39	-33	?	19	114
1940-45	15	20	5	80
1946-59	30	14	5	64
1960-69	36	18	2	62
1970-79	45	24	3	52

Source: Taggart in B. Friedman, (ed.): *Corporate Capital Structure in the United States,* 1985.

Important Points:

(1) Debt has accounted for a larger fraction of total financing since the mid-1960s than was the case earlier (especially since the late 1920s).

(2) The increased use of debt seems largely attributed to an increase in short-term liabilities. In general, short-term liabilities show considerable flactuations.

(3) Equity financing is going down (much of the increase in the 1970's is accounted for by public utilities oreferred stock issuance.

(4) No apparent trend in internal funds financing.

Table 2. Debt to Value Ratios for 25 Industries, Ranked in Ascending Order

Industry	Number of Firms in Industry Sample	Debt to Value Ratio[1] Mean (Standard Deviation)
Drugs&Cosmetics	31	.0907 (.095)
Instruments	27	.1119 (.086)
Metal Mining	23	.1347 (.099)
Publishing	16	.1552 (.169)
Electronics	77	.1579 (.121)
Machinery	80	.1957 (.114)
Food	50	.2056 (.128
Petroleum Exploration	24	.2258 (.151)
Construction	12	.2384 (.151)
Petroleum Refining	31	.2436 (.121)
Metal Working	33	.2502 (.139)
Chemicals	47	.2544 (.135)
Apparel	18	.2603 (.123)
Lumber	7	.2605 (.182)
Motor Vehicles Parts	52	.2714 (.138)
Paper	24	.2895 (.114)
Textile Mill Products	21	.3257 (.133)
Rubber	26	.3262 (.167)
Retail Dept Stores	20	.3433 (.150)
Retail Grocery Stores	16	.3460 (.187)
Trucking[2]	10	.3730 (.209)
Steel	45	.3819 (.195)
Telephone[2]	10	.5150 (.097)
Elec. & Gas Utilities[2]	135	.5309 (.241)
Airlines[2]	16	.5825 (.171)

Source: Bradley Jarrell and Kim *Journal of Finance,* 1984.

1 - Calculated as the 20-year (1962-1981) sum of annual book value of long-term debt divided by the sum of long-term debt and the market value of equity.
2 - Regulated industries.

<u>Important Points:</u>

(1) Debt levels vary across industries, but firms within the same industry tend to have similar debt levels

(2) Regulated firms tend to be highly levered relative to non-regulated firms.

Table 3. Price Reaction to the Announcement of Debt Increases and Decreases

Transaction Type	Two Days Abnormal Return
All leverage increasing transactions	**7.5%**
All leverage decreasing transactions	**-5.3%**
Debt-for-common equity exchange	**9.8%**
Common equity-for-debt swap	**-1.4%**
Debt-for-preferred exchange	**4.6%**

Sources: **Masulis *Journal of Financial Economics*, 1980.**
Israel, Ofer and Siegel *Journal of Financial Economics*, 1989.

Important Points:

(1) An increase in leverage is perceived by stockholders as good news and is associated with positive price reactions

(2) An decrease in leverage is perceived by stockholders as bad news and is associated with negative price reactions

Table 4. Characteristics of industries with lowest and highest leverage (the sample contained 39 U.S. industries). All numbers are industry means.

Industry	Leverage	R&D & Advertising	Capital Expenditure	Net Plant	Profitability
The five industries with lowest leverage					
Cosmetics & Toiletries	.9 (1)	.162 (39)	.064 (4)	.256 (5)	.169 (10)
Drugs	.109 (2)	.132 (38)	.083 (12)	.294 (14)	.205 (22)
Photographic Equipment	.112 (3)	.095 (35)	.088 (16)	.284 (4)	.140 (4)
Aircraft	.134 (4)	.084 (31)	.104 (22)	.326 (17)	.174 (12)
Radio & TV Receiving	.142 (5)	.103 (36)	.076 (6)	.184 (1)	.150 (6)
The five industries with highest leverage					
Petroleum Refining	.294 (35)	.009 (4)	.237 (39)	.886 (39)	.288 (37)
Textile Mill Products	.308 (36)	.022 (8)	.081 (11)	.403 (23)	.177 (14)
Paper & Allied Products	.322 (37)	.012 (5)	.169 (36)	.793 (37)	.179 (6)
Blast Furnaces & Steel	.337 (38)	.007 (3)	.121 (29)	.626 (36)	.136 (3)
Cement Hydraulic	.441 (39)	.000 (1)	.170 (37)	.858 (38)	.134 (2)

Rank out of 39 industries from lowest to highest in parentheses

Source: **Michael Long and Ileen Malitz in J. Stern and D. Chew (eds.) *The Revolution in Corporate Finance,* 1992, Cambridge MA: Basil Blackwell Inc.**

Table 5. Characteristics of industries by leverage quartile (the sample contained 39 U.S. industries).

Quartile	Leverage	R&D	Advertising	Capital Expenditure	Net Plant	Profitability
1	.136	.044	.042	.083	.273	.182
2	.187	.025	.026	.104	.384	.224
3	.212	.024	.024	.111	.411	.190
4	.307	.010	.008	.132	.589	.194
Mean	.224	.026	.026	.105	.418	.202
Median	.210	.012	.021	.103	.378	.192
Low	.090	.000	.000	.048	.184	.120
High	.411	.136	.079	.237	.886	.318

Source: Michael Long and Ileen Malitz in J. Stern and D. Chew (eds.) *The Revolution in Corporate Finance*, 1992, Cambridge MA: Basil Blackwell Inc.

Important Points:

(1) R&D and advertising expenditures, which are intangible investments (and hence are (i) hard to monitor and (2) hard to cash in on in case of a financial distress), show clear negative correlation with leverage.

(2) Net plant and capital expenditure show a positive but weaker correlation with leverage.

(3) Profitability shows no clear correlation with leverage.

(4) A linear regression using the above variables over 39 industries explains 42% of the variance in leverage across industries. In the regression, profitability has a negative coefficient (consistent with the pecking order hypothesis).

Payout Policies - Evidence

■ **Historical Trends**

Table 1. Annual Cash Distributions to Shareholders, 1977-87 (in Millions of 1986 dollars)

Year	Cash via acquisitions	Dividends	Share Repurchase
1977	7,233	49,842	5,688
1978	11,402	51,791	5,553
1979	24,472	55,535	6,532
1980	17,386	56,643	6,594
1981	35,526	56,747	4,814
1982	29,896	57,993	9,203
1983	23,293	60,179	8,451
1984	67,942	63,735	29,024
1985	71,864	69,392	42,421
1986	74,522	77,122	41,521
1987	60,231	80,370	52,582

Source: Bagwell and Shoven, *Journal of Economics Perspectives*, 1989.

Main points:

(1) Dividend payments have increased steadily over time.

(2) There was a big jump in 1984 in cash distributions via acquisitions and share repurchase. This jump can be attributed to the increase in takeover activity at that time. Increased acquisitions put more money in shareholders' hands. Share repurchase, which is an effective takeover deterrent, became more popular as firms sought to avoid takeovers.

Table 2. Number of Stock Buybacks Announced from 1984 to 1989.

Year	Open-market repurchases	Self-tender offers		
		All	Fixed price	Dutch auction
1984	-	23	21	2
1985	183	17	11	6
1986	203	22	12	10
1987	604	30	21	9
1988	207	37	16	21
1989	-	37	13	24
Total	1,197	166	94	72

Source: Comment and Jarrell, *Journal of Finance*, 1991.

Main points:

(1) Open-market repurchases dominate self-tender offers in numbers through the 80's.

(2) Within the self-tender offers, dutch auctions increased dramatically in number from 1984 to 1988 where they outnumber fixed price self tender-offers.

Table 3. Total Dollar Payout to Shareholders by NYSE Firms by Type of Distribution (in Billions of Dollars)

	1983	1984	1985	1986	Average
Regular cash dividends					
Dollar payout	$62.82	$66.93	$68.69	$71.18	$67.40
% of firms[1]	82.77%	82.52%	79.71%	77.58%	80.65%
% of equity[2]	4.77%	4.34%	4.22%	3.70%	4.26%
Special dividends					
Dollar payout	0.59	0.29	0.39	0.17	0.34
% of firms	2.27	2.10	2.31	2.20	2.22
% of equity	0.04	0.02	0.02	0.01	0.02
Open-market repurchases					
Dollar payout	4.65	20.49	22.08	29.85	19.27
% of firms	4.81	13.40	12.03	12.44	10.67
% of equity	0.35	1.33	1.36	1.55	1.15
Self-tender offers					
Dollar payout	1.27	3.70	2.99	5.88	3.46
% of firms	0.47	0.93	0.79	0.86	0.76
% of equity	0.10	0.24	0.18	0.31	0.21
Targeted repurchases					
Dollar payout	2.30	3.74	3.60	4.40	3.51
% of firms	2.04	3.29	3.11	2.79	2.81
% of equity	0.17	0.24	0.22	0.23	0.21

Source: Barclay and Smith, *Journal of Financial Economics*, 1988.

1 - % of total NYSE firms using this payout method in the given year.

2 - Total dollar payout by NYSE firms divided by the total market value of equity of NYSE firms in that year.

<u>Main points:</u>

(1) Special dividends are very rare.

(2) Open-market stock repurchases have increased dramatically in the 80's.

(3) Regular dividen payments are still by far the most prevelent method of distributing earnings to stockholders.

Table 4. Comparison of Dutch Auction and Fixed-Price Offers

		All Offers	Fixed price	Dutch Auction
Sample size		**128**	**65**	**63**
Pre-offer market value of equity in $ millions	**Mean**	**1,357**	**723**	**2,013**
	Median	**257**	**96**	**1,035**
Premium paid - % over pre-repurchase stock price	**Mean**	**16.8**	**20.6**	**12.8**
	Median	**14.1**	**16.0**	**12.5**
Maximum offer premium (%) (Dutch Auctions Only)	**Mean**			**15.7**
	Median			**14.3**
Minimum offer premium (%) (Dutch Auctions Only)	**Mean**			**2.0**
	Median			**1.2**
Shares purchased - % of outstanding shares	**Mean**	**14.9**	**16.6**	**13.1**
	Median	**12.6**	**13.6**	**12.5**
Shares sought (%)	**Mean**	**17.3**	**18.8**	**15.6**
	Median	**15.0**	**16.6**	**14.7**
Shares tendered (%)	**Mean**	**20.4**	**25.0**	**15.7**
	Median	**15.9**	**19.9**	**12.5**
% of shares held by officers & directors (α)	**Mean**	**22.8**	**31.6**	**13.8**
	Median	**16.9**	**28.6**	**6.6**
Implied change in α due to from repurchase	**Mean**	**4.5**	**6.2**	**2.6**
	Median	**2.2**	**4.8**	**0.5**
Percent of offers for which officers & directors are at risk[1]	**Mean**	**65%**	**88%**	**41%**
7-day announcement stock return	**Mean**	**10.4%**	**12.3%**	**8.3%**
	Median	**8.7%**	**10.6%**	**7.5%**

Source: Comment and Jarrell, *Journal of Finance,* 1991.

[1] Officers & directors are defined to be at risk when two conditions hold:

(1) Their collective ownership interest in the firm's stock increases as a result of the offer (non-participation constraint).

(2) The minimum price that the firm can pay in the offer is more than 2% above the closing market price 4 days before the offer is announced (premium-offer condition)

Main points:

(1) Dutch auctions are used by larger firms on average.

(2) Fixed price offers pay a larger premium over the pre-repurchase stock price than Dutch auctions.

(3) Fixed price offers repurchase a larger percentage of shares.

(4) Officers and directors of firms who use fixed price offers (i) hold a larger percentage of shares, (ii) realize a larger increase in shares ownership, and (iii) are more likely to be at risk.

(5) Fixed price offers realize larger announcement returns. That is, they either reveal more information to the market, or since they lead to a more concentrated ownership, alleviate agency frictions.

Additional empirical regularities:

(1) Analysts also revise their earnings forecasts following unexpected dividend increases announcements. (Ofer and Siegel, 1987).

(2) Dividend payout is negatively related to the percentage of a firm's stocks held by its officers and directors, and is positively related to the number of different outside shareholders. (Rozeff, 1982).

(3) All forms of cash distributions appear to have some ability to successfully fend off takeovers.