Strategies for Value Creation: Its Formulation and Measurement

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Sources of Value Creation

Economic value is only created when the businesses of the firm -- and the firm as a whole -- enjoy profit-ability levels which exceed that of their respective cost of capital.

The Market-to-Book Value Model (M/B)

M - *The Investor's Perspective*

An assessment of the present value of the expected cash flow streaming from the assets the firm has already in place and those from investments the firm would have an opportunity to make some time in the future.

B - The Accountant's Perspective

Historical measurement of equity resources contributed by shareholders.

$$\frac{M}{B} = \frac{\text{Expected future payments}}{\text{Past resources committed}}$$

- If M/B is equal to 1, the future payments are expected to yield a fair return on the resources committed. The firm is neither creating nor destroying value.
- If M/B is greater than 1, there is an excess return. The firm is creating value for the shareholders.
- If M/B is less than 1, the return is under the benchmark provided by the market. The firm is destroying value for its shareholders.

Stationary Model with Constant Growth g

Annual Profit = ROE x B

Retained earnings
(P)

Dividend payments
(1 - P)

$$\underbrace{P \times ROE}_{g} \times B$$

$$\underbrace{(1 - P) \times ROE}_{(ROE - g)} \times B$$

Stationary Model with Constant Growth g (cont'd.)

	Year 1	Year 2	…	Year t
Book value (beginning of year)	B	(1+g) B	…	$(1+g)^{t-1}$ B
Earnings	ROE x B	ROE(1+g) B	…	ROE$(1+g)^{t-1}$ B
Retained Earnings	g x B	g(1+g) B	…	g$(1+g)^{t-1}$ B
Dividend Payments	(ROE-g) B	(ROE-g)(1+g) B	…	(ROE-g)$(1+g)^{t-1}$ B
Book Value (end of year)	(1+g) B	$(1+g)^2$ B	…	$(1+g)^t$ B

Stationary Model with Constant Growth g (cont'd.)

$$M = \sum_{t=1}^{\infty} \frac{(ROE - g)(1 + g)^{t-1} B}{(1 + k_E)^t} \qquad (1)$$

$$\frac{M}{B} = \frac{(ROE - g)}{k_E - g} \qquad (2)$$

Valuation of 3M Stock

$$\text{Estimated Value per Share} = \frac{ROE - g}{k_E - g} \times \text{Book Value of 3M per Share}$$

$$= \frac{24\% - 7.5\%}{13\% - 7.5\%} \times \$28.72$$

$$= \$86$$

Actual Value per Share = \$92

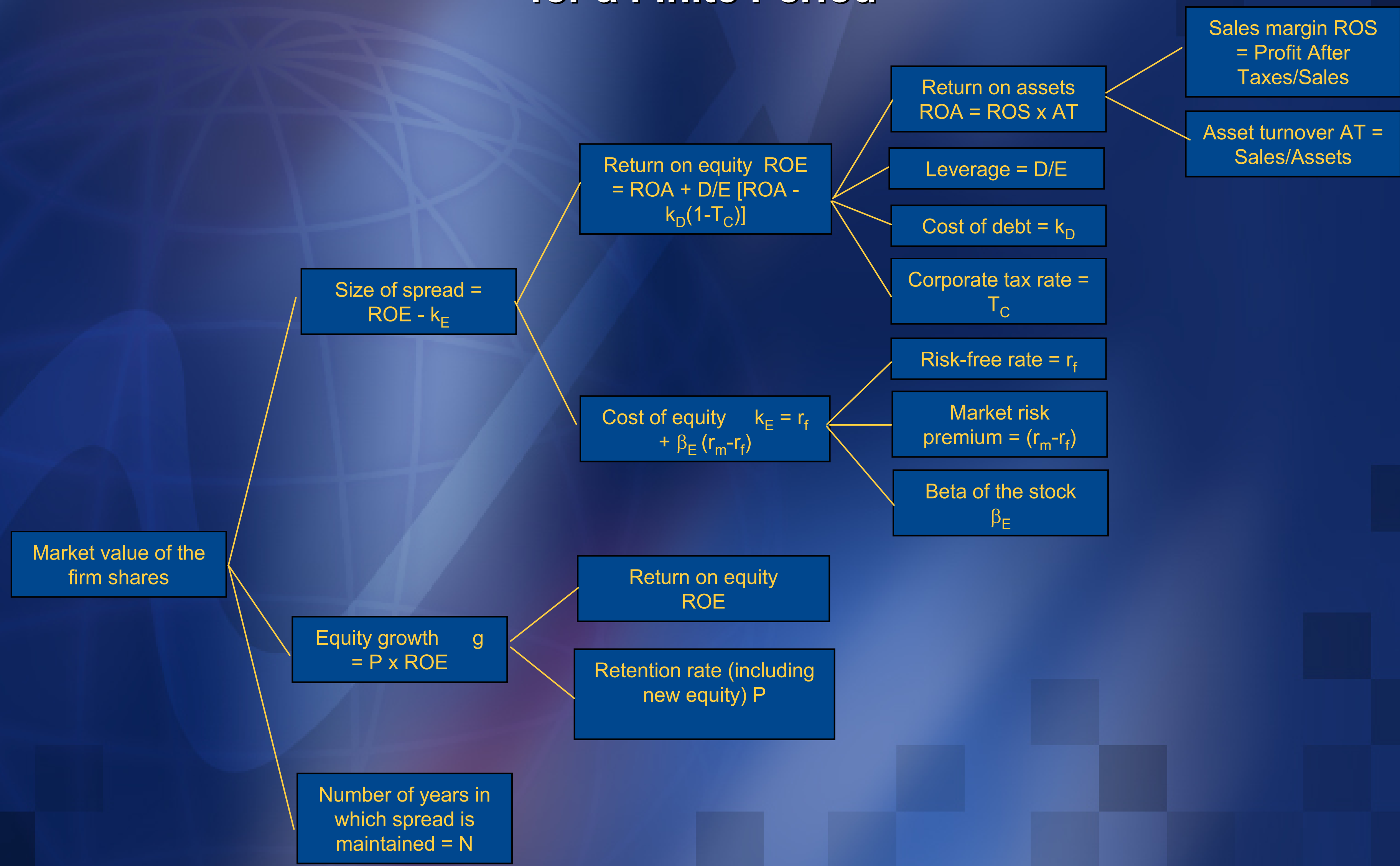
The Essential Features of the M/B Model for a Firm Under Strategy Growth

The profitable firm or business	The breakeven firm or business	The unprofitable firm or business
ROE > k_E	ROE = k_E	ROE < k_E
M/B > 1	M/B = 1	M/B < 1
Growth will increase M/B	Growth will not affect M/B	Growth will reduce M/B
NPV > 0	NPV = 0	NPV < 0

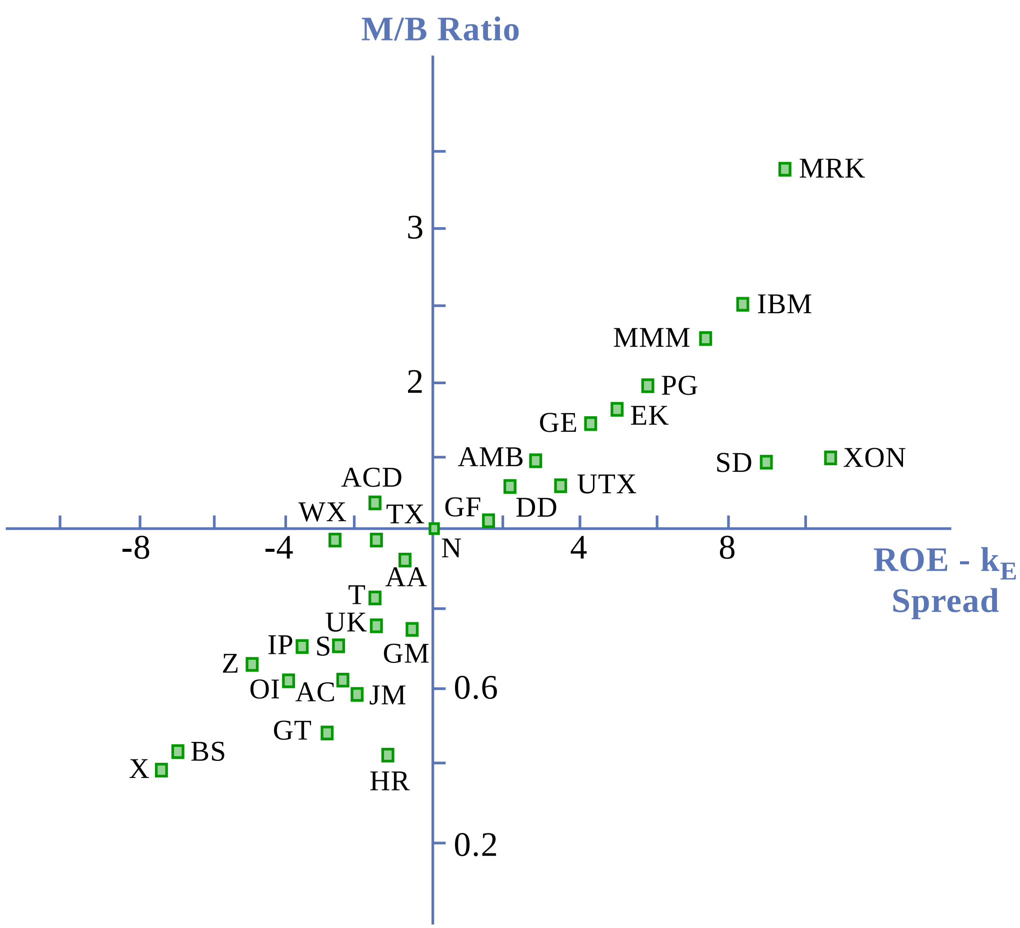
The Determinants of Value Creation

- Size of the competitive advantage, measured as spread = ROE - k_E
- Number of years in which the spread is maintained = N
- Growth opportunities measured as rate of reinvestment = P

Factors Affecting the Market Value of the Firm Under Stationary Growth for a Finite Period



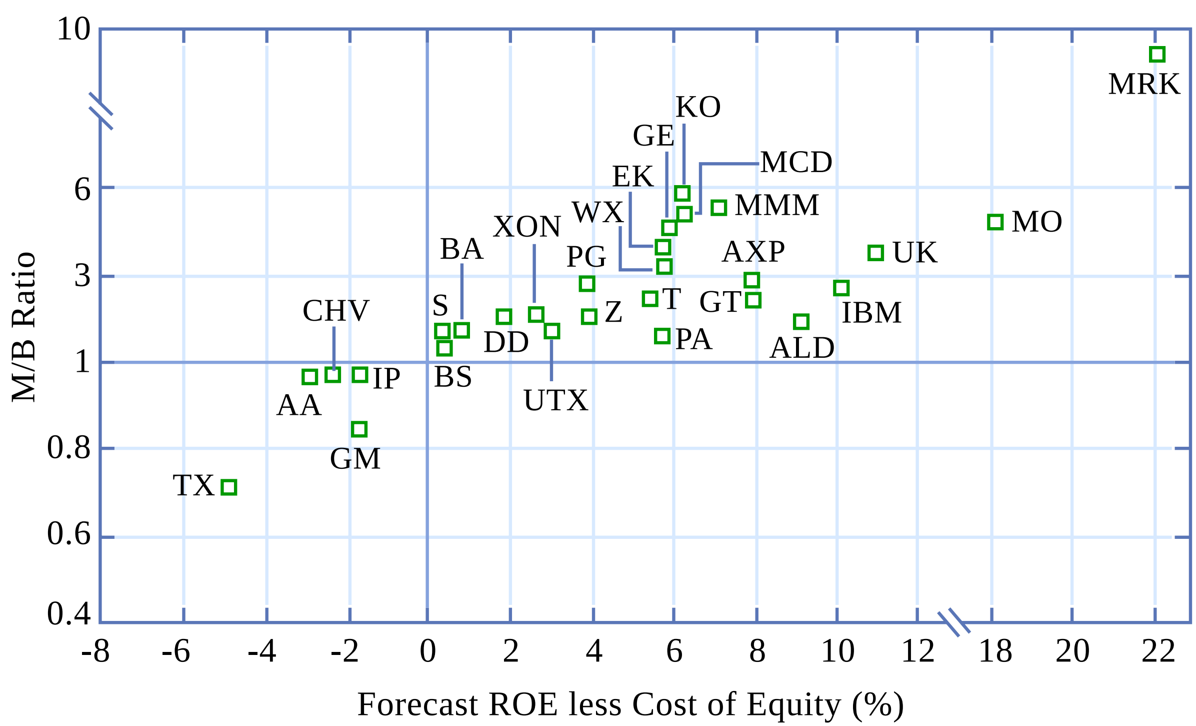
An M/B-vs.-Spread Graph for the 30 Dow Jones Industrials (1980)



AA	=	Alcoa
AC	=	American Can
ACD	=	Allied Chemical
AMB	=	American Brands
BS	=	Bethlehem Steel
DD	=	Du Pont
EK	=	Eastman Kodak
GE	=	General Electric
GF	=	General Foods
GM	=	General Motors
GT	=	Goodyear Tire
HR	=	International Harvester
IBM	=	IBM
IP	=	International Paper
JM	=	Johns Manville
MMM	=	Minnesota Mining
MRK	=	Merck Company
N	=	Inco Limited
OI	=	Owens Illinois
PG	=	Procter & Gamble
S	=	Sears, Roebuck
SD	=	Standard Oil of California
T	=	AT&T
TX	=	Texaco
UK	=	Union Carbide
UTX	=	United Technology
WX	=	Westinghouse
X	=	U.S. Steel
XON	=	Exxon
Z	=	Woolworth

Figure by MIT OCW. Adapted from: Marakon Associates, “Criteria for Determining an Optimum Business Portfolio,” 1981.

An M/B-vs.-Spread Graph for the 30 Dow Jones Industrials (1987)

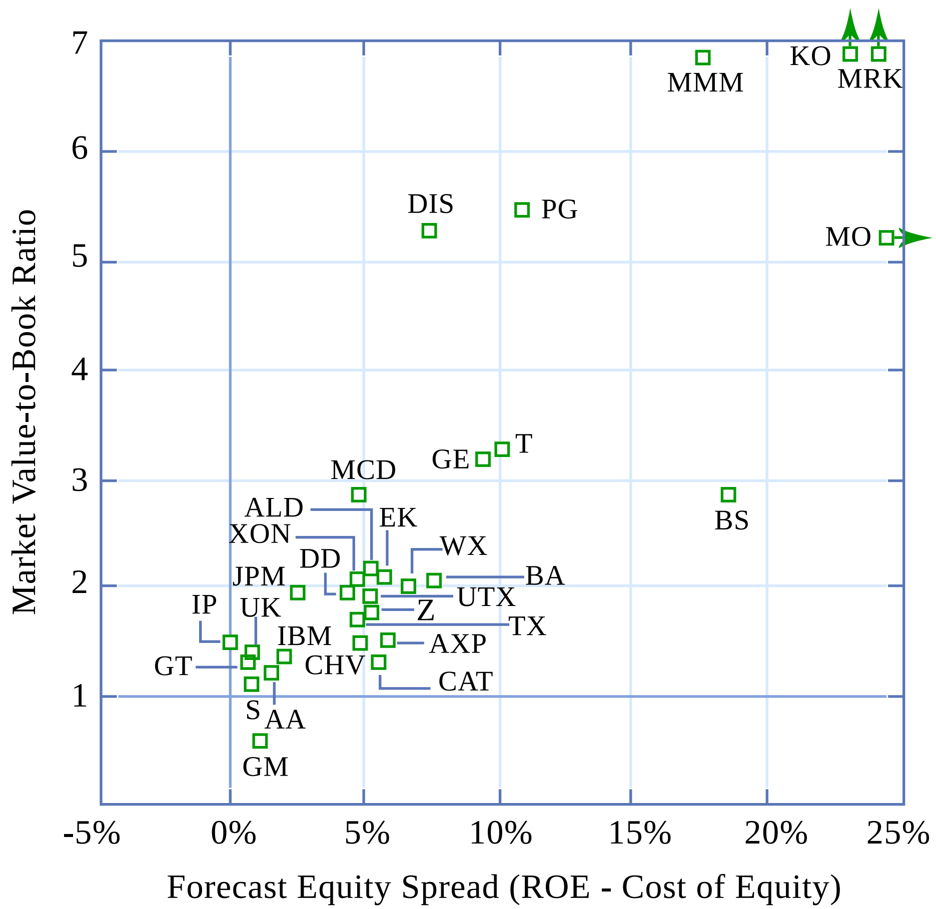


AA	=	Alcoa
ALD	=	Allied Signal
AXP	=	American Express
BS	=	Bethlehem Steel
BA	=	Boeing
CHV	=	Chevron Corp.
DD	=	Du Pont
EK	=	Eastman Kodak
GE	=	General Electric
GM	=	General Motors
GT	=	Goodyear Tire
IBM	=	IBM
IP	=	International Paper
KO	=	Coca-Cola
MCD	=	McDonald's
MMM	=	Minnesota Mining
MRK	=	Merck Company
MO	=	Philip Morris
PA	=	Primerica
PG	=	Procter & Gamble
S	=	Sears, Roebuck
T	=	AT&T
TX	=	Texaco
UK	=	Union Carbide
UTX	=	United Technologies
WX	=	Westinghouse
XON	=	Exxon
Z	=	Woolworth

Figure by MIT OCW.

Adapted from: James M. McTaggart, “The Ultimate Takeover Defense: Closing the Value Gap,” *Planning Review*, January-February 1988, pp. 27-32.

Profitability of Dow Jones Industrials (1992)



AA	=	Aluminum Co. of America
ALD	=	Allied Corp.
AXP	=	American Express
BS	=	Bethlehem Steel
BA	=	Boeing
CAT	=	Caterpillar
CHV	=	Chevron
DD	=	Du Pont
DIS	=	Walt Disney
EK	=	Eastman Kodak
GE	=	General Electric
GM	=	General Motors
GT	=	Goodyear Tire
IBM	=	Int'l Business Machines
IP	=	International Paper
KO	=	Coca-Cola
JPM	=	J.P. Morgan
MCD	=	McDonald's
MMM	=	3M
MRK	=	Merck & Co.
MO	=	Philip Morris
PG	=	Procter & Gamble
S	=	Sears, Roebuck
T	=	AT&T
TX	=	Texaco
UK	=	Union Carbide
TUX	=	United Technologies
WS	=	Westinghouse
XON	=	Exxon Corp.
Z	=	Woolworth (F.W.)

Figure by MIT OCW.

Adapted from: *Value Line Investment Survey* (1992), Marakon Associates analysis.

Profitability of 15 U.S. Industries (September 1987)

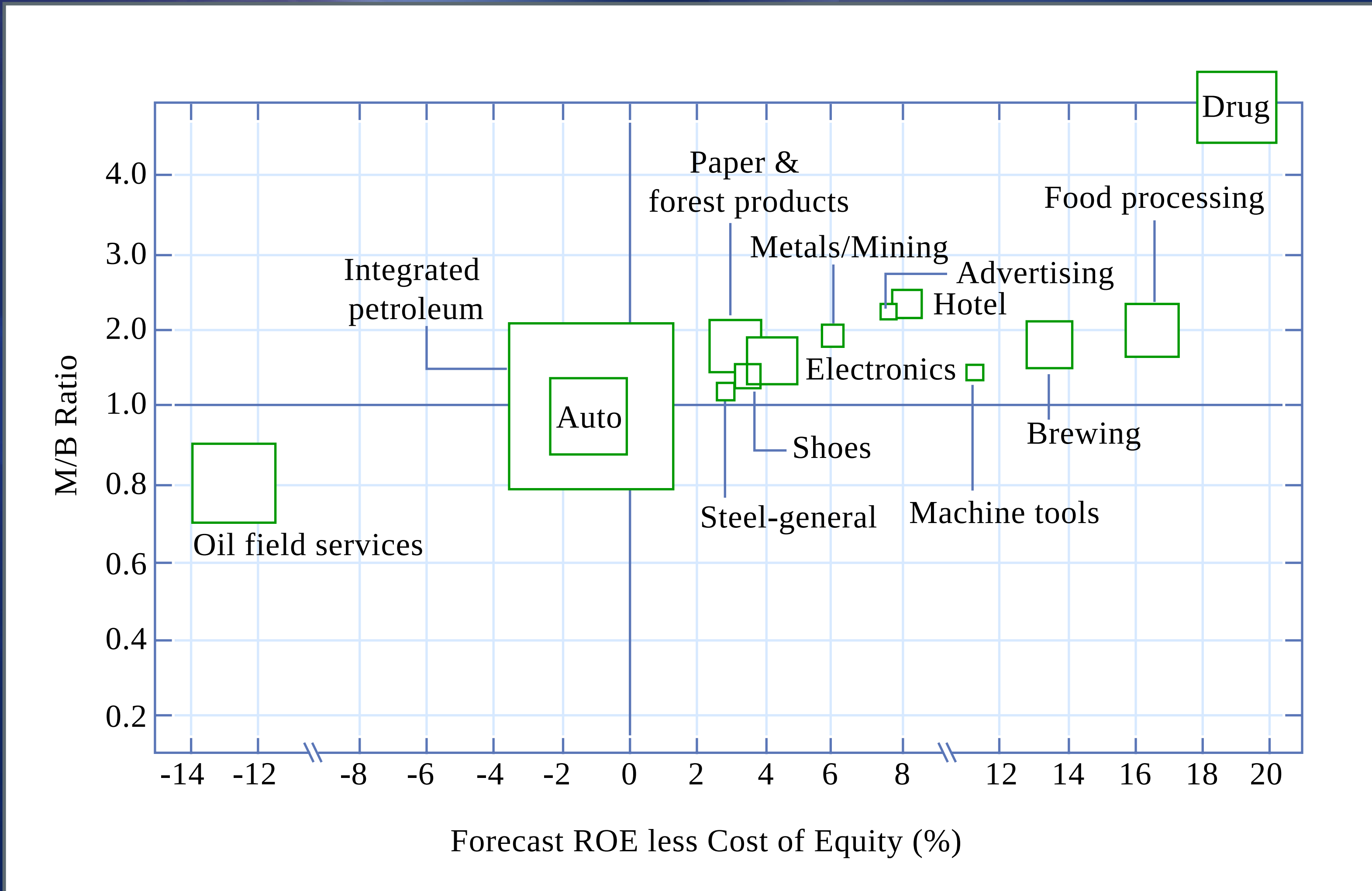
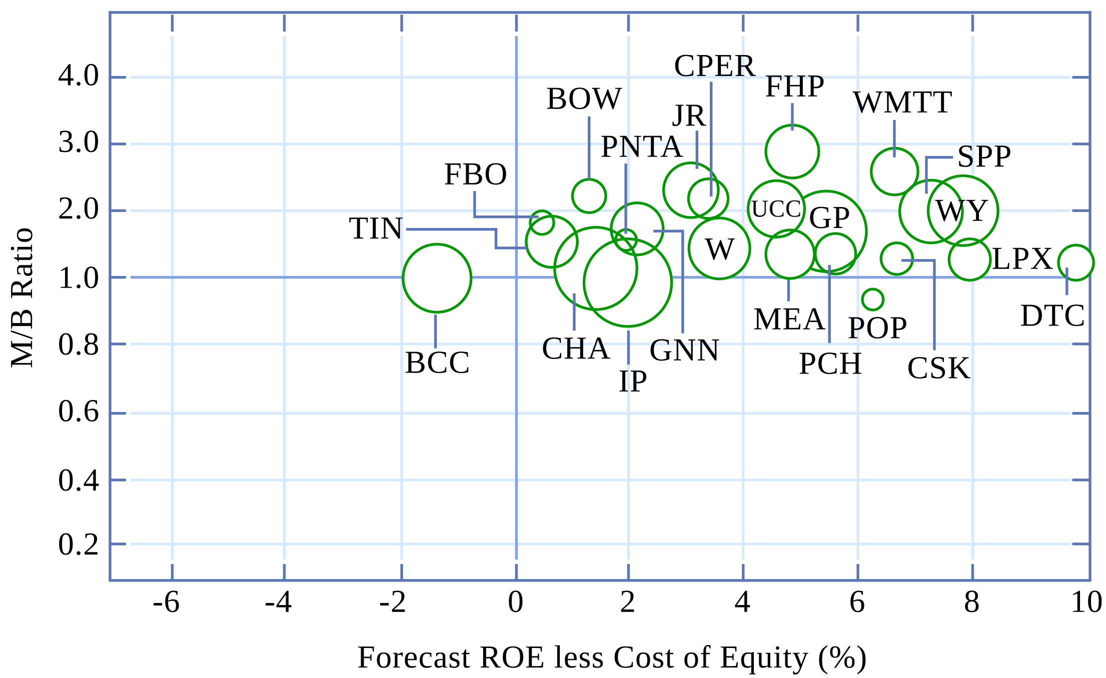


Figure by MIT OCW. Adapted from: McTaggart, 1988.

Profitability of Paper and Forest Products Companies (Spring 1987)



BCC	=	Boise Cascade
BOW	=	Bowater Inc.
CHA	=	Champion International
CPER	=	Consolidated papers
CSK	=	Chesapeake Corp.
DTC	=	Domtar Inc.
FBO	=	Federal Paperboard
FHP	=	Fort Howard Paper
GNN	=	Great Northern Nekoosa
GP	=	Georgia-Pacific
IP	=	International Paper
JR	=	James River Corp.
LPX	=	Louisiana Pacific
MEA	=	Mead Corp.
PCH	=	Potlach Corp.
PNTA	=	Pentair Inc.
POP	=	Pope & Talbot
SPP	=	Scott Paper
TIN	=	Temple Inland
UCC	=	Union Camp
W	=	Westvaco
WMTT	=	Willamett
WY	=	Weyerhauser

Figure by MIT OCW. Adapted from: McTaggart, 1988.

Profitability of Company Portfolio

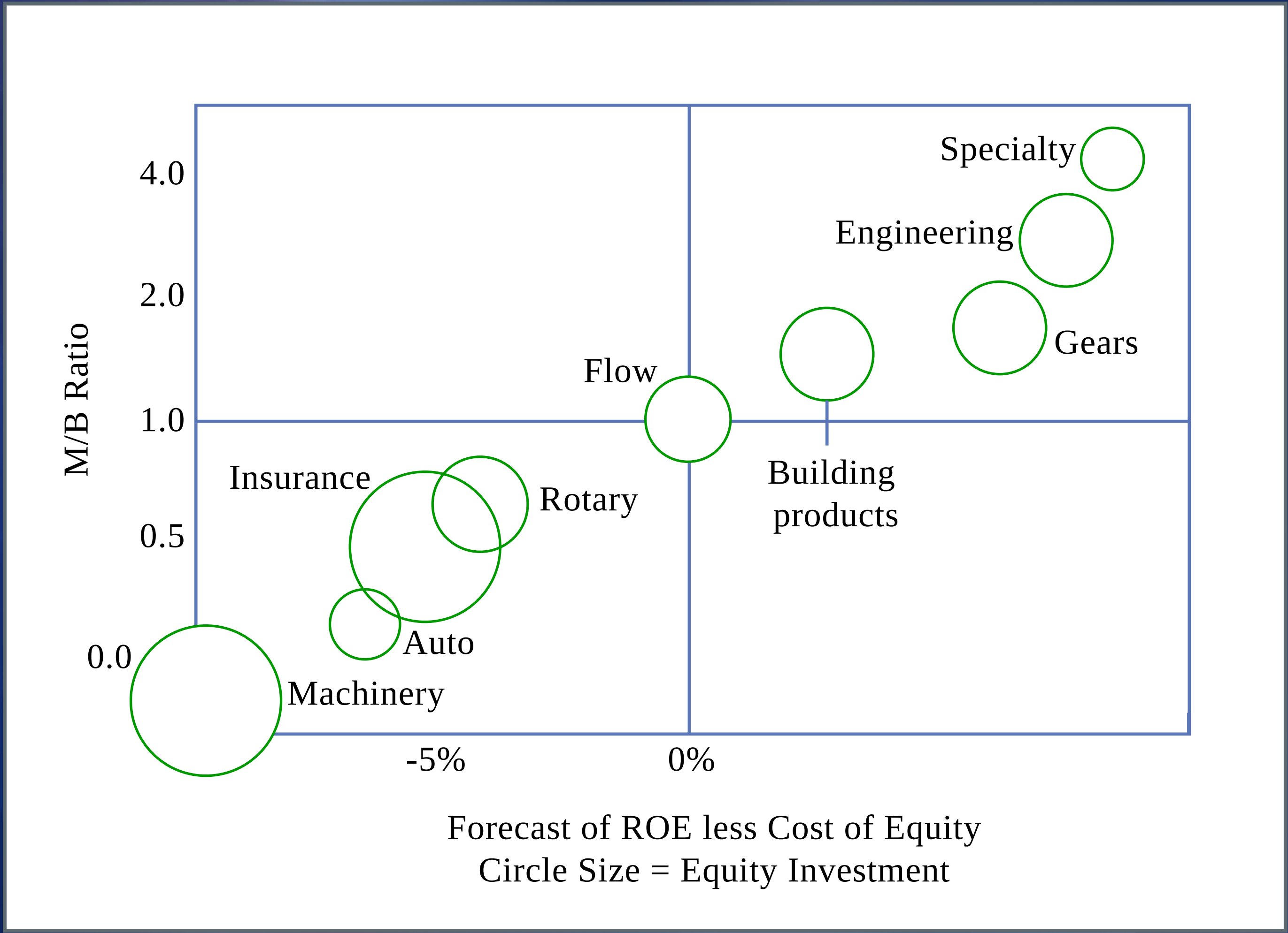
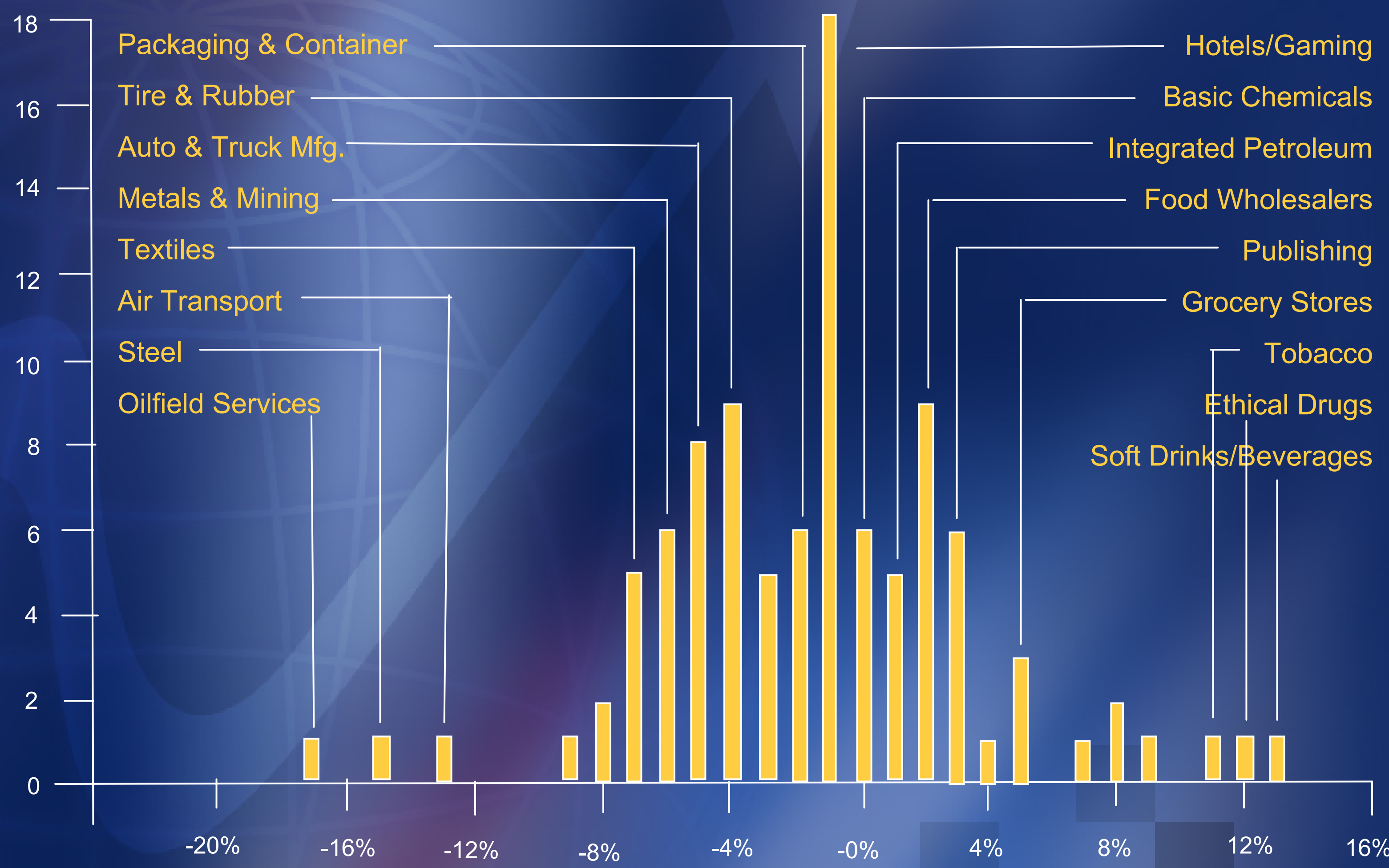


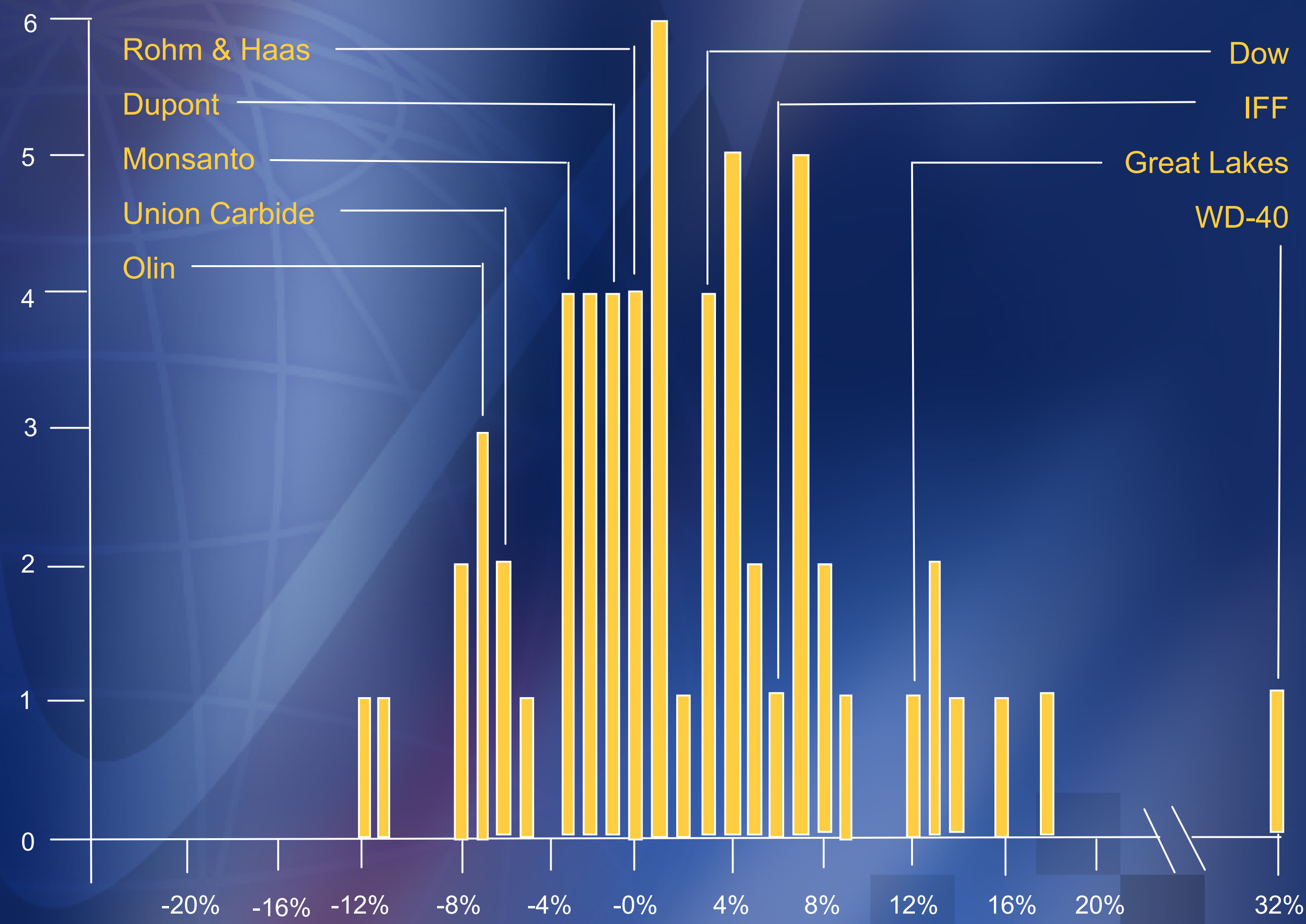
Figure by MIT OCW. Adapted from: McTaggart, 1988.

Historical Equity Spreads Across Industries (1976-91)



Source: *Value Line Investment Survey* (1992), Marakon Associates analysis.

Historical Equity Spreads within the Chemicals Industry (1976-91)



Source: *Value Line Investment Survey* (1992), Marakon Associates analysis.