Price to Value
– An Alternative Approach to Valuation

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Introduction

This paper examines price to value as an alternative to traditional valuation tools. Traditional valuation models typically penalise high growth stocks. The price to value approach alleviates this problem by rewarding companies that have high growth rates relative to its cost of capital.

Model Framework

Under the price to value (PV) framework, the value of a firm is viewed as the present value of the firm's future residual income to equity holders. This model is simply a discounted cash flow approach in an elegant form. Rather than projecting a firm's operating cash flows in the future directly, this model assesses the value of a firm based on the future residual income. In particular, the residual income is estimated by the net return to investors, i.e. return on equity over its cost of capital multiplied by the firm's book value.

A Stock Selection Tool

We have tested the effectiveness of PV as a stock selection tool against traditional value methods, and obtained evidence that PV has been a stronger and more persistent valuation method. When many value methods became contra indicators in 1998 and 1999, PV model maintained its effectiveness until late 1999. Even then, the degree of damage by using PV would have been less severe than other models.

A Signalling Tool

We proposed a new way to use this model framework as a signalling tool for overpricing. We solve for the implied discount rate, which equates the present value of future earnings prospect to the observed market price. Under this framework, a high stock price corresponds to a low discount rate in order to lift the present value. Thus, an unusually low discount rate may imply overpricing, thus may signal a potential fallen angel. Our investigation of performance since March 2000 indicates strong supporting evidence for this application.

Price to Value:
An Alternative Valuation Approach to Stock Selection

A Presentation at Northfield Annual Research Conference

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Presentation Outline

- What has ***motivated*** this study?
- How does PV ***compare*** with traditional valuation models?
- Would PV have been more ***effective*** stock selection tool?
- How can one use this model as a ***signal*** for falling angels?

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Structural Change in Market Composition

US Market - Major Sector Weights (%)	12/80	12/90	12/92	12/94	12/96	12/98	12/99	10/00
Basic Materials	7.6	5.8	5.5	6.0	4.4	2.4	2.2	1.6
Capital Goods	11.1	9.1	8.4	9.0	9.2	7.3	7.0	7.3
Communication Services	6.1	7.0	6.2	6.3	4.5	6.4	6.3	5.6
Consumer Cyclicals	8.2	10.6	13.2	11.9	9.1	9.2	8.3	6.2
Consumer Staples	8.8	17.2	17.7	15.9	15.4	12.9	8.8	9.2
Energy	20.1	8.6	6.2	6.1	5.8	3.7	3.7	4.4
Financials	4.4	8.2	11.6	11.2	13.8	16.0	12.0	14.2
Health Care	7.6	11.8	10.9	10.3	11.4	11.9	8.2	11.2
Technology	15.0	10.0	9.2	13.1	16.6	20.3	28.4	25.1
Transportation	2.6	1.5	1.7	1.4	1.3	0.9	0.6	0.6
Utilities	6.9	8.1	7.1	6.0	4.3	3.4	2.2	3.2
[Unassigned]	1.5	2.1	2.3	2.9	4.3	5.5	12.2	11.6

Stocks in Russel 1000 index were used to capture most liquid stocks, with Standard and Poors' sector theme.

Structural changes in the market composition has made the traditional value models less relevant.

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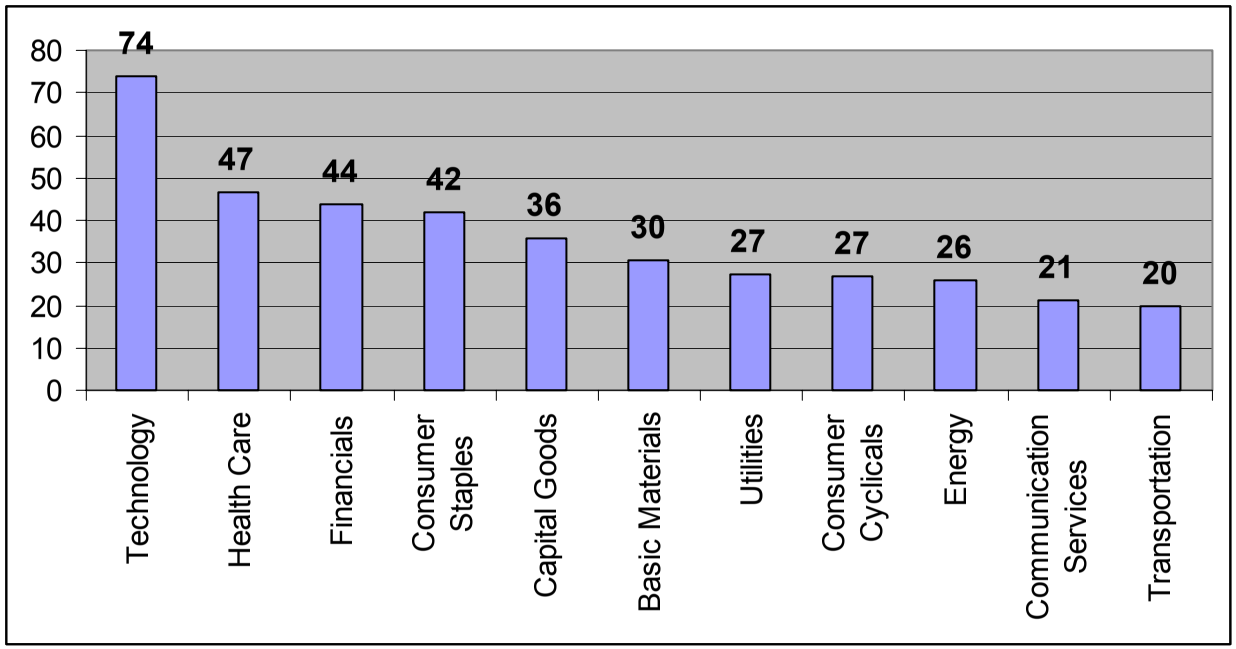
PE Ratio Across Sectors



Data as of 10/2000

Traditional measures make cross sector comparison less meaningful.

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Beneath the Hype: Model Framework

Price over Value, where

Value = Present Value of Future Residual Income

= Future {(ROE – cost of capital)*BK}

It is a discounted cash flow model in an elegant form.

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Model Comparison

Factor	Book Value	Historical Earnings	Earnings Estimate	Forward ROE	Cost of Capital	Model Objective
Model						
PB	x					Cheap stocks
PE		x				Cheap stocks at ***profit*** level
PE fwd			x			Cheap stocks at profit level and ***forward*** looking
PB & ROE	x		x	x		Cheap stocks but with ***growth*** potential
PV	x		x	x	x	Cheap stocks but with ***net*** growth potential (ROE minus cost of capital)

Price to value is a natural progression over traditional value models.

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II.Comparison

A sample of top 50 firms

March, 2000

Company Name	Valuation Ratios				Ranking of Ratios				
	PV	PB	PE	ROE	PV	PB	PE	ROE	Sector
MSFT	1.11	13.4	52.3	25.3	18	36	34	29	Technology
GE	3.91	10.2	40.5	24.6	48	28	29	27	Capital Goods
CISCO	2.26	27.6	173.9	18.1	43	47	47	17	Technology
Walmart	2.65	9.0	39.1	23.5	45	24	28	23	Consumer Cyclicals
EXXON	1.52	6.0	33.0	18.9	30	19	25	18	Energy
INTEL	0.88	12.9	51.4	26.1	14	35	33	32	Technology
LUCENT	0.83	11.8	55.6	20.6	13	31	35	20	Technology
AT&T	0.26	2.9	27.9	13.5	3	8	21	9	Communication Services
IBM	0.62	9.4	24.2	35.3	9	26	14	42	Technology
City Group	1.28	3.7	17.6	20.7	26	10	8	21	Financials
AMERICA ONLINE	2.07	21.5	121.6	11.5	39	42	45	7	Technology
AMERICAN INTL GROUP	1.69	4.2	27.0	15.7	32	12	19	12	Financials
SBC COMMUNICATIONS	0.25	4.8	19.7	27.7	2	14	10	35	Communication Services
HOME DEPOT	3.26	11.3	56.1	20.1	47	30	36	19	Consumer Cyclicals
ORACLE	2.75	61.6	110.0	47.7	46	49	42	48	Technology
MERCK	1.41	11.2	25.4	44.2	27	29	18	47	Health Care
MCI	0.14	2.6	33.1	7.6	1	5	26	5	Communication Services
PROCTER & GAMBLE	1.14	9.3	32.2	32.8	20	25	23	39	Consumer Staples
COCA COLA	2.27	12.6	49.6	33.5	44	33	32	40	Consumer Staples
SUN MICRO	1.82	28.0	115.5	24.9	34	48	43	28	Technology
DELL COMPUTER CORP C	1.18	24.2	61.8	42.0	22	44	38	46	Technology

Note: Rank 1 means the cheapest stock.

PV = 1, fair value; PV < 1, value stocks, PV > 1 expensive stocks.

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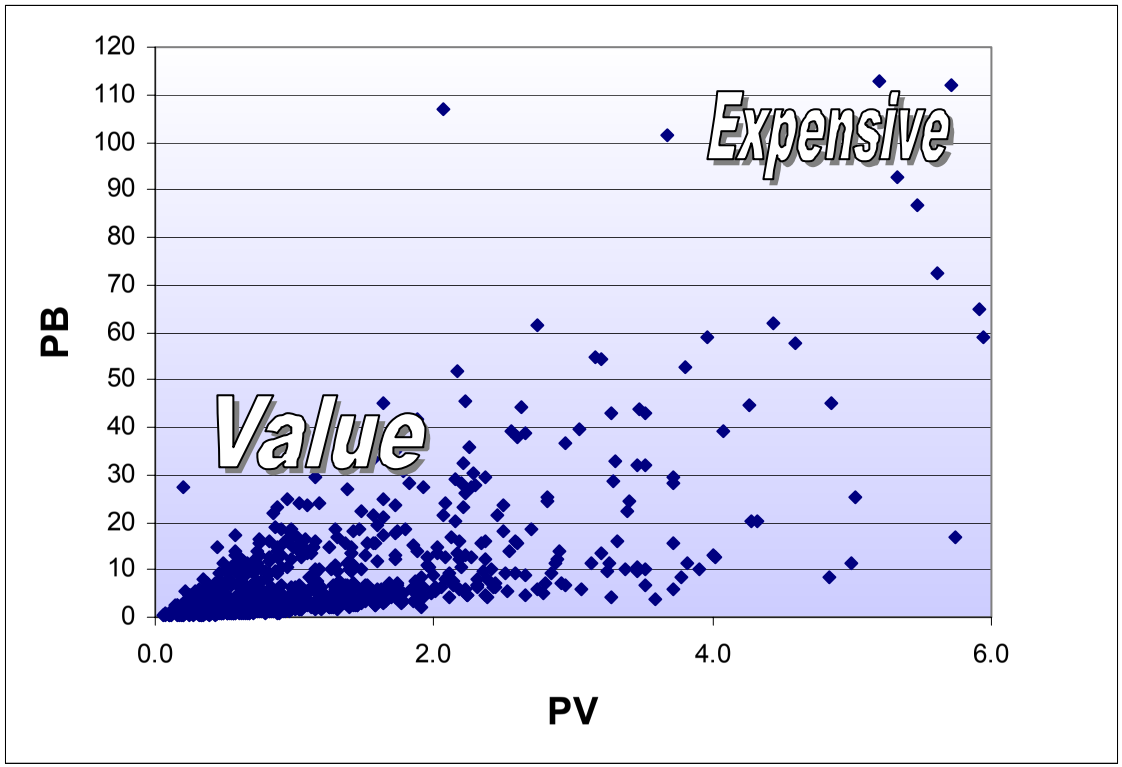
PV vs. PB for top 1000 Stocks



- *Stocks on NE are expensive by both measures, SW are value stocks.*
- *Stocks on NW and SE represent divergence.*

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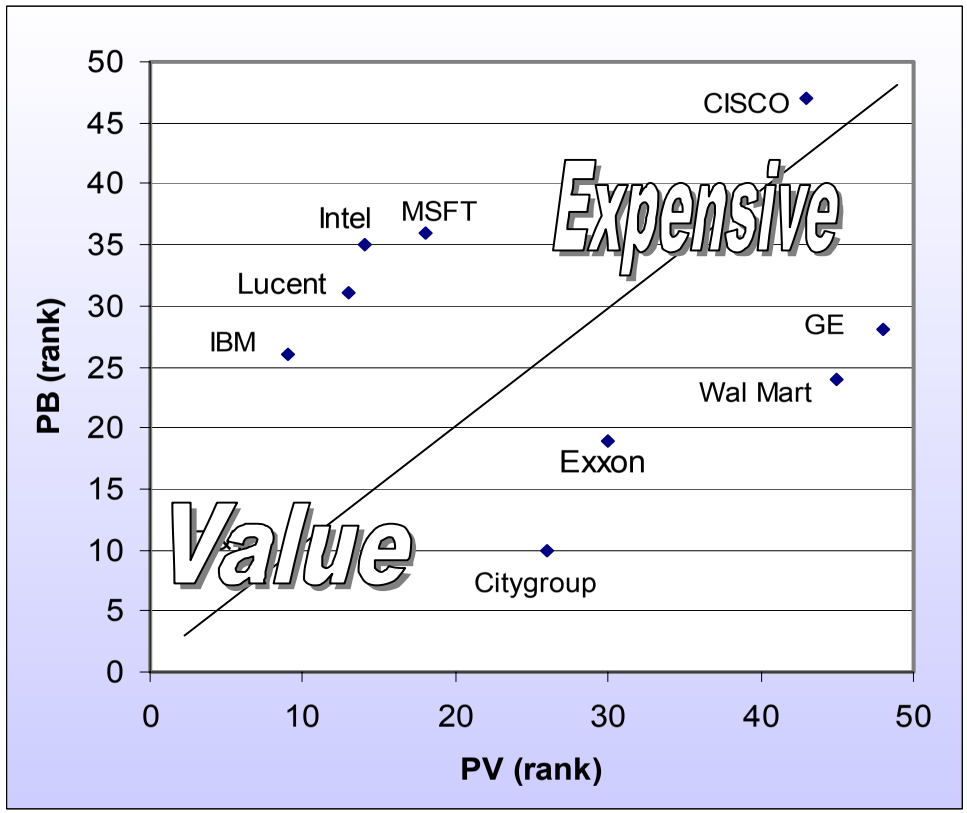
Ranking Comparison of Top 50 Stocks



- *New economy firms are rated more favorably under PV.*
- *GE and Wal Mart are rated as expensive as Cisco under PV.*

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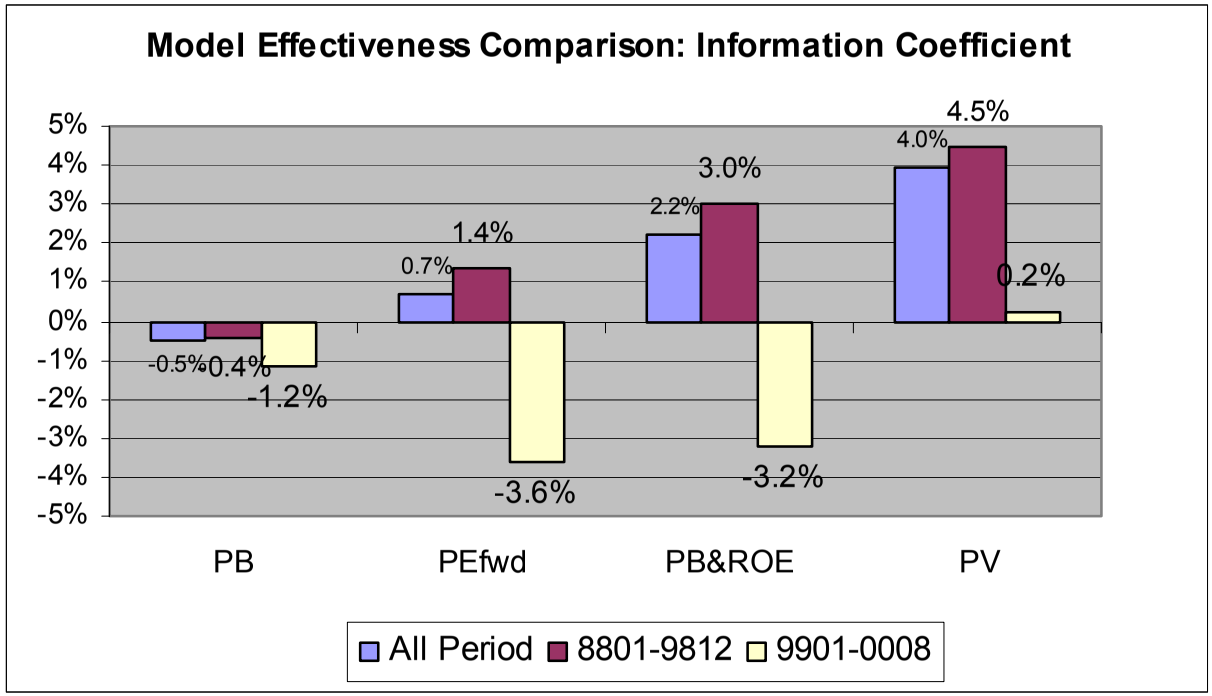
Information Coefficient Comparison



- *PV provides stronger stock selection signals than traditional ratios.*
- *PV gave no signals in 1999, while other models gave wrong signals.*

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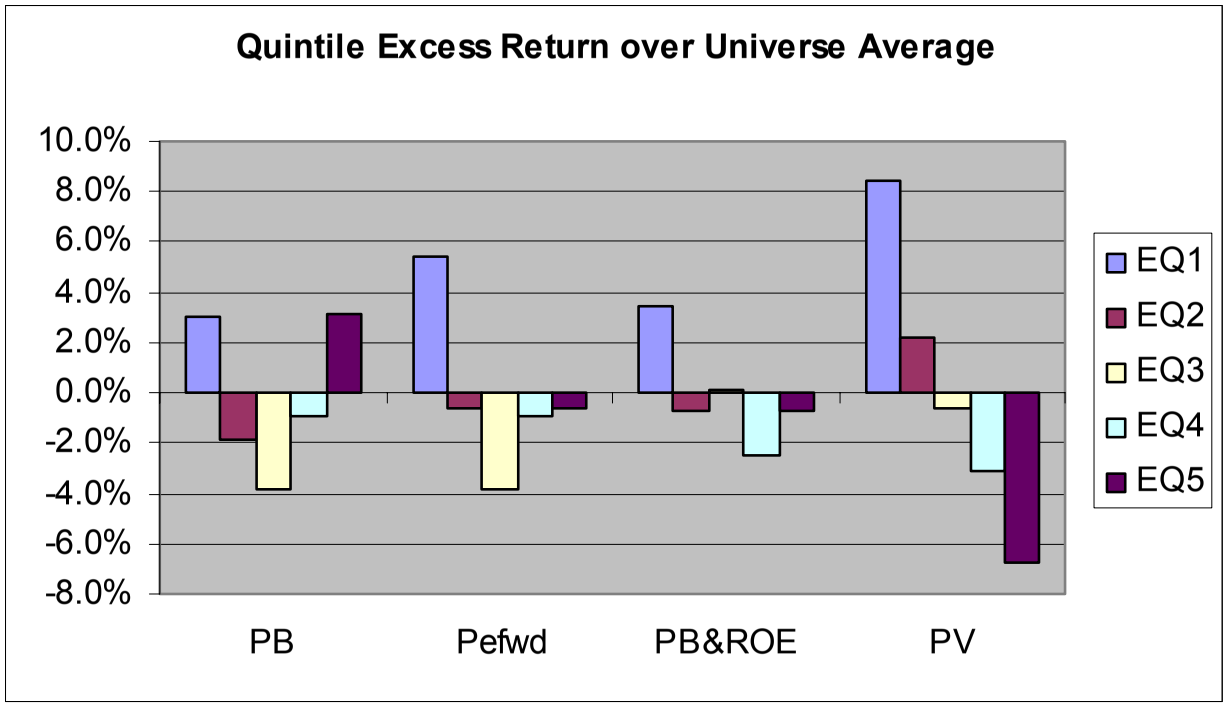
Annualized Excess Returns by Quintiles

1988/01 - 2000/08



PV has been more effective in differentiating the good from the bad.

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Other Considerations

- Time horizon before terminal value comes in.
- Estimating implied cost of capital
  - Group average vs. factor adjusted approach
  - Sector average vs. industry average

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Historical Implied Cost of Capital

	Average 1988-2000	03/31/2000	Change
Technology	5.70	1.72	*-3.98*
Capital Goods	5.52	2.41	*-3.11*
Consumer Cyclicals	6.25	4.73	*-1.52*
Utilities	9.42	8.18	*-1.24*
[Unassigned]	7.33	6.17	*-1.16*
Communication Serv	5.56	4.41	*-1.16*
Energy	4.65	3.83	*-0.82*
Consumer Staples	4.02	5.08	*1.06*
Health Care	3.76	5.44	*1.69*
Basic Materials	8.96	11.01	*2.05*
Transportation	4.95	12.04	*7.09*
Financials	13.27	21.28	*8.00*
All company	***6.61***	6.07	*-0.54*

- *Implied CoC is the discount rate, which equates the future residual income to the observed market price.*
- *It reflects the market consensus of a firm's cost of capital.*

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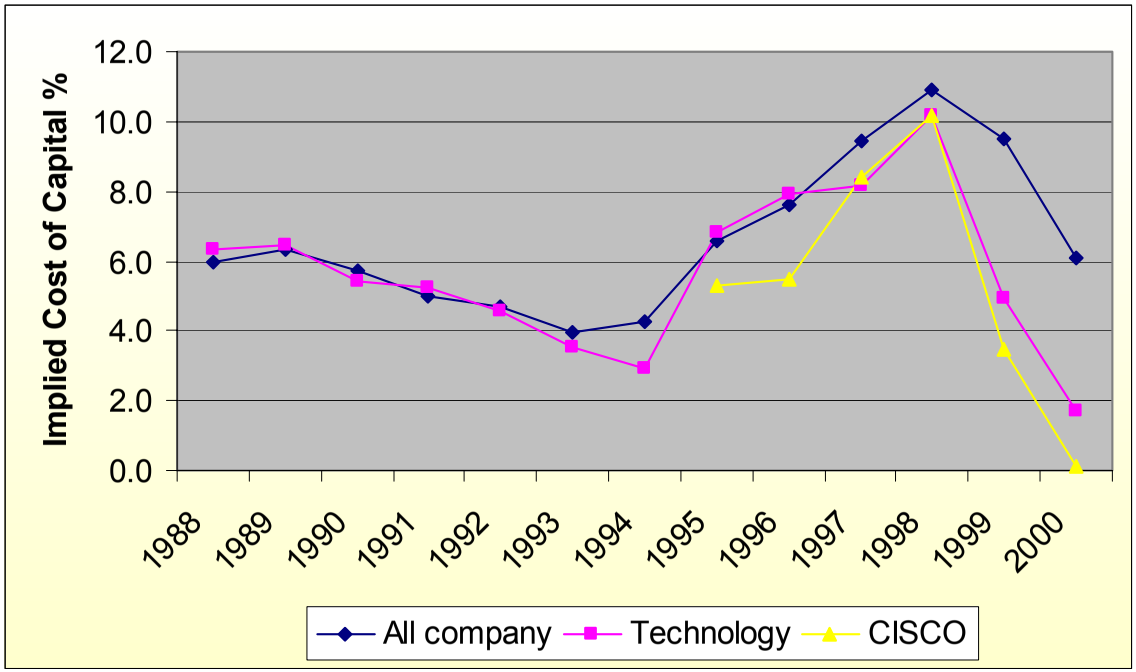
Change in Cost of Capital Over Time



- *Implied CoC dropped to a historically low level in March 2000, some firms' CoC even became negative.*
  - *Does abnormally low CoC signal anything?*

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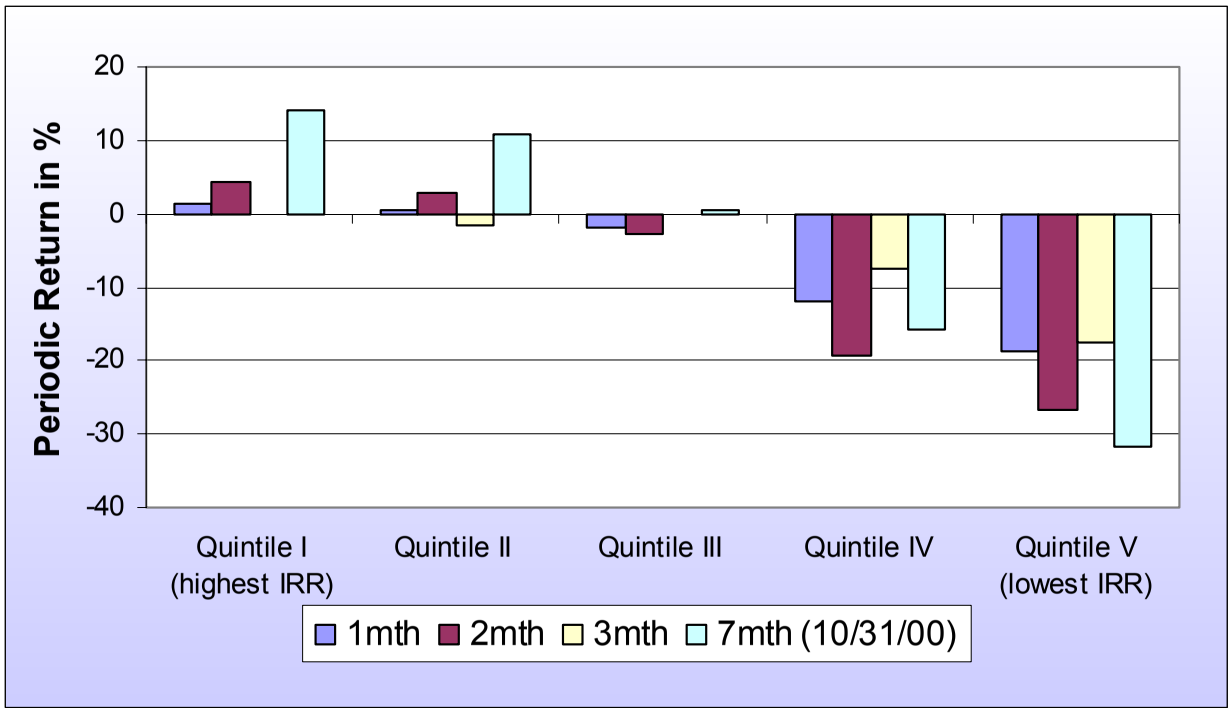
Periodic Returns by Quintile of Implied COC

A story since March 2000



The stocks with abnormally low implied CoC may spell trouble.

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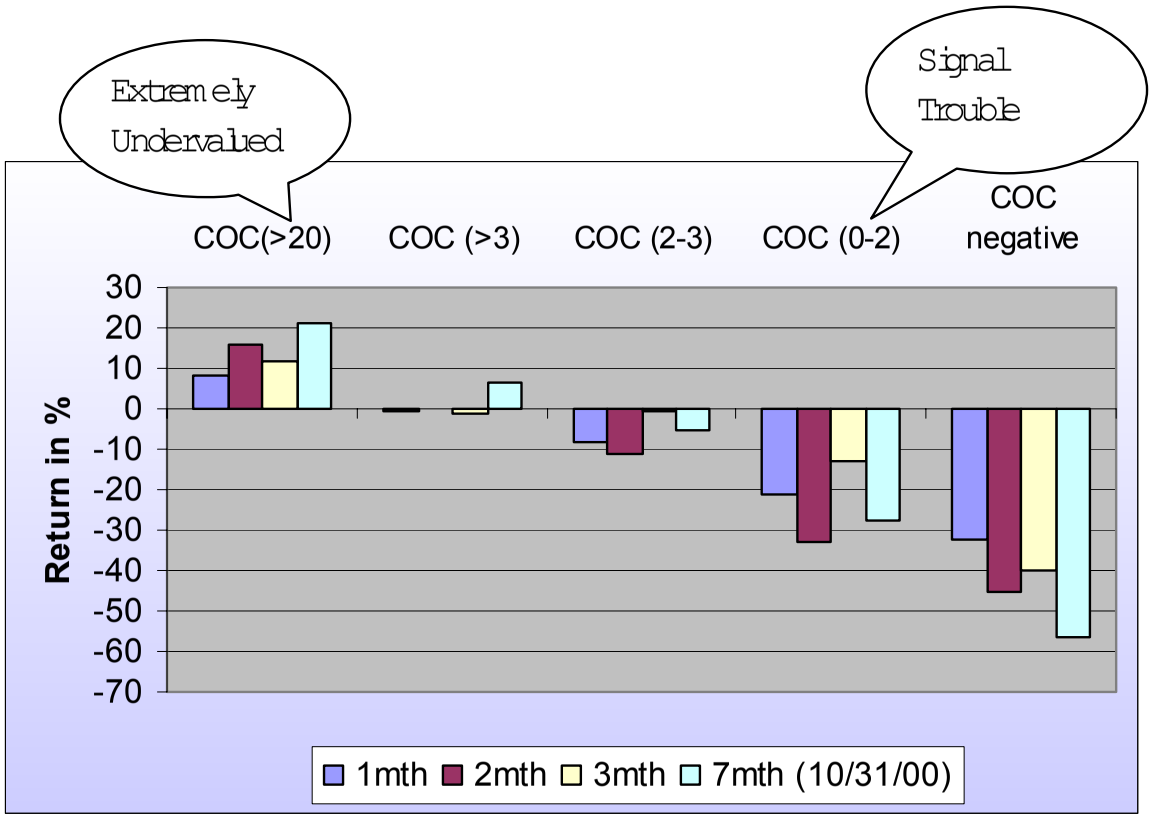
CoC at Extremes vs. Subsequent Performance

A story since March 2000



- *Implied CoC below 2 appears to signal trouble.*
- *CoC above 20 may signal incredible bargain.*

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Conclusion

- Price value is a ***natural progression*** over traditional valuation ratios.
- PV makes ***cross industry*** and cross market comparison more meaningful.
- This model framework has ***two applications***. The first one is to use it as a ***stock selection tool***.
- The second application is that one can use this model to infer the implied discount rate (CoC); and then use this rate as a ***signalling tool*** for falling angels.

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