

# The Anomalies Literature: Implications for Capital Markets in China

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# Outline

- 1 Background
- 2 New Evidence
- 3 Implications for China

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1 Background

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# Background

## Investment Practice

Graham and Dodd (1934): Security Analysis

Value Investing as implemented by Warren Buffet and Peter Lynch

Use accounting information to identify (and buy) undervalued stocks

# Background

## The conceptual framework of the CAPM

The appropriate risk premium on an individual security is determined by the individual security's contribution to the risk of the market portfolio

For any security  $i$ :

$$E(r^i) - r_f = \beta^i [E(r_M) - r_f]$$

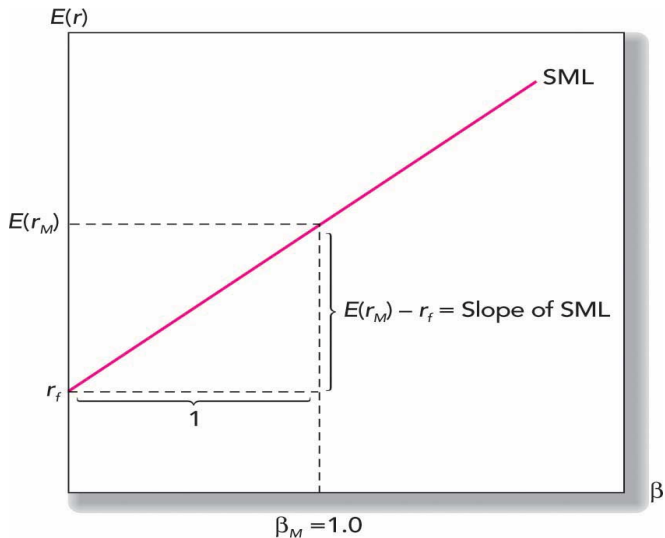
in which

$$\beta^i = \frac{\text{Cov}(r^i, r_M)}{\sigma_M^2}$$

The CAPM gives a relation between expected return  $E(r^i)$  and risk  $\beta^i$ , relation known as the **Security Market Line**

# Background

The conceptual framework of the CAPM: The security market line



# Background

## The CAPM: Empirical performance

The CAPM: only the market beta should explain average returns:

$$r^i - r_f = \alpha^i + \beta_M^i r_M + \epsilon^i$$

in which  $\alpha^i$  should be statistically insignificant from zero

Non-zero  $\alpha^i$  related to past accounting information is common

# Background

## The Fama-French model

Fama and French augment the CAPM with two more factors:

$$r^i - r_f = \alpha_{FF}^i + \beta_M^i r_M + \beta_{SMB}^i r_{SMB} + \beta_{HML}^i r_{HML} + \epsilon^i$$

in which  $\alpha_{FF}^i$  should be statistically insignificant from zero

Outperform the CAPM, but still leaves many anomalies unexplained

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# Evidence

Chen and Zhang (2009, forthcoming, Journal of Finance)

A new three-factor model:

$$r^i - r_f = \alpha_q^i + \beta_M^i r_M + \beta_{INV}^i r_{INV} + \beta_{ROA}^i r_{ROA} + \epsilon^i$$

provides a good summary of the cross section of average stock returns

# Evidence

Properties of  $r_{INV}$  and  $r_{ROA}$ , 1/1972–12/2006, 420 months

$r_{INV}$ : Returns to a strategy long in low-investment stocks and short in high-investment stocks

$r_{ROA}$ : Returns to a strategy long in high- $ROA$  stocks and short in low- $ROA$  stocks

	$r_{INV}$	$r_{ROA}$
Mean	0.43	0.96
$t$	4.75	5.10

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## Evidence

The 25 size and momentum portfolios, 1/1972–12/2006

	Loser	3	Winner	W-L	Loser	3	Winner	W-L
	Average excess returns				$\alpha$			
Small	-0.04	0.80	1.21	1.25	-0.59	0.40	0.73	1.33
3	0.03	0.58	0.98	0.95	-0.51	0.18	0.48	1.00
Big	-0.22	0.29	0.68	0.90	-0.69	-0.07	0.25	0.94
	$\alpha_{FF}$				$\alpha_q$			
Small	-0.93	-0.05	0.51	1.44	0.38	0.49	0.92	0.54
3	-0.62	-0.17	0.47	1.09	0.35	0.12	0.63	0.28
Big	-0.60	-0.05	0.46	1.06	-0.10	-0.10	0.31	0.41

## Evidence

The Campbell, Hilscher, and Szilagyi (2008) distress ( $F$ -prob) deciles, 1/1975–12/2006

	Low	5	High	H-L	$GRS$
Mean	1.03	0.72	-0.35	-1.38	
$\alpha$	0.39	0.01	-1.48	-1.87	3.01
$\alpha_{FF}$	0.39	-0.01	-1.75	-2.14	4.75
$\alpha_q$	0.19	0.13	-0.13	-0.32	1.78

Using Ohlson's (1980)  $O$ -score yields quantitatively similar results

## Evidence

The net stock issues deciles, 1/1972–12/2006

	Low	5	High	H-L	<i>GRS</i>
Mean	1.00	0.82	0.16	-0.84	
$\alpha$	0.42	0.17	-0.64	-1.06	3.97
$\alpha_{FF}$	0.22	0.13	-0.59	-0.82	3.10
$\alpha_q$	0.09	0.24	-0.19	-0.28	2.60

## Evidence

The asset growth deciles, 1/1972–12/2006

	Loser	5	High	H-L	GRS
Mean	0.95	0.62	0.16	-0.79	
$\alpha$	0.39	0.17	-0.53	-0.92	4.33
$\alpha_{FF}$	0.10	0.05	-0.35	-0.46	2.45
$\alpha_q$	0.28	0.08	-0.08	-0.37	2.02

## Evidence

The 25 size and book-to-market portfolios, 1/1972–12/2006

	Low	3	High	H-L	Low	3	High	H-L
	Average excess returns				$\alpha$			
Small	0.10	0.88	1.19	1.09	-0.63	0.37	0.70	1.32
3	0.41	0.74	1.07	0.66	-0.27	0.27	0.59	0.86
Big	0.40	0.59	0.65	0.25	-0.11	0.16	0.25	0.36
	$\alpha_{FF}$				$\alpha_q$			
Small	-0.52	0.09	0.16	0.68	0.08	0.46	0.64	0.57
3	-0.03	-0.12	-0.02	0.01	0.19	0.07	0.31	0.13
Big	0.17	-0.02	-0.26	-0.43	-0.11	-0.04	0.03	0.14

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# Implications

Studies of anomalies in China's capital markets have only started

Wang-Xu (2004): size and floating ratio (tradable over total equity) explain returns, but not beta or book-to-market (b/m)

Wong-Tan-Liu (2006): size and b/m explain returns, not beta or floating

Cui-Wu (2007): size, b/m, turnover, momentum, and short-term reversal; size effect in non-tradable equity

Wang-Di Iorio (2007): size and b/m explain returns, but not beta

# Implications

## Open questions

Why is the size effect so strong in China's capital markets?

- Special ownership structure: liquidity, corporate governance? Lack of sophisticated investors to arbitrage the anomaly away? Lack of high-quality information disclosure?

What about many, many other anomaly variables that have been examined in the U.S.: can they predict future returns in the China's markets?

- Investment, ROA, equity issues, asset growth, market leverage, earnings surprises, gross profit margin, accruals, inventories. . .

# Takeaway

Applying frontier research in investment management for Chinese investors

Security analysis is well accepted as a successful investment philosophy

The academic anomalies literature has provided time-tested empirical methods and documented many cross-sectional patterns

Exploiting anomalies in China's capital markets is likely to be financially fruitful and socially beneficial (to make the markets more efficient)