

DOCTORAL THESIS

Fundamentals and stock returns of red-chips and H-shares in Hong Kong

Chau, Siu Man Sandy

Date of Award:
2003

[Link to publication](#)

General rights

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent URL assigned to the publication

Fundamentals and Stock Returns of Red-Chips and H-shares in Hong Kong

CHAU Siu Man, Sandy

A thesis submitted in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Principal Supervisor: Professor LAM Kin

March 2003
Hong Kong Baptist University

Abstract

Market models are developed to test for the relation between fundamental variables and stock return of Red Chips and H-shares from 1994 to 1997. The fundamental variables to be considered include firm's performance measured by accounting information and ownership measures that include director ownership and majority ownership. Accounting information used are earnings-to-price ratio (E/P), book-to-market ratio (B/M), and market capitalization (MV). Applying restricted SUR, all of these fundamental variables are significant in the market models of the Red Chips and the H-shares. In general, the results of the SUR tests on the Red Chips describe the sign of growth stock and the results of the SUR tests on the H-shares describe the sign of value stock. Moreover, a positive firm size effect is estimated for the returns of the Red Chips and a negative firm size effect is estimated for the returns of the H-shares. In addition, we find that both director ownership and majority ownership are the positive risk factors for the return of the Red Chips and the majority ownership is a positive risk factor for the return of the H-shares. While the state is the indirect majority owner of the Red Chip companies, it is the direct majority owner of the H-shares companies. Overall, the empirical results suggest that Red Chips and H-shares are separate stock groupings.

Table of Contents

| | |
|--|------------|
| DECLARATION | i |
| ABSTRACT..... | ii |
| ACKNOWLEDGEMENTS | iii |
| TABLE OF CONTENTS | 1 |
| LIST OF TABLES | 5 |
| CHAPTER 1 INTRODUCTION | 6 |
| 1.1 INTRODUCTION | 6 |
| 1.2 OBJECTIVE OF THE STUDY | 8 |
| 1.3 SCOPE OF THE STUDY | 9 |
| 1.4 CONTRIBUTION OF THE STUDY | 9 |
| 1.5 LIMITATIONS OF THE STUDY | 12 |
| 1.5.1 <i>Statistical Constraints</i> | 12 |
| 1.5.2 <i>Theoretical Constraints</i> | 13 |
| 1.6 ORGANIZATION OF THE STUDY | 14 |
| 1.7 CONCLUSION | 14 |
| CHAPTER 2 LITERATURE REVIEW | 16 |
| 2.1 INTRODUCTION | 16 |
| 2.2 REVIEW ON ASSET PRICING..... | 17 |
| 2.2.1 <i>Theoretical aspects of asset pricing</i> | 17 |
| 2.2.1.1 Equilibrium models of asset pricing in financial market..... | 17 |
| 2.2.1.2 Theoretical and application problem of riskless borrowing and lending | 19 |
| 2.2.1.3 Theoretical and application problem of homogeneous investors..... | 21 |
| 2.2.1.4 Theoretical and application problems of market portfolio | 23 |
| 2.2.1.5 Development of market model technique..... | 24 |
| 2.2.1.6 Institutional characteristics and asset pricing | 26 |
| 2.2.2 <i>Empirical evidence on asset pricing</i> | 27 |
| 2.2.2.1 Using firm-specific variables in asset pricing | 27 |
| a) Positive relation between stock return and firm size | 28 |
| b) Negative relation between stock return and firm size..... | 29 |
| c) Positive relation between stock return and B/M | 31 |
| d) Negative relation between stock return and B/M..... | 32 |
| 2.2.2.2 Hong Kong evidence on asset pricing tests..... | 32 |
| a) Firm size | 32 |
| b) Earning-to-price | 33 |
| c) Book-to-market | 33 |
| d) Empirical evidence on value stocks and growth stocks in Hong Kong..... | 34 |
| 2.2.2.3 Incorporating institutional characteristics in market model | 35 |
| 2.3 REVIEW ON CORPORATE GOVERNANCE AS AN INSTITUTIONAL CHARACTERISTIC IN ASSET PRICING | 35 |
| 2.3.1 <i>Theoretical aspects of corporate governance</i> | 36 |
| 2.3.1.1 Separation of ownership and control | 37 |
| 2.3.1.2 Entrenchment hypothesis..... | 38 |
| 2.3.1.3 Convergence-of-interest hypothesis..... | 38 |
| 2.3.2 <i>Past research on State ownership</i> | 41 |

| | |
|--|-----------|
| 2.3 CONCLUSION..... | 41 |
| CHAPTER 3 DATA COLLECTION..... | 43 |
| 3.1 INTRODUCTION..... | 43 |
| 3.2 TIME FRAME OF STUDY..... | 43 |
| 3.3 LIST OF STOCKS CHOSEN..... | 43 |
| Name..... | 45 |
| Name..... | 46 |
| 3.4 SOURCES OF DATA..... | 47 |
| 3.5 STOCK RETURNS AND EXCESS RETURNS..... | 48 |
| 3.6 FUNDAMENTAL RISK FACTORS FOR RETURN OF RED CHIPS AND H-SHARES..... | 49 |
| 3.6.1 <i>Market capitalization and Share Capital</i> | 50 |
| 3.6.2 <i>Book Value</i> | 52 |
| 3.6.3 <i>Earnings yield</i> | 53 |
| 3.6.4 <i>Ownership measures</i> | 55 |
| 3.7 CONCLUSION..... | 60 |
| CHAPTER 4 RESEARCH METHODOLOGY..... | 61 |
| 4.1 INTRODUCTION..... | 61 |
| 4.2 EQUILIBRIUM MODEL SPECIFICATION ON EX-POST SYSTEMATIC RISK OF RED CHIPS AND H-SHARES..... | 61 |
| 4.2.1 <i>Beta basics</i> | 61 |
| 4.2.2 <i>Market proxy</i> | 62 |
| 4.2.3 <i>The Market Model</i> | 63 |
| 4.3 THE STATISTICAL MODEL..... | 65 |
| 4.4 REASONS FOR USING SUR..... | 66 |
| 4.5 THE STATISTICAL PROCEDURE OF SUR..... | 68 |
| 4.5.1 <i>Description of general SUR methodology</i> | 68 |
| 4.5.2 <i>Description of restricted SUR methodology</i> | 72 |
| 4.5.3 <i>Applying restricted SUR on the statistical model</i> | 74 |
| 4.6 CONSIDERATIONS IN USING INDIVIDUAL STOCK RATHER THAN PORTFOLIO AS UNIT OF ANALYSIS..... | 75 |
| 4.7 CONCLUSION..... | 76 |
| CHAPTER 5 INFORMAL TESTS ON RETURN FACTORS OF RED CHIPS AND H-SHARES..... | 77 |
| 5.1 INTRODUCTION..... | 77 |
| 5.2 CORRELATIONS BETWEEN THE FUNDAMENTALS AND STOCK RETURNS..... | 78 |
| Panel A: Correlation of fundamentals for Red Chips..... | 80 |
| Panel B: Correlation of fundamentals for H-shares..... | 80 |
| 5.3 BETA ESTIMATION..... | 80 |
| 5.4 PORTFOLIOS RANKED BY BETAS..... | 83 |
| 5.5 PORTFOLIOS RANKED BY FUNDAMENTAL VALUES..... | 83 |
| 5.6 TESTING FOR DIFFERENCES IN RETURNS BETWEEN EXTREME PORTFOLIOS..... | 87 |
| Mean..... | 88 |
| 5.7 CONCLUSION..... | 89 |
| CHAPTER 6 SUR ON MARKET MODELS OF RED CHIPS AND H-SHARES..... | 91 |
| 6.1 INTRODUCTION..... | 91 |
| 6.2 THE DISTINCTION BETWEEN "EX-POST" AND "EX-ANTE" ANALYSIS OF SYSTEMATIC RETURN FACTORS..... | 92 |
| 6.3 MARKET INDEXES AS MACROECONOMIC COMPONENT OF SYSTEMATIC RETURN FACTORS..... | 95 |
| 6.4 FINANCIAL VARIABLES AS MICROECONOMIC COMPONENT OF SYSTEMATIC RETURN FACTORS..... | 97 |
| 6.4.1 <i>Numbers of financial variables to be used</i> | 97 |
| 6.4.2 <i>Choices of financial variables</i> | 97 |
| 6.4.3 <i>Market Value as common denominator</i> | 100 |

| | | |
|--|--|------------|
| 6.5 | RESTRICTED SUR AS AN ECONOMETRIC PROCEDURE FOR SYSTEMATIC RETURN FACTORS ESTIMATION..... | 101 |
| 6.6 | ECONOMIC MODELS OF EX-POST SYSTEMATIC RETURN FACTORS FOR RED CHIPS AND H-SHARES | 102 |
| 6.6.1 | <i>Economic Model 1</i> | 103 |
| 6.6.2 | <i>Economic Model 2</i> | 104 |
| 6.6.3 | <i>Economic Model 3</i> | 104 |
| 6.7 | RESULTS OF SUR ON MARKET MODELS DEVELOPED FROM ECONOMIC MODELS OF EX-POST SYSTEMATIC RETURN FACTORS FOR RED CHIPS AND H-SHARES | 105 |
| 6.7.1 | <i>Market model 1</i> | 106 |
| 6.7.1.1 | Specifications 1 to 3 of Market Model 1 | 107 |
| 6.7.1.2 | Specifications 4 to 6 of Market Model 1 | 108 |
| 6.7.1.3 | Specification 7 of Market Model 1 | 109 |
| 6.7.2 | <i>Market model 2</i> | 112 |
| 6.7.2.1 | Specifications 1 to 3 of Market Model 2 | 112 |
| 6.7.2.2 | Specifications 4 to 6 of Market Model 2 | 113 |
| 6.7.2.3 | Specification 7 of Market Model 2 | 114 |
| 6.7.3 | <i>Market model 3</i> | 117 |
| 6.7.3.1 | Specifications 1 to 3 of Market Model 3 | 117 |
| 6.7.3.2 | Specifications 4 to 6 of Market Model 3 | 118 |
| 6.7.3.3 | Specification 7 of Market Model 3 | 118 |
| 6.7.3.4 | The relationship between E/P and B/M..... | 121 |
| 6.7.3.5 | The relationship between E/P and size | 121 |
| 6.7.3.6 | Inconsistent signs of firm size | 121 |
| 6.8 | THE CONTRASTING EFFECTS OF B/M ON RETURN OF RED CHIPS AND H-SHARES | 122 |
| 6.9 | THE CONTRASTING EFFECTS OF MV (FIRM SIZE) ON RETURN OF RED CHIPS AND H-SHARES..... | 124 |
| 6.10 | CONCLUSION..... | 125 |
| CHAPTER 7 DISCUSSION ON RETURN PREMIA FOR RED CHIPS AND H-SHARES..... | | 127 |
| 7.1 | INTRODUCTION | 127 |
| 7.2 | PAST EVIDENCE ON VALUE AND GROWTH STOCKS IN HONG KONG MARKET | 129 |
| 7.3 | EXPLANATIONS ON HIGH RETURNS OF GROWTH STOCKS..... | 129 |
| 7.3.1 | <i>Premium for high potential of earnings growth</i> | 130 |
| 7.3.2 | <i>Mispricing or irrational Pricing</i> | 130 |
| 7.4 | EXPLANATIONS ON HIGH RETURNS OF VALUE STOCKS | 131 |
| 7.4.1 | <i>Risk Premium to compensate for holding distressed firms</i> | 131 |
| 7.4.2 | <i>Contrarian strategy</i> | 131 |
| 7.4.3 | <i>Repurchase by firms or majority owners</i> | 132 |
| 7.4.4 | <i>Data snooping and data selection biases</i> | 132 |
| 7.5 | RED CHIPS AS GROWTH STOCKS | 132 |
| 7.5.1 | <i>Empirical evidence</i> | 132 |
| 7.5.2 | <i>Economic stories of Red Chips</i> | 133 |
| 7.5.3 | <i>Economic intuition on Red Chips as growth stock</i> | 134 |
| 7.6 | H-SHARES AS VALUE STOCKS | 135 |
| 7.6.1 | <i>Empirical evidence</i> | 135 |
| 7.6.2 | <i>Economic stories of H-Shares</i> | 135 |
| 7.6.3 | <i>Economic intuition on H-Shares as value stock</i> | 136 |
| 7.7 | CONCLUSION | 136 |
| CHAPTER 8 MAJORITY SHAREHOLDERS AS ADDITIONAL RETURN FACTORS FOR RED CHIPS AND H-SHARES | | 138 |
| 8.1 | INTRODUCTION | 138 |
| 8.2 | IMPACT OF STATE OWNERSHIP ON STOCK RETURN OF RED CHIPS AND H-SHARES | 140 |
| | Subsidiaries listed in HK..... | 142 |
| 8.3 | GOVERNANCE STRUCTURES OF RED CHIPS AND H-SHARES | 143 |
| 8.3.1 | Governance structure of Red Chip companies..... | 143 |

| | | |
|-------------------------|---|------------|
| 8.3.2 | Governance structure of H-Share companies..... | 144 |
| 8.4 | MARKET MODEL 4A: INCORPORATION OF OWNERSHIP MEASURES AS RETURN FACTORS FOR RED CHIPS | 144 |
| 8.4.1 | Specifications 1 to 3 of Market Model 4a | 145 |
| 8.4.2 | Specifications 4 to 6 of Market Model 4a | 147 |
| 8.4.3 | Specifications 7 of Market Model 4a..... | 148 |
| 8.4.4 | The sign of growth stock and the large firm effect on the returns of Red Chips are unchanged in Market Model 4a | 150 |
| 8.5 | MARKET MODEL 4B: INCORPORATION OF DIRECTOR OWNERSHIP AS RETURN FACTORS FOR RED CHIPS | 150 |
| 8.5.1 | Specifications 1 to 3 of Table 8.2b | 151 |
| 8.5.2 | Specifications 4 to 6 of Table 8.2b | 152 |
| 8.5.3 | Specification 7 of Table 8.2b | 154 |
| 8.6 | MARKET MODEL 4C: INCORPORATION OF MAJORITY OWNERSHIP AS RETURN FACTORS FOR RED CHIPS | 156 |
| 8.6.1 | Specifications 1 to 3 of Table 8.2c..... | 156 |
| 8.6.2 | Specifications 4 to 6 of Table 8.2c..... | 158 |
| 8.6.3 | Specification 7 of Table 8.2c..... | 159 |
| 8.7 | MARKET MODEL 5: INCORPORATION OF MAJORITY OWNERSHIP AS RETURN FACTORS FOR H-SHARES..... | 162 |
| 8.7.1 | Specifications 1 to 3 of Market Model 5 | 162 |
| 8.7.2 | Specifications 4 to 6 of Market Model 5 | 163 |
| 8.7.3 | Specifications 7 of Market Model 5..... | 165 |
| 8.7.4 | The sign of value stock and the small firm effect on the returns of H-Shares are unchanged in Market Model 5 | 167 |
| 8.8 | THE EFFECTS OF DIRECTOR OWNERSHIP ON STOCK RETURNS OF RED CHIPS AND H-SHARES | 167 |
| 8.9 | THE EFFECTS OF STATE OWNERSHIP AS MAJORITY OWNERS ON STOCK RETURNS OF RED CHIPS AND H-SHARES | 169 |
| 8.10 | CONCLUSION..... | 170 |
| CHAPTER 9 | CONCLUDING REMARKS..... | 172 |
| 9.1 | CONTRIBUTIONS OF THIS STUDY..... | 172 |
| 9.1.1 | <i>Adding international evidence to research on fundamental variables as return factors of stock return</i> | <i>172</i> |
| 9.1.2 | <i>Developing a market model that includes majority ownership as a systematic risk factor</i> | <i>172</i> |
| 9.1.3 | <i>Providing evidence on Red Chips and H-Shares are heterogeneous stock groupings....</i> | <i>173</i> |
| 9.1.4 | <i>Providing evidence on Red Chips as growth stocks, and H-Shares as value stocks</i> | <i>174</i> |
| 9.2 | LIMITATIONS OF THIS STUDY | 175 |
| 9.2.1 | <i>Problems in measuring majority owner</i> | <i>175</i> |
| 9.2.2 | <i>Small sample size and limited time period</i> | <i>176</i> |
| 9.3 | EXTENSIONS FOR FUTURE STUDIES..... | 177 |
| 9.3.1 | <i>Effect of corporate governance on stock performance.....</i> | <i>177</i> |
| 9.3.2 | <i>Developing and testing trading strategies.....</i> | <i>177</i> |
| REFERENCES | | 178 |
| CURRICULUM VITAE | | 195 |