

Overview

List of Tables	XV
List of Figures.....	XVII
List of Abbreviations	XIX
1 Introduction.....	1
1.1 Background and Objective	1
1.2 Organization of the Dissertation.....	3
2 Literature Review	7
2.1 Fundamentals of Asset Pricing Theory	7
2.2 Cross Section of Equity Returns.....	25
2.3 Real Estate Risk as a Priced Factor	38
2.4 Summary and Implications.....	45
3 Estimation Methodology	47
3.1 ICAPM Framework.....	47
3.2 VAR approach.....	48
3.3 Asset Pricing Tests	49
3.4 Summary.....	63
4 Data	65
4.1 State Variables of Interest	65
4.2 Test Assets.....	70
5 Empirical Analysis.....	73
5.1 Derivation of an Alternative ICAPM	73
5.2 Testing the Alternative ICAPM.....	89
5.3 Further Investigations.....	110
6 Conclusion	149
Appendix	151
References	153

Table of Contents

List of Tables	XV
List of Figures	XVII
List of Abbreviations	XIX
1 Introduction.....	1
1.1 Background and Objective	1
1.2 Organization of the Dissertation.....	3
2 Literature Review	7
2.1 Fundamentals of Asset Pricing Theory	7
2.1.1 Capital Asset Pricing Model.....	7
2.1.2 Intertemporal Capital Asset Pricing Model.....	12
2.1.3 Arbitrage Pricing Theory.....	18
2.1.4 Summary	25
2.2 Cross Section of Equity Returns.....	25
2.2.1 Empirical Evidence	26
2.2.1.1 U.S. Stock Returns	26
2.2.1.2 International Evidence.....	28
2.2.2 Potential Explanations.....	28
2.2.2.1 Data-Based Explanations	29
2.2.2.1.1 Data-Snooping Argument.....	29
2.2.2.1.2 Bad-Market-Proxy Argument.....	30
2.2.2.2 Risk-Based Explanations.....	30
2.2.2.3 Non-Risk-Based Explanations	32
2.2.3 Search For a Coherent Rational-Pricing Story	35
2.3 Real Estate Risk as a Priced Factor	38
2.3.1 Impact of Real Estate Risk on the Real Economy.....	38
2.3.1.1 Collateral Channel.....	39
2.3.1.2 Lending Channel	40
2.3.1.3 Housing Channel	41
2.3.1.4 Discussion	42
2.3.2 Impact of Real Estate Risk on Firm-Level Risk.....	42

2.3.2.1	Real Estate Risk and Firms' Exposure to the Macroeconomy.....	43
2.3.2.2	Real Estate Risk and Firms' Cash Flow Maturities .	43
2.3.3	Discussion	45
2.4	Summary and Implications.....	45
3	Estimation Methodology	47
3.1	ICAPM Framework.....	47
3.2	VAR approach.....	48
3.3	Asset Pricing Tests	49
3.3.1	Traditional Beta Method	49
3.3.1.1	Pricing Framework.....	49
3.3.1.2	Fama-MacBeth Method.....	51
3.3.1.3	Tests on Model Evaluation.....	54
3.3.2	Stochastic Discount Factor Method	55
3.3.2.1	Pricing Framework.....	55
3.3.2.2	Generalized Method of Moments.....	57
3.3.2.3	Tests on Model Evaluation.....	59
3.3.3	Discussion	61
3.4	Summary.....	63
4	Data	65
4.1	State Variables of Interest	65
4.1.1	Real Estate Factor.....	65
4.1.2	Fama-French Factors.....	67
4.1.3	Petkova Factors	68
4.2	Test Assets.....	70
5	Empirical Analysis.....	73
5.1	Derivation of an Alternative ICAPM	73
5.1.1	Time Variation in Expected Market Returns	74
5.1.2	VAR Estimation	76
5.1.3	Derivation of Risk Factors	79
5.1.4	Preliminary Cross-sectional Results.....	84

5.1.5	Summary	88
5.2	Testing the Alternative ICAPM.....	89
5.2.1	Descriptive Statistics	89
5.2.1.1	Risk Factors.....	89
5.2.1.2	Test Assets.....	91
5.2.2	Fama-MacBeth Method.....	91
5.2.2.1	First Stage: The Pattern of the Factor Loadings.....	92
5.2.2.2	Second Stage: The Risk Premiums	98
5.2.2.3	Fitted Versus Realized Returns	101
5.2.3	Stochastic Discount Factor Method	103
5.2.3.1	GMM Estimations	103
5.2.3.2	Magnitude of Pricing Errors.....	107
5.2.4	Summary	107
5.3	Further Investigations.....	110
5.3.1	Variations in Test Assets.....	110
5.3.1.1	Managed Portfolios	110
5.3.1.2	Industry Portfolios.....	115
5.3.2	Variations in Variables.....	120
5.3.2.1	Role of Portfolio Characteristics	120
5.3.2.2	Role of Conditioning Information.....	123
5.3.2.3	Relationship between Distress Risk and the Real Estate Factor	127
5.3.2.4	Relationship between GDP Growth and the Real Estate Factor	131
5.3.3	Variations in the Real Estate Factor	135
5.3.3.1	Innovations in Equity REITs.....	136
5.3.3.1.1	VAR Estimation	136
5.3.3.1.2	Pricing the Cross Section	137
5.3.3.2	Orthogonalized Composite REITs	140
5.3.4	Summary	144
6	Conclusion	149
Appendix	151
References	153