

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

The Relationship Between  
Value and Growth Stock Returns,  
Monetary Policy and Economic Activity:  
Evidence From New Zealand,  
Australia and the US

A thesis presented in partial fulfilment of the requirements for the degree of  
Masters of Business Studies in Finance at Massey University

Fiona Penberthy  
1998

## Abstract

This thesis examines the relationship between monetary policy, economic activity and value and growth stock returns in New Zealand, Australia and the US for the period 1990 to 1997. There is evidence to suggest that in the short-term, there are periods where value stocks outperform growth stocks and vice versa. This study investigates the role a number of economic variables play in driving the relative performances of these two groups of stocks. The primary focus of this study is on the relationship between value and growth stock returns and monetary policy, however, the following economic variables are also included in the analysis: Short-term interest rates, the exchange rate, GDP, inflation, money supply, and a business confidence index. Vector autoregressions form the methodological basis for this research and provide impulse response functions and forecast error variance decompositions that are used to determine relationships between the variables. The major finding of this study is that value stocks in Australia and the US perform relatively better than growth stocks during periods of loosening monetary policy. On the other hand, value stocks in New Zealand perform relatively better than growth stocks during periods of tightening monetary policy.

## Acknowledgements

There are many people who have assisted in the completion of this thesis, and to whom I owe a great deal of gratitude.

Firstly, thank you to my supervisor Dr Martin Young. Your enthusiasm for this research and faith in my ability was always a source of encouragement. The insight you offered into finance theory was invaluable, and your willingness to help was always appreciated. Thank you also for the freedom you allowed me in completing this research.

Thank you also to my advisor Kate Wilkinson. Kate's statistical knowledge, patience and encouragement were fundamental to the completion of this thesis.

WestpacTrust Investment Services provided much of the data on which this research was based. Their willingness to assist me in this research was much appreciated.

Finally, I would like to thank my family and friends who have provided endless support and encouragement throughout the year. Undoubtedly, you have all contributed to the completion of this thesis.

# Contents

Abstract	ii
Acknowledgements	iii
List of Tables	vii
List of Figures	ix
<b>Introduction</b>	<b>1</b>
<b>Part One: Literature Review</b>	<b>4</b>
Chapter One : Value and Growth Stock Returns, Monetary Policy and Economic Activity	5
1.1 Explanation of Relative Stock Performances	5
1.2 Value and Growth Stock Returns	10
1.3 Monetary Policy and Stock Returns	18
1.3.1 Money Supply as a Measure of Monetary Policy	19
1.3.2 Changes in the Discount Rate and Federal Funds Rate as a Measure of Monetary Policy	24
1.3.3 The Relative Impact of Monetary Policy on Different Types of Stocks	30
1.4 Economic Series and Stock Returns	34
Chapter Two : Monetary Policy in New Zealand, Australia and the United States of America	42
2.1 Monetary Policy in New Zealand	42
2.2 Monetary Policy in Australia	44
2.3 Monetary Policy in the United States of America	46
2.4 Comparison of Monetary Policy in New Zealand, Australia and the United States of America	47

## **Part Two: Methodology** --- **50**

Chapter Three : Regression Analysis, Bivariate Cointegration and Granger Causality	51
3.1 Regression Analysis	51
3.2 The Unit Root Test	52
3.3 Cointegration	57
3.4 Error Correction and Granger Causality	60
Chapter Four : Vector Autoregressions and Multivariate Cointegration Analysis	64
4.1 The Vector Autoregression (VAR)	64
4.2 Impulse Response Analysis	68
4.3 Forecast Error Variance Decompositions	71
4.4 Unrestricted VARs vs Structural and Cointegrating VARs	73
4.5 Multivariate Cointegration	76
4.6 Block Granger Causality	80

## **Part Three: Data and Exploratory Analysis** --- **82**

Chapter Five : The Data, Monetary Policy Classification and Exploratory Analysis	83
5.1 The Data	83
5.2 The Monetary Conditions Index (MCI)	84
5.3 Value and Growth Stock Indices	86
5.4 Monetary Policy Classification	89
5.5 Value and Growth Stock Returns, Monetary Policy and Economic Activity Over the 1990 to 1997 Period	90
5.6 Statistical Exploratory Analysis	94

## **Part Four: Results** **97**

---

Chapter Six : Bivariate Analysis Results	98
6.1 Value and Growth Stock Returns and Monetary Policy	98
6.1.1 Return Differences and Regression Results	98
6.1.2 Cointegration and Granger Causality Results	102
6.1.3 Summary	104
6.2 Value and Growth Stock Returns, Monetary Policy and Economic Activity	105
6.2.1 Return Differences and Regression Results	105
6.2.2 Cointegration and Granger Causality Results	114
6.2.3 Summary	117
Chapter Seven : Multivariate Analysis Results	118
7.1 Unit Root Test Results	118
7.2 VAR Results	120
7.3 Block Granger Causality Results	139
7.4 Multivariate Cointegration Results	140
7.5 Summary	144
Chapter Eight : Discussion	147
<b>Conclusion</b>	152
<b>References</b>	154

## List of Tables

1.1	Annual value-growth spread statistics for international stock markets (1981 – 1992)	11
1.2	Value and growth cycles for US stocks over the 1989 – 1996 period	16
5.1	Serial correlation in the value/growth stock return spread series for New Zealand, Australia and the US	95
6.1	OLS regression results for New Zealand, Australia and the US	101
6.2	Value and growth stock return differences for New Zealand, Australia and the US	102
6.3	Unit root test results	103
6.4	Unit root test of residuals from cointegrating regressions	103
6.5	Tests for Granger causality	104
6.6	New Zealand value and growth stock return differences	106
6.7	New Zealand regression results	106
6.8	Australian value and growth stock return differences	108
6.9	Australian regression results	109
6.10	US value and growth stock return differences	111
6.11	US regression results	111
6.12	Unit root tests of the interest rate and GDP series for New Zealand, Australia and the US	114
6.13	Test of residuals from cointegrating regressions	115
6.14	Granger causality test results	116
7.1	Unit root tests for New Zealand	118
7.2	Unit root tests for Australia	119
7.3	Unit root tests for the US	119
7.4	Generalised forecast error variance decompositions, New Zealand	120
7.5	Generalised impulse response functions, New Zealand	122
7.6	Generalised forecast error variance decompositions, New Zealand	125
7.7	Generalised impulse response functions, New Zealand	127
7.8	Generalised forecast error variance decompositions, Australia	128
7.9	Generalised impulse response functions, Australia	130
7.10	Generalised forecast error variance decompositions, US	134



7.11	Generalised impulse response functions, US	135
7.12	Block Granger causality test results	139
7.13	Tests for cointegrating relations within MCI-VAR, New Zealand	140
7.14	Tests for cointegrating relations within INT/TWI-VAR, New Zealand	141
7.15	Tests for cointegrating relations within VAR, Australia	142
7.16	Tests for cointegrating relations within VAR, US	143

## List of Figures

5.1	ACF graphs for the difference in return on value and growth stocks in New Zealand, Australia and the US	95
6.1	Periods where growth>value in relation to the business cycle, New Zealand	107
6.2	Periods where value>growth in relation to the business cycle, New Zealand	107
6.3	Periods where growth>value in relation to the business cycle, Australia	109
6.4	Periods where the value/growth spread is the smallest in relation to the business cycle, Australia	110
6.5	Periods where value>growth in relation to the business cycle, US	112
6.6	Periods where the value/growth spread is the smallest, in relation to the business cycle, US	113
7.1	Generalised impulse responses to one standard deviation shock in aCI, New Zealand	123
7.2	Generalised impulse responses to one standard deviation shock in aMCI, New Zealand	123
7.3	Generalised impulse responses to one standard deviation shock in M1, New Zealand	123
7.4	Generalised impulse responses to one standard deviation shock in CPI, New Zealand	124
7.5	Generalised impulse responses to one standard deviation shock in GDP, New Zealand	124
7.6	Generalised impulse responses to one standard deviation shock in TWI, New Zealand	127
7.7	Generalised impulse responses to one standard deviation shock in INT, New Zealand	128
7.8	Generalised impulse responses to one standard deviation shock in aCI, Australia	131
7.9	Generalised impulse responses to one standard deviation shock in Cash rate, Australia	131
7.10	Generalised impulse responses to one standard deviation shock in TWI, Australia	131
7.11	Generalised impulse responses to one standard deviation shock in INT, Australia	132

7.12	Generalised impulse responses to one standard deviation shock in M1, Australia	132
7.13	Generalised impulse responses to one standard deviation shock in CPI, Australia	132
7.14	Generalised impulse responses to one standard deviation shock in GDP, Australia	133
7.15	Generalised impulse responses to one standard deviation shock in CI, US	136
7.16	Generalised impulse responses to one standard deviation shock in Discount rate, US	137
7.17	Generalised impulse responses to one standard deviation shock in TWI, US	137
7.18	Generalised impulse responses to one standard deviation shock in INT, US	137
7.19	Generalised impulse responses to one standard deviation shock in MB, US	138
7.20	Generalised impulse responses to one standard deviation shock in CPI, US	138
7.21	Generalised impulse responses to one standard deviation shock in GDP, US	138