An integrative and dynamic analysis of business bankruptcy in Australia

Lillian Cheung

University of Wollongong

Follow this and additional works at: https://ro.uow.edu.au/theses

Copyright Warning

University of Wollongong

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Recommended Citation


Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au
NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.
AN INTEGRATIVE AND DYNAMIC ANALYSIS OF BUSINESS |
BANKRUPTCY IN AUSTRALIA* |

*A thesis submitted in fulfilment of the requirements for the award of the degree

Doctor of Philosophy

from

UNIVERSITY OF WOLLONGONG

by

Lillian Cheung |

Bachelor of Commerce (University of Wollongong) |

Master of Commerce (University of Wollongong)

Department of Economics

1998
DECLARATION

I hereby certify that this thesis has not been submitted previously as part of the requirements of another degree and that it is the result of my own independent research.

Lillian Cheung
CONTENTS

DECLARATION.................................................................................................................. ii

CONTENTS.................................................................................................................... iii

FIGURES....................................................................................................................... v

TABLES......................................................................................................................... vi

ACKNOWLEDGEMENTS................................................................................................. viii

ABSTRACT...................................................................................................................... ix

CHAPTER 1 INTRODUCTION............................................................................................... 1

1.1 THE CONCEPT OF BANKRUPTCY.............................................................................. 4

1.1.1 Business Failure.................................................................................................. 4

1.1.2 Insolvency........................................................................................................... 5

1.1.3 Bankruptcy......................................................................................................... 6

1.2 OBJECTIVES AND STRUCTURE OF THE THESIS.................................................. 8

CHAPTER 2 LITERATURE REVIEW.................................................................................. 10

2.1 FINANCIAL RATIO ANALYSES.............................................................................. 10

2.2 MICROECONOMIC ASPECTS OF BUSINESS FAILURE........................................ 16

2.3 OTHER INDIRECTLY RELATED MICROECONOMIC STUDIES.............................. 17

2.4 EFFECTS OF MACROECONOMIC FACTORS ON BUSINESS FAILURES............. 18

2.5 EFFECTS OF INTERINDUSTRY LINKAGES ON BUSINESS FAILURES................ 24

CHAPTER 3 RATES OF BANKRUPTCY AND THEIR POTENTIAL EXPLANATORY FACTORS: AN OVERVIEW .............................................................................................................. 26

3.1 AN OVERVIEW OF THE RATES OF BANKRUPTCY IN AUSTRALIA’S INDUSTRIES ..................................... 26

3.2 INTER-INDUSTRY LINKAGES.............................................................................. 29

3.3 AN OVERVIEW OF THE EXPLANATORY VARIABLES........................................ 31

3.4 TIME SERIES PROPERTIES OF THE VARIABLES............................................ 34

3.5 CONCLUDING REMARKS..................................................................................... 38

CHAPTER 4 COINTEGRATION ANALYSIS....................................................................... 40

4.1 ENGLE-GRANGER TEST FOR COINTEGRATION............................................... 40

4.2 ESTIMATION RESULTS......................................................................................... 42

CHAPTER 5 GRANGER CAUSALITY TEST..................................................................... 45

5.1 THE CONCEPT OF GRANGER’S CAUSALITY ....................................................... 45

5.2 THE CAUSALITY TESTS FOR BANKRUPTCY RATES........................................ 46
FIGURES

FIGURE 3-1 BUSINESS BANKRUPTCY RATES IN AUSTRALIA BY INDUSTRY (1973-1992) 28

FIGURE A1 CONCENTRATION RATIO BY INDUSTRY 111

FIGURE A2 INDUSTRIAL DISPUTES BY INDUSTRY 113

FIGURE A3 HOUSING PRICES, 1973-92 115

FIGURE A4 ANNUAL AVERAGE REAL MANUFACTURING WAGE RATE, 1973-92 117

FIGURE A5 STATE GOVERNMENT SPENDING AT CONSTANT PRICES, 1975-92 119

FIGURE A6 COMMONWEALTH/FEDERAL GOVERNMENT SPENDING AT CONSTANT PRICES, 1975-92 121

FIGURE A7 PERSONAL INCOME TAX RATE, 1973-92 123

FIGURE A8 INTEREST RATE, 1973-92 125

FIGURE A9 REAL MONEY SUPPLY, 1973-92 127

FIGURE A10 STATE PER-CAPITA INCOME AT CONSTANT PRICES, 1978-92 129

FIGURE A11 EXCHANGE RATE, 1973-92 131

FIGURE A12 WORLD PRICES, 1973-92 133

FIGURE A13 JAPAN'S GROSS DOMESTIC PRODUCT AT CONSTANT PRICES, 1973-92 135

FIGURE A14 NEW ZEALAND'S GROSS DOMESTIC PRODUCT AT CONSTANT PRICES, 1973-92 137
TABLE 3-1 THE RATES OF BANKRUPTCY IN SIX MAJOR INDUSTRIES IN AUSTRALIA (1973-1992) 27
TABLE 3-2 CORRELATION MATRIX OF BANKRUPTCY RATES BETWEEN INDUSTRIES 31
TABLE 3-3 ESTIMATION RESULTS OF THE UNIT ROOT TESTS 38
TABLE 4-1 ENGLE-GRANGER COINTEGRATION TEST WITHIN A MULTIVARIATE MODEL FOR BR₁, BR₂, BR₃ AND BR₄ WITH AND WITHOUT TREND 43
TABLE 4-2 ENGLE-GRANGER COINTEGRATION TEST OF PAIRS OF INDUSTRIES 44
TABLE 5-1 A SUMMARY OF THE ESTIMATED RESULTS OF THE GRANGER CAUSALITY TESTS 49
TABLE 7-1 A SUMMARY OF THE ESTIMATED ELASTICITIES BETWEEN DIFFERENCES OF DEPENDENT AND INDEPENDENT VARIABLES OBTAINED FROM 3SLS ESTIMATION 72
TABLE A1 CONCENTRATION RATIOS IN THE SIX MAJOR INDUSTRIES IN AUSTRALIA 110
TABLE A2 INDUSTRIAL DISPUTES IN SIX MAJOR INDUSTRIES IN AUSTRALIA 112
TABLE A3 HOUSING PRICES, 1973-92 114
TABLE A4 ANNUAL AVERAGE REAL MANUFACTURING WAGE RATE, 1973-92 116
TABLE A5 STATE GOVERNMENT SPENDING AT CONSTANT PRICES, 1975-92 118
TABLE A6 COMMONWEALTH/FEDERAL GOVERNMENT SPENDING AT CONSTANT PRICES, 1975-92 120
TABLE A7 PERSONAL INCOME TAX RATE, 1973-92 122
TABLE A8 INTEREST RATE, 1973-92 124
TABLE A9 REAL MONEY SUPPLY, 1973-92 126
TABLE A10 STATE PER-CAPITA INCOME AT CONSTANT PRICES, 1978-92 128
TABLE A11 EXCHANGE RATE, 1973-92 130
TABLE A12 WORLD PRICES, 1973-92 132
<table>
<thead>
<tr>
<th>Table Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A13</td>
<td>Japan's Gross Domestic Product at Constant Prices, 1973-92</td>
<td>134</td>
</tr>
<tr>
<td>A14</td>
<td>New Zealand's Gross Domestic Product at Constant Prices, 1973-92</td>
<td>136</td>
</tr>
<tr>
<td>A15</td>
<td>Estimation Results of the Granger Causality Test (Criterion: FPE)</td>
<td>138</td>
</tr>
<tr>
<td>A16</td>
<td>Estimation Results of the Granger Causality Test (Criterion: SP)</td>
<td>142</td>
</tr>
<tr>
<td>A17</td>
<td>Correlation Matrix of Explanatory Variables at Levels</td>
<td>146</td>
</tr>
<tr>
<td>A18</td>
<td>Correlation Matrix of Explanatory Variables in First Differences</td>
<td>147</td>
</tr>
<tr>
<td>A19</td>
<td>Summary of 3SLS Results with Differences of Weighted Pooled-Cross-Section Time-Series Observations</td>
<td>148</td>
</tr>
<tr>
<td>A20</td>
<td>Summary of the Directions of Associations Between Dependent and Independent Variables at Levels Obtained from 3SLS Estimation</td>
<td>154</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my supervisor, Professor Amnon Levy for his guidance, invaluable suggestions, encouragement, as well as the extensive time on reading and evaluating the prose. I am also grateful to Dr. Khorshed Chowdhury and Dr. Tony Webber for their advice in conducting some of the statistical tests.

I am indebted to Michael Organ, Stuart Svensen and Mei Ball for their assistance in data collection, and Robert Hood for his advice on typesetting.

I am also indebted to Dr. Christopher Worswick and other participants of the PhD Conference in Economics and Business 1996 for their invaluable comments.

I also wish to thank Wolfgang Brodessor for his help on computer programme installation for running the statistical tests.

Sincere thanks also go to Professor Robert Castle and Professor Donald Lewis for giving me the opportunity to do my PhD studies.

Last but not least, I would like to thank my parents and husband for their love, support and patience while I am away.
ABSTRACT

This thesis proposes an integrative and dynamic approach for assessing the effects of linkages across industries, industry-specific conditions, aggregate domestic economic conditions and international economic conditions on the rates of bankruptcy in six of Australia's major industries: primary production, mining and quarrying, manufacturing, building and construction, transport, storage and communication and finance and property. The effects of these factors are estimated within a dynamic and simultaneous-equation system with pooled cross-state time-series observations for the period 1978 to 1992. In addition, preliminary tests of cointegration and causality are conducted with nation-wide time-series data for the period 1973 to 1992 in order to explore the possible linkages among industries’ bankruptcy rates.

The estimation results of the preliminary analyses and the dynamic and simultaneous equation system have both suggested inter-industry linkages among bankruptcy rates. Moreover, the estimation results of the simultaneous-equation system have lent support to the survival of the fittest hypothesis for all industries studied. A number of other economic variables have also been found to be significantly associated with business bankruptcy rates, which include industry-specific variables such as the number of industrial disputes, housing prices and manufacturing wage rate; domestic economic variables such as state per-capita income, federal government spending, personal income tax rate, interest rate and money supply; as well as international economic factors such as exchange rate, world prices and Japan’s GDP. Among these variables, government policy instruments have been found to have relatively larger effects on the rates of bankruptcy. The estimation results of these analyses might help policy-makers design a comprehensive stabilisation policy for the Australian business sector.