

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 PATTERNS OF TRADE
BETWEEN THE ASEAN AND ANZCERTA
COUNTRIES IN AGRICULTURAL PRODUCTS**

**A thesis presented in partial fulfilment
of the requirements for the degree of**

Master of Applied Economics

At the Department of Applied and International Economics

Massey University

Palmerston North

New Zealand

Zamroni Zamroni

2003

ABSTRACT

A gravity model of trade could explain the trade patterns of countries, supported by either the dominance of factor endowments or economies of scale as sources of trade. The gravity model is based on the principle that the trade flows between two trading countries is positively related to their economic size, represented by their GDP and population, and inversely related to the distance between them.

By using data from the period 1965-1999, this study applies the gravity model to identify empirically the determinants of agricultural trade among five member countries of the Association of Southeast Asian Nations (ASEAN): Indonesia, Malaysia, the Philippines, Singapore and Thailand; and also between the Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA) countries, vis-à-vis Australia and New Zealand. The variables used to identify the trade patterns between these two groups are: the incomes of exporting and importing countries, populations of exporting and importing countries, distances between them, and some other augmented variables. Distance has been found to be an impediment to trade for all five ASEAN countries, but not for the two ANZCERTA countries. The level of competitiveness, which is represented by the real exchange rate, was found to be significant in respect of agricultural trade. The Asian financial crisis was not found to have significant effects on agricultural trade of most ASEAN countries or of the ANZCERTA countries. The effect of a country's membership of ASEAN varied from one member country to another. The ANZCERTA membership, likewise, did not affect significantly the observed trade patterns between Australia and New Zealand. Furthermore, the ASEAN Free Trade Area (AFTA)-ANZCERTA relationship also did not have a significant effect on the trade patterns of the ASEAN and ANZCERTA countries.

Intra-industry trade (IIT) involving agricultural products among ASEAN countries is relatively low. Agricultural trade of the five ASEAN and the two ANZCERTA countries could be classified as *strongly inter-industry*, not *intra-industry*, on the basis of the findings. Generally, the IIT patterns of the ASEAN and ANZCERTA countries with their trading partners increased gradually from 1965 to 1999, but are still quite low, so that *inter-industry trade* still characterises the exchange of agricultural products among these countries.

ACKNOWLEDGEMENTS

I am very grateful to the two supervisors of my research. Firstly, Professor Srikanta Chatterjee for his precious time and outstanding ideas and comments on my thesis, particularly regarding the theoretical aspects of the study, and for giving me encouragement in the handling of this research. Secondly, Dr. James Obben provided valuable suggestions and corrections, particularly in the empirical areas of this study.

I would like to thank the New Zealand Government and the Ministry of Foreign Affairs and Trade (MFAT) for giving me the opportunity to study at Massey University under a New Zealand Official Development Assistance (NZODA) scholarship. I am also indebted to Mrs. Sylvia Hooker, Mr. Charles Chua and Mrs. Sue Flynn, and other international student support officers of the International Students Office (ISO) of Massey University. My thanks are also extended to Dr. Wijaya Adi, Dr. Carunia M. Firdausy and Mohammad Thoha, MA from the Economic Research Institute (PPE), and Dr. Fatimah Z. Padmadinata, the Head of the Centre for Standardization of the Indonesian Institute of Sciences (PUSTAND LIPI) for their official support. My thanks also go to Mr. Daniel Farley and his lovely wife for their helpful and constructive proof reading.

I am enormously grateful to my father (in memoriam), Mr. Salim Subakir for his valuable guidance in leading my life and pursuing my knowledge and educational aims. My heartfelt thanks go to my loving mother, Mrs. Sofiatun, for her care and love. I greatly thank my parents-in-law, Mrs. Fauziah Roza and Mr. Anshori for their affection and encouragement and Mr. M. Adenan Achmad (in memoriam) who had himself planned to study overseas, but never could. My thanks also go to all my brothers and sisters for their support.

Finally, I would like to express my deepest indebtedness and love to my lovely wife, Devi Apriana. From her, I have had loving and magnificent support in the intense struggle involved in my study, both in Jakarta and in Palmerston North. From her, I have received inspiration and reassurance that I would achieve my best.

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	viii
APPENDICES	ix
ABBREVIATIONS	x
CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Importance of the Study	4
1.3 Objectives of the Study	5
1.4 Methodology	6
1.5 Chapter Outline	7
CHAPTER 2 TRADE PATTERNS, GRAVITY MODELS, INTRA-INDUSTRY TRADE AND PREFERENTIAL TRADING ARRANGEMENTS: A LITERATURE REVIEW	8
2.1 Introduction	8
2.2 Trade Patterns	8
2.3 Gravity Models	10
2.3.1 Theoretical Concepts and Equations	10
2.3.2 Empirical Studies Using the Gravity Models	14
2.3.3 The Gravity Models in Agricultural Trade	20
2.4 Intra-Industry Trade (IIT)	21
2.4.1 Empirical Studies Analysing IIT	24
2.4.2 IIT in Agricultural Products	27
2.5 Preferential Trading Arrangements (PTA)	29
2.5.1 Definitions and General Overview of PTA	30
2.5.2 The Waves of Regionalism in the Asia-Pacific Region	32
2.5.3 Reasons for Existing Regional Trading Arrangements	34

2.5.4	Multilateralism and Regionalism in Agricultural Trade	36
2.5.5	Models of Preferential Trading Arrangements	38
2.6	Concluding Discussion	44

CHAPTER 3 ASEAN AND ANZCERTA AND THEIR FOREIGN

	AGRICULTURAL TRADE PERFORMANCES	45
3.1	Introduction	45
3.2	ASEAN and ANZCERTA	45
3.2.1	ASEAN-AFTA	45
3.2.2	ANZCERTA	49
3.2.3	AFTA-ANZCERTA Relationship	50
3.3	Trade in Agricultural Products	53
3.3.1	Agricultural Trade Patterns of ASEAN, ANZCERTA and Other Trading Blocs	53
3.3.2	Trade Interaction Between ASEAN and ANZCERTA as Groups	56
3.3.3	Agricultural Trade Performance by Countries	59
3.4	Concluding Discussion	69

CHAPTER 4 METHODOLOGY AND TECHNICAL DESIGN

4.1	Introduction	70
4.2	The ASEAN-ANZCERTA Gravity Models	70
4.3	Intra-Industry Trade (IIT)	75
4.4	Intensity of Trade (IOT) Index	77
4.5	Hypotheses	78
4.6	Data	79
4.6.1	Definition of Data	79
4.6.2	Sources of Data	80
4.7	Concluding Discussion	81

CHAPTER 5 EMPIRICAL RESULTS AND DISCUSSION

5.1	Introduction	82
5.2	The General Remarks	82

5.3	The Detailed Discussion of Country-Specific Gravity Models ..	86
5.3.1	Indonesia	86
5.3.2	Malaysia	87
5.3.3	The Philippines	89
5.3.4	Singapore	90
5.3.5	Thailand	91
5.3.6	Australia	92
5.3.7	New Zealand	93
5.4	The Essence of Regional Trading Arrangements in the Gravity Models	93
5.5	Intra-Industry Trade (IIT) Analysis	95
5.5.1	Agricultural IIT of Indonesia	95
5.5.2	Agricultural IIT of Malaysia	96
5.5.3	Agricultural IIT of the Philippines	98
5.5.4	Agricultural IIT of Singapore	99
5.5.5	Agricultural IIT of Thailand	100
5.5.6	Agricultural IIT of Australia	101
5.5.7	Agricultural IIT of New Zealand	102
5.6	Concluding Discussion	103

**CHAPTER 6 SUMMARY, CONCLUSION, POLICY IMPLICATIONS AND
SUGGESTIONS FOR FURTHER RESEARCH** 105

6.1	Summary	105
6.2	Conclusion	108
6.3	Policy Implications for the ASEAN and ANZCERTA Countries .	109
6.4	Suggestions for Further Research	110

REFERENCES 112

LIST OF TABLES

Table 2.1	List of Previous Studies Using the Gravity Models	15
Table 2.2	List of Variables Used in the Previous Studies Using the Gravity Models in Table 2.1	17
Table 3.1	Export and Import Growth Rates (%) in Agricultural Products of Some Regional Trading Blocs 1965 – 1999	54
Table 3.2	Export and Import Shares* (%) in World Agricultural Trade of Some Regional Trading Blocs 1965 – 1999	55
Table 3.3	The Growth Rates (%) of Exports and Imports in Agricultural Products of the ASEAN and ANZCERTA Countries 1965–1999 ..	59
Table 3.4	Annual Shares of Agricultural Exports to Total Exports of the ASEAN and ANZCERTA Countries 1965-1999	60
Table 5.1	The Summary of Regressions of The General and Specific Gravity Models	83
Table 5.2	Intensity of Trade (IOT) Index of Regional Trading Arrangements in Agricultural Products 1965-1999	94
Table 5.3	Agricultural Intra-Industry Trade of Indonesia with Its Trading Partners 1965-1999	96
Table 5.4	Agricultural Intra-Industry Trade of Malaysia with Its Trading Partners 1965-1999	97
Table 5.5	Agricultural Intra-Industry Trade of the Philippines with Its Trading Partners 1965-1999	98
Table 5.6	Agricultural Intra-Industry Trade of Singapore with Its Trading Partners 1965-1999	99
Table 5.7	Agricultural Intra-Industry Trade of Thailand with Its Trading Partners 1965-1999	100
Table 5.8	Agricultural Intra-Industry Trade of Australia with Its Trading Partners 1965-1999	101

Table 5.9	Agricultural Intra-Industry Trade of New Zealand with Its Trading Partners in 1965-1999	102
Table 6	The Plots of the Main Determinants of the ASEAN and ANZCERTA Trade Patterns in Agricultural Products 1965-1999	105

LIST OF FIGURES

Figure 2.1	Basic Model of a Free Trade Area (FTA)	40
Figure 2.2	FTA Under Quantitative Restrictions (QRs)	43
Figure 3.1	The Annual Shares (%) of ASEAN Agricultural Exports and Imports with ANZCERTA 1965-1999	57
Figure 3.2	The Growth Rates of Agricultural Exports and Imports of ASEAN with ANZCERTA 1965-1999	58

APPENDICES

Appendix A	Common Effective Preferential Tariff (CEPT) Reduction of Five ASEAN Countries in Some Agricultural Products	125
Appendix B	The Major Export Destinations of Five ASEAN Countries and ANZCERTA Countries in Agricultural Products 1965-1999	127
Appendix C	The Top Ten ASEAN and ANZCERTA Countries' Exports and Imports in 3-Digit SITC Agricultural Products	134
Appendix D	The Top Ten ASEAN and ANZCERTA Countries' Intra Industry Trade (IIT) With Their Trading Partners in 3-Digit SITC Agricultural Products	138

ABBREVIATIONS

AEM	ASEAN Economic Ministers
AFTA	ASEAN Free Trade Area
ANZCEP	ASEAN New Zealand Economic Cooperation Programme
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ANZCERTA	Australia-New Zealand Closer Economic Relations Trade Agreement
BENELUX	Belgium-Netherlands-Luxemburg
CACM	Central American Common Market
CAP	Common Agricultural Policy
CEP	Closer Economic Partnership
CEPT	Common Effective Preferential Tariff
CIE	Centre for International Economics
DFAT	Department of Foreign Affairs and Trade
ECM	European Common Market
EEC	European Economic Community
EFTA	European Free Trade Association
EU	European Union
FTA	Free Trade Area
FAO	Food and Agriculture Organisation
GATT	General Agreements On Tariffs and Trade
GDP	Gross Domestic Products
G-L	Gruble-Lloyd Index
H-O	Heckscher-Ohlin
IIT	Intra-Industry Trade
IOR-ARC	Indian Ocean Rim-Association for Regional Cooperation
MAF	Minister of Agriculture and Forestry
NAFTA	North American Free Trade Area
NAPES	National Asia Pacific Economic and Scientific database
OECD	Organisation for Economic Cooperation and Development
PTA	Preferential Trading Arrangements
PWT	Penn World Table
SAARC	South Asian Association for Regional Cooperation
SITC	Standard Industrial Trade Classification
URAA	Uruguay Round's Agreement on Agriculture
WTO	World Trade Organisation