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STRUCTURAL CHANGES IN THE GROWTH OF THE MALAYSIAN MANUFACTURING SECTOR FROM 1970-2000

ROHANA KAMARUDDIN.

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By

ROHANA BT KAMARUDDIN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Doctor of Philosophy

June 2006

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Dedication

To my loving parents and four children

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

STRUCTURAL CHANGES IN THE GROWTH OF THE MALAYSIAN MANUFACTURING SECTOR FROM 1970–2000

By

ROHANA BT KAMARUDDIN

June 2006

Chairman: Professor Zakariah Abdul Rashid, PhD

Faculty: Economics and Management

The manufacturing industry has been an important sector in the Malaysian economy for the past three decades. The important role of this sector is due not only to the fact that Malaysia today depends substantially on manufacturing for its foreign exchange earnings, but also because Malaysia is the main exporter of electrical and electronic products. This study examined the sources of structural changes in output growth of Malaysia's economy over the 1978–2000 period, through analysis of the demand side using the 1978, 1991 and 2000 input– output tables. This study also analysed changes in the value-added growth patterns of the manufacturing sector over the period from 1970 to 2000. Two approaches were employed in this study, the econometric approach using UECM (unrestricted error correction model) and the structural decomposition analysis (SDA) approach. The econometric approach was used to determine the long-run relationships between the value-added of manufacturing, per capita income, population and export. The second method, the structural decomposition analysis, was used to analyse the sources of growth and key sectors in the manufacturing industry.

Introduction of the export-oriented strategy in the 1970s and 1980s to replace the import substitution strategy gave fresh impetus to industrial growth. This was evidenced in the long-run movement in export and the value-added of the manufacturing sectors. As the results show, most of the industries were non-resource based such as textiles, electrical and electronic products, which was in line with the world's increasing demand for these products. Export followed by domestic consumption is increasingly an important factors of change in the industrial growth patterns for the Malaysian economy.

The second part of the study employed the input–output analysis. The analysis computed the compositional structural change as a result of decomposition. The study found that the Malaysian economy had undergone a number of structural changes, caused mainly by the reorientation of industrialization strategies as well as by variations in the composition of domestic demand.

The results of the analysis indicate that during the second half of the OPP1 (First Outline Perspective Plan) period between 1978 and 1991, domestic demand expansion in the agriculture, light industries, heavy industries, mining and services sectors was the dominant source of growth in the economy. However, in the comparison between domestic expansion and export expansion, domestic demand expansion was still dominating in all these sectors. From 1991 to 2000, the growth in the mining and heavy industries sectors was due mainly to export expansion. Surprisingly, the light industries sector experienced a negative growth during this period, while the agriculture and services sectors showed declining growth trends. For the entire period between 1978 and 2000, export expansion appeared to be the dominant source of growth for the heavy

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industries and mining sectors, slightly higher in percentage than the domestic demand expansion.

The third part of the study employed the Rasmussen (1956) degree of dispersion index using the input–output table. The findings indicate that the key sectors in 1978, 1991 and 2000 were livestock, grain mills, rubber products and basic metal industries. The combined results of the sources of growth and key sectors in the year 2000 reveal that domestic demand expansion accounted for most of the growth of the key sectors.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

PERUBAHAN STRUKTUR DALAM PERTUMBUHAN SEKTOR PERINDUSTRIAN DI MALAYSIA DARI 1970–2000

Oleh

ROHANA BT KAMARUDDIN

June 2006

Pengerusi: Profesor Zakariah Abdul Rashid, PhD

Fakulti: Ekonomi dan Pengurusan

Perindustrian adalah antara sektor yang penting di Malaysia untuk hampir tiga dekad. Kepentingan perindustrian bukan hanya kerana Malaysia bergantung kepada industri ini untuk pendapatan tukaran wang asing, tetapi juga kerana Malaysia adalah pengeksport barangan elektrikal and elektronik yang terbesar di dunia. Kajian ini menyelidik perubahan struktur dan sumber pertumbuhan output di dalam ekonomi Malaysia pada jangka waktu 1978–2000, melalui analisa permintaan menggunakan jadual input– output 1978, 1991 dan 2000. Kajian ini juga menganalisa perubahan corak pertumbuhan industri untuk nilai–tambah industri pembuatan pada tahun 1970 hingga 2000. Dua pendekatan di gunakan dalam kajian ini, pendekatan ekonometrik Unrestricted Error Correction Model (UECM) dan pendekatan structural decomposition analysis (SDA). Pendekatan ekonometrik di gunakan untuk menentukan hubungan jangka panjang di antara nilai-tambah industri pembuatan dan pendapatan per kapita, populasi dan eksport. Pendekatan kedua, structural decomposition analysis, telah digunakan untuk menganalisa perubahan bahagian struktur dan sektor utama di dalam industri pembuatan.

Pengenalan strategi orientasi eksport pada tahun 1970an dan 1980an untuk menggantikan strategi penggantian import, telah memberi dorongan kepada pertumbuhan industri. Ini dibuktikan dengan hubungan jangka masa panjang di antara eksport dan nilai–tambah sektor pembuatan. Keputusan yang diperolehi adalah kebanyakan industri ialah dari bukan sumber seperti tektiles, barangan elektrik dan elektronik, di mana sejajar dengan permintaan dunia untuk barangan bukan sumber. Eksport dan diikuti dengan penggunaan perbelanjaan domestik menjadi faktor yang penting dalam perubahan corak pertumbuhan industri di dalam ekonomi Malaysia.

Bahagian ke dua menggunakan kajian input–output. Analysis menganalisa komposisi perubahan struktur hasil dari teknik dekomposisi. Kajian menunjukkan ekonomi Malaysia telah mengalami beberapa berubahan struktur, di sebabkan oleh re-orientasi dalam strategi perindustrian dan juga variasi dalam komposisi permintaan domestik.

Hasil kajian menunjukkan pada Rangka Rancangan Jangka Panjang Pertama di antara tahun 1978 hingga 1991, perkembangan permintaan domestik untuk sektor pertanian, industri ringan, industri berat, perlombongan dan perkhidmatan adalah sumber pertumbuhan dalam ekonomi. Walau bagaimanapun, jika perbandingan di buat di antara perkembangan domestik dan perkembangan eksport di sektor pertanian, perkembangan dalam domestik lebih dominasi dalam semua sektor ini. Dari tahun 1991 hingga 2000 pertumbuhan dalam perlombongan dan industri berat adalah di sebabkan oleh perkembangan eksport. Agak mengejutkan, industri ringan mengalami pertumbuhan negatif dalam jangka masa ini, sementara sektor pertanian dan perkhidmatan

menunjukkan corak pertumbuhan yang menurun. Di dalam jangka masa keseluruhan dari tahun 1978 hingga 2000, perkembangan eksport juga menunjukkan sumber pertumbuhan untuk industri berat dan perlombongan, peningkatan peratus yang kecil di bandingkan dengan perkembangan pemintaan domestik.

Di dalam bahagian ke tiga dengan teknik "Rasmussen (1956) dispersion index" mengunakan jadual input-output. Keputusan teknik ini menunjukkan pada tahun 1978, 1991, dan 2000 pemeliharaan ternakan, perkilangan bijirin, barang keluaran getah dan industri struktur logam adalah merupakan sektor utama,. Apabila hasil keputusan sumber pertumbuhan dan sektor utama pada tahun 2000 di gabungkan, menunjukkan perkembangan permintaan domestik merupakan sumber pertumbuhan dalam sektor utama.

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TABLE OF CONTENTS

		Page
DEDICATION		ii
ABSTRACT		iii
ABSTRAK		vi
ACKNOWLEDGEMENTS		ix
APPROVAL		xi
DECLARATION		xii
LIST OF TABLES		xviii
LIST OF FIGURES		xx
LIST OF ABBREVIATIONS		xxi
CHAPTER		
1	**INTRODUCTION**	
	1.1 Background of the Study	1.1
	1.2 Industrialization Phase	1.3
	1.3 Problem Statement	1.9
	1.4 Objectives of the Study	1.12
	1.5 Significance of the Study	1.12
	1.6 Organization of the Study	1.14
2	**STRUCTURE OF THE MALAYSIAN ECONOMY AND ITS MANUFACTURING SECTOR**	
	2.1 Structure of the Malaysian Economy	
	2.1.1 Supply Side	2.1
	2.1.2 Demand Side	2.4
	2.1.3 Openness of the Malaysian Economy	2.6
	2.2 International Trade	
	2.2.1 Trends and Performances of Exports	2.7
	2.2.2 Trends and Performances of Imports	2.9
	2.3 Overview of Manufacturing Industries	
	2.3.1 Phases of Industrialization	2.12
	2.3.2 Overall Performance	2.18
	2.4 Contribution of Labour Force to the Manufacturing Sector	2.24
	2.5 Exports of Manufactured Goods	2.24
3	**LITERATURE REVIEW**	
	3.1 Economic Growth and Development	3.1
	3.2 Economic Growth and Structural Change	3.4
	3.3 Empirical Studies of Growth Elasticity in Manufacturing	3.8
	3.4 Empirical Evidence of Sources of Growth Using SDA	3.11
	3.5 Empirical Evidence of Linkages Analysis	3.20
4	**METHODOLOGY**	
	4.1 Framework of the Study	4.1
	4.2 Industrial Growth Pattern in the Manufacturing Sector	4.4

	4.2.1	The Model	4.5
4.3		Definitions of Variables	4.8
4.4		Estimation Procedure	4.10
	4.4.1	Test for Stationarity : Unit Root Test	4.10
	4.4.2	Cointegration Analysis:ARDL	4.10
4.5		Structural Changes and Decomposition Analysis	4.13
	4.5.1	Measurement of the Extent of Structural Changes in the Malaysian Economy, 1978 – 2000	4.15
	4.5.2	The General I–O Framework	4.16
	4.5.3	Linkages Analysis	4.21
4.6		Economic Input–Output Analysis	
	4.6.1	History, Base, Concept and Assumptions of I–O	4.24
	4.6.2	Uses and Extensions of IOA	4.25
	4.6.3	Limitations of I–O Model	4.26
	4.6.4	Techniques of Input– Output Analysis	4.28
4.7		Data	4.37
5	**RESULTS AND DISCUSSION**		
5.1		Unit Root Test for Non-Stationarity	5.1
5.2		Cointegration Tests	5.5
	5.2.1	Long-Run Equilibrium Estimates	5.9
5.3		Diagnostic Test Results	5.16
5.4		Input–Output Decomposition Analysis	5.19
	5.4.1	Extent and Constituents of Structural Change	5.19
	5.4.2	First Subperiod 1978–1991	5.22
	5.4.3	Second Subperiod 1991–2000	5.29
	5.4.4	Overall Period 1978–2000	5.32
	5.4.5	The Major Export-Oriented Subsectors	5.35
	5.4.6	Directions of Changes	5.39
	5.4.7	Long-Run ARDL and I–O Decomposition Result	5.44
	5.4.8	Analysis of Linkages Effects	5.45
6	**CONCLUSION AND POLICY IMPLICATIONS**		
6.1		Summary and Conclusion	6.1
6.2		Policy Implications	6.6
6.3		Limitations of the Study	6.8
	6.3.1	UECM Technique	6.8
	6.3.2	Input–Output Study	6.9
6.4		Future Research Directions	6.10
REFERENCES			R.1
APPENDICES			A.1
BIODATA OF THE AUTHOR			B.1

LIST OF TABLES

Table		Pages
1.1	Key Indicators of the Malaysian Economy, 1982–2002	1.2
1.2	Malaysia: GDP by Kind of Economic Activity at Constant Prices, 1980–2002	1.3
1.3	Industrialization Phases in Malaysia	1.5
1.4	Performances of the Malaysian Manufacturing Sector, 1982 – 2002	1.9
2.1	Annual Growth Rates by Sector, 1982 – 2002	2.2
2.2	GDP Values, Shares and Annual Growth Rates by Component of Aggregate Demand (1987 – 2002)	2.5
2.3	Malaysian International Trade, 1987 – 2002	2.7
2.4	Export Values, Shares of Total Exports, and Annual Growth Rates of Major Sectors in the Malaysian Economy, 1987 - 2002.	2.8
2.5	Import Values, Shares of Total Imports and Annual Growth Rates of Major Sectors in the Malaysian Economy, 1987 – 2002	2.11
2.6	Policies and Strategies for Industrial Development, 1950 – 2000	2.15
2.7	Exports of Manufactured Goods	2.17
2.8	Principal Statistics of Manufacturing Industries, 1970 – 2003	2.19
2.9	Percentage Contributions of Value of Gross Output by Group, 1981 to 2000	2.20
2.10	Percentage Contributions of Employment by Group, 1981 – 2003	2.22
2.11	Key Ratios of Manufacturing Sector, 1980 – 2003	2.23
2.12	Contributions of the Labour Force to the Economic Sector	2.25
2.13	Exports of Manufactured Goods, 1970 – 2000	2.26
5.1	Definitions of Variables	5.3
5.2	The Unit Root Test for Non-Stationarity	5.4

5.3	Bounds Test for the Existence of Long-Run Growth	5.8
5.4	Estimated Long-Run Growth Elasticity's Total Value-Added of Manufacturing Divisions	5.9
5.5	Positive Growth Elasticities of Export in Manufacturing Divisions	5.13
5.6	Negative Growth Elasticities of Export in Manufacturing Divisions	5.15
5.7	Diagnostic Testing for Total Manufacturing Value Added and Division Value-Added	5.17
5.8	Sources of Industrial Growth in the Malaysian Economy in the Subperiods 1978–1991,1991–2000 and Overall Period 1978–2000	5.20
5.9	Gross Output Growth Rates	5.23
5.10	Changes in Gross Output Shares	5.25
5.11	Industries Ranked according to Export Expansions, 1978–1991,1991–2000, 1978–2000	5.36
5.12	Industries Ranked according to Growth Rates, 1978–1991,1991–2000, 1978–2000	5.42
5.13	Comparison between I–O Decomposition Results and Long-Run ARDL	5.45
5.14	Rangking of Sectors with High Backward Linkages in 1978, 1991 and 2000	5.47
5.15	Sources of Growth (1978–1991), Key Sectors in 1978 – 1991 and Growth Elasticities	5.49
5.16	Sources of Growth (1991–2000), Key Sectors in 2000 and Growth Elasticities	5.50

LIST OF FIGURES

Figure		Pages
3.1	Economic Growth and Production Possibility Curve	3.2
3.2	Two Kinds of Economic Growth	3.3
4.1	Framework of the Study	4.2
4.2	Structure of an Input–Output Table	4.28
4.3	An Input–Output Transaction Table	4.30

LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ARDL	autoregressive distributed lag
BNM	Bank Negara Malaysia
CPI	consumer price index
DDE	domestic demand expansion
EDE	export demand expansion
EOI	export oriented industry
EPZ	export processing zones
FDI	foreign direct investment
FTZ	free trade zone
GDP	gross domestic product
GNP	gross national product
HDI	human development index
HICOM	Heavy Industry Corporation of Malaysia
III	Investment Incentives Act
IMP	Industrial Master Plan
I-O	input-output
IOA	input-output analysis
IOC	input-output coefficients
ISF	import substitution final demand
ISI	import substitution industry
ISW	import substitution intermediate goods

MIC	Malaysian Industrial Classification
MNC	multinational companies
MSIC	Malaysian Standard Industrial Classification
NAP	National Agriculture Policy
NCP	National Car Project
NEP	New Economic Policy's
n.e.c.	not elsewhere classified
NIC	Newly Industrialized Country
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary least square
OPP1	First Outline Perspective Plan
OPP2	Second Outline Perspective Plan
PPI	producer price index
OLS	ordinary least square
RECM	restricted error correction model
SDA	structural decomposition analysis
SITC	Standard International Trade Classification
TFP	total factor productivity
TSC	trade specialization coefficient
USA	United States of America
UECM	unrestricted error correction model
UNDP	United Nations Development Programme

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The Malaysian economy has experienced rapid growth during the past three decades. Malaysia's GDP grew at an average rate of 5.1 percent in the 1960s and 7.8 percent in the 1970s. In the 1980s, the Malaysian economy continued to grow, albeit at a lower average rate of 0.05 percent due to the global recession in 1985–1986. With the recovery of the world economy, the Malaysian economy picked up rather rapidly from 1991 to 1995 at an average rate of 9.5 percent per annum. The Malaysian GDP expanded at the average rate of 8.7 percent per annum during the period between 1996 and 1997 before registering a negative growth rate of 7.4 percent in 1998 due to the East Asian financial crisis. Efforts by the government to resuscitate the economy since mid-1998 has succeeded in generating an average growth rate of 4.75 percent during the period between 1999 and 2002. The experience of rapid economic growth was accompanied by low consumer price index, low unemployment and rising per capita income (Table 1.1).

Table 1.1: Key Indicators of the Malaysian Economy 1982-2002

Year	GDP Real prices (RM million)	Annual growth GDP (%)	GDP per capita (RM million)	Annual growth GDP per capita (%)	Unemployment rate (%)	CPI % change (1994 = 100)
1982	67,206		4,587		3.4	
1983	71,386	6.2	4,744	3.4	3.8	4.6
1984	76,927	7.8	5,154	8.6	5.0	4.6
1985	76,062	-1.1	4,789	-7.1	5.6	3.6
1986	76,971	1.2	4,714	-1.6	7.4	0.4
1987	81,085	5.3	4,834	2.5	7.3	0.5
1988	89,143	9.9	5,177	7.1	7.2	0.8
1989	97,218	9.1	5,504	6.3	5.7	2.6
1990	105,977	9.0	5,854	6.4	4.5	2.9
1991	116,093	9.5	6,259	6.9	n.a	3.0
1992	126,408	8.9	6,638	6.1	3.7	4.3
1993	138,916	9.9	7,100	7.0	4.1	4.7
1994	151,714	9.2	7,543	6.2	n.a	3.5
1995	166,625	9.8	8,054	6.8	3.1	3.7
1996	183,292	10.0	8,659	7.5	2.5	3.4
1997	196,714	7.3	9,080	4.9	2.4	5.2
1998	182,237	-7.4	8,216	-9.5	3.2	2.8
1999	193,422	6.1	8,515	3.6	3.4	5.3
2000	209,959	8.5	8,936	4.9	3.1	2.8
2001	210,640	0.3	8,772	-1.8	4.0	1.5
2002	219,309	4.1	8942	1.9	3.5	
Average	141,865.2		7,103.55		4.2	3.4

Source: Department of Statistics Malaysia (2003)
n.a. – not available

A basic development fact is that a country experiences structural transformation as it develops (Gollin, et al., 2001). This unprecedented rapid economic growth for Malaysia has been accompanied by a marked structural transformation of the Malaysian economy. While the agriculture sector's share in GDP declined from 22.3 percent in 1980 to 8.7 percent in 2002, the contribution of the industrial sector grew from 38.5 percent in 1980 to 44.5 percent in 2002 (Table 1.2). Most of this surge in the industrial sector's growth came from an expanding manufacturing sector, with its contribution to the GDP growth by 50 percent over two decades from 19 percent in 1980 to 30 percent in 2002. Along with its declining significance in GDP, the role

of agriculture as a major contributor to economic growth also declined, with a negative annual growth of 0.2 percent from 1990 to 1995 (Appendix 2). On the other hand, the growth of the manufacturing sector during the same period resulted in an increased contribution to the GDP, although in terms of its annual growth, it showed a declining growth rate with negative 1.0 percent from 2000 to 2002 (Appendix 2).

Table 1.2: Malaysia GDP by Kind of Economic Activity at 1978 Constant Prices, 1980 –2002

Economic activity	Percent share of GDP					
	1980	1985	1990	1995	2000	2002
Agriculture	22.3	20.3	16.3	10.3	8.9	8.7
Mining and quarrying	12.8	13.3	9.4	8.2	7.3	7.2
Manufacturing	18.5	18.5	24.6	27.1	31.9	29.9
Electricity, gas and water	2.2	2.5	2.7	3.5	3.9	4.1
Construction	5.0	5.2	3.5	4.4	3.3	3.3
Wholesale and retail trade, hotels and restaurants	13.1	13.1	13.2	15.2	14.8	14.9
Transport, storage and communication	5.9	6.6	6.7	7.4	8.0	8.6
Finance, insurance, real estate and business services	7.7	8.3	8.2	10.4	12.7	15.1
Other services	7.3	7.2	7.2	7.7	7.6	8.2
Government services	9.6	11.4	8.8	7.1	6.8	7.2
Less imputed bank service charges	2.3	3.8	4.4	5.3	7.5	9.6
Plus import duties	5.2	4.4	3.7	4.1	2.2	2.4

Source: Department of Statistics Malaysia (2004)

1.2 Industrialization Phase

Malaysia's industrialization journey has experienced a dynamic transformation although it has had its share of failures and weaknesses. In the late 1960s, Malaysia implemented its import substitution policy (Table 1.3). The reason for implementing this policy was to reduce the import bill and create more employment opportunities. During this era, the industrial sector

was conceptualized by investment from multinational firms, which were primarily owned by the British. The era also saw the early entrance of investors from the United States. The main source of capital was from foreign investment. The impact of the industrialization policy is evidenced from the balance of payment, value–added, employment and growth. However, the import substitution policy did not have any industrial linkages and networking in the economy because the industries relied on imported raw materials and intermediate outputs.

In the 1970s, industrialization in Malaysia shifted to the policy of export orientation. During the 1970s also, the world market saw trade and capital liberalization. A number of multinational firms, especially those in the electric and electronic industries, started to operate their factories in developing countries to take advantage of the abundant supply of cheap labour, and the many incentives of the domestic and regional markets. This era also saw the appearance of Japan as the largest world producer in electric and electronic merchandise. Japanese corporations looked for production locations outside of Japan to reduce their production costs.