



UNIVERSITI PUTRA MALAYSIA

***INTER-INDUSTRY ANALYSES AMONG MICRO, SMALL, MEDIUM AND
LARGE ENTERPRISES IN MALAYSIA***

CHAKRIN A/L UTIT

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**INTER-INDUSTRY ANALYSES AMONG MICRO, SMALL, MEDIUM AND
LARGE ENTERPRISES IN MALAYSIA**

By

CHAKRIN A/L UTIT

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

January 2021

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

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January 2021

Chairman : Associate Professor Mohd Yusof Saari, PhD
Institute : Tropical Agriculture and Food Security

This thesis is motivated from the view of economic unbalanced between production sizes and economic contribution of micro, small and medium enterprises (MSMEs) in the Malaysian economy. Specifically, it deals with the analyses of the structural differences between MSMEs and large firms in explaining the unbalanced economic contribution. The structural differences are measured by focusing on three different issues. First, it addresses how differences in production structures between MSMEs and large firms contribute to the variations in multiplier impacts. Second, it further details the analysis of differences in production structures by measuring the extent to which the resource-based Government-Linked Companies (GLCs) have influenced the unbalanced contribution of MSMEs. Third, it examines the extent to which the different production structures affect the level of income distribution at different household groups. The three issues are analysed by using two new and novel databases, the so-called MSME-Input-Output (MSME-IO) Table and MSME-Social Accounting Matrix (MSME-SAM), which are specifically developed for this study. The first and second issues are analysed by applying the MSME-IO while MSME-SAM is used to address the third issue. Three key findings are drawn from this study. First, one-size fits all measures is bias as the use of only the proportionality approach to estimate the economic impacts of production sectors tends to overestimate the economic benefits of MSMEs. Second, resource-based GLCs are found to associate with less economic spill over to MSMEs. Third, smaller production sizes, particularly the micro and small-sized sectors contribute relatively higher income multipliers. Altogether, analyses have validated the superiority of utilising disaggregated databases for policy analyses of MSMEs. Based on the superiority of the databases, four key recommendations and policy reflections to improve the future contributions of MSMEs are provided. They include the importance of having updated and regular inter-industry databases for progress monitoring, strengthening of

existing linkages programmes, establishing MSMEs content requirement policy, and strengthening digitalisation among MSMEs for productivity improvement.



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

ANALISIS ANTARA INDUSTRI PERUSAHAAN MIKRO, KECIL, SEDERHANA DAN BESAR DI MALAYSIA

Oleh

CHAKRIN A/L UTIT

Januari 2021

Pengerusi : Profesor Madya Mohd Yusof Saari, PhD
Institut : Pertanian Tropika dan Sekuriti Makanan

Sudut ketidakseimbangan ekonomi antara saiz dan sumbangan ekonomi oleh perusahaan mikro, kecil dan sederhana (PMKS) di dalam ekonomi Malaysia menjadi pendorong kepada penulisan tesis ini. Secara khususnya, ia menganalisis perbezaan struktur antara PMKS dan firma besar dalam menerangkan ketidakseimbangan ekonomi. Perbezaan struktur boleh diukur dengan memberikan tumpuan kepada tiga isu berbeza. Pertama, tesis ini menjawab bagaimana perbezaan struktur pengeluaran antara PMKS dan firma besar menyumbang kepada perbezaan dalam impak pengganda. Kedua, tesis ini memperincikan analisis perbezaan struktur pengeluaran dengan mengukur sejauh mana Syarikat Berkaitan Kerajaan (GLC) yang berasaskan sumber telah mempengaruhi ketidakseimbangan sumbangan PMKS. Ketiga, mengkaji sejauh mana perbezaan struktur pengeluaran mempengaruhi tahap pengagihan pendapatan di kumpulan isi rumah yang berbeza. Ketiga-tiga isu dianalisis dengan menggunakan dua pangkalan data baharu yang dinamakan Jadual Input-Output-PMKS (IO-PMKS) dan Matrik Perakaunan Sosial-PMKS (MPS-PMKS) yang dibangunkan secara khusus untuk kajian ini. Isu pertama dan kedua dianalisa dengan menggunakan IO-PMKS, manakala MPS-PMKS digunakan untuk menjawab isu ketiga. Tiga dapatan utama dihasilkan daripada kajian ini. Pertama, penggunaan satu saiz bagi semua ukuran adalah tidak sesuai kerana penggunaan kaedah perkadaran untuk menganggar impak ekonomi sektor pengeluaran berkecenderungan untuk memberikan nilai impak yang lebih tinggi kepada PMKS. Kedua, GLC berasaskan sumber semulajadi didapati mempunyai kadar sumbangan ekonomi yang rendah kepada PMKS. Ketiga, sektor pengeluaran yang bersaiz lebih kecil, terutamanya sektor bersaiz mikro dan kecil menyumbang pengganda pendapatan yang lebih tinggi. Secara keseluruhannya, analisis telah mengesahkan kelebihan penggunaan pangkalan data yang dibangunkan untuk analisis dasar PMKS. Berdasarkan kelebihan pangkalan data ini, empat cadangan utama dan refleksi dasar untuk meningkatkan sumbangan PMKS telah diberikan. Ia termasuklah kepentingan

mempunyai pangkalan data antara industri yang dikemas kini dan berkala untuk pemantauan kemajuan, pengukuhan program perhubungan industri yang sedia ada, penetapan dasar keperluan kandungan PMKS, dan memperkukuh proses pendigitalan antara PMKS untuk peningkatan produktiviti.



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This thesis summarises the 'output' from all the 'inputs' that I have received throughout my PhD journey. Therefore, to end the journey, I would like to dedicate this thesis and express my gratitude to the parties involved as it embedded their supports and kind assistances.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Mohd Yusof Saari, PhD

Associate Professor
School of Business and Economics
Universiti Putra Malaysia
(Chairman)

Azman bin Hassan, PhD

Associate Professor
School of Business and Economics
Universiti Putra Malaysia
(Member)

Muhammad Daaniyall bin Abd Rahman, PhD

Senior Lecturer
School of Business and Economics
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 06 May 2021

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADB-MRIO	Asian Development Bank, Multi-Regional Input-Output Table
AIOT	Asian International Input-Output Table
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
B40	Bottom 40% income earners
CGE	Computable general equilibrium
COE	Compensation of employees
COICOP	Classification of Individual Consumption According to Purpose
DOSM	Department of Statistics Malaysia
DUA	Distribution & Use of Income Accounts and Capital Account
E&E	Electrical & electronics
ERIA	Economic Research Institute for ASEAN & East Asia
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GLCs	Government-linked companies
GRM	GLC-related MSMEs
GVC	Global Value Chain
HEM	Hypothetical Extraction Method
HES	Household Expenditure Survey
HIP	High Impact Programme
HIS	Household Income Survey
ICIO	Inter-Country Input–Output Table

ICT	Information and communication technology
ILP	Industrial Linkages Programme
IMP2	Second Industrial Master Plan
IMP3	Third Industrial Master Plan
IRIO	Inter-Regional Input-Output Table
KRI	Khazanah Research Institute
MASCO	Malaysia Standard Classification of Occupations
MEA	Ministry of Economic Affairs
MEDAC	Ministry of Entrepreneur Development and Cooperatives
MNCs	Multinational companies
MRS	Manufacturing-related services
MSIC	Malaysia Standard Industrial Classification
MSMEs	Micro, small and medium enterprises
MSME-IO	MSME Input-Output Table
MSME-SAM	MSME Social Accounting Matrix
NEM	New Economic Model
NEP	New Economic Policy
NEP 2030	National Entrepreneurship Policy 2030
NSDC	National SME Development Council
OECD	Organisation for Economic Co-operation and Development
OPP3	Third Outline Perspective Plan
OSMEP	Office of SMEs Promotion of Thailand
PSME	Profile of Small and Medium Enterprises
RoS	Rest of sectors
RoW	Rest of the world

SAM	Social Accounting Matrix
SBA	Small Business Act
SMEA	Small and Medium Enterprise Administration of Taiwan
SMEs	Small and medium enterprises
SMRJ	Organization for Small and Medium Enterprises and Regional Innovation, Japan
SOEs	State-owned enterprises
SPRING	Standards, Productivity and Innovation Board of Singapore
SPV 2030	Shared Prosperity Vision 2030
SUT	Supply and use table
SYM	Statistics Yearbook Malaysia
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
VAX	Value added exports
VDP	Vendor Development Program
WIOT	World Input-Output Table
WTO	World Trade Organization

CHAPTER 1

INTRODUCTION

1.1 About this Thesis

This thesis documents a study that measures the extent to which the differences in production structures of the micro, small and medium enterprises (MSMEs) and large firms in Malaysia have contributed to the variations in economic impacts on output, value added and income distribution. Specifically, this study was inspired by the economic unbalanced between production sizes and economic contributions of MSMEs in the Malaysian economy. From the size perspective, MSMEs are undeniably the backbone of Malaysia's economy, contributing 98.53% of the total number of establishments in 2015 (DOSM, 2017a). However, contribution of MSMEs to value added (also reflecting the contribution to gross domestic product, GDP) was considerably low at 31.92% in 2015 (DOSM, 2017a).

Specifically, this thesis deals with three structural issues between production structures of MSMEs and large firms. First, it addresses how differences in production structures between MSMEs and large firms contribute to the variations in multiplier impacts. Second, it further details analysis of production structures by measuring the extent to which resource-based Government-Linked Companies (GLCs) have benefitted the MSMEs. Third, it examines the extent to which the different production structures characterised by MSMEs and large firms affect the level of income distribution at different household groups.

The three structural issues are analysed by developing two new and novel inter-industry databases. The first database is the MSME-Input-Output (MSME-IO) Table which is developed by splitting production sectors in the standard national input-output table according to four different production sizes (micro, small, medium and large firms). Second, the MSME-IO is extended into a Social Accounting Matrix (SAM) framework (or shortly termed as MSME-SAM) for income distribution analysis. Using these two unique databases, several novel modelling applications are developed, aiming at providing quantitative measures for the variations in the economic impacts of MSMEs and large firms.

Three key findings are worth mentioning from the analyses. First, the one-size fits all measures is bias as the use of only the proportionality approach to estimate the multiplier impacts of production sectors tends to overestimate the impacts on MSMEs. Second, resource-based GLCs are found to associate with less economic spill over to MSMEs. Third, smaller production sizes, particularly the micro and small-sized sectors contribute relatively higher income multipliers.

Altogether, results show that analyses on the disaggregated databases provide new insights on structural issues and give better outcomes for policy development purposes.

This thesis took about 4 years to complete, from 2016 to 2020. Throughout the period, the major research works conducted include the estimation of the databases¹, development of modelling approaches, analyses and validation of findings. Outputs from this thesis have been published in a book titled *Structure of the Malaysian Economy: An Input-Output Analysis* (Khazanah Research Institute, 2018) and national policy documents which include *SME Input-Output Table: Analysis and Impact* (SME Corporation Malaysia, 2018a) and *SME Input-Output Table* (SME Corporation Malaysia, 2018b). Results and findings drawn from this study have also been presented and validated at various stakeholder engagements, and national and international conferences (see Utit et al., 2016; Utit et al., 2019). One of the papers produced from this study was submitted for publication in *Economic Systems Research* and was requested for correction and re-submission. Considering all these aspects, outputs from this study have been validated and reviewed by experts in the inter-industry analysis (for databases and methodologies) and relevant stakeholders (for policy analysis).

This chapter is structured into six sections. Section 1.2 describes the sizes and contributions of MSMEs in the Malaysian economy. Section 1.3 states the problem statements which are linked to the differences in production structures. Section 1.4 specifies the objectives of this study that were structured to address the three issues. Section 1.5 highlights the significance of the study, and lastly, Section 1.6 outlines the whole structures of this thesis.

1.2 MSMEs in the Malaysian Economy

1.2.1 Definition of MSMEs

Globally, there are growing concerns on the importance of MSMEs on the economic growth, particularly in the developing economies (see Beck et al., 2006; Wang, 2016). The increasing attention on MSMEs is mainly attributed by their large composition of the total number of establishments and their contributions to employment opportunities. On average, more than 90% of the total establishments in the world are in MSMEs which are responsible for the majority of employment creation (Ayyagari et al., 2007; 2011). Among the members of the Association of Southeast Asian Nations (ASEAN), MSMEs

¹ The development of MSME-IO is conducted through the collaboration with the Economics and Policy Division of SME Corporation Malaysia between 2017-2018. For MSME-SAM, the development process started in 2019.

make up more than 89% of the establishments and absorb more than 52% of employments (ERIA, 2014).

The statistics at the global and regional scales clearly show that MSMEs are the important growth drivers in most economies. However, MSMEs in different economies do not share a similar structure, and this has become a major obstacle in understanding their behaviours. For instance, different criteria are used to define MSMEs in different economies. In Malaysia, MSMEs are defined based on the number of full-time employees and sales turnover (SME Corporation Malaysia, 2013). Specifically, the definition can be separated into two sections. The first section only covers the Manufacturing sector while the second section covers the Agriculture, Mining & Quarrying, Construction and Services sectors (collectively termed as Rest of Sectors). Table 1.1 provides the definition.

Table 1.1 : Definition of MSMEs in Malaysia

Size	Number of Full-Time Employees	Sales Turnover
Panel A. Manufacturing Sector		
Micro	Less than 5 employees	Less than RM300,000
Small	Between 5 and 75 employees	Between RM300,000 and less than RM15 million
Medium	Between 75 and 200 employees	Between RM15 million and less than RM50 million
Panel B. Rest of Sectors		
Micro	Less than 5 employees	Less than RM300,000
Small	Between 5 and 30 employees	Between RM300,000 and less than RM3 million
Medium	Between 30 and 75 employees	Between RM3 million and less than RM20 million

(Source : SME Corporation Malaysia, 2013)

The firms are categorised into micro, small and medium enterprises if they meet either one of the two specified criteria, whichever is lower. For example, if a firm's employment falls under small size, but its sales turnover falls under microenterprise, the firm will be categorised as a microenterprise. The use of this definition also covers the firms with foreign ownership operating in Malaysia. The types of firms that are excluded from the definition involved public-listed firms (in Bursa Malaysia or main bourses in other countries) and subsidiaries of public-listed firms, multinational corporations (MNCs), GLCs, *Syarikat Menteri Kewangan Diperbadankan* and state-owned enterprises (SOEs).

1.2.2 Economic Contribution of MSMEs

In Malaysia, statistics for the number of MSMEs and their economic contributions are reported in the Profile of Small and Medium Enterprises (PSME) and

National Accounts: Small and Medium Enterprises (DOSM, 2017a, 2014a and 2019a). Two major differences are available between the reports. First, PSME only reports the data for every five years period with the latest report only covers 2015 reference year, while National Accounts which reports the GDP figures for MSMEs covers the period of 2005-2018. Second, in contrast to PSME, information in the National Accounts is presented at the aggregated MSMEs level.

The information for the number of MSMEs and their contributions to employment and value added at the aggregated level in year 2015 from the PSME are given in Table 1.2. Appendix 1.1 gives the information at the sectoral level.

Table 1.2 : Number of MSMEs and contributions to employment and value added, 2015

Size	Firms		Employment		Value Added	
	Number	Share (%)	Worker	Share (%)	RM billion	Share (%)
MSMEs	907,065	98.53	5,652,560	64.73	82.08	31.92
• Micro	693,670	75.35	1,937,557	22.19	2.33	0.91
• Small	192,783	20.94	2,351,712	26.93	37.39	14.54
• Medium	20,612	2.24	1,363,291	15.61	42.36	16.48
Large	13,559	1.47	3,079,678	35.27	175.04	68.08
Total	920,624	100.00	8,732,238	100.00	257.12	100.00

(Source : DOSM, 2017a)

From the size and employment perspectives, MSMEs are undeniably the backbone of Malaysia's economy. MSMEs cover 98.53% (907,065) of the total number of establishments with most of the firms, 75.35%, are microenterprises. Additionally, MSMEs have also become an important source of employment creation which has created 64.73% (5,652,560) of employments in the economy. By segregating the employment share, small firms accounted for 26.93%, microenterprises by 22.19% and medium firms by 15.61%. Nevertheless, large share of the establishments is not well reflected by their contribution to value added. In total, MSMEs only contributed 31.92% (RM82.08 billion) to value added creation through the employment of labour and capital investment. Most of the value added of MSMEs are created by medium firms with 16.48% and small firms with 14.54%.

At the sectoral level, 89.20% of MSMEs are operating under the Services sector. Meanwhile, Manufacturing and Construction sectors collectively contribute 9.58%. In relation to employment creation, 66.80% of jobs are created by the Services sector, 18.39% by Manufacturing, 11.15% by Construction and the rest of 3.67% by Agriculture and Mining & Quarrying. For value added generation, the Services sector accounts for 70.29%, followed by Manufacturing (19.55%), Construction (5.78%), Agriculture (3.68%) and Mining & Quarrying (0.70%).

Overall, the Services sector remains as the largest contributor to value added creation and employment generation due to its composition from the total number of establishments. This observation implies that MSMEs in Malaysia are primarily services-driven.

In Figure 1.1, the information from the National Accounts are presented to reveal the contribution of MSMEs to GDP between 2005 and 2018. However, the estimated GDP figure for 2014 is unavailable. Appendix 1.2 gives the contribution of MSMEs at the sectoral level.

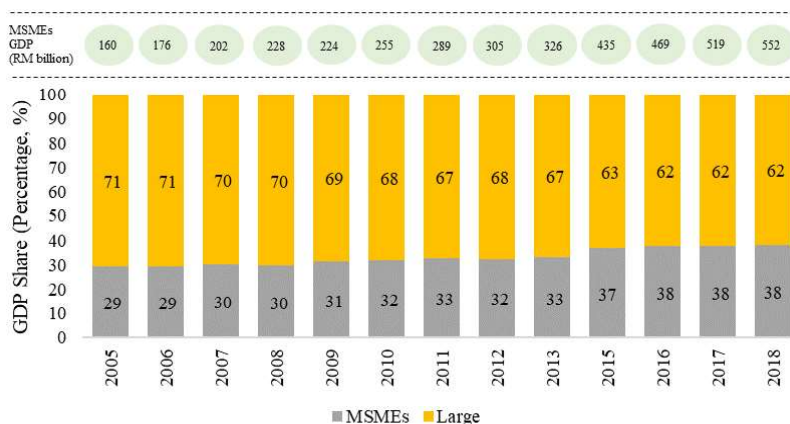


Figure 1.1 : Contribution of MSMEs to GDP, 2005-2018
(Sources : DOSM, 2014a and 2019a)

Between the specified period, MSMEs contribution to GDP grows from 29% (RM159.72 billion) in 2005 to 38% (RM551.65 billion) in 2018, implying the average annual growth of 2%. The positive growth of MSMEs contribution indicates the growing capacity of the firms to create better growth impacts in the economy. However, similar to the case of value added, the contribution of MSMEs is considerably small compared to their composition in the total number of establishments. By separating the amount of contribution into the sectoral level, more than half of the GDP amount from MSMEs between 2005-2018 is contributed by the Services sector. The estimated contribution of the Services sector in 2018 is 62.27%, followed by Manufacturing (19.85%), Agriculture (10.36%), Construction (5.87%) and Mining & Quarrying (0.50%). The remaining 1.15% is contributed by import duties. Concerning sectoral average annual growth impacts, Mining & Quarrying leads the growth by 8.28%, followed by Construction (6.83%) and Services (0.56%). For Manufacturing and Agriculture sectors, their average annual growth shows a decline by -2.49% and -0.85%, respectively.

In comparison with other developing countries such as China and Indonesia, the relative comparison between the share in production sizes and economic contributions of their MSMEs are more balanced. For example, MSMEs represent 99% of the total establishments in China and contribute 58.5% to GDP amount in 2008 (ADB, 2013). In Indonesia, their MSMEs which also constitute 99% of the total establishments generate 61% of the GDP amount (OECD/ERIA, 2018). These observations are in contrast with those observed in Malaysia. The economic unbalanced between production sizes and economic contributions of MSMEs in Malaysia demands for a study which focuses on the structural differences at production levels.

1.3 Problem Statements

This thesis focuses on the analysis of the structural differences between MSMEs and large firms in explaining the unbalanced economic contribution. In this case, the term “unbalanced” is referred to the relatively lower MSMEs contribution to GDP despite their large composition from the total number of establishments. Specifically, it measures the extent to which the differences in the production structures of MSMEs and large firms have contributed to the differences in output, value added and income distribution. In relation to the structural differences, there are three major problems or issues addressed in this thesis.

First, it is important to understand how the differences in production structures contribute to the variations in economic indicators when a stimulus is made. Empirically, sectors with different production sizes have different economic impacts (see Tang et al., 2016; Chong et al., 2019). Thus, results obtained from the analysis using aggregated database might be biased. That is, economic impacts attributed to MSMEs might be over or underestimated. To integrate the size factor, a macroeconomic database that splits the production sectors based on sizes categories is required. Currently, the major macroeconomic database in Malaysia such as the input-output table is presented at the aggregated level. Thus, this clearly demands for the development of an expanded database for MSMEs.

Second, there is a clear policy debate in Malaysia which discusses the economic contribution of GLCs on the development of the country. The size of GLCs in Malaysia's economy is large. Based on a study by Menon and Ng (2013), the size of GLCs as represented by their market capitalisation is 98.2% in Utilities, 73.1% in Retail Trade, 72.3% in Transportation and Warehousing, 59.6% in Banking, 45.6% in Transportation Equipment Manufacturing, 43.7% in Communications, and 16.4% in Real Estate and Rental and Leasing industries. The significant size of GLCs may be crowding out private investment from the economy and thus is expected to have a large influence on the unbalanced contribution of MSMEs.

In-depth empirical studies in understanding the economic impacts of GLCs on MSMEs are limited because of the unavailability of an inter-industry database that integrates GLCs and MSMEs. To investigate the economic impacts of GLCs on MSMEs, a unique inter-industry database that differentiates sectors according to production sizes is required. The use of such database is justified by the fact that several large production sectors are dominated by GLCs.

Third, inequality in income distribution receives considerable attention in the Malaysian development agenda, and the current trends indicate an increasing inequality. Based on the recent Household Income and Basic Amenities Survey Report (HIS), the income disparities between ethnic groups in rural and urban areas are widening between 2014-2016 (DOSM, 2017b). Given the fact that MSMEs are large in size and are hiring about two-thirds of employment, the incidence of enlarging inequality is likely to be influenced largely by the production structures of MSMEs. In a bigger picture, sectors with different production structures (as reflected by their sizes) also tend to impact the level of income distribution differently.

However, the current practices only generalise the impacts of MSMEs on income distribution based on the aggregated national data. The use of such data for analysis might result in a serious misinterpretation of the reality. For example, one may fail to differentiate the impacts of micro-sized sector from the impacts of medium-sized sector on income distribution. Although both sectors are categorised under MSMEs, their impacts may not be similar. To explore into this area demands a study to be carried out on the development of and analysis on a database that links MSMEs to income distribution.

Specifically, the three issues can be structured into the following research questions:

1. How do the differences in production structures between MSMEs and large firms contribute to the variations in multiplier impacts?
2. Given the differences in production structures between MSMEs and large firms, how do resource-based GLC-related sectors affect the growth of MSMEs?
3. To what extent the different production structures in MSMEs and large firms explain the variations in income distribution at different household groups?

Answers to these questions are examined by applying quantitative models into two new and novel databases developed for this study, namely the MSME-IO and MSME-SAM.

1.4 Objectives

Discussions in the previous section structured the issues related to structural differences into three research questions. To answer the research questions, the following three objectives are laid out in this study:

1. To examine the extent to which the differences in production structures between MSMEs and large firms contribute to the variations in multiplier impacts.
2. To measure the contribution of resource-based GLC-related sectors on MSMEs by focusing the analyses based on the GLC-related MSMEs (GRM).
3. To investigate the extent to which production structures in MSMEs and large firms affect the income distribution at different household groups.

Altogether, the aim of this thesis is to measure the extent to which the differences in the production structures of MSMEs and large firms have contributed to the variations in output, value added and income distribution.

To answer the first two objectives, specific inter-industry models based on MSME-IO database were developed. For the first objective, three input-output models were developed with the aims to measure the value added and import contents, to analyse the value added multiplier and to validate the proportionality assumption by running an appropriate simulation.

For the second objective, the Hypothetical Extraction Method (HEM) was applied to the MSME-IO database. Precisely, the HEM attempted to reveal the value added content of GLCs in value added of MSMEs. The use of only value added to represent economic indicator in this analysis is in line with the international practices.

For the third objective, the analyses that link growth and income distribution were performed based on the MSME-SAM. The main modelling approach used for this specific objective is to derive a SAM-based income multiplier.

1.5 Significance of the Study

It should be emphasised that this study provides two important implications from the scientific and policy perspectives. Concerning the scientific perspective, reviews on past literature show that studies that analysed the effects of structural differences in MSMEs using disaggregated databases are lacking. To the best

of our knowledge, only two studies, conducted in China and the Netherlands are found to utilise such a database.

For this study, two new and novel databases were developed. The first database is the MSME-IO which was developed by splitting production sectors in a standard national input-output table according to four different production sizes (micro, small, medium and large firms). Second, the MSME-IO was extended into a SAM framework (termed as MSME-SAM) for income distribution analysis. Using the two unique databases, several novel modelling applications were developed.

From policy perspective, the existing MSMEs studies, particularly in Malaysia are found to be less comprehensive as they primarily focus on issues such as adoption of information and communication technology (ICT), critical success factors and accounting. None of the studies was found to reveal how the structural differences would explain the economic impacts of MSMEs and its relationship with large firms and GLCs. Based on the development of the MSME-IO and MSME-SAM, these policy relevant databases are able to provide policy makers with new scope of studies. Additionally, the databases are capable of providing tools for monitoring the performance of MSMEs in Malaysia. Simulations based on the current economic trends are also able to be conducted to observe their impacts on MSMEs. In short, these databases are set to provide policy recommendations to spur the growth of MSMEs.

1.6 Thesis Outline

This thesis is outlined into five chapters, and each chapter is briefly discussed as the following:

Chapter 1 presents the introduction of the study while, Chapter 2 reviews relevant literature related to MSMEs and identifies literature gaps that identify the novelties aspects of this study. The review is structured into three areas i.e. overview of MSMEs, theoretical review and empirical review. Based on the literature review and assessment, there are two areas of literature gaps that are fulfilled by this study. The first gap fulfilled is the lack of disaggregated databases for MSMEs studies. This study develops two new databases termed as the MSME-IO and MSME-SAM to address this gap. Second, comprehensive analyses for the inter-industry linkages between MSMEs and large firms are limited. To address this gap, in-depth analyses are performed using novel modelling approaches on the MSME-IO and MSME-SAM.

Chapter 3 details the procedures for the development of the MSME-IO and MSME-SAM, and developed modelling approaches based on the two databases. The development of MSME-IO was essential to answer the first and second objectives of this study, while the MSME-SAM was utilised to answer the third objective. The development of the MSME-IO was based on the disaggregation of existing macroeconomic database according to size. The disaggregation process was facilitated by the data from the national input-output table, MSMEs reports and industrial micro-data. For the MSME-SAM, the developed MSME-IO was introduced into the SAM framework as the production account, and other accounts were estimated using information from households' micro-data and statistical reports from the national statistics office.

Chapter 4 provides the empirical results from the application of the MSME-IO in answering the first two objectives and the MSME-SAM for answering the third objective. Key findings from analyses using the MSME-IO show that one-size fits all measures is bias, and resource-based GLCs are associated with less economic spill over to MSMEs. For the application of MSME-SAM, results show that smaller production sizes contribute relatively higher income multiplier. Altogether, analyses have validated the superiority of utilising disaggregated databases for policy analyses of MSMEs.

Chapter 5 gives the concluding remarks for the whole thesis. It summarises the major findings for each objective and provides recommendations and policy reflection. Additionally, it details four key limitations in this study and for each of them, directions for future improvement are provided.

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BIODATA OF STUDENT

Chakrin Utit was born in Sik, Kedah on September 25th, 1990. He received his primary education at Sekolah Kebangsaan Paya Terendam, Sik and continue his lower secondary education at Sekolah Menengah Sains Tun Syed Sheh Shahabudin, Bukit Mertajam. He then continues the upper secondary education at Sekolah Menengah Kebangsaan Sik, Sik. After the completion of pre-university education, he further his study in Bachelor of Economics at Universiti Putra Malaysia (UPM) and graduated in 2014. While serving as a Social Research Officer at the Institute of Agricultural and Food Policy Studies, UPM between 2014-2017, he managed to obtain a Master of Science degree in 2017. Since his early days as a researcher at UPM, he has been extensively researching on small and medium enterprises through the applications of input-output modeling technique and Social Accounting Matrix.

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