



Faculty of Economics and Business

**AN ANALYSIS OF INPUT-OUTPUT INTER
INDUSTRY LINKAGES IN THE MALAYSIAN
ECONOMY**

CHIAH SHING YIH

(40856)

Bachelor of Economics with Honours
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**AN ANALYSIS OF INPUT-OUTPUT INTER INDUSTRY LINKAGES IN THE
MALAYSIAN ECONOMY**

CHIAH SHING YIH

This project is submitted in partial fulfillment of
the requirements for the degree of Bachelor of Economics with Honours
(Industrial Economics)

Faculty of Economics and Business
UNIVERSITI MALAYSIA SARAWAK
2016

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[Signature] 27/6/16
Dr Mohd Khajul Hisyam Bin Hassan
(Date)
Senior Lecturer
Faculty of Economics and Business
Universiti Malaysia Sarawak
94390 Kota Samarahan

Current Address:

*22A, Jalan Putra Mum 3/3 - Royale Putra - Putra Heights
47650 Subang Jaya Selangor*

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40856

ABSTRACT

AN ANALYSIS OF INPUT-OUTPUT INTER INDUSTRY LINKAGES IN THE MALAYSIAN ECONOMY

BY

CHIAH SHING YIH

Economic sectors are closely linked to the rest of the economy through backward and forward linkages. This present paper intends to assess the interconnectedness in the production structure of the Malaysian economy, using the input-output analysis. In this research, Rasmussen unweighted and weighted approaches were applied to the Malaysian I-O table for the year 2010 using 50 aggregated sectors to identify the key sectors. The most contribution of this study is that it provides us a good tool in devising pragmatic policies so as to enhance the competitiveness of key economic sectors and establish a deeper economic linkage, thereby induce a greater rates of economic development.

ABSTRAK

ANALISIS INPUT -OUTPUT HUBUNGAN INTER INDUSTRI DI EKONOMI MALAYSIA

OLEH

CHIAH SHING YIH

Sektor ekonomi berkait rapat dengan ekonomi yang lain melalui hubungan permintaan dan bekalan. Kertas ini bertujuan untuk menilai struktur pengeluaran ekonomi Malaysia dengan aplikasi analisis input-output. Dalam kajian ini, model Rasmussen telah digunakan ke tabel I-O Malaysia bagi tahun 2010 menggunakan 50 sektor keseluruhan untuk mengenali sektor utama. Sumbangan kajian ini sebagai alat analisis untuk merangka dasar-dasar pragmatik bagi meningkatkan daya saing sektor ekonomi utama, mewujudkan hubungan ekonomi yang lebih terintegrasi dan mendorong adanya percepatan proses pembangunan ekonomi.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Inter industry linkages are descriptive measures of the degree of interdependence of industries in terms of their transactions in the economy. It have been studied since the late 50's and was introduced to the province of input-output analysis pioneered by Rasmussen (1956), Chenery-Watanabe (1958), and Hirschman (1958). Since that, there are numerous approach of measuring it and has been revised and extended in numeral means.

Inter industry linkages has been widely exercised by most nations with the initiatives aim to identify the key sectors that dominate the influential ability on economic development. A key sector is one who possess tight forward and backward linkages, thereby played a proactive role in devising pragmatic policies so as to enhance the competitiveness of key economic sectors and establish a deeper economic integration. Withal, linkages analysis also provide an insight of the interdependency of production structure of an economy. Such analysis are creditably meaningful for all nations especially nations with restrained capitals as it prioritize focus and direction to the formulation of investment plans that utilize limited resources to achieve optimal outcomes.

The present paper intend to assess the interconnectedness in the production structure of the Malaysian economy, using the input-output table for 2010 published by the Department of Statistics Malaysia (DOSM, 2010). The analysis is undertaken

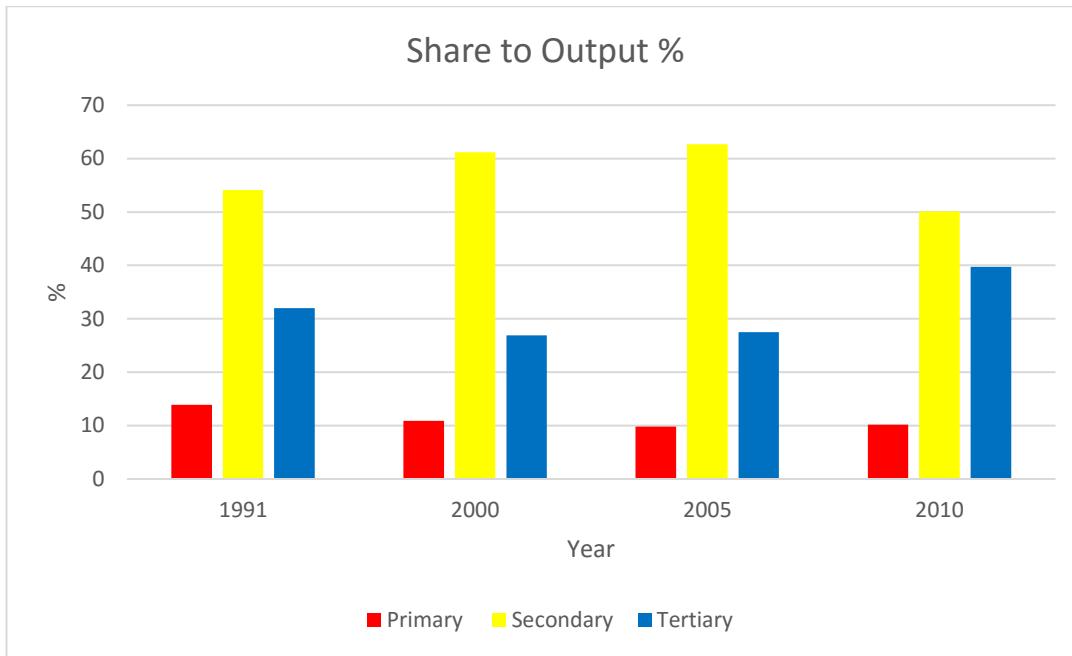
at the most disaggregated level data are available, the 50 industry level. This paper does not include all types of input-output based linkage measures but rather chiefly focuses on Rasmussen unweighted and weighted approach.

1.1 Background of the Malaysian Economy

Ever since Malaysia has achieved independence from British colonial rule in 1957, Malaysia has been demonstrating an extraordinary economy performance over the decades. The structure of the Malaysian economy has undergoes tremendous transformation since then as substantial structure change take place as economy grown over time.

Malaysia is generally regarded as one of the most preeminent Asian countries to have achieved a relatively steady transition to modern economic growth over the last century. Malaysian economy has swung from a rural, mainly agrarian economy in the early years to a manufacturing dominated economy in the late 90s, and farther entering towards tertiary sectors where services sectors plays a proactive role in the economy in the 21st century. The transitions can be clearly seen in the salient changes in the contribution by the primary, secondary, and the tertiary sectors to economic growth over the period as shown in Figure 1.

Figure 1.1 Share of Malaysia's Sector Output, 1991-2010



Source: Department of Statistic of Malaysia, DOSM 2010

During British colonial era, agriculture sectors was the backbone of Malaysian economy. In the 50's and 60's, production of rubber and tin were the two dominant commodities that are the chief sources of the nation's income. High dependencies on the rubber and tin that are relatively volatile in price had placed Malaysian economy at edge. Despite the vulnerability of relying on narrow-based agriculture economies, the economy still managed to thrive by diversify the sources of income of the nation. Diversification within and beyond agriculture were the two forms of diversification strategy that had employed. Promotion of new crops, particularly oil palm was intend to diversify away from the massive reliance on primary commodities. Coincidentally, oil palm sector and its downstream sectors imparts strong linkages which allows the rest of the economy to flourish (Norshaheeda, Noor and Zaimah, 2014).

Since independence, Malaysia had transforms from an agrarian economy to a diversified and relatively prosperous economy where manufacturing emerge as the

dominant sector. The focal point of the political leaders at that time was to expand economic base by undertaking manufacturing activities. Diversification beyond primary sectors was a total success as manufacturing sectors had demonstrated the most impressive progress in Malaysia's growth experience and was the major source of employment creations (Hassan, Baharom and Azis, 2010). The rise of manufacturing sectors indeed had flourished Malaysian economy performance.

As Malaysia are slowly approaching towards third stage of economic development, economic performance is no longer driven by manufacturing merely (MP, 2006). On the contrary, economic growth is fostered by both secondary and tertiary sectors. Service sector is progressively gaining more attention as well as more involvement in the Malaysian economy today. This can be clearly seen in the growing endowment to the nation's GDP empowered by service sectors. The greater involvement of the service sectors in the Malaysian economy is indeed aligned with the growth transformation that has taken place in many of developed nations (MP, 2006). As service sectors exhibit a greater significant in most of the middle income nations as well as OECD countries (Bhattacharya and Rajeev, n.d).

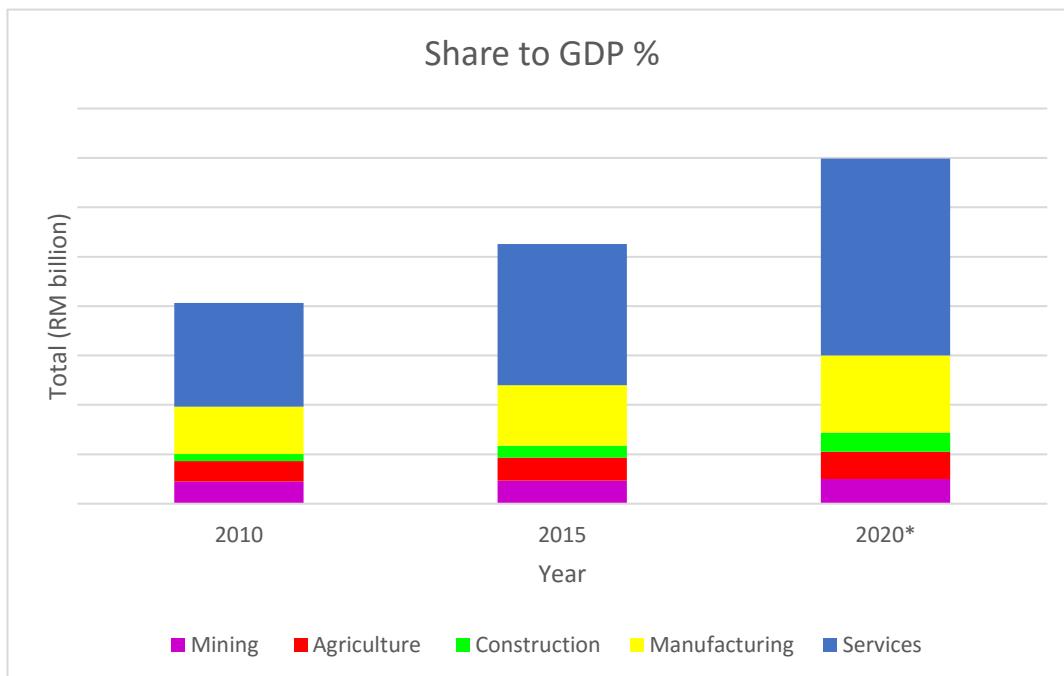
The patterns of Malaysian economic growth and development indeed was embodied by the vision and efforts of many of the nation's great leaders and profound thinkers, as enshrined in the Constitution and as encapsulated in the national policy scheme. The Malaysian planning and development policy system has been formulated based on the vivid understanding of the needs and challenges of the time, as well as the responses required for the nation. Equally important, these frameworks captured the collective aspirations of the country. Upon compilation of these aspirations, it was

then coined into Visions 2020 which was unveiled by the former Prime Minister Tun Dr. Mahathir bin Mohamad in 1991, outlining the long term objectives pertaining to nine challenges in Malaysia.

The Eleventh Malaysia Plan, 2016-2020, is a pragmatic approach that paves the final leg in the course towards realizing the aspiration of becoming a developed nation along all dimensions. Adopting such affirmative action plan are sought to migrate all economic sectors into a high-value added and knowledge-intensive dominance economy. Productivity improvements, innovation, better talent, and greater internationalization are postulated to nourish expansion across all economic sectors as shown in Figure 2. Although some of the share of the sectors particularly agricultural and manufacturing sectors presumed to decline, however their value added remains meaningful to the economic growth.

Economic transformation in Malaysia was accompanied and facilitated by substantial expansion in the services sector. The structural of the economy has evolve to a services oriented economy and services sector became and remains as the engine of economic sustained growth. Needless to say, huge attention and investment are pouring in the service sectors to spur economic expansion. Strategies and programmes underpinned in the plan period was intend to modernize the services subsectors as well as enhance efficiency and effectiveness of the supply chain. With the effort undertaken, services sector premise to demonstrate a broad-based growth across all subsectors and was chiefly supported by wholesale and retail subsector.

Figure 1.2 GDP by Kind of Economic Activity, 2010-2020



Source: Economic Planning Unit and Department of Statistic Malaysia

Notes: Based on GDP in 2010 prices.

On the contrary, production of manufacturing will be elevated through a deviation towards a more complex and diverse merchandises during the plan period. Greater automation and skills is being emphasize to boost productivity. Identified key sectors such as food, beverages and tobacco; fabricated metal products; and machinery and equipment has been highlighted as the focus and priority for investment. Moreover, to upsurge the productivity of the agriculture sector, no effort has been spare on driving innovation and research and development to modernize the sector. Priority has been placed on the agro-food and industrial commodity subsectors to assure the targeted self-sufficient level of food commodities. In addition, predicted recovery on the price of rubber is expected to generate 7.6% growth in rubber subsectors. Promotion on sustainable practices and modern farming technology would then generate high-income.

With multiple pressure on the targeted transition to an advanced economy and inclusive nation, the focus of the Malaysia's eleventh plan has been pouring on economic areas that are most critical to the nation's continued growth. Robust economic growth is crucial to assure Malaysia is approaching towards the envision path.

1.2 Problem Statement

Achieving sustainable growth has been one of the major priorities of all nations today. Being as one of the most victorious developing nations in the South East Asia, Malaysia has been demonstrating a stable and consistent growth over the past decades. However, things have changed since then. After demonstrating an impressive achievement for the last few years, Malaysia is now suffering with several economic challenges which hinders its growth and progress. Needless to say, depreciation of the ringgit, high debt burden, continuous budget deficit and other external factors had impeded Malaysia's ability to sustain the high growth path.

The origins of the current crisis are not entirely external but the domestic policies too have inadvertently contributed to the economic misfortunes. Existing issues in the Malaysian economy can attribute to the weak backward and forward linkages between sectors (Bekhet, 2009). Heightened concern over the economy slowdown that could deepen had centred the attention of all policy makers to assure a shortest period of economic restoration.

In an economy, the interactions between all sectors play a proactive role in amplifying the output growth. Consequently, a sharp economic down turn might

reflecting the policies' failure to promote economic integrations. As Bekhet (2009) alleged that poorly integrated economy was primarily due to the policy of inter-sectoral imbalance between economic sectors. The presence of economic development deficiency can be attributed to the ignorance of economists on the linkages analysis, somewhat has an impact on economic growth with some qualifications.

Hirschman (1985) has been assert on the emphasis of inter linkages of various sectors of the economy. He cited that key sectors could be pragmatic to stimulate the development of a nation, in addition to reactivating economies in crisis (Choi, Ji and Zhao, 2014). Recognition of key sectors is a mandatory channel to foster the development for reaching efficient allocation of resources and is the engine to boost nationalization and industrial structure (Choi et al., 2014).

Despite previous studies has illuminated the value of inter industry linkages analysis, however, the existing attempts to explore analytically on such studies are still somewhat ambiguous. An input-output tables that are a pre-requisite for key sector analysis is only being compiled every five years by most of the developing nations (Choi et al, 2014). Moreover, Norshaheeda et al., (2014) reveals that interindustry linkages strategy has not incorporate in the planning of Malaysia economic development in the past.

As Malaysia are on the momentous journey to achieve the status as a developed nation under the Visions 2020, it is extremely vital to identify the prioritized sectors that need to be addressed and devise proper action plans in order to facilitate the achievement of this lofty vision. Linkage analysis could be a useful guide lines to the

policy makers at national level in the course of fine tuning Visions 2020 strategies.

Moreover, current paper attempts to answers few research questions below:

1. What are the key sectors of Malaysia?
2. What are the effect of an individual sector on another in Malaysian economy?

1.3 Objectives of the Study

1.3.1 General Objective

The purpose of this study is to understand and analyse the inter linkages across all industries in the Malaysia economy.

1.3.2 Specific Objectives

The specific objectives of this study are:

- I. To examine the structure of production of the Malaysia economy using 2010 input-output table published by Department Statistics of Malaysia (DSOM).
- II. To identify those key sectors of the Malaysia economy which are the major accelerator of economic development.

1.4 Significant of the Study

The literature led by Hirschman's Strategy of Economic Development has been asserted the importance of inter-linkages of diverse sectors of the economy. The value of recognizing the key sectors is to highlight that key sectors represent a much more complex and vital role in initiating economic development process. Identification of these key linkage sectors will govern the policy towards a more precise and reliable

development plan and a victorious investment. The current research on inter industry linkages is extensively meaningful in assisting under developed and developing nations with scarce resources to achieve maximum attainable economy expansion.

In addition, identifying key sectors is considerably necessary and helpful for assessing the long-term structural change and devising the strategic policy of economic development both at the local and national level. This interlinkages of sectors are extremely crucial as policy spur for the growth of a high linked sector can consequently impact the interlinked sectors through both forward and backward linkages and can foster the growth prospectus manifolds. Thus identifying the sectoral linkages is an essential pre-requisite for the policy makers in order to formulate appropriate policies for boosting the key high linked sectors, as these in turn propel the growth in other sectors.

Conclusively, having the information about the priority sectors, suitable policies can be navigable towards those sectors for greater expansion of the economy, and can be taken care by the weaker sectors for further improvement. As a strategy to hasten the economic growth of the Malaysian economy, these identified key sectors may be considered for exploitation by concentrating investment resources to them. The findings of this study would definitely be fruitful to the expansion of the economy.

1.5 Organization of the Study

The current study consists of several parts. The first chapter provides a brief introduction to the topic. It provides an insight of the inter industry linkages as well as the profile of the Malaysian economy and structure. This chapter also includes the presentation of the problem statement, research objectives, significant of the study and lastly, the study outline of the paper.

Chapter two presents the prevailing economic theories on the interindustry linkages analysis. It also defines input-output tables, key sectors and backward and forward linkages by describing their unique properties and characteristics.

Third chapter addresses and discuss about the methodology used in this study. This section starting with a basic methodological background for the analysis, various linkage methods will be reviewed briefly. The overview of linkage measures does not include all types of input-output based linkage measures developed but rather chiefly focuses on Rasmussen weighted and unweighted method.

Chapter four gives the result of the analysis and end ups with a discussion on the linkage measures in analysing interdependence in Malaysia economic system. Last by not least, chapter five includes overall presentation of the findings of the analysis and several concluding remarks.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Chapter two presents the prevailing economic theories on the interindustry linkages analysis. It also defines key sectors and backward and forward linkages by describing their unique properties and characteristics.

2.1 Interindustry Linkages Analysis

Input-output method is an adaption of the neoclassical theory of the general equilibrium to the empirical study of the quantitative interdependence between interrelated economics activities. It was introduced by the Nobel Laureate in Economics, Wassily Leontief in the late 30's and was originally developed to evaluate the interlinkages of the industries in an economy. The input-output technique is recognized as an ideal framework to explore the interdependence of all sectors in an economy. It is a tool to evaluate the relationship between industries and the rest of the economy (Guo & Planting, 2000). In addition, Aydin (2007) and Kula (2008) both suggest that linkages analysis can be used to distinguish the key sectors of an economy.

Hirschman (1985) has stressed on the significant of inter linkages of various sectors of the economy as he recommend to incorporate linkages analysis as a critical considerations when targeting industries for future investments, especially developing nations. The importance of inter linkages was strengthen by the findings of Azad