



UNIVERSITI PUTRA MALAYSIA

***IMPACT OF AGRICULTURAL SECTOR ON ECONOMIC GROWTH IN
SELANGOR, MALAYSIA***

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**IMPACT OF AGRICULTURAL SECTOR ON ECONOMIC GROWTH IN
SELANGOR, MALAYSIA**

By

MUINNUDIN BIN MOHD KAMAL

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

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Master of Science

IMPACT OF AGRICULTURAL SECTOR ON ECONOMIC GROWTH IN SELANGOR, MALAYSIA

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November 2018

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Selangor has the highest population density in Malaysia and the population growth in this state is also found to be highest. To support the population growth, the quantity of food production also needs to grow at a parallel rate so that the food supplies can adequately accommodate the growing population in Selangor. However, the growth rate of food production in Selangor is neither stable nor parallel to the population growth rate. The total contribution of the agricultural sector to the economic growth in Selangor declined in 2015 compared to 2010. The significance gaps between the growth rates of population and food production should be reduced as far as food security is concerned. Why is the agricultural sector in Selangor less important? Is the sector associated with lower economic impacts in the state? Therefore, this study attempts to examine the impact of the agricultural sector for the sectoral growth and development of economy in Selangor. For this purpose, this study develops a multi-sectoral database for Selangor that provides inter-industry linkages between the agricultural sector and the rest of the sectors in the state. Such database can be achieved by build a regional input-output table (RIOT) for Selangor. By using RIOT, direct and indirect impacts of growth in the agricultural sector are measured by modelling a value-added multiplier. Results demonstrated that an indirect value-added multiplier effect for the agricultural sector is more dominant than a direct multiplier. This reflected that the agricultural sector has a high degree of integration compared to other sectors and has the potential to generate substantial returns from investment activity as well as stimulate the growth of the sector that acts as an input provider to it. Altogether, this study provides a clear indication that the agricultural sector is not only important for the growth and development in Selangor, but also vital for supporting the population growth.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

IMPAK DARIPADA SEKTOR PERTANIAN TERHADAP PERTUMBUHAN EKONOMI DI SELANGOR, MALAYSIA

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Selangor mempunyai kepadatan penduduk yang tertinggi di Malaysia dan pertumbuhan penduduk di negeri ini juga didapati tertinggi. Untuk menyokong pertumbuhan penduduk, kuantiti pengeluaran makanan juga perlu berkembang pada kadar yang selari supaya bekalan makanan dapat menampung penduduk yang semakin meningkat di Selangor. Walau bagaimanapun, kadar pertumbuhan pengeluaran makanan di Selangor tidak stabil atau selari dengan kadar pertumbuhan penduduk. Jumlah sumbangan sektor pertanian kepada pertumbuhan ekonomi di Selangor merosot pada tahun 2015 berbanding tahun 2010. Jurang yang signifikan antara kadar pertumbuhan penduduk dan pengeluaran makanan perlu dikurangkan sebagaimana kebimbangan terhadap sekuriti makanan. Mengapakah sektor pertanian di Selangor kurang penting? Adakah sektor yang berkaitan dengan impak ekonomi adalah lebih rendah di negeri ini? Oleh itu, kajian ini cuba mengkaji kesan sektor pertanian untuk pertumbuhan dan pembangunan sektoral ekonomi di Selangor. Untuk tujuan ini, kajian ini membina pangkalan data pelbagai sektor bagi Selangor yang menyediakan hubungan antara industri antara sektor pertanian dan sektor-sektor lain di negeri ini. Pangkalan data sedemikian boleh dicapai dengan membina jadual input-output serantau (RIOT) untuk Selangor. Dengan menggunakan RIOT, kesan pertumbuhan langsung dan tidak langsung sektor pertanian diukur dengan memodelkan pengganda nilai tambah. Keputusan menunjukkan kesan penggandaan nilai tambah tidak langsung sektor pertanian lebih dominan berbanding pengganda langsung. Ini menunjukkan sektor pertanian mempunyai tahap integrasi yang tinggi berbanding sektor lain dan mempunyai potensi untuk menjana pulangan yang ketara daripada aktiviti pelaburan serta merangsang pertumbuhan sektor yang bertindak sebagai penyedia input kepadanya. Keseluruhannya, kajian ini memberikan petunjuk yang jelas bahawa sektor pertanian bukan sahaja penting untuk pertumbuhan dan pembangunan di Selangor, tetapi juga penting untuk menyokong pertumbuhan penduduk.

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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 Master of Science. The members of the Supervisory Committee were as follows:

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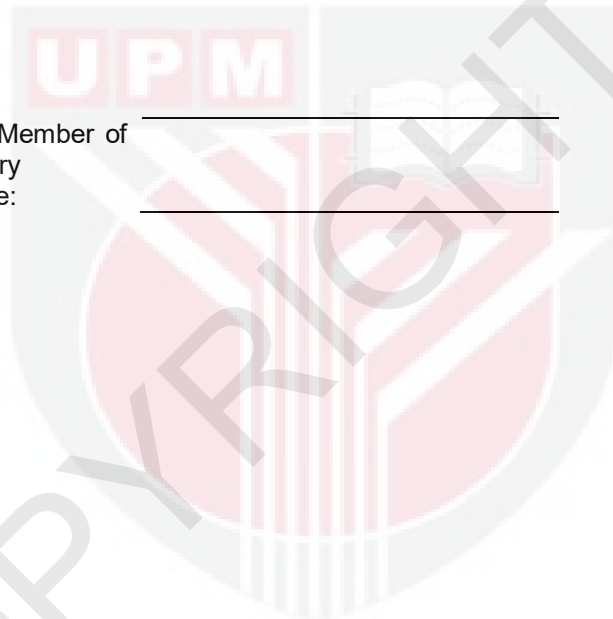


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LIST OF ABBREVIATIONS

CL	Coefficient of Localization
FAMA	Federal Agricultural Marketing Authority
GAP	Good agricultural practices
GAqP	Good aquaculture practices
GDP	Gross domestic product
IADA	Integrated Agricultural Development Area
LQ	Location Quotient
MSIC	Malaysia Standard Industrial Classification
NAP	National Agricultural Policy
R&D	Research and development
RIOT	Regional input-output table
SLQ	Simple Location Quotient
SSL	Self-sufficiency level
StdLQ	Standardized Location Quotient

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Selangor is a state that records the highest population density in Malaysia. The population report depicts that the total population for Selangor in 2005 was 4.85 million or equivalent to 19.2% of the total population in Malaysia which amounted to 28.59 million (Department of Statistics Malaysia, 2016a). The amount increased to 6.18 million in 2015. On average, the population in Selangor has grown at a rate of 2.4% per annum for the 2005-2015 period, which was much larger than the average population growth rate in Malaysia at 1.8% per annum. Thus, to support the population growth, food production also needs to grow at a parallel rate so that the food supply can adequately accommodate the growing population in Selangor. However, the growth rate of food production in Selangor is neither stable nor parallel to the population growth rate mainly after 2013, where food production declined by 8.65% and continued to reduce for the following years (Ministry of Agriculture and Agro-Based Industry Malaysia, 2016). Based on Table 1.1, the contribution of food production towards the total population in Selangor is not encouraging for the past few years and it can affect the sustainability of the state's economy.

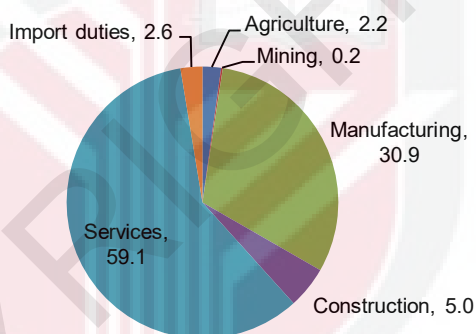
Table 1.1: Comparisons of population and food production in Selangor (2005-2015)

Year	Amount		Growth (%)	
	Population (million)	Food production ('000 ton metric)	Population	Food production
2005	4.85	538.74	-	-
2006	4.99	664.63	2.82	23.37
2007	5.13	625.80	2.83	-5.84
2008	5.27	712.37	2.76	13.83
2009	5.42	599.95	2.83	-15.78
2010	5.50	1,014.96	1.56	69.17
2011	5.65	945.07	2.62	-6.89
2012	5.79	1,057.14	2.48	11.86
2013	5.92	965.71	2.33	-8.65
2014	6.05	873.96	2.20	-9.50
2015	6.18	805.34	2.05	-7.85

Source: Department of Statistics Malaysia (2016a) and Ministry of Agriculture and Agro-Based Industry Malaysia (2016)

In terms of economic performance, Selangor was the largest contributor to the national gross domestic product (GDP) in 2015, standing at 22.6% of the total national GDP. The record from National Account shows that the average of GDP growth rate in Selangor for the 2005-2015 period was at 6.2% per annum, which was 4.9% larger than the average national GDP growth rate per annum (Department of Statistics Malaysia, 2017a). In addition, the average contribution of the agricultural sector to GDP in Selangor is 1.7% per annum. Whilst the GDP growth in Selangor had expanded at favourable rates throughout the period, the contribution of the agricultural sector to the economy was significantly smaller than the manufacturing and services sectors, which contributed 29.4% and 59.5%, respectively, to the state economy in 2015, as shown in Figure 1.1. In 2010, the agricultural sector of Selangor accounted for RM3.92 billion or equivalent to 2.2% from the total state GDP of RM177.72 billion. However, agriculture experienced a decline in the total contribution to GDP by 0.7% in 2015, implying that there was a depleting contribution of the agricultural sector to Selangor's economy.

Contribution of economic sector to Selangor, 2010 (%)



Contribution of economic sector to Selangor, 2015 (%)

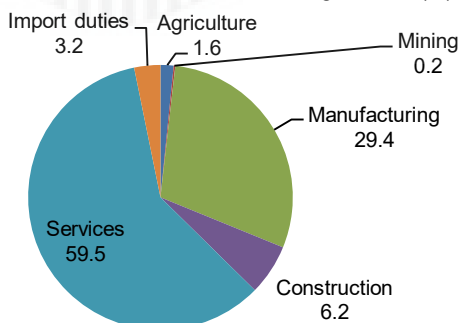


Figure 1.1: Economic sector's contribution to GDP Selangor, 2010 and 2015, at constant price 2010 (%)

(Source: Department of Statistics Malaysia, 2017a)

The significant contributions that dominated the manufacturing and services sectors in Selangor undermined the growth contribution of the agricultural sector, suggesting the role of structural change in shifting the economy at the state level. The continuous increase in the contribution of these two sectors gives an impact to the agricultural sector that is still the focus of Selangor to supply food to the population that continuously increases every year. This is due to increasing contribution of the manufacturing sector that is supported by the electricity and electronics subsectors. The increase in domestic consumption and private investment in Selangor is expected to stimulate domestic-oriented industries such as transport equipment and construction industry materials. Meanwhile, the wholesale and retail subsectors are leading the services sector to economic growth in Selangor (Department of Statistics Malaysia, 2016b). These subsectors are also the driving force for the services sector at the national level.

As stated earlier, the Selangor's agricultural sector's GDP in 2010 and 2015 is only represented by the value of RM3.92 billion and RM3.77 billion. This value can be detailed by identifying the contributions made by each agricultural subsectors such as crops, livestock, fisheries, and forestry. Figure 1.2 shows the contribution made by agro-food and non-agro food subsectors in Selangor. Through this figure, clearly here that contribution of agro-food and non-agro food subsectors to GDP for 2010-2015 period was found to be contracted. In this case, the agro-food sector which involving food crops, food livestock, and food fisheries, recorded a contraction of RM0.05 billion in 2015 compared to the contribution in 2010. Meanwhile, the non-agro food subsectors, including forestry and logging, recorded a contraction of RM0.11 billion. This contractionary is driven by the more advanced aspects of economic development in the construction sector in Selangor.

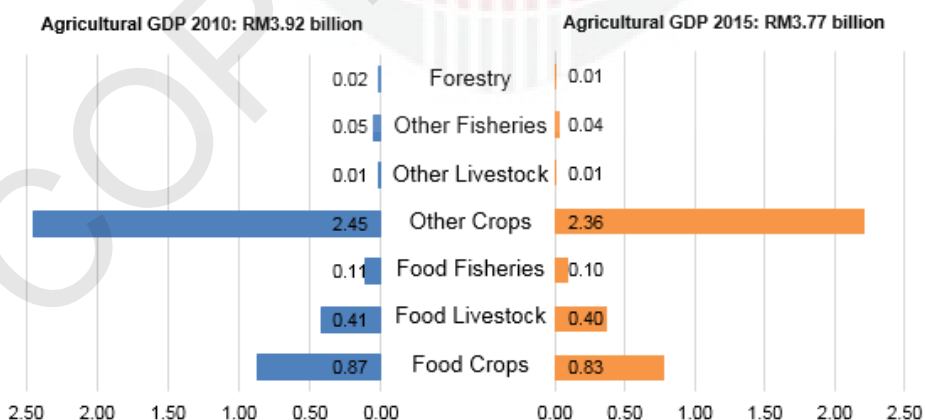


Figure 1.2: Contribution of agro-food and non agro-food subsector to GDP Selangor, 2010-2015, at constant price 2010 (RM billion)

(Source: Department of Statistics Malaysia, 2016c)

This figure proves that the contribution of agro-food subsector is much lower compared with the non-agro food subsector, particularly commodity sector that plays the largest role in the agricultural sector at the state level. Hence, the large contribution percentage of the non-agro food subsector is not necessarily doubted given that the combination of several dominant commodity sectors such as oil palm and rubber is among the major industrial commodities in Selangor. For example, oil palm was shown the contribution of production in Selangor by 503,878 metric tonnes in 2015, reduced by 15.2% in 2010 (Department of Agriculture Malaysia, 2016). While oil palm is one of the major drivers of the country's agricultural sector, production yield declined due to the factor of the reduction of plant area for oil palm in Selangor. However, the production of rubber in Selangor an increasing in production by 23.6% in 2015 compared to 2010 (Department of Statistics Malaysia, 2017b) due to the intensive tapping by smallholders since the price of rubber is high at that time.

This situation has contributed to shortages of food supply due to the rising food prices of imported goods, particularly after the economic crisis that took place in 2008. Consequently, the production costs increased which ultimately urged food prices to keep rising. Besides that, the instability in foodstuff growth also led to the increase in food prices (Ilaboya et. al., 2012). Food supply should be sufficient and expanded further by promoting the enhancement of food production as to meet the self-sufficiency level (SSL) and guaranteeing the production of non-decreasing food supply. The initiative to enhance the food supply such as increasing the production of foodstuffs is important to ensure an adequate food supply and safe consumption. The constraint to provide adequate food supply to the growing population can threaten food security since Selangor is required to produce its own food at least to a reasonable level for the purposes of food security. Thus, food supply could decrease due to the trend of food supply growth that could not cope with the need for population growth.

Meanwhile, the land use for Selangor that applied for the agriculture is covering an area of 298,279.42 hectares (37.5%) in 2012 (Department of Town and Country Planning Selangor, 2017). This amount is include 11.3% for agricultural land for food crops and its production. The remaining of current land use in Selangor is monopolized by industrial crops such as oil palm and rubber. Thus, practically, the vast area of the plants does not necessarily produce much crops to accommodate the needs of the population of the state. With this, commercial and economic development of agricultural areas should be intensified again, either in terms of mechanization or management system used. Besides that, the development of the agro-based industry needs to be improved and enhanced as there are the potential to increase the economy and income among entrepreneurs in Selangor. The current crop area in Selangor is shown in Figure 1.3.

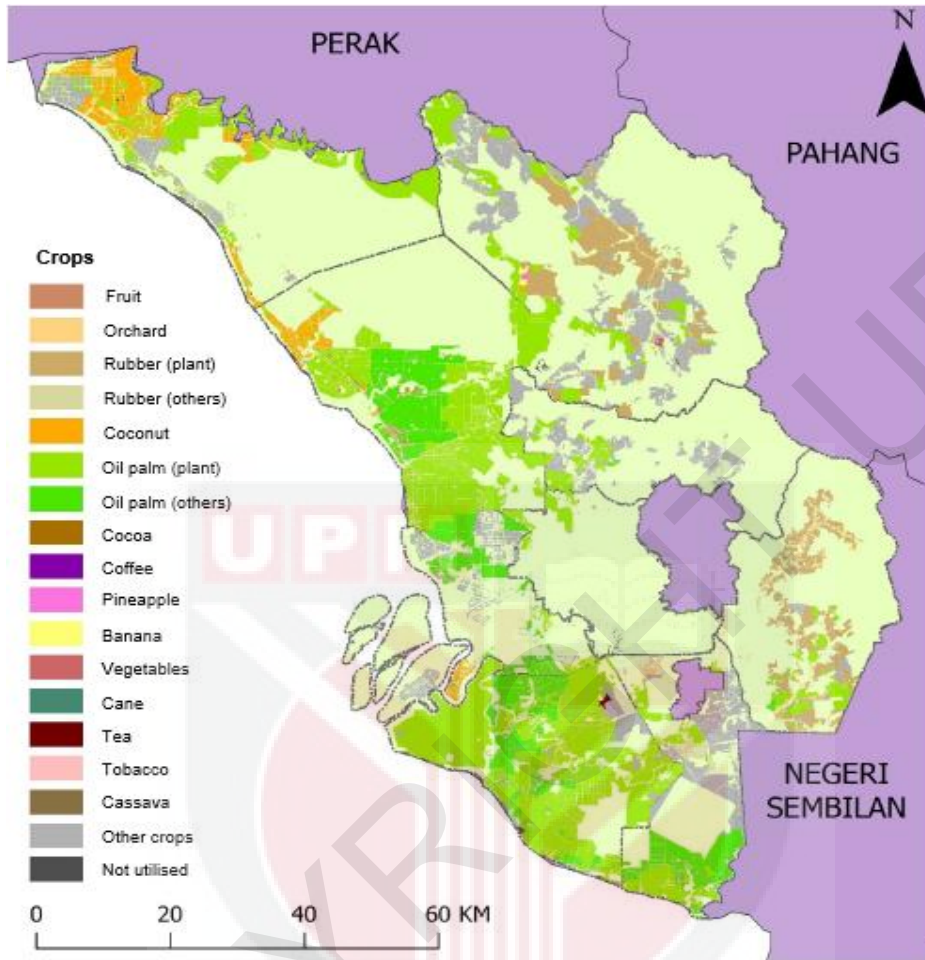


Figure 1.3: Map of current crop area in Selangor
 (Source: Department of Town and Country Planning Selangor, 2014)

For example, current land use for industrial crops in Selangor such as oil palm and rubber, as shown in Figure 1.3, recorded an area of 167,181.89 hectares and 31,576.99 hectares. Only a small portion of agricultural land cultivated with fruit and vegetable crops. In order to strengthen the production of fruits and vegetables, there are several areas of land that can be proposed as new crop areas. Meanwhile, paddy cultivation activities in Selangor are only concentrated in the areas of Kuala Selangor and Sabak Bernam due to soil suitability factors. The entire rice field area is 18,611.73 hectares with 70.3% (13,078.71 hectares) of which is located in the area of Sabak Bernam. The paddy fields in this area are provided with an organized irrigation system. In this regard, the future direction of agricultural development will focus on agricultural activities for the provision of food supply guarantees which are essential elements in sustainable development. Therefore, production of agricultural produce should be increased even if the area of agriculture will continue to decline.

The agricultural role, particularly agro-food sector, has captured the attention to become one of the important economic sectors in contributing to the economic growth at the state level. The emphasis on agricultural sector has enabled Selangor to reduce dependence on food imports from abroad. Although theoretically, Selangor may choose to import food that may be cheaper, but Selangor should not rely entirely on foreign countries to supply food. The development of the agricultural sector needs to be observed extensively from the macroeconomic aspect because it may continue to play an important role in boosting its contribution to GDP. Sustainability in the agricultural sector can be translated by increasing the yield of higher quality agricultural products. Therefore, focus should also be given to the strategic agricultural subsectors to sustain the food supply in Selangor. In the current development phase, the agricultural sector needs to move in tandem with other sectors although the agriculture is still showing its success in its production and in parallel with the growing population.

The efforts to reach the agriculture sustainability need a range of approaches from various aspects that need to be adapted with the developments and transformation of economy that took place recently. With that, the objective of food security can be achieved through increased productivity and production capacity of agricultural products that are able to provide a high value-added multiplier to the state economy. Thus, a comprehensive effort should be designed, particularly for modernising the agro-food sector, since the agricultural sector has to compete with other sectors due to its limited production resources. Overall, the food commodities in Selangor can be expected to grow due to higher household demand through improvements in agricultural efficiency and productivity. Thus, the agricultural sector in Selangor has the potential to become a competitive industry to sustain its production in the long run. Other than that, the objective to increase competitiveness in production and economic growth can be achieved through the strategies of promoting modern agricultural practices.

1.2 Motivation of the Study

Despite the fact that the contribution of the agricultural sector to the Selangor economy has been relatively diminishing, the sector remains as one of the main economic sectors to provide sufficient food supply to the local population. In fact, the decline of agricultural production had influenced the reduction of agricultural sector's GDP to the state economy for the 2010-2015 period. The decline in food production was due to the slower growth of the agricultural sector compared to the growth of the manufacturing and services sectors, which are more dominant in Selangor. We argue that the importance and the potential of the agricultural sector to the state economy may not properly be justified, which in turn affected the policy interests in the sector. This is due to the lack of a specific integrated database for the agricultural sector at the state level that is available to help the policymakers to formulate appropriate policy

directions. It is likely that, the agricultural policy planning has been applied under inadequate information, which hinders the development of food production in Selangor.

In addition, the development of integrated database that shows the industrial linkages of the agricultural sector with the other sectors in the state economy is crucial. This is because the agricultural sector has the potential to grow rapidly. This condition can be considered as the indicator to measure the extent of the agricultural growth for Selangor in the future. To examine these extents, there are some constraints to determine the actual contribution resulting from agricultural production activities. The contribution of the agricultural sector that has been recorded needs to be identified both directly and indirectly in Selangor. This is because it can determine the direct and indirect effects of the agricultural sector in such a way that appropriate macro strategies can be built up for the development of the state's agricultural. In planning, such integrated database is given by a regional input-output table (RIOT) for Selangor as an empirical tool for an overarching policy making.

1.3 Research Questions

Based on the background and issues that have been highlighted, the study seeks to answer two main research questions as follows:

1. To what extent does the agricultural sector in Selangor contribute to the state economy?
2. To what extent of value-added effect does the growth of the agricultural sector in Selangor give to the state economy?

1.4 Objectives of the Study

Generally, this study attempts at determining the impact of the agricultural sector towards the sectoral growth in Selangor. Specifically, there are two specific objectives that need to be achieved which can answer the two research questions.

1. To develop a database to quantify the contribution of the agricultural sector to Selangor's economy; and
2. To identify the direct and indirect effects of the value-added multiplier for the agricultural sector in Selangor.

To achieve the first objective, this study develops RIOT for Selangor which can be used to examine the contribution of the agricultural sector to the state economy. To achieve the second objective, this study calculates the input-output multipliers with a specific reference to the value-added multiplier. The

advantage of input-output multiplier is that the value-added contribution can be separated into direct and indirect effects in measuring the level of integration of the agricultural sector with other economic sectors.

1.5 Significance of the Study

This study offers two significant contributions that are useful particularly for policymakers. Firstly, the novel development of RIOT for Selangor is highly relevant to be used as a tool to help formulate potential strategies in the development of the agricultural sector in Selangor. This dataset can also identify the relation of all economic sectors in a detailed level through an economy-wide approach. By having this database, information pertaining to the industry supply chain can be linked by considering the supply-demand view for each economic sector. The findings from this study can help the policymakers to obtain detailed information on the contribution, development and potential growth of the agricultural sector, which is helpful to devise the framework of economic planning, particularly for the agro-food sector, at the state level. To the best of our knowledge, there is no such dataset available for the purpose of economic analysis by specific sector at the state level.

Secondly, this study can also benefit the policymakers to understand the extent to which the agricultural sector in Selangor can move forward to support the economic growth as a whole. The empirical result of this study (i.e. input-output multipliers and linkages) can be used to help generate policy recommendations for the agricultural sector. Thus, it benefits various parties other than policymakers such as food producers (i.e. farmers, breeders and fishermen), food retailers and consumers both for short and long terms in Selangor. Long-term development plans for the food commodities production at the state level can be designed to stabilise the agricultural production in Selangor. Apart from that, the decision related to policy can be improved to help strengthen the agricultural sector in the future. For example, the formation of National Agro Food Policy for the 2011-2020 period which was released by the Ministry of Agriculture and Agro-Based Industry (2011) ensured the agricultural sector to remain as one of the important sectors to economic growth. This policy formulation can be a catalyst for a more modern and dynamic agricultural industry with the aim of ensuring food supply that will generate potential for increased contribution to the economy in Selangor.

1.6 Organisation of the Study

This study is divided into five chapters as follows.

Chapter 1 briefly focuses on the background of the study, the motivation of the study, research questions that need answers to describe

it, the objectives to achieve this study and the significance of this study.

Chapter 2 describes the related past literatures. This chapter was conducted in two sections. The first section explains briefly about the introduction on what will be described in a more detailed manner. The second section attempts to review the past literatures. For a better understanding, the section is separated into five themes: (I) importance of the agricultural sector to economic development, (II) factors influencing the growth of the agricultural sector, (III) impact of the agricultural sector to food security, (IV) agriculture for policy implication, and (V) application of economic analysis in the agricultural sector.

Chapter 3 describes the methodological approach undertaken. The chapter started with a brief introduction on the process of conducting the analysis. As the study applied the input-output modelling, the discussion will focus on how to develop the RIOT for Selangor as the dataset and apply it for estimation purpose by using the Simple Location Quotient (SLQ) approach. The RIOT can be used to quantify the economic impact of the agricultural sector through multiplier and linkage approach.

Chapter 4 presents the major findings from the analysis on the agricultural sector. The first part gives a brief introduction to the chapter. The rest of the chapter provides the sufficiency of the agricultural sector in Selangor based on the SLQ approach, followed by the discussion of direct and indirect contributions of the agricultural sector through multiplier and linkage approach.

Chapter 5 summarises the whole study by detailing the relevance of conducting this study, major findings that can be mentioned, outlines the policy recommendation that can be paid attention to by relevant parties, addresses the limitations of the study that can be identified and the future studies that could be potentially applied for further research, and finally concludes the overall purpose of this study.

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