



NEWSLETTER

DOSM/BPE/3.2022/Series 50

TRADE IN VALUE ADDED: MULTIPLIER DECOMPOSITION¹

Introduction

This study presents findings on the analysis of Trade in Value Added (TIVA) for multiplier decomposition. Multi Regional Input-Output (MRIO) released by Asian Development Bank (ADB) for reference year 2015 - 2020 is being used for the purpose of this analysis.

Multiplier decomposition method is an analytical tool to analyse the economic spillover effect within Malaysia and among Malaysia's trading partner countries. This method disaggregate the **intra-regional, interregional spillover and interregional feedback effects** from a change of final demand for a particular sector in Malaysia.

Concept and Definition

Various multiplier effects can be calculated using multiregional input-output model for a single region, for each of the other regions and for the "rest of the economy".

Multiplier effect is decomposed into three...

- Intra-regional Effects (M1)** captures the multiplier effect arising from the increase of final demand in a particular product towards Malaysia's economic sectors
- Interregional spillover effects (M2)** provides the spillover multiplier effect received by other countries as a result from increased production in Malaysia's economic sector
- Interregional feedback effects (M3)** is the impact resulting from spillover production in partner country that rely input from Malaysia

Impact Analysis

For this analysis we assumed that an exogenous USD1,000 increase in the final demand of the Manufacturing sector in Malaysia will give impact to **Manufacturing and other sectors in Malaysia** as well as **other countries**

- M1 Increased demand for **Malaysia's manufacturing products**
- and...
- M1 increased output of **Malaysia's economic sectors**
- and also...
- M2 increased output of the sectors from **other countries**

Then give the...
feedback effect which is the impact resulting from **spillover production in partner country** that rely input from Malaysia.

M3

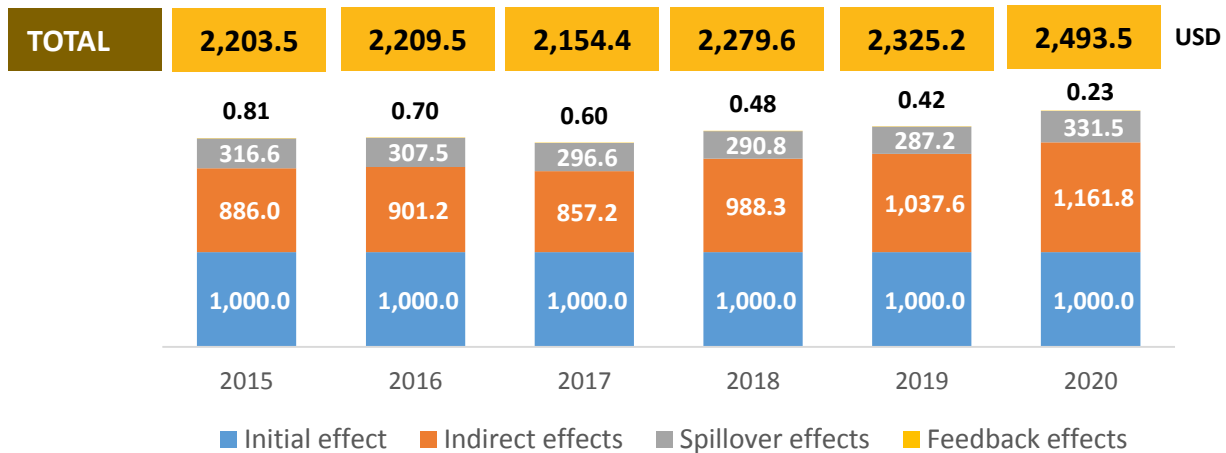
¹ Authors: Rusnani Hussin, Junainah Sedek, Siti Rahmah Seh Omar, Mohamad Amjad Mohamed Zahari



Impact Analysis (continued)

An increase of USD1,000 in the final demand of manufacturing sector in Malaysia would affect the domestic economy. Within the period of 2015 to 2020, it would impact more than **40.0 per cent** to the Malaysian economy domestically (indirect effect), less than **one-fifth** was spillover effect and less than **1 per cent** revert to the Malaysian economy (feedback effect).

Exhibit 1. Multiplier Decomposition for Malaysia, 2015 – 2020



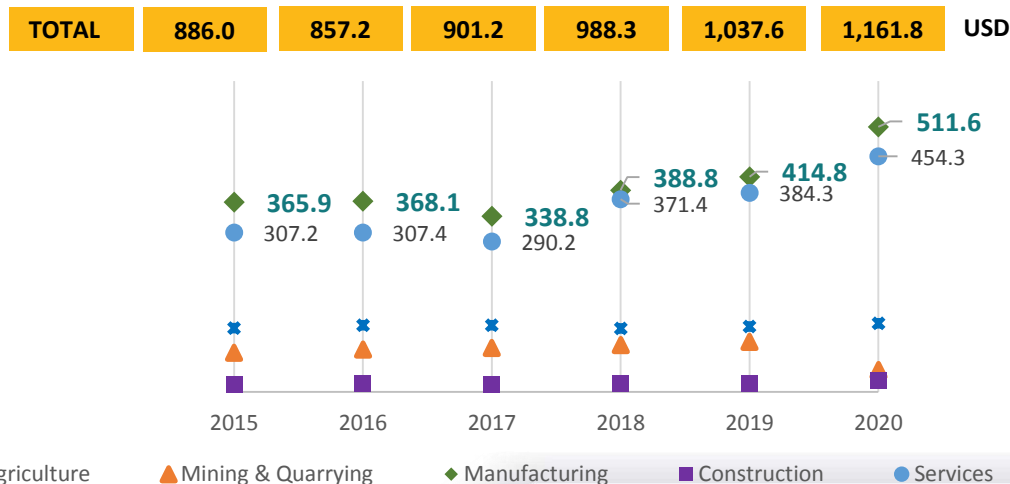
Source: Calculations using ADB MRIO

Intraregional effect (M1) by sectors, 2015 - 2020

In terms of intraregional effects, an increase in the demand of Manufacturing sector in Malaysia induced **highest output in the Manufacturing sector, followed by Services sector in Malaysia** between 2015 and 2020.

In 2020, an increase of USD1,000 indirectly increase total output in the Malaysia's economy by **USD1,161.8**, of which **Manufacturing** attributed to the largest effect with **USD511.6**, followed by **Services USD454.3**.

Exhibit 2. Intraregional effect (M1) by sectors, 2015 - 2020

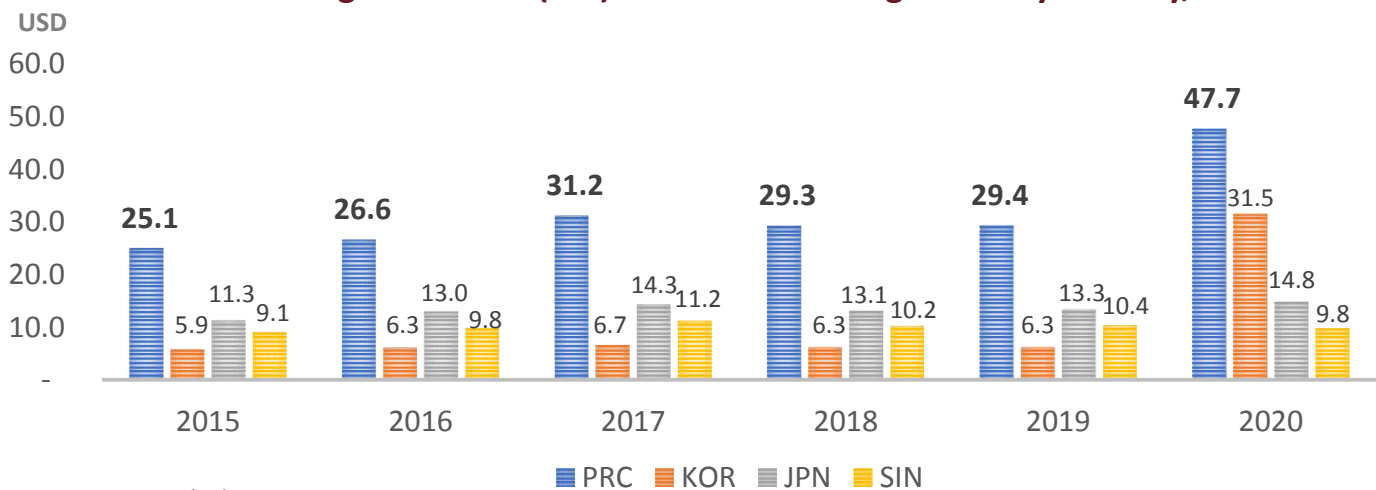


Source: Calculations using ADB MRIO

In 2020, China represented 21.2 per cent of imports from Malaysia's total imports. China was the most affected country because China was the top Malaysia's trading partner.

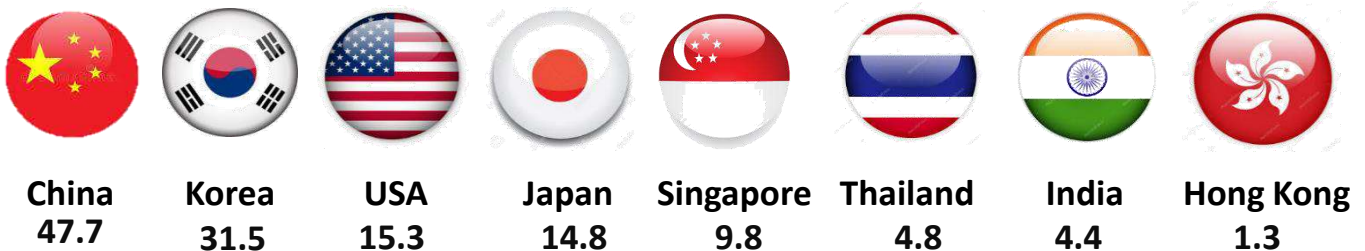
The findings showed that **China received the highest spillover effect** especially in the Manufacturing sector, followed by **Japan, USA and Singapore** during 2015 and 2020.

Exhibit 3. Interregional effect (M2) for Manufacturing sector by Country, 2015- 2020



Source: Calculations using ADB MRIO

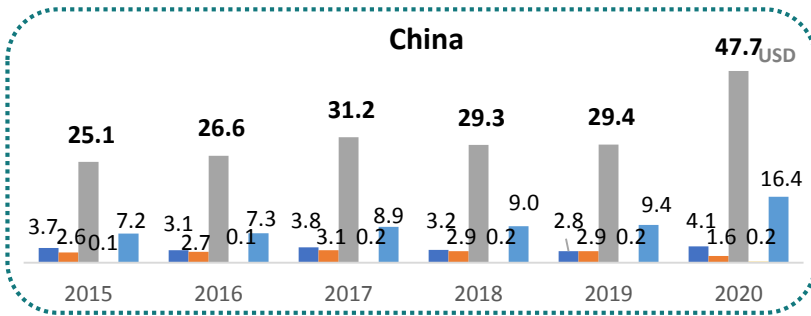
Exhibit 4. Eight Major Trading Partner, 2020 (USD)



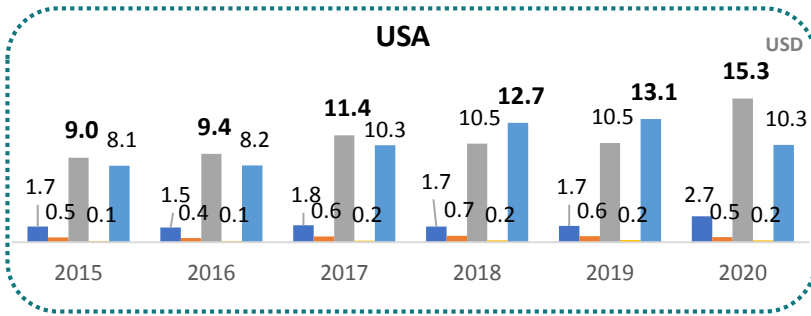
In terms of interregional effects among eight major trading partners, China registered the highest spillover effect for Manufacturing sector with USD47.7, followed by Korea (USD31.5), USA (USD15.3) and Japan (USD14.8).

Source: Calculations using ADB MRIO

Inter regional effect (M2) by Country by Sector, 2015 - 2020

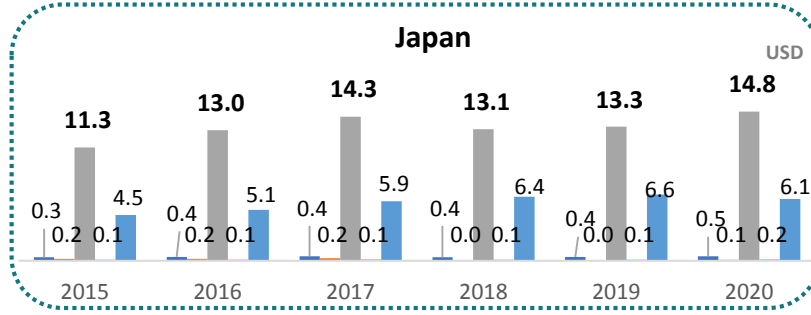


The increase in the demand of Manufacturing sector in Malaysia also had an output inducement impact in other sectors of the major trading partner countries.

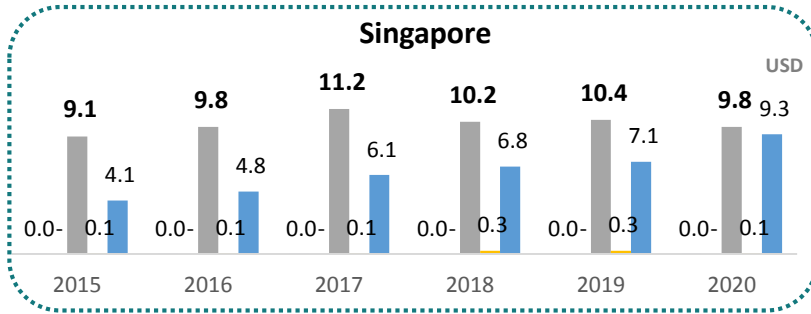


China, USA and Japan received the highest spillover effect in the Manufacturing sector, during 2015 and 2020.

USA also received the largest spillover effect in the Manufacturing sector for the period of 2015 to 2017.



However, starting in 2018, the USA's Services sector had overtaken the Manufacturing sector's spillover effect. This is in line with USA being the **world's leading commercial services trader** in 2018 following world exports of commercial services increased by 46 per cent and services exports grew 3.9 per cent annually since 2008 until 2018 (World Trade Statistical Review 2019, WTO).



Source: Calculations using ADB MRIO

- Agriculture
- Mining & Quarrying
- Manufacturing
- Construction
- Services

Disclaimer:

This article in this newsletter is the initiative of DOSM officers. The views expressed are those of the authors and do not necessarily represent the view of DOSM.

Acknowledgements:

The authors would like to thank the Economic Indicators Division, especially Director, Ms. Jamia Aznita Jamal for the guidance, ideas and opinions.