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ANALYSIS OF ASYMMETRIES IN OFFICIAL INTERNATIONAL MERCHANDISE TRADE STATISTICS: A CASE STUDY OF MALAYSIA

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Abstract:

International merchandise trade plays an essential capacity in economic development, linking producers and consumers in various countries into a global economic system. From year to year, International Merchandise Trade Statistics (IMTS) has been in focus by the United Nations Statistical Commission (UNSC) and the presence of discrepancies in the data have been noticed, attributable to dissimilarities especially in recent years with the evolution of global value chains. Mirror or asymmetrical analysis is one of the most used instruments for comparing data quality of external trade statistics between partner countries. This paper utilizes this analysis to identify the extent of asymmetry of official international merchandise trade statistics between Malaysia and its selected trading partners using annual time series data for 19 years between 2002 and 2020. By employing the mirror technique, it is observed that the value of exports from a country is almost impossible to tally the value of imports into the corresponding country and vice versa. However, the degree of asymmetry varies from country to country. Among the countries in observation, discrepancies are consistently high with China's and the Philippines' imports and Singapore's exports. Meanwhile for other countries, the discrepancies were low or medium except for certain years. These discrepancies can be resulting from various possible conceptual and measurement variations between the estimation practices of different countries. While it is difficult to identify specific reasons for the inconsistencies, further analysis on a specific country, industry or products and time period may help for better understanding of scenarios and lead to reduce the discrepancies where possible.

Keywords:

Mirror Analysis; Discrepancies; Exports; Imports; Malaysia

1. Introduction

The availability of timely and high-quality statistics is crucial for monitoring, analysis and projections of macroeconomic developments, along with an instrument in facilitating the policy maker in establishing policies and development planning. Asymmetry analysis, also known as mirror analysis, examines whether a country's exports to another country are equivalent to the imports from that country and vice versa.

Bilateral trade statistics show bilateral merchandise flows between two countries. In this case, country A is the reporting country and country B is the partner country. In general, if country A exports goods to country B, the value of country A's exports should be equal to the value of country B's imports. Unfortunately, this is not always the case. For example, Malaysia's recorded exports to China should be equal to China's recorded imports from Malaysia. However, in many cases the value of exports and imports between two countries are different that are known as bilateral trade asymmetries. There have always been discrepancies in trade flow reporting. Asymmetries exist, due to some possible reasons in international trade statistics.

The aim of this paper is to identify the extent of asymmetry of official international merchandise trade statistics between Malaysia and its selected trading partners.

2. Literature Review

Based on article written by Roger-Claver Victorien Gnogoue (2017), mirror analysis is a decision-making tool used to investigate differences in a country's foreign trade. It does so by examining both import and export statistics. Discrepancies in mirror analysis can be caused by a variety of factors (Yeats 1995, Makhoul and Otterstrom 1998, Ferrantino and Wang 2008, Eurostat 2009). It is important to remember that their occurrences do not always mean there is a problem with the data on either side. Instead, they could be the result of the influence of some legitimate factors. It is also important to understand the factors that lead to discrepancies in mirror analysis.

Javorsek (2016) stated that the sources of asymmetries in merchandise trade statistics include differences in various aspect specifically in valuations of imports and exports, attribution of trade partners; and recording re-exports.

While Podgorica (2015) explained that the sources of asymmetries can be divided into two categories which are by the methodology of International Trade in Goods Statistics (ITGS) or by errors in reporting. The main methodological reasons are trade system, time of registration and partner countries used for the mirror analysis. For errors in reporting, the common errors are valuation of processing trade, product misclassification and triangular trade.

For a long time, the international statistical community has discussed and worked to improve the quality of IMTS. For years, the UNSC, the world's highest decision-making body in the field of statistics, has discussed IMTS and noted the data's inconsistencies due to asymmetries. With the introduction of global value chains (GVCs) and efforts to estimate trade in value added, this has become even more prominent in recent years (TiVA). In addition, GVCs and TiVA have raised a different issue with traditional IMTS: double counting, which is estimated to account for up to 28% of total global trade in 2010. (UNCTAD, 2013).

3. Methodology

An analysis of asymmetries in official international merchandise trade statistics used data gathered from various sources. For Malaysia trade data was obtained from Department of Statistics Malaysia, while trade data for Vietnam is downloaded from Trade Statistics Database (COMTRADE). Meanwhile for trade data of Singapore, Thailand, Philippine, Indonesia, China, the United States of America (USA), Hong Kong and Netherland were extracted from IHS Market. The analysis used annual time series data for 19 years between 2002 and 2020.

For the mirror analysis, the statistical value is usually the only indicator used. Over this characteristic of bilateral trade flows, the above index can be derived as follows, depending on which of the two countries is involved as the goods importer and exporter (Guo, 2010):

$$Asymmetry = Value(R) - Mirror\,Value(P)$$

$$Discrepancy = ABS(\frac{(Value(R) - Mirror\,Value(P)}{(Value(R) + Mirror\,Value(P)/2})$$

Where:

- R is the Reporter
- P is the Partner
- Value is the statistical value as recorded by the Reporter
- Mirror Value is the mirrored statistical value as recorded by the Partner

The following three levels of discrepancies are distinguished according to the defined rules of mirror analysis (Podgorica, 2015):

- From 0% to 15% - the discrepancy is considered low.
- From 15% to 50% - the discrepancy is considered medium. Higher than 30% discrepancy deserves additional analysis.
- More than 50% - discrepancy is considered high

Further analysis was made at Harmonised and Coding System (HS)-2 digit for better understanding the pattern of discrepancies for each country throughout the year.

4. Results

Malaysia's exports and imports performance for the period of 2002-2020 have been in upward trend except for 2009 and 2020 as shown in Chart 4.1. In 2002, Malaysia's exports were valued at RM357.4 billion, while import RM303.1 billion. However, Malaysia, a trade-dependent country, was severely hit in its trade in 2009 due to global financial crisis 2008/2009. Nevertheless, it recovered a year later. Malaysia's trade performance in 2020 moderately affected by the Movement Control Order announced by the Government of Malaysia in response to the COVID-19 pandemic in the country, yet Malaysia's exports reached RM981.0 billion, increased by 5.8 per cent (CAGR) from 2002 and for imports it recorded up to RM796.2 billion, increased by 5.5 per cent.

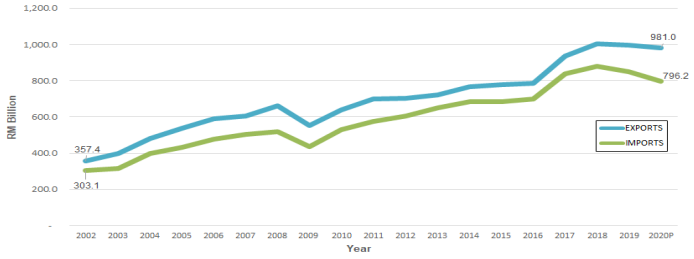

Chart 4.1 Malaysia's Exports and Imports Performance, 2002-2020

4.1 Malaysia and Major Trading Partners

The discrepancies between Malaysia reported exports from its major trading partners and their reported imports to Malaysia for 2002 to 2020 are showed in Chart 4.2. Overall, Singapore's and USA's discrepancy remained consistently low and moderate. Meanwhile, China's discrepancy was consistently high over the time. The highest discrepancy was recorded in 2020, of which was contributed by HS 47 (Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard).

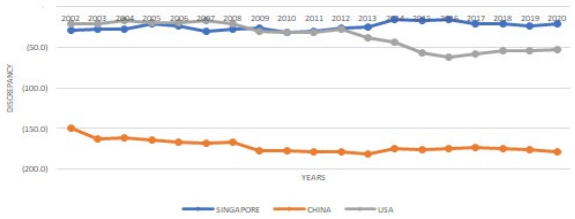

Chart 4.2: Discrepancy between Malaysia's exports and Major Trading Partner's imports

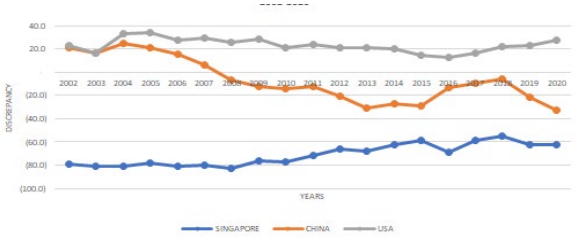

Chart 4.3: Discrepancy between Malaysia's imports and Major Trading Partner's exports

Meanwhile, chart 4.3 showed the discrepancy between Malaysia reported imports from its major trading partners and their reported exports to Malaysia from year 2002 to 2020. It was found that Singapore's relative asymmetry across the time series was consistently high discrepancy. However, the discrepancies for China and the USA consistently low and moderate over the time.

4.2 Malaysia and selected ASEAN Countries (ACs)

As comparing Malaysia's exports with selected ASEAN countries imports, it was found that Singapore, Vietnam and Thailand, have consistently low discrepancies over time (Chart 4.4). On the other hand, Indonesia display high discrepancy from year 2002 to 2004. The product that contributed for high discrepancy in year 2002 for Indonesia, was HS 02 (Meat and edible meat offal), in year 2003 was HS 71 (Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin), and for 2004 was HS 63 (Other made up textile articles; sets; worn clothing and worn textile articles; rags). After 2004, the discrepancy value of Indonesia improved and become consistently moderate and low. Lastly for the Philippines, the discrepancy was consistently high over time and the highest discrepancy was in 2013. It was contributed by the product that had the highest discrepancy on that year which is HS 51 (wool, fine or coarse animal hair; horsehair yarn and woven fabric).

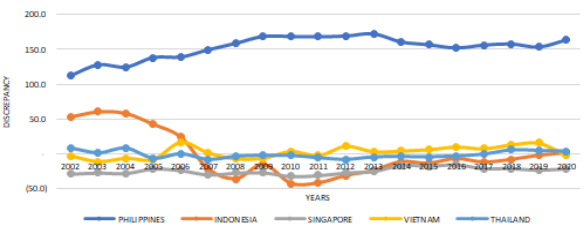

Chart 4.4: Discrepancy between Malaysia's exports and selected ACs' imports

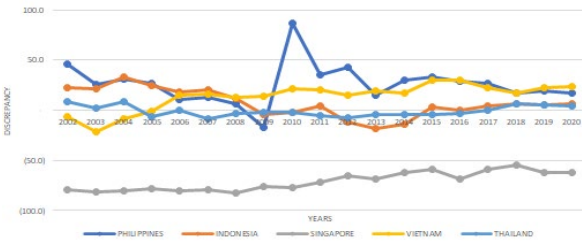

Chart 4.5: Discrepancy between Malaysia's imports and selected ACs' exports

The discrepancies between Malaysia's imports and selected ACs' exports for 2002 to 2020 are showed in chart 4.5. Four out of the five selected ACs' which are Indonesia, Philippines, Vietnam and Thailand were consistently moderate and low but in 2010, the discrepancy for Philippines was high. HS 79 (Zinc and articles thereof) was the product that had the highest discrepancies in that year. The discrepancy for Singapore is consistently high over time and the highest discrepancy was in 2008 that was contributed by HS 01 (Live animals) which has the highest discrepancy in that year.

4.3 Malaysia and Entrepot Country

Difference performance was found as comparing Malaysia's export with Entrepot Countries' imports for 2002 until 2020 (Chart 4.6). The discrepancies for Entrepot import countries were consistently moderate and low except for Netherland in the year 2020 and Hong Kong in the year 2015 and 2016 that were having high discrepancy values. For Netherland in 2020, HS 79 (Zinc and articles thereof) was the product that had the highest discrepancy for that year. While for Hong Kong in 2015 and 2016, the products that have the highest discrepancy are HS 78 (Lead and articles thereof) and HS 88 (Aircraft, spacecraft, and parts thereof).

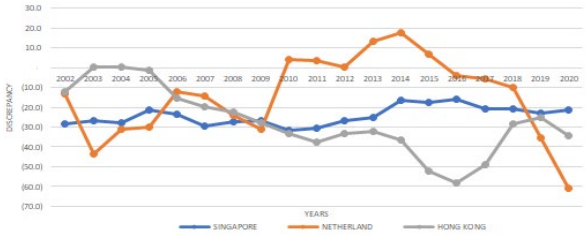

Chart 4.6: Discrepancy between Malaysia's imports and Entrepot Country exports

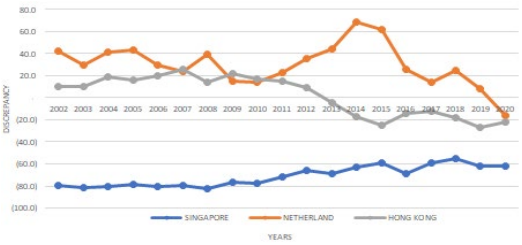

Chart 4.7: Discrepancy between Malaysia imports and Entrepot Country exports

Overall discrepancy between Malaysia imports and Entrepot Countries' exports for 2002 to 2020 showed some inconsistency pattern (Chart 4.7). The discrepancy in Hong Kong and Netherland remained consistently low and moderate but in 2014 and 2015, the discrepancy for the Netherlands is high. The product that has the highest discrepancies for 2014 was HS 47 (Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard) and for 2015 was HS 10 (Cereals). While for Singapore, it shows that the discrepancies are consistently high over time. The highest discrepancy was in 2008 that was contributed by HS 01 (Live animal).

5. Discussion and Conclusion:

The main purpose of this study was to observe the degree of discrepancies of official international merchandise trade statistics between Malaysia and its selected trading partners. The study employed mirror or asymmetrical analysis on yearly data of Malaysia and its trading partners for imports and exports of goods for the period between 2002 and 2020. Based on the findings, it can be concluded that it is almost unfeasible to have perfect symmetrical bilateral trade data between countries. This result was predictable and is in accordance with previous studies. Moreover, according to the result of analysis from all countries in observation, the degree of discrepancies differs from country to country though most of the discrepancies were consistent from time to time. These inconsistencies can be resulting from several possible conceptual and measurement variations between the estimation practices of different countries such as differences in valuations of imports and exports; differences in

attribution of trade partners; differences in recording re-exports; and et cetera. Even though triangular trade was a common reason in the existing literature, the result of analysis from entrepot countries does not show substantial differences from other countries except for MY imports versus SG exports. Further analysis by the chapter of goods (HS-2) explains different chapters of goods contributed to the discrepancies for different countries and time. For better understanding the situation, further analysis should be carried out on a specific country, industry or products and time period which might steer to a solution in order to reduce the discrepancies where possible. These discrepancies do not depict the inaccuracy in statistics of any country. However, all countries should work together to improve the uniformity for better analysis.

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