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EFFECTS OF TRADE OPENNESS ON INFLATION, INCOME INEQUALITY AND ECONOMIC GROWTH IN SELECTED DEVELOPING COUNTRIES

TEE HENG GUAN

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By

TEE HENG GUAN

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

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

EFFECTS OF TRADE OPENNESS ON INFLATION, INCOME INEQUALITY AND ECONOMIC GROWTH IN SELECTED DEVELOPING COUNTRIES

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June 2020

Chairman : Associate Professor Shivee Ranjanee Kaliappan, PhD
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Trade openness is important to the national growth and development. However, its impact on inflation, income inequality and economic growth among developing countries remain inconclusive. Additionally, the use of different measurements for trade openness such as the standard trade shares (TS) measurement, world trade shares (WTS) and composite trade shares (CTS), a new measurement for trade openness also yields different results. The first research objective examines the relationship between trade openness and inflation on 51 developing countries from 1995 to 2018. This is motivated by the mixed relationships between trade openness and inflation among the developing countries. The finding based on system GMM estimation indicates a positive and significant relationship between CTS and inflation but not for TS and WTS. The second research objective focuses on the relationship between trade openness and income inequality on 52 developing countries from 1995 to 2015. This is motivated by the existence of mixed relationships between trade openness and income inequality among the developing countries. The second objective was estimated using system GMM estimation and there is a positive and significant relationship between trade openness and income inequality for both CTS and WTS but there is an insignificant relationship when TS is used. The third research objective examines the relationship between trade openness and economic growth on 57 developing countries from 1995 to 2018. As suggested by new growth theory, the relationship between trade openness and economic growth is positive, however, empirical findings were mixed among the developing countries. The finding based on system GMM estimation reveals a positive and significant relationship between trade openness and income inequality for both CTS and WTS but there is an insignificant relationship when TS is used. In conclusion, policies towards greater trade openness need to be handled with care to prevent further rise of inflation and income inequality. For income inequality, higher real GDP per capita is needed to reduce income inequality. For economic growth, both higher trade openness and physical capital are needed for continuous economic growth.

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

KESAN KETERBUKAAN PERDAGANGAN KEPADA INFLASI, KETIDAKSEIMBANGAN PENDAPATAN DAN PERTUMBUHAN EKONOMI DI NEGARA SEDANG MEMBANGUN TERPILIH

Oleh

TEE HENG GUAN

Jun 2020

Pengerusi : Profesor Madya Shivee Ranjanee Kaliappan, PhD
Fakulti : Sekolah Perniagaan dan Ekonomi

Keterbukaan perdagangan adalah penting bagi pertumbuhan dan pembangunan ekonomi negara. Namun, kesan daripada keterbukaan perdagangan tetap tidak selaras. Ia juga penting untuk menekankan kesan keterbukaan perdagangan secara tidak langsung kerana keterbukaan perdagangan tidak semestinya mempengaruhi pembolehubah makroekonomi secara langsung. Tambahan pula, penggunaan pengukur yang berlainan bagi keterbukaan perdagangan seperti perwakilan perdagangan (TS), perwakilan perdagangan dunia (WTS) dan gabungan perwakilan perdagangan (CTS), sejenis pengukur terbaru yang mengukur tahap keterbukaan perdagangan juga menunjukkan keputusan yang berlainan. Objektif pertama kajian adalah tentang hubungan antara keterbukaan perdagangan dan inflasi ke atas 51 negara sedang membangun dari 1995 sehingga 2018. Ini adalah dimotivasi oleh kewujudan perhubungan yang bercampuran di antara keterbukaan perdagangan dan inflasi di kalangan negara sedang membangun. Keputusan daripada sistem GMM menunjukkan hubungan yang positif and signifikan di antara CTS dan inflasi tetapi tidak signifikan untuk TS dan WTS. Objektif kedua kajian adalah tentang hubungan antara keterbukaan perdagangan dan ketidakseimbangan pendapatan ke atas 52 negara sedang membangun dari 1995 sehingga 2015. Ini adalah dimotivasi oleh kewujudan perhubungan yang bercampuran di antara keterbukaan perdagangan dan ketidakseimbangan pendapatan di kalangan negara sedang membangun. Objektif kedua dianggarkan menggunakan sistem GMM dan terdapat hubungan yang positif and signifikan di antara keterbukaan perdagangan dan ketidakseimbangan pendapatan untuk CTS dan WTS tetapi terdapat hubungan yang tidak signifikan apabila TS digunakan. Objektif ketiga kajian adalah tentang hubungan antara keterbukaan perdagangan dan pertumbuhan ekonomi ke atas 57 negara sedang membangun dari 1995 sehingga 2018. Sepertimana yang diperolehi daripada teori pertumbuhan ekonomi baru, hubungan di antara keterbukaan perdagangan dan pertumbuhan ekonomi adalah positif tetapi keputusan secara empirikal adalah bercampuran di kalangan negara sedang membangun. Keputusan berdasarkan kepada sistem GMM menunjukkan hubungan yang positif and signifikan di antara keterbukaan

perdagangan dan pertumbuhan ekonomi untuk CTS dan WTS tetapi terdapat hubungan yang tidak signifikan apabila TS digunakan. Kesimpulannya, polisi-polisi ke arah mempertingkatkan keterbukaan perdagangan perlu diawasi dengan berhati-hati untuk mengelakkan daripada peningkatan inflasi dan ketidakseimbangan pendapatan yang berlanjutan. Bagi ketidakseimbangan pendapatan pula, peningkatan pada GDP sebenar per kapita perlu diutamakan untuk mengurangkan ketidakseimbangan pendapatan. Bagi pertumbuhan ekonomi pula, peningkatan pada keterbukaan perdagangan dan modal fizikal harus diambil berat untuk memastikan pertumbuhan ekonomi yang berterusan.

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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:

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Date: 08 October 2020

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This is to confirm that:

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- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
CEE	Central and Eastern European
CCEMG	Common Correlated Effects of Mean Group
CPI	Consumer Price Index
CTS	Composite Trade Shares
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HOSS	Heckscher-Ohlin and Stolper-Samuelson
IMF	International Monetary Fund
NTBs	Non-Tariff Barriers
SSA	Sub-Saharan Africa
TS	Trade shares
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and Pacific
VECM	Vector Error Correction Model
WB	World Bank
WTO	World Trade Organization
WTS	World Trade Shares

CHAPTER 1

INTRODUCTION

1.1 Background of The Study

Globalization and economic integration have begun to take place rapidly among developing nations since the 1980s. The process of global economic integration has become more rapid with the establishment of the World Trade Organization (WTO) in 1995 which largely promotes free trade or a more open trading environment at the global scale. Since then, issues relating to trade openness have been widely discussed among policy makers and researchers. In simple terms, globalization is defined as the integration of nations into the global market (Clamon & Kremer, 2006; Lee, 2014). Basically, globalization comprises three broad dimensions namely, economic globalization, social globalization, and political globalization (Dreher, 2006).

Economic globalization refers to the flow of goods and services; social globalization refers to the flow of information and ideas; and political globalization refers to the diffusion of governmental policies. Among these three forms of globalization, the most commonly used in the trade literature is economic globalization. According to Reuveny and Li (2003), economic globalization consists of four main components which include foreign direct investment (FDI), foreign financial capital, international labor mobility and trade flows. Economic globalization is commonly measured using two indexes namely, actual trade flow index (Ulasan, 2015) and trade restrictions index (Sachs & Warner, 1995). These two indexes are referred to as trade openness and trade liberalization, respectively, that convey different conceptual meanings. Trade openness is about the real exports and imports sector while trade liberalization is about the trade policies that reduce or remove trade barriers such as tariffs and non-tariff barriers (NTBs). According to Parikh (2007), globalization is a multi-dimensional phenomenon as it consists of not merely openness but also integration and interdependency among the nations globally. Hence, it is natural to treat globalization as a broad concept and trade openness as one of the elements of globalization.

Globalization is a gradual process which does not take place or happen instantaneously (Dowrick & Golley, 2004). This notion is similar to trade openness. It is a general belief that as the world becomes more globalized from time to time, trade openness also gradually increases. In fact, the latest evidence has shown that the percentage of both the total world's exports and imports in developing countries had increased from 1985 to 2017 as in Figure 1.1 and Figure 1.2 (UNCTAD, 2019). For the world's total exports, it had increased from 25.74 percent in 1985 to 44.41 percent in 2017. Similarly, the world's total imports had also increased from 23.35 percent in 1985 to 41.66 percent in 2017.

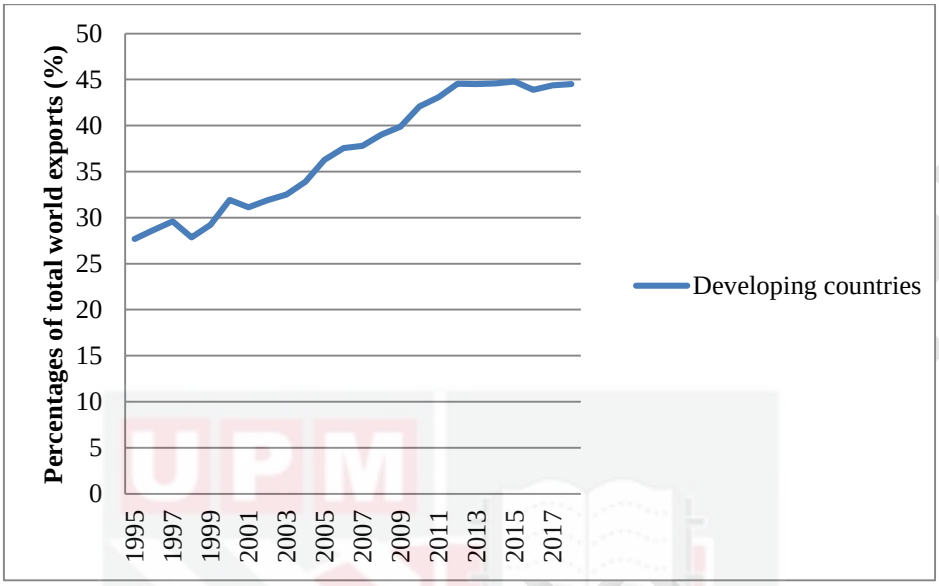

Figure 1.1 : Percentages of Total World Exports, 1995-2018
[Source: Total Trade and Share, UNCTAD (2019)]

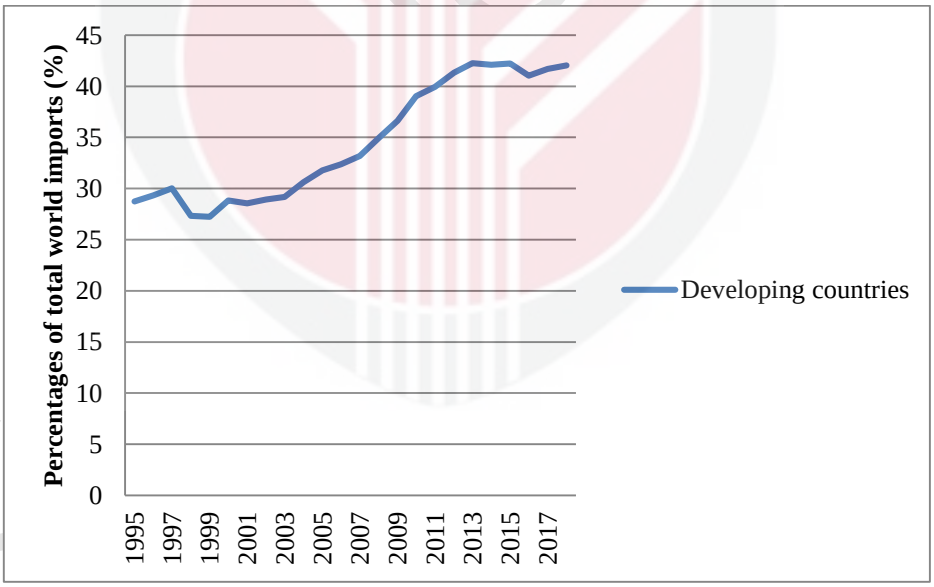

Figure 1.2 : Percentages of Total World Imports, 1995-2018
[Source: Total Trade and Share, UNCTAD (2019)]

Comparing between the developing and developed countries in terms of trade shares, which is one of the most commonly used trade openness measurements for developed and developing countries, again developing countries have been showing greater trade shares than the developed countries between 1995 and 2018 as shown in Table 1.1. This provides evidence that the developing countries have been depending largely on the international trade. The role played by trade openness is further supported when the trade shares among the developing countries are compared with the average trade shares in the rest of the world. This is because the trade shares among the developing countries are consistently higher than the average trade shares in the rest of the world from 1995 to 2018.

Table 1.1 : Trade Shares among Developed and Developing Countries, 1995 – 2018

Countries	1995	2000	2005	2010	2015	2018
Developing	58.07	66.49	77.17	68.97	59.31	60.33
Developed	36.95	42.82	47.94	52.46	53.79	56.00
Average[1]	43.35	60.64	57.70	56.98	55.64	59.63

Notes: Trade shares is measured by exports plus imports divided by Gross Domestic Products (GDP) (in percentage)
[Source: Trade Openness Indicators, UNCTAD (2019)]

According to Eris and Ulasan (2013), since the 1950s the volume of world merchandise exports has been growing at 6% while the world's GDP has been growing at 3%. As for the two categories of countries (developed and developing nations), it is observed that trade flows in the developing nations have outperformed trade flows in the developed nations significantly. The United Nations World Economic Situation and Prospects Weekly Highlight (2014) pointed out that the world trade shares of goods and services among the developing nations had increased from 27 % in 1998 up to 40 % in 2012. At the same time, however, the developed nations experienced a decreasing trend from 71 % in 1998 to 55 % in 2014. The outperformance of trade openness in developing countries compared to developed countries has provided support towards the selection of the developing countries in this study.

According to the United Nations (2016) and the World Bank (2016), a total of 129 nations are classified as developing countries, and the list is shown in Table A1. Subject to data availability and after the removal of outliers in the samples[2], this study selected different developing countries to meet with different objectives of the study.

[1] Based on UNCTAD (2019), world consists of three main groups of countries, including developing, developed, and transition countries. Hence, average refers to the average trade shares consisted of developed and transition countries from the rest of the world when comparing to the average trade shares from developing countries.

[2] The outliers are removed via the command of Bacon in Stata.

Generally, prior to 2008, developing nations have generally shown remarkable growth as compared to developed nations. Developing nations have recorded an average annual GDP growth of 4.7% between 1991 and 2002 which was 2% higher than those of the developed nations. The positive momentum continued with a record of 4.5 % to 5% higher growth rates compared to developed nations after 2002. However, during the beginning, the growth momentum has been disrupted due to the global financial crisis. As a result, the growth rate of the developing nations decreased from 5.7% to 4.4% in 2013 (World Trade Organization, [WTO], 2014). Since the growth performance loses its stability particularly after the period of crisis, this triggers the question of how countries could sustain their economic growth.

In addition to issues related to the sustainability of economic growth and trade openness measurements, another issue that requires attention at the global and domestic levels is the worsening of income inequality among the developing nations (World Bank, 2013). According to the United Nations Development Programme (UNDP) (2013), majority of the developing countries suffer from income inequality as measured by the Gini index from the 1990s to 2000s. For instance, both the low income and lower middle-income groups have shown increasing trends in the Gini index from 36 percent to 39.9 percent and 41.1 percent to 43.9 percent respectively while the upper middle-income group has shown a decreasing trend in Gini index from 53.4 percent to 49.7 percent.

Apart from income inequality, increases or instability of inflation is another concern that is regarded as crucial and needs to be addressed in developing countries. According to UNCTAD (2016), developing countries have shown an increasing trend in inflation rates as measured by CPI from less than 0.01 % in 1985 to 161.82 % in 2014. This is greater than the CPI of 117.73 % as seen in developed countries in 2014.

In order to understand the importance of trade openness for the selected developing countries, it is imperative to observe the trend of trade openness along with inflation, income inequality, and economic growth which are the main concerns of the present study. The following sections will discuss these variables by incorporating trend analyses and scatter plots.

1.1.1 Trade Openness and Inflation in Selected Developing Countries

Inflation is commonly defined as a continuous increase in the general price level that raises the cost of living, decreases the value of investment and hence affects the economic well-being since it is related to the rising cost of living and the decreasing value of investment (Greenidge & DaCosta, 2009). Therefore, it is important to identify the sources of inflation to minimize the adverse effect of inflation on the economy as a whole. Theoretically, demand-pull and cost-push are the commonly used theories to explain the sources of inflation. According to the demand-pull theory, inflation happens as a result of excess demand for the commodity and factor markets. Meanwhile, the cost-

push theory attributes the cause of inflation to the reduction in aggregate supply due to the firms' rising costs of production[3].

Recently, Syed (2012) argued that export prices raises the domestic inflation among developing nations, and this happens as the process of globalization and trade openness reinforces the sensitivity of domestic price to international demand and supply. Any imbalances between the demand and supply will increase domestic inflation since it triggers an opportunistic behavior. For instance, developing nations that are characterized by low cost of production would sell their goods at a higher price to the developed nations that are characterized by a higher cost of production instead of selling a lower price at the domestic level. A lower price in the developing nations also means a lower supply of the goods in the developing nations until demand is greater than supply which triggers the rise in the price in the developing nations. The final outcome is the rising price level in the developing nations. In line with the above discussion, the present study intends to investigate the trade openness-inflation nexus based on Romer's (1993) hypothesis which has asserted a negative relationship between these variables. Romer (1993) stated that the negative relationship is due to the monetary policy coordination related to inflation objectives between two nations which will eventually form a bigger but a less open economy. By lessening openness, these two nations have greater incentives to pursue a monetary expansionary policy since they do not bear the cost following the depreciation in exchange rates when they increase their money supply. The outcome of being less open is therefore, greater inflation. Meanwhile, according to Samimi, Ghaderi, and Sanginabadi (2011), the negative relationship is related to the incentive to create inflation by the central bank which is also related to the shape of the Phillips curve. This implies that trade openness will reduce inflation when the central bank has less incentives to create inflation surprises and the nation faces a steeper Phillips curve which indicates a greater tradeoffs between inflation and unemployment.

In order to observe the trend between trade openness and other macroeconomic variables (inflation, income inequality and economic growth), this study has conducted a trend analysis from 1995 to 2018 with the number of countries varies according to data availability and after the removal of outliers. As shown by Figure 1.3, on average, trade openness as measured by trade shares has shown a small increase from 70.11 percentage of GDP in 1995 to 73.50 percentage of GDP in 2018. On the other hand, inflation as measured by the percentage changes in Consumer Price Index (CPI) had been showing a huge decline from 30.61 percentage in 1995 to 3.58 percentage in 2018 among the 51 developing countries.[4] This is in line with the finding of Rogoff (2003) who has observed the trend of disinflation since the mid of 1970s (Ha, Ivanova, Ohnsorge & Unsal, 2019).

[3] As pointed out by Dwivedi (2005), both demand pull and cost push theories are part of modern theory of inflation after the classical and neoclassical theory of inflation.

[4] Inflation rates refer to the changes of CPI with 2010 as the base year. The inflation rates are generally high before 1990s and started to decrease gradually after 1995 among 48 developing countries. This is due to the fact that most of the developing countries only started to pursue greater trade openness in 1990s.

The declining trend of inflation, which is also known as disinflation, among the developing countries has started in the mid-1990s after persistent high inflation periods between 1970s and 1980s that had recorded double digits of inflation (Ha et al., 2019). By 2000, inflation at the global level had started to stabilize and same goes to the inflation among the developing countries. The possible reason for the decline of inflation is that the developing countries have generally adopted a more resilient monetary and fiscal policy to control the inflation. For instance, the developing countries can tighten their monetary policy to control inflation. One of the ways is by reducing their broad money supply. Apart from that, the developing countries can also use their fiscal policy to control for inflation such as by increasing the taxes and reducing government expenditures.

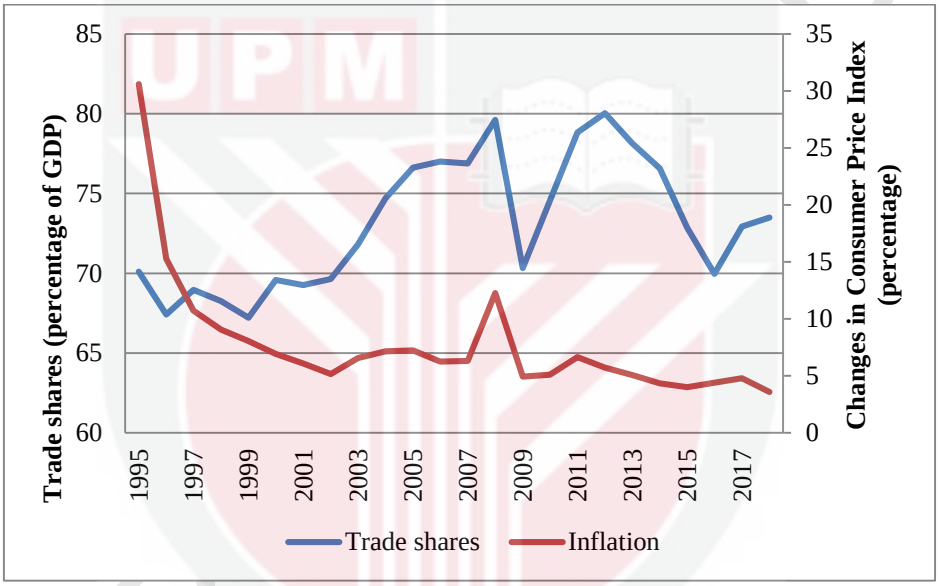

Figure 1.3 : Trade Openness and Inflation in Selected Developing Countries, 1995-2018[5]

[Source: World Bank, World Development Indicators (2019)]

[5] There are a total numbers of 51 selected developing countries. The 51 selected developing countries are Nepal, Pakistan, Bolivia, Botswana, Burkina Faso, Burundi, Cameroon, Colombia, Costa Rica, Cote d'Ivoire, Dominican Republic, Egypt, Arab Rep., El Salvador, Ghana, Guatemala, Honduras, Kenya, Malawi, Morocco, Niger, Panama, Senegal, Togo, Tunisia, Gambia, Peru, Eswatini, Jamaica, Armenia, Azerbaijan, Haiti, Kyrgyz Republic, Cambodia, Paraguay, Tanzania, Bangladesh, Benin, Congo, Rep., Jordan, Sri Lanka, Uganda, Mali, Guinea-Bissau, Mongolia, Lao PDR, Mauritania, Rwanda, Zambia, Belize, Mozambique and Georgia.

Next, scatter plots were used to observe the preliminary relationships between trade openness with other macroeconomic variables (inflation, income inequality and economic growth) from 1995 to 2018 subject to data availability. Figure 1.4 shows that trade openness measured by trade shares seems to have a flat slope or almost no relationship with inflation from 1995 to 2018. The observed trend seems to contradict Romer's (1993) hypothesis which has predicted a negative relationship. However, when composite trade shares is used as the proxy for trade openness, the relationships seem to be negative since it showed a downward slope (refer to Figure 1.5). Since trade openness as measured by trade shares and composite trade shares show different trends of slopes on inflation, further empirical analysis is needed to examine whether the predictions of Romer's (1993) hypothesis holds in the context of developing countries. This is also important to provide some insights on policy making especially on trade policy and monetary policy as related to inflation targets in the developing countries.

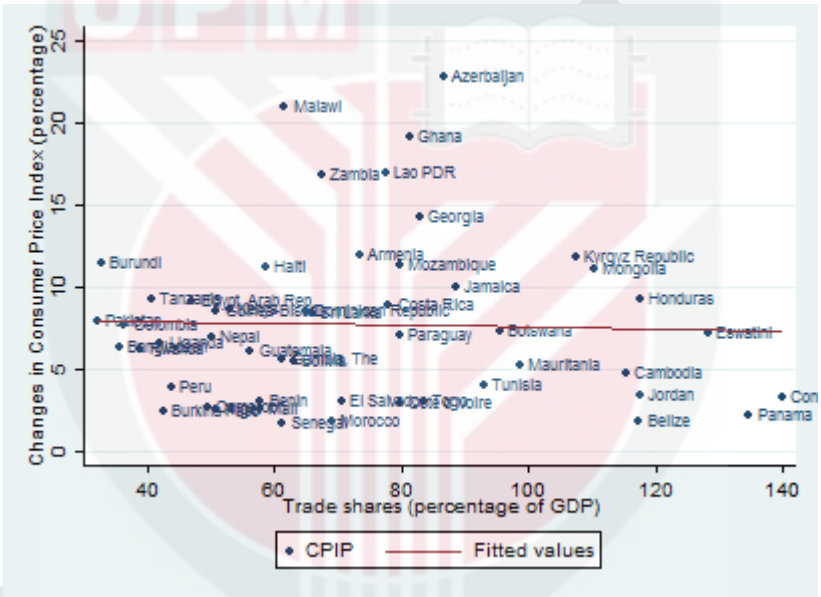

Figure 1.4 : Scatter Plot of Trade Shares versus Inflation for Selected Developing Countries, 1995-2018
[Source: World Development Indicators, the World Bank (2019)]

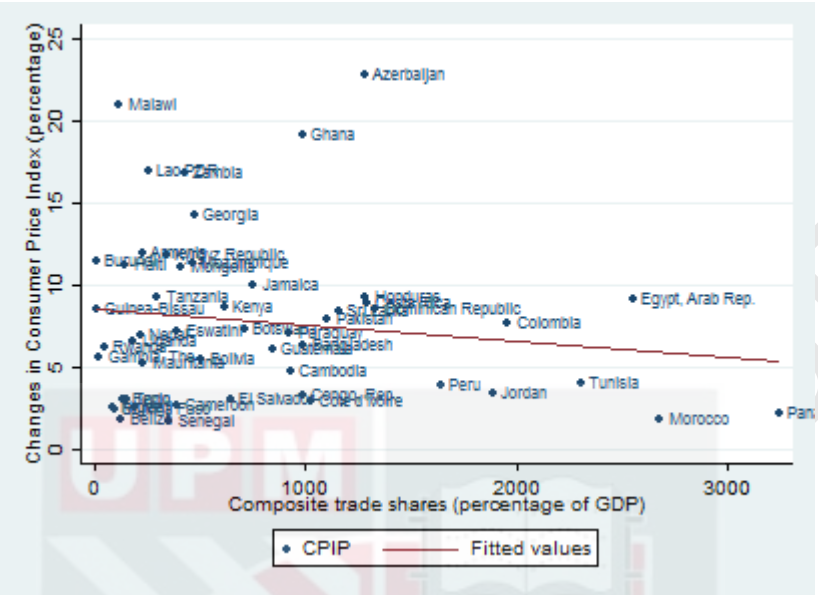

Figure 1.5 : Scatter Plot of Composite Trade Shares versus Inflation for Selected Developing Countries, 1995-2018
[Source: World Development Indicators, the World Bank (2019)]

1.1.2 Trade Openness and Income Inequality in Selected Developing Countries

Since the 1980s, most of the developing Asian nations have been facing the problem of income inequality (Asian Development Bank [ADB], 2012). Statistically, in 2010, 11 out of 28 selected developing Asian nations (covering 82% of the population) have shown a rising trend in income inequality. Income inequality has negative impacts on a nation since it can create social and political instability (International Monetary Fund [IMF], 2008). Generally, society views income inequality as unfair and unjust and could contribute to the incidence of poverty. Moreover, according to the United Nations [UN] (2013), income inequality also prevents access to health and education services which are vital for the growth and development process of a nation. This worsens the situation as it has the intergenerational effects in terms of economic mobility. This means that those who are under the low-income category are likely to remain at the same income level from one generation to another. In addition, income inequality tends to worsen financial and economic crises (Berg & Ostry, 2011).

Lee (2010) pointed out that globalization is to be blamed for the outcome of income inequality for certain countries. Accordingly, as the world becomes more integrated, external exposures begin to have a greater influence over the world economies, and the same goes to income distribution of nations due to greater trade openness. As suggested by the standard theory of international trade by Heckscher Ohlin and Stopler Samuelson,

not every country is expected to experience a rise in income inequality. They have stated that only developed nations are expected to encounter rising income inequality while the developing nations are expected to have low income inequality. This is because developed countries have relatively abundant skilled labors in contrast to developing countries that have relatively abundant unskilled labors. Following the process of trade openness, the demand for unskilled labors will increase and so do their wages. This results in the reduction of wage dispersion which would then lower income inequality in developing countries. The opposite is true for developed countries (Meschi & Vivarelli, 2009).

Figure 1.6 shows the trend of income inequality on the averages among 19 developing countries from 1995 to 2015. Trade openness as measured by trade shares had been showing a small increase from 66.89 percentage of GDP in 1995 to 70.74 percentage of GDP in 2015. Income inequality which is measured by the Gini coefficient has been showing a decline from 43.68 in 1995 to 42.72 in 2015. The Gini coefficient has hit the peak of 43.93 in 1998. In 1999, it had started to show a declining trend continuously until it reached to a low of around 42.53 in 2014 before increased marginally to 42.72 in 2015. A drop in the Gini coefficient indicates the fall of income inequality since 0 refers to perfect income equality while 100 refers to perfect income inequality. Hence, on average, the 52 developing countries have experienced an increasing trend of income inequality pre-2000s before the decline post-2000s. This is consistent with the prediction of Heckscher Ohlin and Stopler Samuelson theorem.

As stressed by World Inequality Lab (2018), the average national income inequality remains strong among the developing countries despite the developing countries having experienced a declining trend of income inequality. This is attributable towards the varying growth rates of national income among the developing countries. The varying growth rates of national income among the developing countries were influenced by political and economic crises, particularly the Asian Financial crisis that happened in 1997 though less affected by global financial crisis around 2009. It is this varying growth rate of national income among the developing countries that have given rise to the high level of national income inequality.

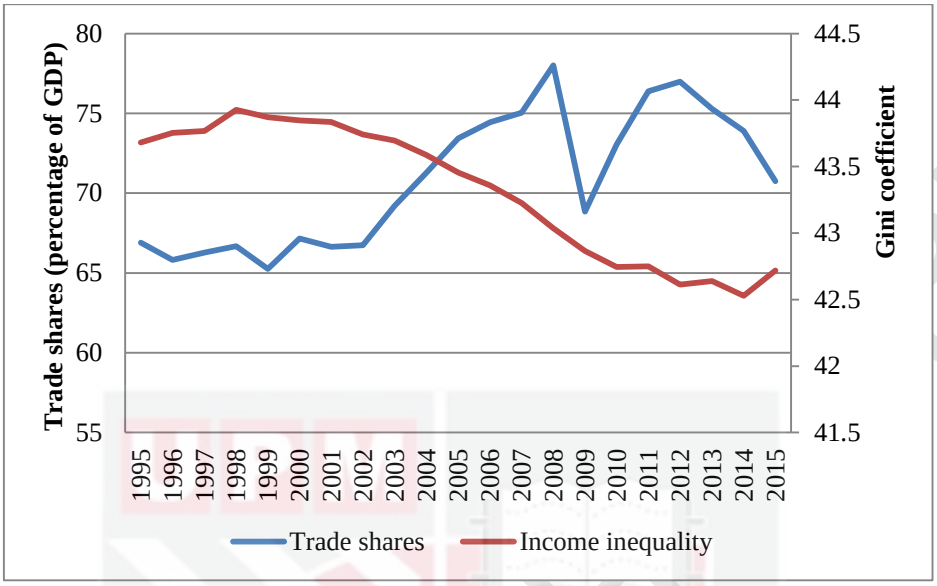

Figure 1.6 : Trade Openness and Income Inequality for Selected Developing Countries, 1995-2015[6]
[Source: World Bank, World Development Indicators (2019)]

Figure 1.7 and Figure 1.8 show the scatter plots for trade openness and income inequality for 52 developing countries from 1995 to 2015. It is observed that trade openness has a positive relationship with income inequality when trade shares was used as the measurement for trade openness. However, when using composite trade shares as the proxy for trade openness, it seems to have a flat slope or almost no relationship with inflation from 1995 to 2015. Since the scatter plots show two different types of relationships between trade openness and income inequality among the selected developing countries, it is important to conduct further empirical analysis to ascertain the relationship between trade openness and income inequality.

[6] There are a total numbers of 52 selected developing countries. The 52 selected developing countries are Botswana, Egypt, Malawi, Morocco, Nepal, Peru, Colombia, Costa Rica, Tunisia, El Salvador, Guatemala, Bangladesh, Jordan, Rwanda, Mauritania, Ghana, Dominican Republic, Kyrgyz Republic, Lao PDR, Paraguay, Yemen, Rep., Belize, Bolivia, Burundi, Mongolia, Namibia, Nicaragua, Senegal, Uganda, Burkina Faso, Cameroon, Gambia, Niger, Armenia, Benin, Cambodia, Central African Republic, Congo, Rep., Cote d'Ivoire, Haiti, Honduras, Jamaica, Kenya, Mali, Pakistan, Sri Lanka, Sudan, Eswatini, Tanzania, Togo, Zambia, and Congo, Dem. Rep.

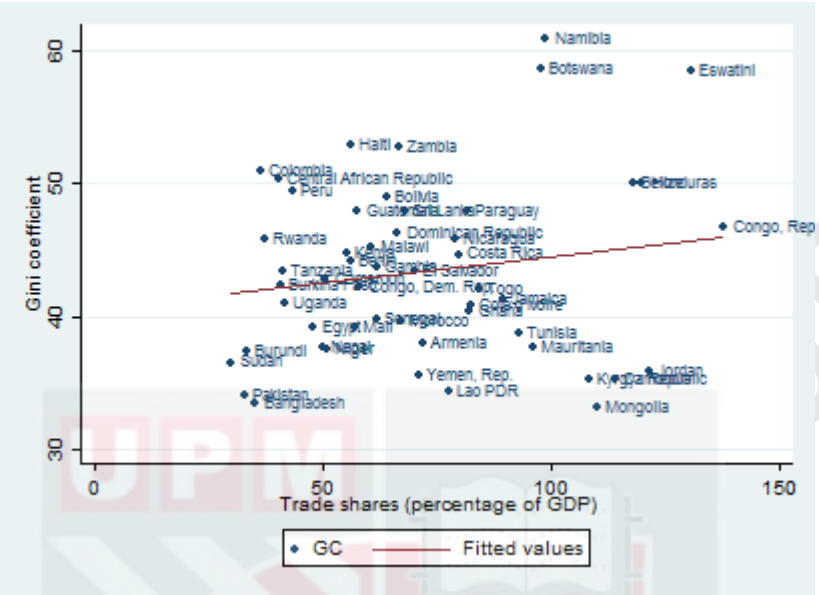

Figure 1.7 : Scatter Plot of Trade Shares versus Income Inequality for Selected Developing Countries, 1995-2015
[Source: World Development Indicators, the World Bank (2019)]

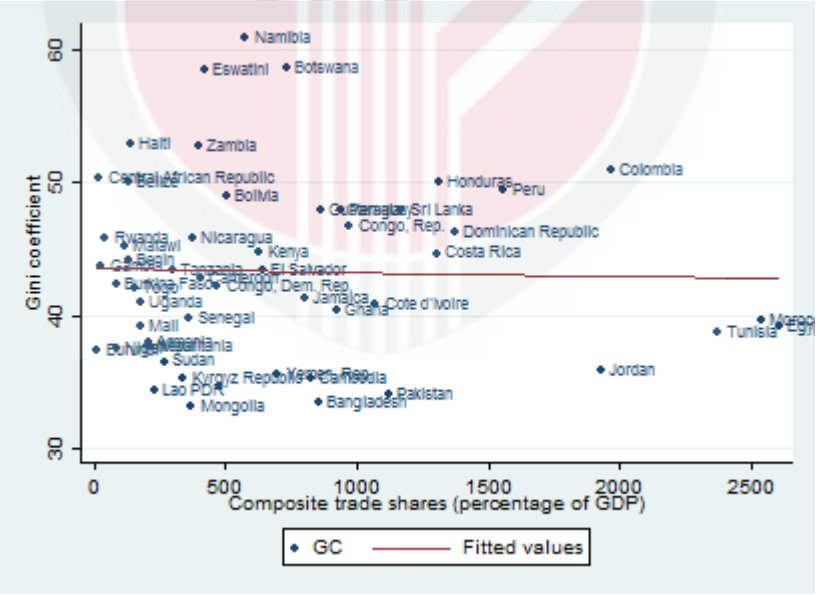

Figure 1.8 : Scatter Plot of Composite Trade Shares versus Income Inequality for Selected Developing Countries, 1995-2015
[Source: World Development Indicators, the World Bank (2019)]

1.1.3 Trade Openness and Economic Growth in Selected Developing Countries

Economic growth which is closely linked to the income level of the countries is one of the dynamic gains from international trade (Carbaugh, 2012; Pomfert, 2008). The link between trade openness and income level or economic growth is still a hotly debated issue among scholars and policy makers (Papageorgious, 2002). The differences in opinions are observed, both in the theoretical underpinnings and empirical findings (Singh, 2010). According to Singh (2010), the neoclassical trade theory is pro-growth, but the neoclassical growth theory does not even consider the role of trade in promoting growth. The new growth theory, on the other hand, recognizes the importance of trade to growth and has generally predicted a positive relationship between trade openness and economic growth. However, the findings from empirical studies are rather mixed and therefore, reaching a consensus on the empirical link between trade and growth is hardly possible.

Economic growth is also vital for any nation since it is regarded as a necessity for poverty reduction and income redistribution purposes (UNCTAD, 2014). Trade serves as one of the important channels in enabling growth of a nation. Due to the greater level of trade openness, developing countries have specialized in goods that they have comparative advantage and also benefits from the influx of high technology from the developed countries. The trade gains have eventually contributed to the welfare improvements of society as a whole.

Figure 1.9 and Figure 1.10 show positive relationships between trade openness and economic growth from 1995 to 2018. CTS measurement has shown an obvious positive relationship between trade openness and economic growth whereas TS measurement has shown relatively flat slopes between trade openness and economic growth. This casts a doubt on the positive relationships between trade openness and economic growth as suggested in the standard economic growth theory.

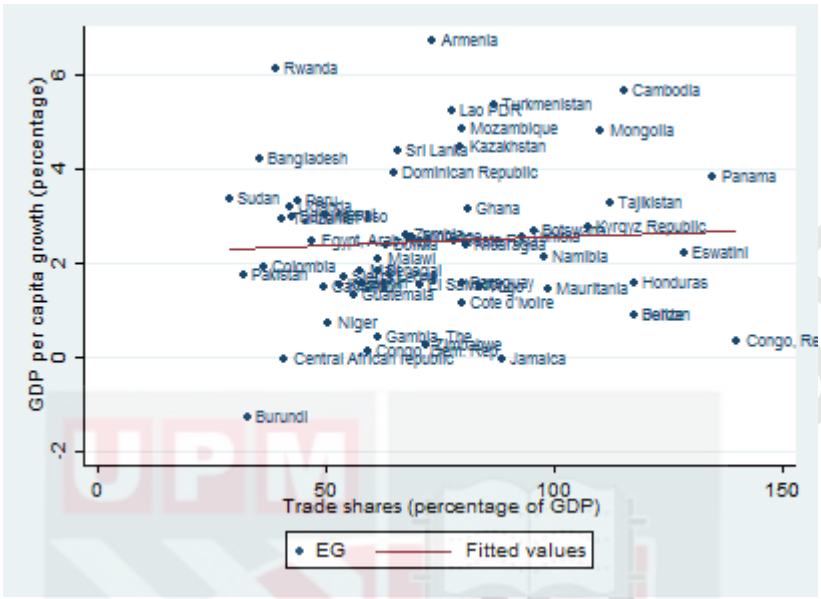

Figure 1.9 : Scatter Plot of Trade Shares versus Economic Growth for Selected Developing Countries, 1995-2018
[Source: World Development Indicators, the World Bank (2019)]

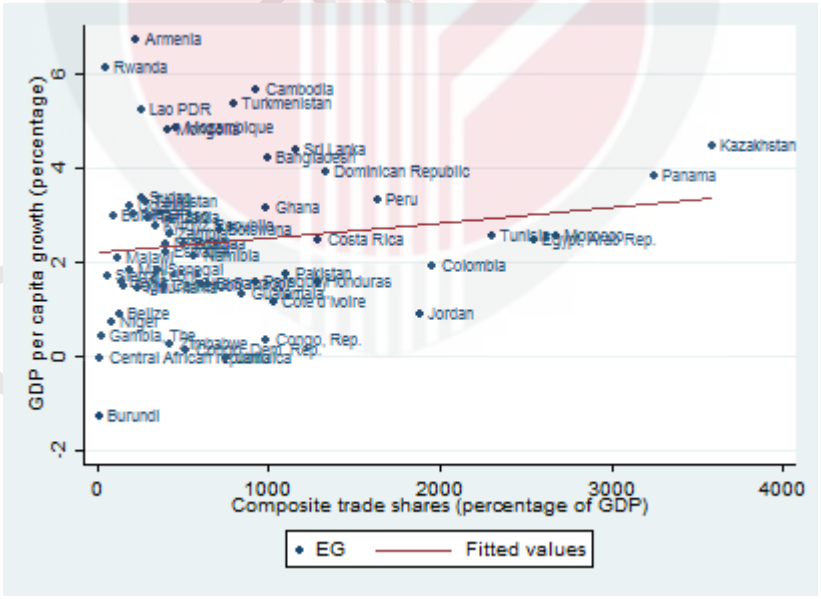

Figure 1.10 : Scatter Plot of Composite Trade Shares versus Economic Growth for Selected Developing Countries, 1995-2018
[Source: World Development Indicators, the World Bank (2019)]

In order to capture accurately the importance of trade openness, a proper measurement for trade openness is needed. Trade literatures have proposed numerous measurements for trade openness. The most commonly used is the standard trade shares, which is measured by exports plus imports divided by GDP. Squalli and Wilson (2011) introduced a measurement that incorporates the global aspect of trade openness which is world trade shares. When making a comparison between trade shares and world trade shares measurements, Squalli and Wilson (2011) have found several differences when using these two different measurements.

For instance, India was ranked 132th with a trade share of 30.45 per cent but ranked sixth (3.49 per cent) when the world trade shares measurement was used. When a composite trade share measurement was used, the ranking dropped to 23rd position. The different rankings highlight the inability of the standard trade shares measurement in capturing the accurate trading conditions or the level of trade openness of a nation. Therefore, Squalli and Wilson (2011) proposed two measurements, namely world trade shares and composite trade shares (which is a combination of both the trade shares and world trade shares).

Table 1.2 shows the changes in ranking when different measurements were used for the selected Asian developing countries. For instance, Malaysia which has 230.33 per cent of trade shares is at the fourth position; however, with only 2.12 per cent in world trade shares, it fell to the seventeenth position. With the introduction of the composite trade shares measurement, Malaysia has recorded 66527.34 per cent in trade openness and is ranked at the third position. In comparison, India which has 30.45 per cent of trade shares is at the 132nd position; however, with 3.49 per cent in the world trade shares, it moved up to the sixth position. With the introduction of the composite trade shares measurement, India has recorded 14458.98 per cent in trade openness and is therefore, ranked at the 23rd position.

Hence, the use of the trade shares as the indicator of trade openness only makes India a less open country while the use of the world trade shares as the indicator of trade openness makes Malaysia appear to be less open compared to India. This leads to the conclusion that by using the composite trade shares measurement, it has enabled adjustments between trade shares and world trade shares measurements which eventually influences the ranking for trade openness.

Table 1.2 : Comparisons of Different Trade Openness Measurements for Selected Developing Countries

Nations	Trade shares (%)	Ranking	World Trade Shares (%)	Ranking	Composite Trade Shares (%)	Ranking
Malaysia	230.33	4	2.12	17	66527.34	3
Tajikistan	165.37	8	0.059	88	1331.56	70
Thailand	127.61	23	2.189	16	37984.57	11
Pakistan	34.57	127	0.43	44	2036.74	61
Bangladesh	33.22	129	0.33	54	1466.20	66
India	30.45	132	3.49	6	14458.98	23

[Source: Adapted from Squalli & Wilson (2011), Table 2, pages 1749-1751)]

The advantages of using the composite trade shares (CTS) measurement compared to the standard trade shares (TS) measurement as the indicator for trade openness is again proven in Table A2. Table A2 shows the rankings for trade openness using both TS and CTS as comparisons for the indicator of trade openness using 2014 as the year for comparison involving a total of 105 developing countries subject to data availability and excluding the Pacific Island countries. 2014 was chosen since it contains the latest periods covered by this study whereby the developing countries have been experiencing greater international trade openness since 1980s. The reason for the exclusion of the Pacific Island countries is that they are relatively small and rely heavily on the tourism sector rather than on international trade as the main source of income for their countries.

As seen in Table A3, American Samoa is ranked at the top with TS of 171.70, but its ranking dropped dramatically to 95th with CTS of 74.52. Vietnam is ranked second with TS of 169.53 but the ranking dropped slightly to the 5th with CTS of 24648.00. Maldives, on the other hand, is ranked third with TS of 164.29, but the ranking dropped heavily to the 63rd with CTS of 356.51.

The movement of rankings occurs from TS to CTS once the external dimension is considered in CTS. Countries with a high level of external trade openness as captured by CTS proceed to higher rankings than countries that only secure a high level of internal trade openness as captured by TS. Since Vietnam has actively pursued both internal and external trade openness when compared to American Samoa and Maldives, it has therefore obtained a relatively higher ranking in CTS. On the other hand, both American Samoa and Maldives registered relatively huge drops in their ranking as a result of less movement towards trade openness with the external environment.

It is important to use the appropriate measurement (CTS) which accounts for an internal dimension of a country's total income which is linked to international trade (as represented by trade share measurement) and an external dimension of a country's interaction with the rest of the world (as represented by world trade share measurement) in trade openness. This is because the standard TS measurement suffers from the exclusion of the external dimension. The inclusion of external dimension is also as

important as the internal dimension since the level of trade openness can only be captured appropriately by combining both internal and external dimensions of trade openness.

1.2 Problem Statement

Trading activities grew rapidly among the developing countries between the 1980s and 1990s due to the process of globalization. The interest on the potential economic impacts of trade openness on the developing countries has received an attention from the scholars and policy makers, especially when it is observed that the degree of trade openness among the developing countries is greater than developed countries (UNCTAD, 2016). Generally, it is widely believed by scholars that international trade is important and has a beneficial impact on national economic growth and development. Existing literature on trade openness have focused on its economic effects on various microeconomics as well as macroeconomics indicators. Nevertheless, there is lack of consensus in terms of the effects of trade openness on inflation, income inequality and economic growth.

The first issue addressed by the present study is the relationship between trade openness and inflation. According to Romer's (1993) hypothesis, trade openness is disinflationary. Being disinflationary, nations would be able to reduce macroeconomic instability which has an adverse impact on national economic growth and development. However, this outcome contradicts with the conventional theory of inflation which predicts a positive relationship between trade openness and inflation since inflation is believed to be imported via trading activities. Since the initial empirical works testing on Romer's hypothesis was undertaken in the context of developed nations, the present study intends to examine the relationship in the case of the developing countries taking into consideration that the economic structure of developing countries are different than those of developed countries. This raises the question with regard to the validity of Romer's hypothesis in developing countries. Another possible reason is because of ignoring the dynamic nature of inflation. There are only several of studies[7] which have taken into account the dynamic nature of inflation by including lagged of inflation in assessing the effect of trade openness on inflation. It is vital to include the lagged of inflation when assessing the effect of trade openness on inflation as the inflation in the previous period might has an influence on the inflation in the following period. When this information has not been captured through the inclusion of the lagged variable for inflation, it might leads to misleading results regarding the true effect of trade openness on inflation.

[7] Lin, Mei, Wang, and Yao (2017), Sepehrivand and Azizi (2016), Yiheyis (2013), Samimi, Ghaderi, Hosseinzadeh, and Nademi (2012), and Gruben and Mcleod (2004) are among the studies which have taken into account the dynamic nature of inflation.

A first glance at the trend analyses revealed that trade openness using the standard TS measurement seemed to have a negative relationship with inflation among the sample countries of study. In other words, a greater level of trade openness tends to lower the inflation among the sample countries of study. However, the preliminary observation of the scatter plots has shown relatively flat slopes and hence unclear relationships between trade openness and inflation using TS measurement. The relationships between trade openness and inflation only became obvious when using CTS measurement as shown by the negative slope. This implies that the use of different measurement for trade openness can yield different results regarding to the relationships between trade openness and inflation.

In order to assess the effect of trade openness on inflation, this study has adopted a relatively new and comprehensive measurement of trade openness which accounts for greater dimensions of trade openness, including external as well as internal trade openness to address the issue of measurement for trade openness. This also lacks in literature since most of the studies[8] only used the most common measurement of trade openness, known as the TS measurement, in assessing the effect of trade openness on inflation.

The second issue addressed by the present study is the relationship between trade openness and income inequality. Meschi and Vivarelli (2009) have questioned whether trade openness improves or worsens income distribution in developing countries that started since the introduction of the Heckscher-Ohlin and Stolper-Samuelson (HOSS) theorem. However, the empirical findings on the relationship between trade openness and income inequality has yielded mixed results among the developing countries. A possible reason is because of ignoring the dynamic nature of income inequality. There are only a few of studies[9] which have taken into account the dynamic nature of income inequality by including lagged of income inequality in assessing the effect of trade openness on income inequality. It is vital to include the lagged of income inequality when assessing the effect of trade openness on income inequality as the income inequality in the previous period might has an influence on the income inequality in the following period. When this information has not been captured through the inclusion of the lagged variable for income inequality, it might leads to misleading results regarding the true effect of trade openness on income inequality.

[8] Lin, Mei, Wang, and Yao (2017), Sepehrivand and Azizi (2016), Kurihara (2013), Mukhtar (2012), Samimi, Ghaderi, Hosseinzadeh, and Nademi (2012), Thomas (2012), and Gruben and Mcleod (2004) are among the studies which trade shares measurement in assessing the effect of trade openness and inflation.

[9] Majeed (2015) and Bergh and Nilsson (2010) are among the studies which have taken into account the dynamic nature of income inequality.

A first glance at the trend analyses revealed that trade openness using the standard TS measurement seemed to have a negative relationship with income inequality among the sample countries of study. In other words, a greater level of trade openness tends to reduce income inequality among the sample countries of the study. However, preliminary scatter plot analyses on trade openness-income inequality nexus have revealed different relationships when using TS and CTS measurements. For example, preliminary scatterplots analysis has shown positive relationships between trade openness and income inequality when using TS measurement but when trade openness is measured by CTS measurement, the relationships between trade openness and income inequality became unclear as indicated by relatively flat slopes.

This again implies that the use of the appropriate measurement of trade openness is vital since it has different results as shown by the TS and CTS measurements respectively. This is also lacking in the literature since most of the studies[10] only used the most common measurement of trade openness, known as the trade shares measurement, in assessing the effect of trade openness and income inequality. Thus, it is vital to assess the role of trade openness through the augmented version of the Stolper-Samuelson theorem which includes the effect of trade openness in assessing the relationship between trade openness and income inequality in developing countries by using the appropriate measurement of trade openness.

The third issue examined in the present study is the nexus between trade openness and economic growth. According to Papageorgious (2002), the relationship between trade openness and growth is positive as suggested by the new growth theory. A positive relationship means that a country grows with the level of trade intensity and it is stronger in developing countries compared to developed countries. Nevertheless, the empirical relationship between trade openness and economic growth, particularly in the developing countries, is unclear. Knowing the effects of trade openness is important as it allows policy makers to design an appropriate growth policy. It is vital to include the lagged of income level when assessing the effect of trade openness on economic growth as the income level in the previous period might has an influence on the income level in the following period. When this information has not been captured through the inclusion of the lagged variable for income level, it might leads to misleading results regarding the true effect of trade openness on economic growth.

[10] Daumal (2013), Acar and Dogruel (2012), Calderon and Chong (2010), Meschi and Virarelli (2009), and Chakrabarti (2000) are among the studies which trade shares measurement in assessing the effect of trade openness and income inequality.

A first glance at the preliminary scatterplots analysis has shown relatively flat slopes and hence unclear relationships between trade openness and economic growth using TS measurement. The relationships between trade openness and economic growth only became obvious when using CTS measurement as shown by the positive slope. This implies that the use of different measurement for trade openness can yield different results regarding to the relationships between trade openness and economic growth. Hence, this study addresses the importance of taking account of the effect of trade openness and economic growth in developing countries by using an appropriate measurement for trade openness. Overall, the use of the different trade openness measurements such as the standard trade shares and the more comprehensive measurement of composite trade shares which account for different dimensions of trade openness influence the effect of trade openness on inflation, income inequality and economic growth differently. Against this background, this study addressed the following research questions:

(i) What is the link between trade openness and inflation?
(ii) Does trade openness exhibit any relationship with income inequality?
(iii) Does trade openness affect economic growth?

1.3 Research Objectives

Generally, this study intends to examine the effects of trade openness on inflation, income inequality, and economic growth in the selected developing countries. Specifically, this study aims to achieve the following research objectives:

(1) To examine the impact of trade openness on inflation in selected developing countries,
(2) To determine the impact of trade openness on income inequality in selected developing countries, and
(3) To investigate the impact of trade openness on economic growth in selected developing countries.

1.4 Significance of The Study

In general, the findings of the present study contribute to the existing body of knowledge and policy implications particularly when trade openness has been regarded as a controversial topic when linked to macroeconomic phenomena such as inflation, income inequality, and economic growth since the developing countries opened their economies to international trade. Standard international trade theories such as absolute advantages of Smith and comparative advantage of Ricardo have continuously highlighted the gains achieved by international trade. Yet, it is not always the case as shown in the findings of the empirical studies. Hence, a study which treats trade openness seriously by considering the three measurements of trade openness that accounts for three different dimensions is needed to highlight the importance of trade openness to inflation, income

inequality, and economic growth by focusing on the impacts in the case of developing countries. When the role of trade openness is determined, appropriate trade policies such as whether to continue to pursue a free trade policy or to place certain restrictions to cover the costs that arise from opening international trade would be able to be formulated.

This study adopted the latest measurement for trade openness which is the composite trade shares (CTS) as developed by Squalli and Wilson (2011). The rationale lies in the multi-dimensional nature of the trade characteristics. Therefore, trade openness measurement which only accounts for a single dimension of international trade such as the standard trade openness measurement is believed to have a weakness in capturing comprehensive characteristics of trade openness. So far, there are limited of studies which have used the measurement developed by Squalli and Wilson (2011), including the studies of Alragas, Murphy, Parhi, Mishra, and Ouattara (2015) ,Sakyi, Villaverde, and Maza (2014) and Iyke (2017). These are only a few of the studies that used the composite trade shares in assessing the relationships between trade openness and economic growth while none of them have used the composite trade shares in assessing the relationships between trade openness and inflation and also between trade openness and income inequality. This study therefore contribute by bringing back to the attention on the use of a more comprehensive measurement of trade openness known as composite trade shares measurement in assessing the role of trade openness on inflation, income inequality, and economic growth.

1.5 Organization of The Chapters

Chapter one provides an overview of the study, which includes the background of the study, the problem statement, research objectives, significance of the study and organization of the thesis. Chapter two provides a comprehensive review of literature related to the main issues of the study. The review is divided into two main sections namely, review of theories and previous empirical studies. Chapter three describes the methodology used in this study which includes theoretical framework, model specification, empirical methods, variables description and data sources. Chapter four presents and interprets the findings. Chapter five provides the discussion of the results. The final chapter draws conclusions, makes policy recommendations, highlights the limitations of the study and provides several suggestions for future research.

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