EXPORT LED GROWTH VIA INTRA-REGIONAL TRADING AN ECONOMETRIC ANALYSIS OF ASEAN, EU, NAFTA, MERCOSUR AND COMESA

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Abstract. The extent of intra-regional trading in influencing economic growth has not been given adequate attention in the literature. The Heckscher-Ohlin (H-O) factor endowment theory argued that the regional economy is usually blessed with common resources and expertise, thus an increase in intra-regional trading may only lead to trading of commonalities. This raise the questions of whether exports of commonalities may spur economic growth in the long-run. To further understand the issue, data spanning from 1995 to 2019 was employed and five groups of regional economies has been selected namely the ASEAN, EU, NAFTA, MERCOSUR and COMESA. By employing the GMM and 2SLS panel data which may allow for instrumental variables (IV) approach, this study further filled the gap in the literature. Based on the analysis, it is found that an increase export may reverse economic growth in intra-regional trading in most cases. This strengthens earlier argument that trading in commonalities is doubtful in promoting long-run economic growth. The findings are robust to diagnostic checking for both estimations techniques. This suggest that any regional economic arrangements should move away from intra-regional trading towards inter-regional trading in order to sustain more prominent economic growth in the long-run.

Keywords: Export led growth, intra-regional trading, trading of commonalities, endowment factor, instrumental variables, spillover effect, non-exporting industries, comparative advantage, Structural Equation Modelling (SEM), specialization
JEL Codes: O54

1. Introduction

Albeit the topic long discussions in the literature, the issue of export led growth (hence fourth ELG) was still in the center of arguments among researchers and policy makers. The crucial role of export in an economy is obvious, such as transfer of scare resources and promoting specialization which leads to economies of scale, greater utilization, technological transfer and improvements, and efficient resource allocations. In this spectrum, economic growth is likely to be promoted (Feder, 1983; Krishna et al., 2003; Trindale, 2005; Lam, 2013; Kollie, 2020). Nevertheless, some negative externalities due to greater export are also inevitable such as shrinking the demand for domestic production in non-exporting industries and making them less relevant, and thus may impede long run economic growth. This is some of few arguments which made the topic still vibrant and unsettled which has added fuel to the debate.

Initially, trade was dominated and motivated by scarcity rather than specialization with objectives to increase economies of scale. Only in the last few decades the trend shifted, where specialization has been in the central theme of international trade specifically towards the global value chain specialization. Under the comparative advantage theory, it is suggested that an economy will be better off if it practices an open

economy rather than a closed economy. Hence, the volume of world exports increased exponentially from 1960 to 2019 as depicted in figure 1.

[Figure 1]: World Merchandise Export from 1960 to 2019. Data are obtainable from WTO International Trade Statistics 2019. Current prices, USD Million.

The motive for international trade led by comparative advantage has urged many economies to lift up trade barriers in order to allow for greater trade activities. The process started somewhere around late 70s due to industrialization policy among emerging economies, with most of trade activities start to flow between developed and less developed economies. The trend shows that developed economies tend to specialize in capital intensive industries while less developed economies are more into labor intensive industries (Do and Levchenko, 2004; 2007). While the trade trend looks promising, it seems that economic crisis is more pronounce and persistent after economic opening which halted economic growth[1]. It is argued that liberalization may increase external economic shocks thus hampering economic growth which subsequently slow down the international economic activities. Hnatkovska and Loayza (2003) and Hazman (2016; 2017) also pointed out that the negative implication for growth from volatility has become increasingly larger in the last two decades which was driven by the large economic downturn. The event is somewhat uncommon compared to its normal cyclical fluctuations. For instance, during and after the 1997 East Asia economic crisis, 2008 U.S. sub-prime crisis and recent Europe contagion, world economic growth slowdown follow suit particularly due to distorted demand as a results of income flow disruption.

It seems that higher export trend in the past decades may not necessarily follows with higher growth in reality. This may resulted from externalities of greater openness which invites more unwanted shocks to domestic economy. This situation cast doubt on most of ELG literatures such as reported in Corbo et al., (1985), Husein (2009), Jin (1995), Ozturk and Acaravci (2010), Trindale (2005) and Adedoyin (2020). Additionally, Arora and Vamvakidis (2004), Blankenau et al. (2001) and Rodrik (1998) argue that the domestic economy is subjected to more volatility as a result of greater

[1] E.g., Imbs, J. 2007. "Growth and Volatility." *Journal Of Monetary Economics*, 54(7), 1848–62 in a sample study of 49 countries, pointed out that growth and volatility are negatively correlated in aggregate.

trade openness to the world goods and services market which dampen economic growth. In simple words, it seems that greater exports may reverse economic growth due to the situation. Due to this situation, many countries have questioned the rationality of having greater trade mobility and some have even reconsidered liberalization for more protectionism policy, especially after several occasions of economic crises and contagion. The trend of international trade which dominated on the basis of country by country now shifted towards inter and intra-regional trading with the latter is priority. For instance, there are growing numbers of intra-regional trade agreements such as NAFTA, ASEAN, EU, MERCOSUR and COMESA which aim towards regional sustainable economic growth. Even though these economics agreements have been established as early as in the 70's, the role of regional integration especially in term of trade mobility has just started to received enormous attention in the middle of 90's especially after several economic crisis and contagion. Furthermore, with the several initiatives initiate under these agreements such as special tariff protection rate and promotion of pioneer status, intra-regional trading has become a recent trending in international trade pattern based on current observations. Intra-regional trades may also eliminate excessive bureaucracy and regulations in business and labour which limit economic factors mobility.

Under intra-regional trading, trade is form under the basis of 'Most Favoured Nations' (MFN) and mutual consent which aim at positive sum game and greater international risk sharing. Under this arrangement, the spirit of neighbourhood is also emphasized. In turn, it is expected that intra-regional trading may reduce the effect of external shocks in an economy. Many countries expect that under intra-regional trading, some negative externalities due to greater international trading which may hamper long run economic growth may be reduce, thereby promoting long run economic growth. As shown in many reports, the share of intra-regional exports is steeply increasing since mid-90 especially involving NAFTA, EU, MERCOSUR, COMESA and ASEAN region[2]. This also was supported by Dutta (2009), Phan and Jeong (2014) and Rugman (2004) in their empirical investigations.

However, whether the shifting exports trend from circulating between country by country bases towards favouring intra-regional exports led to more economic growth is still in need of more investigations. Intriguingly, despite the recent trend of increasing intra-regional exports, the remaining literatures which investigate the ELG hypothesis in the context of intra-regional trading is still thin and there are very few studies on the matter especially in the case of NAFTA, EU, ASEAN, COMESA and MERCOSUR region. Furthermore, the intra-regional trading seems to gain more popularity and emphasize from the policy maker while its long run implications on economic growth are still not clear. Since regional economies tend to produce almost homogeneous product due to commonalities in factor endowment, it is interesting to investigate how exports in commonalities may contribute towards long run economic growth. Even though there are arguments on core, semi-periphery and periphery relationship among regional economy, still the endowment factor holds while shift of power are also possible

[2] For instance, (Paul Gruenwald, 2008) Eurostat Statistic Explained: Intra-EU trade in goods-recent trends (http://ec.europa.eu/eurostat/statistics-explained/index.php/Intra-EU_trade_in_goods_-_recent_trends) and ((ADB), 2009)

as stated under the product lifecycle theory, hence there is no clear relationship among the regional economy. By taking instrumental variables approach which has not been widely utilized in testing the intra-regional ELG hypothesis, this topic will be further discussed and highlighted in this study. In short, the present study aims to test the ELG hypothesis by focusing on intra-regional trades in five blocs of economies namely NAFTA, EU, ASEAN, COMESA and MERCOSUR by emphasizing on instrumental variables approach and hence filling the void in the literature.

2. Literature discussions and arguments

The ELG hypothesis has been long discussed in the literature which is not surprising to observe. Despite of its long discussions, the topic is still far from settled. Most of early ELG literature, they tend to revolves around testing the causality direction between export and growth and then the discussion expended towards co-integration investigation. Most studies hypothesis that export should positively influence economic growth, due to the possibilities of positive spill over into the economy. For instance, an increase in exports may increase the source of income rudiment while reducing unemployment hence stimulating private consumption which may increase economic activity and GDP. In this sense, not only export based industry may benefit from industrialization, but also non-exporting industry. An increase in income rudiment may create higher demand for goods and services in an economy. This shows that exports may create double welfare effects which stimulate economic growth in the long run.

For instance, Salvatore and Hatcher (1991), Marin (1992), Bahmani-Oskooee and Alse (1993), Abu-Qarn and Abu-Bader (2004), Bahmani-Oskooee and Oyolola (2007), Parida and Sahoo (2007), Jun (2007), Gagnon (2008), Narayan and Smyth (2009), Bahmani-Oskooee and Economidou (2009), Husein, (2009), Ozturk and Acaravci (2010) and Hye (2012) are all postulate the existence of positive relationship between export and growth especially in developing economies. The first two literatures provide evidence through cross-sectional analysis, while the last four derived the conclusion through panel data analysis and the rest concluded the positive ELG hypothesis by utilizing time series analysis.

It is point out that by utilizing panel data analysis the tests tend to have higher power due to the utilization of both time series and cross-sectional dimension. Nevertheless, very few have employed the panel data analysis to conclude the ELG hypothesis. This shows that the positive relationship between export and growth are still in need of more investigations especially involving panel data analysis. Moreover, the results provided by Parida and Sahoo (2007) and Narayan and Smyth (2009) only consider a small sample of countries in the study and hence might be insufficient to draw a comprehensive ELG conclusion with regards to specific region[3]. However, in Parida and Sahoo (2007) and Jun (2007) they utilized data spanning from 1980 to 2002 and 1960 to 2003, while Narayan and Smyth (2009) using data ranging from 1974 to 2002 where all of these studies possess a long range of data which is an added advantage despite of their small set of countries observed. Except for Gagnon (2008), the study

[3] Four South Asian countries are included in Parida and Sahoo (2007), while 6 Middle East countries in Narayan and Smyth (2009).

comprises of 96 countries with data ranging from 1960 to 2004 which can be considered as a large database to derive the positive ELG hypothesis. Despite of the comprehensive findings, these studies did not discuss ELG in the context of specific regional economies while the country selections seems to be somewhat randomly chosen.

Apart from that, there are some studies that couldn't prove any significant relationship or at least inconclusive results between export and growth in term of causality testing and long run relationship. This are recorded such as in Jin and Yu (1996), Giles and Williams (2000a; 2000b), Richards (2002), Love and Chandra (2005), Tang (2006), Bahmani-Oskooee (2009), Mahadevan (2009) and Katircioglu et. al., (2010). Interestingly, most of these insignificant ELG findings are based on developing economies. Since these findings are quite contradict with the conventional theory and thought, Dreger and Herzer (2011) argued that the insignificant results are mainly dominated by highly dependencies on primary commodity exports which is common for developing economies. High concentration on primary commodity exports may not only risk an economy towards volatile commodity prices and volume which could leave an economy in deep uncertainties, but also pull the economy away from manufacturing sector which is more competitive and able to create sustainable income earning. By nature, primary commodities also may not offers abundance of spillovers effects which is crucial of economic development (Sachs and Warner, 1995; Herzer, 2007).

Various method have been used such as utilizing Granger causality testing, ARDL method to co-integration and Johansen and Juselius (JJ) co-integration test, ECM and VAR technique which has arrived at this conclusion. Most of these literatures only consider single country specific analysis except for Bahmani-Oskooee (2009) who considers 61 countries at each country level. Again, still none of these studies and findings is based on panel data analysis. This provides the impression that there is still lack of studies to test the ELG hypothesis using panel data analysis and what seems to be more critical is to find studies which addressed the ELG in the context of intra-regional trading. This is the main aim of this study.

Another body of the literature tend postulate the existence of negative relationship of ELG hypothesis. Among studies to arrive at this conclusion are such as Dodaro (1991) where the negative ELG is likely to appear in low income countries while population size may also play a role in a cross-sectional analysis for 41 developing economies. Similar with Ghatak et. al., (1997) and Herzer et al., (2004) suggest that the effect of primary exports on non-export GDP is negatively interrelated in the case of Malaysia and Chile. Nevertheless, these studies are limited to cross-sectional and time series analysis, while findings based on panel data analysis are hardly found. Noting the limitations, Dreger and Herzer (2011) tend to utilize panel data approach using DOLS regression analysis where they found a significantly negative association between exports and economic growth in the long run. Interestingly, the component of exports is excluded from the GDP hence reflecting the effect of exports on non-exporting sectors which has not been widely addressed in most of ELG literature observations. They argued that most of the GDP proportions are a component of exports itself, hence increasing the likely of positive relationship between exports and GDP. By separating the exports from GDP may also reflects the spill over effect of exports on non-exporting industries. Nevertheless, their study is restricted to only 45 developing economies only.

Based on the discussed literature, it is believed that there is lacked of discussion with regards to ELG hypothesis in the context of intra-regional trading. Among the few works, Rugman (2004) who analyse the recent trend of intra-regional pattern in NAFTA concluded that the pattern of intra-regional trade is ever increasing since its realization in 1994 and in other region as well such as in EU and ASEAN. Nevertheless, the study restricted to using descriptive approach and no inference was made on how intra-regional trading may impact the regional economy. With that in mind, this study extends the literature by analysing the effect of export on economic growth in the spectrum of intra-regional trading.

3. Theoretical framework and model specifications

3.1. Theoretical framework

As stated earlier, this study intends to test the ELG hypothesis based on intra-regional trading for five regional economics; the ASEAN, the EU, NAFTA, MERCOSUR and COMESA. It is point out that there might be a possible relationship between exports and economic growth as reveal in the literature. Nevertheless, how far they are interconnected in the context of intra-regional trading is in need of more exploration as very few studies shed the lights on the issue. Particularly, when the volume of world exports and economic growth grow rapidly along with the integration of intra-regional arrangements.

According to comparative advantage theory, an economy which is closed to trade may experience low level of economic growth as a result of low level of specialization to boost productivity hence explaining the linkages between these two variables. Do and Levchenko (2004) also point out that the differences of growth rate between developed and developing economies can be explained through international trade involvements (exports). Prior to international trade, most of economies share a common features or characteristic such as low GDP, low private consumption, low wage rate and high rate of unemployment (Lam, 2013). In other words, in the absence of exports, an economy is unlikely to achieve greater economic growth especially in developing economies. This highlight on quantity constraint in domestic market faced by these economies especially in manufacturing sector as pointed out by Barro and Grossman (1971) and Branson (1989); where an initial start of industrialization may not be supported by adequate effective demand for a rapid and sustained economic development hence led towards lesser investment initiatives and low productivity. This in turn, hinders economic growth as low level of investment signalling for lesser job opportunities and higher unemployment, which lead towards lower private consumption. As highlighted in Krishna et. al., (2003), this is also known as double lock system where economic growth may not grow rapidly and this situation may also lead into vicious cycle. From those theoretical perspectives, it seems that exports and growth are positively related, where low level of exports may lead to less economic growth and vice-versa. This is one of the examples of demand-side perspective in explaining the ELG hypothesis.

Based on the above arguments, it seems that in order to explain the direct effect of export on growth, the effect must be controlled for and this is in-line with Dreger and Herzer (2011). Accordingly, in the original form of ELG expects that exports might not have an instantaneous growth effect in which the effect of exports on growth goes

through productivity. By referring to the above arguments, it seems that exports may trigger productivity by focusing on investments in sectors where a given country possesses comparative advantages hence promoting greater growth (Kunst and Marin, 1989). According to Helpman and Krugman (1985) also, exports may increase economics of scale by means of market expansion at international level rather than stick only to domestic markets which increase larger operation scale thus promoting growth. And the most important fact, exports also could increase productivity through spillovers effect where exports may not only provide the source of foreign exchange to subsidize imports, but it also embeds the knowledge of production know-how and foreign technology which is likely to benefit long run economic growth (Grossman and Helpman, 1991). And according to Feder (1983), the spillovers effects also may spread towards non-exporting sectors by mean of interaction between exporting and non-exporting industries. This includes the incentives for technological improvements and better managements as a result of greater international competition (Chuang, 1998).

In the context of ELG in intra-regional trading which involves trades of commonalities, this is an important question to be put forward whether the above arguments hold. Trading in commonalities may not able to offers abundance of spillover effects by much as regional economies share the same scar resources. What is meant by commonalities is that, regional bloc of economies tends to share the same endowment factor, set of skills, knowledge and technological advancement hence producing goods that are almost identical in quality and capacity. With commonalities in products, they also share the same technological and expertise level hence reducing the likeliness of exports to stimulate growth through this channel. With ever increasing intra-regional arrangements, this highlights the importance of discussing the ELG in the perspectives of intra-regional trading as proposed.

This is necessary especially when it is observed that there are some cases where liberalization in trade which followed with rapid exports volume in some economies doesn't lead to more growths as predicted. This relationship can be observed in some of the empirical findings as revealed in section 2. It is point out that higher exports volume needs higher level of specialization, and the decision for which sectors to specialize are mostly based on comparative advantage. Having said that, for sectors with fewer advantages (non-exporting sectors) will be less relevant in the economy and in the worst case, these sectors are at risk of wiped out of the economy permanently. If this situation occurs, this will lead to a hike in unemployment and low private consumption to stimulate economic growth especially when there are too few sectors with comparative advantages. These economies might even experience negative balance of payment hence slowing economic growth and in the worst case reversing the growth rate. This shows that an increase in specialization may also create negative externalities in the economy. Furthermore, the spillovers effect due to greater specialization also depends very much on the absorptive capacity (Dreger and Herzer, 2011). This shows that specialization may not guarantee an effective specialization effect.

However, this does not lead to a suggestion that an economy should not specialized. As highlighted by Marin (1992), the author argued that in the absence of specialization the economy may lead to co-existence of abundance of firm producing wide range of products in a given country. For instance, industrialization policy with a

view for massive export production may boost the level of productivity, however, if the industrialization leads to production of array of varieties products and no specialization take place[4], it is fear that export expansion will only lead towards producing low levels of output and hence reverse the demand for export products. In this sense, an additional effect of export may not significantly affect economic growth especially in the long run.

These two explanations depict that whether to specialise or not, negative externalities which could reverse economic growth due to greater exports could still occur. In relation to this study, intra-regional trading may lead to trading of commonalities which could reduce and cancelled the benefit of specialization hence impede productivity as explained. Therefore, it is important to understand whether export may stimulate economic growth in the context of intra-regional trading.

3.2. Model specification

Based on the discussion, it is argued that export may not have an instantaneous effect on economic growth. Instead, the effect of export is through productivity channel. For the purpose, the model developed in this study follows Dreger and Herzer (2011). According to the author, since the effect of export is through productivity, the model can be build based on an *AK*-type production function stated below.

$$Y_{it} = A_{it}K_{it}^{b_{1i}} \quad (1)$$

Where Y_{it} and K_{it} is the production level and capital accumulation for country *i* at time *t* and the productivity parameter is represent by A_{it}. In order to capture the effect of export on economic growth through changes in productivity, it is assumed that the productivity parameter can be represented by the export function. Therefore, A_{it} can be further expressed as equation (2).

$$A_{it} = f(x_{it}) = x_{it}^{b_{2i}} \quad (2)$$

Clearly x_{it} is the export of country *i* at time *t*. By replacing A_{it} with x_{it} in equation 1 and turning the equation into logarithm forms yield the following equation (3).

$$\ln(Y_{it}) = b_{1i}\ln(k_{it}) + b_{2i}\ln(x_{it}) \quad (3)$$

Both b_{1i} and b_{2i} explain the cross-country average output elasticities with respects to both capital and exports respectively. Nevertheless, according to Dreger and Herzer (2011) b_{2i} which measured the elasticities of export may be bias[5]. As suggested by the likes of Greenaway and Sapsford (1994), Siliverstovs and Herzer (2007) and Dreger and Herzer (2011), the bias effect of exports on output can be distinguished by deriving the real output net of exports. Mathematically, the real output net of exports can

[4] In international trade theory, a country will specialize in a production of which they are blessed with abundance of resources or expertise in order to fully utilize their production capacity. Failure to specialize may lead towards low level of production.

[5] The author argued that exports itself is part of output through the national accounting identity. Therefore, a significant positive relationship between exports and output seems imminent even when there is no productivity effect.

be obtained by subtracting exports from output[6]. Therefore, equation (4) shows the effect of exports through productivity on net output.

$$\ln(NO_{it}) = c_{1i}\ln(k_{it}) + c_{2i}\ln(x_{it}) + c_{3i}\ln(gov_{it}) \quad (4)$$

Where, c_{2i} in the equation is 0 indicate just the share of exports in output[7]. According to Siliverstovs and Herzer (2007) and Dreger and Herzer (2011), if c_{2i} is greater than 0 the model suggests that exports are productivity-increasing whilst productivity-reducing if c_{2i} is less than 0. Additionally, in equation (4) government expenditure which depicted by gov_{it} is introduced in the model as a control variable. Since equation (4) eliminated export as a component of GDP, the model is more likely to depict the effect of export on non-exporting sectors through the spill over effects. Usually, these sectors involved small scale industries which is also depends very much on government incentives (Ebitu et al., 2016; Meath et al., 2016). Therefore, the inclusion of government expenditure in the model seems relevant.

Unlike Dreger and Herzer (2011), this study analysed both equation (3) and (4). As explained, by looking at equation (4) it is argued that the equation may only depict the spill over effect of exports on non-exporting sectors despite of its advantages in reducing the bias. Furthermore, if exports in equation (3) are regarded as an identity of national accounting, it is in fact all of the variables in an economy served the same effects[8]. Given the arguments, the study considers regressing both equation (3) and (4); equation (3) depicted the overall effect of exports on output and equation (4) depicted the spill over effect of exports on non-exporting sectors in term of output productions. The data for GDP, exports and government consumptions is obtainable from the World Bank Indicator (WDI) online database.

3.3. Modelling the IV and source of data

Since the study aims at understanding the effect of exports on growth through intra-regional trading, the model should incorporate with some of external factors which could stimulate the reason of trading in commonalities[9]. Therefore, taking an instrumental variable (IV) approach through Structural Equation Modelling (SEM) with the standard 2SLS and GMM may seem appropriate. By definitions IV is a variable that may have affection on the explanatory variables but with zero effect on the endogenous variable. Therefore, the incentives to trade in commonalities under the backdrop of intra-regional trading can be further understand by utilising this approach. By adopting this

[6] $Net\ Output = GDP_{it} - Export_{it}$

[7] It is assumed that $Y = X^{\alpha}N^{1-\alpha}$, and α is the share of exports in output. By substituting this equation into equation (3) and some manipulation with equation (4), where $c_1 = b_1/(1-\alpha)$, $c_2 = (b_2-\alpha)/(1-\alpha)$, it is found that if $b_2 = \alpha$, then $c_2 = 0$.

[8] Not only limited to exports, but also agriculture, manufacturing, tourism, financial sectors and etc. If the issue of national accounting identity is a serious question, then it invalidates other studies using GDP as endogenous variable. Therefore, the argued bias effect of equation (3) should not arise greatly.

[9] Since regional economies tend to share similar resources, expertise and economics blessing, the factors which driven the incentives to trade should be addressed. E.g., neighboring countries shortage in domestic supply on goods, preference over imported goods, income of neighboring countries and etc.

approach also, the gap in the literature is filled where export led growth is viewed from different perspective which have not been tested before[10]. Since the deployment of IV in the model, the reduced form equation can be further written as equation (5)

$$x_{it} = \alpha + \beta_1 nbim_{it} + \beta_2 nbgdp_{it} + \beta_3 lavecon_{it} + \beta_4 reer_{it} + \varepsilon_{it} \quad (5)$$

Where,

$nbim_{it}$ refers to neighbouring country tendency to import among its regional counterparts, $nbgdp_{it}$ is income of neighbouring countries in the region, $lavecon_{it}$ is the average consumptions of neighbouring countries in the region and $reer_{it}$ reflects the real effective exchange rate of neighbouring countries in the region. Thus, the reduced form shows the incentives of neighbouring countries in the region to obtained goods from its regional counterparts. In other words, the equation depicted the reason and motivation for trading in commonalities among its regional counterparts driven by shortage in supply for goods and services in neighbouring countries. With the introduction of set of IV as in equation (5), the study further addressed the big gap in the literature.

The data for neighbouring country tendency to import among its regional counterparts are obtainable from the United Nations Conference on Trade development (UNCTAD) database, income of neighbouring countries and average consumptions of neighbouring countries in the region are originated from the World Development Indicator (WDI) database and the real effective exchange rate of neighbouring countries is extracted from the Global Economic Monitor (GEM) database. All of the data are observed from 1995 to 2019 due to the fact that some of the regional arrangements only started from year 1994, and to make thing comparable it should start from year 1995. All of the extracted data are transformed through simple mathematical calculation to obtain the neighbouring countries tendency to import, income, consumption and real effective exchange rate[11].

Therefore, the IV is not biased which may satisfy the requirements of inclusion the IV in the model and the transformation process also eliminate the potential of any direct correlation with Y_{it} and NO_{it}. In other words, the proposed IV are efficient and satisfy the exclusion restriction as stated in the basic rules and condition in introducing IV in econometric regression analysis. In addition, the inclusion of IV may eliminate endogeneity issues in the model should they arise.

4. Results

For the purpose of the study, the 2SLS and GMM regression technique are employed. Both tests are employed as a measure of robustness due to the limitation and strength of each test. This approach is similar to Hazman et al., (2018) who employed two econometric estimations for robustness check. It is argued that the GMM is more consistent and asymptotically efficient compared to 2SLS.

[10] For simplicity, the modelling of SEM is not presented here to avoid lengthy specifications as the study deployed both 2SLS and GMM to test the role of IV in explaining export on growth.

[11] E.g. for Malaysia nbgdp, the GDP of each neighbouring countries in the region are added up (excluding own economy) and then divided by the total number of neighbouring economies in the region.

However, the GMM is more vulnerable towards finite sample bias due to weak instruments variables (Huang, 2010). In this spectrum, 2SLS seems to be more powerful and relevant. Therefore, both tests are employed in this study as a robustness check. For simplicity of the study, both 2SLS and GMM model specification is not presented here as the study employed the standard specifications of both models. For both 2SLS and GMM tests, fixed effect is utilized in deriving the results. It is argued that a country in the same region might possess the same level of technological achievement, expertise and resources; therefore, it is likely that fixed effect seems to be more appropriate[12].

Other than that, while country fixed effects control for unobserved time constant heterogeneity, country-specific time trends capture any unobserved factors that change gradually over time. For example, several studies such as De Jong and Whiteman (1991), Leybourne (1995) and Banerjee and Russel (2005) suggest that these factors are stationary around a time trend. Therefore, fixed effect is set on both 2SLS and GMM measurements in this study and applied in both equation 3 and 4. For the purpose of this study also, the stationary test is skipped. This is particularly due to the fact that in the case of panel data estimation of structural parameter tends to converge to zero for two independent non-stationary variables unlike in time series analysis (Kao, 1999). Even though non-stationary panel data is argued to be biased in the standard errors, still the point approximation of the parameters value are consistent compared to time series analysis hence the analysis may not lead to spurious regressions. The result is as presented in table 1.

[Table 1]: Estimation of the effect of intra-regional trading on Output, based on 2SLS and GMM on model 1 (equation 3)

Region	**ASEAN**		**EU**		**NAFTA**		**MERCOSUR**		**COMESA**	
Estimations	2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM
Capital	1.15***	1.08***	2.92*	2.58**	0.23***	0.23***	1.38***	1.40***	3.09*	2.68**
Export	-0.71***	-0.62**	-1.91	-1.57*	0.11*	0.17**	-1.38***	-1.37***	-3.67*	-3.17**
Hansen test (p-value)	0.56	0.38	0.15	0.14	0.15	0.16	0.601562	0.67	0.29	0.21
Std error	0.43	0.42	0.94	0.85	0.15	0.16	0.279106	0.28	1.64	1.50
R2	0.93	0.94	0.72	0.77	0.98	0.98	0.982335	0.98	0.36	0.46
Adj R2	0.93	0.93	0.70	0.76	0.98	0.98	0.981073	0.98	0.32	0.43
F-stat	563.35***		815.38***		101.03***		672.2062***		61.88***	
Countries	9	9	28	28	3	3	4	4	18	18
Observations	171	171	532	532	57	57	76	76	341	341

Note: ***, ** and * indicate the level of significant at 1%, 5% and 10% respectively.

From the table, both 2SLS and GMM shows the existence of significant relationship for most of the variables of interest at least at 10% significant level. The R^2

[12] Random effect may allow for uniqueness and unobserved factor of each country in the model. However, country in the same region may share lots of commonalities and uniqueness; hence fixed effect may seem sufficient.

value for all of the region under investigation is higher except for COMESA[13]. The standard error of the estimations and *F*-statistics for all of the regions is also quite small and highly significance which indicate a good goodness of fit criteria. The most important indicator for economics model with IV is the Hansen test results, which in this case indicate that the model has been correctly justified and satisfied the IV requirements[14]. According to Staiger and Stock (1997) and Stock et al., (2002), weak instruments can be detected if the Hansen *F*-statistic value is less than 10. Clearly, the results presented in the table have passed the test with ease, hence, indicating that the model did not suffer from weak instrument biased. The insignificance results of the Hansen test also further shows that the effect of IV is direct to the exogenous variables with no affection to the endogenous variable. With the ability of the model in satisfying the rigid requirements in inclusion the IV, it is deemed that the results of this study is not biased and is efficient[15].

As the result suggests, four out of five economic regions with meaningful economic arrangement fail to establish a positive significant relationship between export and economic growth. In the opposite, the results suggest a negative implication towards growth in the long run for both regression techniques. This shows that intra-regional trading may only lead towards lower economic growth in the long run. In simple words, trading in commonalities doesn't spur economic growth. Therefore, current regional effort in increasing intra-regional trading may only reverse the effect of export on economic growth in the long run. This also explain why intra-regional trading arrangement have not been so successful in most region thus parallel with Simms and Simms (2007). For example, since 2003 to 2013 the share of intra-regional trading compared to the world trading for MERCOSUR only increase from 21% to 28%, EU from 75.5% reduce to 75.1%, COMESA from 11% to 18% and ASEAN from 54% to only 58%[16]. According to Campos (2016), the slight increases in the trade are only due to significant reduction in tariff rate. This shows that the fundamental reason for trade has not been grounded strongly and not well established hence leading to lower impact on the overall economy. It is strongly believed that for a successful trade, it may not only benefit from the exchange of goods and services solely but also its implication towards the overall supply chain in the economy. In conjunction with this, there are also many

[13] The lower R^2 value for COMESA shows that the region export might only contribute a small portion to the regional GDP compared to the other region in the sample test. This can be fix by including other variables in the model such as agriculture and mining or other variables related to primary sector which suit the nature of the economy of the region. However, in order to keep the model simple and comparable with the other regions in the sample test, the suggested variables are not included in the model. Furthermore, the variables of interest are all significance in the model and are sufficient to explain the model and hence there is no need to include those suggested variables.

[14] According Roodman (2009), Hansen test is preferable than the Sargan test due to *P*-value of Sargan test tend to be very sensitive to instruments proliferation.

[15] The instrumental variable (IV) regression on EU is without the real effective exchange rate (reer) variables due to EU currency unit. However, the EU and the Eurozone does not fully overlap. Thus, the exchange rate factor as a motive for trade is relaxed in this region and therefore excluded from the IV list.

[16] The data are obtainable from UNCTAD data based and subjected to simple calculation.

reports discussed on the failure of intra-regional trading in bloc of economies[17]. Some of the reports expressed concern that the share of intra-regional trade and investment remain low and stagnant for many years. Perhaps this is because of trading in commonalities which doesn't provide the desired positive effects to the economy. Therefore, the concern of the reports is strongly justified by the finding of this study.

The only exception is for NAFTA where both 2SLS and GMM postulate positive direction from export to growth. This is the only example of intra-regional trading which might benefit all of the countries in the region. Perhaps due to encouraging intra-regional trading results, NAFTA has become the largest free trade agreement of all and the positive results from this study further justify the size of intra-regional trade among NAFTA members. This was also parallel with Blecker et al., (2017) and Dubbert & Sengenberger (2018) who also suggest that NAFTA has been a success. Among the possible explanation of why NAFTA is successful compared to the other regional trading agreement is that all of the three countries in NAFTA are producing goods and services which can be clearly differentiated unlike most of regional trading cases. Furthermore, it seems quite clear in the case of NAFTA that the core, the semi-periphery, and the periphery country have not change over the years, hence specifying the role of each country in regional trading which avoids overlapping productions. The fundamental ground of the trading is based on the source of comparative advantage endowment. For instance, Mexico and Canada focus more on primary products such as agriculture and the US focus on higher technology products. Hence, all parties in the region benefit from lower prices and greater output due to greater specialization[18].

Therefore, if intra-regional trading is to be maintained and boost for the other regional agreements, NAFTA may serve as a good example by reducing the trade of commonalities. As highlighted by Marin (1992), failure to state the line of specialization may lead to lower productivity hence largely determines the rate of success. The finding of this study also is in line with earlier expectation where intra-regional trading may reverse the growth of an economy in most cases due to trade of commonalities. Most regional countries may share the same culture and factor endowment which allow them to specialize in the same expertise area which against the rule of comparative advantage which only promote the trade of commonalities. This finding provides a useful insight for regional policy makers to rethink their trading strategies. Perhaps an inter-regional trading may serve a better strategy to spur economic growth and further investigations on this should be conducted.

In term of the effect of capital on economic growth, all of the regions postulate a significant positive relationship between the two variables. In other words, greater capital investment and technological advancement may increase economic growth in the long run. This finding is parallel with such as Scherer (1986), Mosk (2001) and Teixeira and Queirós (2016) among the many who pointed out that technological advancement played a crucial role in promoting long run economic growth. An increase in

[17] https://www.accaglobal.com/my/en/member/member/accounting-business/2018/02/insights/afr-trade.html, https://www.eastasiaforum.org/2018/04/10/how-should-we-measure-aseans-success/

[18] https://www.thebalance.com/facts-about-nafta-statistics-and-accomplishments-3306280

neighbouring countries import tendency, income, consumption and exchange rate advantage, need to be supported by greater capital accomplishment in order to magnify exporting country economic growth. Therefore, capital investment and technological advancement should be seen as a priority rather than working on strengthening intra-regional trading.

In term of intra-regional trading spillovers effect, equation 4 is further analysed and the results is as follows.

Table 2 represent the export spillover effects of intra-regional trading on the economy particularly on non-exporting industries as specified in equation (4). In other words, the equation further analyses the effect of intra-regional trading on non-exporting sectors.

[Table 2]: Estimation of intra-regional trading on net output, based on 2SLS and GMM on model 2 (equation 4)

Region	**ASEAN**		**EU**		**NAFTA**		**MERCOSUR**		**COMESA**	
Estimations	2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM	2SLS	GMM
Capital	0.59***	0.592***	0.75*	0.75**	0.59***	0.59***	0.62***	0.64***	0.04	0.13
Export	-0.62***	-0.62***	-0.83***	-0.83***	-0.68***	-0.68***	-0.81***	-0.82***	-0.11	-0.21
Government expenditure	-0.27	-0.27	1.86***	1.86**	0.71***	0.69***	0.89***	0.82***	0.12	0.08
Hansen test (p-value)	0.99	0.99	N/A	N/A	0.08*	0.14	0.52	0.53	0.22	0.19
Std error	0.15	0.15	0.23	0.23	0.04	0.04	0.09	0.09	0.27	0.26
R2	0.94	0.94	0.77	0.77	0.99	0.99	0.98	0.98	0.88	0.89
Adj R2	0.93	0.93	0.76	0.76	0.99	0.99	0.98	0.98	0.87	0.88
F-stat	176.18***		317.99***		272.35***		94.68***		104.99***	
Countries	9	9	28	28	3	3	4	4	17	17
Observations	171	171	532	532	57	57	76	76	323	323

Note: ***, ** and * indicate the level of significant at 1%, 5% and 10% respectively.

The non-exporting sectors are usually a small scale industry which usual serve as a feeder for larger industries and act as an important component of supply chains in producing the final goods (Harash et al., 2014)[19]. The theory behind this is that when exports of the exporting industries grow, the demand for unfinished goods or raw material from non-exporting industries should also increase (Withey, 1980). Therefore, an increase in export should increase the profit of non-exporting industries hence

[19] Larger industries usually producing goods and services accordingly to economies of scale and the proceeds of productions are usually ended up for exports.

contributing towards greater economic growth. However, small scale industries are usually government dependent sectors (Ebitu et al., 2016; Meath et al., 2016). They rely so much on government incentives and assistance for their existence. In other words, their contribution to economic growth is potentially upset by large government expenditure in the form of subsidies. Hence, greater exports may not always lead to greater contribution of non-exporting sectors towards the economy, but it also could potentially worsen the economy in the long run. Therefore, the estimations of equation (4) is regarded as crucial in understanding whether intra-regional trading could benefit the economy in term of non-exporting sector contribution to economic growth.

Prior to results coefficient discussions, it is always useful to discuss some of the goodness of fit parameter and validity of the model. As the indicated in table 2, the Hansen test shows that the IV variables in the model have been correctly specified with no weak instrument detected and no biased effect in the model. Except in the case of NAFTA under the 2SLS regression, it seems that the Hansen test seems to indicate there is a concern of weak instrument at 10% significance level. However, under the GMM estimation, there is no biased effect is presented for NAFTA region. Therefore, there are discrepancies in the robustness check for weak instrument in the case of NAFTA[20]. As in the case of EU, the Hansen test was not presented as the model is just justified due to exclusion of exchange rate variable in the list of IV[21]. In order to check for IV biasness, the LIML test was performed and the result is consistent with the GMM and 2SLS estimations[22]. This shows that the results of 2SLS and the GMM estimation was not affected by weak instruments in the model, hence, indicating the strength and validity of the model IV. The other indicator such as the standard error is also small enough for the entire sample, while the R^2 and the adjusted R^2 are also satisfying. The F-statistic under the 2SLS estimations also postulates a very good indicator of a goodness of fit. Therefore, it can be said that the model estimations for the entire sample are able to fulfil the good fit criteria.

As presented by the regression results, the effect of greater intra-regional trading towards non-exporting sector is negatively related in all cases. Some explanations for this result may be the following ones:

1) This shows that greater intra-regional trading may not able to stimulate positive spillovers effect on non-exporting industries which is almost similar to Shams (2003). In other words, despite of increasing production due to greater demand, the non-exporting industries fail to benefit from intra-regional trading. Perhaps it is because of lacking spillovers effect in term of technological and knowledge transfer due to trading of commonalities. Clearly, regional countries tend to share common knowledge and resources endowment. Having said that, the cost

[20] The Hansen test under the GMM tends to be more superior as every instrument in the model are possible GMM estimator. In other words, the GMM formalization is generally a property of Hansen test (Soderbom, 2009).

[21] The exclusion of exchange rate in the model is because EU is using a common currency in the region which leads to the number of IV equivalent with the number of exogenous variables. Hence, the model is just justified.

[22] The result of LIML test is not presented for simplicity, but available upon request.

of production didn't affect by much due to knowledge, technological advancement and resources commonalities. Furthermore, government expenditure in term of subsidies seems to cancel out the benefit of intra-regional trading. In other words, the gain form intra-regional trading is given back to the non-exporting industries in term of subsides which cancelling the positive effect. Therefore, it can be said that intra-regional trading also may not benefit the non-exporting industries which postulate the same conclusion with the previous model regression.

2) The effect of greater foreign trade should not only limit to the direct economic implications, but also its indirect effect as a result of imports and exports spillovers on domestic production (Guisan, 2013). According the author, exports is usually followed with unfavourable direct effects due to the fact that exports tend to exhaust resources of raw or intermediate input in the domestic market. On the other hand, imports often found to followed with positive effect on domestic market which depends on the nature of the goods; higher degree of complimentary imported goods tends to heighten the positive effect on the domestic market and for the intermediate inputs may provide better results for domestic sectors production. In the case of substitutive products, greater imports may impede positive effects on domestic productions. However, in most cases it is found that the favourable effect of complimentary goods tends to exceed the negative effect of substitutive goods. On the export side, exports tends to increase the capacity to imports of the country, where the total effect of exports is equivalent to the total direct effect on output plus its indirect effect through the increasing output imports. The evidence was based on a sample of OECD countries.

However, the result also shows that greater government expenditure still able to produce significance positive effect towards non-exporting industries at least in the EU, NAFTA and MERCOSUR. Despite the lack of spillovers effect from intra-regional trading, government expenditure might seems able to increase employment in the economy especially in non-exporting sectors hence promoting economic growth (Matusz, 1996). Therefore, increasing government spending seems to be a good decision for these three regions. Differ with ASEAN and COMESA regions, heightening government spending may not stimulate growth for non-exporting industries. It is observed that a significance negative effect in ASEAN region and insignificant effect for COMESA.

This shows that government spending on ASEAN region seems to be directed to less impactful investments which in the end further burdened the country economies (Cockerham, 2010). While in COMESA, government spending are unable to heightened non-exporting sectors due to higher cost on unrelated trade policy such as customs administration and regulatory costs (Mengistae, 2010). Therefore, the results suggest that a slight changes in the government expenditure policy is needed especially focusing on development or capital expenditure rather than the operating expenses.

This all make sense as the results in both regressions suggests that greater capital investment and technological advancement are positively related to economic growth for

both exporting and non-exporting sectors. The neighbouring regional country tendency to import may induce the incentives of exporting country to promote technological and investment advancement. Therefore, it can be said that intra-regional trading is more likely to benefit the economy in term of increasing the motivation of exporting country to further improve their capital advancement. However, the same effect of trickling down effect in term of capital advancement can be seen in other trading arrangement and it is not exclusively occurred in intra-regional trading. Therefore, it is stressed that greater intra-regional trading may not spur economic growth in the long run for most of the cases.

5. Conclusion

In conclusion, even if it is argued that regional trading may be very beneficial in relaxing economic shocks to meet consumption requirements and compliments, welfare, increasing efficiency through competition and economic of scale, it may seems to be more visible in the short run in some cases while its long run effect is also debatable. Meanwhile, the role of spillover effect also cannot be ignored, as it is the engine for transfer of knowledge, differentiated skills and provide the movements of largely differentiated products which could be the catalyst for economic growth. Therefore, despite the ability of regional trading to increase the positive effect on domestic economies, the amount of the effects seems insufficient to spur long run economic growth as the results suggest.

The results for both regressions model clearly postulate that greater intra-regional trading may not able to stimulate economic growth in the long run for most of the cases where export may not able to lead economic growth in the long run. This is particularly lack of spillovers effect due to trading in commonalities among the regional country members. As mentioned, regional countries are often blessed with the same endowment factors, set of skills and knowledge and hence fail to transfer new development into the regional economy. Furthermore, the positive spillovers are also depends on the nature of the products being exports and imports, whether it is complimentary or substitutive goods. What seems triggering, the long run effect of regional trading are not just limited to exporting industries, but also to non-exporting industries. With non-exporting sectors are largely affected, the net positive benefits from exports are exhausted through government spending in term of subsidies to maintain the existence non-exporting industries which usually consists of small scale firms.

To overcome the drawbacks, it is suggested that the regional policy makers to not focusing and emphasize on the idea of intra-regional trading. Instead, the discussions during the schedule regional summit should focus on inter-regional trading instead of intra-regional trading which sounds more promising as it seems to fulfil the fundamental motives of trade and parallel with the theory of comparative advantage. The spillovers effect of largely differentiated endowment factor such as technological exchange, knowledge transfer, skills and resources differentiation is more likely and can be expected. With these expected spillovers outcome, the long run benefits of greater trade will be more prevalent on economic growth. However, more research should be done on this prior to implementation.

Overall, this research is able to contribute to the current body of literature by emphasizing that export led growth must not always spur economic growth in the long run. It depends on the trading countries involves in order for the spillover to take effect in the domestic market, where regional economies tend to possess almost the same level of technological advancement hence producing almost identical products. It also depends on the products that are being traded, where regional economy tends to produce almost homogeneous products due to same endowment factor. In such environment, positive spillover is less likely.

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ANNEX.

ASEAN

The Association of Southeast Asian Nations comprises of eleven countries (the recent members was Timor Leste in 2009). Initially ASEAN was established in 1967 comprising only five countries and since then have expanded. The aim of ASEAN is to promote economic, security, and political issues within the region, and since then they becoming an important trading bloc among the member country. However, for the purpose of the study nine countries were selected out of eleven ASEAN members due to data availability namely; Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Cambodia, Brunei & Laos. https://asean.org/about-asean/member-states/

EU

The European Union was officially established in 1993; however its first cooperation started since 1945. In 1949 the council of Europe was established which aim at promoting democracy and protecting human rights and the rule of law. After the establishment of the council, several reforms were made. And in 1958 the first meeting of the European Parliamentary Assembly was initiated which lead to the birth of the European Parliament in 1962. Since then, greater economic integration among the member country was promoted through European Free Trade Association (EFTA). Since then, the treaty was developed and later become the European Union (EU) in 1993. For the purpose of this study, all 27 countries plus the United Kingdom was selected for this study namely; Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden and United Kingdom.

(Despite of official exclusion of the United Kingdom on the 31st January 2020 from the bloc, the country was included in the analysis. This was due to the regional long history and influence on the regional importance in creating economic spillovers to the other member countries which can't be ignored) https://www.gov.uk/eu-eea
https://www.government.nl/topics/brexit/question-and-answer/when-will-the-united-kingdom-leave-the-european-union

NAFTA

The establishment of the North American Free Trade Agreement (NAFTA) was driven by the success of the European Economic Community in promoting greater economic integration among its member country. In 1992 the movement to establish the trade bloc was initiated and by 1994 NAFTA was officially in effect. Since then, the regional trading bloc has become an important economic pillar of the regional economic development. The members of the bloc are Canada, Mexico & the United States of America. For the purpose of this study all of these countries were included in the analysis.
https://www.worlddata.info/trade-agreements/nafta-north-american-free-trade-agreement.php

MERCOSUR

The MERCOSUR trading bloc was derive from the Spanish words *"Mercado Común del Sur"* which refers to Common Market of The South. The economic bloc was established in 1991 comprising four original members namely Argentina, Brazil, Paraguay, and Uruguay which aim at greater movement of goods, services, and factors of production between countries as well as eliminating trade barriers among the member country. Since the establishment of MERCOSUR in 1991, the numbers of countries associated with the trading bloc have grown drastically over the years. However, for the purpose of this study, four original states in the region were selected namely; Argentina, Brazil, Paraguay & Uruguay. The Venezuela was excluded from the study due to the fact that the country was only included as the region trading bloc member since 2012 and later was exclude in 2016. Therefore, limiting the data observations for the study, while, the other associate countries was also excluded as they were only incorporated since 2015.
https://www.mercosur.int/en/about-mercosur/mercosur-countries/

COMESA

The establishment of the Common Market for Eastern and Southern Africa (COMESA) was formally initiated in 1994. However, the movement to promote the regional economy has started way earlier since 1981 through the promotion of Preferential Trade Area for Eastern and Southern Africa (PTA) which later on established as COMESA. The member country comprises of 21 African Member States stretching from Tunisia to Eswatini which aim at promoting greater regional economic integration through trade and the development of natural and human resources. Since its establishment, COMESA has played a bigger role in promoting greater economic growth in the region economy. For the purpose of this study 19 countries were selected namely; Angola, Burundi, Comoros, Democratic Republic of Congo, Egypt, Eritrea, Eswatini, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Sudan, Uganda, Zambia and Zimbabwe. Despite of exclusion of Angola in 2007 and Namibia in 2004, these countries were still included in the analysis as their long history with the region since the establishment of PTA in 1981 which may provide crucial information on economic spillover effects. The other country members who were not included in the study are due to limited data availability.

https://www.comesa.int/members/ https://www.fao.org/3/w5973e/w5973e06.htm

The data for this study is obtainable from:
https://databank.worldbank.org/source/world-development-indicators,
https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en,
https://databank.worldbank.org/source/global-economic-monitor-(gem)