The Export-Led Growth in Malaysia: Does Economic Policy Uncertainty and Geopolitical Risks Matter?

Abstract

In spite of the fact that the connection between exports of goods and services and economic growth has for quite some time been talked about, the examination of the relationship in light of recent global events such as economic policy uncertainty and geopolitical risks is yet to be given the required attention. Various empirical research has demonstrated that the export-led growth hypothesis (ELGH) holds for singular nations in terms of overall economic development. However, this study re-examines the ELGH with a special focus on the absolute and mediating impact of economic policy uncertainties and geopolitical risks. With data spanning the period 1980 to 2018. Empirical results from the Autoregressive distributed lag model and the error correction models suggest that for Malaysia, Economic Policy Uncertainty (EPU) exerts a negative impact on growth evens as its moderating impact on exports leads to negative economic growth. On the other hand, the impact of Geopolitical risk on growth is both negative and positive but insignificant in the short-run and long-run respectively. The study suggests the government of Malaysia works to ensure macroeconomic and political stability to achieve export-driven growth in the country.

Keywords: Export-Led Growth; Economic Policy Uncertainty; Geopolitical Risks; GDP; Malaysia

1. Introduction

The debate on the driving forces and accelerators of economic growth has been a keynote topic of considerable policy discussion in the literature (Vedia-Jerez and Chasco, 2016; Wadud, 2017; Recuero and Couvet, 2018; Chirwa and Odhiambo, 2019). The general submission is that economic growth is a multifaceted concept that is affected by several variables. Export is one of the vital economic activities that touch the interest of every national economy (Napoles, 2001; Ibrahim, 2002; Tang, 2006; Shahbaz Azim and Ahmad, 2011). To buttress the argument of the non-newness in the literature, exports as one of the deterministic variables of economic growth, it was argued in Classical economic school of thought as postulated by Adam Smith (1776) and David Ricardo (1817) that international trade is a key factor in determining economic growth in every economy and that every economy gains from international trade through specialization.

However, the imperative role of export in stimulating growth has led to a number of debates among policymakers and researchers over the past few decades. A number of empirical studies discovered a significant positive relationship between export growth and economic growth (Shahbaz Azim and Ahmad, 2011; Dar et al., 2013; Ee ,2016; Tang & Abosedra ,2019) while some other stems of studies found the opposite (Hai, Hai and Hung ,2017 ; Quaicoe et al., 2017). This hot debate led to the formation of export-led growth (ELG) hypothesis. ELG hypothesis generally denotes the existence of a significant positive relationship between exports and economic growth, in particular, productivity growth is determined by the level of exports. ELG hypothesis holds that increasing the amount of labour and capital in an economy are not every time the only medium through which overall economic growth can be achieved but also huge investment in exports. The theory of ELG postulates that expansion of export can boost economic growth through various means. These include the promotion of effective and increased productivity through the focus on specializing in sectors with comparative advantages and more effective production techniques, expansion of the market size and intensified technological advancement due to the ever-increasing avenues for competition in the global market.

Malaysian economy has been experiencing rapid economic growth since the mid-1980s given the boost in export as the backbone of the growth. As a result, export promoting strategy has been given much attention in Asia. Most countries in Asia have been emulating ELGH as a replacement for the failed import substitution strategy found in most countries in other part of the world. Specifically, Malaysia has been experiencing rapid growth rates as a result of specialization

on production and export of consumer goods (Sulaiman and Saad 2014). Despite the perceived impacts of export on growth, there are still disparities in the evidence for export-led growth (ELG) hypothesis. For instance, Giles and Williams (2000) carried out an extensive survey on ELGH covering more than 150 papers and they concluded that discrepancies persist as a result of different results shown by a number of studies observed.

On the other hand, there has been a heightened interest in Economic uncertainty (EU) owing to the occurrence of the global financial crisis (Baker et al. 2016). A significant yet unobservable notion in influencing economic circumstances, Economic uncertainty entails a situation that is characterized by insufficient knowledge needed to estimate prevailing economic conditions. in confidence. Economic uncertainty is a frequent topic of discussion at economic policy summits and as posited by Pástor and Veronesi (2013) it signifies the condition of the absence of certainty on the future trends or movement of economic policies. Economic uncertainty causes a depressive impact on investments, national consumption and increases financial costs, (Gilchrist et al. 2014; Abid 2019). Similarly, Geopolitical Risks (GPR) has been identified by the World Economic Forum (2016) to be among the five top global risks. GPRs refers to a series of uncertainties in the political spaces. It refers to conditions such as political tensions, civil violence, terrorism, electoral conflicts (Suárez-de Vivero and Mateos, 2017; Hoque , Wah and Zaidi, 2019) and it has been found to lead to negative impacts on exports, imports, equity and financial markets as well as the collective economy (Antonakakis et al., 2014; Aslam & Kang, 2015; Lanouar & Goaied, 2019).

This present study has duly recognized the relevance of economic policy uncertainty (EPU) and Geopolitical risks (GPR) to the export-led growth (ELG) hypothesis. Even as economic policy uncertainty (EPU) and geopolitical risks (GPR) have become important areas of investigation to the government and researchers (Mahadevan & Suardi ,2008; Chen et al ,2019; Mansour-Ichrakieh & Zeaiter ,2019; Tiwari et al. , 2019; Kannadhasan & Das, 2019) given the vulnerability of national economies to microeconomic and macroeconomic uncertainty.

Therefore, this present study takes into consideration the impact of Geopolitical Risks (GPR) and Economic Policy Uncertainty (EPU) on export-led growth (ELG) hypothesis in Asia. The EPU index is used to measure the economic risk attached to the future path of unreliable government policy which delays the decision of investors to invest until the uncertainty is resolved.

This affirms the study conducted by Lubos and Pietro (2011). They found out that many policymakers and business leaders have emphasized the levels of policy uncertainty had increased radically owing to the Great Recession of late 2000 which affected the global economy.

However, the EPU index has been widely experimented in the literature as a proxy for economic uncertainty with less attention on the growing dangers that are being posed in form of wars, terrorists' attacks, natural disasters and other analogous events that require making provision for another proxy for explaining the geopolitical disorders and this has led to the index of GPR. The major distinction between EPU and GPR index is that EPU is outlined based on uncertainty regarding an economy, whereas GPR takes into consideration happenings that can cause social unrest like war, terrorism, political disagreements, and natural disasters and so on. Previous studies have been static in the use of dummies in the literature as they treat EPU and GPR separately. They fail in their justification for incorporating the combined lagged effects of both EPU and GPR as related to external trade and economic environment.

This study fills an important gap in the Export-Led Growth Hypothesis literature. To the best of our knowledge, this research work is the first to examine the impact of Economic policy uncertainty and Geopolitical Risks on the Export-Led Growth Hypothesis. Previous studies focused on the impact of EPU and GPR on other economic indicators such as innovation, financial development, capital investment at firm level, tourism and economic growth (GDP) (Adams and Fuss, 2008; Ashraf and Shen, 2019; Wei (2019; Akadiri et al, 2019; Xu, 2020). Secondly, we contribute to the existing literature on the Export-Led Growth Hypothesis. The outcome of this study will reveal the role of economic and political stability on export performance and consequently economic growth, the knowledge of which will affect the future of export policy in the study country-Malaysia. Similarly, the outcome of this study will be beneficial to countries with similar economic structures to Malaysia especially surrounding export performance.

Thus, this current study tends to contribute significantly to the body of knowledge as it considers the twin impact EPU and GPR on the economic growth of Malaysian economy which is specifically driven by exports. There is hardly a study in the literature, to the best of our knowledge that has made an attempt in this regard.

2. Literature Review

2.1 Export-Led Growth in Malaysia

The link between export and economic growth has been discussed extensively in the literature in the vocal lenses of international and development economics. The underpinning assumption of neoclassical growth theory proposes that export plays a major role in productivity growth and also enhances the economics of scale and makes the global market more competitive. However, the evidence on the relationship between exports and economic growth remains a controversial issue in the literature. The pool of studies on the nexus varies based on the periods, data type and econometric model considered in each study, so there is consensus as regards whether there is a relationship or not. The result displayed by Love & Chandra (2005) on ELG hypothesis in Bangladesh over the periods 1972-2000 shows that there is a one-way causality running from economic growth to export with no evidence for the validity of ELGH. This study is a basis for the fact that the export of Bangladesh is driven by economic growth. Another related study by Marwan et al. (2013) found no evidence of a causal relationship between exports and economic growth for Sudan. Furthermore, Gokmenoglu et al (2015) did not also find any evidence to support ELG hypothesis in Costa Rica over the period from 1980 to 2013. Quaicoe et al. (2017) employed a vector error correction model (VECM) to examine the influence of free zones exports and investments on economic growth in Ghana over the period of 1998-2015. They discovered that there is a significant inverse relationship among economic growth, free zones investments and exports.

There are several studies on TLGH that found evidence for a causal relationship between export growth and economic growth. For instance, study on Mexico by Thornton (1993) discovered a positive one-way causal relationship running from exports to economic growth. Hye et al. (2013) carried out an empirical analysis on the rationality for the export-led growth hypothesis in 6 Asian countries using different periods based on the data available between 1960 and 2009. The Granger causality test showed support for validity of the ELG hypothesis for all the countries except for Pakistan. Ee (2016) also move further to examine the validity of the ELG hypothesis in 4 selected Sub-Sahara African countries from 1985 to 2014. The study found empirical evidence for the validity of export-oriented growth in the 4 countries. Sunde (2017) also explored the impacts of foreign direct investment and exports on economic growth in South Africa covering 1990-2014. Among other results found while applying a Granger Causality test, a bidirectional relationship was also discovered between exports and economic growth. Tang &

Abosedra (2019) also considered the impact of logistic performance on the ELG hypothesis in 23 Asian countries over the period 2010 to 2016. Their finding shows that the ELG hypothesis is valid in Asia and that economic growth in Asia is found to be restricted to the logistics performance level in the countries examined.

In recent years, Malaysia has been experiencing rapid economic growth majorly encouraged through export activities. A number of studies have emerged on testing the validity of the ELG hypothesis focusing on Malaysia. Accordingly, Ibrahim (2002) tested the validity of the export-led hypothesis in Malaysia for 1960-1997 periods. The study found evidence for bidirectional causal relationship between exports and economic growth. Another study conducted by Keong et al (2005) on the ELGH in Malaysia from 1959 to 2000 supports the validity of ELGH in Malaysian economy both the short-run and long-run. Al-yousif (2006) also carried out an explicit analysis of the nexus between exports and economic growth in the context of Malaysia. Using a multivariate model, a mixed and inconclusive result was discovered as the ELGH is only valid in the short run Tang (2013) attempted to test the validity of ELGH in Malaysia by using monthly data set from January 1975 to August 2010. The causality tests experimented in the study showed the overtime instability of TLGH.

In 2014, Haseeb et al suggested a continuous investment in export activity after finding evidence for the validity of TLGH in Malaysian economy over the period from 1971 to 2013. . Sulaiman & Saad (2014) investigated the nexus between export growth and economic growth in Malaysia by employing a quarterly data and OLS covering the period from 1767 to 2009. They discovered an evidence of unidirectional causal relationship running from export to economic growth. Lim &Linga (2015) followed the same path in the literature by testing validity of ELGH in Malaysia from 1970 to 2013. Applying Johansen cointegration and Granger causality techniques, they discovered a unidirectional causal relationship moving from economic growth to export and this is a basis for economic growth-driven export instead of export-driven growth.

2.2 Economic Policy Uncertainty, Geopolitical Risks, Export and Economic Growth

Recently, there is an increasing diversion in the literature to the study of the adverse effects of Economic Policy Uncertainty (EPU) and Geopolitical risk (GPR) on economic growth and other microeconomic and macroeconomic variables. The volume of studies that have been carried out

in the current literature on various ways through which EPU and GPR can impair economic activities. It has been opined in the literature that EPU and GPR are proxies to measure policy risk which can affect economic growth (Bloom 2009). However, Malaysia has been on the spotlight in the literature since the emergence of the financial crisis experienced in the late 2000 that affects the global economy most especially Asian countries and several studies have come up to measure the impacts of EPU and GPR on various economic activities in the region. For instance, On market returns, Kannadhasan & Das (2019) provided empirical evidence for the influence of EPU and GPR on the emerging stocks in Asian economy by using Quantile regression analysis. They presented three major findings in the study; firstly, EPU has a negative impact on the stock prices and the impact spread across the distribution of the returns got from the quantiles while GPR has a mixed result, secondly, EPU poses more adverse effect than that of GPR. And lastly, the link found among the three variables is distorted and varies across different conditional quantiles. On tourism demand, Tiwari et al. (2019) also investigated the effects of economic policy uncertainties and geopolitical risks on tourism demand in India. Their wavelet analysis showed that geopolitical has more influence than economic policy uncertainties in the economy. More so, it was discovered in the study that GPR affects tourism demand in the long run while EPU has a short-term effect.

Furthermore, Mansour-Ichrakieh & Zeaiter (2019) examined the impact of GPR on the financial stability of Turkish economy employing a monthly data from January 2006 to November 2018. Applying Threshold Vector Auto Regression method (Threshold VAR), they evaluated the effect of GPR stemming at the regional level; Saudi Arabia and global level; Russia on financial stress in the country and they discovered that GPR emerged from Saudi Arabia and Russia took a different way of influencing the Turkish financial stability as Russia seemed to be a global competitor for Turkey in terms of economic and political structures, whereas Saudi Arabia is more likely to be solely dependent on the geopolitical structure. Also, Chen et al (2019) also investigated the effect of economic policy uncertainty (EPU) on the exchange rate instability in China using monthly data from December 2001 to November 2018. Employing the quantile regression, the result shows that EPU has a significant positive on all the quantiles fluctuations of exchange rates in China.

Looking from another angle, the researches that discuss the relationship between economic policy uncertainty (EPU), geopolitical risk (GPR) and international trade are relatively limited. There are few studies on this topic, an example is that of Mahadevan & Suardi (2008), that

attempted a dynamic analysis of the impact of uncertainties on import and export-led growth for Japan and the Asian Tigers. They discovered that the flexibility of Japan's GDP growth is solely boosted by import while the GDP growth rate of Hong Kong is both export-led and import-led. In the same vein, the uncertainty factor involved in the study breaks the causal relationship between the GDP growth and trade of Korea though it didn't affect the causal relationship between the GDP growth of Taiwan with its export and imports.

3. Data and Method

This study's empirical investigation adopts annual data from the Word development Indicator (WDI) (2019) from 1980 to 2018. We rely on annual data because most of the series adopted are computed annually. The macroeconomic data adopted for the analysis include export, government expenditure, foreign direct investment, economic policy uncertainty indices and geopolitical risk indices and are all described in table 1. In other to achieve the objectives of this study, we specified four models for estimations in line with the export-led growth hypothesis, as presented below:

RGDP = f (EXPORT, GOVT EXPENDITURE, FDI) (1)

RGDP = f (EXPORT, GOVT EXP, FDI, EPU) (2)

RGDP = f (EXPORT, GOVT EXP, FDI, GPR) (3)

RGDP = f (GOVT EXPORT x EPU, EXPORT x GPR) (4)

To empirically investigate the effect of economic policy uncertainty and geopolitical risks on export-led growth in Malaysia, the study utilizes the ARDL model and the Error Correction Mechanism Model for our empirical analysis. The models were adopted because having conducted pre-estimation test on the series, it was found that in some models (equation 1 and 3), the series we stationary in mixed order of integration (i.e. I(0) and I(1) variable, while in the other models(equation 2 and 4), the series were stationary only at first difference (I(1) variables).

[TABLE 1 HERE]

[FIGURE 1 HERE]

[TABLE 2 HERE]

Table 2 and figure 1 both demonstrate the summary statistics and trend of the variables adopted in this study respectively. EPU shows an average of 0.037 over the period considered on a standardized scale of 1000 and with a standard deviation of 0.022. This consequently reveals EPU is at the minimum in Malaysia. The maximum EPU index over the period is 0.16 and the minimum stood at 0.002. the FDI/GDP ratio presents an average of 3.87% over the period of study, with a standard deviation of 1.19%. the highest FDI/GDP ratio recorded for the period stood at 8.76% and the minimum at 0.05%. The mean export for the periods stood at US$149 billion, with a standard deviation of US$79.9 billion. The highest export value for the periods reads US$270 billion and the minimum export shows US$24.8 billion. The geopolitical risk (GPR) gives an average of 91 over the periods, with a standard deviation of 18.2. The highest index for GPR over the periods stood at 133 and the minimum at 59.5. The GPR index of Malaysia seems to be on the high side and could pose serious social and economic implication in the country. The government consumption expenditure (GOVCON) records an average of US$22.8 billion over the periods considered with a standard deviation of US$13.5 billion. The highest GOVCON value for the periods stood at US$49.1 billion and the least for the periods records US$7.5 billion. The Jargue-Bera and its P-value show all variables are normally distributed except for the EPU series.

3.1 The ARDL model

The ARDL model was proposed by Pesaran et al. (2001) to accommodate the limitations of the Ordinary Least Square model in addressing non-stationary series. It has the advantages of absolving series of mixed order of integration or stationarity level and also, the issue of endogeneity is of a negligible problem as long as the model is free of residual correlation. This method has gained traction as researchers have adopted it in empirical studies across several areas of interest. Malik, et al. (2020), adopted it in investing the impact of oil price, FDI and economic

growth on carbon emission in Pakistan, identifying that the method adequately accommodate the serial correlation and endogeneity among variables, thereby, providing a robust estimate. Similarly, Nafti and Guizani (2019) adopted the method on investigating the determinants of bitcoin price volatility and found the method to be efficient in handling non-stationary series. In like manner, Baharumshah, et al. (2009) adopted the method in investigating the stability of money demand in China, identifying that the flexibility of the model in accommodation series of mixed stationarity makes it an appropriate model for the study. More recently, the study of see (Onifade *et al*.,2020a; (Onifade *et al*.,2020b; Taiwo *et al*.,2020) adopted the use of ARDL methodology to investigate trade and unemployment nexus in Nigeria, government expenditure and growth nexus in Nigeria and inflation, oil revenue, and monetary policy mix in an oil-dependent economy respectively. The baseline ARDL model of two variables X and Y can be specified as presented below;

$$\Delta y_t = a_0 + \sum_{i=0}^{p} b_i \Delta y_{t-1} + \sum_{i=1}^{p} c_i \Delta x_{t-1} + d_1 y_{t-1} + d_2 x_{t-1} + \varepsilon_t \quad (5)$$

From equation (5) above, Δ denotes the difference operator, a_0, the drift component in the model and ε_t, the white noise disturbance in the model. Variable y represents the explained variable, while x captures the explanatory variables in the model. Parameters b_i and c_i are short-run parameters and d_1 and d_2 capture the long-run relationships in the model.

3.2 The ECM Model

The Error Correlation Mechanism (ECM) Model allows a linear combination of non-stationary series without necessarily producing a spurious regression. Asterous and Hall (2007) explained that the estimation of non-stationary series using Ordinary Least Square would produce a spurious result and ECM model can perfectly take care of that limitation. This was corroborated by Gujarati (2011) who claimed that for each set of non-stationary time series data would only be useful for a particular episode (short run), it is therefore not appropriate to generalize it to other periods. Asterous and Hall (2007) further clarify that adopting ECM for non-stationary series, all term in the ECM model are stationary and the standard OLS is therefore valid. This is because if Y_t and X_t are I(1), then ΔY_t and ΔX_t are I(0), and by definition, Y_t and X_t are cointegrated, their linear combination $(Y_{t-1} - \alpha - \beta X_{t-1})$ I(0). A number of studies have adopted the ECM model

in their empirical investigation. Such include Chevallier (2011) in evaluating the carbon-macroeconomy relationship, Danao and Geoffery (2016) in forecasting aggregate electricity consumption and kolo and Tzanova (2017) in forecasting the German forest product trade. A generic representation of ECM model given variable X and Y at time is represented below:

$$\Delta y_t = \propto + \beta \Delta x_t + \delta ECT_{t-1} + \vartheta_t \, (6)$$

A more representative model can be expressed as:

$$\Delta y_t = \propto + \sum_{i=1}^{k} \theta_i \Delta y_{t-1} + \sum_{j=0}^{N} \beta_j \Delta x_{t-j} + \delta ECT_{t-1} + \vartheta_t \, (7)$$

From (6) and (7), Δ denotes the difference operator, a_0, the drift component in the model and ϑ_t the error term. Parameter β represents the coefficients of the explanatory variable explaining the relationships among the explained variable and the explanatory variables. δ is the coefficient of the Error Correction Term (ECT), which is expected to be negative, less than 1 and statistically significant for the model to be valid (Asterous and Hall, 2007). The ECT measures the speed of adjustment in the model, that is, how low it takes for the model to revert to equilibrium.

4. Results and Discussions

[TABLE 3 HERE]

Table 3 shows the unit root test conducted to test for the stationarity property of the series using the Augmented Dickey-Fuller (ADF) and Philip-Peron (PP) test. Both test results of individual variable corroborate each other. It was found that most of the variables are not stationary, except for Economic Policy Uncertainty (EPU) and Export* Economic Policy Uncertainty (EXPEPU). This result is helpful in understanding the predictability level of each series in the model and their implication for policy issues (Asterous and Hall, 2007).

[TABLE 4 HERE]

Table 4 presents the ARDL bound test conducted to ascertain if there is a long-run relationship among the series in the model. This test was conducted for model 2 and 4 that fit the ARDL criteria. As presented by Pesaran et al. (2001), a long-run relationship exists if the F-statistic exceeds the I1 bound (upper bound) at any given significant level. Our results show a long-run relationship exist in the models and validates the estimation of long-run relationship in the model.

[TABLE 5 HERE]

From Table 5, the results for model 1 reveal that exports and government expenditure contribute positively and significantly to an increase in real output in Malaysia, while although FDI contributes positively to growth, its effect is rather insignificant. Model 1 shows a percentage increase in export is likely to increase real national output by 0.24 percent, while a percentage increase in government expenditure would likely increase real output in Malaysia by 0.21 percent. The R-Squared shows only about 69 percent of changes in RGDP is accounted for changes in export, FDI and government expenditure, while the F-stat confirms a joints significance of the variables in the model.

From model 2, from Table 5, both government expenditure and FDI exert a positive but insignificant influence on RGDP in Malaysia in the short-run, however, in the long-run, they both become positively significant. In the long run, a one percent increase in government expenditure is likely to increase real output by 0.89 percent, and for FDI, a one percent increase is likely to increase real output by 0.04 percent. Export exerts a positive and statistically significant effect on RGDP in the short run, but over time, this effect, though positive becomes in significant. A one percent increase in export likely increase RGDP by 0.28 percent and statistically significant in the short-run, however, in the long-run, it has a statistically insignificant effect of 0.11 percent. The result shows Economic policy uncertainty (EPU) negatively influence RGDP both in the short-run

and long-run and statistically significant. In the short-run, a one percent increase in EPU likely reduces RGDP by 0.02 percent, while in the long-run, a percent increase in EPU likely reduces RGDP by 0.14 percent and statistically significant. The result reveals EPU has more long-run effect on RGDP than short-run effect. This could be because, over time, if economic policy uncertainty persists, it could further disrupt the free flow of economic activities in the country and even distort their relationship with the world. The R squared explains that 99 percent of changes in RGDP are explained by changes in GOVEXP, FDI, EPU and EXPORT, while the F-stat confirms a joints significance of the variables in the model.

From model 3, government expenditure and exports, just like the results from the previous model exert a positive and significant effect on RGDP, while FDI, though shows a positive sign, insignificantly affect RGDP. The new variable in the model in form Geopolitical Risk (GPR) that distinguishes the model from model 1 and 2 exerts a negative but insignificant effect on RGDP in Malaysia. It shows that although GPR affect negatively changes in RGDP, this negative influence is insignificant on its own. The R square explains about 72 percent of changes in RGDP is captured by changes in GOVEXP, FDI, EXPORT and GPR. The F-stat confirms the joint significance of the variables in the model.

Model 4 test for the effect of the interaction of export and economic policy uncertainty and the interaction of export and geopolitical risk (GPR) on RGDP in Malaysia. It was found that EXPEPU exerts a negative and significant influence on RGDP in the short and long run. A percent increase in EXPEPU likely reduces RGDP by 0.01 percent in the short-run and likely reduces RGDP by 0.14 percent in the long-run. These negative effects of EXPEPU on RGDP could be that as a result of economic policy uncertainty, trading partners are persuaded to seek for alternative sources of import, and consequently render export less competitive in the country, thus eroding the significant contribution of export to RGDP. EXPGPR, although exerts a negative influence on RGDP in the short and long run, these negative effects are both insignificant in both runs. Just like economic policy uncertainty, trading partners might want to minimize risk in the trade and sought to alternative trading partners with a relatively stable geopolitical risk, which could consequently account for the negative contribution of export to RGDP. Government expenditure, just like the previous model affects RGDP positively in the short and long run. The R square explains about 99 percent of changes in RGDP is captured by changes in GOVEXP, EXPORT*EPU and EXPORT*GPR. The F-stat confirms the joint significance of the variables in the model.

[FIGURE 2 AND 3 HERE]

5. Conclusion

This examination reconsiders the export-led growth hypothesis (ELGH) for the case of Malaysia with the introduction of economic policy uncertainty and geopolitical risks in the hypothesis. We measure export as the exports of goods and services as provided by World Bank development indicators. We additionally introduce the economic policy uncertainty and geopolitical risk indices which are powerful determinants of the volume of economic activity in a country. For example, the impact of the government's monetary and macroeconomic policies, regional, internal and external crisis and their impact on the economy. The autoregressive distributed lag model (ARDL) and the error correction models (ECM) are used to estimate the ELGH. The results for model 1 illustrate that export and government expenditure contribute positively and significantly to an increase in real output in Malaysia while from model 2, both government expenditure and FDI are not significant in the short-run, however, in the long-run, they both become positively significant. Export exerts a positive and statistically significant effect on RGDP in the short run, but over time, this effect is eroded.

Subsequently, the results show that Economic policy uncertainty (EPU) negatively influences RGDP both in the short-run and long-run and statistically significant. The result reveals EPU has more long-run effect on RGDP than short-run effect. From model 3, government expenditure and export, just like the result from the previous model exerts a positive and significant effect on RGDP, while FDI do not matter in explaining RGDP. Geopolitical Risk (GPR) is a unique variable that although it leads to negative changes in RGDP, this negative influence is insignificant on its own. Model 4 test for the effect of interaction of export and economic policy uncertainty and the interaction of export and geopolitical risk (GPR) on RGDP in Malaysia. It was found that EXPEPU exerts a negative and significant influence on RGDP in the short and long run. Government expenditure, just like the previous model affects RGDP positively in the short and long run.

The results of this study hold very important macroeconomic policy implications. First of all, our findings uncover that financial solidness of Malaysia assumes a significant task for the Malaysian economy for increased growth in export; which suggests that to improve the impact of export in the total economic development of the nation, approaches that help boost Gross domestic

product development ought to be followed. Then again, policies that promote export in the presence of geopolitical crisis and economic policy uncertainties, for example, the utilization of a regional trade system is key. This is because supporting the export-based industries may not directly add to the monetary development of Malaysia until EPU and GPR are factored into the economic model of the nation. Along these lines, the administration of Malaysia should offer a need to such arrangements that lead to a stable financial framework and keep up quick and reasonable monetary and macroeconomic policy developments.

In suggesting a path for future studies around a similar study, it will be interesting to study the non-linear relationship between Economic policy uncertainty and Geopolitical risk on Export-led growth. This will help contribute to the literature on this theme. Similarly, future studies can be conducted for a multi-country group to aid the understanding of the effects of Economic policy uncertainty and Geopolitical risk on Export-led growth at a regional level. Such studies will be useful for economic policy taking place at a multi-country level.

Declarations

Availability of data and materials

The data for this present study are sourced from the database World Development Indicators (https://data.worldbank.org/), Geopolitical risk index (https://www2.bc.edu/matteo-iacoviello/gpr.htm) and Economic Policy Uncertainty index after Ahir et al., (2018) http://www.policyuncertainty.com

Competing interests

I wish to disclose here that there are no potential conflicts of interest at any level of this study.

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Authors' contributions

The first authors Festus Fatai Adedoyin (FFA) was responsible for the conceptual construction of the study's idea. Second author Joseph Olarewaju Afolabi (JOF) handled the literature section while third authors Kürşat Yalçiner (KY) managed the data gathering, preliminary analysis and simulation alongside fourth authors Festus Victor Bekun (FVB) that proceeded to interpretation of the simulated results and responsible for proofreading and manuscript editing.

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Authors' information

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List of Tables

Table 1. Description of variables and measurement Units

Name of Indicator	Abbreviation	Proxy/Scale of Measurement	Source
Real Gross Domestic Product per capita	RGDP	Constant 2010 US$	WDI
Exports of goods and services	EXP	constant 2010 US$	WDI
General government final consumption expenditure	GOVEXP	constant 2010 US$	WDI
Foreign direct investment, net	FDI	% of GDP	WDI
Geopolitical Risk	GPR	Index	(Caldara and Iacoviello, 2018) https://www2.bc.edu/matteo-iacoviello/gpr.htm.
Economic Policy Uncertainty	EPU	World Uncertainty Index (WUI)	(Ahir et al., 2018) http://www.policyuncertainty.com
Note. WDI is connotation for data from World Bank Development Indicator of the World Bank database sourced from https://data.worldbank.org/. WUI = This tab contains the beta version of the historical World Uncertainty Index (WUI) for 82 countries from 1952Q1 to			

2019Q3. The tab contains a moving average index. The 3-quarter weighted moving average is computed as follows: 1996Q4= (1996Q4*0.6) + (1996Q3*0.3) + (1996Q2*0.1)/3.

Table 2. Descriptive statistics

	EPU	FDI/GDP	EXPORT	GPR	GOVCON
Mean	0.036602	3.87E+00	1.49E+11	9.11E+01	2.28E+10
Median	0.030667	3.501087	1.52E+11	87.43975	1.87E+10
Maximum	0.162711	8.760474	2.70E+11	133.1132	4.91E+10
Minimum	0.002032	0.056692	2.48E+10	59.46531	7.50E+09
Std. Dev.	0.029743	1.913158	7.99E+10	18.20434	1.35E+10
Skewness	2.355122	5.48E-01	-0.164833	6.34E-01	0.583132
Kurtosis	10.59581	3.54E+00	1.604149	2.85E+00	1.958676
Jarque-Bera	113.1672	2.119537	2.914194	2.307634	3.463084
Probability	0.0000	0.346536	0.232911	0.31543	0.177011
Sum	1.244472	131.5376	5.07E+12	3098.759	7.76E+11
Sum Sq. Dev.	0.029193	120.7857	2.11E+23	10936.13	6.02E+21
Observations	34	34	34	34	34

Source: Author's computation for EViews 9

Table 3. Unit root test

	PP		ADF		Order of integration
Variables	levels	first difference	levels	first difference	I(d)
LNEPU	-6.5519	-2.784	-4.885	-3.4478	I(0)
LNFDI	-2.8822	-6.605***	-2.9634	-5.2825***	I(1)
LNGPR	-2.1247	-4.6562**	-3.2229	-4.7628**	I(1)
LNGOVEXP	-1.4346	-6.6993***	-1.4231	-6.7249***	I(1)
LNEXP	-1.242	-5.9401***	-1.1829	-5.3763***	I(1)
LNRGDP	-1.4687	-5.3811***	-1.4314	-5.3793***	I(1)
LNEXPEPU	-5.09279	-6.9254***	-4.3979	-2.5567	I(0)
LNEXPGPR	-0.0845	-5.574478***	-0.9166	-5.2694***	I(1)

Source: Author's computation from EViews

Note: Asterisk represents level of significance ***, ** and * denotes 1%, 5% and 10 % respectively

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Table 4. Bound test

	Model 2	Model 4
F-statistic	9.7523***	4.2422*
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

Source: Author's computation

Note: Asterisk represents level of significance ***, ** and * denotes 1%, 5% and 10 % respectively

Table 5. ARDL Results

Dependent variable: LOG(RGDP)

Variables	Model 1	Model 2	Model 3	Model 4
SHORT RUN				
DLOG(GOVEXP)	0.2119**	0.3167	0.2713***	0.2322***
	(0.0233)	(3.5889)	(0.0082)	(0.0005)
DLOG(FDI)	0.008	0.0076	0.0069	
	(0.1323)	(0.2231)	(0.1774)	
DLOG(EPU)		-0.0180**		
		(0.0210)		
DLOG(EXP)	0.2402***	0.2802**	0.2555***	
	(0.0064)	(0.0468)	(0.0068)	

DLOG(EXPEPU)				-0.0141*
				(0.1064)
DLOG(EXPGPR)				-0.0244
				(0.4807)
DLOG(GPR)			-0.0268	
			(0.2613)	
ECM(-1)	-0.1692*		-0.1614	
	(0.0677)		(0.2709)	
CointEq(-1)		-0.4715**		-0.2805***
		(0.0154)		(0.0019)
C	0.0190**	0.5606	0.0111	1.3389**
	(0.0278)	(0.4004)	(0.3726)	(0.0212)
LONG RUN				
LOG(GOVEXP)	-	0.8967***	-	0.8279***
	-	(0.0003)	-	(0.0000)
LOG(EXPEPU)		-0.1377***	-	-0.1429**
		(0.0024)	-	(0.0446)
LOG(FDI)	-	0.0429*		
	-	(0.0856)		
LOG(EXPGPR)				0.0858
				(0.412)
LOG(EXP)	-	0.1127		
	-	(0.1893)		
LOG(EPU)		-0.1377***		
		(0.0024)		
C	-	1.1889	-	6.9422***
	-	0.32	-	(0.0007)
R square	0.69	0.99	0.72	0.99
Adjusted R square	0.62	0.99	0.60	0.99
POST ESTIMATION TESTS				
F-Stat	9.3165***	2445.73***	6.1420*** 937.32***	
	(0.0000)	(0.0000)	(0.0002)	(0.0000)
Hetetroscedasticity test	1.5388***	0.3326***	1.4039***	1.9561**
	(0.2067)	(0.9698)	(0.2458)	(0.1049)
Serial correlation test	1.1456***	3.3537***	0.8748***	0.2047***
	(0.3355)	(0.1718)	(0.4323)	(0.8175)
Ramsey test		0.2746***		0.2439***
		(0.628)		(0.6291)

Source: Author's computation from EViews

Note: Asterisk represents level of significance ***, ** and * denotes 1%, 5% and 10 % respectively

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		(0.0210)		
DLOG(EXP)	0.2402***	0.2802**	0.2555***	
	(0.0064)	(0.0468)	(0.0068)	

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DLOG(GPR)			-0.0268	
			(0.2613)	
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LOG(FDI)	-	0.0429*		
	-	(0.0856)		
LOG(EXPGPR)				0.0858
				(0.412)
LOG(EXP)	-	0.1127		
	-	(0.1893)		
LOG(EPU)		-0.1377***		
		(0.0024)		
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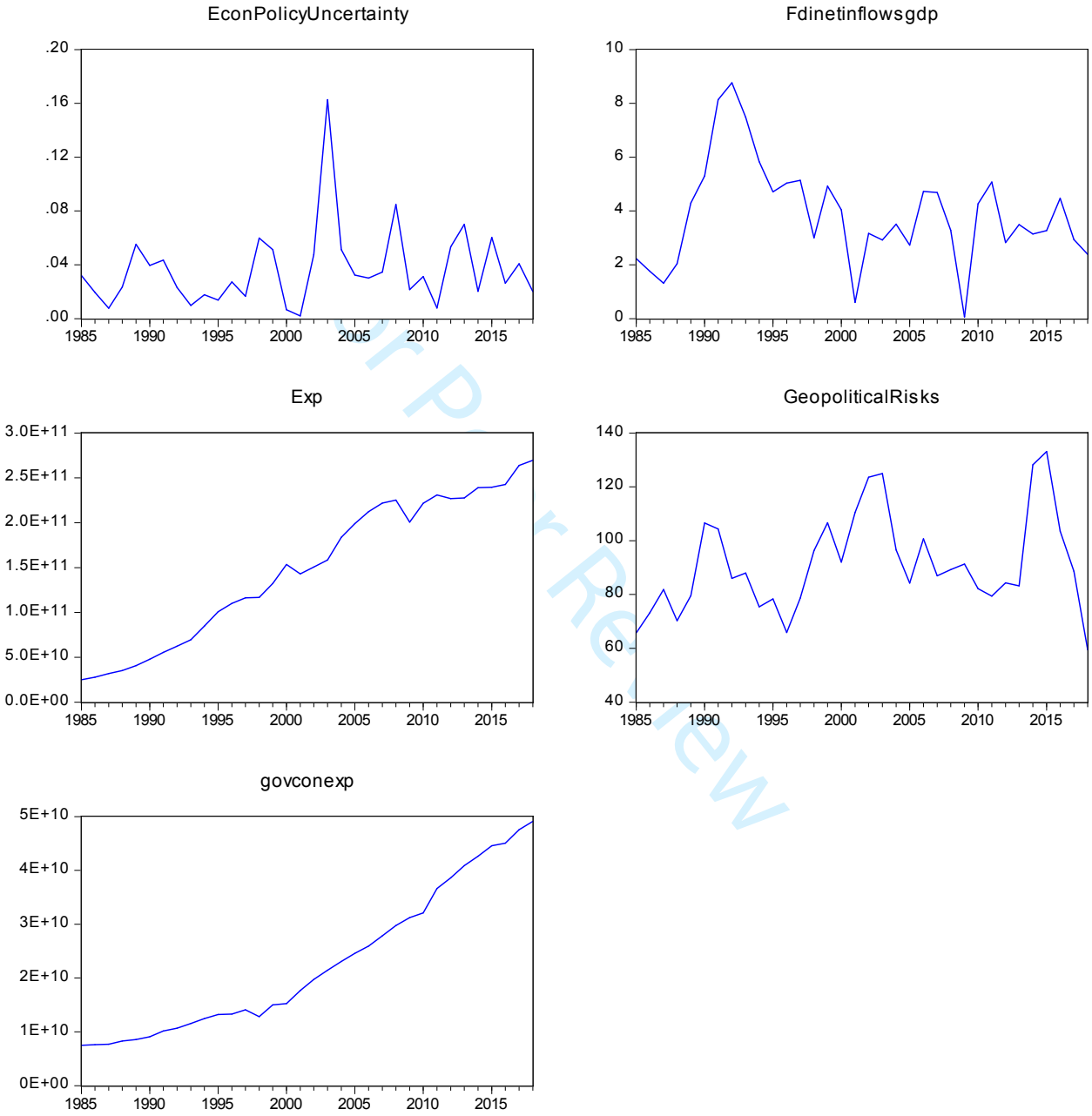
Source: Author's computation from EViews

Note: Asterisk represents level of significance ***, ** and * denotes 1%, 5% and 10 % respectively

LIST OF FIGURES

Figure. 1 Trend of Variables



Source: Authors computations with data from World Bank Development Indicators, Caldara and Iacoviello, (2018) and Ahir et al., 2018.

CUSUM test for parameter stability for model1 and 3

Figure 2: CUSUM test for model 1

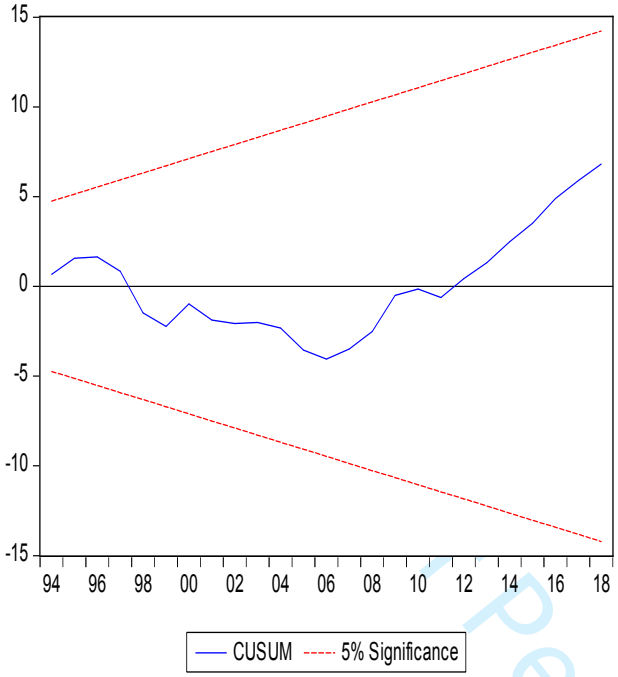
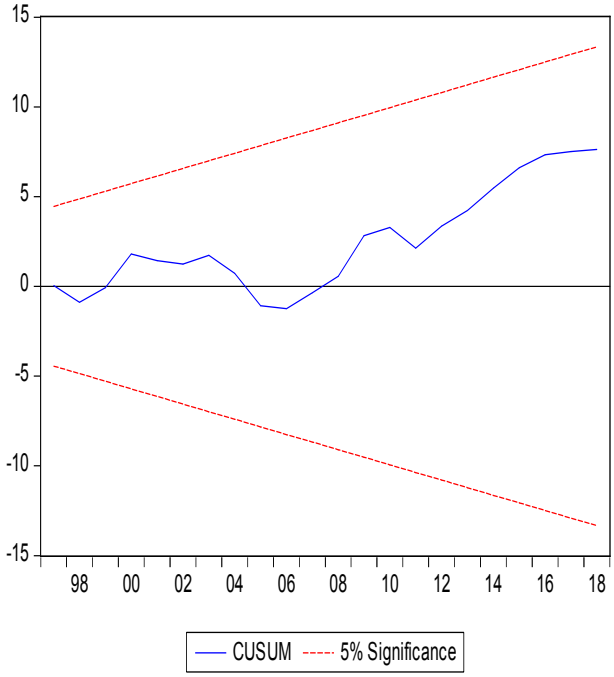


Figure 3: CUSUM Test for model 3



The CUSUM tests show the models are stable within the 95 percent confidence bound.