THE ECONOMIC SIGNIFICANCE OF TOURISM IN ASIA
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Abstract
This study aims to observe short and long run association of selected macroeconomic variables and tourism with economic growth. This research particularly emphasizes to perform and analyze triangular Granger relationships between variables and Granger causality test under VECM. Besides tourism variables, the current research also intends to propose a few macroeconomic variables, such as, exports, human capital and physical capital as the control variables, for determining the nature of causality of these variables with economic growth. Although, limited studies are available regarding government tourism expenditure and tourism receipts under neoclassical exports and growth model however, the available empirical findings are mixed and inconclusive. The time series data of 28 years from 1989 to 2017 is used for the analysis purpose. As the economy grows, all the gross domestic product (GDP) components, such as human and physical capital, government spending, and exports also expand. With time, these variables exhibit some upward moving patterns. Tourism receipts are found to have bidirectional causality with economic growth in Thailand in the long run. Granger causality from economic growth to physical capital is also found in the short run, suggesting that Thailand should strive to achieve robust economic growth in the first place in the short run. In general, though the study does not differentiate the value of capital stock between private and public sectors, the study is able to obtain a fairly reliable measure of the trend in fixed investment in Thailand.

Keywords: Tourism, Economic Growth, ASEAN

Background
Tourism industry is the biggest export sources in the world that able it to generate a significant tax revenue, reduced domestic tax burden and promote infrastructure development which can benefit all rather than tourists alone (UNWTO, 1997). From UNWTO/OMT 2009, international tourist arrivals have continued to grow. In 1950, it was 25 million, growing to 277 million 30 years later, and again increased to 438 million in 1990, and increased another 246 million to 684 million in 2000, and in 2008, and it shot up to 922 million. By 2020, international tourist arrivals are expected to achieve 1.6 billion, and generate approximately US$2 trillion in international tourism receipts (UNWTO, 2001). Generally international tourist arrivals and international tourism receipts move parallelly. When there is an increase in international tourist arrivals, it will lead to a rise in tourism receipts. Travel and tourism play an important role in any country involves in this
industry. Besides generating income, tourism also provides a large number of jobs as it is a labor-intensive industry. As a country moves along the process of economic expansion, according to author, almost all of the components in gross domestic product (GDP) or macroeconomic aggregates exhibit an upward trend. The movement of the variables along the time could display some sort of behavior or pattern. Thailand’s economy also follows the same trends. The tourism in Thailand is increasing over the course of last 16 years as evident from the figure 1.

![Yearly tourist arrival (millions) in Thailand](image)

**Source: Ministry of Tourism**

Tourism contributes to economic growth (RGDP) from its exports service in terms of tourism receipts, which generates foreign exchange earnings and it could result in tourism led growth, growth led tourism or both. Though this area (tourism receipts) is relatively new which was initiated by Tang and Abosedra (2016), the recent empirical studies on this field are like mushrooms growing after the rains. To name a few of the most recent studies are Phiri (2016) for Pakistan and Mérida and Golpe (2016) for Turkey, for Thailand, etc. Nevertheless, the findings from the empirical studies are mixed, inconsistent (Tang & Abosedra, 2016) and are still debatable at the moment in time (Dogru & Bulut, 2018). Moreover, referring to the more specific empirical findings between government tourism expenditure (GTEx) and RGDP, in the present study’s observation, only a few empirical studies have been found. Among them are Sharif, Saha, and Loganathan (2017) where the former support bidirectional relationship in ASEAN and the latter supports GTExs leading to income growth in Cyprus.

Keeping in view the contribution of tourism in the world economy and as a potential RGDP variable, the current study aims to investigate supply-side association among RGDP, tourism receipts, and GTEx, since there are still less number of studies available in this area (Kreishan, 2015). The extent of GTEx and tourism receipt on Thai RGDP is empirically investigated, using standard production function of neoclassical growth theory. The exports and other neoclassical variables can also be included to avoid serious misspecifications in measuring the productivity of factors and their contribution in RGDP. In addition, this study facilitates in
estimating the triangular relationships between tourism receipts, selected macroeconomic variables and growth in Thailand. The empirical findings could later be used as a parameter for assessing the selected macroeconomic variables and tourism's impact on the overall economy.

**Literature review**

Having look at the development of production function in neoclassical growth model above, the following section presents the evolution of studies of tourism and exports to RGDP as well as the ideas to incorporate neoclassical growth model in tourism and exports variables to determine the causality relationships. There are two area of theoretical literature explaining the relationship between tourism and growth. One is based on aggregate demand of Keynesian theory where tourism through the multiplier process generates a positive effect on income and employment in a country in a short run. The other one is incorporated tourism sector to the trade and endogenous growth theories. This approach has prompt the pioneer work from Jayaraman, Choong, and Fatt (2018) to examine how tourism connects to the condition of maximization of growth rate by applying Malam et al. (2018) two sectors endogenous growth model to tourism industry. They reveal that the major seed of growth is productivity given that the two measuring goods are not close substitutes to each other. Proposed the idea of tourism led growth (TLG) hypothesis was derived directly from the export led growth (ELG) hypothesis; the latter means that exports expansion contributes instantly to the RGDP (Bojanic & Lo, 2016). Theoretically, it has been argued that exports contribute positively to the RGDP through foreign exchange earnings, enhancing efficiency through competition, exploiting economies of scales and promoting technical knowledge diffusion (Tanna, Topaiboul, & Li, 2018). There are many researches checking the ELG hypothesis for both developed and developing countries. Some of those are: Habibi, Rahmati, and Karimi (2018) on Greece; Tang and Abosedra (2016) on Jordan; Jouini (2015).

There are two branches growing from ELG hypothesis in tourism Literature. One is known as Tourism Capital Imports to Growth (TKIG) (Du, Lew, & Ng, 2016) and the other one is recognized as TLG hypothesis. The former sees that increases in quantity inputs leading to RGDP and is empirically tested in Spain, who then supported the idea. This is confirmed by Sokhanvar (2019) whereby Spain's tourism receipts enable the imports of capital goods for economic development and industrialization since the early Sixties. For the latter (TLG) standpoint, it's very much similar to ELG hypothesis. TLG hypothesis simply means tourism as a nontraditional export apparently causes long run RGDP. As a result, the overall RGDP is triggered by tourism activities. On the other hand, the rapid RGDP of an economy is said to be able to attract domestic and foreign tourists thus causes growth led tourism. Even though TLG is directly derived from ELG hypothesis, the studies on this subject are rather limited Kreishan (2015) due to the new interest in investigating the relationship between tourism and RGDP. As mentioned previously, thus far there is little theoretical literature on TLG hypothesis but on the other hand more empirical papers can be found (Dogru & Bulut, 2018). Tang and Abosedra (2016) appeared to be the first to examine TLG hypothesis, followed by Chang and Lee (2017) on Greece, Hatemi (2016).

Whether it is tourism growth causing RGDP or conversely, RGDP leading to tourism expansion is still debatable at the moment in time (Dogru & Bulut, 2018).

From the long-term perspective, ELG hypothesis supporting tourism in the sense that the latter would also lead to the long run growth based on several contentions. First, (as mentioned before in the earlier section) the foreign exchange earnings from tourism activities can be used to import capital goods or raw materials as inputs for the local production leading to RGDP. This is proven in Tunisia where capital accumulation has provided an impressive impact on its economy; Second, the increase in international tourism has stimulated the local industry to increase efficiency in order to compete with enterprises from other countries, thus leading to increasing income and RGDP; and lastly, the tourism industry enable local firms to tap
economies of scale (Hatemi, 2016), thus leading to higher production, cost efficiency and GDP.

In the context of neoclassical theory, an initiator who incorporated production function to investigate ELG and TLG on Mauritius. He uses the variables such as physical and human capital, disaggregated export in his study. The other researchers who follow his footsteps are Dogru and Bulut (2018) and Kreishan (2015). Shafiullah, Selvanathan, and Naranpanawa (2017) incorporate production function framework in the model to investigate which three components of exports namely manufacturing, semi manufacturing and primary exports contribute to GDP in Pakistan from 1972-2005. They run Johansen cointegration, ECM and Toda and Yamamoto Granger causality. Semi-manufactured exports and manufactured exports are found to have long run and contemporaneous effects on GDP in Johansen cointegration tests. ECM results show that manufactured exports are more responsible to generate growth in the short run in Pakistan.

Using a neoclassical growth model, employed three statistical techniques, i.e. VAR, OLS, and VECM to assess if GDP in Mexico is led by its imports or exports during 1960-2007. The study used real GDP as the dependent variable and gross capital formation as the independent variable and a proxy for capital, and X, L, and M represent real exports, labor force, and real imports, respectively. Results obtained from OLS show valid ELG. Whereas, the VAR analysis revealed a two-way causal relationship between real GDP and imports. In addition, K and L also hold causal relationship with Y i.e. causality running from K and L towards Y, where Y represents real GDP. The VECM analysis is also performed to assess the growth hypotheses proposed in this study, the result for VECM also supports the hypothesis that the GDP in Mexico is led by L and M.

Scholar also studied that whether any causality exists between real exports (RX), human development (HD), GDP (RGDP), and real physical capital (PC) in Pakistan during 1970-2009, using Augmented Granger causality and ARDL framework to assess trivariate, bivariate and tetravariate causality. The results of ARDL approach shows that the use of HD index may enhance the robustness of the regression model. Empirical findings suggest that export led growth does not exist in Pakistan rather exports is found to be driven by the level of growth, the study also reported a human based endogenous growth in the long-run. The causality test shows that GDP Granger cause RX, whereas for HD and GDP’s causal relationship, the trivariate, tetravariate and bivariate tests indicated the acceptance of null hypothesis, thereby implying that there is no causal relationship running from HD to GDP. For tetravariate causality among RX, HD, GDP and PC, the results reveal that a causal relationship exists from PC to GDP. Thus, the empirical findings indicated the rejection of human capital and export led growth hypothesis, rather, the exports in Pakistan is found to be driven by its growth.

The Cobb-Douglas production function can be developed by adding tourism, government expenditure, and exports into the model as additional variables, where tourism is a non-standard type and export is a standard type of exports. Such as, this function has also been expanded by Tang and Abosedra (2016) for the purpose of integrating tourism with the standard production inputs, i.e. human capital and physical capital. In this regard, Brida, Cortes-Jimenez, and Pulina (2016), proposed an empirical perspective, i.e. the Cobb-Douglas function, which is distinguished by returns to scale, is a simple theoretical framework to be used in the empirical researches. Therefore, this study intends to measure the causality between neoclassical production function, GDP and tourism in the context of Thai economy.

For a very long time, the developed as well developing economies’ policy makers and economists have been anxious about the contribution of government expenditure in GDP. There are two fundamental arguments, according to the first point of view, government spending is a national income outcome and is an endogenous factor. This perspective is referred as the Wagners’s Law. The second is the Keynesian perspective, according to which government spending contributes to the GDP and is viewed as an exogenous factor. Thus, the Keynesian theory and Wagner’s Law are the two fundamental arguments regarding the
direction of government spending and RGDP relationship. Therefore, one of these economic theories, i.e. Wagnerian and Keynesian holds in this study. According to Aregbeyen and Kolawole (2015), if the causal relationship runs from national output to government spending then government tourism spending tend to has a passive role in the economy whereas, if the causal relationship runs from government spending to national output, then government spending is said to be a significant policy variable.

For a very long time, no specific model is identified for determining the RGDP and government spending relationship. Adam Smith and a few other classical economists directed their attention to the inclination of long-term government expenditure trend, but no effort has been made to develop a general theory for measurement. After hundred years, a German economist, initiated and formulated a simple model for estimating government spending. In Wagner’s view, government spending is a growth outcome and is an endogenous factor. Therefore, with an increase in per capita income, the significance of public sector also increases, which implies that inevitable features of a growing state are of significant importance (Simon, 2019). Wagner is a pioneer in identifying positive relationship among the size of government and level of economic development. Thus, the formulation of Wagner’s view makes the Wigger’s Law which was first introduced in late 19th century. The major contribution of Wagner’s law is its generalization about government spending, by making direct inference from the historical evidence. According to this law, there is a long-run tendency of public spending to growth in comparison to national income or GDP. The Wagner’s law has also been supported by several time series analyses and other empirical evidences.

Keynesian theory is a contradictory theory to Wagner’s law. The Keynesian theory is based on the role of government in response to aggregate demand, during the period when economy is experiencing stagnant or declining growth. Hein (2017) believed that government spending has the ability to significantly contribute to the RGDP by increasing the aggregate demand. Resultantly, the use of expansionary fiscal policy increase incomes and economic activities and reduce unemployment. According to Hein (2017), an increase in government spending, also brings an increase in national income. Thus, the direction of causal relationship in Keynesian theory is from government expenditure to the national income. Considering this, government expenditure acts as a significant tool for stimulating the process of RGDP and is an important exogenous factor. However, it is not a government growth theory, rather an appropriate economic stabilization theory. Several developing countries’ experiences have supported the Keynesian proposition about RGDP, which occurred as a result of these countries implementation of expansionary fiscal policy in their economy and by analyzing the trends of RGDP. However, this theory does not necessarily applicable on all the economies at all times, and is found to be applicable to only few developing economies. Therefore, these theories and policies must only be used and implemented by the governments and policy makers.

Tourism Impacts and Economic Significance

The tourism industry involves many different segments of the population to provide a great significant value to the economic activities. Since tourism is an integrated system in the economy (Liu, Huang, & Fu, 2017), it is said to have close connection with other economic activities, thus enable it to stimulate the global economic system via tourism economic impact multipliers. The tourism economic impact multiplier starts with the expenditures of tourists for goods and services such as accommodations, food and beverage, and shopping in an itinerary that shows direct contribution to the hotel, restaurants and retail stores (referred as direct impact). These tourism direct related sectors will then pay workers’ salaries and wages for the supply of services and purchasing of merchandises from other business sectors in the economy to be used in the businesses (indirect impact). The workers who receive the money from tourism direct related sectors then purchases goods and services with the income. The business enterprises which get the money from tourism direct related sectors, on the other hand, would purchase the supplies from other business sectors which is not related directly to
the tourism activities in the region (induce impact), thus creating a chain effect in the economy. The cumulative result is the impact of tourist expenditures in the economic system (Berzina & Lauberte, 2018). When additional money is brought in by tourists to the host area, it induces extra business activities in the area and creates more activities such as sales, employment, income, and government revenue in term of taxes in the area. This process will lead to the multiplier effect in the economy.

The main economic significance from the tourism multiplier effect to the host in the tourists itineraries is whereby the tourists use their monies earned at the place of origin and spent in the places they visited in the form of tourist expenditures. The flow of money from tourist expenditures is recycled and respent in their itineraries, thus results in the income increases by a greater amount than itself, this is known as the multiplier effect. The size of the multiplier effect depends on how much and how many times the original income is re-spent at each stage as well as the level of savings and imports as leakages through purchases (Holden, 2016).

In terms of tourism contribution, it can generate effects to the macro and micro economic. One of the significance of tourism industry is to provide jobs to the local residents. Tourism creates jobs not only for its own sector but also to the other sectors in the economy as it is interdependent with other services sectors such as hotels and restaurants, wholesale and retail trade, transports, etc. Besides, being sources of income and employment generation (Dodds & Ko, 2016), transportation systems, shopping and entertainment facilities, and also other public facilities. Therefore tourism enable not only the places of destinations to enjoy extra source of income, favorable balance of payment, job employment, infrastructure and amenities (Pillmayer & Scherle, 2014), better and higher standard of living.

Government Expenditure and Tourism

It is unavoidable to engage tourism with public economics and environmental economics due to market failures in the industry because it relies, to a great extent, on natural or man-made environments. This is where government comes in. The role of the government is important as it ascertains that the country achieves prosperous RGDP and is always in a state of stability. Specifically, government plays an important role in the development of tourism Nawaz and Hassan (2016) as it recognizes the crucial function of tourism towards an economy and therefore is trying to exploit its potential (Brida & Zapata-Aguirre, 2009). This includes preparing efficient transportation infrastructure; safeguarding the country’s political stability to guarantee tourists safety; providing conducive environment for private sectors to grow and flourish as well as formulating effective tourism strategies and planning for the development of the sector. Loutif, Moscardini, and Lawler (2000) find that in the competitive world, the most crucial features for a country to fight for in order to get the market share are the infrastructure and resources. That is why one must not forget that to develop tourist attraction area, as according to author, requires a significant budget from the government to provide basic facilities and infrastructures in the first place. Government in practice finances a large part of infrastructure required for tourism (Rasoul, 2017).

There are many economic factors that encourage government to support and finance tourist related activities such as favorable balance of payment, regional development, diversifying the economy, higher income levels, increased government revenue (taxes) and new job opportunities (Pearce, 1991). For instance, direct involvement of the government in setting up tourism and hospitality facilities in Kenya in the 1970s and the 1980s has resulted in the speeding up of the development of that industry (Nawaz & Hassan, 2016). The basic behavior of government in its public finance or fiscal policy is that initially it spends money and collects it back as revenues later. However, government does more than spend and collect tax. Researcher examine Wagner’s law and Keynesian approach based on annual data from 1970-2006 in Thailand by using Auto Regressive Distributed Lag (ARDL). They use both bivariate and multivariate model to study two scenarios: one relating aggregate government expenditure and GDP and another relating government spending on education and GDP. Bivariate reveals
Wagner’s law is supported while in multivariate framework, Keynesian hypothesis is suggested. They conclude that omitted variables bias can significantly change the validity of Wagner’s law. Incorporating two dimensions of government namely size proxied by government expenditure and quality proxied by government in neoclassical production function, Cooray (2009) intended to determine the role of government in RGDP on a cross section of 71 countries ranging from developed, developing and transition nations between 1996-2003. He found that both the size and quality of government are crucial for economic expansion. In other words, the increase of government expenditure and good governance can lead to RGDP. Besides, human capital is also found to be of positive statistical significant affecting RGDP. Employing Douglas production function, scholar measure the effect of capital formation on RGDP in western China and make comparison with eastern and central regions. They adopt variables closely related to capital formation such as local fiscal expenditure, central government investments, loans, equity financing, FDI and private investment. Prior to OLS approach, they examine the data from 1992 to 2006 using unit root and cointegration tests to avoid spurious regression.

Model specification
With respect to chronology, the pioneer outstanding paper in growth theory was written by Ramsey in 1928 dealing with utility function and individual inter-temporal optimization. After Ramsey, late in 1950s, Nilofer and Qayyum (2018) and Greiner, Semmler, and Gong (2016) appeared to relate Growth Theory with Keynesian analysis. Their contribution seemed to be appreciated by the economists of post Great Depression era, but the current literature does not take into account this approach. The most significant contribution to the growth literature was developed by Aniket (2018), though in the same year they were independent of each other and the models were published in different journals. The former was in the US and the latter was in Australia. They observed that growth relied on labour and capital which in turn determined technological change. In the growth literature, their models are said to be the most outstanding which involve neoclassical production function with constant saving rate, constant returns to scale, diminishing returns for inputs such as labour and capital, and positive substitution rate between inputs. After Aniket (2018), the next model developed in growth theory was known as the Diamond model. They adapted Ramsey’s analysis and accounted saving as internal in the model. This model makes sure that the worker and capital’s productive factors are rated based on their marginal products, this is very much similar to decentralized competitive structure. The next model involved in Growth Theory was introduced by Teece (2018) about increasing return to scale generated by production and investment. The ideas arose based on the learning by doing concept which stemmed from innovation that spilled over to the rest of the economy. Ramlan and Ram (2018) and Malam, Abba, and Hassan (2018) entered with their reinvented RGDP theory with their short run macroeconomic problem investigation, long run growth, and replaced ‘new growth theories with internal technological developments’ with ‘neoclassical growth models with external technological developments’. In the early 1970s, the growth models had been ignored due to the models undertaken technically and therefore the connection with empirical studies stopped. Meanwhile, the short run macroeconomic fluctuations became the focus of attention. The breath of growth models were shaped by Ramlan and Ram (2018) and Malam et al. (2018). The models did not regard technological change, treated growth as infinite as there were new types of capital involved and these new factors of production did not work according to the law of diminishing returns. Between 1987 and 1990, Romer was involved in research and development (R&D) and imperfect competition in the growth models. In addition, Kung and Schmid (2015) had also contributed R&D factors to the models that brought forth monopolistic power. It is said that positive long run growth would hold if the innovation and creative information goes along in the economy. This study relates Cobb Douglas Production Function with growth theory from Aniket (2018), Hamdan (2016) and Chow (2017). In economics, the function that explains the
relationship between an output and inputs can be represented by Cobb-Douglas production function. Initially, Knut Wicksell (1851-1926) proposed this function and later in 1900-1928, Charles Cobb and Paul Douglas tested it with statistical evidence. For the empirical specification, the first model, neoclassical aggregate production function is used as a platform to show that physical capital, human capital and labour enter as inputs in the general production function as:

\[ Y_t = A_t f(PK_t^\alpha, HC_t^\beta, L_t^\gamma) \ldots (1) \]

Where \( Y \) denotes the real GDP, \( PK \) denotes domestic physical capital, \( HC \) is human capital, \( L \) is labour force and \( A \) is measure of Hicks-neutral technological progress that also represents multifactor productivity.

\[ y_t = A_t^* P_k^\alpha \cdot \left( \frac{hc_t}{L_t} \right)^\beta \ldots (2) \]

\[ y_t = A_t PK_t^\alpha + HC_t^\beta \ldots (3) \]

where \( y_t \) is the output per labour, \( P_k^\alpha \) is physical capital per labour and \( hc_t^\beta \) is human capital per labour. The second model is the framework from Feder (1983). According to Feder (1983), the economy consists of two sectors such as export \( X \) and non-export \( N \) and each of the sectors has different production function, which requires both the capital \( PK \) and labour \( L \) to produce the output as shown in (4) and (5) respectively

\[ N = Af(PK_N, L_N, X_N) \ldots (4) \]

\[ X = Af(PK_N, L_N) \ldots (5) \]

The study extends the existing literature by building on Feder’s model on export \( X \) and non-export \( N \) sectors. The model is then written as:

\[ y_t = Af(pk, hc, X, N) \ldots (6) \]

This study sees tourism receipts (TR) as a non-export item and substitutes TR with N in equation (7) to become:

\[ y_t = Af(pk, hc, X, TRC) \ldots (7) \]

A few researchers have attempted to trace and capture this phenomenon by integrating tourism into aggregate production function (Dogru & Bulut, 2018; Kreishan, 2015). Thus, TLG hypothesizes that tourism expansion provides a significant contribution to RGDP. The relationship between government spending and RGDP in this study is based on a framework analogous to Ram (1986). His two-sector production function is based on original Feder (1983) exports and RGDP model. Ram (1986), followed models who assumes that the economy consists of a government (GOV) and a non-government (NGOV) sector:

\[ NGOV = NGOV(PK_N, L_N, GOV) \ldots (8) \]

\[ GOV = GOV(PK_N, L_N) \ldots (9) \]

GTEx (denoted as GTEx) is added as another independent variable while human capital, on the other hand, is further divided into government expenditure on education (GEEx) and health (GHEEx). When taking all the mentioned variables into consideration and arranging according to the priority, the model of the study becomes:

\[ Y_t = \vartheta_0 + \vartheta_1 TRC_t + \vartheta_2 GTEx_t + \vartheta_3 GEEx_t + \vartheta_4 GHEEx_t + \vartheta_5 X_t + \vartheta_6 PK_t + \varepsilon_t \ldots (10) \]

To determine the RGDP with respect to a linear logarithmic production function is used. Thus model (3.9) has becomes (3.10) as follows:

\[ GDP_t = \vartheta_0 + \vartheta_1 TRC_t + \vartheta_2 GTEx_t + \vartheta_3 GEEx_t + \vartheta_4 GHEEx_t + \vartheta_5 X_t + \vartheta_6 PK_t + \varepsilon_t \ldots (11) \]

**Measurement**

**RGDP (Y)** is specified using Real GDP per capita as a proxy for economic expansion. It is one of the most used macroeconomic indicators for measuring growth (Barro & Sala-i-Martin, 2004; Mankiw, Romer, & Weil, 1992) Tourism Receipts (TR): Real tourism receipts (TR) is used as a proxy of tourism growth (Adamou, Clerides, & Zachariadis, 2010; Dogru & Bulut, 2018). TR is preferred as compared to tourist arrivals because it is a universal measured consistent index collected by national and international agencies. In addition, it contains monetary transaction values well corresponding with GDP. A positive sign in TR is expected since it is a nonstandard type of exports which contributes in tourism receipts from foreign tourists. **government tourism**
expenditure (GTex) is proxied by real GTex. A positive sign is expected in G since government earnings are injected into the economy as government expenditures. **Physical Capital (K):** Real gross fixed capital formation per labour is used as a proxy of physical capital (K). Real gross fixed capital formation measures both private and public national investment (Bermejo Carbonell & Werner, 2018). It has been used in the study by Makhetha and Rantaoeng (2017) and Sakyi, Commodore, and Opoku (2015). The expected sign for K is positive since based on the Neoclassical Growth Theory, K is the important determinant of growth. **Human Capital (H):** In this study, human capital investment is proxied by government operating expenditure on education (He) (Ramlan & Ram, 2018); as well as government total expenditure on health (Hh) Ramlan and Ram (2018). The rationale is that an increase in government spending on human capital development such as education and health is expected to increase the output in the economy since they increase the productivities of the workers. For instance, spending on education on one hand, enable the national to acquire skills to become knowledgeable nation; spending on health on the other hand will lead to healthy and fit labour forces to increase the higher level of productivity (Mostepaniuk & Parish, 2019). **Exports (X):** Real manufacturing exports is used as a proxy of exports (X). This variable has been used in the studies by Shafiullah et al. (2017) and Kreishan (2015) among the few. The expected sign of X is positive since X is a standard type of exports of goods contributing through foreign exchange, production efficiency through competition and economies of scale.

**Method**

Many economic time series are non-stationary but there may still exist the long run relationship between those non-stationary variables. According to Asteriou and Hall (2015), cointegration means non-stationary variables are integrated in the same order with residual stationary. Having tested the series for unit root and identify the order of integration, Wang, Fang, and Zhou (2016) is employed for the studies when testing more than two series. This multivariate approach is the most popular in cointegration methods as it is able to estimate several cointegration relationship at a time. Johansen cointegration method is of great importance to time series data because it is capable to test for the number of cointegrating vectors (r) existing between a number of time series (n) as well as it permits the researchers to test on these vectors based on selected restrictions. In other words, by using this method, researchers are able to perform a few tasks at once from a set of non-stationary series, i.e. besides estimating and testing the equilibrium relationship, the researchers can also abstract short run deviations from the equilibrium. As for the long run relationship, it would appear between a set of I(1) variables with one or more cointegrating vectors Wang et al. (2016). The following methods are used to tests for the cointegration long run relationship between GDP, tourism receipts, government revenue, physical capital, education, health and exports. Two non-stationary variables are said to be cointegrated if they are integrated in same order plus the existence of one or more linear combinations between them are stationary. Since the two series are cointegrated, they are prevented from drifting away from one another in the long run and there is a pressure to converge them into long run equilibrium. If cointegration is found in the series, then one should apply VECM to test for the Granger causality to avoid misspecification problems (Granger, 1988). The VECM is a multivariate dynamic model that comprises a cointegrating equation. If the variables are stationary but not integrated, VECM should not be applied but instead Vector Autoregressive (VAR) model should be used to examine the dynamic relationship between the variables. VECM imposes cointegration on its variables which is a special case of VAR that enables the researchers to differentiate between short run and long run Granger causality. To refrain from misspecification and neglecting the important constraints, relevant error correction terms (ECTs) must be included in the VAR, n the case where cointegration is nonexistence, the standard first difference vector VAR model is adopted. The VAR models will be the same as the above except that ECT must be elimination from both the equations. This indicates that only short run causality information can be checked.
\[
\Delta GDP_t = \phi_{01} + \sum_{i=1}^{p} \phi_{11} \Delta GDP_{t-i} + \sum_{i=1}^{p} \phi_{21} \Delta TRC_{t-i} + \sum_{i=1}^{p} \phi_{31} \Delta GTE_x_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta GEEx_{t-i} \\
+ \sum_{i=1}^{p} \phi_{41} \Delta GHEx_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta X_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta PK_{t-i} + u_{it} \quad \ldots \quad (12)
\]

\[
\Delta TRC_t = \phi_{01} + \sum_{i=1}^{p} \phi_{11} \Delta GDP_{t-i} + \sum_{i=1}^{p} \phi_{21} \Delta TRC_{t-i} + \sum_{i=1}^{p} \phi_{31} \Delta GTE_x_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta GEEx_{t-i} \\
+ \sum_{i=1}^{p} \phi_{41} \Delta GHEx_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta X_{t-i} + \sum_{i=1}^{p} \phi_{41} \Delta PK_{t-i} + u_{it} \quad \ldots \quad (13)
\]

**Results**

The calculated t-statistic of ADF test is higher than the critical value of ADF test statistic at 1 per cent level of significance, this implies that the null hypothesis of unit root for GDP, TRC, GTEx, GEEx, GHEx, X, and PK cannot be rejected at 1 per cent level of significance for constant. 1st difference tests results from ADF indicating that GDP, TRC, GTEx, GEEx, GHEx, X, and PK are stationary after first differencing at order one.

**Table 1.**

<table>
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<tr>
<td>1</td>
<td>-624.659</td>
<td>166.047*</td>
<td>5.24e+10*</td>
<td>41.667</td>
<td>43.590*</td>
</tr>
<tr>
<td>2</td>
<td>-585.566</td>
<td>46.418</td>
<td>5.58e+10</td>
<td>41.473*</td>
<td>45.046*</td>
</tr>
</tbody>
</table>

To answer the second research objective, the results of short run Error Correction Model for RGDP is presented in Table 2.

To establish the existence of long run relationship among these variables, a cointegration test by Johansen with two test statistics, namely trace statistic and maximum eigenvalue statistics are performed. The null hypothesis indicates the variables in the study are not cointegrated. To reject the null hypothesis requires the cointegration test of trace and maximum eigen values to be greater than at least one from the critical values. Thus, failing to accept the null hypothesis of no cointegration draws the conclusion that the long run equilibrium relationship between RGDP and its explanatory variables over time do exist. Moreover, the p-value is 0.09 which is greater than the 5 per cent level.

**Table 2.**

<table>
<thead>
<tr>
<th>Johansen cointegration test</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( GDP_{t-1} )</td>
<td>0.0177***</td>
<td>0.0089**</td>
</tr>
<tr>
<td>( TRC_{t-1} )</td>
<td>0.0198**</td>
<td>0.0170</td>
</tr>
<tr>
<td>( GTE_{t-1} )</td>
<td>0.0254**</td>
<td>0.0243**</td>
</tr>
<tr>
<td>( GEEx_{t-1} )</td>
<td>0.0222**</td>
<td>0.0284*</td>
</tr>
<tr>
<td>( GHEx_{t-1} )</td>
<td>0.2138**</td>
<td>0.0633**</td>
</tr>
<tr>
<td>( X_{t-1} )</td>
<td>0.0254**</td>
<td>0.3214*</td>
</tr>
<tr>
<td>( PK_{t-1} )</td>
<td>0.0222***</td>
<td>0.4633**</td>
</tr>
</tbody>
</table>

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Conclusion

Tourism receipts result in a double effect in Thailand where it is not only contributing to tourism-led growth but also the multiplier effect in the country. For instance, when tourists pay for goods and services such as accommodations, food and drinks, and shopping in a destination, the money is directly contributed to the hotel, restaurants and retail stores (direct impact). These tourism direct related sectors then pay the workers’ wages in payment for the supply of services, besides paying for the merchandises purchased from other business sectors in the economy to use in their businesses (indirect impact).

In relation to government operating expenditure on tourism, it shows that tourism attractive policies to enhance RGDP implemented at present are effective. Moreover, according to Osoba and Tella (2017), operating expenditure contribute more than capital expenditure. Thus channeling funds to this sector should not be stagnant but to continue and increase further as the country’s RGDP does not come from physical capital, human capital or exports alone, as show in the findings, it also stems from GTEx. The efficient utilization of government budget to promote RGDP is an important policy objective (Chirwa & Odhiambo, 2016). This may further suggest that the government should continue with the improved tourism policies with more budget allocation to attract and meet the demand from the international tourists in order to enhance further growth. For instance, more funds should be injected into tourism to promote Thailand to other countries, and to support the attractive tourism activities and packages.

Developing efficient physical capitals is important to a country. This is seen in the Granger causality results from physical capital to RGDP in both the short and long run. This implies that the government and private sectors have to play an important role by providing more funds to the development of physical capital to support the economic activities in Thailand. To secure a sustainable long run RGDP, the only method is to manage the development of sustainable infrastructure in the right way. This is because the amount of capital invested by the government and private sectors permit greater production, efficient transportation, industrialization, greater markets as a result of population expansion, more favorable terms of trade and technical progress to occur. Therefore, higher capitals facilitate greater RGDP. On the other hand, Granger causality from RGDP to physical capital is also found in the short run, suggesting that Thailand should strive to achieve robust RGDP in the first place in the short run.

In general, though the study does not differentiate the value of capital stock between private and public sectors, the study is able to obtain a fairly reliable measure of the trend in fixed investment in Thailand.

References


Hein, E. (2017). The principle of effective demand: Marx, Kalecki, Keynes, and beyond The Routledge Handbook of Heterodox Economics (pp. 84-100); Routledge.


