

The Impact of Export Diversification on Economic Growth: A Comparative Study

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ABSTRACT

Gross Domestic Product (GDP) is a measurement of economic growth in any country because it represents income of the country. One major component of GDP is exports. Therefore, exporting is an important pillar through which economic growth can be achieved. Nevertheless, the kind of export growth plays an important role in accelerating the economic growth rate. The previous scholars long-argued each other on this kind of exports whether export diversification or export concentration. Export diversification was the key success of economic boom in Asian countries, where the export diversification policy has been adopted over the last five decades with fruitful economic returns. On the other hand, Central American countries applied different diversification programs such as, nontraditional farm-raised shrimp, textile and cut flowers in the early 1970s to the mid-1990s. However, they could not attain the stabilization in their export earnings. In Africa, natural resource-based products have dominated exports for the last five decades, but concentration on such products could not make these African countries richer. Consequently, this paper tries to examine the real impact of export diversification policy on economic growth by testing the hypothesis of *export diversification-led growth strategy* using the most common measurement of export concentration, Hirschmann-Herfindahl index, through the comparison between panel data of different countries; mainly from Africa, Central America, and East Asia, using Generalized method of moments (GMM) through the period starting from 1980 until 2012, and based on Eviews package.

Keywords: Export Concentration and Diversification, Labor Productivity, Gross Domestic Product, Hirschmann-Herfindahl index.

1. Introduction

Gross Domestic Product (GDP) is a measurement of economic growth in any country in the world because it represents the income of the country. One major component of GDP is exports. Therefore, exporting has been an important pillar through which economic growth can be achieved. However, the kind of export growth plays an important role in accelerating the economic growth rate. One Particular type of export growth which facilities export performance, maintains export earnings, and sustains economic growth. Hence, the majority of the pervious literature, export diversification has been proven theoretically and empirically to be the effective remedy for these uncertainties due to its pivotal role in avoiding the shortfalls in export concentration such as investment risks, highly increased volatility in the exchange rate, and extreme price and volume fluctuations by diversifying the number of exporting commodities and increasing the number of exporting sectors rather than depending on a limited number of commodities in the export basket (Herzer and Nowak-Lehmann 2006). Thereby, an economy can achieve higher rates of export and overall economic growth and economic.

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The important role of export diversification can be proved in the light of East Asian “Tigers” -- China, Japan, Singapore and South Korea, where the export diversification has been adopted over the last five decades with fruitful economic returns. On the other side, Central American countries such as Costa Rica, El-Salvador, and Guatemala applied different diversification programs such as, nontraditional farm-raised shrimp, and textile and cut flowers in the early 1970s to the mid-1990s. However, they could not attain the stabilization in their export earnings. In Africa, natural resource-based products have dominated exports for most countries such as Nigeria, and Egypt, but concentration on such products could not make these African countries richer.

In that regard, this study tries to investigate the real impact of export diversification policy on economic growth by testing "*diversification-led growth strategy*" hypothesis that export Promotion strategy accompanied by export diversification policy has a robust positive impact on the economic growth rather than export promotion strategy alone through the comparison between number of African countries (Algeria, Egypt, Tunisia, and Morocco) and central American countries (Costa Rica, El-Salvador, Guatemala, and Honduras) and Asian countries (China, Japan, South Korea, and Singapore) using the most commonly used measurement of export concentration, Hirschmann-Herfindahl index, and by applying panel data model based on Generalized method of moments (GMM). Thus, the next section revises the empirical literature, while the third section provides the data and methodology and then the fourth section shows the results, while the last section provides the discussion and conclusion.

2. Overview of the Empirical Literature

Export growth plays an important role in the economy due to its effect on trade growth and economic growth. Therefore, the sustainability of the export growth rate is an eligible target for any country. The globalization phenomenon and openness to trade under uncertain circumstances, such as the collapse of Second World War in 1950 and global financial crisis in late 2008, may introduce uncertainties and fluctuations in export earnings which discourage investment opportunities. Discouraging investment opportunities leads to instability in export growth which in turn reflects negatively on economic growth.

Since export diversification is associated with a shifting from traditional and primary products to manufactured products, it is able to overcome the problems involved with inelastic global demand for primary exports such as increasing trade volatility (Munemo 2013). Moreover, Herzer and Nowak-Lehmann (2006) found that an economy can avoid investment risks, extreme prices, and volume fluctuations by diversifying the number of exporting commodities and increasing the number of export sectors rather than depending on a limited number of commodities in its export basket. Agosin (2009) added that introducing new capital products spurred the productivity enhancement and technological advance. While exporting one or few products highly increases the exchange rate volatility which leads to instability in export earnings.

In the same context, endogenous growth theory hypothesizes that export diversification affects long run economic growth based on returns of scale and dynamic spillover effects. Herzer and Nowak-Lehmann (2006) listed these benefits to include learning new technologies, providing labor training along with learning efficient management styles, improving organization forms, and marketing skills.

Empirically, Matadeen (2011), and Kadyrova (2011) demonstrated that export concentration negatively affected economic growth by adding the export concentration index as an explanatory variable along with labor and capital in the augmented Solow growth model. On the other hand, Agosin (2009) argued that export diversification has a robust effect on the economic growth when exports are growing rapidly. He proved this argument by developing an interaction variable of export diversification and the per capita export growth rate which is much more significant than export diversification alone.

Hammouda and et al. (2010) investigated the knowledge spillovers benefits by examining the impact of export diversification on total factor productivity using panel data of African countries. They concluded that the total productivity of both labor and capital

increases as long as the level of diversification rises. Furthermore, Herzer and Nowak-Lehmann (2006) tested the hypothesis of export diversification externalities assuming that public knowledge is a function of number of export sectors and share of manufactured exports in total exports, and using the augmented Cobb-Douglas production model in the case of Chilean economy. They found that Chile depended on natural resource-based diversification strategy; however the natural resources will gradually run out. Additionally, they claimed that economic growth could be achieved by increasing the share of manufactured exports and the level of the technological contents.

In the same line, Stanley and Bunnag (2001) reported that, although Central American countries, specifically Costa Rica, El-Salvador, Guatemala, and Honduras, have applied different diversification programs such as fresh fruit and vegetables, nontraditional farm-raised shrimp, and textile and cut flowers in the early 1970s and mid-1990s, they could not stabilize their export earnings. Furthermore, this concentration in few new manufactured products enabled them to achieve stabilization more easily than pursuing diversified agricultural products.

In this point, Bebczuk and Berrettoni (2006) confirmed the importance of diversification in new sectors, especially which require intensive levels of technology, and the necessity of understanding the reasons behind the failure of diversification strategies in some regions of Central America. Moreover, Many researchers, for instance Dutt et al. 2011 and Mah (2011), have assured that export diversification with export structure transformation to the manufacturing sector was the key success of the export-led growth strategy in Korea, and moreover, it led Korea to be considered as one of the East Asian tigers and a benchmark for many developing countries.

Apparently, Scholars have long-established that diversification of manufactured products with high levels of technological content is remarkable element for the success of export diversification policy and a very discriminating element for explaining the differences among exporting countries.

3. Data and Methodology

3.1 Data

Export items data classified by Standard International Trade Classification (SITC ver 3) at 2- digit level according to Harmonized Commodity Description and Coding System (HS/K). The data has been collected from the World Trade Organization for all countries and used in calculating the export concentration index, Hirschmann-Herfindahl index (HHI), for each country by taking the sum squared of export share for a certain product to total exports as the following:

$$HHI_{jt} = \sum_{i=1}^n \left(\frac{x_{ijt}}{X_{jt}} \right)^2 \quad (1)$$

Where x_{ijt} is the value of export for category i of country j in year t , X_{jt} is the value of total exports of country j in year t , and n the number of categories. Hereafter, export diversification index has been calculated by subtracting one from HHI, as $(DIVI = HHI - 1)$ as the inverse of the export concentration index.

3.2 Methodology and Analysis

The export diversification process has been investigated by a number of studies in the last few decades. Most of these studies have contended a positive relationship between export diversification and economic growth, (e.g Al-Marhubi 2000, Herzer and Nowak-Lehmann 2006). In particular, Agosin (2009) claimed that the effect of the export diversification on economic growth is stronger when the exports are growing rapidly than the effect of export diversification policy alone. He proved this argument by developing an interaction variable between the Export diversification index and per capita export growth rate. Therefore, this study tries to extend the existing literature by examining the hypothesis that the export promotion strategy accompanied by the export diversification policy has a

robust positive impact on economic growth rather than an export promotion strategy alone by developing an interaction variable between the annual export growth rate and the export diversification index in a model has been developed from augmented Solow growth model, which simply assumes that output is a function of capital and labor (Solow 1956). In this model Gross Domestic Product per Capita (GDPC), as a proxy of economic growth, is regressed on the explanatory variables which are Labor Productivity (LABPR), Gross Capital Formation growth rate (GCFT), annual export growth rate (XPT), an interaction variable between annual export growth rate and export diversification index (XPT*DIVI). For the data consistency, and better economic interpretation some variables have been transformed into natural logarithms which help approximated them very simple (Hill, Griffiths, and Lim 2012); thus in the following discussion; LLABPR and LGDPC denote the natural logarithms of GDP per capita which represents at the same time the average annual rate of GDP per capita growth rate.

In order to allow the individual effect of cross sections that controls the unobserved variables and explain the dynamic effect of the explanatory variables (Judson and Owen 1996), the panel dataset model, that covers 12 countries for the period 1980-2012, has been employed based on Two Stage Least Square (TSLS) with fixed effect estimator which latter differs across the countries, the model can be expressed in the following equation:

$$\text{LGDPC}_{i,t} = \alpha_i + \beta_0 \text{LGDPC}_{i,t-1} + \beta_1 \text{LLABPR}_{i,t} + \beta_2 \text{GCFT}_{i,t} + \beta_3 \text{XPT}_{i,t} + \beta_4 \text{XPT} * \text{DIVI}_{i,t} + e_{i,t} \quad (2)$$

Where the constant α_i is different for each country, and $e_{i,t}$ error term.

Potentially two types of endogeneity problems are exist in this regression. First, the model includes a lagged dependent variable ($\text{LGDPC}_{i,t-1}$) as the explanatory variables which are correlated with the fixed effects (α_i) in the error term ($e_{i,t}$). Blundell and Bond (1998) proposed that standard estimation procedures such as the OLS and the TSLS produce biased estimates of parameters in this case, and suggested that the system Generalized Method of Moments (GMM) method should be used. Second, other explanatory variables may be correlated with the error term, hence, Arellano and Bover (1995) cast that within the system of GMM, the lagged levels and lagged differences are used as instruments after composition of first differenced equations in which the fixed effects of country are removed. Therefore, in order to deal with those problems, the study also employed the GMM system.

4. The results

The export diversification-led growth hypothesis has been tested and the estimation results of Two Stage Least Square (TSLS) and the system of Generalized Method of Moments (GMM) in equation (2) are shown in Table 4. As can be seen, the results of two methods of estimation suggest a highly significant (at 1%) positive linear relationship between LGDPC and number of the explanatory variables, as well as significant (at 5%) positive linear relationship between the interaction variable (XPT*DIVI), except XPT which shows an insignificant positive linear relationship with the LGDPC through both TSLS and GMM estimations. Hence, the results support the hypothesis of the study that the export growth strategy *alone* does not lead to economic growth but the export growth strategy when accompanied by export diversification policy has a robust positive effect on economic growth.

Table 1 Regression Results: TSLS and GMM

Variable	TSLS	GMM
LGDPC(-1)	1.0254 (0.000) ***	0.8918 (0.000) ***
LLABPR	0.0401 (0.013) ***	0.2458 (0.0121) ***
GCFT	0.000 (0.028) **	0.0005 (0.000) ***

XPT	0.000 (0.484)		0.0000 (0.1719)
XPT*DIVI	0.000 (0.042) **		0.0004 (0.0245) **
Countries Effects			
China	0.0457		
Japan	-0.0185		
Korea	0.0283		
Singapore	0.0081		
Algeria	-0.0134		
Egypt	0.0220		
Tunisia	0.0008		
Morocco	0.0002		
Costa Rica	-0.0021		
El-Salvador	-0.0126		
Guatemala	-0.0039		
Honduras	-0.0693		
Obs	370		356
R-Squared	0.9993	J-Stat	4.75
Durbin-Watson stat	1.965		

Notes: The table reports the coefficients given by models TSLS and GMM. TSLS model uses White cross-section standard error, while GMM uses White period standard error that is shown in brackets. J-test is the test for validity of instruments. Symbols *, **, *** represent the significance levels of 10%, 5% and 1%, respectively.

In order to test the export diversification-led growth hypothesis with consideration of the country characteristic, the countries have been divided into three groups: Asian group (China, Japan, Korea, and Singapore); African group (Algeria, Egypt, Tunisia, and Morocco); Central American group (Costa Rica, El-Salvador, Guatemala, and Honduras). The results are shown in table 2

Table 2 GMM Results: Country Characteristics

Variable	Asian	African	Latin
LGDP(-1)	0.3998 (0.000)***	0.1315 (0.001)***	0.7440 (0.000)***
LLABPR	0.6664 (0.013)***	0.8576 (0.000)***	0.0665 (0.1112)*
GCFT	0.0000 (0.028)***	0.0002 (0.2279)	0.0004 (0.000)***
XPT	0.0000 (0.484)	0.0000 (0.0556)*	0.0008 (0.0747)*
XPT*DIVI	0.0024 (0.042)**	0.0003 (0.172)	0.00135 (0.0735)
Obs	119	124	113
J-Stat	2.0005	6.0002	5.0003

Notes: The table reports the coefficients given by models TSLS and GMM. TSLS model uses White cross-section standard error, while GMM uses White period standard error that is shown in brackets. J-test is the test for validity of instruments. Symbols *, **, *** represent the significance levels of 10%, 5% and 1%, respectively.

As can be seen, the interaction variable (XPT*DIVI) has a significant positive relationship with economic growth in case of Asian but it has insignificant positive linear relationship in case of African countries and Central American countries. However, the (XPT) has an insignificant positive relationship in case of Asian countries and slightly significant (10%) in Central American and African countries. Therefore, this result proved the export diversification-led growth hypothesis, in case of Asian countries only.

5. Discussion and Conclusion

In the last five decades, the export diversification policy has aroused a great debate regarding its tangible effect on economic growth among economic policy planners in general and trade policy makers in particular. Notwithstanding this debate, this policy has been adopted by different countries around the world, however; its effective returns on export and economic growth have been achieved by a small number of countries such as Korea and China.

With the attempt to investigate the real impact of export diversification on economic growth, the study developed a model according to Augmented Solow growth model to test the hypothesis of export diversification-led growth. The results have proved the hypothesis that an export promotion strategy accompanied by an export diversification policy has a robust positive effect on economic growth in case of Asian countries through both methods TSLS and GMM, as the results show an insignificant positive linear relationship with (XPT) and a significant positive linear relationship with interaction variable (XPT*DIVI).

According to the analysis, the study revealed that implementation of the export diversification policy in export sector of Asian countries played a pivotal role in achieving high economic. As from the beginning of the 1960s, these countries could successfully diversify their export baskets by shifting from primary to capital intensive goods, a situation which reduces the dependence on primary products and expands manufacturing activities. This expansion of manufacturing activities also increases technological knowledge and learning, which enables the economy to apply foreign technology. The adoption of new technology enhances the ability to innovate new products in order to achieve international competitiveness and simultaneously increases the level of diversification (Herzer and Nowak-Lehmann 2006; Agosin 2009; Shepherd 2010). While the export diversification policy in number of traditional manufacturing commodities such as farm-raised shrimp, textile in central America, and the export sector of natural resource-based in Africa could not achieve the stability in their exports and thus it affected negatively on economic growth levels. The lacks of well-educated labor force, good institutional and independent financial resources are considered potential barriers for conducting comprehensive export strategies that might achieve the diversity in exporting basket and hereafter maintain export earnings, and sustain economic growth.

In conclusion, the successful implementation of export strategies accompanied by export diversification policy in Asian countries could achieve stability in export earnings and maintain high rates in export growth. Thus, the study proposes that export diversification is the base for a stable export growth which achieves a sustained economic growth.

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