

# Empirical Testing of The Export-Led Growth Hypothesis (ELG): Evidence in Asia and Latin America

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## Abstract

The concept of the export-led growth (ELG) hypothesis has been debated up to date. Mercantilism adherents argue that exports are the driving force of economic growth. According to modern economists, exports and economic growth are causal and only occur for a short time. The exporting process involves the transfer of foreign direct investment (FDI), and its opposite is the ELG. Meanwhile, ELG does not apply the economic growth increase of industrialized/large countries since it increases FDI inflows, technological developments, and infrastructure improvements. Therefore, increasing the efficiency of production and distribution affect the competitive prices in the international market.

The study aims to examine Asia and Latin America's hypothesis of export-led growth in the years 2007-2018. This research framework refers to the export concept in promoting economic growth through institutional quality, logistics performance, and FDI. To examine these estimates, the autoregressive distributed lag (ARDL) and Granger causality test were conducted for long and short-term relationships. Also, the panel data approach was implemented.

The results show that there are short and long term differences in ELG models of industrialized and developing countries between regions. However, logistics performance, institutional quality, and exports have a varied and divergent causality relationship to economic growth. Strong (narrow side) and partial support for the export-led growth hypothesis was also discovered. Meanwhile, institutional reform was needed by policymakers in an integrated manner to improve logistics performance (including infrastructure) since it positively impacts FDI and export activities aimed to promote economic growth.

*Keywords: Export-led growth, institutional quality, logistics performance, FDI*

*JEL Classification: F11, F14, F43*

## I. Introduction

The export-led growth hypothesis (ELG) has become an interesting topic for economists in recent decades. It assumes that international trade and export activities are primarily the working force of a country's economic growth. Exports can optimize resource distribution due to comparative advantages, achieve the economic scale, and improve people's economic activities to increase productivity. In addition, it contributes to the economy through several channels, such as income effects, capital accumulation (physical and human), economic substitution, and resource

distribution effects. The validity of the ELG hypothesis has been supported by previous studies [(Bahmani-Oskooee, Mohtad, & Shabsigh, 1991); (Solomon, 1992); (Ahumada & Sanguinetti, 1995); (Begum & Shamsuddin, 1998); (Siliverstovs & Herzer, 2005); (Martín & Herranz, 2006); (Roshan, 2007); (Sultan, 2008); (Dutta, 2009); (Lam, 2013); (Pan & Nguyen, 2018); and (Mamun, BAL, & AKCA, 2019)].

However, some economists have argued that the export-led growth hypothesis is a legacy of Mercantilism, which is supported by Classical Economists. However, the hypothesis was not dynamic concerning the development of world exports and its specialization model was not stable/static. According to empirical study, the ELG hypothesis does not apply in industrialized countries (Sheehey, 1992); and exports make a small contribution to economic growth, especially in developing nations (Sannassee, Seetanah, & Jugessur, 2014). Furthermore, exports and economic growth are causal (Giles & Williams, 2000) (Shahbaz & Rahman, 2014). Therefore, some studies rejected this hypothesis [(Ahmed & Brennan, 2019); (Pazim, 2009); (Mishra, 2011); (Dreger & Herzer, 2013); (Jin & Jin, 2015)]. Subsequently, there is no empirical backup for this hypothesis in the Philippines (Ballester & Sinay, 2013), and weak support affects economic growth [(Dodaro, 1993) (Kristjanpoller & Olson, 2014)]

This study seeks to uncover new facts about the debated export-led growth hypothesis by developing several variables, such as institutional quality [(Sathyamoorthy & Tang, 2018), (Sinkovics, Kurt, & Sinkovics, 2018), (Zhang & Xing, 2017)] and logistic performance index (Ekicia, Kabak, & Ülengin, 2019) as benchmarks for infrastructure development. The logistics sector is an indicator of economic growth, however, this is a reverse impact. This study covers two developing countries of Asia and Latin America, which incidentally have a large dependence on the export sector and low institutional quality.

## **II. Literature Review**

The dispute regarding the Export-led growth hypothesis (ELG) or export orientation as a driving-force of economic growth will continue to develop in line with the dynamics of its model. Mercantilism gave rise to the ELG hypothesis, where the wealth of a country is determined by the export value. According to classic findings, exports increase the distribution of resources, raw materials, and intermediate goods that are not produced by a country to increase productivity. Similarly, empirical research supports the ELG hypothesis, export orientation, and comparative advantage, which will lead to optimal resource allocation of resources to achieve economical sales. This will result in technological improvements, increased domestic economic activity, and full employment (Balassa, 1978). Furthermore, international trade has a positive impact on the economy through the creation of income effects, capital accumulation, economic substitution/production, and better income distribution (Corden, 1992). These factors promote exports to become a more dominant catalyst for economic growth than human capital accumulation (Darrat, Hsu, & Zhong, 2002). Therefore, there is strong evidence towards the export-led growth hypothesis [(Ahumada & Sanguinetti, 1995), (Siliverstovs & Herzer, 2005), (Bahmani-Oskooee,

Mohtad, & Shabsigh, 1991), (Solomon, 1992), (Begum & Shamsuddin, 1998), (Martín & Herranz, 2006), (Roshan, 2007), (Sultan, 2008), and (Dutta, 2009)].

Hye (2012) stated that there is a reciprocal relationship between exports and economic growth (ELG), imports, and economic growth (ILG), as well as exports and imports in China. The economic growth towards exports was 1.62, while its elasticity was 0.59. This has an impact on the speed of response received at the occurrence of changes, especially in economic growth. In contrast, the elasticity of exports towards imports was 1.32 and 0.97. Therefore, this condition has an impact on the deficit of foreign trade balance since import impulses towards exports have a larger proportion than the other way.

In supporting the ELG hypothesis, institutional quality has a vital role in creating a conducive climate both economically and politically. Even though it is not the main variable, it serves as a mediator between exports and economic growth (Sathyamoorthy & Tang, 2018). Relatively established political stability produces policies that support population productivity growth. Conversely, the prolonged instability of political factors will have an impact on export quality and economic backwardness (Narayan et al., 2007).

Logistics plays a role in increasing the competitiveness of exports in international markets. Low logistics costs will produce a more competitive price of goods. Its progress will automatically stimulate and develop national competitiveness, which is an important factor in economic growth (D'Aleo & Sergi, 2017). Logical performance cannot be separated from institutional quality, infrastructure, technology, and labor. Consequently, synergy is required between the stakeholders involved. For this reason, an intermediary between these elements is necessary to improve the Logistics Performance Index (LPI), sustainable independence, and competitiveness of the country (Ekicia, Kabak, & Ülengin, 2019).

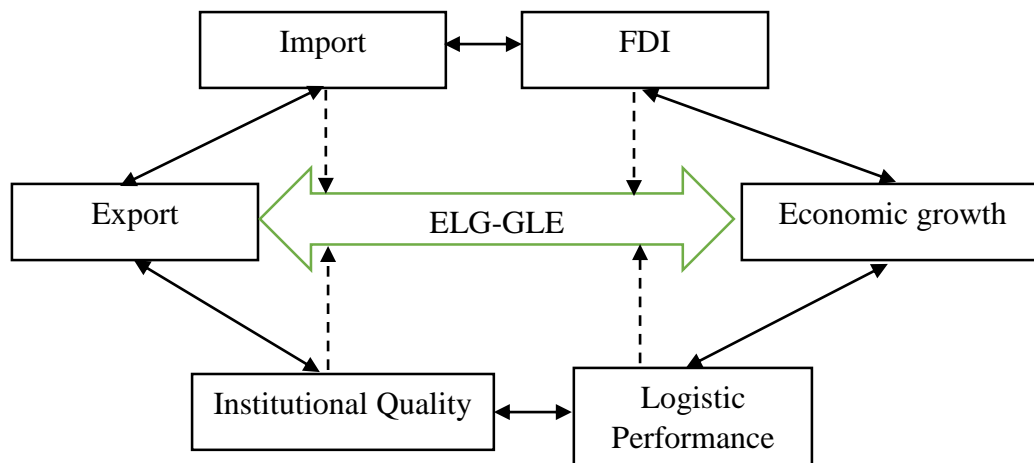
Apart from ELG's support, Nene & Boubacar (2015) assumed that per capita growth is not proportional to the increased exports in developing countries. Developing countries only receive benefits from commodity exports, while diversification is enjoyed by countries with longer experience. This is reflected in the greater impact of commodity exports on economic growth than total exports. This condition creates a group in which developing countries focus on the export of goods, especially primary products. Therefore, diversification from exports lacks understanding and experience.

In the case in South Asia, ELG is partial and only a large country (size) such as India, has relatively large market openness (Love & Chandra, 2005). However, the huge domestic market in the country is not comparable to the ELG model. India being a large country, lead the way in boosting the economy in the region. Furthermore, its large market size caliber should be the epicenter of attracting foreign direct investment (FDI) in the context of developing intra-trade in South Asia. Therefore, the relatively large market size is not a benchmark for export-lead growth.

### **III. Research Method**

This study framework refers to Figure 1 on the pattern of ELG relationships with FDI, Import, institutional quality, and logistic performance variables following the previous review. This model

emphasizes the relationship between institutional quality, logistics performance, and ELG both as a moderator and as an explanatory variable. Logistics performance will directly affect export activities and also influence the ELG and GLE formation. It is directly influenced by policymakers regarding the direction of logistics sector development in a country. It is determined by institutional quality (Pillars of global competitiveness index / GCI) [ (Schwab, 2018) and (Ekicia, Kabak, & Ülengin, 2019)].



**Figure 1.** Linkage ELG-GLE towards all variables

FDI plays a role in capital formation through various channels, including multinational companies. The existence of the enterprise will automatically increase the productivity of exports while influencing economic growth. Conversely, institutional quality and logistic performance become the main attractions for FDI, especially in the commodity sector. Also, regulation clarity regarding investment and an effective transportation/logistics network will increase stakeholder commitment to invest. This phenomenon will automatically lead to an increase in income levels and, combined with other factors, will lead to returns in production, technology transfer, and human capital (Ekicia, Kabak, & Ülengin, 2019).

### *Models*

This analysis model uses the vector autoregression (VAR) approach to identify the causality relationship between the dependent and independent variables. The variables include GDP per capita (Y), Export (X, as GDP percentage), Import (M, as GDP percentage), Foreign Direct Investment (FDI), Logistic Performance Index (LPI), and Institutional Quality (InsQual). These data were obtained from the World Bank and the United Nations of Commodity Trade Statistics Database (UN Comtrade). Furthermore, annual data for the period 2007-2018 is obtained from 21 countries in Asia and 13 Latin American countries. This model has a non-structural concept but still considers a theoretical approach. Therefore, it helps to properly capture economic

symptoms/phenomena. According to Granger (2003) and Sathyamoorthy & Tang (2018), the VAR model used in this study is as follows:

$$\begin{aligned}
Y_{it} &= \alpha_{0i} + \alpha_{1i}Y_{i,t-1} + \dots + \alpha_{ki}Y_{i,t-k} + \beta_{1i}X_{i,t-1} + \dots + \beta_{ki}X_{i,t-k} + \gamma_{1i}Z_{i,t-1} + \dots \\
&\quad + \alpha\gamma_{ki}Z_{i,t-k} + \varepsilon_{1it} \\
X_{it} &= \delta_{0i} + \delta_{1i}X_{i,t-1} + \dots + \delta_{ki}X_{i,t-k} + \theta_{1i}Y_{i,t-1} + \dots + \theta_{ki}Y_{i,t-k} + \vartheta_{1i}Z_{i,t-1} + \dots \\
&\quad + \theta_{ki}Z_{i,t-k} + \varepsilon_{2it} \\
Z_{it} &= \varphi_{0i} + \varphi_{1i}Z_{i,t-1} + \dots + \varphi_{ki}Z_{i,t-k} + \sigma_{1i}Y_{i,t-1} + \dots + \sigma_{ki}Y_{i,t-k} + \omega_{1i}X_{i,t-1} + \dots \\
&\quad + \varphi_{ki}X_{i,t-k} + \varepsilon_{3it}
\end{aligned}$$

Re-written as,

$$\begin{aligned}
Y_{it} &= \alpha_{0i} + \sum_{i=1}^k \alpha_{1i}Y_{i,t-1} + \sum_{i=1}^k \beta_{1i}X_{i,t-1} + \sum_{i=1}^k \gamma_{1i}Z_{i,t-1} + \varepsilon_{1it} \\
X_{it} &= \delta_{0i} + \sum_{i=1}^k \delta_{1i}X_{i,t-1} + \sum_{i=1}^k \theta_{1i}Y_{i,t-1} + \sum_{i=1}^k \vartheta_{1i}Z_{i,t-1} + \varepsilon_{2it} \\
Z_{it} &= \varphi_{0i} + \sum_{i=1}^k \varphi_{1i}Z_{i,t-1} + \sum_{i=1}^k \sigma_{1i}Y_{i,t-1} + \sum_{i=1}^k \omega_{1i}X_{i,t-1} + \varepsilon_{3it}
\end{aligned}$$

That is,

$$\begin{aligned}
\alpha_{0i} &\neq \alpha_{0j}, \alpha_{01} \neq \alpha_{ij}, \dots, \alpha_{ki} \neq \alpha_{kj}, \forall i, j \\
\beta_{0i} &\neq \beta_{0j}, \beta_{01} \neq \beta_{ij}, \dots, \beta_{ki} \neq \beta_{kj}, \forall i, j \\
\gamma_{0i} &\neq \gamma_{0j}, \gamma_{01} \neq \gamma_{ij}, \dots, \gamma_{ki} \neq \gamma_{kj}, \forall i, j \\
\delta_{0i} &\neq \delta_{0j}, \delta_{01} \neq \delta_{ij}, \dots, \delta_{ki} \neq \delta_{kj}, \forall i, j \\
\theta_{0i} &\neq \theta_{0j}, \theta_{01} \neq \theta_{ij}, \dots, \theta_{ki} \neq \theta_{kj}, \forall i, j \\
\vartheta_{0i} &\neq \vartheta_{0j}, \vartheta_{01} \neq \vartheta_{ij}, \dots, \vartheta_{ki} \neq \vartheta_{kj}, \forall i, j \\
\varphi_{0i} &\neq \varphi_{0j}, \varphi_{01} \neq \varphi_{ij}, \dots, \varphi_{ki} \neq \varphi_{kj}, \forall i, j \\
\sigma_{0i} &\neq \sigma_{0j}, \sigma_{01} \neq \sigma_{ij}, \dots, \sigma_{ki} \neq \sigma_{kj}, \forall i, j \\
\omega_{0i} &\neq \omega_{0j}, \omega_{01} \neq \omega_{ij}, \dots, \omega_{ki} \neq \omega_{kj}, \forall i, j
\end{aligned}$$

#### IV. Result and Discussion

Table 1 shows the results of empirical tests using autoregression of panel data by conducting Pairwise Granger Causality Tests for 6 variables, namely economic growth proxied by GDP per capita ( $GDP_{it}$ ), Net inflow of Foreign Direct Investment ( $FDI_{it}$ ), Export as a percentage of GDP ( $X_{it}$ ), Import also applies equal to Export ( $M_{it}$ ), Institutional Quality to capture control of corruption, government effectiveness, political stability, regulatory quality, rule of law as well as voice and accountability ( $InsQual_{it}$ ), and Logistic Performance Index ( $LPI_{it}$ ). The focus and discussion are based on the causal correlation obtained by Pairwise Granger Causality and Wald Tests, overall countries in Asia, Latin America, and all regions.

**Table 1.** The Result of Pairwise Granger Causality

Variable test	Asia	Latin America	All Region
$GDP_{it} \rightarrow X_{it}$	-0.000185	-0.000423 *	-0,000204 *
$X_{it} \rightarrow GDP_{it}$	1.859.230 **	7.726.972 *	1.502.034 **
$GDP_{it} \rightarrow M_{it}$	5.96E-05	-0.000167	-4.47E-05
$M_{it} \rightarrow GDP_{it}$	-1.774.792 ***	-7.621.220 *	-1.510.756 **
$GDP_{it} \rightarrow FDI_{it}$	-52372.59	1322761.	-73926.68
$FDI_{it} \rightarrow GDP_{it}$	1.42E-08	-1.94E-08 **	1.22E-08
$GDP_{it} \rightarrow InsQual_{it}$	3.79E-06	1.090.039	4.11E-06
$InsQual_{it} \rightarrow GDP_{it}$	3.208.360	3.603.202	3.094.984
$GDP_{it} \rightarrow LPI_{it}$	-1.17E-05 **	5.97E-06	-9.47E-06 ***
$LPI_{it} \rightarrow GDP_{it}$	-1.220.771	2.674.376 **	-8.262.638
$FDI_{it} \rightarrow X_{it}$	5.01E-11	1.83E-11	3.93E-11 *
$X_{it} \rightarrow FDI_{it}$	-1.65E+08	1.77E+08	-1.08E+08
$FDI_{it} \rightarrow M_{it}$	4.66E-11 ***	1.42E-11	3.93E-11 **
$M_{it} \rightarrow FDI_{it}$	-84382101	-1.55E+08	-93459604
$FDI_{it} \rightarrow InsQual_{it}$	1.77E-13	-5.70E-13	1.97E-15
$InsQual_{it} \rightarrow FDI_{it}$	3.32E+09	1.81E+09	2.86E+09 *
$FDI_{it} \rightarrow LPI_{it}$	7.37E-13 **	-7.10E-13	6.35E-13 ***
$LPI_{it} \rightarrow FDI_{it}$	-3.48E+08	1.38E+10	-2.14E+08
$InsQual_{it} \rightarrow LPI_{it}$	0.090140 **	0.003190	0.059681 ***
$LPI_{it} \rightarrow InsQual_{it}$	0.005727	0.152135	0.040163
$InsQual_{it} \rightarrow X_{it}$	3.155.786 **	2.071.353 **	2.723.391 ***
$X_{it} \rightarrow InsQual_{it}$	-0.001085	-0.008494	-0.002190
$InsQual_{it} \rightarrow M_{it}$	2.420.139 **	1.256.704	2.044.369 ***
$M_{it} \rightarrow InsQual_{it}$	7.54E-05	0.000806	-0.000654
$LPI_{it} \rightarrow X_{it}$	-1.216.038	-1.463.110	-1.577.134
$X_{it} \rightarrow LPI_{it}$	0.007440	-0.001731	0.005049
$LPI_{it} \rightarrow M_{it}$	3.293.998	-5.699.047	2.052.181
$M_{it} \rightarrow LPI_{it}$	-0.013053 ***	0.001625	-0.009862 ***
$X_{it} \rightarrow M_{it}$	-0.025566 **	0.541833 **	0.110709 ***
$M_{it} \rightarrow X_{it}$	-0.370991 ***	-0.199079	-0.338892 ***

Note: \*), \*\*), \*\*\*) Significant at 1, 5, and 10 percent levels, respectively

### Asia

Table 1 showed that "economic growth ( $GDP_{it}$ ) does not cause export ( $X_{it}$ )", due to the null hypothesis "non-Granger causality from  $GDP_{it}$  to export", then the relationship between these variables ( $GDP_{it} \rightarrow X_{it}$ ) is declared non-existent. causality. Meanwhile, the relationship between exports and economic growth is reversed, rejecting the null hypothesis "non-Granger causality of

exports to GDP", which means that there is causal connections between the variables. Therefore, these results showed a uni-directional relationship between export variables and economic growth, however, it is not vice versa. This result is consistent with the findings of Mamun, BAL, & AKCA (2019) since the export policy in promoting economic growth (output) is not coherent in promoting exports. Therefore, this policy is vulnerable to internal shocks and long-term economic resilience. It implies weak support for ELG, due to the absence of a bidirectional relationship. Conversely, institutional quality has a unidirectional causality relationship to exports, imports, and logistics performance. Availability of applicable rules, guidelines, ease of licensing, and good governance will simultaneously promote export, import, and logistics performance.

### *Latin America*

Contrary to the previous result, economic growth and exports in this region have a bidirectional relationship between the two variables with a significance level of less than 10%. Hye (2012) supported this result with the argument that exports, imports, and economic growth have a strong two-way causality relationship between variables, with an elasticity value of 0.59-1.64 percent. This percent has major consequences in formulating international trade policy. Logistics performance has a direct causal relationship on economic growth, where the LPI variable contributes to GDP growth. In terms of the causality of logistics performance on economic growth ( $LPI_{it} \rightarrow GDP_{it}$ ), this transmission consists of two channels, namely (i) direct, where LPI contributes to GDP through various output formation activities, and (ii) indirect, where logistics performance acted as a moderator in the creation of GDP, where LPI is only used as an institution in creating output. Generally, the findings in this region support the ELG, GLE, and ILG except for GLI hypotheses .

### *All Region*

The result of the Pairwise Granger Causality analysis shows higher causality for some variables compared to other regions / partial. The null hypothesis of economic growth ( $GDP_{it}$ ) and exports ( $X_{it}$ ) is rejected, which means that there is a reciprocal cause for this variable. This result is coherent with Narayan et al. (2007) and Roshan, (2007) where there is a strong external causal relationship between GDP towards exports and the decomposition effect of these two variables. Therefore export development (manufacturing) policies can be developed. Meanwhile, Institutional quality has a direct causal relationship to exports, FDI, and logistics performance. These results are consistent with the report of Ekicia, Kabak, & Ülengin (2019) where the government needs to improve infrastructure, quality institutions, the ability to capture technological changes in facilitating improved logistics performance. Furthermore, institutional quality has a role in improving export performance. This relationship triggers productivity and reverses the simultaneous effect of institutional quality. This is in line with Sathyamoorthy & Tang (2018), where it was reported that institutional quality plays an important role in ELG. Therefore, institutional reform is needed as an instrument to increase the benefits of economic growth and export expansion.

## V. Conclusion

Exports in Asia have a direct relationship to economic growth, therefore, this finding supports ELG weakly. This condition has an impact on long-term export performance. Meanwhile, developing countries in Asia tend to have large trade openness. When growth fails to boost export performance, there is a lag and an economic shock on its output. The inability of the government to respond to these policies will weaken competitiveness due to the dynamic response to the market. A similar condition also occurred between the exports, imports institutions quality and logistics performance. Therefore, a comprehensive study related to institutional quality is required.

Furthermore, Institutional quality has unidirectional causality relationships across all regions. This condition implies that a reform of the quality of service, availability of standard rules, infrastructure, simplification of the bureaucracy, political stability, and security at the government level are needed to push export productivity and create an integrated logistics ecosystem. The quality of institutions as a moderator in ELG, due to this variable indirectly has a causal relationship on economic growth. Meanwhile, the quality of institutions has also contributed to foreign direct investment. This shows that governance, bureaucratic systems, and infrastructure attract FDI flows. Finally, legal certainty, speed of services, short terms, and political stability are the main considerations on increasing FDI input. Therefore, these results support the ELG hypothesis bidirectionally, but not for the Asian region.

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