






EXPORT-LED GROWTH HYPOTHESIS: EMPIRICAL EVIDENCE FROM SELECTED SOUTH ASIAN COUNTRIES



 Mukesh Kumar¹
 Nargis^{2*}
 Azeema Begam³

¹Department of Business Management, Institute of Business Management (IoBM), Pakistan.

¹Email: m_kella@hotmail.com Tel: +923002170441

^{2*}Department of Economics, University of Karachi, Pakistan.

^{2*}Email: nargismalik866@gmail.com Tel: 03132725052

³Email: azeemausman@hotmail.com Tel: +923492041156



(+ Corresponding author)

ABSTRACT

Article History

Received: 7 October 2019

Revised: 12 November 2019

Accepted: 16 December 2019

Published: 29 January 2020

Keywords

Export
GDP growth
Panel ARDL-ECM
South Asian countries.

JEL Classification:

F14; F43.

The hypothesis of Export-Led Growth (ELG) asserts exports as a development approach in order to enhance the productivity of an economy targeting big international markets. However, empirical evidences based on this postulate are mixed yet contradictory. The prime objective of this paper is to validate the customary ELG hypothesis specifically for selected South Asian economies incorporating the dynamics of the panel data. In this regard, four South Asian countries-Bangladesh, India, Pakistan, and Sri Lanka have been selected. The study employs panel unit root, panel ARDL and ECM for the time span of 1991-2017. The model includes annual GDP growth, exports, imports; and foreign direct investment for the econometric estimation. The findings prove significant and positive impact of exports and foreign direct investment whereas; negative but significant impact of imports on GDP growth of South Asian countries. Nevertheless, there exists some operational and institutional glitches that obstruct the ELG process in South Asia. These include geo-political ambiguities of the region, high price ratios, low investment rates, insufficient economic infrastructure, and unfavorable regulatory settings hampering the economic growth. It is thus suggested that South Asian countries can promote market diversification broadening the product range. Besides; policies based on export promotion should be considered to enhance capacity and quality of exports in order to stimulate growth.

Contribution/ Originality: This study contributes in existing literature while investigating ELG hypothesis making an allowance for a new panel for economies South Asian namely Bangladesh, India, Pakistan and Sri Lanka. Moreover, the study clusters around defining the dynamics of the ELG through applying panel Autoregressive Distributed Lag (ARDL) regression.

1. INTRODUCTION

The Export-Led Growth (ELG) strategy has been aimed to enhance the productive capacity of the home economy in international markets while achieving the objective of economic growth (Saglam and Egeli, 2017). In this regard, economists discuss number of international trade theories namely Hecksher-Ohlin theory of trade, theory of openness; and theory of openness for growth (Krueger, 1978; Salvatore, 1983; Bhagwati, 1988). The combined declaration of these perspectives considers trade as a source of technological diffusion and spillover to foster the overall productivity of the economy (Palley, 2011). Moreover; the insight of ELG hypothesis is the main part of this approach which had been instigated in 1970s in order to bear the fruit of border openness. During this

era, the most of the economies had switched from inward-looking policies of import substitution policies towards out-ward looking policy of the ELG while targeting foreign demand for domestic products. For instance; the key of success for Asian Tigers and Japan was that these economies has contributed a lot towards more economic integration through trade as the strategy ELG had been widely acknowledged during 1970-1999.

Correspondingly, the ELG claims that development and extension of export activities not only generate employing opportunities but also provide benefits to industrial sector which cater the growth of the economy. There are many evidences from developing and emerging economies that were appeared to provide the empirical supports for this hypothesis. In this regard, a significant segment of literature has been devoted to test the ELG hypothesis using divergent data sets. The literature also revolves around determining the causality from growth to exports; however, this is not the concern of this study.

Against the traditional background, over the last years, the literature on ELG has raised apprehensions on the significance of ELG strategy as an appropriate tactic for the development (Ee, 2016). Even, impact of exports on growth cannot relates with level of development of the country which is being under consideration such as developed, emerging or developing because every economy have adopted the policies of export promotion as per their contemporaneous condition (Palley, 2011). Furthermore; it was believed that ELG depended more on Foreign Direct Investment (FDI) thus ELG must be replaced with Demand-Led Growth (DLG) hypothesis. In addition, it was assumed that ELG is only applicable for industrialized and developed countries due to higher share in exports and it was completely deployed by international organizations and the process of globalization (Palley, 2011). However; it is argued by Blecker (2003) that the cause of failure of ELG in many developed economies could be attributed to expansion effect on growth which was crowded-out. Furthermore, due to reduction in international demands for exports from developed countries, ELG strategy became the reason of over-productivity and over-investment in these countries.

Additionally, unpredictability, impulsiveness and instability of exchange rate in international markets also can also be questioned for the dependence of less-developed economies on ELG policies (Singer, 1975). Thus, the ELG hypothesis undergoes myth of Beggar-Thy Neighbor policy which harms trading partners in terms of devaluation of currency to gain comparative advantage (Felipe, 2003). These arguments provides an insights views which clears this misconstruction regarding ELG that there is no mutual consensus on the success or failure of ELG policies as it may differs from one region or country to another region or country.

South Asia is one of the progressive continents as this region has gained its leads as fastest growing region in the world that are experiencing sustained and robust growth patterns form the last few years (Munir and Javed, 2018). This could be attributed to the sturdy performance of the various Asian economies like India and Sri-Lanka which has been driven by foreign investments, infrastructure progress, energy efficiencies and determination of governments (Chow, 2010). However, this is always not the case for some countries of South Asia. Considering this region of Asia, the Pakistan and Bangladesh are still striving hard to achieve the goals of sustainable development and economic growth. Although, imports grew faster than exports in South Asia, however; growth relays on exports in terms of job creation, foreign reserves, development of small industries etc. Therefore; it can be stated that ELG stratagem in South Asian economies heavily depend on the access to international trade, market diversification, and foreign demand. Meanwhile; due to limited production capacity and products diversification, South Asian countries are not able to avail full benefits of export promotion polices that can stimulate their growth (Din, 2004). As, it is already well defined that these economies are far behind in turning the benefits of exports in favor of their growth (Rizavi *et al.*, 2010). This is due to the fact that major exports of these countries profoundly rely on primary goods and intermediated goods with less focus on manufactured goods that demand surges promptly (Hausmann *et al.*, 2007; Jarreau and Poncet, 2012). These products are price inelastic therefore; exchange rate depreciation is not supporting to enhance export demands in international markets. This insight accentuated that high technology based exports will add up more benefits for the sluggish growth in South Asia.

Precisely, this could be the reason that not much devotion had been delivered previously to test the hypothesis of ELG due to its feeble implications. However, recently policy think tanks and researchers have started showing inclination to test and approve the hypothesis for South Asian economies due to the fact that there is still an incessant argument esteeming the probable dominance of South Asian economies in international markets. Therefore, this study endeavors to revisit the ELG hypothesis making an allowance for a new panel for economies South Asian namely Bangladesh, India, Pakistan and Sri Lanka. Moreover, the study clusters around defining the dynamics of the ELG through applying panel Autoregressive Distributed Lag (ARDL) regression. The technique allows generating aggregate results of the economies in the selected panel regressing separate models for both long-run and short-run.

The study has been organized in to five main divisions. The next part of the study discusses the divergences in the literature while the third segment presents methodology with variables descriptions and estimation procedure. The fourth fragment of the paper elucidates the estimation of results and discussion. The last part concludes the study with vital policy suggestions.

2. LITERATURE REVIEW

The ELG hypothesis had been explored by various scholars using divergent econometric applications and data sets. Additionally, there exists huge literature focusing developing nations using abundant pragmatic techniques and data sets (panel, cross-section, time series). The findings of these studies vary with econometric approach, data periods under consideration, variables (real or nominal), causality perspectives (uni or bi-directional); control variables of the models, interactive terms and so on. This is the reason that the export-growth association is yet a subject of extensive deliberation in the literature. In this regard, it is pertinent to mention here an extraordinary attempt by Giles and Williams (2000). The authors reviewed the work of more than hundred studies on ELG during 1963-1999 and concluded an undetermined consensus of ELG literature.

For that reason, we will ponder to a comprehensive perspective of the ELG literature and will consider the relevant and related studies throughout the section. Therefore, in Table 1 we have focused on specific studies related to South Asia in order to extract the gap in the extensive ELG literature.

The Table 1 explains that there exists an extensive literature exploring the ELG for South Asian economies focusing in both balanced and unbalanced studies. These studies differ in terms of data, estimations and country selection of Asia region. Moreover, most of the studies had relied on causality analyses ignoring the dynamic perspective of the ELG hypothesis and thus there is a limited literature directing the dynamics and forecasting of growth through exports and vice versa. Shafiullah *et al.* (2017) and Thornton (1996) ended up on long-term running from different exportable goods to growth of Australia and Mexico respectively. However, Dhawan and Biswal (1999) estimated Vector-Autoregressive (VAR) model and found causality in short term for Indian economy. Additionally, other set of panel exploration includes study by Ee (2016); Biyase and Zwane (2014); Alimi (2012); Tekin (2012); Razmi and Hernandez (2011); Mehrara and Firouzjaee (2011); Pazim (2009); Kónya (2006); Parida and Sahoo (2007) and Reppas and Christopoulos (2005).

Considering the time series perspective of the ELG hypothesis, Aslan and Topcu (2018); Bosupeng (2015); Bilas *et al.* (2015); Bhatti and Bashir (2015); Shahbaz *et al.* (2011); Paul (2011) and Yew (2004) are a few distinguished studies. The other set of studies favoring the ELG includes the studies of Seabra and Galimberti (2012) and Foster (2006). It is worth mentioning here that these studies took into account various econometric models and explained results given the time span under consideration for ELG hypothesis.

Table-1. Compilation of Asian studies.

Author (s)	Year	Countries (Region)	Data	Methodology	Findings
Ekanyake (1999)	1999	8 Developing Asian Economies	1960-1997 Balanced Panel	Cointegration & Error Correction Model (ECM)	Validated ELG only for Malaysia
Kemal <i>et al.</i> (2002)	2002	5 South Asian Economies	1960-1998 Unbalanced Panel	Johansen Co-integration & VECM	ELG approved for all economies
Din (2004)	2004	5 South Asian Economies	2002 Unbalanced Panel	Johansen Co-integration & VECM	Bi-directional causality for Bangladesh, India, Sri Lanka while GLE approved for Nepal & no causality was found in case of Pakistan
Love and Chandra (2004)	2004	Pakistan, India, Sri Lanka	1950-2000 Unbalanced Panel	Johansen Co-integration & VECM	ELG for Pakistan, Bi-directional causality for India and no causality for Sri Lanka
Shirazi and Manap (2005)	2005	5 South Asian Economies	20002-03 Unbalanced Panel	Trivariate Model, Johansen Cointegration, Toda-Yamamoto Granger Causality	Bi-directional causality for Bangladesh & Nepal, ELG for Pakistan and no evidence for India & Sri Lanka
Eusuf and Ahmed (2007)	2007	South Asian Economies	1965-2005 Unbalanced Panel	Bivariate Model, Engle Granger Method	ELG for Pakistan, Growth Led Exports (GLE) for Sri Lanka, Bhutan GLE-India, Nepal, Maldives & no causality for Bangladesh
Parida and Sahoo (2007)	2007	Four South Asian Economies	1980-2002 Balanced Panel	Multivariate Analysis, Pedroni's Panel Co-integration, Fully Modified Ordinary Least Square (FMOLS)	Endorsed ELG hypothesis for all economies
Safdari <i>et al.</i> (2011)	2011	13 Developing Economies of Asia	1988-2008 Balanced Panel	Bivariate Model, Panel Co-integration and FMOLS	The uni-directional hypothesis of GLE had been affirmed.
Nasreen (2011)	2011	8 Developing Economies of Asia	1975-2008 Balanced Panel	Bi-variate Model, Panel Cointegration, FMOLS	GLE for Pakistan, Sri Lanka, Indonesia, ELG for Malaysia & Thailand, Bi-directional causality for India & Philippines, no evidence of causality for Bangladesh
Hye <i>et al.</i> (2013)	2013	Six South Asian Economies	2009 Unbalanced Panel	Trivariate Analysis, Bound Testing	ELG was significant for all Bangladesh, India, Nepal, Sri Lanka, Bhutan except Pakistan. Whereas; GLE was not effective for Bangladesh & Nepal.
Kumari and Malhotra (2015)	2015	5 South Asian Economies	1980-2012 Balanced Panel	Trivariate Analysis, Johansen Co-integration, VECM	Bi-directional causality for India while no causality for Pakistan, Bangladesh & Sri Lanka
Malhotra and Kumari (2016)	2016	4 Largest South Asia Economies	1980 to 2012 Balanced Panel	Johansen Co-integration, VECM, Impulse Response Function, Variance Decomposition	ELG only for the economy of India

The literature review provides useful insights and revealed mixed results that specifically count on the either country or region given the objective under consideration. Summing the gist of the section, it is examined these studies have not integrated the acumen of exports-growth dynamics which plugs in the long term perspective in compliance with the short term convergence or divergence.

3. ANALYTICAL FRAMEWORK

Export-orientation policies have significant impact in the stimulation of economic growth directly and indirectly both. It has been found that increase in exports raise directly output growth as a main factor of GDP which is Keynesian perspective. While using advance technology, exports also stimulate economic growth indirectly this may lead to efficient allocation of economic resources, increase in productivity, full capacity utilization and economies of scale (Balassa, 1985; Grossman and Helpman, 1991). Furthermore; it increases economic competency of the country in order to compete with foreign competitors while exploring new markets for their products. Moreover; exports also generates foreign exchange which not only raise the level of imports but also support to imports capital and intermediate inputs for domestic production that further enhance growth through progression of industries (Balassa, 1985; Awokuse, 2003). This study follows new growth framework of Awokuse (2003) and Shan and Sun (1998) to examine the ELG hypothesis in growth model while including other relevant variables which have also significant contribution of GDP growth.

4. METHODOLOGY

4.1. Data Source

This study implies panel dataset exports for the period of 1981 to 2017 of four selected countries such as Pakistan, India, Sri Lanka, and Bangladesh that have significant share of exports in GDP. All dataset have been obtained from World Development Indicators (WDI) and International Financial Statistics (IFS). Description of variables and unit of measurement is presented in Table 2.

Table-2. Description of variables.

Variables		Abbreviation	Unit of Measurement	Reference Studies
Annual GDP growth	Dependent	Log(GDPG)	Annual Percentage	Paul (2011); Shahbaz <i>et al.</i> (2011)
Exports	Independent	Log(EX)	Percentage of GDP	Ahmad <i>et al.</i> (2016); Ronit and Divya (2014)
Imports		Log(IMP)	Percentage of GDP	Malhotra and Kumari (2016); Shirazi and Manap (2005)
Foreign Direct Investment		FDI	Percentage of GDP	Hakizimana (2015)

4.2. Research Estimation Technique

While considering panel data framework, this research has been performed due to several advantages which improve efficiency of estimated outcomes. Using diverse knowledge and increase comprehensiveness of the analysis panel data incorporates effects of time series data along with cross section (Baltagi, 2013). Due to availability of data, panel data is estimated with large time period (T) and large cross section (N). However; the differences are applied with assumptions of with large or small time span with large number of cross section. Other panel different techniques are available through which panel data set can be estimated with certain restrictions and requirements. For instance; models of Fixed Effect (FE), Random Effect (RE); and Generalized Method of Moment (GMM) are appropriate for small time span. Moreover; the main outcomes have been drawn from large time span which divulges that homogenous slope coefficients (asymptotic) are often not suitable (Pesaran and Smith, 1995; Pesaran *et al.*, 1999;1997). It should be notified that dynamic GMM estimator is applicable only in case of $N > T$. The FE model pools time series data for each cross section while allowing fluctuation in intercept across cross section. However; if estimated coefficients are not same then fixed effect model generate false and misleading outcomes. It is pertinent to mention here that as for our case, 4 economies are less than the 36 years ($N < T$). Hence, Dynamic

Mean Group (DMG) projected by Pesaran *et al.* (1999) is a suitable panel option as this considers a lower degree of heterogeneity (Fazli and Abbasi, 2018).

Equation 1 illustrates model with homogenous slope coefficient while Equation 2 presents panel model with heterogeneous slope coefficient.

$$Y_{it} = \alpha_{10} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha_{20} + \beta_{1i} X_{1it} + \beta_{2i} X_{2it} + \beta_{3i} X_{3it} + v_{it} \quad (2)$$

Where;

i = cross section

t = time span

Y = dependent variable

X = independent variable

If Equation 1 is accepted then panel model is estimated through conventional panel models (FE, RE, or GMM) whereas; if Equation 2 is accepted then panel model can be estimated through PMG or DMG. However; model estimation with heterogeneous slope coefficient are considered better in empirical research because it is more consistent authentic with economic realities (Coakley *et al.*, 2006; Eberhardt and Teal, 2011; Fazli and Abbasi, 2018).

The mean group estimators follow two basic rules: first; to estimate a particular estimation model for every group which exists in the panel model. Second; to take average of coefficient of each group in order to obtain coefficients of the panel. In this respect; the group heterogeneity is deliberated in the model and coefficients would also be comparable to the original parameters of the economies.

Equation 3 present the DMG estimators with panel ARDL($p, q_1, q_2, q_3, \dots, q_n$).

$$y_{it} = \sum_{j=1}^p \lambda_{ij} y_{i,t-j} + \sum_{j=0}^q \delta_{ij} x_{i,t-j} + \mu_i + \varepsilon_{it} \quad (3)$$

Here;

y_{it} = dependent variable for group I

x_{ij} = Vector of explanatory variables of group I

δ_{ij} = Vector of coefficients

$i = 1, 2, 3, \dots, N$ (Groups)

$t = 1, 2, 3, \dots, T$ (Time)

μ_i = Fixed effect

ε_{it} = Vector of error terms

It is more appropriate to estimate model with re-parameterization of Equation 3. It is structured co-integration DMG obtaining both long-run and short-run estimates. The choice between DMG models i.e Average Mean Group (AMG) or Pooled Mean Group (PMG) has been done by Hausman test.

The PMG estimation assumes that error terms are independent yet not serially correlated with explanatory variables (exogenous). The second imperative assumption of PGM is the presences of long-term association between variables (endogenous and exogenous). The third assumption of PGM is that parameters of long run are same across different cross section however it may not be same in short-run. Moreover; the PGM estimator is also flexible which permits homogeneity in long-run coefficient over each subgroup of countries or variables. Hence; through this producer of estimation, the conventional problems of estimation can be resolved.

$$\Delta y_{it} = (\varphi_i y_{i,t-1} \beta_i' x_{it}) + \sum_{j=1}^{p-1} \lambda_{ij}^* \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \delta_{ij}^{*'} \Delta x_{i,t-j} + \mu_i + \varepsilon_{it} \quad (4)$$

$$\begin{aligned} \text{Where, } \Delta y_{it} &= y_{it} - y_{i,t}, \varphi_i = -\left(1 - \sum_{j=1}^p \lambda_{ij}\right), \beta_i = \sum_{j=0}^q \delta_{ij}, \lambda_{ij}^* \\ &= -\sum_{m=j+1}^p \lambda_{im} \text{ and } \delta_{ij}^{*'} = -\sum_{m=j+1}^q \delta_{im}. \end{aligned}$$

Equation 4 shows general model of ARDL-PMG where; is speed of adjustment parameters which is expected to be negative. As mentioned above that PGM estimator assumes homogeneity in the coefficient of long-run estimates which must be same across countries and group whereas; coefficients of short run estimates are allowed vary across group or countries.

The error correction from of PMG is estimated as follow:

$$\Delta y_{it} = \phi_i (y_{i,t-1} - \vartheta_i' X_{it}) + \sum_{j=1}^{p-1} \lambda_{ij}^* \Delta y_{i,t-1} + \sum_{j=0}^{q-1} \delta_{ij}^{*'} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (5)$$

Equation 5 shows error correction from of PMG where; parameter is the error term which shows speed of adjustment. If $\phi_i=0$ no long run relationship would be proved. This error term should be negative and significant due to prior assumption which shows that variables will be converged towards equilibrium in long-run whereas; the vector θ_i contain the long-run association among variables.

5. FINDINGS OF PANEL ESTIMATES

Table 3 presents summary statistics of the variables in the study. There is significant fluctuation in the maximum and minimum values of exports with the range of minimum value of 1.22 while maximum of 3.66.

Similarly; the range of variation for imports is minimum 1.943 and maximum 3.90. GDP growth rate and foreign direct investment have also recorded variations ranging from 0.014 to 2.26 for GDP growth whereas; from 0.000861 to 3.66 for FDI.

Table-3. Statistical descriptive.

Statistics	LnGDPG	LnEX	LnIM	FDI
Mean	1.594185	2.687286	3.020553	0.860799
Median	1.631239	2.737326	3.043754	0.747736
Maximum	2.264653	3.663964	3.904409	3.668323
Minimum	0.014293	1.222673	1.943082	0.000861
Std. Dev.	0.411831	0.545998	0.480088	0.749025
Skewness	-1.268760	-0.363411	-0.198668	1.299739
Kurtosis	5.185376	2.539093	2.477399	5.210041
Jarque-Bera	68.22385	4.505957	2.621843	70.81955
Probability	0.000000	0.105086	0.269572	0.000000
Sum	232.7511	392.3438	441.0008	125.6766
Sum Sq. Dev.	24.59266	43.22655	33.42024	81.35064
Observations	146	146	146	146

Table-4. Correlation matrix.

Variables	GDPG	IMP	EX	FDI
LnGDPG	1	0.0997	0.1401	0.13724
LnIMP	0.0997	1	0.9024	0.5213
LnEX	0.14011	0.9024	1	0.5840
FDI	0.13724	0.5213	0.5840	1

The above table shows various correlation matrixes that proves linear relationship and strength of among variables. We have found weak but positive linear association among variables with respect to GDPG. The results of panel unit root tests have been presented in Table 4. First, we have employed the panel unit root test of Im *et al.* (2003) which was hereafter termed as IPS test. This test has been widely used in empirical studies due to its simple technique and alternative hypothesis which claims heterogeneity. The IPS test basically assumes independence among cross sections of the panel data without considering time effects (common). Moreover, the test incorporates the heterogeneity through distinct deterministic properties (both constant and non-constant) with serial correlation (heterogeneous) arrangement of the error terms (Afonso and Rault, 2008). Additionally, we have also provided the results of three other panel unit root tests for expedite comparisons. These include Levin, Lin and Chu, Augmented Dickey Fuller and Peseran tests that are hereafter referred as LLC, ADF and PP test respectively.

Table-5. Panel unit root tests.

LLC Test (Trend and Intercept)					IPS Test (Trend and Intercept)				
I(0)			I(1)		I(0)			I(1)	
	T-Stat	Probe-values	T-Stat	Probe-values		T-Stat	Probe-values	T-Stat	Probe-values
LnEX	2.215	0.9866	-1.34336	0.0896	LnEX	2.7176	0.9967	-3.91299	0.0000
FDI	-1.44577	0.0741	-4.62605	0.0000	FDI	2.81458	0.0024	-6.32640	0.0000
LnGDPG	-2.21773	0.0133	-5.59699	0.0000	LnGDPG	-3.8339	0.0001	-9.15049	0.0000
LnIMP	1.32876	0.9080	-5.15529	0.0000	LnIMP	0.11823	0.5439	-5.10114	0.0000
ADF Test (Trend and Intercept)					PP Test (Trend and Intercept)				
I(0)			I(1)		I(0)			I(1)	
	T-Stat	Probe-values	T-Stat	Probe-values		T-Stat	Probe-values	T-Stat	Probe-values
LnEX	0.72202	0.9995	29.6543	0.0002	LnEX	2.56268	0.9586	111.729	0.0000
FDI	22.7279	0.0037	50.3488	0.0000	FDI	17.5468	0.0249	127.404	0.0000
LnGDPG	29.7337	0.0002	77.7071	0.0000	LnGDPG	286.899	0.0000	1053.56	0.0000
LnIMP	0.62986	0.6138	39.4391	0.0000	LnIMP	6.42545	0.5997	72.1505	0.0000

Table 5_ represents outcomes of various unit root tests. It can be verified that the variables of the panel dataset are integrated at level and first difference both. This allows to employ the panel ARDL methodology. The outcomes of panel unit roots also exclude the possibility of integration of variables at second difference and none of under lying variable is of order I(2). The long-term integration between under lying variables is inspected by the Kao (1999).

Table-6. Results of cointegration test.

H ₀ : No Co – integration	t-Statistic	Prob.
	-2.848414	0.0022

The Table 6 shows result of Kao test. It is clear from the estimates in the table that the null hypothesis is rejected at 1 percent which endorses long-term affiliation between variables. Thus, co-integration among variables is sufficient avoiding likelihood of false regression.

Table-7. Results of hausman test.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	17.700574	3	0.0005

The acceptance of alternative hypothesis in Table 7 also allows to employ the PMG-ARDL technique (Fazli and Abbasi, 2018). Thus, result of Hausman test allows to estimate the dynamics of the main model (Fazli and Abbasi, 2018). Figure 1 shows maximum selected lags of estimated model.

Figure 1 shows maximum selected lags of estimated model.

Akaike Information Criteria (top 20 models)

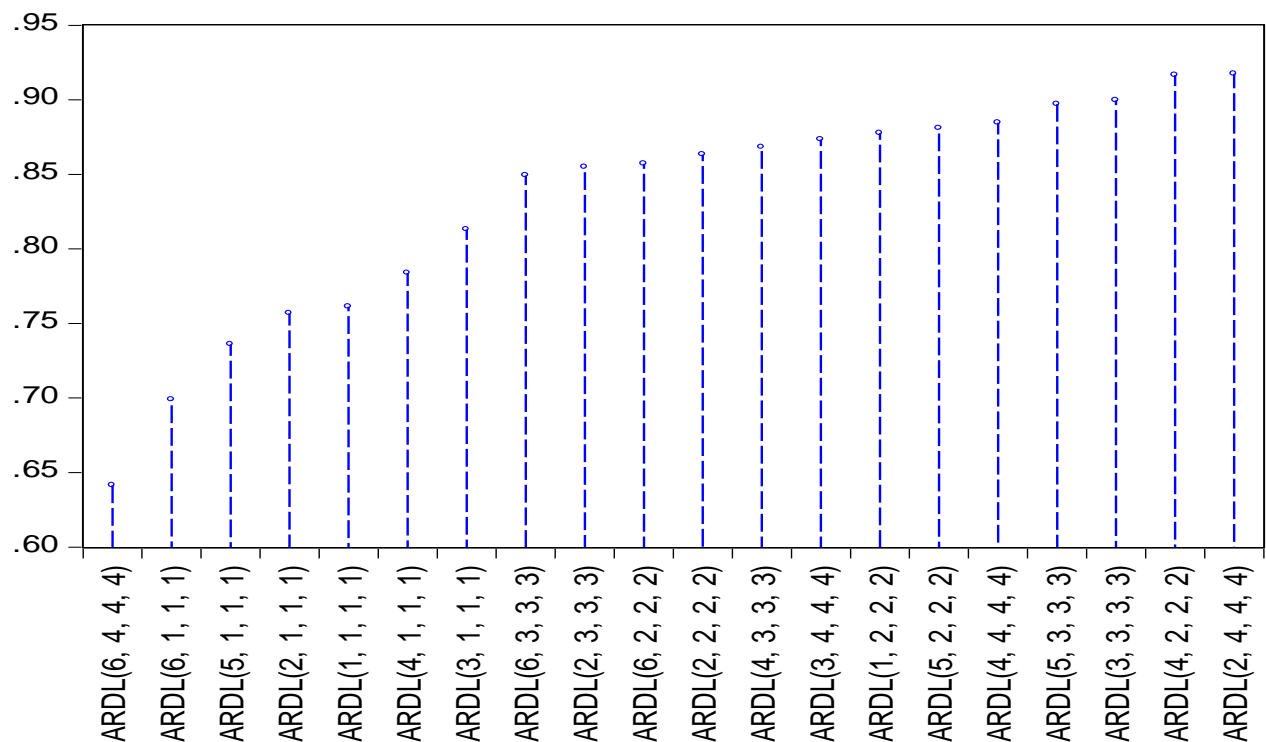


Figure-1. Optimal model selection of ARDL (akaikie information criteria).

While selecting appropriate maximum lag lengths with automatic selection under Akaike Information Criteria (AIC), we have estimated ARDL Model for long and short run estimates.

Table-8. Long run estimates of panel model.

Dependent Variable: D(LnGDPG)				
Model selection method: Akaike info criterion (AIC)				
Selected Model: ARDL(6, 4, 4, 4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LnEX	0.629670	0.120532	5.224100	0.0000
LnIMP	-0.664867	0.352884	-1.884094	0.0642
FDI	0.371595	0.096173	3.863808	0.0003

The results of long run estimates have been presented in Table 8. The result confirms export-led growth hypothesis in case of SAARC countries. The result is in line with number of studies such as Balassa (1985); Parida and Sahoo (2007); Medina-Smith (2000); Seabra and Galimberti (2012) and Kumari and Malhotra (2015). A 1 percent increase in exports may leads to cause economic growth by 0.62 percent which also proves export potential for this region. Therefore; to ensure long-term growth; the region need to integrated with global world to sustain its upward growth, create more jobs and economic development for its people. Policymakers need to implement and ambiguous range of policy to implements an ambitious range of reforms that can turn the regions into the world next export power (World Bank, 2019). Moreover; foreign exchange from export earning can also be used to imports capital and intermediate goods to enhance growth.

Table-9. Short-run estimates of panel model.

Dependent Variable: D(LnGDPG)				
Model selection method: Akaike info criterion (AIC)				
Selected Model: ARDL (6, 4, 4, 4).				
ECM(-1)	-1.431219	0.589750	-2.426821	0.0181
D(GDPG(-1))	0.655284	0.578356	1.133013	0.2615
D(GDPG(-2))	0.536123	0.594920	0.901168	0.3709
D(GDPG(-3))	0.289217	0.307332	0.941059	0.3503
D(GDPG(-4))	0.295633	0.261916	1.128728	0.2633
D(GDPG(-5))	0.178443	0.221952	0.803969	0.4244
D(EX)	-0.556764	2.331738	-0.238777	0.8121
D(EX(-1))	2.138019	1.366663	1.564409	0.1227
D(EX(-2))	-0.814167	1.391289	-0.585188	0.5605
D(EX(-3))	-0.994394	0.610060	-1.629993	0.1081
D(IMP)	0.619595	1.555323	0.398371	0.6917
D(IMP(-1))	-1.284561	0.832072	-1.543810	0.1276
D(IMP(-2))	-0.091395	0.686766	-0.133080	0.8946
D(IMP(-3))	0.033348	0.253368	0.131620	0.8957
D(FDI)	-0.291280	0.348400	-0.836051	0.4063
D(FDI(-1))	-0.394480	0.208827	-1.889028	0.0635
D(FDI(-2))	-0.184767	0.195483	-0.945183	0.3482
D(FDI(-3))	-0.280690	0.070182	-3.999470	0.0002
C	2.212869	1.094008	2.022717	0.0474
@TREND	0.004013	0.012351	0.324893	0.7463
Log likelihood	45.79675			
Cross Section Short Run Equation				
Countries	Coefficient	Std. Error	t-Statistic	Prob.*
Bangladesh	-2.342712	0.325736	-7.192063	0.0055
India	-0.61650	0.239957	-2.569223	0.0825
Pakistan	-2.539204	0.112492	-22.57277	0.0002
Sri-Lanka	-0.226455	0.068264	-3.317322	0.0451

Finally foreign competition brings economies of scale and accelerates technical progress in production resulting economic growth (Moosa, 1999). We have found significantly positive impact of FDI on economic growth of SAARC countries. The finding is similar with Lan (2006); Mottaleb (2007); Hansen and Rand (2006); Ahmad *et*

al. (2012); Andraz and Rodrigues (2010). We can conclude that FDI positively enhances economic growth in South Asia, both directly and indirectly. The negative and significant association between import and gdp growth has been found in this study which is logically accepted that increasing imports worsen balance of trade. A 1 percent decrease in import may leads to increase economic growth by 0.66 percent. Increasing imports not only increase debt of region but also increase demand of foreign currency that negatively impacts economic growth. the finding is in line with the study of Mohsen (2015); Kholis (2012) and Kartikasari (2017). Moreover; deficit in trade reflects foreign borrowing which further increase problems in developing countries.

Table 9 elucidates the results of PGM short run estimates of both panel data. Considering the panel estimates of short run, the value of ECM is $-1.43(0.0181)$ which is validating convergence of the model towards long run equilibrium after occurrence of any shocks in the short. Meanwhile, cross-section estimates of short run also indicate movement towards equilibrium as ECM term's signs are negative and statistically significant for Bangladesh, India, Pakistan and Sri Lanka with coefficients values of -2.34 , -0.616 , -2.53 and -0.22 respectively.

6. CONCLUSION AND RECOMMENDATIONS

This study has contributed in the recent literature incorporating the dynamics of ELG for selected economies of South Asia. We have investigated the traditional concept of ELG by making the panel for the time span of 1981-2017. The dynamic behavior of the variables in the model has been captured through the panel ARDL approach. The positive and significant coefficient between the core indicators of ELG has endorsed the postulate for the selected countries. This implies that expansion in exports would be significantly transmuted in the growth of the South Asian emerging economies. Considering the other control variables of the model, all variables have been found significant influence on growth of South Asian economies.

Besides, the significant declaration of both long-run and short-run estimates affirmed the dynamics of the model under consideration in this study. This provides a plausible explanation of using appropriate variables in remodel. Moreover, the outcomes of the separate short run ECM has revealed no considerable variations implying the short run convergence in all four economies. On the whole, the ELG in the developing economies of South Asia has been declared effective in improving the growth.

In this regard, we have proposed a few doable policy measures in the lieu of two main insights, notably considering the long term perspective and to rectify the distortions in case of disequilibrium in the short run.

- This is high time for the South Asian economies to calibrate the initiative of export expansion which may tend to facilitate their exports and markets to international exposure. This will not only fabricate the capacity of exports in these economies but will also provide an accelerator effect to economic progress.
- Considering the geo-political patterns of the South Asia, it is well persuaded that economies in the region lag behind in terms of regional trend and integration. Therefore, it is essential for these economies to compose worthy regional trade policies and go beyond conflicts in order to converge in a more liberalized region.
- There is also a dire need for the region to develop the research and development (R&D) infrastructure in order to acquire knowledge and technological expertise.
- The harmony of the ELG in South Asia can be conveniently attained through enhancement in productive capacity to fulfill local demand, technological intensiveness, and competitive prices (home and foreign) and last but not the least product and market diversification.
- Turning to the demand of the importing countries, the exports of value added and manufactured products are highly inelastic and thus provide an intuition for the economies to deviate from their traditional exports of primary goods.
- Nevertheless, the economies must reduce their reliance on external sources (imports) and adopt the contemporary models of growth as these models emphasize on local components of aggregate demand.

- The extraordinary propensity of imports must be eliminated and should be replaced with the initiatives of raising wages specifically in the services sector in compliance with more focus on financial derivatives alleviating savings of the economies.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Acknowledgement: All authors contributed equally to the conception and design of the study.

REFERENCES

- Afonso, A. and C. Rault, 2008. 3-step analysis of public finances sustainability: The case of the European Union. Available from <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp908.pdf?9f225d7f465ec17611f9d1fad6643a0>.
- Ahmad, N., M.F. Hayat, M. Luqman and S. Ullah, 2012. The causal links between foreign direct investment and economic growth in Pakistan. *European Journal of Business and Economics*, 6(1): 20-21.
- Ahmad, N., K. Kostelić and A. Ahmad, 2016. Is export led hypothesis valid in Pakistan? If so, how important is export to Europe?. In *EU Future Perspectives: Innovation, Entrepreneurship & Economic Policy*. Available from <https://www.researchgate.net/publication/304521669>.
- Alimi, S., 2012. Is the export-led growth hypothesis valid for Nigeria. *Research Journal of Economics and Business Studies*, 12(2): 8-14.
- Andraz, J. and P. Rodrigues, 2010. What causes economic growth in Portugal: Exports or inward FDI? *Journal of Economic Studies*, 37(3): 267-287. Available at: <https://doi.org/10.1108/01443581011061276>.
- Aslan, A. and E. Topcu, 2018. The relationship between export and growth: Panel data evidence from Turkish sectors. *Economies*, 6(2): 1-15. Available at: <https://doi.org/10.3390/economies6020022>.
- Awokuse, T.O., 2003. Is the export-led growth hypothesis valid for Canada? *Canadian Journal of Economics*, 36(1): 126-136.
- Balassa, B., 1985. Exports, policy choices, and economic growth in developing countries after the 1973 oil shock. *Journal of Development Economics*, 4(1): 23-35.
- Baltagi, B.H., 2013. *Econometric analysis of panel data*. 5th Edn., The Atrium, Southern Gate, Chichester: John Wiley & Sons Ltd.
- Bhagwati, J.N., 1988. Export-promoting trade strategy: Issues and evidence. *World Bank Research Observer*, 3(1): 27-57. Available at: <https://doi.org/10.1093/wbro/3.1.27>.
- Bhatti, W.K. and R. Bashir, 2015. Exports LED growth: A case study of Pakistan. *Journal of Economics and Sustainable Development*, 6(3): 35-40.
- Bilas, V., M. Bošnjak and S. Franc, 2015. Examining the export-led growth hypothesis: The case of Croatia. *Our Economy*, 61(3): 22-31. Available at: <https://doi.org/10.1515/ngoe-2015-0010>.
- Biyase, M. and T. Zwane, 2014. Is the export-led growth hypothesis valid for African countries? An application of panel data approach. *Public and Municipal Finance*, 3(2): 30-34.
- Blecker, R.A., 2003. *The diminishing returns to export-led growth. The bridge to a global middle class: Development, trade, and international finance*. Boston: Kluwer. pp: 259-298.
- Bosupeng, M., 2015. The export-led growth hypothesis: New evidence and implications. Available from <https://www.researchgate.net/publication/315723253>.
- Chow, K.H., 2010. Asian Tigers' choices: An overview. ADBI Working Paper Series, No. 238.
- Coakley, J., A.-M. Fuertes and R. Smith, 2006. Unobserved heterogeneity in panel time series models. *Computational Statistics & Data Analysis*, 50(9): 2361-2380. Available at: <https://doi.org/10.1016/j.csda.2004.12.015>.
- Dhawan, U. and B. Biswal, 1999. Re-examining export-led growth hypothesis: A multivariate cointegration analysis for India. *Applied Economics*, 31(4): 525-530. Available at: <https://doi.org/10.1080/000368499324246>.
- Din, M.U., 2004. Exports, imports, and economic growth in South Asia: Evidence using a multivariate time-series framework. *The Pakistan Development Review*, 43(2): 105-124. Available at: <https://doi.org/10.30541/v43i2pp.105-124>.

- Eberhardt, M. and F. Teal, 2011. Econometrics for grumblers: A new look at the literature on cross-country growth empirics. *Journal of Economic Surveys*, 25(1): 109-155. Available at: <https://doi.org/10.1111/j.1467-6419.2010.00624.x>.
- Ee, C.Y., 2016. Export-led growth hypothesis: Empirical evidence from selected Sub-Saharan African countries. *Procedia Economics and Finance*, 35: 232-240. Available at: [https://doi.org/10.1016/s2212-5671\(16\)00029-0](https://doi.org/10.1016/s2212-5671(16)00029-0).
- Ekanayake, E., 1999. Exports and economic growth in Asian developing countries: Cointegration and error-correction models. *Journal of Economic Development*, 24(2): 43-56.
- Eusuf, M.A. and M. Ahmed, 2007. Causality between export and growth: Evidence from South Asian Countries. MPRA Paper No. 21027.
- Fazli, P. and E. Abbasi, 2018. Analysis of the validity of Kuznets curve of energy intensity among D-8 countries: Panel-ARDL approach. *International Letters of Social and Humanistic Sciences*, 81: 1-12. Available at: <https://doi.org/10.18052/www.scipress.com/ilshs.81.1>.
- Felipe, J., 2003. Is export-led growth passé? Implications for developing Asia. Available from <https://www.adb.org/sites/default/files/publication/28337/wp048.pdf>.
- Foster, N., 2006. Exports, growth and threshold effects in Africa. *The Journal of Development Studies*, 42(6): 1056-1074. Available at: <https://doi.org/10.1080/00220380600775027>.
- Giles, J.A. and C.L. Williams, 2000. Export-led growth: A survey of the empirical literature and some non-causality results. Part 1. *The Journal of International Trade & Economic Development*, 9(3): 261-337. Available at: <https://doi.org/10.1080/09638190050086177>.
- Grossman, G.M. and E. Helpman, 1991. Trade, knowledge spillovers, and growth. *European Economic Review*, 35(2-3): 517-526. Available at: [https://doi.org/10.1016/0014-2921\(91\)90153-a](https://doi.org/10.1016/0014-2921(91)90153-a).
- Hakizimana, J., 2015. The relationship between foreign direct investment (FDI) and GDP per capita in Rwanda. Available from <https://poseidon01.ssrn.com/delivery.php?ID=99402012300009910608607901807010701011604506706009502811009608410302212310802201810101806309911102604203410411201608209300702102906600403308300107411911100901907512307702205002002501111087027094127021016116001012076127008003109086114005109075102020087&EXT=pdf>.
- Hansen, H. and J. Rand, 2006. On the causal links between FDI and growth in developing countries. *World Economy*, 29(1): 21-41. Available at: <https://doi.org/10.1111/j.1467-9701.2006.00756.x>.
- Hausmann, R., J. Hwang and D. Rodrik, 2007. What you export matters. *Journal of Economic Growth*, 12(1): 1-25. Available at: <https://doi.org/10.1007/s10887-006-9009-4>.
- Hye, Q.M.A., S. Wizarat and W.-Y. Lau, 2013. Trade-led growth hypothesis: An empirical analysis of South Asian countries. *Economic Modelling*, 35(C): 654-660. Available at: <https://doi.org/10.1016/j.econmod.2013.07.040>.
- Im, K.S., M.H. Pesaran and Y. Shin, 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1): 53-74.
- Jarreau, J. and S. Poncet, 2012. Export sophistication and economic growth: Evidence from China. *Journal of Development Economics*, 97(2): 281-292. Available at: <https://doi.org/10.1016/j.jdeveco.2011.04.001>.
- Kao, C., 1999. Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 90(1): 1-44. Available at: [https://doi.org/10.1016/s0304-4076\(98\)00023-2](https://doi.org/10.1016/s0304-4076(98)00023-2).
- Kartikasari, D., 2017. The effect of export, import and investment to economic growth of Riau Islands Indonesia. *International Journal of Economics and Financia*, 7(4): 663-667.
- Kemal, A., M. Din, U. Qadir, L. Fernando and S. Colombage, 2002. Exports and economic growth in south asia. A study prepared for the south asia network of economic research institutions. Available from http://saneinetwork.net/Files/02_05.pdf.
- Kholis, M., 2012. The impact of foreign direct investment on Indonesia's economic growth; Macroeconomic studies with the application of panel data. *Journal of Organization and Management*, 8(2): 111-120.

- Kónya, L., 2006. Exports and growth: Granger causality analysis on OECD countries with a panel data approach. *Economic Modelling*, 23(6): 978-992. Available at: <https://doi.org/10.1016/j.econmod.2006.04.008>.
- Krueger, A.O., 1978. Foreign trade regimes and economic development: Liberalization attempts and consequences. *Journal of Development Economics*, 6(3): 447-451.
- Kumari, D. and N. Malhotra, 2015. Export and economic growth in select South Asian countries: Causality analysis based on Granger test & VECM. *Arthshastra Indian Journal of Economics & Research*, 4(4): 21-36. Available at: <https://doi.org/10.17010/aijer/2015/v4i4/77668>.
- Lan, N.P., 2006. Foreign direct investment and its linkage to economic growth in Vietnam: A provincial level analysis. Centre for Regulation and Market Analysis, University of South Australia. Conference Paper. Retrieved from https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=ESAM07&paper_id=24.
- Love, J. and R. Chandra, 2004. Testing export-led growth in India, Pakistan and Sri Lanka using a multivariate framework. *The Manchester School*, 72(4): 483-496. Available at: <https://doi.org/10.1111/j.1467-9957.2004.00404.x>.
- Malhotra, N. and D. Kumari, 2016. Revisiting export-led growth hypothesis: An empirical study on South Asia. *Applied Econometrics and International Development*, 16(2): 157-168.
- Medina-Smith, E.J., 2000. Is the export-led growth hypothesis valid for developing countries? A case study of Costa Rica. *Policy Issues in International Trade and Commodities. Study Series No.7. UNCTAD*. Available from https://unctad.org/en/docs/itcdtab8_en.pdf.
- Mehra, M. and B.A. Firouzjaee, 2011. Granger causality relationship between export growth and GDP growth in developing countries: Panel cointegration approach. *International Journal of Humanities and Social Science*, 1(16): 223-231.
- Mohsen, A.S., 2015. Effects of oil and non-oil exports on the economic growth of Syria. *Academic Journal of Economic Studies*, 1(2): 69-78.
- Moosa, I.A., 1999. Is the export-led growth hypothesis valid for Australia? *Applied Economics*, 31(7): 903-906. Available at: <https://doi.org/10.1080/000368499323869>.
- Mottaleb, K.A., 2007. Determinants of foreign direct investment and its impact on economic growth in developing countries. Working Paper MPRA Paper No. 9457, Posted 07 Jul 2008 02:28 UTC. Available from https://mpra.ub.uni-muenchen.de/9457/1/MPRA_paper_9457.pdf.
- Munir, K. and Z. Javed, 2018. Export composition and economic growth: Evidence from South Asian countries. *South Asian Journal of Business Studies*, 7(2): 225-240. Available at: <https://doi.org/10.1108/sajbs-10-2017-0117>.
- Nasreen, S., 2011. Export-growth linkages in selected Asian developing countries: Evidence from panel data analysis. *Asian Journal of Empirical Research*, 1(1): 1-13.
- Palley, T.I., 2011. The contradictions of export-led growth (No. 119). *Public Policy Brief*. Available from <https://www.econstor.eu/bitstream/10419/54288/1/675943582.pdf>.
- Parida, C.P. and P. Sahoo, 2007. Export-led growth in South Asia: A panel cointegration analysis. *International Economic Journal*, 21(2): 155-175. Available at: <https://doi.org/10.1080/10168730701345414>.
- Paul, B.P., 2011. Revisiting export-led growth for Bangladesh: A synthesis of cointegration and innovation accounting. *International Journal of Economics and Finance*, 3(6): 3-15. Available at: <https://doi.org/10.5539/ijef.v3n6p3>.
- Pazim, K.H., 2009. Panel data analysis of "export-led" growth hypothesis in BIMF-EAGA Countries. Available from https://mpra.ub.uni-muenchen.de/13264/1/MPRA_paper_13264.pdf.
- Pesaran, M.H., Y. Shin and R.P. Smith, 1999. Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446): 621-634. Available at: <https://doi.org/10.1080/01621459.1999.10474156>.
- Pesaran, M.H., Y. Shin and R.P. Smith, 1999;1997. Pooled estimation of long-run relationships in dynamic heterogeneous panels. *DAE Working Papers Amalgamated Series*, No. 9721.
- Pesaran, M.H. and R. Smith, 1995. Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, 68(1): 79-113. Available at: [https://doi.org/10.1016/0304-4076\(94\)01644-f](https://doi.org/10.1016/0304-4076(94)01644-f).

- Razmi, A.M. and G. Hernandez, 2011. Can Asia sustain an export-led growth strategy in the aftermath of the global crisis? An empirical exploration. ADBI Working Paper No, 329.
- Reppas, P.A. and D.K. Christopoulos, 2005. The export-output growth nexus: Evidence from African and Asian countries. *Journal of Policy Modeling*, 27(8): 929-940. Available at: <https://doi.org/10.1016/j.jpolmod.2005.06.007>.
- Rizavi, S.S., K.M. Khan and H.S. Mustafa, 2010. Openness and growth in South Asia. *South Asian Studies*, 25(2): 419-428.
- Ronit, M. and P. Divya, 2014. The relationship between the growth of exports and growth of gross domestic product of India. *International Journal of Business and Economics Research*, 3(3): 135-139. Available at: <https://doi.org/10.11648/j.ijber.20140303.13>.
- Safdari, M., M. Mahmoodi and E. Mahmoodi, 2011. The causality relationship between export and economic growth in Asian developing countries. *American Journal of Scientific Research*, 25(1): 40-45.
- Saglam, Y. and H.A. Egeli, 2017. Empirical analysis of export-led growth and domestic demand-led growth hypotheses in East Asia. *Uluslararası İktisadi ve İncelemeler Dergisi*, 19(1): 211-226.
- Salvatore, D., 1983. A simultaneous equations model of trade and development with dynamic policy simulations. *Kyklos*, 36(1): 66-90. Available at: <https://doi.org/10.1111/j.1467-6435.1983.tb02661.x>.
- Seabra, F. and J.K. Galimberti, 2012. Conditioned export-led growth hypothesis: A panel threshold regressions approach. *Economy Magazine*, 38(2): 07-24. Available at: <https://doi.org/10.5380/re.v38i2.29947>.
- Shafiullah, M., S. Selvanathan and A. Naranpanawa, 2017. The role of export composition in export-led growth in Australia and its regions. *Economic Analysis and Policy*, 53: 62-76. Available at: <https://doi.org/10.1016/j.eap.2016.11.002>.
- Shahbaz, M., P. Azim and K. Ahmad, 2011. Exports-led growth hypothesis in Pakistan: Further evidence. *Asian Economic and Financial Review*, 1(3): 182-197.
- Shan, J. and F. Sun, 1998. On the export-led growth hypothesis: The econometric evidence from China. *Applied Economics*, 30(8): 1055-1065. Available at: <https://doi.org/10.1080/000368498325228>.
- Shirazi, N.S. and T.A.A. Manap, 2005. Export-led growth hypothesis: Further econometric evidence from South Asia. *The Developing Economies*, 43(4): 472-488. Available at: <https://doi.org/10.1111/j.1746-1049.2005.tb00955.x>.
- Singer, H.W., 1975. The distribution of gains between investing and borrowing countries. In *The Strategy of International Development*. London: Palgrave Macmillan. pp: 43-57.
- Tekin, R.B., 2012. Economic growth, exports and foreign direct investment in least developed Countries: A panel Granger causality analysis. *Economic Modelling*, 29(3): 868-878. Available at: <https://doi.org/10.1016/j.econmod.2011.10.013>.
- Thornton, J., 1996. Cointegration, causality and export-led growth in Mexico, 1895-1992. *Economics Letters*, 50(3): 413-416. Available at: [https://doi.org/10.1016/0165-1765\(95\)00780-6](https://doi.org/10.1016/0165-1765(95)00780-6).
- World Bank, 2019. South Asia economic focus: Export wanted. World Bank Publication. Available from <http://pubdocs.worldbank.org/en/610891557730060473/051419-South-Asia-Economic-Focus-Exports-Wanted-Robert-Beyer.pdf>.
- Yew, W.L., 2004. The role of domestic demand in the economic growth of Malaysia: A cointegration analysis. *International Economic Journal*, 18(3): 337-352. Available at: <https://doi.org/10.1080/1016873042000269993>.

Views and opinions expressed in this article are the views and opinions of the author(s), Asian Journal of Economic Modelling shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.