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EXPORT-GROWTH NEXUS WHILE USING THE BLOCK EXOGENEITY: EMPIRICAL EVIDENCE FROM PAKISTAN

ZWIĄZEK MIĘDZY EKSPORTEM A WZROSTEM W KONTEKŚCIE WYKORZYSTANIA EGZOGENICZNOŚCI BLOKOWEJ: DANE EMPIRYCZNE Z PAKISTANU

Abstract

The core objective of the study is to analyze the association between export and economic growth under the consideration of the time frame 1967 to 2017 for Pakistan economy. The review of literature assists to find out the frequently utilize factors are the real GDP per capita, export, import, trade openness, fiscal development and capital formation possible determinants of the economic growth. However, Export Led Growth (ELG) hypothesis is oftenly employed to elaborate the affiliation between export and the growth. Auto-regressive distributed lag (ARDL) bound test approach to cointegration accompanied with the structural break and vector auto regressive (VAR) are employed to analysis the long-term association among real GDP per capita, export, import, trade openness, fiscal development and capital formation. The empirical analysis confirms the cointegration among the factors and the ELG hypothesis holds in Pakistan economy. The Block Exogeneity reveals that export and the capital formation have strong influence to stimulate the economic growth. While all the other factors have cumulative influence on the growth. Moreover, the impulse response exposes that if the shock of real GDP per capita, import, trade openness, fiscal development and the capital formation are given to the export, then response of export would be positive in the coming time frame.

Keywords: *Export, Fiscal Development, Capital Formation, Structural Break down and Block Exogeneity*

Streszczenie

Głównym celem badania jest analiza związku między eksportem a wzrostem gospodarczym w okresie 1967–2017 dla gospodarki Pakistanu. Przegląd literatury pomaga ustalić, że prawdopodobne czynniki wzrostu gospodarczego to rzeczywisty PKB na miesz-

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kańca, eksport, import, otwartość handlu, rozwój fiskalny oraz nakłady kapitałowe. Jednak hipoteza wzrostu dzięki eksportu (ELG) jest często stosowana w celu opracowania powiązania między eksportem a wzrostem. Do analizy długoterminowego związku między rzeczywistym PKB na mieszkańca, eksportem, importem, otwartością handlową, rozwojem fiskalnym i nakładami kapitałowymi stosuje się podejście do kointegracji z autogresyjnym rozproszonym opóźnieniem (ARDL) wraz ze strukturalnym podziałem i automatyczną regresją wektorową (VAR). Analiza empiryczna potwierdza kointegrację między czynnikami i hipotezę wzrostu dzięki eksportu (ELG) w gospodarce Pakistanu. Blokowa egzogeniczność wykazuje, że eksport i nakłady kapitałowe mają silny wpływ na rozwój ekonomiczny. Wtenczas gdy wszystkie inne czynniki mają kumulatywny wpływ na wzrost. Ponadto reakcja impulsowa ujawnia, że jeśli wpływ rzeczywistego PKB na mieszkańca, import, otwartość handlu, rozwój fiskalny i nakłady inwestycyjne wywierany jest na eksport, wówczas reakcja eksportu byłaby pozytywna w nadchodzących ramach czasowych.

Słowa kluczowe: Eksport, rozwój fiskalny, kształtowanie kapitału, struktura podziału i egzogeniczność blokowa

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Statement of the problem in general outlook and its connection with important scientific and practical tasks.

From the last decade, the developing economies are struggling to develop outward-orientation policies to achieve the economic growth. However, numerous economists highlight that export is the core element which energize the economic growth (Hassan & Murtala, 2016; Kumari & Malhotra 2015; Saleem & Sial 2015; Rangasamy, 2009; Jordaan & Eita, 2007; Mamun & Nath, 2005; Chandra & Love, 2005). The supporters believe that increase in the export enhance the standard of living while increasing the per capita income. They also elaborate that export influence the productivity of the goods and services through a series of possible ways such as dispersion of technical enhancement, effective use of resources, competition among firms, economics of scale, easy access to foreign exchange and increase in the imports of raw material and capital goods which in turn enhance the capital formation. Hence, it stimulates domestic as well as export production in the economy (Saleem & Sial, 2015; Chaudhary et al, 2007; Awokuse, 2006; Afzal, 2006; Quddus & Saeed, 2005; Thangavelu & Rajaguru, 2004; Akbar & Naqvi, 2000; Chuang, 2000) widely recognize as Export- Led Growth (ELG) hypothesis in literature. The export-led growth (ELG) system illustrates a policy which promote the export considerably incorporated with the economic growth globally (Balassa, 1971). It is proven by numerous studies that ELG hypothesis affect the export – growth positively by its multiplier effects (Ulrich, 2014; Sengupta 1993; Salvatore & Hatcher 1991; Ram 1985; Krueger 1978). Although, trade openness is thought a suitable parameter to extend the

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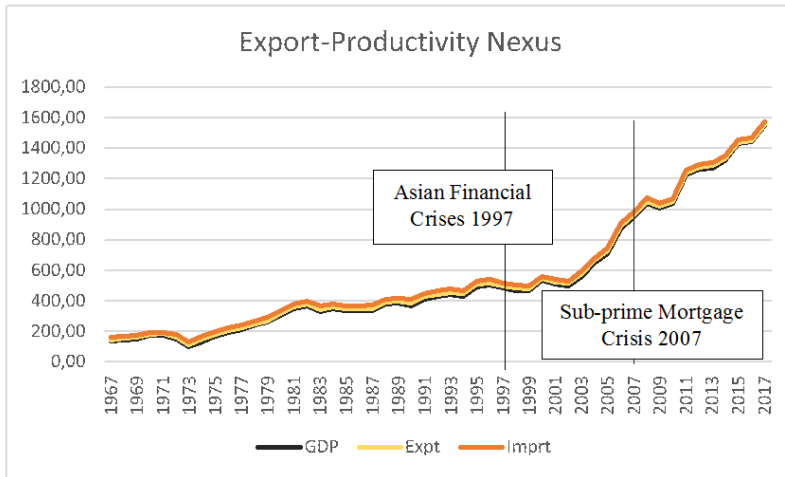
economic prosperity which assist to utilize the potential provision of the resources while bestowing the numerous fluctuating reimbursements.

On the contrary, in growth-led export (GLE) phenomena, the economic growth can enhance the export capacity and can introduce many products for domestic market's demand. The GLE hypothesis investigates the association between growth and exports. And their course of causality would be economic growth towards the exports (Arnade & Vasavada, 1995), or may be bi-directional (Kugler & Dridi; Xu, 1996). However, new growth approach reported that export of technological skills effect all the sectors (Hessels & Stel 2011; Plumper & Graff, 2001) of the economy even increasing the economies to scale, promotes the learning and innovations, efficient utilization of resources, which in turn increase the per capita and enhance the economic growth (Crespo-Cuaresma & Worz, 2005). The newly industrialized countries such as Malaysia, Indonesia, India, Philippines, Hong Kong, Singapore, Taiwan, Thailand and South Korea obtain fast economic growth, while utilizing the export-oriented strategies (Liu et al, 2009; Thangavelu & Rajaguru, 2004).

Pakistan on the other side, in 50's and 60's adopts the policy of the import substitution to recover the balance of payment (BOP) and to enhance the home industry. Although, in 70's diverts to the export promotion policy (Afzal, 2006). And in 80's move to the outward oriented policy. However, to increase the export, the government take steps to enhance the export sector such as export subsidies, effective exchange rate, exports bonus scheme and export licenses during different times to inspire the manufactured exports (Afzal, 2006; Quddus & Saeed, 2005). The exports from the developing economies are highly rigorous which are very unpredictable in demand and lead to the uncertainty in export earnings (Amurgo-Pacheco & Pierola, 2008). The most important problem was resolved by the Velde (2010), while answering the question i.e. how developing economies are influenced by the crises emerged globally like 2008. Numerous researchers incorporated with many factors specially the export from developing nations and determined that both product and geographical export variation is very important for elastic to the crises (Siddiqui, 2018).

In recent past Pakistan encourages and sponsored rigorous enhancement in the export-productivity (output) relation. Consequently, Pakistan has to face many contests which are in the favor of the outward-oriented growth during the Asian financial crisis (1997) or the sub-prime mortgage recession 2008 in the America which affect the whole economy very quickly. So, Pakistan's export-productivity nexus are demonstrated on the bases of internal and external construction. Fig.1 presents the export, import, and gross domestic product (GDP) of Pakistan comprises on the 1967 to 2017.

Fig.1. Pakistan’s Export-Productivity Relation.



Source: Author(s) calculation

The fig also elaborates that all the factors fluctuate due to the regime shift and organizational changes. Especially in the era of 1997 at the Asian Financial crisis and the sub-prime mortgage 2007 crisis in America. It is noted that the shockwaves unusually effect the Pakistan’s export- productivity connection.

This work tries to fill the breach among the literature in three ways. First of all, to investigate the association among the export, import and gross domestic product for Pakistan by considering the structural break. Secondly, it utilizes the ARDL approach to elaborate the short and the long-run affiliation among them. Thirdly, used the Block exogeneity to measure the cumulative influence of all factors on the gross domestic product. And lastly, employ the impulse response function to examine the future behavior of the variables i.e. if one variable fluctuates then what would be the response of the other variable.

Analysis of latest research where the solution of the problem was initiated.

Numerous research work is available to elaborate the export-growth association with different findings. However, four hypotheses carry weights in this regard. The first is the ELG approach which recognize that export is the engine of the growth. So, country should adopt the export-oriented policy to boost up the trade openness which in turn promotes the growth in many ways. Such as easy foreign exchange policy for the import of capital as well as transitional goods for home production (Chenery & Strout, 1966; McKinnon, 1964). Export enhance the efficient resource utilization and the economies of scale to compete at world level (Balassa, 1978; Krueger, 1980). And export also make easy access to the high technology and efficient management that upgrade the technological development (Liu & Zhang 2015; Awokuse & Christopoulosb 2009; Yamada 1998; Helpman & Krugman, 1985).

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Secondly, the GLE approach reported that inward-looking enhancement policy is the suitable to promote economic growth. While the third view states a bidirectional causal bond between exports and economic (Lean & Smyth, 2010; Tsen 2010; Liu et al., 2009; Fugarolas et al, 2007; Awokuse, 2006; Al-Mamun & Nath, 2005; Abual-Foul, 2004; Abdulai & Jaquet, 2002; Chuang, 2000) and the fourth determines no causal relationship between the two variables.

Kilavuz and Topcu (2012) states that export of high technological industrial equipment along with the investment are significantly and positively effects the economic growth. Additionally, in the second model, high and low technological industrial material along with investment significantly but positively affect the growth of the economy. For this purpose, they employ the 22 developing economies utilizing the time frame of 1998–2006 with two models.

While Dreger and Herzer (2013) employ the 45 developing nations to investigating the association of export with the non-export GDP and found that in the short run there is positive but in the long run there is negative association between them. However, the factors have different affiliation between them across the nations.

Kundu (2013), while applying the Fixed effects model in India, Sri Lanka, Bhutan, Maldives, Nepal, Bangladesh and Pakistan. The study does not find the appropriate prove of the ELG hypothesis in the expressed the member of the SAARC countries. Although, Ugwuegbe, et al. (2013) found a positive and significant association of the oil and the non-oil export to the economic growth in the Nigeria. Furthermore, Hye et al. (2011) reported the validation of the ELG hypothesis in the Six Asian economies except Pakistan, and Import led growth hypothesis prevails in all the countries. While, GLE hypothesis valid in all nations except Nepal and Bangladesh though growth-led import applies to all nations.

Hamed, Hadi, and Hossein (2014) conducted research on the 23 developing nations from South Asia, South America and North Africa, while utilizing the standard deviation of the Revealed Comparative Advantage (RCA) Index. And concluded that export variation positively influenced the economic growth. Moreover, Muhoro and Otieno (2014) reported the validation of the ELG hypothesis in the Kenya. While Paul (2014) found the prove of the validation of the ELG in the short as well as in the long run in the Bangladesh for the period of 1979-2010.

Ahmed and Hamid (2014), while employing the cumulative export experience function at 2-digit level of SITC export statistics of Pakistan, found the significant relation GDP and trade openness with the export whereas the relation of Structural Change Index and Product Concentration Index was found insignificant. Forgha, Sama, and Atangana (2014) concluded that export variation positively affects the GDP per capita for Cameron. Kumari and Malhotra (2015) analysis states that ELG hypothesis prevails in the Sri Lanka and Bangladesh in the long-run and India only for the short-term and found no casual association in Pakistan. However, Bashir et al. (2015) reviles the validation of the ELG hypothesis in Pakistan for the period 1972-2012. Saleem and Sial (2015) also found the long-term association of the exports, human-capital and capital-formation on GDP in Pakistan for the 1973-2013.

Hassan and Murtala (2016) confirms the GLE in the Malaysia while utilizing the Toda and Yamamoto augmented causality test. Lam (2016), found a short-run bi-directional

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causality for Malaysia, Philippines and Thailand. While in Indonesia uni-directional causality from economic growth to exports. Ee (2016) confirms the ELG hypothesis in the Botswana, Equatorial Guinea and Mauritius while utilizing the government expenditure, investment and exports on economic growth. Balavac and Pugh (2016) work shows that change in the productivity and export fluctuations are positive but significantly associated. This conclusion is based on the 25 transitional countries.

Uddin and Khanam (2015) describes in their research that in Bangladesh the export is less than the import which shows the trade deficit. However, the study reports that import and the GDP growth are negatively but insignificantly correlated. Keho (2017) finds out the ELG hypothesis exists in the Cote d'Ivoire in the long term.

Saddiqui (2018) in their work finds a modest positive link between GDP growth and export variation but significant. Recently, Romyen et al, (2019) found that the phenomena of ELG hypothesis is prevailing in the Thailand. Also concludes that the export– growth situation prevails in the short run but fluctuating upward continuously.

In the consideration of the above stated literature, it is clear that Export led growth (ELG) hypothesis beautifully explore the connection between the export and economic growth. Numerous researchers employed different factors to examine the association among them and considerably found different results. Simply saying that the affiliation between export- growth are of fluctuating nature. This work tries to fulfill the literature gap and explore the new perspective of the export-growth nexus under the consideration of the Pakistan economy.

Aims of paper. Methods

Theoretical Frame Work and Data

Saleem and Sial (2015) in their study design a equation which was more likely to the classical model such as presented.

$$Z = \rho C + \delta B + \sigma T \quad (1)$$

Which is very resembles to the neo-classical production function and also employed to study the association among the export, import and the GDP. The study will employ their model, while adding some important variables which are elaborated by the literature review. These includes the Romyen et al, 2019; Aamir Hussain Siddiqui, 2018; Yaya Keho, 2017; Saeed & Altaee, (2017) and Dutt et al, (2015)

$$\ln Y_t = \lambda_0 + \lambda_1 \ln GF + \lambda_2 \ln HC + \lambda_3 \ln X + \gamma_t \quad (2)$$

In this equation Y, GF, HC, X and γ are stands for the real GDP, gross fixed capital formation, human capital, real export and error term respectively. But in this study, we incorporated a verity of factors which have been utilized by different studies in the past (Romyen et al. 2019; Yaya Keho, 2017; Ee, 2016; Saleen & Sial, 2015; Muhoro & Otieno, 2014; Dreger & Herzer, 2013). All the factors are employed in a single study while re-framing the above stated equation 2.

$$\ln Z_t = \alpha_0 + \beta_1 \ln \text{Exp} + \delta_2 \ln \text{Ipt} + \tau_3 \ln \text{Tr} + \phi_4 \ln \text{Fs} + \pi_5 \ln \text{Cf} + \omega_t \quad (3)$$

However, Z, Exp, Ipt, Tr, Fs and Cf denotes the real gdp, export, import, trade openness, fiscal development, gross fixed capital formation and the white noise respectively. And

these $\alpha_0, \beta_1, \delta_2, \tau_3, \phi_4, \pi_5$ are the parameters. Numerous studies states that the sign of the parameters β_1 and δ_2 have a considerable positive association with the economic growth (Lam, 2016; Hassan & Murtala, 2016; Kumari & Malhotra, 2015; Kumari & Malhotra, 2014; Tsen, 2010; Rangasamy, 2009).

Data

This study incorporated a number of variables such as real GDP per capita (proxy for economic growth). export, import, fiscal development, trade openness, and gross fixed capital formation (Romyen et al. 2019; Saeed & Atlaee, 2017; Yaka Keho, 2017; Saleem & Sial, 2015). The data were collected from the world development Indicators (WDI) and Handbook of statistics (State Bank) which is comprises from 1967 to 2017.

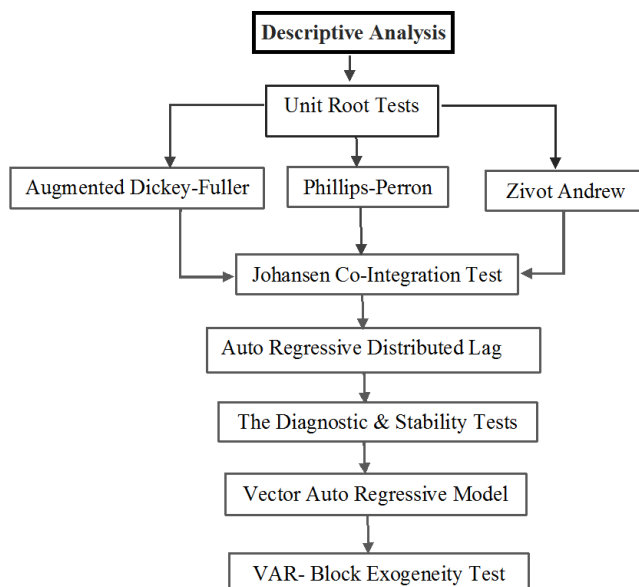
Table 1. Variables and Source

Variables	Description	Measure	Source
GDP	Gross Domestic Product	GDP at Market Price	WDI
Exp	Export	% of GDP	WDI
Imp	Import	% of GDP	WDI
To	Trade Openness	Sum of Exp & Imp	WDI
Fs	Fiscal Development	% of GDP	WDI
Cf	Capital Formation	% of GDP	WDI

Source: Author(s) calculation

The study will follow the plan which is expressed in the figure 02.

Fig 2. Plan of the Study.



Source: Author(s) calculation

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In the perspective of the past work, it is necessary to design a considerable strategy to investigate the ELG hypothesis while employing the conceivable factors for the export - growth nexus. This analysis is carried to ensure the short and long-run association along with the possible variables which play key role in the export- growth nexus. Hence, the ARDL in equational form can be presented such as.

$$\begin{aligned} \Delta \ln Z_t = & \alpha_0 + \sum_{w=1}^v \alpha_{1w} \Delta \ln Z_{t-w} + \sum_{w=1}^v \alpha_{2w} \Delta \ln \text{Exp}_{t-w} + \sum_{w=1}^v \alpha_{3w} \Delta \ln \text{Ipt}_{t-w} + \sum_{w=1}^v \alpha_{4w} \Delta \ln \text{Tr}_{t-w} \\ & + \sum_{w=1}^v \alpha_{5w} \Delta \ln \text{Fs}_{t-j} + \sum_{w=1}^v \alpha_{6w} \Delta \ln \text{Cf}_{t-w} + \delta_1 \ln Z_{t-1} + \delta_2 \ln \text{Exp}_{t-1} + \delta_3 \ln \text{Ipt}_{t-1} \\ & + \delta_4 \ln \text{Tr}_{t-1} + \delta_5 \ln \text{Fs}_{t-1} + \delta_6 \ln \text{Cf}_{t-1} + \lambda_t \end{aligned} \tag{4}$$

$$\begin{aligned} \Delta \ln \text{Exp}_t = & \alpha_0 + \sum_{w=1}^v \alpha_{1w} \Delta \ln \text{Exp}_{t-w} + \sum_{w=1}^v \alpha_{2w} \Delta \ln Z_{t-w} + \sum_{w=1}^v \alpha_{3w} \Delta \ln \text{Ipt}_{t-w} + \sum_{w=1}^v \alpha_{4w} \Delta \ln \text{Tr}_{t-w} \\ & + \sum_{w=1}^v \alpha_{5w} \Delta \ln \text{Fs}_{t-w} + \sum_{w=1}^v \alpha_{6w} \Delta \ln \text{Cf}_{t-w} + \delta_1 \ln Z_{t-1} + \delta_2 \ln \text{Exp}_{t-1} + \delta_3 \ln \text{Ipt}_{t-1} \\ & + \delta_4 \ln \text{Tr}_{t-1} + \delta_5 \ln \text{Fs}_{t-1} + \delta_6 \ln \text{Cf}_{t-1} + \eta_t \end{aligned} \tag{5}$$

$$\begin{aligned} \Delta \ln \text{Ipt}_t = & \alpha_0 + \sum_{w=1}^v \alpha_{1w} \Delta \ln \text{Ipt}_{t-w} + \sum_{w=1}^v \alpha_{2w} \Delta \ln Z_{t-w} + \sum_{w=1}^v \alpha_{3w} \Delta \ln \text{Exp}_{t-w} + \sum_{w=1}^v \alpha_{4w} \Delta \ln \text{Tr}_{t-w} \\ & + \sum_{w=1}^v \alpha_{5w} \Delta \ln \text{Fs}_{t-w} + \sum_{w=1}^v \alpha_{6w} \Delta \ln \text{Cf}_{t-w} + \delta_1 \ln Z_{t-1} + \delta_2 \ln \text{Exp}_{t-1} + \delta_3 \ln \text{Ipt}_{t-1} \\ & + \delta_4 \ln \text{Tr}_{t-1} + \delta_5 \ln \text{Fs}_{t-1} + \delta_6 \ln \text{Cf}_{t-1} + \pi_t \end{aligned} \tag{6}$$

The above stated equations show the long-term affiliation among the factors. Hence for the short term, the error correction model is presented in the equational form.

$$\begin{aligned} \Delta \ln \text{Exp}_t = & \alpha_0 + \sum_{w=1}^v \alpha_{1j} \Delta Z_{t-w} + \sum_{w=1}^v \alpha_{2w} \Delta \ln \text{Exp}_{t-w} + \sum_{w=1}^v \alpha_{3w} \Delta \ln \text{Ipt}_{t-w} + \sum_{w=1}^v \alpha_{4w} \Delta \ln \text{Tr}_{t-w} \\ & + \sum_{w=1}^v \alpha_{5j} \Delta \ln \text{Fs}_{t-w} + \sum_{w=1}^v \alpha_{6w} \Delta \ln \text{Cf}_{t-w} + \text{ECT}_{t-1} + \varepsilon_t \end{aligned} \tag{7}$$

However, the term ECT is stands for the short-term affiliation among the factors. The term also explains the speed of adjustment meanings that how much one factors adjusted towards equilibrium every year.


Exposition of main material of research with complete substantiation of obtained scientific results. Discussion

Results and the Discussion

To illustrate the basic overview of the factors, all the data is presented descriptively which introduce the mean, median, maximum, minimum, standard deviation, and normally distribution of the data of the study and enables to identify the associations among variables. Hence the data is comprising from 1967 to 2017 in the Table 1. The result shows that the mean value of export and growth are the 6.03 and 6.06 which lies between the 4.46 (mini) and 4.61(mini) and the 7.34(maxi) and 7.34(maxi) respectively. However, import, trade openness, fiscal development and the capital formation are the 6.00, 3.46, 3.15 and 2.75 respectively. Table 02 describes all the variables descriptively.

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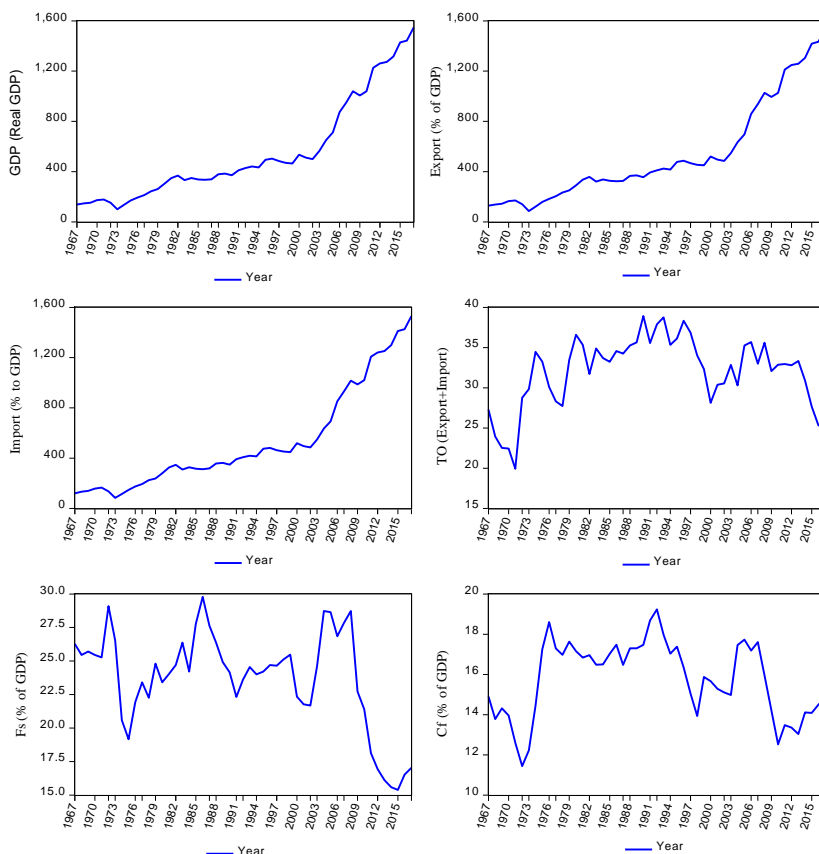
Table 2. Data Description.

	Ln GDP	Ln Exp	Ln Ipt	Ln To	Ln Fs	Ln Cf
Mean	6.06	6.03	6.00	3.46	3.15	2.75
Median	6.06	6.02	6.01	3.50	3.20	2.79
Maximum	7.34	7.34	7.33	3.66	3.39	2.96
Minimum	4.61	4.46	4.43	2.99	2.73	2.44
Std. Devi.	0.72	0.74	0.76	0.15	0.17	0.12
Skewness	0.04	0.01	-0.01	-1.18	-1.05	-0.57
Kurtosis	2.21	2.25	2.22	4.08	3.39	2.48
Jarqu-Bera	1.36	1.20	1.30	14.35	9.75	3.38

Source: Author(s) calculations

While figure 03 demonstrate the episodic increase in data under the consideration of the data 1967 to 2017. Each and every graph represents the ups and downs of the variable through it passes.

Fig 3. Trend of Variables.



Source: Author(s) calculation

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To detect the stationery, a number of tests like ADF test, PP test and for data break ZA test were utilized whom results are presented in the Table 03, 04 and 05 individually.

Table 3. ADF Test Results.

Variables		t stat	P Value	Lag	Conclusion
ln GDP	Constant	-0.18	0.93	1	
	1 st Difference	-5.50	0.00*	1	I(1)
	Trend and Constant	-2.83	0.19	1	
ln Exp	1 st Difference	-5.50	0.00*	1	
	Constant	-0.26	0.92	1	I(0)
	1 st Difference	-5.68	0.00*	1	
ln Ipt	Trend and Constant	-3.00	0.14	1	
	1 st Difference	-5.64	0.00*	1	
	Constant	-0.31	0.91	1	
ln To	1 st Difference	-5.55	0.00*	1	I(1)
	Trend and Constant	-3.08	0.12	1	
	1 st Difference	-5.50	0.00*	1	
ln Fd	Constant	-2.21	0.20	1	
	1 st Difference	-7.69	0.00*	1	I(1)
	Trend and Constant	-1.97	0.60	1	
ln Cf	1 st Difference	-7.92	0.00*	1	
	Constant	-1.89	0.33	1	
	1 st Difference	-5.84	0.00*	1	I(1)
ln Fd	Trend and Constant	-2.39	0.37	1	
	1 st Difference	-5.82	0.00*	1	
	Constant	-2.96	0.04**	1	
ln Cf	1 st Difference	-5.03	0.00*	1	I(0)
	Trend and Constant	-2.99	0.14	1	
	1 st Difference	-5.00	0.00*	1	

***, **&* 10, 5 & 1% Significance Level respectively

Source: Author(s) calculation

Table 4. Phillips-Perron Test Results.

Variables		t stat	P Value	Lag	Conclusion
ln GDP	Constant	-0.09	0.94	1	
	1 st Difference	-6.06	0.00*	1	I(1)
	Trend and Constant	-2.51	0.32	1	
ln Exp	1 st Difference	-6.00	0.00*	1	
	Constant	-0.12	0.94	1	I(0)
	1 st Difference	-6.25	0.00*	1	
ln Ipt	Trend and Constant	-2.55	0.29	1	
	1 st Difference	-6.19	0.00*	1	
	Constant	-0.19	0.93	1	
ln To	1 st Difference	-6.16	0.00*	1	I(1)
	Trend and Constant	-2.60	0.27	1	
	1 st Difference	-6.10	0.00*	1	
ln Fs	Constant	-2.27	0.18	1	
	1 st Difference	-8.05	0.00*	1	I(1)
	Trend and Constant	-2.02	0.57	1	
ln Cf	1 st Difference	-13.76	0.00*	1	
	Constant	-1.61	0.46	1	
	1 st Difference	-5.77	0.00*	1	I(1)
ln Cf	Trend and Constant	-2.07	0.54	1	
	1 st Difference	-5.72	0.00*	1	
	Constant	-2.29	0.17	1	
ln Cf	1 st Difference	-5.20	0.00*	1	I(1)
	Trend and Constant	-2.29	0.42	1	
	1 st Difference	-5.40	0.00*	1	

***, **&* 10, 5 & 1% Significance Level respectively

Source: Author(s) calculation

All the factors are stationery at 1(1), except the gross fixed capital formation which has 1(0) integration order. Which shows the rejection of the H_1 : non-stationery. However, to capture the break down in the data, Zivot Andrew test (2002) was utilized whom results are mention in the Table 05.

Table 5. Structural Breaks Zivot Andrew Test.

Variables	A-Intercept			B-Trend			Both = A & B		
	t-stat	Prob.	Year	t-stat	Prob.	Year	t-stat	Prob.	Year
Ln GDP	-3.43	0.05	1989	-3.18	0.00	2002	-3.62	0.11	1996
Ln Exp	-3.59	0.04	1989	-3.30	0.00	2002	-3.72	0.14	1996
Ln Ipt	-3.64	0.12	1992	-3.33	0.00	2002	-3.78	0.12	1996
Ln To	-3.19	0.00	1979	-3.94	0.01	1981	-3.99	0.01	1979
Ln Fs	-	5.47	2009	-	0.01	2008	-4.50	0.00	2003
Ln Cf	4.66**	0.01	2008	4.20***	0.53	1980	-4.14	0.42	1979

At Intercept -5.34.-4.93 and -4.58 are the *** (10%), ** (5), * (1) are the critical values. And -4.80, -4.42 and -4.11 ate at the Trend level. While A&B -5.57, 5.08 and -4.82 are the critical value. T-stat should be greater than the critical values in all cases (A, B and A&B).

Source: Author(s) calculation

Whom results state that fiscal development and the capital formation has the structural break. The fiscal development has break in the data both in the year 2009 and the 2008 at the intercept and the trend level respectively. We all aware of the sub-prime crisis which effect the whole world because of the globalization. However, to elaborates the association among the real GDP, export, import, trade openness, fiscal development and the capital formation, correlation method is employed, which elaborates that all the variables fluctuates together. The results are as follows in Table 06.

Table 6. Correlation.

Variables	LnGDP	LnExp	LnIpt	LnTo	LnFs	LnCf
LnGDP	1					
LnExp		1				
LnIpt			1			
LnTo				1		
LnFs					1	
LnCf						1

Source: Author(s) calculation

The outcome reports the required level of correlation among the factors. The next notable thing is the past value of the variables to attain a suitable number of past values, lag length is employed which assist to find out the suitable number of the lags. The results are such as in the Table 07.

Table 7. Lag length Outcomes.

lag	logL	LR	FPE	AIC	SC	HQ
0	362.09	NA	2.62e-14	-14.24	-14.01	-14.15
1	638.03	474.60*	1.80e-18*	-23.84*	-22.23*	-23.22*

Source: Author(s) calculation

The AIC states that one lag will be enough. While for the long-term association among the factors, the Johansen cointegration test is employed, the results are mention in the Table 08 and 09 respectively.

Table 8. Trace Values.

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Trace Statistic	5% Critical Value	Prob.	Hypothesized No. of CE(s)
$A_0: n = 0$	$A_1: n \leq 1$	0.59	110.01	95.75	0.00	None *
$A_1: n \leq 1$	$A_1: n \leq 2$	0.46	79.28	69.81	0.00	At most 1*
$A_1: n \leq 2$	$A_1: n \leq 3$	0.39	50.81	47.85	0.02	At most 2*
$A_1: n \leq 3$	$A_1: n \leq 4$	0.32	28.02	29.79	0.07	At most 3*

Source: Author(s) calculation

Table 9. Maxi-Eigen Value.

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Max-Eigen Statistic	5% Critical Value	Prob.	Hypothesized No. of CE(s)
$A_0: n = 0$	$A_1: n \leq 1$	0.59	41.73	37.07	0.03	None *
$A_1: n \leq 1$	$A_1: n \leq 2$	0.46	28.46	27.49	0.01	At most 1*
$A_1: n \leq 2$	$A_1: n \leq 3$	0.39	50.81	57.85	0.12	At most 2
$A_1: n \leq 3$	$A_1: n \leq 4$	0.32	28.02	25.29	0.07	At most 3*

Source: Author(s) calculation

The outcomes of the Johansen confirm the long-term affiliation among the real GDP per capita, export, import, trade openness, fiscal development and the capital formation, which is alike the findings of the Forgha, Sama, and Atangana (2014); Bashir et al. (2015); Saleem and Sial (2015); Hassan and Murtala (2016); Balavac and Pugh (2016); Ee (2016); Uddin and Khanam (2017); Yaya Keho (2017); Saddiqui (2018); Romyen et al, (2019) in their respective countries.

This research utilizes the approach design by the Pesaran et al. (2001). to determines the short and long-term association among the GDP, export, import, trade openness, fiscal development and the capital formation. The necessary condition for the ARDL approach is the there is no 2nd difference stationery exist. While the $H_0: \phi_0 = \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5$ while $H_1: \{ \phi_0 \neq 0 \} \cup \{ \phi_1 \neq 0 \} \cup \{ \phi_2 \neq 0 \} \cup \{ \phi_3 \neq 0 \} \cup \{ \phi_4 \neq 0 \} \cup \{ \phi_5 \neq 0 \}$

0) having long term association among the variables. The results of the ARDL bound test are mention in the table 10.

Table 10. ARDL Bound Testing Estimations.

LnGDP LnEXP LnIPT LnTO LnFS LnCF				
Test stat	Value	Sigif.	I(0)	I(1)
F-stat	3.83	10%	2.08	3.00
K	5	5%	2.39	3.38
		1%	3.06	4.15
LNEXP LNGDP LNIPT LNTN LNFS LNCF				
Test stat	Value	Sigif.	I(0)	I(1)
F-stat	4.13	10%	2.08	3.00
K	5	5%	2.39	3.38
		1%		4.15
LNIPT LNGDP LNEXP LNTN LNFS LNCF				
Test stat	Value	Sigif.	I(0)	I(1)
F-stat	6.58	10%	2.08	3.00
K	5	5%	2.39	3.38
		1%	3.06	4.15

Source: Author(s) calculation

It is illustrated from the results that when economic growth, export and the import are individually dependent factors then in all cases F-stat value (3.83, 4.13 and 6.58) is bigger than the upper bound value at 5% and 10% respectively. Which propose that H0 with no cointegration is rejected in contrast to the H1 with cointegration is accepted. Therefore, it is determined that long run affiliation among the factors exists.

However, Table 10 demonstrate the short and the long-term elasticities of the ARDL approach.

Table 10. ARDL short and long-term Estimation.

Variables	Coefficient	Std. Error	t- stat	Prob.
Δ Ln GDP	0.11	0.07	2.87	0.03**
Δ Ln Exp	0.69	0.11	3.00	0.06***
Δ Ln Ipt	0.38	0.35	3.01	0.00*
Δ Ln TO	0.20	0.08	3.49	0.01**
Δ Ln Fs	0.26	0.06	3.06	0.03**
Δ Ln Cf	0.25	0.13	3.63	0.03**
ECT	-0.69			0.04**
Long Run Coefficient				

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Ln GDP	0.14	0.05	2.68	0.01**
Ln Exp	1.99	0.05	3.79	0.01**
Ln Ipt	0.52	0.16	3.30	0.00*
Ln To	0.09	0.03	3.04	0.00*
Ln Fs	0.20	0.08	2.48	0.01**
Ln Cf	0.44	0.27	2.74	0.02**
Adjusted R ²	0.89			
AIC	-2.75			
HQC	-2.12			

Source: Author(s) calculation ***, ** and * shows the significance level at 10, 5 and 1 % respectively.

Table 10 elaborates the elasticities of short and long-term, all the factors (growth, export, import, trade openness, fiscal development and gross fixed capital formation) are affiliated with each other in both time frame with positive but significant influence. However, the error correction term (ECT), {should be negative and significant (P 0.04) (Banerjee et al, 1998)} states that 67% dis-equilibrium is adjusted every year. Which conforms that the ELG hypothesis is prevailing in the Pakistan economy. The outcomes are alike with the conclusions of Taghavi et al, 2012; Kilavuz & Topcu, 2012; Dreger & Herzer, 2013; Paul, 2014; Ahmed & Hamid, 2014; kumari & Malhotra, 2015; Saleem & Sial, 2015; lam, 2016; Keho, 2017; Romyen et al, 2019 in their respective countries. Although, to find out the stability, study utilizes a series of diagnostic test mention in the Table 11. In which ARCH models (Engle 1982) value is greater than 0.05 shows that H₀: Homoskedasticity which is required. The Breusch–Godfrey serial correlation LM (Breusch 1978; Godfrey 1978) to find out the serial correlation, the p value is greater than 0.05 showing the acceptance of the H₀: no serial correlation.

Table 11. Outcomes of Diagnostic tests.


Diagnostic tests			
ARCH test	χ^2 - stat	df (3.12)	Prob (0.35)
Breusch-Godfrey serial	χ^2 - stat	df (1.69)	Prob (0.63)
Corelation LM test			
Ramsey RESET test	F-stat (16.2)	df (1, 39)	Prob (0.45)
Jarque-Bera test	F-stat (1.24)		Prob (0.75)

Source: Author(s) calculation

However, Ramsey RESET test provide evidences i.e. model specification is correct i.e. p value > 0.05. Moreover, Jarque and Bera test value is greater > 0.05 which elaborates that residual term is normal i.e. N0: Normal distribution is accepted for the designed model. Furthermore, to find out the stability of parameter the CUSUM and the CUSUMSQ tests were employed. The figures 3 and 4 show the straight line which lies between the critical bound at 5% significance level, showing the N0: stable parameters which is desirable. Therefore, this confirms the stability and reliability of parameters in the model presented graphically in the Fig 04 and 05.

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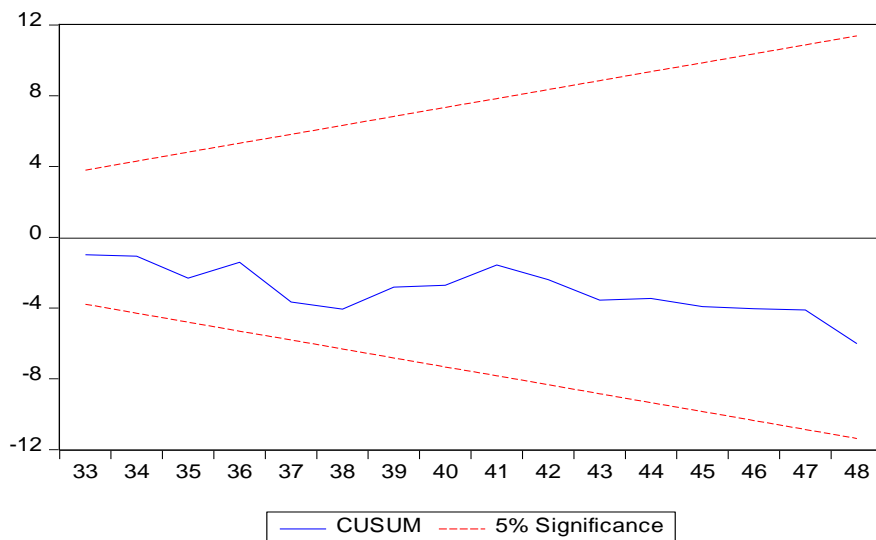
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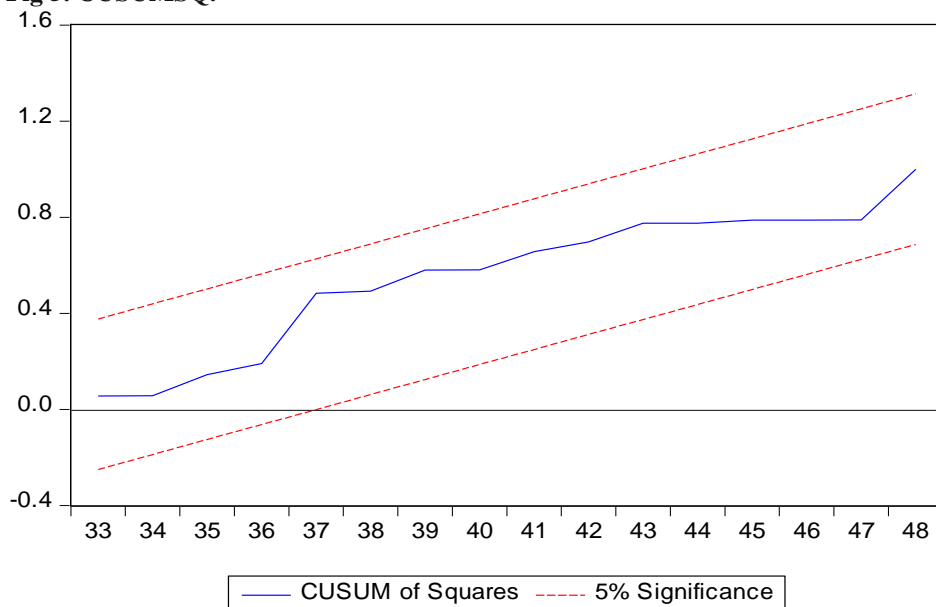
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Fig 4. CUSUM.



Source: Author(s) calculation

Fig 5. CUSUMSQ.



Source: Author(s) calculation

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Now study moves to find out the fluctuating effects of the factors. Sims (1980) introduces VAR approach because there is no endogenous and exogeneous variables, it deals all the factors on the same line. The estimations are presented in the Table 12.

Table12. Vector Auto Regressive Estimations.

Variables	Ln GDP	Ln Exp	Ln Ipt	Ln To	Ln Fs	Ln Cf
Ln GDP	3.728	3.187	5.322	1.408	-2.209	1.337
	-2.955	-3.223	-3.020	-2.617	-2.062	-1.725
	[1.261]	[0.988]	[1.762]	[0.538]	[-1.070]	[0.775]

Source: Author(s) calculation

The p-value reported is the 0.03 which is less than 0.05 which is desirable. However, the VAR cannot be elaborate individually, so study utilize the VAR-Block exogeneity which assist to find out the cumulative response of all the factors.

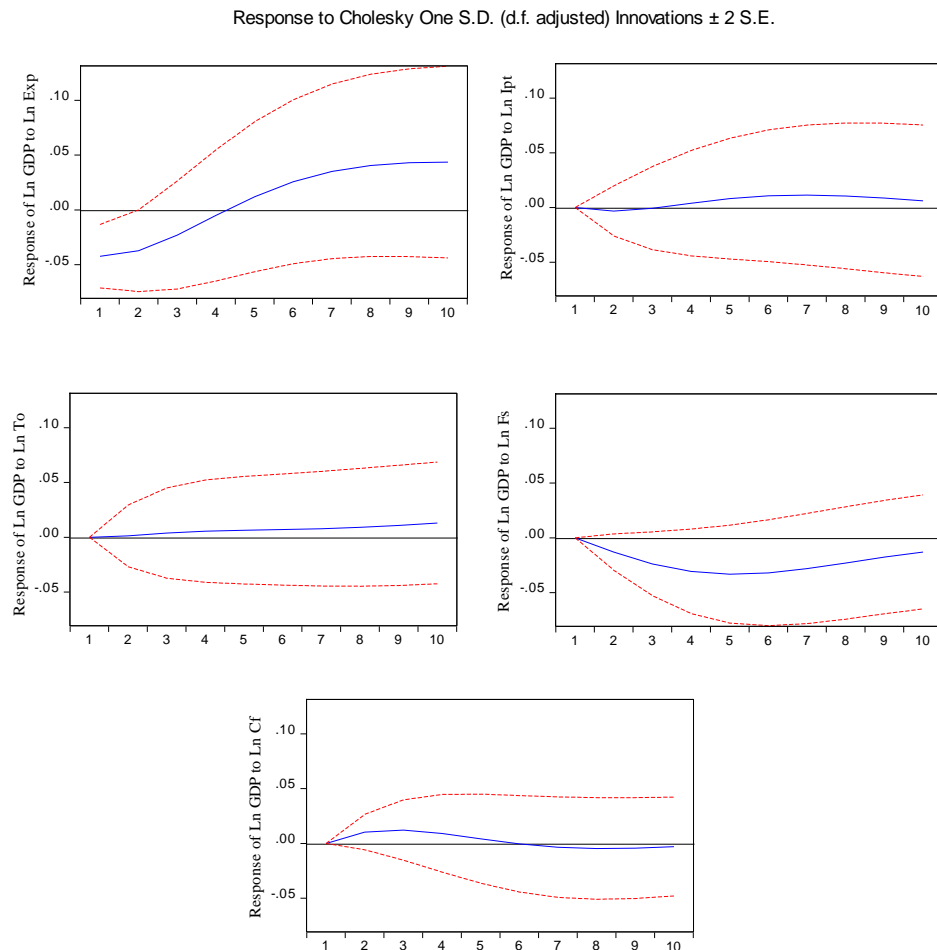
Table 13. Block Exogeneity.

Dependent variable: LNGDP			
Excluded	Chi-sq	df	Prob.
Ln Exp	4.714076	2	0.094
Ln Ipt	0.043974	2	0.978
Ln To	0.804846	2	0.668
Ln Fs	0.716174	2	0.699
Ln Cf	5.250784	2	0.072
All	19.18364	10	0.038

Source: Author(s) calculation

The values show that the export and fixed capital formation have the strong influence on the economic growth while all the other factors like import, trade openness and fiscal development along with the export and the capital formation cumulatively influence the economic growth. However, to illustrate the response of the all the factors when shock of one variable is given to the others. Because we are living in the dynamic world where everything is fluctuating. Moreover, the policy maker make experiment to observe the response of all the other factors while changing one variable. To detect the response of all the factors, the impulse response function (IRF) was employed fig 6.

Fig 6. Impulse Response Function.



Source: Author(s) calculation

The impulse response function (IRF) assist to capture the response when a variable fluctuates and the shock wave passes through the whole economy. In other words, when all the other factors (like export, imports, trade openness, fiscal development and the capital formation) fluctuate from their level then in what direction the economic growth moves in the future. Now study elaborates and discuss the response of the export when all other factors fluctuate. The fig 06 states that when a standard deviation shock of export is given to the economic growth then the economic growth starts to increase with an increasing way, attain the equilibrium and respond positively meaning that with an increase in the level of the export, growth rate is affected positively. Which is the key

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objective of our designed methodology i.e. export lead the growth. It seems here is prevailing in Pakistan scenario which is also examined by the Saleem and Sial (2015).

The fig 6 also shows that with a change in the level of import the response of the economic growth would be initially negative but very close to the equilibrium state, after 3rd period attain the equilibrium and increase with an increasing rate. Simply, if the government increase the imports then it would attain the stabilization state in the long term. While the response of the economic growth would be also positive when the trade openness exists in the economy. Meaning that the policy should be such that which favor the trade openness while lowering the restriction for the other nation.

Moreover, the response of the fiscal development initially would be positive but turns into negative with the passage of time. After the fifth period it starts to move towards the equilibrium line and then moves along with it. Although the change in the capital formation, the growth would respond positively till fifth period, after that become negative and moves very close to the equilibrium line.

Conclusions

In this work, an effort was made to investigate the long-term affiliation between the export and the economic growth. Moreover, the study analysis the export led growth hypothesis, does it prevail in the Pakistan economy or not. For this purpose, numerous variables such as real GDP per capita (economic growth), export, import, trade openness, fiscal development and the gross fixed capital formation were employed which are comprises on the data from 1967 to 2017, collected from the world development indicator (WDI). To investigate the association among the concerning variables Johansen co-integration, ARDL, VAR, VAR-Block Exogeneity and Impulse response were employed.

To establish the relation, the study initially utilized the stationery test like ADF test, PP test and the ZA test, to detect the zero mean and constant variance. While ZA test find out the time break in the data exists in different series of the variables. The Johansen confirms the long-term affiliation among economic growth, export, import, trade openness, fiscal development and the gross fixed capital formation. The ARDL bound test were employed economic growth, export and imports individually and study found the critical value (3.83, 4.13 & 6.58 respectively) are greater than the upper bound values at five percent significant level.

Then study find out the short term and long-term elasticities utilizing the ARDL approach and came to know that all the factors are positively and significantly influence the economic growth in both time frame. However, to empowers the finding or the model a number of diagnostic tests were employed which concludes that the specification of the model is correct, model is normally distributed and there is no problem of auto correlation and the model is homoscedastic along with parameters lies in the 5% significant level boundary. The short and the long-term affiliation was also determined by the Romyen et al, 2019; Saddiqui, 2018; Keho 2017; Saleem & Sial, 2015; Khan et al, 2012).

So, to analyze the fluctuating influence of all the factors, the study employs the VAR model. Which elaborates that all the factors cumulatively influence the economic growth of Pakistan. Moreover, the future response of the all the variables IRF was employed which illiterates that export enhance the economic growth, import. Fiscal development

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and the capital formation while trade openness in the long term moves towards the equilibrium.

The study suggest that the government should adopt the export-oriented policies which enhance the economic growth. And focus on the innovative and high-tech production to penetrate the international market which in turn enhance the imports. Moreover, country should design strategies under the consideration of the neighbor country's demand. In simple words the trade policies should be liberalize which promote the trade openness.

References:

1. Abdulai A., Jacquet P., (2002). *Exports and economic growth: cointegration and causality evidence for Cote d'Ivoire*. African Development Review, 14(1), 1-17.
2. Abdalla M., Abdelbaki H.H., (2014). *Determinants of Economic Growth in GCC Economies*. Asian Journal of Research in Business Economics and Management, 4(11), 46-62.
3. Abual-Foul B., (2004). *Testing the export-led growth hypothesis: evidence from Jordan*. Applied Economics Letters, 11(6), 393-396.
4. Aditya A., Acharyya, R., (2013). *Export diversification, composition, and economic growth: Evidence from cross-country analysis*. The Journal of International Trade & Economic Development, 22(7), 959-992.
5. Afzal M., (2006). *Causality between exports, world income and economic growth in Pakistan*. International Economic Journal, 20(1), 63-77.
6. Ahmed H., Hamid N., (2014). *Patterns of export diversification: Evidence from Pakistan*. The Lahore Journal of Economics, 19, 307.
7. Akbar M., Naqvi Z.F., Din M.U., (2000). *Export diversification and the structural dynamics in the growth process: The case of Pakistan* [with comments]. The Pakistan Development Review, 573-589.
8. Arnade C., Vasavada U., (1995). *Causality between productivity and exports in agriculture: evidence from Asia and Latin America*. Journal of Agricultural Economics, 46(2), 174-186.
9. Awokuse T.O., Christopoulos D.K., (2009). *Nonlinear dynamics and the exports–output growth nexus*. Economic Modelling, 26(1), 184-190.
10. Awokuse T.O., (2003). *Is the export-led growth hypothesis valid for Canada?* Canadian Journal of Economics/Revue canadienne d'économique, 36(1), 126-136.
11. Bashir D., Iqbal M., Nasim I., (2015). *Exports-led growth hypothesis: The econometric evidence from Pakistan*. Canadian Social Science, 11(7).
12. Balassa B., (1971). *Regional integration and trade liberalization in Latin*. Journal of Common Market Studies 10, 58–77.
13. Balassa B., (1978). *Exports and economic growth: Further evidence*. Journal of Development Economics, 5(2), 181-189.
14. Balavac M., Pugh G., (2016). *The link between trade openness, export diversification, institutions and output volatility in transition countries*. Economic Systems, 40(2), 273-287.
15. Banerjee A., Dolado J., Mestre R., (1998). *Error-correction mechanism tests for cointegration in single-equation framework*. Journal of Time Series Analysis, 19(3), 267-283.
16. Chaudhary M.A., Shirazi N.S., Chaudhary M.A.S., (2007). *Trade policy and economic growth in Bangladesh: A revisit*. Pakistan Economic and Social Review, 45(1), 1-26.
17. Chenery H., Strout A., (1966). *Foreign assistance and economic development*. American Economic Review, 56(4), 679-733.
18. Chuang Y., (2000). *Human capital, exports and economic growth: A causality analysis for Taiwan, 1952-1995*. Review of International Economics, 8(4), 712-720.

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[DOI 10.5604/01.3001.0014.3531](https://doi.org/10.5604/01.3001.0014.3531)

19. Cuaresma J.C., Wörz J., (2005). *On export composition and growth*. Review of World Economics, 141(1), 33-49.
20. Dreger C., Herzer D., (2013). *A further examination of the export-led growth hypothesis*. Empirical Economics, 45(1), 39-60.
21. Dickey D.A., Fuller W.A., (1981), *Likelihood ratio statistics for autoregressive time series with a unit root*. Econometrica, 49(4), 1057-1072.
22. Ee Yee Chia (2016), *Export-Led Growth Hypothesis: Empirical Evidence from Selected Sub-Saharan African Countries*, Procedia Economics and Finance, 35, 232 – 240.
23. Elheddad M., (2016). *Natural Resources and FDI in GCC Countries*, International Journal of Business and Social Research, 6(7), 12-22.
24. Forgha N., Sama N., Atangana E., (2014). *The effects of export diversification on economic growth in Cameroon*. International Invention Journal of Arts and Social Sciences, 1(3), 54-69.
25. Furuoka F., (2007). *Do exports act as —engine of growth? Evidence from Malaysia*. Economics Bulletin, 6(37), 1-14.
26. Hassan S., Murtala M., (2016). *Market size and export-led growth hypotheses: New evidence from Malaysia*. International Journal of Economics and Financial Issues, 6(3), 971-977.
27. Hamed K., Hadi D., Hossein K., (2014). *Export diversification and economic growth in some selected developing countries*. African Journal of Business Management, 8(17), 700-704.
28. Hessels J., Stel A.V., (2011). *Entrepreneurship, export orientation and economic growth*, Small Bus Econ. 37, 255–268.
29. Helpman, E. and P. Krugman, (1985). *Market structure and foreign trade*. Cambridge, MA: MIT Press.
30. Hye Q.M.A., Siddiqui M.M., (2011). *Export-led growth hypothesis: multivariate rolling window analysis of Pakistan*. African Journal of Business Management, 5(2), 531-536.
31. Jordaan A.C., Eita J.H., (2007). *Export and economic growth in Namibia: A Granger causality analysis*. South African Journal of Economics, 75(3), 540-547.
32. Keho Y., (2017). *The Export and Economic Growth in Cote d'Ivoire: evidence from a Multivariate Time series analysis*. Asian Journal of Economic Modelling. 5(2), 135-146.
33. Kilavuz E., Topc B.A., (2012). *Export and Economic Growth in the Case of the Manufacturing Industry: Panel Data Analysis of Developing Countries*. International Journal of Economics and Financial Issues. 2(2), 201-215.
34. Krueger A., (1980). *Trade policy as an input to development*. American Economic Review, 70(2), 288-292.
35. Kugler P., Dridi J., (1993). *Growth and exports in LDCs: a multivariate time series study*, International Review of Economics and Business, 40, 759-67.
36. Kumari D., Malhotra N., (2015). *Export and economic growth in selected South Asian countries: Causality analysis based on Granger test and VECM*. Arthshastra: Indian Journal of Economics and Research, 4(4), 21-36.
37. Kundu A., (2013). *Bi-directional Relationships between Exports and Growth: A Panel Data Approach*. Journal of Economics and Development Studies, 1(1), 10-23.
38. Lam T.D., (2016). *An empirical analysis of the ASEAN-4's causality between exports and output growth*. International Journal of Economics and Financial Issues, 6(2), 497-502.
39. Liu Yi., Ning Zhang (2015). *Sustainability of Trade Liberalization and Antidumping: Evidence from Mexico's Trade Liberalization toward China*. Sustainability 7(9), 11484–503.

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40. Love J., Chandra R., (2004). *Testing export-led growth in India, Pakistan and Sri Lanka using a multivariate framework*. The Manchester School, 72(4), 483-496.
41. Mamun K.A.A., Nath H.K., (2005). *Export-led growth in Bangladesh: A time series analysis*. Applied Economics Letters, 12(6), 361-364.
42. McKinnon R., (1964). *Foreign exchange constraint in economic development and efficient aid allocation*. Economic Journal, 74(294), 388-409.
43. Muhoro G., Otieno M., (2014). *Export led growth hypothesis: Evidence from Kenya*. Journal of World Economic Research, 3(4), 37-46.
44. Paul B.P., (2014). *Testing export-led growth in Bangladesh: An ARDL bounds test approach*. International Journal of Trade, Economics and Finance, 5(1), 1-5.
45. Pesaran H., Shin Y., Smith R.J., (2001). *Bounds testing approaches to the analysis of level relationships*. Journal of Applied Econometrics, 16(3), 289-326.
46. Perron P., (1997). *Further evidence on breaking trend functions in macroeconomic variables*. Journal of Econometrics, 80(2), 355-385.
47. Phillips P.C.B., Perron P., (1988). *Testing for a unit root in a time series regression*. Biometrika, 75(2), 335-346.
48. Plümper Th., Graff M., (2001). *Export specialization and economic growth*, Review of International Political Economy, 8(4), 661-688
49. Quddus M.A., Saeed I., (2005). *An analysis of exports and growth in Pakistan*. The Pakistan Development Review, 44(4), 921-937.
50. Raj S.K., Chand P.P., (2017). *Analysis of Fiji's Export and Its Impact on Economic Growth*. International Journal of Business and Social Research, 7(4), 01-14.
51. Ram R., (1987). *Exports and economic growth in developing countries: Evidence from time-series and cross-section data*. Economic Development and Cultural Change, 36(1), 51-72.
52. Rangasamy L., (2009). *Exports and economic growth: The case of South Africa*. Journal of International Development, 21(5), 603-617.
53. Romyen A., Liu J., Sriboonchitta S., (2019). *Export-Output Growth Nexus Using Threshold VAR and VEC Models: Empirical Evidence from Thailand*. Economies, 7(2), 60.
54. Saeed S.T., (2017). *Export and Economic Growth Nexus in the GCC Countries: A panel Data Approach*. International Journal of Business and Social Research, 7(12), 01-09.
55. Saleem A., Sial M.H., (2015). *Exports-growth nexus in Pakistan: Cointegration and causality analysis*. Pakistan Economic and Social Review, 53(1), 17-46.
56. Salvatore D., Hatcher T., (1991). *Inward and outward oriented trade strategies*. Journal of Development Studies, 27, 7-25.
57. Senguptaa, Jati K., (1993). *Growth in NICs in Asia: Some tests of new growth theory*. Journal of Development Studies, 29, 342-57.
58. Siddiqui A.H., (2018). *Export Diversification and Growth in Pakistan: An Empirical Investigation from 1972 to 2015* 1. Business and Economic Review, 10(1), 107-131.
59. Sims C.A., (1980). *Macroeconomics and reality*. Econometrica, 48(1), 1-48.
60. Taghavi M., Goudarzi M., Masoudi E., Gashti H.P., (2012). *Study on the Impact of Export and Import on Economic Growth in Iran*, Journal of Basic and Applied Scientific Research, 2(12), 12787-12794.
61. Thangavelu S.M., Rajaguru G., (2004). *Is there an export or import-led productivity growth in rapidly developing Asian countries? A multivariate VAR analysis*. Applied Economics, 36(10), 1083-1093.
62. Toda H.Y., Yamamoto T., (1995). *Statistical inference in vector autoregressions with possibly integrated processes*. Journal of Econometrics, 66(1-2), 225-250.

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63. Tsen W.H., (2010). Exports, domestic demand, and economic growth in China: Granger causality analysis. *Review of Development Economics*, 14(3), 625-639.
64. Ugwuegbe S.U., Uruakpa P.C., (2013). *The impact of capital formation on the growth*. Unpublished PhD thesis, University of Nigeria, Nsukka.
65. Ulrich A., (2014). *Export-oriented horticultural production in Laikipia, Kenya: Assessing the implications for rural livelihoods*. *Sustainability*, 6(1), 336-347.
66. Velde D., (2010). *The global financial crisis and developing countries: Synthesis of the findings of 11 country case studies*. Working Paper Series No. 316, Overseas Development Institute.
67. Xu Z., (1996). *On the causality between export growth and GDP growth: an empirical reinvestigation*. *Review of International Economics*, 4(2), 172-184.
68. Yamada H., (1998). *A note on the causality between export and productivity: an empirical re-examination*. *Economics Letters*, 61(1), 111-114.
69. Zivot E., Andrews D.W.K., (2002). *Further evidence on the great crash, the oil-price shock, and the unit-root hypothesis*. *Journal of business & economic statistics*, 20(1), 25-44.

ISSN 2450-2146 / E-ISSN 2451-1064

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