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Analyzing the Impact of Globalization on Economic Growth

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Abstract: Globalization is a buzz word that catches significant importance as a reform agenda post 1980. The current study is an attempt to analyze the impact of globalization on economic growth of Pakistan. The sample period for this study ranges from 1980-2009. For empirical analysis of the study, Autoregressive Distributive Lag model is employed while for data analysis Augmented Dicky Fuller test is applied. It is found that all the variables are stationary at first difference. The empirical findings of the study suggest that economic globalization in long phase of time increase growth in case of Pakistan economy, social globalization has negative impacts on growth and political globalization is insignificant which mean that it will not increase or decrease the growth of Pakistan economy. While in short run economic globalization at lag 1 and social globalization decrease the pace of growth. It is suggested to the government that as overall globalization helps in increasing the growth of economy therefore government should formulate such a policy that helps the economy to be globalized.

Keyword: globalization; growth; bound test/ARDL

JEL Classification: C22; H77; F43

1. Introduction

In the last decade of the 20th century globalization emerged as a reform agenda around the different countries of the world. It has various dimensions like political, economic and social. No common consensus is found while defining the phenomenon of globalization, amongst the researcher and scholars. Garry (1998) define the globalization as a process that helps in coordinating political systems and called it a west cultural installation in the world economy. Peter (2002) is of the view that it helps in bringing the investment, consumption and saving decision closer. By globalizing the economy a country get enable to attract investment from abroad, labor can move freely in a globalize economy, capital flow and trade increase considerably.

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Considering all these assumption related to globalization this paper attempts to find out the impacts of globalization on economic growth in Pakistan. This paper is unique in the sense that it employs relatively advance methodology of cointegration called Bound Testing Approach. It is believed that by using this relatively new methodology the results will improve and capture the true picture of the impacts of globalization comparing to the previous studies.

Rest of the study is divided into following section. Section two provide literature review, data and methodology is discussed in third section. Fourth section is about empirical results and discussion while conclusion and policy recommendation is discussed in fifth section.

2. Literature Review

Anwar (2002) told that openness and growth has no strong relationship. Although Pakistan has liberalized its trade policies but yet its trade performance is poor because they reduced tariff rate more than bound tariff under WTO. Foreign direct investment which is a main factor of growth does not increase up to the satisfactory level due to poor law and order and political instability in Pakistan.

Stiglitz (2004) highlighted that globalization impact on growth is different across the world. Globalization give benefits to developed countries and adversely affects the performance of developing countries because less developed countries keep high foreign reserve and provide low or interest free loan to the developed countries and Globalization also compel less developed countries to accept different kinds of risk (risk that are associated with exchange rate and interest rate changes) and enhance income of those countries which have comparative advantage. Karras (2003) argued that trade openness promote growth. He also suggested that global and national policies should be developed so that trade among different countries becomes easy.

Aka (2006) used share of international trade as a proxy for globalization. He argued that globalization, openness and growth are interrelated with each other. He also told that globalization reduces growth of Cote D'Ivoire both in short and long run and openness enhance growth only in short run. Dreher (2006) developed an index for 123 countries from 1970-2000. He told that globalization is the main engine that improves growth and reduces poverty inside a country. He also argued that globalization helps in providing employment and thus improve living standards of people while political globalization does not have any impact on growth. Alfaro et al (2006) stated that growth in financially stable economies is twice more than unstable economies in presence of foreign investor. They told that market structure plays an important role to attract foreign investor in order to achieve higher growth. Zhang (2006) argued that FDI has increased export and

productivity in China and it has contributed more to China's economic development.

Feridun et al (2006) analyzed the impact of Public investment, government investment, trade openness and financial openness on growth. They found that public investment show positive and significant relationship with growth. Government investment shows no relationship, trade openness play no role in promoting growth and financial openness reduces growth. Afzal (2007) used financial integration and trade openness as proxies for globalization. He argued that there exist linear relationship between financial integration, trade openness and economic growth in long run. Karagoz (2009) told that remittances impact on growth is negative and significant. FDI has no impact on growth while domestic investment and export impact is positive.

Mutascu and Fleitcher (2011) told that economic position of a country will boost up if it is more globalized. Loto (2011) found that total trade reduces growth in Nigeria, FDI helps in promoting growth. He also told that sound policies and improvement in trade with other countries will help Nigeria to get beneficial results from globalization and Nigeria should be focus on producing portfolio of product that has international demand.

Alimi and Atanda (2011)suggested that globalization increase trade, technology transfer, foreign direct investment and living standards in a country and reduces poverty and bring employment which ultimately leads to enhance growth. Neupani (2011) concluded that both globalization and education show highly significant and positive relationship with growth. He also added that economic growth will be more of those countries that are more globalized and has high education rate as compare to those countries that are less globalized and has low education rate. Kakar et al (2011) recommended that globalization as an important tool in the hand of developing country to raise growth.

As it is clear from the above analysis of the previous literature that there are although found abundant of literature describing globalization and growth relationship but still the researchers cannot come up with the common findings as some view that the globalization helps in growth of the economy while others tells the different story. Therefore a need for a study to analyze the globalization and growth relationship was felt so that the check the said relationship.

3. Data and Methodology

3.1. Data

To analyze the impact of globalization (Economic, Social and Political globalization) on economic growth, current study used time series data from 1980

to 2009.The data on GDP which is used as a proxy for growth is taken from State Bank of Pakistan (SBP). The data on KOF index which is used as a proxy for (Economic, Social and Political globalization) is taken from http://globalization.kof.ethz.ch.

3.2. Methodology

It is a well-known fact that usually there exist a unit root problem in the time series data and thus if such data is analyzed it will leads to a wrong conclusion (Granger & Newbold, 1974), the ordinary OLS application results will be spurious (Thomas, 1997). We adopt the Box and Jenkins (1970, 1976) methodology to avoid this problem and take the data at its difference form D until it became stationary. By doing so although on one hand we will be lead to the right conclusion but some degrees of freedom will be lost (Davidson et al, 1978).

Various methods have been suggested by the literature for the elimination of unit root but this will adopt Augmented Dicky Fuller (ADF) test**.**

Generally the ADF can be written as;

$$\Delta Zi = cons. + \varphi Z_{i-1} + \sum_{j=1}^{p-1} \Omega j \Delta Z_{i-j} + \mu i \dots \dots \dots (1)$$

Here the μ is the error term and $\Delta Z_{i\text{-}j} = Z_{i\text{-}1} - Z_{i\text{-}2}$

When the time trend is included it will become;

$$\Delta Zt = cons. + \varphi Z_{t-1} + \sum_{j=1}^{p-1} \Omega j \Delta Z_{t-j} + \mu t \dots \dots \dots (2)$$

In the above equation "2"time trend is represented by"t" and null hypothesis for this equation is $\varphi = 0$. If series is stationary then we reject null hypothesis.

The current study will employ ARDL/Bound test for Cointegration to make cointegration analysis. This technique is suggested by Pesaran et al (2001), and on the following reasons we select this particular technique for the analysis;

I-   This technique is simple and can easily be used. After knowing that the variables are integrated of order 1 or stationary at level then the ordinary least square is applicable.

II-   This technique does not need a prior test for unit root.

III- The main advantage of this technique is, it give best result at small sample.

Three steps are involved in ARDL approach:

a- In the first step cointegration amongst variable is tested in long run and for this Pesaran et al (2001) suggest F-statistics.

General form of long run cointegration is as:

$$\Delta Y_t = con. + \sum_{i=0}^{p} \alpha i \Delta Y_{t-i} + \sum_{i=0}^{p} \beta i \Delta N_{t-i} + \lambda 1 Y_{t-1} + \lambda 2 N_{t-1} + \varepsilon_t .... (3)$$

Co-integration is tested among "Y_t" and "N_t" in the above equation.

The null hypothesis in the above case is;

$$Ho : \lambda 1 = \lambda 2 = 0$$

$$H1 : \lambda 1 \neq \lambda 2 \neq 0$$

For making decision about long run cointegration existence, we compare the values of F-statistics which we obtained from our model with the F-statistics critical value suggested by Pesaran et al (2001). There are three possibilities about long run co-integration. (a) If the calculated value of F-statistics which we obtained from our estimation is less than lower bound of F- statistics tabulated value. It means that no long run co-integration exist among variables. (b) If F-statistics lies in between the lower and upper bound of F-statistics critical value, it means inconclusive results. (c) If F-statistics calculated value is greater than upper bound of F-statistics at 5% significance level, it shows that long run co-integration exists among variables and we can move forward to estimate long run and short run relationship (Pesaran et al, 2001).

b- In case there exist a long run cointegration then in the second step we estimate the long run elasticities of the selected model by applying OLS (Ordinary Least Square) technique.

$$Y_t = Con. + \sum_{i=0}^{p} + \lambda 1 Y_{t-1} + \sum_{i=0}^{p} \lambda 2 N_{t-1} + \varepsilon_t ......(4)$$

In above model $\lambda 1, \lambda 2$ represent long run coefficients.

c- In the third and final step it is attempted to extract the short run dynamics through Error correction model (ECM). Our short run model for this step is as;

$$\Delta Y_t = con. + \sum_{i=1}^{p} \alpha i \Delta Y_{t-i} + \sum_{i=1}^{p} \beta i \Delta N_{t-i} + \varepsilon_t ....(5)$$

$\alpha i, \beta i$ shows coefficient of short run in above model.

3.2.1. Econometric form of the Model

General econometric form of this model is as following;

$$\ln RGDP_t = \beta 0 + \beta 1(EGI)_t + \beta 2(PGI)_t + \beta 3(SGI)_t + \varepsilon_t \ldots \ldots \ldots \ldots \ldots (6)$$

Where

lnRGDP= natural log of Real Per Capita Gross Domestic Product.

lnEGI= natural log of Economic Globalization Index.

lnSGI= natural log of Social Globalization Index

lnPGI= natural log of Political Globalization Index.

ε_t = error term

Here we take real gross domestic product as a proxy for economic growth. Alimi and Atanda (2011) used RGDP as a proxy for growth to investigate the impact of globalization and business cycle on economic development in Nigeria. For globalization KOF index has been used here. This index was first of all developed by Dreher (2006) for 123 countries to analyze the impact of globalization on growth. KOF index shows three dimension of globalization which are economic social and political. Mutascu and Fleitcher (2011) also used KOF index for Romanian economy to analyze the relationships between economic growth and globalization.

The above stated general econometric model will be estimated through application of ARDL and thus we will convert it into ARDL form as following;

For long run co-integration

$$\Delta \ln RGDP_t = \alpha 0 + \sum_{i=1}^{t} \alpha 1 \Delta \ln RGDP_{t-i} + \sum_{i=1}^{u} \alpha 2 \Delta \ln EGI_{t-i} + \sum_{i=1}^{v} \alpha 3 \Delta \ln SGI_{t-i} + \sum_{i=1}^{w} \alpha 4 \Delta \ln PGI_{t-i} + \textcircled{a} \ln RGDP_{t-i} + \upsilon \ln EGI_{t-1} + \sigma \ln SGI_{t-1} + \Theta \ln PGI_{t-1} + \varepsilon_t$$

$$\text{----------}(7)$$

For Long run coefficient

$$\ln RGDP = \alpha 0 + \alpha 1 \ln EGI_{t-1} + \alpha 2 \ln SGI_{t-1} + \alpha 3 \ln PGI_{t-1} + \varepsilon_t \ldots \ldots \ldots \ldots (8)$$

For Short run dynamics

$$\Delta \ln RGDP_t = \alpha 0 + \sum_{i=1}^{x} \alpha 1 \Delta \ln EGI_{t-i} + \sum_{i=1}^{y} \alpha 2 \Delta \ln SGI_{t-i} + \sum_{i=1}^{z} \alpha 3 \Delta \ln PGI_{t-i} . (9$$

4. Results and Discussion

4.1. Data Analysis

The unit root analysis of the data is made through applying Augmented Dicky Fuller (ADF).Unit root analysis is made by once using intercept alone and then used both trend and intercept. First the data is analyzed at level and it is found that all the variables are non-stationary at level by using once intercept alone and then using both intercept and trend. It is clear from the table (4.1a) that the entire variable selected for this particular study became stationary at first difference.

Table (4.1a). Unit Root Analyses by Applying ADF Methodology

Variables	At Level		At 1st Difference	
	Intercept	T+I	Intercept	T+I
*ln*RGDP	-1.0406	-1.9731	-4.0497	-4.0414
*ln*EGI	-0.7178	-2.9997	-6.6502	-6.4907
*ln*SGI	-0.0063	-1.5351	-3.5897	-3.5807
*ln*PGI	-0.8837	-1.1723	-4.7653	-4.7483

Note: the Critical Values at 5% level of significance at level are -2.96 and -3.57 while at first difference the critical values are -2.97 and 3.58 respectively.

4.2. Long Cointegration Analysis

In order to analyze the impact of globalization on economic growth, here we take RGDP as a growth proxy. While regressing equation (7) it is found that long run co-integration exist between globalization and growth as per suggested by Pesaran et al (2001) that for long run cointegration amongst the variables the calculated value of F-statistics must be greater than the tabulated value at 5% level of significance, the table (4.2a) below shows that in our model the calculated value is 8.07 and the critical value for this particular model is 4.35 and thus null hypothesis for no long run cointegration is rejected. In opposite case when we normalize the Economic globalization as dependent variable it is found that that the result is inconclusive as suggested by Pesaran et al. (2001) that if the calculated values lies in between the upper and lower critical values then the results will be inconclusive on the other hand when Social globalization and Political globalization taken as a dependent variable it is found that there is no long run cointegration as suggested by Pesaran et al (2001), See Table (4.2a).

Table (4.2a). Long Run Cointegration Analyses

Equation	F-calculated	Critical values at 5%		Remarks
		I(0)	I(1)	
1.f_{rgdp}(lnRGDP/lnEGI,lnSGI,lnPGI)	8.0789	3.23	4.35	co-integration exist
2.f_{rgdp}(lnEGI/lnRGDP,lnSGI,lnPGI)	3.6634	3.23	4.35	Inconclusive
3.f_{rgdp}(lnSGI/lnRGDP,lnEGI.lnPGI)	1.5442	3.23	4.35	No co-integration
4.f_{rgdp}(lnPGI/lnRGDP,lnEGI,lnPGI)	2.9552	3.23	4.35	No co-integration

Note: Critical values are taken from Pesaran, M, H., Shin, Y &Smith, J (2001).

4.3. Analysis of Long Run Estimates

As stated above that long run cointegration exists between globalization and economic growth. Therefore we can move forward to estimate long run relationship between them. For this purpose we estimate equation (8) based on ARDL (1,2,0,0) selected on Schwarz Bayesian Criterion at Lag length 2. While estimating this equation we found highly significant relationship between the two. The coefficient value of the economic globalization suggests that with every 1% increase in openness of the economy the growth will be increased more than unity. The findings of this study support the results of Dreher (2006), Mutascu and Fleitcher (2011), Neupani (2011).

Social globalization shows negative and significant relationship with economic growth. it shows that 1% increase in social globalization decline growth by 32%. This negative effect of social globalization is due to social factor which may be literacy, culture and international tourism. By increasing the literacy rate the labor will become skilled and thus will be able to contribute positively. Pakistan has a diverse cultural country which can be used as a determinant of growth if channelize, explore and expose in a proper way. Currently the cultural differences created hurdles in the way of growth of the economy and thus it has to be addressed properly. Similarly tourism can also contribute to the growth of economy but at the moment because of ethnic problems and terrorism, tourism contributes nothing to the economy. Government should tickle this problem with 100% commitment and as suggested before there is a lot of room for the development of this aspect. Political globalization shows insignificant relationship to the growth of Pakistan. Dreher (2006) also found insignificant impact of political globalization on growth.

Table (4.3a). Long run relationship Dependent variable: *ln*RGDP

Regressors	Coefficient	Standard Error	T-Ratio	Prob
*ln*EGI	2.8975	.7592	3.8167	(.001)
*ln*SGI	-.3211	.1695	-1.8952	(.073)
*ln*PGI	-.24436	.4631	-.5278	(.603)
C	7.2808	.7361	9.8913	(.000)
R-Square	.78	Adj-R^2	.69	
F-stats	18.29(.004)	DW-Statistics	2.06	
Test statistics	CHSQ	LM version	F-Version	
Serial correlation	1	1.0509 (.305)	.7799 (.388)	
Functional Form	1	.0151 (.903)	.0107 (.919)	
Normality	2	.2593 (.878)		
Heteroscedasticity	1	.8929 (.345)	.8564 (.363)	

Note: Serial correlation is tested through Breuch-Pagan test, Ramsey RESET test for functional form, Normality is tested through Jarque-Bera and white test is performed for Heteroscedasticity

4.4. Short Run Analysis

Equation (9) has been estimated in order to show the impact of globalization on economic growth in short run and its results are displayed in the table (4.4a). This model is selected on the basis of SBC lag length 2 whose ARDL specification is (1,2,0,0). It is found that economic globalization shows insignificant relationship to economic growth while on the other hand economic globalization shows negative and significant relationship at lag 1. Social globalization shows negative and significant relationship with growth and 1% increase in social globalization reduce growth by 3%. ECM value is negative and significant and it clearly state slow speed of adjustment to long run equilibrium.

Table (4.4a). Short run Elasticities

Regressors	Coefficient	Standard Error	T-Ratio	Prob
d*ln*EGI	.10530	.073249	1.4376	(.165)
d*ln*EGI 1	-.22662	.080628	-2.8107	(.010)
d*ln*SGI	-.038921	.020225	-1.9244	(.067)
d*ln*PGI	-.029538	.043634	-.6769	(.505)
dC	.88012	.43187	2.0379	(.049)
Ecm(-1)	-.12088	.062810	-1.9246	(.067)
R-Squared	.4359		Adj-R^2	.2748
F-stat	7.2455 (.014)		DW-statistics	2.09

Dependent variable is *dlnRGDP*

CUMSUM and CUSUMSQ are presented in Figure 1 and the line indicates that this model is structurally stable because the lines fall between critical bound at 5%.
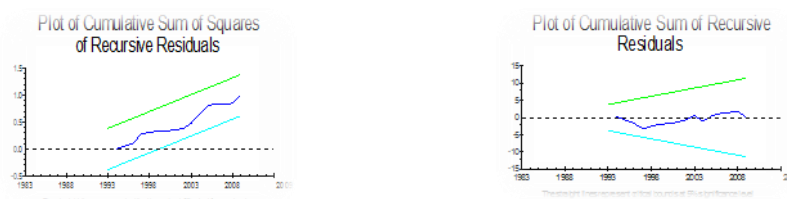

Figure 1

The R^2 (.54) and Adjusted R^2 (.30)suggested the model is well specified and for the detection of serial correlation, functional form, heterosecedasity and normality the current study employs various diagnostic tests and the results (Table 4.5a) suggest that no such problems lies in our selected model.

Table (4.5a). Diagnostic Test

Test statistic	*CHSQ*	LM version		F version	
		Value	**Prob.**	**Value**	**Prob.**
Serial correlation	1	2.4514	(.117)	1.5978	(.224)
Funtional form	1	.2133	(.644)	.1274	(.726)
Normality	2	.0092	(.995)		
heteroscedascity	1	.4056	(.524)	.3813	(.642)

Note: The above table displays the results of long run cointegration analysis

5. Conclusion and Policy Recommendation

The phenomena of globalization emerged on the globe during the last decades of 20th century. In the current study the impacts of globalization on economic growth has been addressed by using KOF index (See Appendix "A" for KOF Index). The empirical findings of the study suggest that, in long run economic globalization shows positive and significant relationship with growth. Social globalization has negative impact on growth. Political globalization shows insignificant relationship with growth. In short run economic globalization shows positive relationship at lag 1. Social globalization has negative and significant relationship with growth and political globalization has no impact on growth. In light of the findings of the study it is suggested to the government that she should open its economy to the

international market because that will not only help in a better allocation of resources by competing with external market but also is a source of importing advance technologies. Although the social globalization has negative impacts but once addressing seriously can be mould back its impacts from negative to the positive influences. Literacy which is one of the most important social indicator can be increased by following the policy of "each one teach one", launching awareness programs at various levels, a comprehensive plan has to be chalked out for bringing it upto the desired level. Similarly by preventing the cultural heritage and exchange of cultures delegation with other countries will helps in promotion of own culture.

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Appendix A

2012 KOF Index of Globalization

Indices and Variables Weights

A. Economic Globalization	**[36%]**
i) Actual Flows	(50%)
Trade (percent of GDP)	(21%)
Foreign Direct Investment, stocks (percent of GDP)	(28%)
Portfolio Investment (percent of GDP)	(24%)
Income Payments to Foreign Nationals (percent of GDP)	(27%)
ii) Restrictions	(50%)
Hidden Import Barriers	(24%)
Mean Tariff Rate	(27%)
Taxes on International Trade (percent of current revenue)	(26%)

` Capital Account Restrictions	(23%)
B. Social Globalization	**[37%]**
i) Data on Personal Contact	(34%)
Telephone Traffic	(25%)
Transfers (percent of GDP)	(4%)
International Tourism	(26%)
Foreign Population (percent of total population)	(21%)
International letters (per capita)	(25%)
ii) Data on Information Flows	(35%)
Internet Users (per 1000 people)	(33%)
Television (per 1000 people)	(36%)
Trade in Newspapers (percent of GDP)	(32%)
iii) Data on Cultural Proximity	(31%)
Number of McDonald's Restaurants (per capita)	(44%)
Number of Ikea (per capita)	(45%)
Trade in books (percent of GDP)	(11%)
C. Political Globalization	**[26%]**
Embassies in Country	(25%)
Membership in International Organizations	(28%)
Participation in U.N. Security Council Missions	(22%)
International Treaties	(25%)

Source:

Dreher, Axel, 2006, Does Globalization Affect Growth? Empirical Evidence from a new Index,Applied Economics 38, 10: 1091-1110.

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