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An Analysis of Global Integration and Economic Growth Nexus: Evidence from Pakistan

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Abstract
The following research examines economic growth potential from the perspective of globalization for Pakistan. The empirical results are estimated using the ARDL model over the period 1970 to 2018. The study reports the time before and after the openness to the world. The country opened up its borders quite late in the 80s. The results demonstrate that, in the short term, globalization negatively affects economic growth, but that, in the long run, it boosts economic growth. Globalization has assisted Pakistan's economic progress since the country opened its borders and economy to the rest of the world, but not to too much extent, what it could. Furthermore, research findings demonstrate that government spending and physical capital improve economic growth, however, inflation has a detrimental impact on Pakistan's economic growth.

Keywords: Globalization, Economic Growth, Inflation, Physical Capital, Government spending, Pakistan, ARDL Bound Test

JEL Classification: F15, F21, F33, O3

1. Introduction

"Economic growth has liberated societies from the natural pressures that forced societies into an immediate struggle for survival, but they haven't yet been liberated from their liberator. The commodity's independence has spread over the entire economy it now dominates. This economy has transformed the world, but it has merely transformed it into a world predominated by the economy."
— Guy Debord

Economic growth remains one of the crucial macroeconomic goals that a country strives for and maintains. However, the question here is how it will be achieved, and which path will be pursued to manage it. There are some extremely prosperous economies across the globe such as; the USA, the UK, France, South Korea, and Japan. Where, in contrast, many countries have a large proportion of their population still living below the sustenance level due to slow economic growth. These growth disparities are not by chance, but more precisely because of a combination of certain factors. This variation in economic growth urges scholars to investigate economic growth aspects and their importance in the growth process (Majeed & Ayub, 2018).

While investigating these economic growth aspects, the link between economic growth and globalization becomes an area of considerable interest. Globalization is popularly referred to as a double-edged weapon. Apart from benefitting the economies through economic, social, and political changes, it sometimes hinders economic growth. It is widely believed that the growth effects of globalization depend upon any country's economic structure during the globalization process. Among the impoverished, globalization creates both winners and losers. On the one hand, globalization reduces the cost of production by improving resource allocation and resource use efficiency. Furthermore, consumers have more access to a wider variety of products. Globalization, on the other hand, has been related to growing inequality, according to various studies, because the poor are not always able to gain from trade.

Nevertheless, the benefits ripped by the countries globally through globalization are not to be ignored. Recognizing the potential benefits of globalization, many developing countries have been integrating their economies, particularly through trade, financial flows, technological diffusions, and knowledge transfers, since the early 1980s. Pakistan is one of those countries which started adopting a global rule to lead the economies. Pakistan started liberalizing its economy in 1982-83 with the assistance of IMF and World Bank through the improvement of the economy with the role of the private sector. Those amendments of the 80s included price deregulation, delinking of the rupee from the US dollar, denationalization of industry, import liberalization, and export expansion schemes (Afzal, 2007). This shows that like all developing countries in the world, Pakistan also welcomed globalization by integrating into the world economy through foreign direct investment (FDI), trade liberalization, and other macroeconomic policies.

Pakistan's economy has always had a volatile growth pattern, with regular boom and bust cycles, making long-term and inclusive growth difficult to achieve. Pakistan's major urban areas known as its economic hub along with underdeveloped areas of the country are considered the growth poles of Pakistan's economy. But internal political instability, economic uncertainty, a mixed level of foreign investment, and a rapidly growing population with a 2pc growth rate have all hampered the economy and its growth in history. Though consistent worker remittances bolster foreign exchange reserves and expand the current account deficit – are generated by a growing trade gap as import growth outpaces export growth which threatens to deplete reserves and slow GDP growth in the medium term.

Since the 1950s, Pakistan has used an import substitution strategy to create a highly protected environment for industrialization. Domestic resource costs increased from roughly 1.20 percent in 1968-69 to 3.33 percent in 1980-81, resulting in an inefficient industrial structure (Naqvi & Kemal 1991). With the effects of major industry nationalization in the 1970s, the industrial sector began to shrink even more, with annual growth falling from 9.9 percent in 1960 to 5.5 percent in the 1970s (Husain, 2000). Beginning in the late 1980s, Pakistan attempted to liberalize its trading regime and integrated its economy with the global economy. A major shift was seen in trade and industrial policies from an inward-looking economy to an outward-looking economy. Or to say from import-substitution strategy towards export promotion and trade liberalization. Those strategies involve, the replacement of non-tariff barriers to tariffs, cutting down tariffs from 100pc to 35pc in 1998-99, and managing floating exchange rates to the free-floating exchange rates (Husain, 2000).

For the early three decades, Pakistan's economy was heavily reliant on foreign direct investment (FDI) but remained restricted to it. Following modifications to trade and industrial policy in the late 80s, the Pakistani government began to open the economy and relax the regulations governing foreign investment. According to the Handbook of Statistics 2020, after total liberalization in the 1990s, FDI in Pakistan increased from a low of $10.7 million in 1976-77 to $1296 million in 1995-96, growing at a compound annual growth rate of 25.7 percent. In 1995-96, private investment inflows into the country increased by 93.3 percent to $1532 million. Following that, in 1999, the investment portfolio of 1996 plummeted to $449 million. A stunning negative FDI influx of $27 million was recorded in 2004. With such changes in the investment portfolio of the country for several decades, currently, the FDI stands at $2,074 million (SBP, 2020).

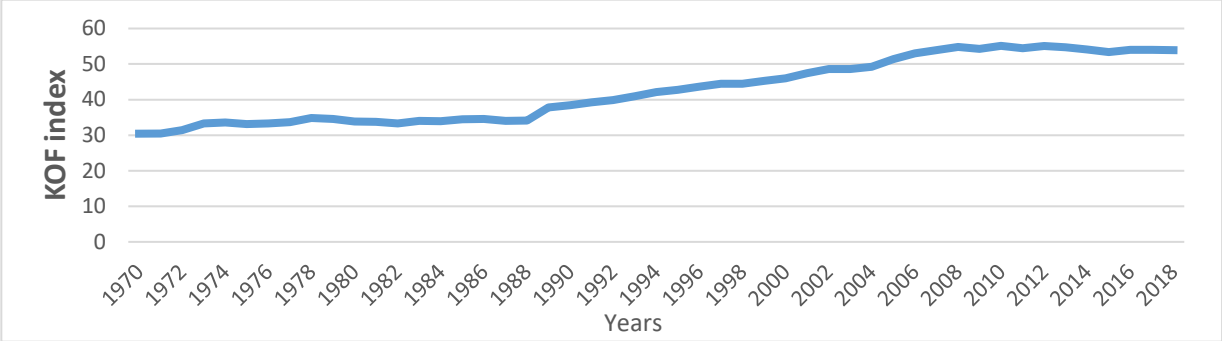
Besides FDI Pakistan's economy also relies heavily on foreign aid and remittances. Pakistan also receives international financial funding in the form of loans and grants from a variety of sources. Pakistan receives long-term loans from global institutions including bilateral aid from developed and oil-rich nations. However, the country still stagnates at very low levels of foreign investment despite high incentives by the government through high-interest rates and a major share in profit. It may call upon a couple of reasons like economic uncertainty due to political instability (regime change), terrorism activities, inconsistency in policies by governments, and a weak bureaucratic system.

Technology remains crucial to any networking in an economy. To make sure the availability of technology and its uses governments tend to create an ecosystem for such purpose. According to Network Readiness Index 2021 rankings, Pakistan ranks 97 out of 134 while having an index of 40.2. It shows that Pakistan despite entering the era of globalization remains significantly weak at strengthening its technology and networking across the country.

The economic literature on the consequences of globalization on Pakistan's economic growth, which bears the policies of trade liberalization, FDI inflow, privatization, and investment in ICT infrastructure and human capital, tends to produce contradictory evidence across the country. Some see globalization as a blessing to developing economies like Pakistan, while others see it as a threat to economic growth. Majeed (2011) explores the trade and economic development nexus for Pakistan by analyzing time series data from 1970 to 2006. His results show that trade does not increase economic growth in Pakistan. While Bhatti & Fazal (2020) consider the importance of a continuous supply chain for raw materials and export-led growth for the industrial sector of Pakistan reveal the opposite. They argue that globalization boosts the growth of the industrial sector in Pakistan through economic development and increased commercial production by importing the new machinery that upsurges the agriculture output level and economic expansion.

Figure 1, shows the globalization trend in Pakistan from 1970 to 2018. However, it shows that globalization in the country tends to have an increasing yet slow trend throughout the liberalization process.

Figure 1: Trends of globalization in Pakistan since the 1970s



To the best of our knowledge, no earlier study has calculated the impact of globalization on Pakistan's economic growth using a three-dimensional comprehensive measure of globalization. There is a need to investigate the relationship between economic growth and this international phenomenon (globalization) in the context of Pakistan, which has a significant impact on the country's economic sustainability. This study also aims at checking the robustness of the impacts of globalization on economic growth in Pakistan. This research covers a longer horizon of time covering about a half-century from 1970 to 2018. The study also offers important policy implications. The study's contribution would result in an addition to the existing scientific literature aimed at key policy decisions for the future and would strengthen the role of government policies in the proper direction

The remaining paper is arranged as follows. Section 2 encounters the prior studies in the context of economic growth and globalization. Section 3 discusses the empirical modeling and practice. Section 4 presents the model findings and tables. While section 5 concludes the debate and recommends policy.

2. Literature review

The first period of globalization started in the early 19th century and lasted until 1914. Since then, globalization has accelerated as a result of the financial as well as production factors' mobility among countries. Concerns about globalization have grown in recent years as a result of the consequences of inequality in economic development, poverty, income disparities among segments of society and countries, cultural dominance, and environmental or economic integration. As a result of their multifaceted implications, the impacts of globalization have become one of the most contentious issues. Since the 1980s, the rise in globalization trends in the global economy has resulted in a variety of notions in the related literature. Related literature suggests that globalization seems an uneven phenomenon, having negative as well as positive effects. Bhagwati (2005) contends that increased globalization trends will benefit international competition and economic progress. Economics of globalization tends to produce positive effects when money is poured into developing economies and people tend to succeed

economically while enjoying better living standards. Husain (2000), argues the positive impacts of globalization are attributed to liberal policies rendered by a country. Globalization's positive effects convey through four main channels: international trade, international money flows, cross-border labor flows, and technological transformation, particularly in information technology (IT) and telecommunications.

Globalization also reduces income inequality and poverty levels through growth impact. Globalization links to economic growth in the first tier, while poverty reduction links to economic growth in the second tier. Furthermore, as a consequence of globalization, economic growth tends to increase through rapid technical progress, the fusion of global financial markets, and reduced information and processing costs which helps to ensure growth in productivity and investment, and optimum resource allocation. Through globalization, poor countries, in particular, can receive the benefits of contemporary technology while avoiding many of the growing pains associated with its development. (Incekara & Sway, 2011).

Several studies reveal empirical evidence for such positive impact of globalization on economic growth. Ying et al. (2014) using panel fully modified OLS (FMOLS), revealed that economic globalization has a favorable significant impact on economic growth. Gurgul & Lach (2014) discovered to have a strong and robust growth-enhancing influence, particularly in economic and social dimensions; where economic dimensions included (international trade, growth of foreign investment, removal of import barriers, and establishment of a tax policy). Kilic (2015) studies globalization in developing countries' growth rates, for 74 developing countries from 1981 to 2011. According to the findings, economic globalization has a positive impact on economic growth levels. Bataka (2019) using data from 40 Sub-Saharan African (SSA) countries from 1980 to 2015, reveals that de jure globalization enhances economic growth.

A large number of studies have documented different forms of globalization like international trade, FDI, and ICT advancement which lead to influence the economic growth of countries (Apergis et al. 2008; Pegkas, 2015; Gnangnon, 2018; Sağlam, 2018). Among them, trade liberalization accounts for an important and most followed form. Trade liberalization has grown in popularity over the last three decades, particularly among emerging and developing economies. This is usually the result of the anticipated limitations of most followed import substitution-based strategies in the developing world which restricts the goods and capital inflow. And also, the IMF and the World Bank, for example, have routinely made trade liberalization a condition of their financing. The primary basis for this level of commitment to a trade reform program is a firm view that liberalization is necessary for a transition from closed to open economies. Generally, economists like, Grossman & Helpman (1993) agree that open economies grow faster than closed economies.

Despite such an acclaimed relationship of openness to growth, the link between trade and economic growth continues to be a source of contention in both theoretical and empirical studies. For example; the 'neoclassical trade' theory supports such a relationship of trade openness to growth, although the 'neoclassical growth' theory does not; and the 'new trade' theory is doubtful, whereas the 'new growth' theory supports the positive impacts of trade on output and economic growth (Singh, 2010). In light of the 'endogenous theory' of economic growth, Romer (1986) and Lucas (1988) gave a more comprehensive assessment of trade's productivity effects, as well as an additional feature assessing trade-induced convergence in per capita income and growth across nations.

From a theoretical standpoint, trade liberalization allows for the resource reallocation from areas with comparative disadvantage; resources may be redundant, towards the areas of comparative advantage; with resource abundance. Trade also boosts growth and productivity by increasing the availability of a variety of intermediate inputs and encouraging worldwide technological diffusion. Akhtar et al. (2015) view exports as improving a country's foreign exchange reserves, and it is also maintained that the foreign exchange produced by exports can be used to pay for imports. Several studies show that trade has a discernable positive impact on productivity and growth leading to convergence in income per capita and total factor productivity across nations, implying that trade reduces income gaps between countries (Dollar, 1992; Ben-David, 1993). While cross-country growth analysis also finds a positive relationship between trade liberalization and growth using trade shares or trade liberalization indices (Sachs et al. 1995; Edwards, 1997; Frankel & Romer, 1999; Dollar & Kraay, 2001).

According to Wacziarg and Welch (2008), nations that opened their economies for trade saw an average annual growth rate which was around 1.5 pc higher than before openness. The effects of trade liberalization in fostering economic growth can also be seen through effects on physical accumulation. Post liberalization investment rates rose to 1.5 percentage points than before. Siddique & Majeed (2015) accessed the relationship between trade on economic growth and found positive results for the long-run relationship. Gnangnon (2018) using unbalanced panel datasets for 150 countries from 1995 to 2015, examines the influence of multilateral trade liberalization on economic growth rates however, the findings indicate that multilateral trade liberalization has a large and favorable impact on economic growth. Bardi and Hfaiedh (2021) investigated the impact of trade openness on economic growth using data from 1975 to 2016 and a panel of eight nations. Their findings suggest that merchandized and financial openness do help in promoting economic growth.

Trade becomes a more beneficial policy when the cross-border labor movement is also allowed. Rodrik (2002) argues the most promising of the "feasible globalization" is a multilaterally negotiated visa regime that permits a mix of high-skilled and low-skilled workers from developing countries to enter advanced countries temporarily. Even if it led to a very slight increase in cross-border labor flows, such a plan would almost certainly provide greater revenue gains. Harrison & McMillan (2007) discuss the case for India and Columbia and suggest trade reforms are more likely to benefit the poor when trade liberalization policies work in conjunction with a reduction in impediments to labor mobility.

Besides trade, many studies have also focused on a more financial dimension or form of globalization which is FDI, which tends to boost economic growth. FDI in the form of multinational corporations and aid to development projects remain a more focused area for the global agenda. Many studies have demonstrated the importance of FDI to any economy, particularly in today's globalized world where domestic investment is insufficient for development and progress. Foreign direct investment plays a vital role in a country's economic progress by delivering cutting-edge technology, offering greater infrastructure, supplying foreign capital, and creating job possibilities (Shahid et al 2013).

The establishment of multinational enterprises (MNEs) is fundamentally tied to economies of scale, nonmarketable technology, management, and product diversification, hence limiting competition in host economies (Hymer, 1976). FDI plays a vital role in the production process in a country as it increases the supply of funds required for domestic investment in a host country. It enhances the growth rate in two ways: firstly through attracting foreign funds required by domestic investment and secondly, through the interaction of advanced technologies (Pegkas, 2015).

The positive impact of FDI is certainly supported by many studies. Campos & Kinoshita (2002) study the impact of FDI on growth for the period 1990–1998. The study's main outcomes revealed that FDI significantly and positively impacts the economic growth of each country under study. Khawar (2005) also finds a similar positive relationship between FDI with the economy under an empirical cross-country growth analysis from 1970 to 1992. Apergis et al. (2008) counter the causal link between the two macro variables (FDI and growth) for a set of transition economies. Their results suggest bidirectional causality between the two macro-variables. Pegkas (2015) also finds supporting results for the positive and significant impact of FDI on economic growth in the Eurozone. Majeed and Ashiq (2019) also find the favorable role of FDI in the economic growth of Pakistan over the period 1976-2016. Bakhsh et al. (2022) conclude the same results for a significant positive impact of FDI on economic growth in the case of Pakistan.

Certainly, investment patterns over the globe have changed since the fourth industrial revolution. Countries tend to boost their economies through investing in ICT (Information and Communication Technology) infrastructure. ICT is too regarded as a critical sector that significantly contributes to economic growth. The majority of economic activities, trade, and foreign direct investment are heavily reliant on modern ICT sources. ICT is said to be the composition or integration of software-related modes of information sharing like; computer workstations, telecommunications, electronics, networks, and information media that has an impact on individuals, businesses, and the whole economy. It has been considered that ICT capital is more growth-intensive compared to non-ICT capital. Higher levels of ICT stock per capita allow any typical economy to achieve higher growth rates. Levine (1997) argues that progress in ICT infrastructure tends to improve the influence of economic advancement on growth by

eliminating market imperfections and increasing financial functions. Therefore investment in ICT remains the key driver of productivity growth. ICT could enable emerging and developing countries to 'leapfrog' traditional methods for increasing productivity. According to Steinmueller (2001) ICTs have the potential to support the "leapfrogging" development strategy. Jorgenson & Vu (2005, 2011) taking into account the global growth rate during the initial phase of globalization support that the most important source of development in industrialized countries and Asian economies was the investment in intangible assets, such as IT equipment and software. The 2016 World Development Report offers insights into a growth accounting exercise conducted in developed and developing nations between 1995 and 2014. According to the report, the percentage share of ICT capital in total input factor contribution to GDP growth is quite similar in developing and developed countries. (World Bank, 2016). However, the varying results in growth rates can be attributed to every country's absorbance capacity which remains significantly different worldwide.

Most studies find positive results for economic growth while accounting for increment in investment in ICT infrastructure. Pohjola (2000) finds that a significant and positive impact of ICT on growth emerges for a sample of 23 OECD countries. Inklaar et al. (2005) compared the ICT contributions to growth in the US and the EU4 (Germany, the Netherlands, France, and the United Kingdom), and finds that ICT contribution to growth in the US is more than EU4 during the 1979–2000 period. As US started investment earlier than EU4 in ICT infrastructure. Edquist & Henrekson (2017) and Sağlam (2018) investigate the role of the internet, investment in ICT infrastructure, mobile phones, and research and development (R&D) in economic growth. Their findings show that ICT spread raises the proportion or share of R&D and human capital formation, which has an indirect favorable impact on economic growth. Withstanding the fact of negative spillovers of ICT in developing countries, on the other hand, casts doubts on technological shock. The rapid accumulation of ICT in areas where skilled labor is scarce will eliminate low-skilled workers (those in the majority) and the poor because they are not well equipped and qualified, thereby lowering growth rates and increasing poverty and income inequalities. Furthermore, ICT will provide developed countries with more benefits in competing with developing countries in their domestic markets (Freeman & Soete, 1985; Aghion et al, 1998; Freeman, 2013) which could not be beneficial for the latter ones.

A conclusion is that Trade, FDI, and ICT impact the counties' growth rates depending on the countries' institutional and political backgrounds. It remains endogenous policy choices of governments and the private sector to make economies wide open for cross-border flows of goods, labor, capital, and technology to reap the benefits of globalization.

Prior studies on the globalization and growth nexus have focused on a single dimension of globalization, ignoring the fact that globalization is comprehensive and multifaceted, with multiple impact channels on the economy. Many of them (Sachs et al. 1995; Edwards, 1997; Frankel & Romer, 1999; Dollar & Kraay, 2001; Wacziarg & Welch 2008; Bardi & Hfaiedh, 2021) emphasized trade liberalization as a growth engine. Other studies (Pohjola, 2000; Steinmueller, 2001; Draca et al., 2006; Cardona et al., 2013) have focused solely on the impact of other variables on economic growth through ICT or FDI. The current research aims to provide a comprehensive analysis of globalization's impact on economic growth. It aims at providing a nuanced focus on the globalization trend in Pakistan from the 1970s (before opening up to the world) to date (where the economy is still.

3. Empirical Methodology

The present study analyzes the impact of increasing globalization in shaping economic growth. It considers the annual data of Pakistan ranging from the period 1970 to 2018 depending upon the availability of data. The data for all the variables are taken from the world development indicator (WDI, World Bank) whereas, table 1 provides the description of these variables in detail. The description of the model to achieve the objective of the current study is as follows:

Economic Growth = f (Globalization, Capital, Government Spending, Inflation)

GDP= f (GI, K, GS, INF)

Where GDP is described as gross domestic product per capita at constant 2015 US$, globalization is the KOF index of total globalization, government spending is general government final consumption

expenditure at constant 2015 US$, capital is described as gross fixed capital formation, and inflation which is measured by a consumer price index. We are utilizing the Autoregressive Distributed Lag approach (ARDL) to the Bound technique proposed by Pesaran et al. (2001). The basic reason behind using this model is that this approach is helpful in the case of variables exhibiting diverse order of integration i.e. variables can be stationary at the level i.e. I (0) or variables can be of I (1) i.e. stationary at the first difference. Secondly, the selected approach also gives an unrestricted error correction model. This approach provides us with dynamics of both the short and long run. In addition, this approach gives valid t-statistics and unbiased estimates by eliminating the endogeneity issue of repressors through appropriate lag selection. Thus our analysis is based on this approach for best estimates. The model equation is given as follows:

$$\Delta \ln(\boldsymbol{GDP})_t = \boldsymbol{\beta_0} + \sum_{i=1}^{p} \boldsymbol{\beta_1} \Delta \ln(\boldsymbol{GDP_{t-i}}) + \sum_{i=1}^{p} \boldsymbol{\beta_2} \Delta \boldsymbol{GI_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_3} \Delta \boldsymbol{K_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_4} \Delta \mathbf{lnGS_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_5} \Delta \boldsymbol{Inf_{t-i}} + \emptyset_1 \boldsymbol{ln(GDP)_{t-1}} + \emptyset_2 \boldsymbol{GI_{t-1}} + \emptyset_3 \boldsymbol{K_{t-1}} + \emptyset_4 \boldsymbol{ln(GS)_{t-1}} + \emptyset_5 \boldsymbol{Inf_{t-1}} + \boldsymbol{\varepsilon_t} \quad \text{-------1}$$

Where the coefficients $\beta_1, \beta_2, \beta_3, \beta_4$, and β_5 represents the short-run estimates while $\emptyset_1$, $\emptyset_2$, $\emptyset_3, \emptyset_4$ and $\emptyset_5$ represents the long-run coefficients. β_0 represents the constant term and ε_t is the error term. In addition, ARDL based error correction model (ECM) model can be shown as:

$$\Delta \ln(\boldsymbol{GDP})_t = \boldsymbol{\beta_0} + \sum_{i=1}^{p} \boldsymbol{\beta_1} \Delta \ln(\boldsymbol{GDP_{t-i}}) + \sum_{i=1}^{p} \boldsymbol{\beta_2} \Delta \boldsymbol{GI_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_3} \Delta \boldsymbol{K_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_4} \Delta \mathbf{lnGS_{t-i}} + \sum_{i=1}^{p} \boldsymbol{\beta_5} \Delta \boldsymbol{Inf_{t-i}} + \boldsymbol{\theta ECT_{t-i}} + \boldsymbol{\varepsilon_t} \quad \text{--------2}$$

Where ECT is an error correction term and it must be negative to provide evidence of system convergence in the long run from the short run. $\boldsymbol{\varepsilon_t}$ is an error term that is normally distributed.

To estimate the ARDL model first of all we will understand the stationarity condition of our used variables by applying unit root testing. Augmented Dickey-Fuller (ADF) Unit Root Test and Phillip Perron (PP) Unit Root Test are conducted in the current study. After this, for detection of long-run association in our model, we will apply Co-integration bound test.

The bound test contains:

Null Hypothesis: $\emptyset_1 = \emptyset_2 = \emptyset_3 = \emptyset_4 = \emptyset_5 = 0$ (No Cointegration)

Alternative Hypothesis: $\emptyset_1 \neq \emptyset_2 \neq \emptyset_3 \neq \emptyset_4 \neq \emptyset_5 \neq 0$ (Presence of Cointegration)

Thus after accepting the existence of long-run association ECM is estimated.

4. Empirical Results

Table 1: Data Description

Variables	Symbols	Unit	Source
Globalization	GI	Index (0-100)	KOF Index
GDP per capita	GDP	Constant 2015 US$	World Bank(2021)
Capital	K	Percentage of GDP	World Bank(2021)
Government Spending	GS	Constant 2015 US$	World Bank(2021)
Inflation	INF	Annual percentage	World Bank(2021)

Table 2 provides a detailed summary of statistics of the desired variables for analysis. In the case history of Pakistan, the average globalization index is 42.65, with a low of 30.46 in 1971 and a high of 55.12 in 2010. Till the late 70s, Pakistan remained an inward-looking economy, and started liberalizing the economy in the early 1980s remained. This contributed to the lowest level of globalization in 1971. While for 2010, it was provided by a better than expected boom in Coalition Support Fund (CSF), growth in remittances, and improvement in trade account through high cotton exports which surpassed earlier projections. The average value of its GDP per capita in constant is 968.53 in constant 2015 US$. As shown in Table 2, summary statistics also include other control variables.

Table 3 represents the association among our variables by giving their correlation values. The correlation matrix reports a positive association between GDP and globalization. Also, there exists a positive relationship between GDP and government spending. However, all other variables exhibit a negative association with each other.

Table 2: Descriptive Statistics

Variables	Mean	Std. Dev.	Minimum	Maximum
Globalization	42.65141	8.781915	30.4644(1971)	55.12311(2010)
GDP	968.5355	265.2777	565.0732(1972)	1502.891(2018)
Capital	15.73788	1.826524	11.33023	19.11229
GS	$1.32e^{10}$	$9.02e^{9}$	$2.99e^{9}$	$3.76e^{10}$
Inflation	8.815705	5.207417	2.529328	26.66303

Table 3: Correlation Matrix

	Globalization	GDP	Capital	GS	Inflation
Globalization	1.0000				
GDP	0.9504	1.0000			
Capital	-0.1946	-0.0745	1.0000		
GS	-0.1128	0.9536	-0.2053	1.0000	
Inflation	-0.1128	-0.2235	-0.1295	-0.1996	1.0000

First of all unit root testing i.e. ADF and P-P are applied to analyze the stationary condition of variables. Before the bound test, it is necessary to perform it because this test is not applicable if any one variable in data has an integration of order two I (2) or beyond. The results of the ADF test are presented in Table 4 while the results of the P-P test are presented in table 5. In both the tests, GDP, capital, globalization, and government spending are revealed to be non-stationary at a level however they become stationary on taking the first difference. While inflation is stationary at the level thus it is integrated of order zero I (0).

Table 4: Augmented Dickey-Fuller Unit Root Test

Variables	ADF Test Statistics				Variables Type
	Level		1st Difference		
	t-statistics	Critical Value	t-statistics	Critical Value	
Globalization	-0.543	-2.936	-5.434***	-2.938	I(1)
GDP	0.021	-2.936	-5.372***	-2.938	I(1)
Capital	-2.160	-2.936	-5.054***	-2.938	I(1)
GS	2.629	-2.936	-6.996***	-2.938	I(1)
Inflation	-3.82***	-2.936	-	-	I(0)

*** indicates the level of significance at 1%

Table 5: Phillip Perron Unit Root Test

Variables	P-P Test Statistics				Variables Type
	Level		1st Difference		
	t-statistics	Critical Value	t-statistics	Critical Value	
Globalization	-0.543	-2.936	-5.434***	-2.938	I(1)
GDP	0.021	-2.936	-5.372***	-2.938	I(1)
Capital	-2.160	-2.936	-5.054***	-2.938	I(1)
GS	2.629	-2.936	-6.996***	-2.938	I(1)
Inflation	-3.528***	-2.93	-	-	I(0)

*** indicates the level of significance at 1%

Thus unit root analysis gives evidence of mixed integration in our data i.e. one variable is I (0) and others are I (1). Thus we apply the bound test to it. The outcome obtained from the bound test is presented in table 6 along with its critical value. The bounds test indicates the presence of a long-run link among our variables of interest at 1%, 5%, and 10% significance levels. As the calculated F-statistics value is greater than the upper critical bound value at 1%, 5%, and 10% significance levels. Thus the alternative hypothesis of the presence of Cointegration is accepted.

Table 6: ARDL-Bound Test Results

			Bound Critical Values		
Test statistics	Value	Lags	Significance Level	I(0)	I(1)
F-Statistics	5.575	3	1%	3.74	5.06
			5%	2.86	4.01
			10%	2.45	3.52
t-statistics	-3.261	3	1%	-3.43	-4.60
			5%	-2.86	-3.99
			10%	-2.57	-3.66

ARDL bounds test predicts the existence of long-run association thus ECM model is applied, and its result is presented in table 7.

Table 7: Error Correction Model Results

Dependent Variable (Economic Growth)	
Short Run Coefficients	
ECT_{t-1}	-0.19881* (.07011)
Core Variable	Estimated Coefficients
$Globalization_{t-1}$	-0.00231 (0.00264)
$D.Globalization_{t-1}$	-0.00771* (0.00287)
Explanatory Variables	
$Inflation_{t-1}$	0.00280* (0.00055)
$D.Inflation_{t-1}$	0.00234* (0.00059)
Constant	0.11348 (0.18466)
Long Run Coefficients	
Globalization	0.00907** (0.00369)
Capital	0.01581** (0.00733)
GS	0.25411* (0.04822)
Inflation	-0.01287* (0.00434)
R-squared	0.5251
Observations	46
Root Mean Square Error	0.0136

Standard errors reported in parentheses (* p<0.01, ** p<0.05, *** p<0.1)

Current work employs ARDL long-run and short-run coefficients by applying an error correction model (ECM). For such analysis lag order selection is the most important exercise to carry out the empirical

work. Akaike Information Criterion (AIC) is used to select an appropriate lag length. Short-run coefficients show the negative role of globalization in determining economic growth but this coefficient is insignificant at first lag. This supports the theory from the literature of negative repercussions in the short run. In addition, significant and positive effects of inflation and its lagged value on economic growth are reported. However, the coefficient of error correction term is significant at a 1% significance level with a magnitude of -0.1988 which shows that deviation from long-run equilibrium will be adjusted at the speed of 19.8%. Moreover, our analysis is based on the long-run relationship between globalization and the economic growth of Pakistan. The long-run coefficient of globalization tends to be positively significant in rising economic growth in the case of Pakistan i.e. one unit rise in globalization results in a 0.9% rise in economic growth. Aside from liberalization policies, this positive impact can be attributed to remittances from Pakistan's labor abroad, a rise in aid to Pakistan from international donor agencies like the EU and World Bank for poverty eradication programs like the BISP (Benazir Income Support Program) and US-AID after 9/11 for cooperation in so-called 'war on terror.

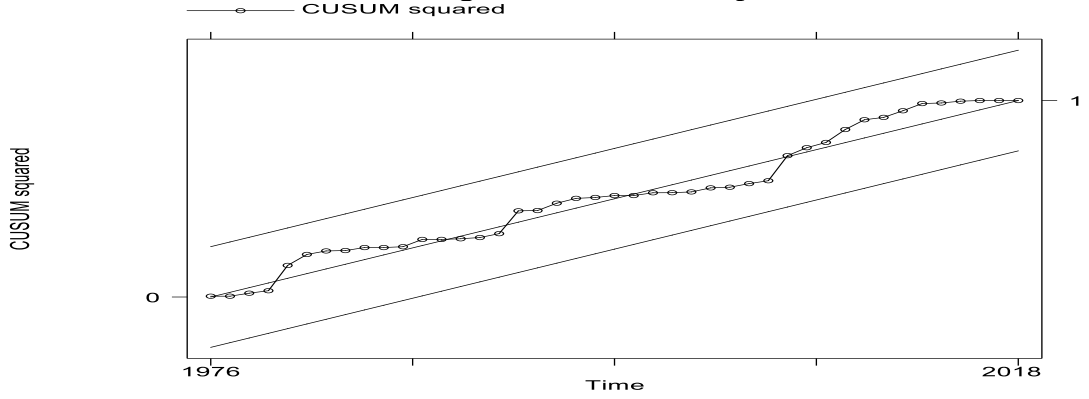
Similarly, government spending performs a significant role in boosting the economic growth of any country. In the case of Pakistan, the coefficient suggests that a one percent rise in government spending results in a 0.25% rise in economic growth. Inflation declines the economic growth to 1.2% by its unit rise while capital rise increases the economic growth. These findings are similar to earlier studies (Majeed & Malik, 2016; Majeed, 2017 & Majeed, 2019). The results remain conclusive with all the long-run coefficients of independent variables and are statistically significant.

Table: 8 Diagnostic Tests Results

Durbin-Watson's alternative test for Autocorrelation	
Chi-squared	0.008
Prob > chi2	0.9284
Durbin-Watson d statistic to test for first-order serial correlation	
d-statistics	2.01
Breusch-Godfrey test for higher-order serial correlation	
Chi-squared	0.011
Prob > chi2	0.9180
Breusch-Pagan / Cook-Weisberg test for heteroscedasticity	
Chi-squared	0.16
Prob > chi2	0.6885

Diagnostic testing is performed to make sure about the goodness of the selected model analysis. Durbin-Watson and Breusch-Godfrey tests for serial autocorrelation and Breusch-Pagan test for heteroscedasticity are performed. The outcomes of all tests are presented in table 8. All of the performed tests indicate that the applied model is free of autocorrelation and heteroscedasticity issues.

Figure 2: CUSUM2 Graph



Moreover, for analyzing the stability of the estimated model cumulative sum of the square of the recursive residuals (CUSUM2) test is performed and its graph is presented in figure 2. This graphic analysis supports the stability of short-run and long-run parameters as the plot for stability is laying under the critical values at the 5% significance level of the graph portion.

5. Conclusion

Given the positive spillovers of globalization, the present study has analyzed the impact of globalization on Pakistan's economic growth using time series data from 1970 to 2018. This study is based on ARDL bound testing approach. The empirical results show that globalization exerts a negative influence on economic growth in the short run while globalization has a positive and significant impact on economic growth in the long run. The role of physical capital and government spending is also positive and significant in explaining the economic growth of Pakistan. However, inflation has a negative and significant influence on economic growth.

6. Policy Implications

This study suggests that countries need to open up their doors to unlock the potential of globalization. For Pakistan, it must ensure that every sector of the economy is liberated in terms of trade development, ICT infrastructure improvement, and an open economy for FDI, but with carefully regulated policies so that globalization can be proven beneficial to every sector of the economy. However, the government needs to invest a significant amount of money, time, and appropriate policies in the economy to reap the benefits of globalization.

The subject of whether globalization has an impact on growth continues to be debated. Because the countries have yet to fight the battle.

7. Limitations of the Study

The study aims at a single country analysis of globalization and economic growth nexus. Further studies can be done doing comparisons of regional countries under such a comprehensive measure of globalization. Moreover, this study reports negative results in the short run; the abrupt changes due to globalization can be better interpreted through reasons behind this by other studies.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Disclosure statement

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