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## Globalisation and Economic Growth Nexus: Empirical Evidence from Pakistan

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### Abstract

Globalisation has several faces and a variety of social, political, and economic ramifications. It has given many countries numerous opportunities. Others argue that today's globalisation is only tangentially different from colonialism in the past. Since affluent countries levy taxes on developing-country commodities, developing countries have not benefited from this. Developed countries' protection of agriculture and basic manufacturing has harmed developing countries significantly. Pakistan has made significant efforts to integrate its economy with the rest of the world through foreign commerce, investment, and other macroeconomic policies. Globalisation's sufficiency and utility are seen from a variety of angles. Based on solid factual evidence, it is vital to analyse whose viewpoints are supported by Pakistan's experience. Because Pakistan's economy has been liberalised, it also seeks to decrease poverty, which may be achieved through acceptable economic progress. Because Pakistan's economy has been liberalised, it also seeks to decrease poverty, which may be achieved through acceptable economic progress. The paper investigates the impact of globalisation on the economic growth of Pakistan over the period from 1971 to 2021, employing the ARDL approach. Economic growth was measured through the annual growth rate, whereas; KOF Globalization Index was used to measure globalisation. Instead, the inflation rate, FDI, official development assistance, gross capital formation, and labour force participation rate have also been taken into account in the model. The study's findings have proven the negative impact of globalisation on economic growth in Pakistan. The findings suggested that despite several years of openness policies related to trade, FDI, or technological transfer, Pakistan is still not ready to gain the positive effects of globalisation; Therefore, there is a need to adhere to policies that promote trade and investment considering the ground realities of Pakistan.

**Keywords:** Globalisation, Economic Growth, ARDL, FDI, Pakistan

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## 1. INTRODUCTION

Economic growth (EG) has long been perceived as a significant macroeconomic objective of economic strategy. As a result, many

studies have been undertaken over the decades to explain how this goal has been achieved successfully. The subject of how expanding international trade and financial integration influence economic growth has sparked a massive surge of study in recent decades (Saqib, Masnoon, & Rafique, 2013; Dreher, 2006; Afzal, 2007; Ying, Chang, & Lee, 2014).

The process Globalisation has evolved as a result of advancements in communication technologies and infrastructure. Globalisation may also be described as "a process of international economic integration resulting from the transfer of global ideas, product perspectives, and inventions" (Kilic, 2015; Suci, Asmara, & Mulatsih, 2016). It is the increased cross-border financial, economic, and foreign direct investment movement among countries, facilitated by fast developments in and deregulation of technologies and the internet. It conjures up images of a borderless society with increased economic integration that raises people's living standards worldwide. It may also be defined as the worldwide proliferation of distinctive ethnic values and experiences (Zerrin & Dumrul, 2018).

Lee et al. (2017) revealed that when developing economies follow outward-oriented policies, that enhances their EG. The increasing mobility of finance and production factors among countries in recent years has accelerated globalisation. Globalisation is commonly described as integrating global trade of goods and services and financial markets. On the other hand, advancements in communication and technology may also be characterised as

integrating international markets. Samimi and Jenatabadi (2014) have also stressed that globalisation supports to development of networks of relationships among multi-players over intra- or multi-continental boundaries, facilitated by a range of flows such as individuals, information and ideas, capital, and products. As a result, it is regarded as a phenomenon that crosses national boundaries, combines diverse economies, cultures, technologies, and governance systems, and produces complex interdependence ties.

It has been stated by Zahonogo (2018) that the rate of globalisation has accelerated in recent decades due to numerous factors, such as government policies and international organisations that have played a significant role in the development of global integration. Many developed and developing countries pursued economic liberalisation policies. Trade openness commenced in advanced economies in the 1970s. However, it began in emerging economies in the 1980s with lower transportation, communication, and transaction costs. It has also transformed domestic corporations into multinational corporations to maximise profits in new global markets.

Swadzba (2019) has also highlighted that countries are already more interconnected regarding economic, financial, social, and cultural relationships. However, more than liberalisation initiatives are needed to ensure the benefits of globalisation. Some nations are now seeing rapid growth and economic development due to globalisation, while others are still waiting to reap the benefits of globalisation. It is extremely

difficult to draw any clear conclusions about the impact of globalisation on a country's economic and social performance. The disparities in the structures and current policies of various countries are to blame. The impact of the border opening heavily depends on a country's human resources and governance (Hasan, 2019; Titalessy, 2018).

Todaro and Smith (2020) have argued that globalisation opens up new pathways for the abolition of global poverty and may improve nations' conditions through social, economic, intellectual, and scientific interactions, trade, and finance. Several low-income nations, such as India and China, have gained from globalisation, attaining remarkable economic development, and lowering international inequities. Bhanumurthy, and Kumawat (2020), have investigated the impact of globalisation on emerging nations and pointed out that more than half of developing nations have seen significant trade growth and tariff reductions. These nations are gaining ground with the developed countries, while the others are incurring losses. Globalisation issues have also grown in recent times, economic consequences growth, poverty, disparity, geographical disparities, cultural predominance, and economic or environmental interdependence (Samimi, & Jenatabadi, 2014; Lee et al., 2017).

Thus, the impact of globalisation has been among the most controversial concerns, with far-reaching consequences. Globalisation positively affects economic growth, foreign capital exposure, new economic opportunities, an upsurge in the financing, technology acquisition, the advancement of energy and communication

infrastructure, the development of labour performance and workplace circumstances, and the propagation of human rights. Furthermore, negative consequences include the degradation of international capital economic stability, destruction of traditional coherence, deterioration of the country's economic sovereignty, and increased impoverishment of nations (Zerrin, & Dumrul, 2018 Bhanumurthy & Kumawat, 2020).

### **1.1 Globalization, and Economic growth of Pakistan**

The economy of Pakistan has also experienced a significant impact of globalisation, as the process has affected the economy's economic, social, legal, and political setup. This is why Pakistan has faced both positive and negative repercussions of globalization regarding the segregated evidence in academia (Kakar, et al., 2011; Afzal, 2007; Hasan et al., 2019). The optimistic school of thought considers globalization as an opportunity for developing economies. For instance, Hasan et al. (2019) declare that globalization exhibits negative outcomes for the growth of Pakistan in the short run, yet it ends up boosting economic growth in the long run. The authors also claim that this surge in growth is attributed to the openness of the economy to the bordered economies. However, this effect still needs to be put to the test as prescribed by the advent of globalization. Globalization ensures economies enjoy a superior or better competitive place in the global market with lesser operating costs. It enhances goods and services and customer orientation in compliance with greater product accessibility. This mechanism of globalization works with

resource diversification, the development and creation of investment prospects, openness to markets, and accessibility to productive resources and inputs (Faridi & Khan, 2008; Bhatti & Fazal, 2020).

Pakistan has experienced an uneven growth experience that has captured a boom-bust trend, as seen in figure 1. Although Pakistan has seen although the country saw some favourable growth patterns, particularly during 1980–1992, at annual growth rate was reordered at 5 to 6 per

cent. (World Bank, 2020b; ADB, 2020b).). However, the overall pattern of growth has been affected by global events. Hence, the EG rate decreased due to the financial crisis in 2009.

Again, the rate of EG was also badly affected by the pandemic in 2020. It can be seen that annual growth was 6.4 per cent in the 1980s; however, it declined to 5 per cent in the 2010s. IMF has also projected that the growth rate will remain at 3.5 per cent shortly (ADB, 2022).

**Figure 1: RGDP Rate Pakistan 1980 to 2026**

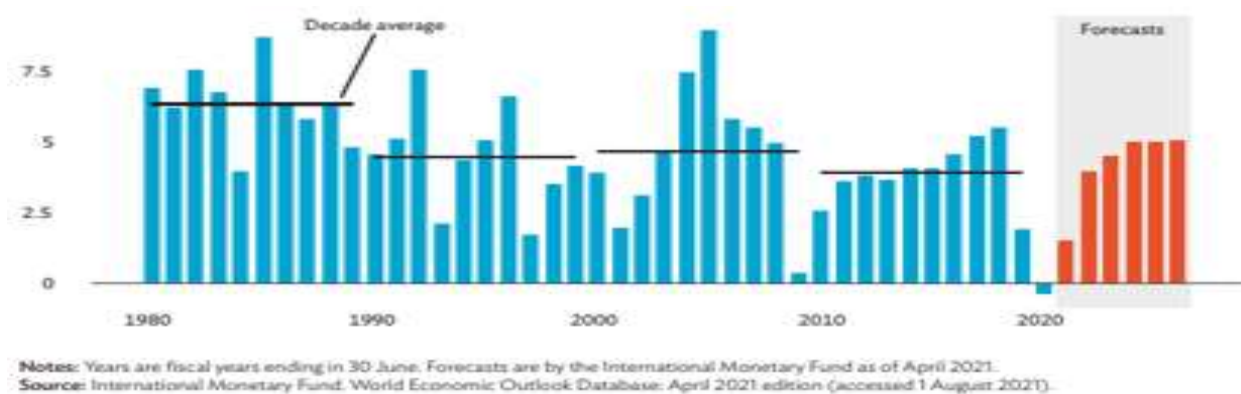
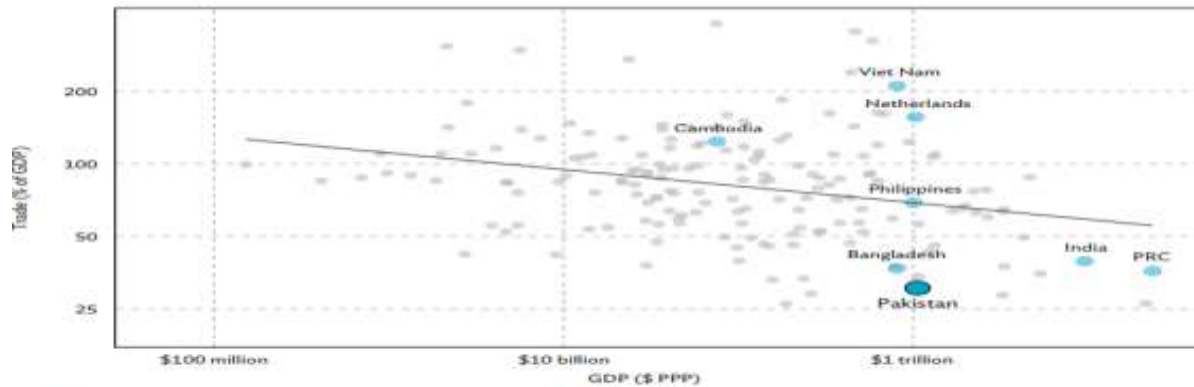


Figure 2, on the other hand, depicts the level of economic openness as a percentage of GDP. It has been seen that Pakistan has one of the lowest trade-to-GDP ratios in the globe at 30

percent. It also proved that Pakistan is less open as compared to its neighbours, such as India (39 percent) and Bangladesh (37 percent) (ADB, 2022).

**Figure 2: Trade Openness at Various Levels of Economic Development, 2019**



GDP = gross domestic product, PPP = purchasing power parity, PRC = People's Republic of China.  
**Notes:** Horizontal axis is gross domestic product in current international dollars at PPP. Vertical axis is the sum of exports and imports of goods and services as a share of GDP.  
**Source:** World Bank, World Development Indicators (accessed 1 August 2021).

Pakistan had liberalised its economy as part of the adjustment process, even though its trade expansion has been less dramatic than other fastest globalising countries (Fazil, 2020). In the 1990s, Pakistan initiated an economic liberalisation period to encourage and promote economic self-sufficiency, development, and growth. Pakistan implemented economic stabilisation and structural adjustment initiatives to address the domestic economic imbalance and external deficits in 1988. 1988 is also considered a turning point in the economic strategy of Pakistan, when the government significantly transitioned from "inward-looking policies" toward "outward-looking policies." Since prior governments have steadily expanded these measures, significant progress has been made in the execution of these strategies, which can be seen as substantial growth in export value; however, there is still much room for improvement in trade and financial liberalisation. Trade expansion has not been as persuasive as fast globalisation; exports have also lagged behind the rest of the world. Pakistan is experiencing challenges due to increasing competition circumstances that have worsened

the domestic industry (Fazil, 2020; Afzal, 2007; Hasan et al., 2022).

On the bright side, the cross-border labour movement has helped Pakistan enormously. Pakistani labourers travelling overseas are an external investment resulting in huge remittance inflows to the domestic economy. These remittances have generated micro-benefits for low-income groups and alleviating poverty, as well as macro-benefits in terms of promoting domestic consumption among a growing middle class and relieving external bottlenecks (Kakar, et al., 2011; Hasan et al., 2019). On the negative side, Pakistan has been negligent in receiving foreign investment and rising exports. Pakistan was not considered a significant beneficiary of the global rise in FDI. Furthermore, minimal FDI was received in manufacturing, particularly in the extractive sector, which has limited economic spillovers. Although FDI in services such as banking and telecommunications was beneficial, it also resulted in outflows of earnings and profit (Hamdani, 2014).

It has also been argued by Hamdani (2014) and Bhatti & Fazal (2020) that Pakistan

has a latecomer to global manufacturing and value chains and has not penetrated the competitive areas of international markets. It still imports advanced technological products but does not export technically advanced goods. The main manufactured exports are labour-intensive textiles and garments, competing in a saturated global market with falling trade conditions. Thus, globalisation is seen as essential for faster EG with equity; however, it has been argued that it reduces growth rates and worsens economic disparity in developing countries. Bhatti has also mentioned, & Fazal (2020), that globalisation is only seemingly different from old colonialism today. Developing nations have not prospered from this because developed countries have imposed tariffs on goods from developing countries. The protection of agricultural items and basic manufactured goods has also caused significant harm to develop countries like Pakistan. From this perspective, knowing how globalisation affects EG in Pakistan is crucial.

## 1.2 Objective of the Study

Based on the background and problem statement above, the objectives of the study are:

- To empirically examine the link between overall globalization and EG.
- To provide the policy implications, keeping in view the impact of globalization on economic growth.

## 2. LITERATURE REVIEW

### 2.1 Globalization

In the contemporary era, the concept of globalisation has changed. The domain of globalisation has been extended beyond the

interconnection of economies and has been considered a source of cultural exchanges. This could be attributed to the fact that there has been a drastic change in the approach of economies regarding economic collaborations (Elsherif, 2016). Globalisation has been a buzzword in the political economy for the last two decades, although no uniform definition has emerged. Globalisation is an ancient phenomenon with a new face, commonly defined as increasing global links between nations. Globalisation, a dominant force in the latter decade of the twentieth century, is establishing a new age of interaction among nations, economies, and people, according to UNDP (1999, p. 25). It is boosting people's interactions across national boundaries in the business, technology, culture, and government." According to Rothenberg (2003, p.1), "globalisation is the acceleration and intensification of connection and integration among people, businesses, and governments of other nations".

### 2.2 Theoretical Aspect of Globalization

The link between globalisation and growth is a controversial and widely debated issue in the literature on growth and development (Hasan, 2019). However, this issue still needs to be addressed. At best, theoretical growth research provides a contradictory and inconclusive discussion of the relationship between globalisation and growth. Some research concluded that globalisation favours growth through planning and allocating domestic resources, Technological diffusion, better productivity improvements, and capital augmentation. However, others have argued that

globalisation harms EG in nations with weak governance, oppressive regimes, and those specialising in inefficient globalisation-related activities (Santiago et al., 2020; Suci, Asmara, & Mulatsih, 2016).

Given the differing theoretical perspectives, much empirical research on the influence of globalisation on economic growth in developed and developing nations has been conducted. Pioneering studies such as Dollar (2002), Sachs et al. (1995), and Edwards (1998) have explored the effect of trade openness using several indexes and proxies on EG and proved that openness is linked to faster growth of the economy. Dreher (2006) has introduced a comprehensive index that measures three different aspects of globalisation such as social, economic, and political. According to Dreher (2006), globalisation's economic and social aspects significantly impact EG. However, political aspects have no significant impact on EG. The study of Roa and Vadlamannati (2011) has also proved the same findings as Dreher (2006). It has also been found that the positive impact of globalisation on EG is larger than the impact of investment on EG.

Additionally, Zerrin & Dumrul (2018) argued that the globalisation paradigm is based on a business approach that incorporates resource diversification among countries in order to improve the range of products and services of various firms. This diversity feature improves economic institutions while reducing risk exposures. It also distributes operations, offering horizontal and vertical market integration gains. Several studies have also suggested that

globalisation generates possibilities for countries, primarily developing countries, by expanding export markets and escalating access to foreign investment (Borensztein et al., 1998; Vamvakidis, 1998; Haddad, Lim, & Saborowski, 2010). Another school of thought evaluates globalisation from a competitive standpoint and argues that it generates a competitive business environment for companies, bringing several consumer benefits while lowering pricing and product variety. A large body of studies examined and evaluated the advantages of globalisation for both developed and developing countries. Thus, the business elements of globalisation directly impact economic success while indirectly alleviating poverty (Boisier, 2005; Bresser Pereira, 2010). It has also been argued by many prominent countries that are more open to foreign trade have more possibilities to improve faster as compared to closed economies. For instance, Potrafke (2015, p. 518) stated, "Globalisation is expected to spur economic growth for many reasons. Trade openness enables, for example, countries to exploit comparative advantages, to gain from specialisation, to foster innovation and efficient production."

In "neoclassical models of closed economies" like the "Solow model (Solow, 1956)" which also explains that a steady-state rate of growth does not rely on foreign trade however extended model has shown that international trade ma has only a temporary impact on output growth (Baldwin, 1992). However, a more in-depth analysis reveals that theoretical assumptions about the influence of trade globalisation on growth are less certain. The effect of increased trade globalisation is likewise

not obvious in endogenous growth theory (Dollar, 2001). For instance, Young (1991) proposed an “endogenous growth model” in which developed countries participated in open trade with a developing country in which developed countries grew faster than developing countries, and developed countries suffered more EG loss. Furthermore, policymakers did not handle globalisation well from a political economics standpoint, which generated systemic vulnerabilities while obstructing long-term beneficial EG impacts for large nation groups (Stiglitz, 2002). On the other hand, a policy debate over financial globalisation pointed to an overall favourable impact on EG, particularly during the “Washington Consensus” (Rodrik, 2006). However, more depth investigation based on different theoretical models of financial globalisation that impact EG also suggested inconsistent or weak impact (Rodrik & Subramanian, 2009; Sakyi & Egypt, 2017; Iamsiraroj & Doucouliagos, 2015).

Besides this, a low level of financial globalisation may protect economic systems from international crises and policy manipulation of widening the capital account that may even have negative implications on EG (Eichengreen & Leblang, 2003; Kneller et al., 2008). It can be said from a comprehensive review of the existing theoretical literature that the consequences of financial globalisation on EG may be “dependent” and “context-specific” on certain nations or country groups. According to Bhattacharya (2004), a significant share of people and countries has continued to be omitted from the advantages of globalisation due to the “asymmetrical nature of the system”, even though

it generates several benefits such as greater freedom of choice, reduced prices of goods, and more income. However, it is also found that the advantages of globalisation are distributed unequally among developed and developing nations even inside the countries (United Nations 2004, p. 229). Adam (2008) and Kilic (2015) have also explained that although globalisation has brought possibilities for some economies while promoting EG, however; it also causes poverty and inequality, which leads to negative EG.

### **2.3 Evidence of Link between Globalisation and EG**

According to Akhtar (2013), “...it remains a struggle to ensure that all countries and all people benefit from globalization’s full potential.” Global forces, such as commerce and cross-border flows of capital and manpower, have generated an opportunity for some while harming others.” So, it goes with the territory that globalization is under threat; however, the World Bank (2017a) has released a report that argued that the prospects for the South Asian region are better and globalization has been good for development and critical to poverty reduction (p. 26). Empirical studies have explored historical data on the link between globalization and EG, proving that globalization has had a long-term favourable influence on EG. It has also been found that more globalized nations are more sustainable. Globalization has stimulated EG, increased gender equality, and strengthened human rights; however, it has also contributed to income disparity. Several articles have attempted to explore how trade and financial globalization affect economic growth; however, the major

findings are ambiguous. Several authors have given enough empirical support that globalization' has a significant impact on EG (Olimpia & Stela, 2017); Dollar, 1992; Harrison, 1996; Santiago, Fuinhas, & Marques, 2020), whereas additional empirical evidence has raised the question related to the significance of globalization on overall GDP (Levine & Renelt, 1992; Ahmed, 2012; Afzal, 2007; Ulucak et al., 2020). Several other prominent studies have also gained acknowledgement that has pointed unambiguously positive impact of financial openness on EG (Bekaert et al., 2005; Quinn & Toyoda, 2008). However, other researches are incapable of discarding the hypothesis that global financial integration has no positive impact on EG or they have found mixed proofs (Grilli & Milesi-Ferretti, 1995; Alfaro et al., 2006; Furceri et al., 2019). Besides this, Barry (2010) has also analyzed the effect of the "KOF globalization index" on the EG of sub-Saharan Africa. Stiglitz (2002) has also highlighted that "states that various institutional issues, monopolistic tendencies, moral hazard, and adverse selection may restrict the diffusion of advantages from globalization". According to another perspective, globalization is a phenomenon that has a deleterious effect on the development of countries. It contends that globalization worsens income inequality, degrades environmental and social values, and raises the danger of an economic catastrophe, owing to excessive unpredictability in capital flows, which makes countries with weak financial institutions vulnerable to external shocks (Türedi, 2016).

İncekara and Savrul (2011) have also argued that despite the fast technological

progress brought by globalization, the interconnectedness of global capital markets, low processing and information costs have contributed to promoting efficiency and capital growth, efficient utilization of resources, and employment creation, thus led to strengthening EG rate. However, it is still questionable if all nations will gain equally from globalization's potential (Gurgul & Lach, 2014). Olimpia and Stela (2017) have examined the linkage between EG and globalization through regression and correlation analysis. It has been found that globalization has a substantial influence on EG. The author has also suggested that findings revealed that if developing countries want to improve EG, thus it should move towards more globalization and integration. Ahmad et al. (2017) have already investigated the role of FDI on the EG of Malaysia using the ARDL technique. The study's outcome has revealed that FDI has a considerable influence on EG in both the "long and short run"; hence, financial development and FDI are equally beneficial. On the other hand,

Samimi and Jenatabadi (2014) have also explored the link between economic globalization on EG in the context of OIC countries. It has also been found that countries must receive the suitable income that can be gained from globalization. The findings of Kilic (2015) also show the positive effect of economic and political globalization, whereas social globalization negatively affects the EG of several countries.

Khalil (2015) also explored the relationship between Globalisation and EG in the case of Pakistan. Currently, the country seems more of a beneficiary of globalisation than a

contributor. There is a need to change the conditions of participation in globalization from passive to active engagement. An extra push is also needed to persuade international organizations to connect their operations with their operations worldwide. Furthermore, a more advantageous trade framework is essential for “export-oriented investment” in Pakistan. Above all, global participation will need a significant increase in Pakistan’s technological abilities at the organizational and economic levels. Bukhari and Munir (2016) also explored the impact of globalization on EG in selected Asian countries using panel data. According to the findings, social globalization greatly influences GDP in Asian countries; however, political and economic globalization has a negligible impact on GDP. Khan et al. (2016) have also explored the influence of globalization on the EG of Pakistan. The study’s findings have also indicated that economic and social globalization has no major impact on EG, whereas; political globalization has a significant impact on EG.

Aurmaghan and Nawaz (2021) have also explored whether globalization impacts economic growth in Pakistan and found that economic globalization has a negative influence on EG, whereas; political and social globalization has a positive and strong impact on EG with growth. Acheampong et al. (2021) have also revisited the impact of globalization on EG and found a negative impact of political and economic globalization while a positive impact of social globalization on EG.

## 2.4 Research Gap

In the age of globalisation, discovering the influence of globalisation on EG is worthwhile since the “net impact of globalisation” on EG remains a mystery. In addition, available empirical research on the impact of globalisation on EG is unclear. On the other hand, the impact of globalisation on EG has been extensively studied using a variety of data and methodologies. However, the majority of these studies suffer from econometric shortcomings and a restrictive definition of globalisation. After 2006, a considerable number of empirical research on the effects of globalisation on EG were conducted. However, studies in the context of South Asian nations such as Pakistan were mostly disregarded. As one of the world's largest economies with enormous growth capacity, research on the impact of globalisation on EG in Pakistan is significant, specifically for economic policy. This study attempts to address that gap by comprehensively analysing the impact of overall globalisation on the EG of Pakistan.

## 3. RESEARCH METHODOLOGY

### 3.1 Data Source and Description of Variables

This study has employed time series data on an annual basis from 1971 to 2021 that has been taken from World Bank and ETH, Zurich. In order to measure the GDP growth rate, the annual GDP growth rate has been taken whereas, whereas KOF Globalization Index by Dreher (2006) has been used to measure overall globalization. It measures three dimensions of globalisation such as social, political, and economic, forever country since 1970 and has been a widely used globalisation index in studies. Besides this, CPI, FDI, gross capital formation,

labour force participation rate and official development assistance have also been taken as independent variables.

### 3.2 Modelling Framework

The paper aims to examine the relations between globalisation and GE while taking relevant control

$$GDPG = f(KOFGI, GFCF, CPI, FDI, LFPR, ODA) \dots \dots \dots (1)$$

Where,

GDPG = GDP growth (annual %)

KOFGI= KOG Globalization Index

GFCF= Gross fixed capital formation (annual % growth)

CPI= Inflation, consumer prices (annual %)

FDI= Foreign direct investment, net inflows (% of GDP)

LFPR= Labor force participation rate, total (% of total population ages 15+) (national estimate)

ODA= Net ODA received (% of GNI)

Taking a further step, this simple model was converted into econometrics from bi adding error

variables into accounts, such as inflation rate, foreign investment, official development, gross fixed capital formation, and labour force participation rate.

The general model can be modelled as follow;

terms; hence, the empirical equation can be seen as in equation 2

$$GDPG = \alpha_1 + \alpha_2 KOFGIt + \alpha_3 GFCFt + \alpha_4 CPIt + \alpha_5 FDI_t + \alpha_6 LFPRt + \alpha_7 ODA_t + \varepsilon_t \quad (2)$$

### 3.3 Unit Root Tests

Unit root test is considered very critical in time series models and cointegration. This stalks from the element that “a stochastic process with a unit root is itself non-stationary”. Thus, it is assumed that testing unit root is quite similar to testing whether a “stochastic process is stationary or non-stationary. Therefore, explaining the reason to test for unit roots is important because it plays a key role in the theory and methods of time series models and o-integration. This study is based on time series data. Hence, there is a need to check the

stationarity of the data. Otherwise, the findings will be genuine. There are several methods of testing unit root; however, in this paper, two wield used methods such as Augmented Dickey-Fuller (ADF) developed by Dickey and Fuller (1981) and Phillips-Perron (PP) developed by Phillips and Perron (1988), have been employed. It is argued that knowing the properties of unit roots is very important in order to make series more efficient and reliable for further analyses. It is assumed that “series of Y would be non-stationarity if the estimated coefficient of unit root is more than tabulated t-statistic” generated by Dickey and

Fuller in 1979. However, the PP test is not similar to the ADF test because it deals with the issue of “serial correlation” and “heteroskedasticity” in residual terms. It has also been explained by the author that the ADF test is more relevant because it adjusts significantly for the existence of “serial correlation”. It has also been assumed by DF that the test considers error terms as independent and identically distributed; however, ADF has the ability to adjust the DF while taking care of the possibility of serial correlation in residual while adding the “lag difference term of the regressand”. Besides this, Philips and Paerron have developed a non-parametric technique to deal with the issue of serial correlation without taking lagged difference terms in the error term.

### 3.4 Autoregressive Distributive Lag Model

There are several empirical studies that have used ‘Ordinary Least Square (OLS) to prove the relationship between dependent and independent variables. The main concern of using the OLS method is that it is assumed that error terms are normally distributed in terms of

zero mean and finite variance. Hence, it may give ambiguous outcomes if the analysis is performed without testing unit root test, which may also lead to misleading policy analysis in the wrong direction. Furthermore, all variables should be integrated at level zero for applying the OLS method, which is not possible in many time series data (Shrestha, & Bhatta, 2018). On the other hand, applying Johansen co-integration also requires testing unit roots to ensure that all variables are integrated at level (1). The researcher found it difficult to use time series if time series data contains a mixture of integration at level zero and level (1). ARDL method is more suitable in this case because it allows not test unit root test. One point that should be considered using ARDL is that none of the variables should be integrated at level (2) or at the second difference of the unit root test (Nkoro & Uko, 2016).

The “Autoregressive Distributive Lag Model (ARDL) to Co-Integration Approach” is demonstrated as equation 3.

$$\begin{aligned} \Delta GDPG_t = & \beta_1 + \beta_T T + \beta_{KOFGI} KOFGI_{t-1} + \beta_{GFCF} GFCF_t + \beta_{CPI} CPI_{t-1} + \beta_{FDI} FDI + \beta_{LFPR} LFPR_{t-1} \\ & + \beta_{ODA} ODA_t + \sum_{j=1}^a \beta_j \Delta GDPG_{t-j} + \sum_{k=0}^b \beta_k \Delta KOFGI_{t-k} + \sum_{l=0}^c \beta_l \Delta GFCF_{t-l} \\ & + \sum_{m=0}^d \beta_m \Delta CPI_{t-m} + \sum_{n=0}^e \beta_n \Delta FDI_{t-n} + \sum_{o=0}^f \beta_o \Delta LFPR_{t-o} + \sum_{p=0}^g \beta_p \Delta ODA_{t-p} + \varepsilon_t \dots (3) \end{aligned}$$

In this equation, (3)  $\Delta$  represents difference operators, T shows trends variable whereas;  $\varepsilon$  is the error term that is considered as normally distributed with finite variance and zero mean.

On the basis above equation, the “null hypothesis of no co-integration” is required that F-statistics should be more than UCB.

$$H_0 : \beta_{GDPG} = \beta_{KOFGI} = \beta_{GFCF} = \beta_{CPI} = \beta_{FDI} = \beta_{LFPR} = \beta_{ODA} = 0$$

The “alternative hypothesis of co-integration” is

$$H_1 : \beta_{GDPF} \neq \beta_{KOFGI} \neq \beta_{GFCF} \neq \beta_{CPI} \neq \beta_{FDI} \neq \beta_{LFPR} \neq \beta_{ODAL} \neq \beta_{FR} \neq 0$$

Pesaran et al. (2001) developed two asymptotic bounds for the “upper critical bound” (UCB) and “lower critical bound” (LCB). For accepting the alternative hypothesis of co-integration, it is

$$GDPG_t = \delta_{\omega 1} + \sum_{h=1}^k \delta_1 GDPG_{t-h} + \sum_{i=1}^l \delta_1 KOFGI_{t-i} + \sum_{j=0}^m \delta_2 GFCF_{t-j} + \sum_{k=0}^n \delta_3 CPI_{t-k} + \sum_{l=0}^o \delta_4 FDI_{t-l} + \sum_{m=0}^p \delta_5 LFPR_{t-m} + \sum_{n=0}^r \delta_6 ODA_{t-n} \dots \dots \dots (4)$$

Furthermore, after establishing long-run association among dependent and independent variables, the next step is taken to estimate the

When it is confirmed that there is co-integration among variables, long-run coefficients are generated through equation (4).

coefficient for short-run analysis while using the “Error Correction Model”. Equation (5) demonstrated the ECM model of the study.

$$\Delta GDPG_t = \delta_{\omega 1} + \sum_{i=1}^a \delta_{GDPG} \Delta GDPG_{t-i} + \sum_{j=0}^b \delta_{KOFGI} \Delta KOFGI_{t-j} + \sum_{l=0}^d \delta_{GFCF} \Delta GFCF_{t-l} + \sum_{m=0}^e \delta_{CPI} \Delta CPI_{t-m} + \sum_{s=0}^j \delta_{FDI} \Delta FDI_{t-s} + \sum_{o=0}^f \delta_{LFPR} \Delta LFPR_{t-o} + \sum_{q=0}^g \delta_{ODAL} \Delta ODA_{t-q} + \beta_{ECM} ECM_{t-1} + \varepsilon_t \dots \dots \dots (5)$$

Here,  $ECM_{t-1}$  is considered as “lagged error term” whereas; ECM coefficient values explains the speed of adjustment from short-run imbalance to long-run balance. Thus, model (5) presents that GDPD can be explained by difference of linear (non-linear) KOF globalisation index, gorses fixed capital formation, FDI, inflation rate, labour force participation rate and official development assistant plus “lagged error term and residual term. After finalising the both long-run and short-run models, diagnostic tests have also been used

to check issues of “normality”, “multicollnarity”, “heteroscedasticity”, and “model specification”.

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Analysis

Following the research methodology, the study presents the findings of estimation analysis in the following tables. Initially, descriptive analysis was performed of the gathered data. The descriptive statistics of the included variables have been presented in table 1.

**Table 1:** Descriptive Statistics

	CPI	FDI	GFCF	KOFGI	LFPR	ODA
<b>Mean</b>	8.868390	0.746526	3.808352	43.48199	49.02118	2.289409
<b>Median</b>	7.844265	0.576511	4.327710	43.59309	49.30000	1.778530
<b>Maximum</b>	26.66303	3.668323	15.82522	58.18328	52.03000	7.741471
<b>Minimum</b>	2.529328	-0.062662	-12.52425	30.31370	29.96000	0.177805
<b>Std. Dev.</b>	5.109687	0.766624	6.496649	8.998948	3.767442	1.571228
<b>Skewness</b>	1.554051	2.304381	-0.149023	0.081729	-4.365355	1.393323
<b>Kurtosis</b>	5.680613	8.536458	2.723312	1.430435	21.50371	5.009063

<b>Jarque-Bera</b>	35.79771	110.2728	0.351449	5.291790	889.5518	25.07868
<b>Probability</b>	0.000000	0.000000	0.838849	0.070942	0.000000	0.000004
<b>Sum</b>	452.2879	38.07281	194.2259	2217.581	2500.080	116.7599
<b>Sum Sq. Dev.</b>	1305.445	29.38565	2110.322	4049.053	709.6811	123.4379
<b>Observations</b>	51	51	51	51	51	51

Source: Estimated by Authors

Table 1 elaborates that all selected variables exhibit homoscedastic variables with normal distributions. This can be affirmed by the Jarque-Bera values that compare the mean and median values of the underlying variables to identify the direction of central tendency or skewness of the data as it can be seen in the table that CPI, FDI and ODA have mean values greater than the median values about positive skewness. The

remaining variables (CPI, GFCF, KOFGI, and LFPR) have mean values less than median values showing negative skewness in the series.

#### 4.2 Correlation Matrix

The data estimation proceeds with the results of the correlation matrix in Table 2. The table portrays the coefficients of correlation of the selected independent variables.

**Table 2:** Correlation Matrix

	<b>CPI</b>	<b>FDI</b>	<b>GFCF</b>	<b>KOFGI</b>	<b>LFPR</b>	<b>ODA</b>
<b>CPI</b>	1.000	0.090	-0.233	-0.106	0.072	0.314
<b>FDI</b>	0.090	1.000	0.021	0.590	0.136	-0.472
<b>GFCF</b>	-0.233	0.021	1.000	-0.177	0.068	0.175
<b>KOFGI</b>	-0.106	0.590	-0.177	1.000	0.269	-0.747
<b>LFPR</b>	0.072	0.136	0.068	0.269	1.000	-0.176
<b>ODA</b>	0.314	-0.472	0.175	-0.747	-0.176	1.000

Source: Estimated by Authors

Table 2 affirms that the correlation coefficient of all exploratory indicators is positive for the dependent variables (GDPG). In addition to this, the values in the tables are less than 0.58; therefore, it can be concluded that there is no issue of multicollinearity among the independent variables of the model.

#### 4.3 Testing Stationarity: Unit Root Test

Based on the proposed methodology, prior to the model estimation, the study tests the stationarity of all of the variables to ensure the appropriate model so the model can be correctly specified. The study has employed parametric and non-parametric tests to verify whether the underlying series have unit roots. Table 3 indicates the outcomes of the ADF test, which is parametric.

**Table 3:** Stationarity Estimates of ADF-Unit Root Test

<b>Variables</b>	<b>Calculated value</b>	<b>5% Tabulated value</b>	<b>10% Tabulated value</b>	<b>Prob.*</b>
GDPG (0)	-5.941607	-3.5	-3.18	0.0000
$\Delta$ (GDPG)(0)	-11.13358	-3.5	-3.18	0.0000
KOFGI(0)	-1.630489	-3.5	-3.18	0.7665
$\Delta$ (KOFGI)(0)	-5.715746	-3.5	-3.18	0.0001**

CPI(0)	-3.554219	-3.5	-3.18	0.0444
$\Delta$ (CPI)(0)	-6.792864	-3.5	-3.18	0.0000
FDI(1)	-3.433755	-3.5	-3.18	0.0586
$\Delta$ (FDI)(0)	-4.875713	-3.5	-3.18	0.0013
GFCF(3)	-5.026234	-3.5	-3.18	0.0009
$\Delta$ (GFCF)(0)	-7.051707	-3.5	-3.18	0.0000**
LFPR(0)	-7.313637	-3.5	-3.18	0.0000**
$\Delta$ (LFPR)(1)	-10.65311	-3.5	-3.18	0.0000**
ODA(0)	-3.685206	-3.5	-3.18	0.0326
$\Delta$ (ODA)(1)	-6.416760	-3.5	-3.18	0.0000**

Source: Estimated by Authors

Note: “MacKinnon (1996) one-sided p-values., \*\* = 5% significance level and \*\*\* = 10% significance level. [Y: The Level form of the variable Y] [ $\Delta$  (Y): The first change of the variable Y] [ $\Delta$  (Y, 2): The second difference of the variable Y]”

The outcomes of the ADF stationarity test for this study unveil that except for the main independent variable of KOFGI, all other included variables are stationary at the level. At the same time, KOFGI is stationary at the first level. In a non-

parametric test, the study again tested the stationarity of the variables with the help of the PP unit root test. The findings of the test are elucidated in table 4.

**Table 4:** Estimates of PP-Unit Root Test

Variables	Calculated value	5% value	Tabulated	10% value	Tabulated	Prob.*
<b>GDPG (3)</b>	-6.129425	-3.5		-3.18		0.0000
<b><math>\Delta</math>(GDPG)(6)</b>	-14.62059	-3.5		-3.18		0.0000
<b>KOFGI(2)</b>	-1.810100	-3.5		-3.18		0.6850
<b><math>\Delta</math>(KOFGI)(2)</b>	-5.689899	-3.5		-3.18		0.0001**
<b>CPI(4)</b>	-3.558661	-3.5		-3.18		0.0440
<b><math>\Delta</math>(CPI)(11)</b>	-8.000289	-3.5		-3.18		0.0000
<b>FDI(0)</b>	-2.170634	-3.5		-3.18		0.4949
<b><math>\Delta</math>(FDI)(5)</b>	-4.611447	-3.5		-3.18		0.0028
<b>GFCF(2)</b>	-5.478240	-3.5		-3.18		0.0002
<b><math>\Delta</math>(GFCF)(1)</b>	-10.40666	-3.5		-3.18		0.0000**
<b>LFPR(1)</b>	-7.315239	-3.5		-3.18		0.0000**
<b><math>\Delta</math>(LFPR)(48)</b>	-47.16118	-3.5		-3.18		0.0000**
<b>ODA(3)</b>	-3.637539	-3.5		-3.18		0.0366
<b><math>\Delta</math>(ODA)(48)</b>	-19.36390	-3.5		-3.18		0.0000**

Source: Estimated by Authors

Note: MacKinnon (1996) one-sided p-values., \*\* = 5% significance level and \*\*\* = 10% significance level. [Y: The Level form of the variable Y] [ $\Delta$  (Y): The first change of the variable Y] [ $\Delta$  (Y, 2): The second difference of the variable Y]”

The PP-Unit Root in table 4 test elaborates that KOFGI and FDI are stationary at the first difference, whereas the rest of the variables at

stationary at the level. Both ADF and PP unit root tests have been assessed to specify the appropriate model for this study. As the unit root tables explain, the selected aggregate variables are stationary at the level and first difference. This

indicates that variables exhibit mixed stationarity. Therefore, based on different stationarity orders in Tables 3 and 4, the study employs the ARDL model to estimate the causal association between the GDPG and KOFGI while considering

next step is to opt for the lag length criteria required to perform the regression effectively. According to Pesaran et al. (2001), the lag selection must be appropriate for determining independent and dependent variables.

#### 4.4 Co-integration Analysis

the dynamics of the model with long-run and short-run assessments.

As the pre-requisite of the ARDL model has been established due to unit root testing, the

The co-integration destination of the model has been presented in table 4. The table demonstrates that calculated F-statistics (17.39) is greater than the upper bound (3.99) at the 1 per cent significance level.

**Table 4:** The ARDL Co-integration Analysis

Estimated Model		
Optimal lag structure	(2, 4, 4, 4, 3, 4, 4)	
F-statistics	17.39976*	
Significant level	Critical values ( $T = 47$ ) <sup>#</sup>	
Asymptotic: n=1000	Lower bounds, $I(0)$	Upper bounds, $I(1)$
10%	1.99	2.94
5%	2.27	3.28
2.5%	2.55	3.61
1%	2.88	3.99
Actual Sample Size 47	Finite Sample: n=50	
10%	2.17	3.22
5%	2.55	3.708
1%	3.424	4.88
	Finite Sample: n=45	
10%	2.188	3.254
5%	2.591	3.766
1%	3.54	4.931
R <sup>2</sup>	0.968577	
Adj. R <sup>2</sup>	0.903637	
F-statistics	14.91484*	
D-W-statistics	2.219556	

Note: \*=1%, \*\*=5% and \*\*\*=10% significance levels.

This implies that the model's variables are co-integrated, which is the prerequisite to applying the ARDL approach in compliance with the mixed results of unit root at I (0) and I (1). The table also provides the details of the optimal lag structure (2, 4, 4, 4, 3, 4, 4) prescribed by the AIC. It is worth mentioning that the lag structure is selected by the EViews software, automatically adding more reliability to the estimated model. Overall, the co-integration findings affirm that the opted variables are co-integrated in the context of Pakistan for the given period.

## 4.5 Model Estimations

### 4.5.1 Long Run Dynamics of GDPG-KOFGI Model

This section provides the findings of the main estimation exercise with the help of ARDL. Academicians extensively employ the ARDL approach as it estimates both long-run and short-run regression. Thus, a researcher can trace the dynamics of the phenomenon by using the ARDL model.

**Table 5:** Long Estimates of Dynamic GDPG-KOFGI Model

<b>Dependent Variable: Industrial wages</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>T-Statistic</b>	<b>Prob. Value</b>
<b>CPI</b>	-0.281601	0.032603	-8.637298	0.0000
<b>FDI</b>	1.575194	0.213259	7.386310	0.0000
<b>GFCF</b>	0.055080	0.030276	1.819260	0.0889
<b>KOFGI</b>	-0.122459	0.014326	-8.547856	0.0000
<b>LFPR</b>	-0.163936	0.070840	-2.314187	0.0352
<b>ODA</b>	0.448017	0.099132	4.519406	0.0004
<b>C</b>	18.95573	3.540390	5.354135	0.0001
<b>R2</b>	0.968577			
<b>Adj. R2</b>	0.903637			
<b>D-W statistic</b>	2.219556			
<b>F-Statistic</b>	14.91484*			

*Source: Estimated by Authors*

Considering the long-run estimates of the GDPG-KOFGI in table 5, it has been found that there exists a significant yet negative association between GDPG and KOFGI. The coefficient value is 0.12 with a highly significant probability value, i.e., 0.000. Globalization is a well-evident phenomenon around the globe, and there is no

doubt that its advents have affected the entire globe (Zahid, 2015). In the contemporary era, it exerts both negative and positive outcomes for the economies worldwide irrespective of their income status as developed or developing economies. There is another limited strand of literature arguing whether globalization matters

for economies or not (Baloch et al., 2021). However, the study is restricted to the negative impact of globalization on economic growth as it can conveniently be traced without any complex simulations. The study has employed the new measure of globalization (KOF index) as it encounters economic, social, and political domains to cater the globalization. Intuitively, the negative outcomes of globalization for the economy of Pakistan can be attributed to the dimensions mentioned above in the index.

First, the economic dimension of KOF includes both trade and financial components of the economy that are further extended to foreign investment, trade restrictions and capital openness. Developing economies experience periodic collapse, resulting in declining growth rates and financial crises (Prasad et al., 2005). Correspondingly, this is the case for Pakistan as the economy has been severely affected by financial downfall, which has been persistently transmuted into low economic globalization, creating negative outcomes for the growth of the economy (Usman, 2010). Second, the social dimension of globalization regards people's way of living, family backgrounds, and societal setups (Kis-Katos et al., 2018). Predominantly, this aspect of the globalization believes in bringing societies and people around the globe together. However, for a developing economy like Pakistan, there are issues and concerns regarding the implications of globalization for societal protection as it encompasses culture, identity and security of families and communities about people's reluctance towards globalization (Shopping et al., 2017). This consideration could also be a driving factor for the ineffectiveness of

the social dimension of the KOF globalization index and henceforth indicate a negative outcome for the economic activity of Pakistan. Third, the political dimension of globalization encompasses the role of embassies, international NGOs, membership in international accords and international organizations (Gygli et al., 2019). Even though Pakistan is among the founding members of most the international organization, including the World Trade Organization (WTO) and agreements such as the General Agreement for Trade and Tariffs (GATT), it has failed to mark its presence in the global market due to political instability, and weak policy implementations (Newman, 2009). The economy barely follows the policies indigenously and rather considers them as obligations as imposed by the "International Monetary Fund (IMF) and World Bank" (Tabassum et al., 2016). Additionally, the failure of different structural and development programs has also fueled the negative outcomes of globalization for the economy, society and politics. Leading to policy dilemmas (Patrick, 2007).

The study also includes a set of control variables that are useful to run the regression in this study. The findings of control variables reveal that all variables are significantly associated with the GDP. This is in line with the existing luminous literature that considers the variables' macroeconomic significance. ARDL regression unveils that CPI is negatively associated with the GDPG as the coefficient value is 0.28 and the p-value is highly significant (0.000). It is a well-evident fact that increasing inflation rates have been a matter of concern for the economy of Pakistan over the past few years. In a recent

study, Ahmad et al. (2020) found a negative and significant association between the two variables. Khan (201) attributes intuitively rising inflation as good or bad (single-digit inflation) for developing and emerging economies.

Nevertheless, the distinction appears due to the extent of volatility in inflation rates (Junejo et al., 2021). Precisely for the economy of Pakistan, the driving factors for inflation volatility are conventional tax collection sources, high non-development expenditures and low involvement of the central bank (Rahman et al., 2019). Thus, it can be precluded that high inflation will cause an alarming economic situation in the coming years due to worsened macroeconomic instability (Mamun & Ullah, 2020).

FDI in the model explains a positive association with the dependent variable with a highly significant probability (0.000). The positive coefficient value (1.57) enhances the significance of this study for theory favouring the crowding-in effect of FDI supported by the Innovation-based model and endogenous growth theory (Agarwal & Khan, 2011). The literature on the theory proclaims the spillover effect of FDI on the economy regarding growth (Ahmed, 2012). FDI creates employment and facilitates the economy in terms of technology and skill development (Osano & Koine, 2016). These spillover outcomes can easily be traced to the economy's productivity with long-term economic development for the developing economy of Pakistan. In order to add the domestic investment perspective, the model has been extended by including the GFCF as an independent variable.

The positive association of the variable with the GDPG can be seen by the magnitude of coefficient 0.05 with significance at 10 per cent (0.08). Conventionally, GFCF is expected to be highly associated with the GDPG as it determines the economy's size and performance, leading to higher levels of aggregate demand and productive capacity (Ali, 2015; Kanu & Ozurumba, 2014).

The GDP-KOFGI model also argues for the role of the labour market so that an important market component can be discussed. It is presumed that the variable enhances the inclusiveness of the study. The study has found a negative association of LFPR with the GDPG (Shahid, 2014), as the magnitude of the coefficient is 0.16 with a 0.03 value of significance. According to Rahman (2018), South Asia's social and economic setup has rapidly changed in favour of entrepreneurship and low-concentration trade skill development. Capital deficiency is also a vibrant factor for low labour productivity in developing economies and, precisely, in Pakistan. Lastly, ODA is found to have a positive outcome for the economy as the magnitude of the beta coefficient is 0.44 with a significant probability (0.0004). This result is in line with the study of Parveen et al. (2021). According to the authors, the direct connotation of the variable with the GDPG could be associated with the fact that ODA assists the economy in terms of more sustainability which ultimately transmuted into better growth rates.

#### **4.6 Short Run Estimates of GDPG-KOFGI Model**

Table 6 embodies the short-run estimates of the ARDL model. The estimated value of the ECM model is negative and significant. The magnitude of the value is -2.05, and it is highly significant, with 0.000 as a p-value. These estimates affirm that the underlying model of the study will converge to its equilibrium position after any shock or divergence in the short run. Additionally, the coefficient value of ECM terms can be used to estimate the adjustment rate of the model under consideration. By dividing the ECT coefficient by 1, the value of the adjustment is 5.8 of the models towards equilibrium after a certain shock. In this case, the speed of adjustment of the GDPG-KOFGI is approximately six months. This implies that the

model will acquire its equilibrium position in 6 months. Referring to the short-run significance of the variables, Table 6 shows all independent variables have a significant role in the GDPG as per the estimation results. These results comply with the existing studies on the short-run significance of macroeconomic variables like El Abed and Zardoub (2019) and Shah et al. (2012). The short-run estimates of Ahmed et al. (2021) also endorse that globalization significantly impacts the economy's growth. Therefore, the GDPG -KOFGI model exhibit significant implications for the economic activity of Pakistan; however, as mentioned earlier, the negative impact of KOFGI on GDPG is subjected to different economic considerations.

**Table 6:** Short Run Estimates of GDPG-KOFGI Model

<b>Dependent Variable: GDPG</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>T-Statistic</b>	<b>Prob. Value</b>
<b>D(GDPG(-1))</b>	0.350786	0.085759	4.090379	0.0010
<b>D(CPI)</b>	-0.102258	0.032082	-3.187392	0.0061
<b>D(CPI(-1))</b>	0.634644	0.055649	11.40441	0.0000
<b>D(CPI(-2))</b>	0.279074	0.052943	5.271187	0.0001
<b>D(CPI(-3))</b>	0.231615	0.038353	6.038964	0.0000
<b>D(FDI)</b>	2.804123	0.369266	7.593773	0.0000
<b>D(FDI(-1))</b>	-1.100614	0.315106	-3.492837	0.0033
<b>D(FDI(-2))</b>	-1.853492	0.311402	-5.952097	0.0000
<b>D(FDI(-3))</b>	-1.513209	0.344568	-4.391611	0.0005
<b>D(GFCF)</b>	0.116800	0.016319	7.157505	0.0000
<b>D(GFCF(-1))</b>	0.155558	0.021789	7.139412	0.0000
<b>D(GFCF(-2))</b>	0.113314	0.030424	3.724473	0.0020
<b>D(GFCF(-3))</b>	0.053675	0.022952	2.338542	0.0336
<b>D(KOFGI)</b>	-0.152089	0.095161	-1.598225	0.1308
<b>D(KOFGI(-1))</b>	-0.769656	0.154675	-4.975942	0.0002
<b>D(KOFGI(-2))</b>	-2.193678	0.218134	-10.05659	0.0000
<b>D(LFPR)</b>	-0.127812	0.042757	-2.989242	0.0092
<b>D(LFPR(-1))</b>	-0.082262	0.039420	-2.086795	0.0544

<b>D(LFPR(-2))</b>	-0.020093	0.036929	-0.544111	0.5944
<b>D(LFPR(-3))</b>	-0.046837	0.030429	-1.539230	0.1446
<b>D(ODA)</b>	-0.892955	0.159567	-5.596111	0.0001
<b>D(ODA(-1))</b>	-1.676858	0.199235	-8.416468	0.0000
<b>D(ODA(-2))</b>	-1.149036	0.172966	-6.643120	0.0000
<b>D(ODA(-3))</b>	-0.474793	0.142549	-3.330743	0.0046
<b>ECT(-1)*</b>	-2.058997	0.144103	-14.28836	0.0000
<b>Adj. R<sup>2</sup></b>	0.942689			
<b>F-statistic</b>	17.39976			

Source: Estimated by Authors, Note: D-W statistic value is 2.220

On the whole, the findings of Short run analysis support the dynamic association between GDPG and KOFGL.

#### 4.7 Post Estimation Tests

In order to enhance the reliability of the estimated model, a series of the post-estimation test has

**Table 7:** Post Estimation Reliability

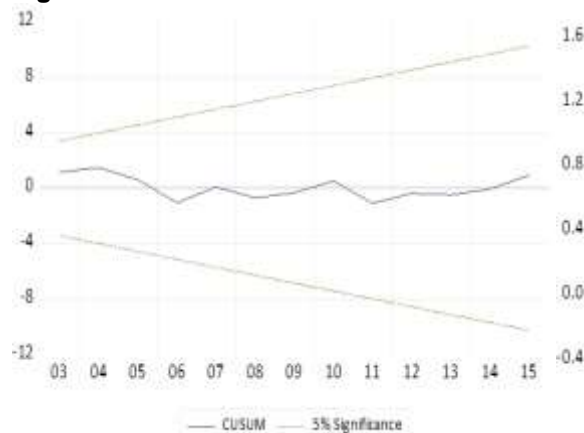
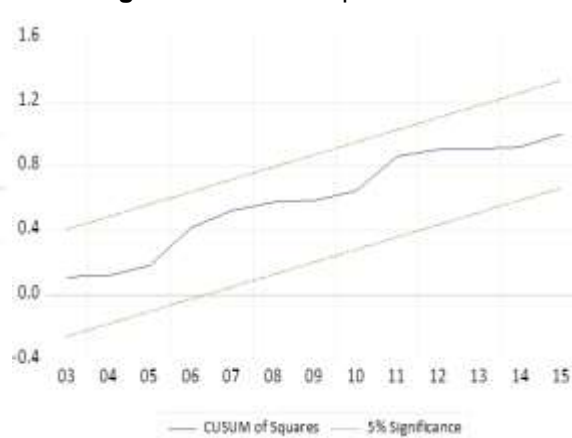
Test	F-statistic	Orbs*R2	Prob. F	Prob. $\chi^2$
B-G LM (Serial Correlation)	0.580500	3.853328	0.5735	0.1456
B-Pagan-G (Heteroskedasticity)	0.548485	24.97084	0.9229	0.7690
Harvey (Heteroskedasticity)	0.873064	30.24021	0.6390	0.5049
Glejser (Heteroskedasticity)	0.659954	27.11764	0.8402	0.6663
ARCH (Heteroskedasticity)	0.189883	0.197661	0.6651	0.6566

Source: Estimated by Authors. Note: B= Breusch, G= Godfrey

Table 7 enumerates no evidence of a violation of CLRM assumptions. Thus, the study concludes that there is no serial correlation in the model and affirms homoskedasticity's presence. According to Daniel (2011), the post-estimation results are crucial for validating the predicted model. Correspondingly, the study has also conducted stability tests for the model. Figure 1 and 2

been executed. Table 7 portrays the findings of the post-estimation tests. These tests have been regressed to test the problems of serial correlation and heteroskedasticity in the prescribed model.

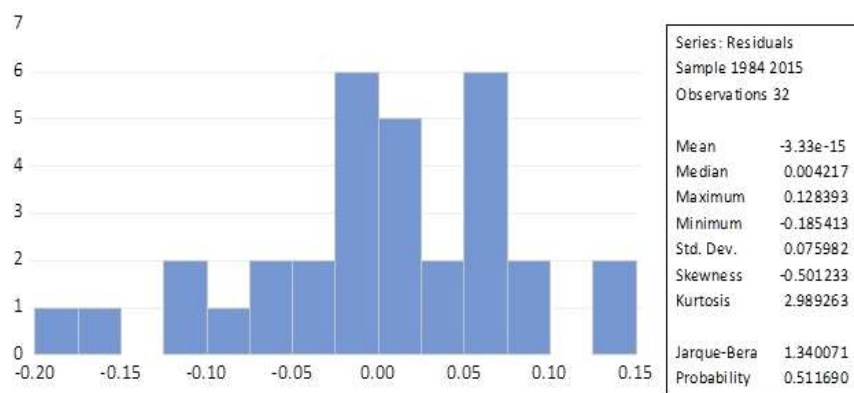
demonstrates the stability test of the model using the "cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMsq)", respectively. These plots are pioneered by Pesaran et al. (1999) to test the specification of the regression equation. According to Bahmani-Oskooee and Nasir (2004), the hypothesis deals with the correctly specified model equation.

**Figure 3: CUSUM Plot****Figure 4: CUSUMsq Plot**

*Source: Estimated and Illustrated by Authors*

Both plots endorse that the GDPG-KOFGI model is stable as the lines describing the CUSUM and CUSUM of square (CUSUMsq) are not beyond the upper and lower boundaries of the plot. Considering the reliability of the residuals, the normality has been tested using the Jarque-Bera

(JB) method. The method allows for the evaluation of the skewness and kurtosis of the model. Following the rule of thumb, if the JB test, the skewness of the model must be zero, whereas the kurtosis is expected to be greater than zero.

**Figure 6: Residual Plot for GDPG-KOFGI Model**

*Source: Estimated and Illustrated by Authors*

Figure 3 demonstrates that as the probability of the JB test is greater than 5, the residuals are normally distributed.

## 5. CONCLUSION

The prime objective of the study is to figure out the impact of increasing globalisation on the economic growth of Pakistan, considering the period from 1971-2021. The empirical estimation of the GDPD-KOFGI model has been

done using the dynamic ARDL model with both long-run and short-run assessments. The study's findings suggest a negative association exists between globalisation and economic growth. Precisely, abundant literature exists on the economic growth-globalisation nexus; it is segregated into different schools of thought that argue for its positive, negative or neutral outcomes. This study has assessed the dynamics of the nexus and explained different dimensions of globalisation to justify the negative outcome of globalisation for Pakistan. The study has also included a set of relevant control variables that strengthen the macroeconomic insights of the model. There is a significant association for all control variables with the GDPG affirming the relevance of the estimation exercises. The distinction in the study arises because it highlights the unconventional outcomes to define the weak policy domain of Pakistan precisely in the context of globalisation, economic growth and macroeconomic stability.

The study has analysed the recent data and points out the divergence of the data from the theoretical economic perspectives. In this sense, the study proposes a few doable policy implications in the context of Pakistan to provide more robustness to the policy initiatives. First, Mujahid et al. (2016) proclaim that the economy

of Pakistan has to consider its trade dimensions by expanding its trade potential and competitiveness. For this purpose, firms need to play their part in reaching the international market with better quality products. This would also assess the economy to adjust its trade deficits and ensure worldwide economic visibility. Second, for financial integration, Pakistan has to acquire the benefits of increasing financial flows (private) in the global financial markets. Combes et al. (2019) prescribed that a developing economy must retain its open trade status by ensuring strict interventions for the effectiveness of trade policies. Third, due to recent criticism of globalisation, regional integration has gathered the attention of academicians and policy think tanks (Sideri, 2020). Regional integration enables economies to benefit from common supply chains to rapidly carve out regional trade agreements. This policy intervention has been widely acclaimed in different economies, precisely developing economies, that are seeking regional integration to reap the benefits of multilateral business and trade while alleviating the potential difficulties of globalisation. In a nutshell, globalisation supports new potentials for growth and development through wealth creation. However, contradictory viewpoints and insights exist concerning its economic, social, and political consequences.

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