



## The nexus between foreign direct investment and exports led-economic growth: Latest evidence from Pakistan using the autoregressive distributed lag (ARDL) approach

*Ishfaq Ahmed<sup>a\*</sup>, Muhamad Ahsan<sup>b</sup>*

<sup>a</sup> Graduate Program, Universitas Islam Negeri Sunan Ampel Surabaya, Surabaya, Indonesia; [ahmedishfaq.m@outlook.com](mailto:ahmedishfaq.m@outlook.com)

<sup>b</sup> Faculty of Islamic Economics and Business, Universitas Islam Negeri Sunan Ampel Surabaya, Surabaya, Indonesia; [m.ahsan@uinsa.ac.id](mailto:m.ahsan@uinsa.ac.id)

### ARTICLE INFO

#### **Article History:**

Received 02-10-2024

Revised 04-05-2024

Accepted 06-11-2024

#### **Kata Kunci:**

FDI, PDB, Ekspor,

Impor, ARDL

#### **Keywords:**

FDI, GDP, Exports,

Imports, ARDL

### ABSTRAK

Ekonomi Pakistan telah mengalami serangkaian peristiwa yang tidak menguntungkan, seperti perang melawan teror, ketidakstabilan politik, dan pandemi COVID-19, yang menyebabkan perlambatan ekonomi. Penelitian ini bertujuan menyelidiki ketergantungan pertumbuhan ekonomi Pakistan pada modal asing (FDI) atau ekspor melalui pertumbuhan yang dimotori oleh FDI dan ekspor. Data time series tahunan PDB, FDI, Ekspor, dan Impor dikumpulkan melalui website Bank Dunia sejak tahun 1980 hingga 2022. Pendekatan auto-regressive distributed lag (ARDL) digunakan untuk menganalisis data yang telah dikumpulkan. Hasil temuan menunjukkan bahwa pertumbuhan ekonomi yang dimotori oleh FDI (FLG) tidak valid dalam jangka panjang namun valid pada jangka pendek. Selain itu, ekspor telah memberi pengaruh positif dan signifikan terhadap pertumbuhan ekonomi dalam jangka panjang maupun jangka pendek dan menjadi sumber utama pertumbuhan ekonomi di Pakistan.

### ABSTRACT

Pakistan's economy has experienced a series of unfortunate events, such as the war on terror, political instability, and the COVID-19 pandemic, leading to an economic slowdown. This study aims to investigate the dependence of Pakistan's economic growth on foreign capital (FDI) or exports through FDI- and export-driven growth hypothesis. Annual time series data on GDP, FDI, Exports, and Imports were collected through the World Bank website from 1980 to 2022. An auto-regressive distributed lag (ARDL) approach is used to analyze the data that has been collected. The findings show that economic growth driven by FDI (FLG) is not valid in the long term but valid in the short term. In addition, exports have positively and significantly influenced economic growth in the long and short term and become a major source of

\*Corresponding Author

economic growth in Pakistan.

## INTRODUCTION

Global economic conditions are considered the most significant determinant of the economic growth of developing countries, and this nexus has significantly grown in recent years due to the integration of international trade, exports, imports, capital inflow, and foreign direct investment (FDI). The issue of FDI is a topic of interest among researchers due to the significance and importance of foreign direct investment for developing and emerging economies (Nazzal et al., 2023). Growth theories highlight that FDI significantly influences economic growth as globalization has raised the significance of FDI globally (Sabir et al., 2019). The introduction of cutting-edge technologies is facilitated by FDI (Sultana & Turkina, 2020). Additionally, inward FDI benefits emerging economies by accumulating capital, favoring the host economy's balance of payments (Demir & Lee, 2022). Therefore, inward FDI into emerging economies will improve capital flows, boost exports, expand production, and give rise to economic development (Ahmed et al., 2023), resulting in the development of the FDI-led growth hypothesis (FLG).

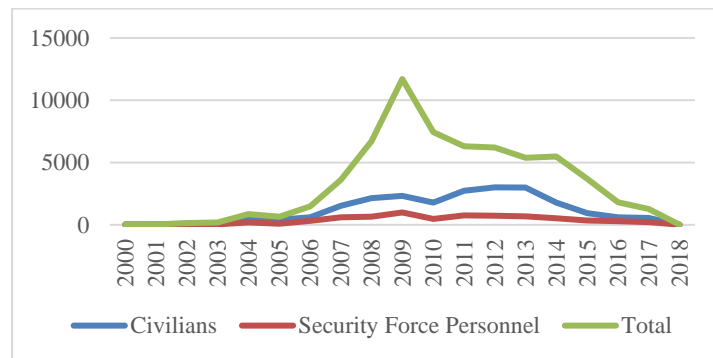
Similarly, the new growth theory has highlighted the relevance of exports in growth processes through economies of scale (Shan & Sun, 1998). Developing nations that engaged in import-substitution industrialization in the past have seen tremendous growth due to focusing on the export-led growth hypothesis (ELG) (Ahmad et al., 2018). Studies highlighted the significance of exports for the developing economy's growth. According to Kim et al. (2022) and Yimer (2023), exports can lead to economic growth in different ways. Expanding exports will increase the demand for the country's products, increasing gross domestic product. Secondly, exports can reduce the country's unemployment and help to reduce poverty. Petchko (2018) argued that exports promote economic growth by increasing total production and facilitating resource use. Hence, exports bring real economic growth in terms of industrialization and reduction in employment (Kurniawan & A'yun, 2022), and exports are considered the engine of economic growth (Vogiatzoglou, 2019). Empirical research found that foreign direct investment (FDI) enhances exports, but this effect depends on the host country's level of development. Hence, developing economies can benefit most from FDI to boost exports (Sahoo & Dash, 2022).

Foreign direct investment can boost exports both theoretically and empirically. Theoretical research suggests that FDI inflows can boost exports directly and indirectly through increasing domestic capital, knowledge, and technology-based spillovers, increasing competitiveness, providing funds for export production, and fortifying export routes (Sahoo & Dash, 2022; Yimer, 2023). However, empirical research has still demonstrated that the advantages of FDI for exports would not always be the same and might change depending on the economic and political conditions of the host country (Ahmad et al., 2018). Similarly, the positive impact of

FDI can be influenced by various factors. One significant factor is the level of technological advancement, stable economic environment, political stability, and investment policies of the host economy. If the host country has political stability and a solid technology base, FDI can bring in the latest technology and know-how, boosting local productivity and innovation.

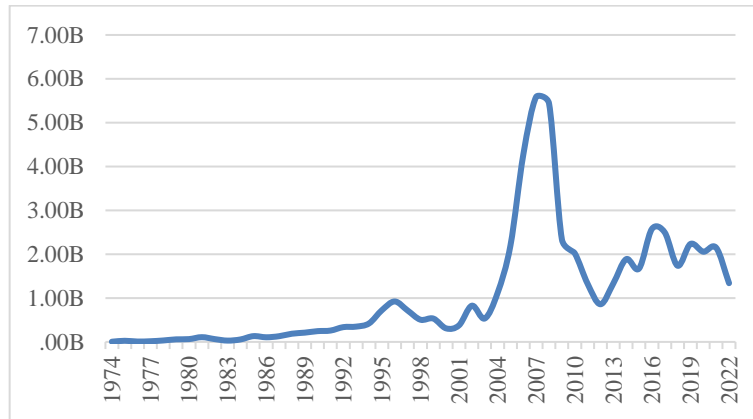
Conversely, if the host country has a weak technology base and poor economic and political stability, then FDI may not be as effective in generating economic growth (Ullah et al., 2023). It is worth mentioning that FDI has a short-run growth effect as economics move towards a new steady state (Herzer et al., 2008). In the literature, several empirical studies support the argument that FDI can lead to economic growth conditional to the host country's environment, and FDI has a negative effect on non-OECD countries (De Mello, 1997). Another important study highlighted the conditional effect of FDI on economic growth (Qureshi et al., 2021). Another argument is that FDI inflows only boost the economic growth of export-oriented countries rather than import-substituting economies (Carbonell & Werner, 2018). Furthermore, Herzer (2008) highlighted the negative impact of FDI on the economic growth of 44 developing countries. The following paragraphs will discuss the state of Pakistan's economy.

Pakistan is a developing country and is always trying to secure large amounts of foreign capital from developed economies, such as China, the USA, the UK, and Hong Kong, in the form of foreign direct investment. It is a fact that a country's political and law and order situation is essential for the sustainability of economic growth. Peace leads to economic growth and sustains the country's peace (Zakaria et al., 2019). After 9/11, world economics has changed, and countries are still struggling for political and regional peace and economic stability. Pakistan is one of the countries that has been badly affected by terrorism and suicide attacks. Over the years, Pakistan has lost the confidence of potential investors and business people and also failed to attract foreign direct investment in the country, which resulted in a decline in the economic growth of Pakistan. Figure 1 illustrates the graphical presentation of trends of fatalities in terrorist and suicide attacks from 2003 to 2018.



**Figure 1**  
**Fatalities in Terrorist Attacks during 2003-2018**  
 Source: South Asia Terrorism (2020)

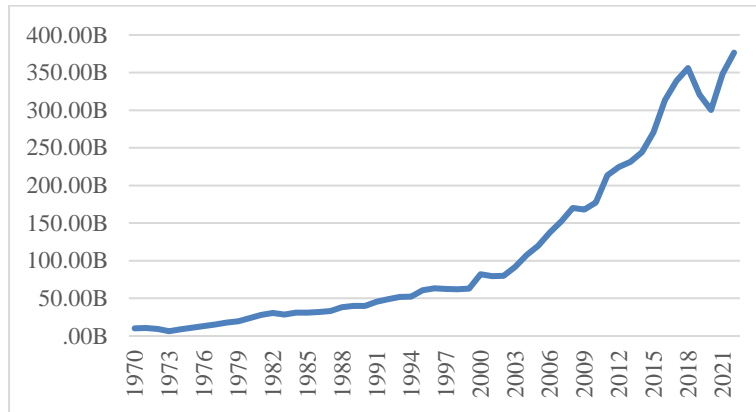
Figure 1 depicts the trends of the death toll of civilians and armed forces personnel in terrorist attacks from 2003 to 2018. It is believed that 2003 was the beginning of a difficult era for Pakistan as this year, terrorism is going to impact the country badly. 2009 witnessed a severe wave of terror until the end of 2017. In 2014, Pakistan started a major military operation against the militants, and as a result of continued efforts, in 2018, Pakistan comprehensively smashed the militants.



**Figure 2**  
**FDI Inflows in USD**  
**Source: World Bank (2023a)**

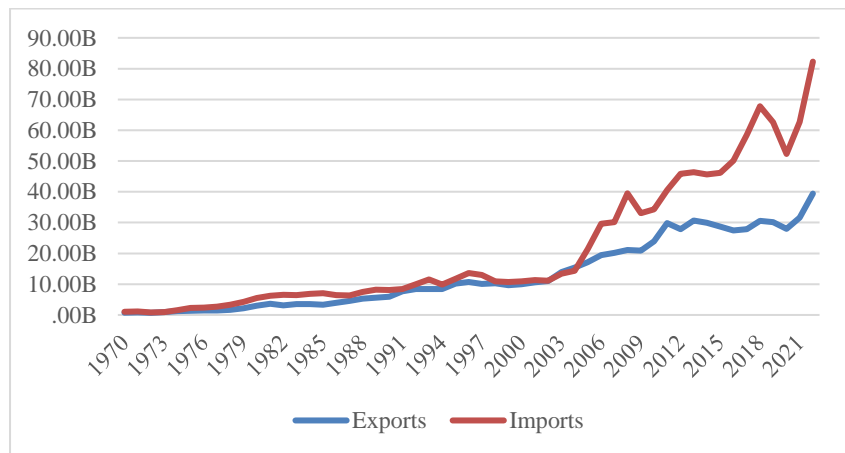
Figure 2 illustrates the trends of FDI inflows in Pakistan. From 2003 to 2007, Pakistan succeeded in getting high amounts of FDI, as this era was just the beginning of terrorism in Pakistan. In that period, Pakistan secured more than thirteen billion dollars, which was very high in Pakistan's history. It happened due to the military regime, and Pakistan has perfect ties with the US government. They support Pakistan in terms of financial aid to counter terrorism and safeguard US interests.

Moreover, the government allowed foreign investment in the Banking, Telecommunication, and Agriculture sectors. However, nowadays, political instability, unsustainable economic conditions, and a complex taxation system have led to a decline in foreign investment. After that, Pakistan witnessed a massive decline in the FDI inflows. It is because of the increased intensity of terror attacks and unstable political and economic conditions that lead to the destruction of the economy. The COVID-19 pandemic also hit Pakistan's FDI inflows, which declined from 2.23 to 1.34 Billion US dollars.



**Figure 3**  
**Trend of GDP in USD**  
 Source: World Bank (2023c)

Figure 3 displays the GDP trend over the years from 1970 to 2022. After visualizing trends, it is clear that Pakistan’s GDP is continuously growing very slowly. In 2007, Pakistan's GDP met the threshold of 100 billion dollars. During the war on terror, Pakistan’s GDP displays a downtrend. In 2018, the GDP value in US dollars stood at 350 billion, the highest during the COVID-19 pandemic. Pakistan witnessed a very sharp decline in GDP value.



**Figure 4**  
**Trend of Exports and Imports in USD**  
 Source: World Bank (2023b)

The mixed trends of exports and imports are shown in Figure 4. It is evident that from 1970 to 2003, Pakistan had a similar pattern of imports and exports, which did not create the current account deficit problem. However, after 2006, Pakistan largely depended on imports and did not emphasize exports. As a result, imports are very high compared to exports. During 2021, Pakistan’s imports had a value of 80 billion, and exports stood at only 40 billion, which is a huge difference and created the balance of payment problem.

Based on the above discussion, this study aimed to investigate the FDI-led and export-led economic growth hypothesis in Pakistan because Pakistan is a country that has been badly affected by the war on terror and political instability. Empirical literature argued that the potential benefits of FDI inflows and exports are conditional upon peace and political and economic stability (Sahoo & Dash, 2022; Zakaria et al., 2019). So, it is crucial to study and investigate whether the FDI-led or export-led economic growth propositions are valid under Pakistan's unfeasible economic and country conditions. Furthermore, to identify whether FDI or exports are the natural source of economic growth of Pakistan or not. Advanced econometric modelling Auto-regressive distributed lag (ARDL) was used to test these hypotheses. Because ARDL modelling is considered the more fit technique to model the dynamic relationship of variables under unfavorable economic conditions Kurecic et al. (2017), the ARDL approach yields unbiased estimates even in cases where some regressors are endogenous Menegaki (2019), and this approach is valid with small data size (Sam et al., 2019). This study is unique because no study has investigated these two hypotheses simultaneously in Pakistan, and most studies conducted on Pakistan's economy have emphasized the impact of FDI on GDP (Munir & Ameer, 2020; Rehman, 2016; Saqib et al., 2013) by using the traditional cointegration modelling. Johansen test of cointegration and vector error correction model (Rehman, 2016; Shahzad et al., 2016).

## **LITERATURE REVIEW**

### **FDI led- economic growth**

Research on the connection between investment and economic development has examined on neoclassical and endogenous growth theories. Neoclassical growth theory holds that labor, capital, and technology are the three main drivers of economic growth (Solow, 1956). This theory emphasizes the contribution of exogenous technology to economic progress in addition to capital and labor. The neoclassical growth theory provides a significant basis for understanding how foreign direct investment affects economic growth. However, the neoclassical theory does not account for the spillover effect of foreign direct investment on the host country's economic growth (Nguyen, 2022). In order to overcome this limitation, the endogenous growth theory was developed to provide a more thorough explanation of the economic growth that foreign direct investment (FDI) stimulates in the host country (Romer, 1990). According to the endogenous theory, foreign direct investment (FDI) stimulates economic growth in the host country more effectively than domestic investment (Herzer et al., 2008). However, FDI encourages technology transfer from the developed country to the host country, enhancing the advancement of technology in the receiving economy dependent upon the host country's environment (Nguyen, 2022).

Several empirical studies investigated the proposition of FDI-led economic growth in emerging and developing countries. Herzer et al., (2008) tested the FDI-led economic growth in 28 developing countries and found either short-term or long-term effects of FDI on the economic growth of developing countries. Millia (2022) found a negative impact of FDI inflow in the long run and a positive impact of FDI on economic growth in the short run. According to Pandya & Sisombat (2017), FDI has a positive and significant relationship with GDP, infrastructure development, imports, exports, and employment creation in Australia. Furthermore, findings revealed no direct and linear relationship between FDI and economic growth. Exports have a strong relationship with economic growth. Another study conducted by Hussain & Haque (2016) found that foreign direct investment and trade significantly impacted Bangladesh's economic growth from 1973 to 2014. Abbas (2018) examined the impact of FDI and external debt on Pakistan's economic growth from 1970 to 2015. As a result, in the long run, FDI has an insignificant impact on economic growth. However, in the short run, it significantly impacts economic growth. In the long run, external debt does not impact economic growth. Dike (2018) revealed a positive relationship between agricultural foreign investment and long-term economic growth. Another study found that in the short run, FDI positively impacts the economy (Yang, 2019). The vector error correction model confirms the bi-directional relationship between FDI and GDP and evidence of the strong impact of GDP on FDI inflow in Poland (Kosztowniak, 2016). Evidence of the minimal influence of FDI on economic growth was reported (Encinas-Ferrer & Villegas-Zermeño, 2015). Another study by Shahzad et al. (2016) investigated the relationship between terrorism, foreign direct investment, and economic growth by employing the Granger causality and the VECM model. The results show long-run cointegration and bidirectional causality among the variables in the case of Pakistan. The empirical literature on FDI-led economic growth provides mixed results for emerging and developing economies.

### **Exports led- economic growth**

Numerous studies have focused on exports and economic growth to determine the causal relationship between economic growth and exports (Awokuse, 2003). If export drives economic growth, it is called the “export-led growth hypothesis”. Otherwise, if economic growth drives exports, it is called the “growth-led exports hypothesis” (Odhiambo, 2022). The export-led growth hypothesis states that a country's Gross domestic product (GDP) depends not only on the amount of capital and labor but also on the exports (Awokuse, 2003, 2008; Odhiambo, 2022), which makes exports an engine of economic growth (Vogiatzoglou, 2019). Furthermore, theoretical literature highlighted that policies focused on exports can also indirectly spur economic growth by maximizing capacity utilization, optimizing resource allocation, and taking advantage of economies of scale (Awokuse, 2003). Countries that focus on exporting a large share of their output seem to grow faster than others (Michaely, 1977). On the empirical side, many studies investigate the causal

relationship between exports and economic growth, and literature has been divided into three categories. The first category of studies found unidirectional causality from exports to economic growth, such as Kim et al., (2022) for Myanmar, Ahmad et al., (2018) for selected five ASEAN countries, Shirazi & Manap (2004) for Pakistan found unidirectional causality from exports to economic output (GDP). The second group of studies such as Abbas (2018), found unidirectional causality between economic output and exports for Pakistan in the long and short run. The third group of studies found bidirectional causality between exports and economic growth, such as Dinç & Gökmen (2019) found the evidence of bi-directional causality in the long run between exports and economic growth. Bakari & Mabrouk (2017) found bidirectional causality between exports and economic growth in PANAMA. Awokuse (2008) reassessed the export-led and import-led economic growth hypotheses and found that the import-led hypothesis was more robust than export-led economic growth. Saini & Singhania (2018) narrated that imports of different raw materials enhance the value addition of products, and imports of the latest technology, tools, and equipment increase productivity, improving the economic growth rate. Ahmad et al. (2017) found a positive and significant impact of exports and imports on economic growth through the ARDL approach. Rehman (2016) highlighted the importance of exports in economic growth and argued that stable economic conditions stimulate exports.

## **Methodology**

### ***Autoregressive distributed lag (ARDL)***

The autoregressive distributed lag (ARDL) methodology is based on the ordinary least square (OLS). ARDL has been considered the more effective approach to quantify the long and short-run dynamic relationship between the variables (Chaudhry et al., 2013; Kalai & Zghidi, 2019; Sultanuzzaman et al., 2018). Empirical Studies focusing on capturing the dynamic relationship between FDI, exports, and economic growth used ARDL modelling, such as Chaudhry et al. (2013) investigated the relationship between FDI and economic growth in case of China by using ARDL approach. Ahmad et al. (2022) used ARDL framework to measure the impact of Chinese's FDI on GDP growth of Pakistan. Kalai & Zghidi (2019) quantify the interrelationship between FDI, trade and economic growth through ARDL approach in MENA countries. The ARDL approach has several advantages over the traditional approaches to measuring cointegration, such as the Johansen test of cointegration, Engle-Granger, and the Maximum likelihood test of cointegration. The following points make the ARDL approach different from other traditional approaches. The ARDL model can be specific with the different I(0) or I(1) or integrated in the same order of integration (Abdelhadi & Eddine, 2021). ARDL bound cointegration test can be valid for small data sets as other tests are only valid for large data sets (Sam et al., 2019). ARDL approach allowed the different lagged for each variable of interest (Kurniawan & A'yun, 2022). The problem of endogeneity can be managed by ARDL modelling when long and short-run coefficients are estimated concurrently with the



lagged explanatory and dependent variables and yield valid and unbiased estimates (Menegaki, 2019; Murthy & Okunade, 2016)

The ARDL model incorporates lagged values of both the dependent and independent variables as regressors. A generalized form of the ARDL model can be written as follows:

$$Y_t = \gamma_{0i} + \sum_{i=1}^p \delta_i y_{t-i} + \sum_{i=0}^q \beta_i x_{t-i} + \varepsilon_t \dots\dots\dots 1$$

Where  $Y_t$  is the vector, and  $x_{t-i}$  are the variables which have to either order of I(0) or I(1) or combination of both.  $\delta_i$  and  $\delta_i$  are the coefficients of the equation,  $\gamma_{0i}$  is the constant term, and  $p, q$  is the optimal lag length of the dependent and regressors.

**Econometric model**

The model is derived from a production function using the conventional method. Economic growth is measured by GDP as this indicator is considered a good proxy for growth Bayarçelik & Taşel (2012). Following by Sultanuzzaman et al. (2018) and Hsiao et al. (2006), FDI and exports are introduced into the model to capture the slipover effect and dynamic relationship on economic growth. Furthermore, imports were used as a control variable in the model. The tri-variate model can be written as follows in the form of equations:

$$\ln GDP_t = \alpha_0 + \beta_1 \ln FDI_t + \beta_2 \ln EXP_t + \beta_3 \ln IMP_t + \varepsilon_t \dots\dots\dots 2$$

$$\ln FDI_t = \alpha_0 + \beta_1 \ln GDP_t + \beta_2 \ln EXP_t + \beta_3 \ln IMP_t + \varepsilon_t \dots\dots\dots 3$$

$$\ln EXP_t = \alpha_0 + \beta_1 \ln GDP_t + \beta_2 \ln FDI_t + \beta_3 \ln IMP_t + \varepsilon_t \dots\dots\dots 4$$

Where  $\ln GDP_t$  is the gross domestic product,  $\ln FDI_t$  is the net foreign direct investment inflow,  $\ln EXP_t$  is the exports of goods and services, and  $\ln IMP_t$  is the imports of goods and services, all the variables are in US dollars.  $\alpha_0$  is the constant terms and  $\beta_1$  to  $\beta_3$  as the coefficients.

**Econometric Testing**

**Unit Root**

Before beginning any econometric analysis on time series, a series must check for stationarity. Working with stationary series leads to spurious results (Chaudhry et al., 2013). According to Shrestha (2018), when the series is not stationary at level but after taking the first difference series to become stationary, it has been permitted to use the ARDL model for estimating the time series data. So, to check unit root properties of series, the Augmented Dickey-Fuller (ADF) test with constant and trend developed

by Dickey & Fuller (1979), and the Phillips Perron (PP) test employed through this equation:

$$\Delta y_t = \alpha + \gamma y_{t-1} + \lambda t + v_t \dots\dots\dots 5$$

Where  $\Delta y_t$  represent the change in all variables in the time  $t$ ,  $\alpha$  shows the constant term,  $y_{t-1}$  represents the one-legged value of all variables.  $\gamma, \lambda$  shows the parameters, and  $t$  denotes trends and  $v_t$  denotes the error term of the equation. The null and alternative hypotheses are  $H_0: \gamma = 0$ ,  $H_1: \gamma < 0$ . If we fail to reject the null hypothesis that  $H_0: \gamma = 0$ , we conclude that the series is non-stationary, and if we reject the null hypothesis, we conclude that the series is stationary (Hill et al., 2007).

### **ARDL Bound test for cointegration**

The bound cointegration test is based on the ARDL model developed by the (Pesaran, 2001). The testing of the bound test is based on three major factors: firstly, testing the order of integration of variables either they depict the same order of integration and none of the variables have an order of integration I(2), secondly the number of observations and the number of regressors (Abdelhadi & Eddine, 2021). ARDL bound test of cointegration was used on the three models. Model 1 (equation 6) is developed to check the existence of exports-led growth (ELG) and FDI-led growth (FLG) in Pakistan when  $\ln GDP$  is taken as the dependent variable, model 2 (equation 7) is constructed to determine the determinants of FDI with  $\ln FDI$  as dependent variable, and model 3 (equation 8) is constructed to verify whether growth led exports (GLE) is appropriate for Pakistan economic when using  $\ln EXP$  as dependent variable. To check cointegration among the variables the ARDL bound test provides F-test. If the value of the F-test is greater than the upper bound critical value, then we reject the null hypothesis of no integration. Otherwise, we do not reject the null hypothesis. If cointegration is found, the next step would be to find the long and short-run coefficients.

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln GDP_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln FDI_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln EXP_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \varepsilon_t \dots\dots\dots 6$$

$$\Delta \ln FDI_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln FDI_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln GDP_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln EXP_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \varepsilon_t \dots\dots\dots 7$$

$$\Delta \ln EXP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln EXP_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln GDP_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln FDI_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \varepsilon_t \dots\dots\dots 8$$

Where  $\Delta$  is the differenced operator of variables.  $\alpha_0$  represent the constant term of the model equations.  $\alpha_1, \alpha_2, \alpha_3, \alpha_4$  represents the short-term coefficients.  $\delta_1, \delta_2, \delta_3, \delta_4$  represents the long-term coefficients.

**Error Correction Model**

Co-integrated variables have an error correction term that displays the changes in the dependent variable with the independent variable, and this shows how the dependent variable deviates from a short-run to a long-term equilibrium relationship (Chaudhry et al., 2013). ECM can be written as follows:

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln GDP_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln FDI_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln EXP_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \gamma ECT_{t-1} + \epsilon_t \dots\dots\dots 9$$

$$\Delta \ln FDI_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln FDI_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln GDP_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln EXP_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \gamma ECT_{t-1} + \epsilon_t \dots\dots\dots 10$$

$$\Delta \ln EXP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \ln EXP_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \ln GDP_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \ln FDI_{t-1} + \sum_{i=1}^{q_3} \alpha_4 \ln IMP_{t-1} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln FDI_{t-1} + \delta_3 \ln EXP_{t-1} + \delta_4 \ln IMP_{t-1} + \gamma ECT_{t-1} + \epsilon_t \dots\dots\dots 11$$

Where  $\gamma$  represents the parameter of speed of adjustment towards equilibrium, and  $ECT$  donates the error correction term.

**Table 1**  
**Operational Definitions of Variables**

Variable	Operational Definition	Unit	Source
Gross Domestic Product (GDP)	GDP is the measure of a country's overall output, considered a good proxy for economic growth.	GDP constant 2015 US\$	World Bank Data*
Foreign Direct Investment (FDI)	FDI inflow represents the capital flow from developed or emerging countries.	FDI inflow, net inflows BoP, current US\$),	World Bank Data
Export of Goods and Services	Exports represent the value of a country's outputs sold to another country.	EXP, BoP current US\$	World Bank Data
Import of Goods and Services	Imports represent the value of inputs that a country buys from other countries.	IMP, BoP current US\$	World Bank Data

The secondary data of all extracted variables are derived from data from 1980 to 2022 in log form from each variable in the model estimation. EViews 9 has been used to run the ARDL approach for time series.

## RESULTS

### *Descriptive statistics*

The descriptive statistics of all variables shown in Table 2, gross domestic product, foreign direct investment, exports and imports of goods and services with their natural logarithm form.

**Table 2**  
**Descriptive Statistics**

	<b>GDP</b>	<b>FDI</b>	<b>EXP</b>	<b>IMP</b>
Mean	194124.4	1227.488	16335.19	27654.81
Median	168488	723	10523	14185
Maximum	399949	5590	38968	76514
Minimum	60054	29	3155	6348
Std. Dev.	98659.72	1348.674	11110.79	22006.46
Skewness	0.493	1.722	0.400	0.756
Kurtosis	2.090	5.860	1.674	2.211
Jarque-Bera	3.226	35.904	4.298	5.209
Observations	43	43	43	43

Table 2 of descriptive statistics shows each variable's mean, median, maximum, minimum, standard deviation, skewness, and kurtosis in the original form of \$ million. Skewness and kurtosis indicate the properties of height and spread of data distribution. Positive skewness indicates the right distribution slope, and negative skewness indicates the left distribution slope. In our data set, all variables were positively skewed. If the kurtosis value equals three, data is normally distributed. Furthermore, a kurtosis value greater than three means data has a high distribution peak, and lower than three means data has a flat distribution. According to our calculations, GDP, EXP, and IMP have kurtosis values of less than three, which indicates the flatness of data distribution, and FDI has a kurtosis of 5.85, which indicates a high peak of distribution.

### *Unit Root Test*

Before estimating the cointegration, it is appropriate to test the unit root to verify the stationarity of data.

**Table 3**  
**Unit Root Test Results**

Model	Variables	ADF	PP	Level of critical values			p-value (ADF)	p-value (PP)	Decision
				1%	5%	10%			
With intercept only	<b>At level</b>								
	<i>LnGDP</i>	2.888	2.652	3.596	2.933	2.604	0.055	0.091	NS
	<i>LnFDI</i>	1.696	1.718	3.596	2.933	2.604	0.426	0.415	NS
	<i>LnEXP</i>	0.873	0.872	3.596	2.933	2.604	0.787	0.787	NS
	<i>LnIMP</i>	0.146	0.186	3.596	2.933	2.604	0.937	0.932	NS
	<b>At first difference</b>								
	<i>LnGDP</i>	4.670	4.652	3.600	2.935	2.605	0.000	0.000	S
	<i>LnFDI</i>	5.603	5.628	3.600	2.935	2.605	0.000	0.000	S
With intercept and trend	<b>At level</b>								
	<i>LnGDP</i>	2.685	2.938	4.198	3.523	3.192	0.247	0.161	NS
	<i>LnFDI</i>	1.811	2.001	4.198	3.523	3.192	0.681	0.583	NS
	<i>LnEXP</i>	1.680	1.919	4.198	3.523	3.192	0.742	0.627	NS
	<i>LnIMP</i>	2.212	2.335	4.198	3.523	3.192	0.470	0.406	NS
	<b>At first difference</b>								
	<i>LnGDP</i>	4.969	4.969	4.198	3.523	3.192	0.001	0.001	S
	<i>LnFDI</i>	5.593	5.593	4.198	3.523	3.192	0.000	0.000	S
<i>LnEXP</i>	6.097	6.096	4.198	3.523	3.192	0.000	0.000	S	
<i>LnIMP</i>	5.639	5.617	4.198	3.523	3.192	0.000	0.000	S	

Note: optimal lag selection by the software EViews, for the ADF test, SIC Schwarz information Criterion adopted, and for PP test, bandwidth automatically selected, based on Newey-West by using Bartlett Kernel adopted. NS and S stand non-stationary and stationary, respectively.

Table 3 reports the findings of the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test with intercept only and with trend and intercept. The decision criteria to accept or reject the unit root hypothesis. If the absolute test statistic value is greater than the absolute critical value at a 5% significance level, we conclude that the series is stationary and has no problem with the unit root.

**Lag selection model**

To estimate the lag length, the vector autoregressive (VAR) model is used to select optimal lag criteria. For small samples, the Akaike information criterion has strong power for estimating the optimal lag length (Mwakabungu & Kauangal, 2023). In Table 4, optimal lag length 1 was used for all variables.

**Table 4**  
**Vector autoregressive lag order selection**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-22.423		0.000	1.355	1.526	1.416
1	176.912	347.590*	3.78e-09*	-8.047*	-7.1959*	-7.7480*
2	190.587	21.039	0.000	-7.928	-6.392	-7.377
3	204.650	18.750	0.000	-7.828	-5.610	-7.032

Source: Author Calculations

**ARDL-Bound test of Cointegration**

ARDL bound cointegration test was designed to analyze the relationships

between variables in the long run. This approach provides a way to capture the long-run equilibrium relationships of the proposed models.

**Table 5**  
**ARDL bound test of cointegration**

F- statistics	Level of significance	Lower bound I(0)	Upper bound I(1)
3.718*	Equation 6 (model 1) ARDL model selection [1,0,0,2]		
	10%	3.47	4.45
	5%	4.01	5.07
	2.5%	4.52	5.62
13.856***	Equation 7 (model 2) ARDL model selection [1,0,4,4]		
	10%	2.72	3.77
	5%	3.23	4.35
	2.5%	3.69	4.89
3.908**	Equation 8 (model 3) ARDL model selection [1,0,1,1]		
	10%	2.01	3.1
	5%	2.45	3.63
	2.5%	2.87	4.16
	1%	3.42	4.84

Note: \*,\*\*,\*\*\* indicate the statistical significance level at 10%, 5%, and 1%. The values in brackets indicate the legged length selected automatically by the software based on AIC criteria.

### Diagnostic test

Table 6 illustrates the diagnostic test results for models 1, 2, and 3. The normality test is based on the Jarque-Bera, Breusch-Godfrey LM test for serial correction, and the heteroscedasticity test is based on the Breusch-Pagan-Godfrey approach.

**Table 6**  
**Diagnostic Test**

Diagnostic test	Model 1 (prob-value)	Model 2 (prob-value)	Model 3 (prob-value)
Normality test	0.904	0.934	0.597
Heteroscedasticity test	0.731	0.495	0.581
Serial correlation test	0.536	0.360	0.690

Source: Author Calculations

The prob. value of each test falls under considerable criteria. So, we can conclude that in all tri-variate models, there is no problem of normality, and all data falls under the normal distribution and no problem of serial correlation and Heteroscedasticity found in the models.

### Long run Estimation

Long-run estimates of each of the three models are reported in Table 7. Long-run estimation provides insight into how GDP, FDI, and exports will respond in the long run.

**Table 7**  
**Long Run Estimates**

Variables	Model 1 Coefficient (t-statistics)	Model 2 Coefficient (t-statistics)	Model 3 Coefficient (t-statistics)
C	10.398 (16.505) ***	-13.766 (-1.467)	-6.910 (-3.689) ***
LnGDP	-	-0.115 (-0.133)	0.831 (5.796) ***
LnFDI	-0.004 (-0.133)	-	0.092 (2.797) **
LnEXP	0.557 (5.796) ***	1.811 (2.797) ***	-
LnIMP	0.110 (1.403)	-0.214 (-0.495)	0.286 (3.300) ***

Note: \*, \*\*, \*\*\* indicates the statistically level of significance at 10%, 5% and 1%.

### Short run Estimations

The findings of the short run are shown in Table 8. The ARDL approach for estimating short-run relationships reveals that the error correction term, which denotes ECT, is statistically negatively significant, which indicates the speed of adjustments for any changes arising from the short run will be equilibrium in the long run at a rate of 7.9 percent in each model.

**Table 8**  
**Estimating Short-Run Relationship**

Variables	Model 1 Equation 9 [1,0,0,2] Coefficient (t-statistics)	Model 2 Equation 10 [1,0,4,4] Coefficient (t-statistics)	Model 3 Equation 11 [1,0,1,1] Coefficient (t-statistics)
$\Delta$ LnGDP		0.831 (1.545)	0.831 (20.237) ***
$\Delta$ LnFDI	0.831 (15.986) ***		0.092 (3.107) ***
$\Delta$ LnEXP	0.092 (4.828) ***	0.092 (0.148)	
$\Delta$ LnEXP(-1)		-0.516 (-0.746)	
$\Delta$ LnEXP(-2)		-0.516 (-0.722)	
$\Delta$ LnEXP(-3)		-0.516 (-0.877)	
$\Delta$ LnIMP	0.286 (13.191) ***	0.518 (1.224)	0.516 (5.614) ***
$\Delta$ LnIMP(-1)	-0.516 (-30.996) ***	-0.516 (-0.901)	
$\Delta$ LnIMP(-2)		-0.516 (-0.919)	
$\Delta$ LnIMP(-3)		-0.516 (-1.185)	
$\Delta$ Trend	0.516 (15.329) ***		
Constant CointEq(-1)	-7.910	-7.910	-7.910

Variables	Model 1	Model 2	Model 3
	Equation 9 [1,0,0,2] Coefficient (t-statistics)	Equation 10 [1,0,4,4] Coefficient (t-statistics)	Equation 11 [1,0,1,1] Coefficient (t-statistics)
	(-89.787) ***	(-86.008) ***	(95.783) ***

Note: \*, \*\*, \*\*\* indicates the statistically level of significance at 10%, 5% and 1%.

## Discussion

### Test of stationarity

The stationarity test investigates whether a series has the problem of unit root or not. Table 3 reported the results of the ADP and PP tests with the different variations: intercept only and with trend and intercept. If the absolute test statistic value is greater than the absolute critical value at a 5% significance level, we conclude that the series is stationary and has no problem with the unit root. Test of unit root reveals that order of integration refers to several differencing operations needed to make a series stationary. All the variables are non-stationary at the level, and both tests support each other's findings. The null hypothesis of unit root cannot be rejected because the p-value of each variable is greater than 0.05 or 5% significance level. The null hypothesis is rejected when the first difference of each variable is taken at less than a 5% significance level. So, it is concluded that all variables are integrated at order one I(1), and none have two or more orders of integration, which is one of the mandatory requirements to run the ARDL bound test of cointegration, revealing that all the variables were non-stationary at the level but after taking the first difference.

### Test of cointegration

The evidence of long-run correlation (cointegration) among the variables of interest through the model was tested by employing the recently developed approach of the ARDL bound test. Table 5 shows that each model used a different lagged length, which the EViews automatically determined. Lagged length of eq. 6 (1,0,0,2), eq. 7 (1,0,4,4), and lastly, for eq. 8 (1,0,1,1), selected based on AIC criteria. For model 1, the ARDL model was run using constant and trend because it was significant for eq.6. For the second model, the trend was not significant. Therefore, F-stats were obtained using constant. For model 3, the trend and constant were not statistically significant. Results show evidence of a long-run relationship for each equation at 10%, 1%, and 5% significance level.

### FDI- led economic growth in the long run and short run

Long-run estimates of Model 1 were reported in Table 7. The purpose of Model 1 was to test the FLG hypothesis in Pakistan with GDP as a dependent variable. As shown in Pakistan, FDI has a negative and insignificant impact on economic growth. Indicating that in the long run, an increase in GDP will decrease the FDI, leading to the invalidity of the FLG hypothesis in Pakistan. Because during the war against



terrorism, Pakistan witnessed a massive inflow of funds as an aid to combat terrorism. It has been stated that FDI has a positive effect on the growth of the economy if the investment is used for productive purposes (Javorcik, 2004). Our findings do not support the neoclassical economic growth theory that foreign investment is essential for economic growth because the positive impact of FDI is directly linked with the peace, stability, and good economic conditions of the host country, as highlighted by Ahmad et al. (2018) and Ullah et al. (2023). Based on these findings, we can argue that the positive impact of FDI depends on the host country's economic conditions.

Furthermore, the findings of the short-run coefficients of model 1 are shown in Table 8. The finding reveals that FDI positively and significantly impacts economic growth, indicating that FLG is only valid for Pakistan's economy in the short run. These findings suggest that FDI can only contribute to the host country's economic growth in the short term as the economy moves towards a new stable state. Overall, our findings support the endogenous theory of economic growth because the theory states that internal forces have a more significant impact on economic growth than external forces. The internal forces include labor capital, knowledge, innovation, and the country's overall situation, leading to production and real economic growth. Carbonell & Werner (2018) narrated that FDI only brings growth if the country has an export-oriented economy. Policymakers should pay attention to these critical determinants of economic growth. Although our findings are in line with Herzer et al. (2008), FDI has a short-run growth effect on economic growth, Abbas et al. (2018) reported an insignificant impact of FDI on economic growth in the long run but a positive impact on economic growth found in the short run in case of Pakistan. Millia et al. (2023) reported insignificant impact of FDI in the long run but significant in the short run on economic growth in emerging economy.

### **Exports- led economic growth in the long and short run**

Long-run and short-run coefficients of Model 1 for capturing the ELG hypothesis were reported in Tables 7 and 8, respectively. Findings show that both long and short-run exports have a significant positive effect on GDP since the economy of Pakistan is heavily based on agriculture and the export of crops and related items. According to Lam (2013), an increase in exports has boosted transportation and infrastructure and has the potential to provide significant profit surpluses and foreign exchange reserves. In emerging economies, the export sector has significant room for expansion and yields high returns. It can catalyze economic growth and is linked to both forward- and backwards-looking industries and the externalities associated with export expansion. As a result, each of these elements has the potential to accelerate the growth of a growing economy. However, findings reveal that increased exports will increase economic growth, indicating that ELG is valid in Pakistan in the long and short run.

Furthermore, policymakers should focus on supporting small- and medium-

scale manufacturing units, which are considered the engine of economic growth. Our results are consistent with the findings of Raghutla (2020), which found supportive evidence for export-led growth (ELG) in Brazil and Russia. Exports positively and significantly impact developing or emerging economies (Adedoyin et al., 2022; Ahmad et al., 2017; Ahmad et al., 2018; Liu et al., 2019).

### **Relationship between growth, FDI, and exports**

Both long-run and short-run coefficients of models 2 and 3 were reported in Tables 7 and 8, respectively. In the long run, only exports positively and significantly impact FDI inflows. Herzer et al. (2008) found exports as a strong determinant of FDI in developed and developing countries. The positive association between FDI and exports indicates that an increase in exports will increase the FDI inflow in the country, which supports the argument that exports bring the FDI inflow in the country and an increase in exports gives positive signals of economic growth to investors, but on short run none of any factor have influence on the FDI. Moreover, findings confirm the bidirectional causal relationship between exports and growth, meaning that exports led growth and growth led exports in the case of Pakistan. Furthermore, the findings revealed that GDP, FDI, and imports positively and significantly impact exports in the long and short run, indicating that growth and FDI in Pakistan are considered decisive determinants of exports. The findings also indicate the invalidity of growth-led FDI or FDI-led growth in the case of Pakistan. Our results align with Kurniawan & A'yun, (2022), who found no causal relationship between the FDI and real GDP or vice versa in Indonesia. Following our finding's, policymakers should take proactive actions to boost the exports and related policies, which will attract foreign direct investment in the country and reduce the high level of balance of payment deficit due to the high volume of imports.

## **CONCLUSIONS**

The study's findings suggest a negative and insignificant relationship between FDI and economic growth, meaning that the FDI-led growth hypothesis is invalid in Pakistan. Although, in the short run, FDI has limited effects on Pakistan's economic growth. However, the study found a positive and significant relationship between exports and economic growth in the short and long run. Furthermore, the study provides evidence of bidirectional causality between exports and growth and found evidence of positive relationships between FDI and exports.

Finally, the findings of this study give strong recommendations to policymakers to pay more attention to exports, which bring actual economic growth to Pakistan rather than only facilitate foreign investors. Encouraging export culture will boost the local industries, which eventually lead to a reduction of unemployment, inflation, and poverty. It also causes an inflow of FDI into the country because it is evident that FDI only brings positive growth to economies based on exports and a

peaceful environment.

This study has data frequency and period limitations as we used annual data from 1980 to 2022 and also used ARDL modelling to investigate the relationship between variables. Future studies could focus on quarterly data with longer time periods that would be appropriate to use other cointegration methodologies. Secondly, future studies could focus on comparing the results of different econometric techniques, which can be empirically useful to prove the superiority of the approach.

## REFERENCES

- Abbas, B., Iqbal, S., & Malik, I. (2018). FDI, External Debt and Their Impact on Economic Growth of Pakistan: Empirical Evidence Using Larger Sample Size. *International Journal of Contemporary Management*, 4(1), 1–21. <https://doi.org/10.2139/ssrn.3121113>
- Abdelhadi, M., & Eddine, K. A. N. (2021). The Impact Of Human Capital On Economic Growth In Algeria During The Period 1970-2018: Application Of ARDL Approach To Cointegration. *Strategy and Development Review*, 11(3), 554–571. <https://doi.org/10.34276/1822-011-003-030>
- Adedoyin, F. F., Afolabi, J. O., Yalçiner, K., & Bekun, F. V. (2022). The Export-Led Growth in Malaysia: Does Economic Policy Uncertainty and Geopolitical Risks Matter? *Journal of Public Affairs*, 22(1), 1–36.
- Ahmad, D., Afzal, M., & Ghani Khan, U. (2017). Impact of Exports on Economic Growth Empirical Evidence of Pakistan. *Ahmad, D. (2017). International Journal of Applied Economic Studies*, 5(2), 1–9. <http://sijournals.com/IJAE/>
- Ahmad, F., Draz, M. U., & Yang, S. C. (2018). Causality nexus of exports, FDI and economic growth of the ASEAN5 economies: evidence from panel data analysis. *Journal of International Trade and Economic Development*, 27(6), 685–700. <https://doi.org/10.1080/09638199.2018.1426035>
- Ahmad, M. S., Szczepankiewicz, E. I., Yonghong, D., Ullah, F., Ullah, I., & Loopesco, W. E. (2022). Does Chinese Foreign Direct Investment (FDI) Stimulate Economic Growth in Pakistan? An Application of the Autoregressive Distributed Lag (ARDL Bounds) Testing Approach. *Energies*, 15(6), 2050. <https://doi.org/10.3390/en15062050>
- Ahmed, S. F., Mohsin, A. K. M., & Hossain, S. F. A. (2023). Relationship between FDI Inflows and Export Performance: An Empirical Investigation by Considering Structural Breaks. *Economies*, 11(3), 73. <https://doi.org/10.3390/economies11030073>
- Awokuse, T. O. (2003). Is the export-led growth hypothesis valid for Canada? *Canadian Journal of Economics/Revue Canadienne d'économique*, 36(1),

- 126–136. <https://doi.org/10.1111/1540-5982.00006>
- Awokuse, T. O. (2008). Trade openness and economic growth: Is growth export-led or import-led? *Applied Economics*, 40(2), 161–173. <https://doi.org/10.1080/00036840600749490>
- Bakari, S., & Mabrouki, M. (2017). Impact Of Exports and Imports On Economic Growth: New Evidence From Panama. *Journal of Smart Economic Growth*, 2(1), 67–79.
- Bayarçelik, E. B., & Taşel, F. (2012). Research and Development: Source of Economic Growth. *Procedia - Social and Behavioral Sciences*, 58, 744–753. <https://doi.org/10.1016/j.sbspro.2012.09.1052>
- Carbonell, J. B., & Werner, R. A. (2018). Does Foreign Direct Investment Generate Economic Growth? A New Empirical Approach Applied to Spain. *Economic Geography*, 94(4), 425–456. <https://doi.org/10.1080/00130095.2017.1393312>
- Chaudhry, N. I., Mehmood, A., & Mehmood, M. S. (2013). Empirical relationship between foreign direct investment and economic growth. *China Finance Review International*, 3(1), 26–41. <https://doi.org/10.1108/20441391311290767>
- De Mello, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *Journal of Development Studies*, 34(1), 1–34. <https://doi.org/10.1080/00220389708422501>
- Demir, F., & Lee, S. (2022). Foreign direct investment, capital accumulation, and growth: The rise of the Emerging South. *International Review of Economics & Finance*, 80, 779–794. <https://doi.org/10.1016/j.iref.2022.02.044>
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366a), 427–431.
- Dike, C. (2018). Effects of Foreign Direct Investment in Sub-Saharan Africa Economic Growth: Evidence from Panel Data Analysis. *International Journal of Economics and Financial Issues*, 8(2), 255–261.
- Dinç, D. T., & Gökmen, A. (2019). Export-led economic growth and the case of Brazil: An empirical research. *Journal of Transnational Management*, 24(2), 122–141. <https://doi.org/10.1080/15475778.2019.1609895>
- Encinas-Ferrer, C., & Villegas-Zermeño, E. (2015). Foreign Direct Investment and Gross Domestic Product Growth. *Procedia Economics and Finance*, 24(July), 198–207. [https://doi.org/10.1016/s2212-5671\(15\)00647-4](https://doi.org/10.1016/s2212-5671(15)00647-4)
- Herzer, D., Klasen, S., & Nowak-Lehmann D., F. (2008). In search of FDI-led growth in developing countries: The way forward. *Economic Modelling*, 25(5), 793–

810. <https://doi.org/https://doi.org/10.1016/j.econmod.2007.11.005>
- Hill, R. C., Griffith, W. E., & Lim, G. C. (2007). *Principles of Econometrics Fourth Edition* (I. John Wiley & Sons (ed.)). John Wiley & Sons, Inc.
- Hsiao, F. S. T., & Hsiao, M.-C. W. (2006). FDI, exports, and GDP in East and Southeast Asia—Panel data versus time-series causality analyses. *Journal of Asian Economics*, 17(6), 1082–1106. <https://doi.org/10.1016/j.asieco.2006.09.011>
- Hussain, M. E., & Haque, M. (2016). Foreign direct investment, trade, and economic growth: An empirical analysis of bangladesh. *Economies*, 4(2), 1–14. <https://doi.org/10.3390/economies4020007>
- Javorcik, B. S. (2004). Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages. *The American Economic Review*, 94(3), 605–627. <http://www.jstor.org/stable/3592945>
- Kalai, M., & Zghidi, N. (2019). Foreign Direct Investment, Trade, and Economic Growth in MENA Countries: Empirical Analysis Using ARDL Bounds Testing Approach. *Journal of the Knowledge Economy*, 10(1), 397–421. <https://doi.org/10.1007/s13132-017-0460-6>
- Kim, B., Kyophilavong, P., Nozaki, K., & Charoenrat, T. (2022). Does the Export-led Growth Hypothesis Hold for Myanmar? *Global Business Review*, 23(1), 48–60. <https://doi.org/10.1177/0972150919863929>
- Kosztowniak, A. (2016). Verification of the relationship between FDI and GDP in Poland. *Acta Oeconomica*, 66(2), 307–332. <https://doi.org/10.1556/032.2016.66.2.6>
- Kurecic, P., & Kokotovic, F. (2017). The Relevance of Political Stability on FDI: A VAR Analysis and ARDL Models for Selected Small, Developed, and Instability Threatened Economies. *Economies*, 5(3), 22. <https://doi.org/10.3390/economies5030022>
- Kurniawan, M. L. A., & A'yun, I. Q. (2022). Dynamic Analysis On Export, FDI and Growth in Indonesia: An Autoregressive Distributed Lag (ARDL) Model. *Journal of Economics, Business, & Accountancy Ventura*, 24(3), 350–362. <https://doi.org/10.14414/jebav.v24i3.2717>
- Lam, R. C. (2013). Export and growth: a linkage effect perspective. *International Journal of Development Issues*, 12(1), 53–66. <https://doi.org/10.1108/14468951311322118>
- Liu, M. H., Margaritis, D., & Zhang, Y. (2019). The Global Financial Crisis and the Export-Led Economic Growth in China. *Chinese Economy*, 52(3), 232–248. <https://doi.org/10.1080/10971475.2018.1548144>

- Menegaki, A. N. (2019). The ARDL Method in the Energy-Growth Nexus Field; Best Implementation Strategies. *Economies*, 7(4), 105. <https://doi.org/10.3390/economies7040105>
- Michaely, M. (1977). Exports and growth. *Journal of Development Economics*, 4(1), 49–53. [https://doi.org/10.1016/0304-3878\(77\)90006-2](https://doi.org/10.1016/0304-3878(77)90006-2)
- Millia, H., Adam, P., Muthalib, A. A., Tajuddin, T., & Pasrun, Y. P. (2022). The Effect of Inward Foreign Direct Investment and Information and Communication Technology on Economic Growth in Indonesia. *Agris On-Line Papers in Economics and Informatics*, 14(1), 69–79. <https://doi.org/10.7160/aol.2022.140106>
- Millia, H., Ernawati, E., & Heriberta, H. (2023). Do foreign direct investment, trade and their interactions affect economic growth in Indonesia? *Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah*, 11(1), 1–16. <https://doi.org/10.22437/ppd.v11i1.22698>
- Munir, K., & Ameer, A. (2020). Nonlinear effect of FDI, economic growth, and industrialization on environmental quality: Evidence from Pakistan. *Management of Environmental Quality: An International Journal*, 31(1), 223–234. <https://doi.org/10.1108/MEQ-10-2018-0186>
- Murthy, V. N. R., & Okunade, A. A. (2016). Determinants of U.S. health expenditure: Evidence from autoregressive distributed lag (ARDL) approach to cointegration. *Economic Modelling*, 59, 67–73. <https://doi.org/10.1016/j.econmod.2016.07.001>
- Mwakabungu, B. H. P., & Kauangal, J. (2023). An empirical analysis of the relationship between FDI and economic growth in Tanzania. *Cogent Economics & Finance*, 11(1). <https://doi.org/10.1080/23322039.2023.2204606>
- Nazzal, A., Sánchez-Rebull, M.-V., & Niñerola, A. (2023). Foreign direct investment by multinational corporations in emerging economies: a comprehensive bibliometric analysis. *International Journal of Emerging Markets*. ahead-of-print, 1–26. <https://doi.org/10.1108/IJOEM-12-2021-1878>
- Nguyen, M.-L. T. (2022). Foreign direct investment and economic growth: The role of financial development. *Cogent Business & Management*, 9(1), 2127193. <https://doi.org/10.1080/23311975.2022.2127193>
- Odhiambo, N. M. (2022). Is export-led growth hypothesis still valid for sub-Saharan African countries? New evidence from panel data analysis. *European Journal of Management and Business Economics*, 31(1), 77–93. <https://doi.org/10.1108/EJMBE-06-2020-0156>
- Pandya, V., & Sisombat, S. (2017). Impacts of Foreign Direct Investment on Economic

- Growth: Empirical Evidence from Australian Economy. *International Journal of Economics and Finance*, 9(5), 121–131. <https://doi.org/10.5539/ijef.v9n5p121>
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bound Testing Approaches to the analysis of long run relationships. *Journal of Applied Econometrics*, 16(3), 289–326.
- Petchko, K. (2018). *Theory and Theoretical Frameworks* (K. B. T.-H. to W. A. E. and P. P. Petchko (ed.); pp. 181–206). Academic Press. <https://doi.org/10.1016/B978-0-12-813010-0.00010-7>
- Qureshi, F., Qureshi, S., Vinh Vo, X., & Junejo, I. (2021). Revisiting the nexus among foreign direct investment, corruption and growth in developing and developed markets. *Borsa Istanbul Review*, 21(1), 80–91. <https://doi.org/10.1016/j.bir.2020.08.001>
- Raghutla, C., & Chittedi, K. R. (2020). Is there an export- or import-led growth in emerging countries? A case of BRICS countries. *Journal of Public Affairs*, 20(3), e2704. <https://doi.org/10.1002/pa.2074>
- Rehman, N. U. (2016). FDI and economic growth : empirical evidence from Pakistan. *Journal of Economic and Administrative Sciences*, 32(1), 63–76. <https://doi.org/10.1108/JEAS-12-2014-0035>
- Romer, P. M. (1990). Endogenous Technological Change. *Journal of Political Economy*, 98(5), 71–102. <https://doi.org/10.1086/261725>
- Sabir, S., Rafique, A., & Abbas, K. (2019). Institutions and FDI: evidence from developed and developing countries. *Financial Innovation*, 5(1), 1–20. <https://doi.org/10.1186/s40854-019-0123-7>
- Sahoo, P., & Dash, R. K. (2022). Does FDI have differential impacts on exports? Evidence from developing countries. *International Economics*, 172, 227–237. <https://doi.org/https://doi.org/10.1016/j.inteco.2022.10.002>
- Saini, N., & Singhania, M. (2018). Determinants of FDI in developed and developing countries: a quantitative analysis using GMM. *Journal of Economic Studies*, 45(2), 348–382. <https://doi.org/10.1108/JES-07-2016-0138>
- Sam, C. Y., McNown, R., & Goh, S. K. (2019). An augmented autoregressive distributed lag bounds test for cointegration. *Economic Modelling*, 80, 130–141. <https://doi.org/10.1016/j.econmod.2018.11.001>
- Saqib, D., Masnoon, M., & Rafique, N. (2013). *Impact of foreign direct investment on economic growth of Pakistan*. Thesis, Södertörns University.
- Shahzad, S. J. H., Zakaria, M., Rehman, M. U., Ahmed, T., & Fida, B. A. (2016). Relationship Between FDI, Terrorism and Economic Growth in Pakistan: Pre

- and Post 9/11 Analysis. *Social Indicators Research*, 127(1), 179–194. <https://doi.org/10.1007/s11205-015-0950-5>
- Shan, J., & Sun, F. (1998). On the export-led growth hypothesis: the econometric evidence from China. *Applied Economics*, 30(8), 1055–1065. <https://doi.org/10.1080/000368498325228>
- Shirazi, N. S., & Manap, T. A. A. (2004). Exports and economic growth nexus: The case of Pakistan. *Pakistan Development Review*, 43(4II), 563–579. <https://doi.org/10.30541/v43i4iipp.563-581>
- Shrestha, M. B., & Bhatta, G. R. (2018). Selecting appropriate methodological framework for time series data analysis. *Journal of Finance and Data Science*, 4(2), 71–89. <https://doi.org/10.1016/j.jfds.2017.11.001>
- Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, 70(1), 65. <https://doi.org/10.2307/1884513>
- South Asia Terrorism. (2020). Fatalities in Terrorist Attacks during 2003-2018. <https://old.satp.org/satporgtp/countries/pakistan/database/casualties.html>
- Sultana, N., & Turkina, E. (2020). Foreign direct investment, technological advancement, and absorptive capacity: A network analysis. *International Business Review*, 29(2), 101668. <https://doi.org/10.1016/j.ibusrev.2020.101668>
- Sultanuzzaman, M. R., Fan, H., Akash, M., Wang, B., & Shakij, U. S. M. (2018). The role of FDI inflows and export on economic growth in Sri Lanka: An ARDL approach. *Cogent Economics & Finance*, 6(1), 1518116. <https://doi.org/10.1080/23322039.2018.1518116>
- Ullah, S., Luo, R., Ali, K., & Irfan, M. (2023). How does the sectoral composition of FDI induce economic growth in developing countries? The key role of business regulations. *Economic Research-Ekonomska Istrazivanja*, 36(2), 2129406. <https://doi.org/10.1080/1331677X.2022.2129406>
- Vogiatzoglou, K. (2019). Export Composition and Long-run Economic Growth Impact: A Cointegration Analysis for ASEAN ‘Latecomer’ Economies. *Margin: The Journal of Applied Economic Research*, 13(2), 168–191. <https://doi.org/10.1177/0973801018812571>
- World Bank. (2023a). Foreign direct investment, net inflows (BoP, current US\$) - Pakistan. World Bank. <https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=PK>
- World Bank. (2023b). Trend of Exports and Imports in USD. World Bank. <https://data.worldbank.org/indicator>
- World Bank. (2023c). Trend of GDP in USD. World Bank.



<https://data.worldbank.org/indicator>

- Yang, J. (2019). Research on Dynamic Relationship between Indian FDI and Economic Growth Based on SVAR Model. *6th International Education, Economics, Social Science, Arts, Sports and Management Engineering Conference (IEESASM 2018) Research*, 294, 50–55. <https://doi.org/10.2991/ieesasm-18.2019.11>
- Yimer, A. (2023). The effects of FDI on economic growth in Africa. *The Journal of International Trade & Economic Development*, 32(1), 2–36. <https://doi.org/10.1080/09638199.2022.2079709>
- Zakaria, M., Jun, W., & Ahmed, H. (2019). Effect of terrorism on economic growth in Pakistan: an empirical analysis. *Economic Research-Ekonomska Istrazivanja*, 32(1), 1794–1812. <https://doi.org/10.1080/1331677X.2019.1638290>

