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## Article

# Nexus between economic growth and foreign private investment: Evidence from Pakistan economy

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## FINANCIAL ECONOMICS | REVIEW ARTICLE

# Nexus between economic growth and foreign private investment: Evidence from Pakistan economy

Misbah Sadiq<sup>1</sup>, Muhammad Usman<sup>2</sup>, Aysha Zamir<sup>3\*</sup>, Malik Shahzad Shabbir<sup>4</sup> and Ankasha Arif<sup>5</sup>

**Abstract:** This study examines the impact of economic growth along with taxes, technology, trade openness and exchange rate on the sustainability of foreign private investment (FPI) in Pakistan. This study uses random effects and generalized least squares estimators and contains data set starting from 1996 to 2017. The results indicate that the Pakistan economy has vastly positive influenced regarding the location and choice of emerging and developed countries' investment in the domestic market. Furthermore, emerging and developed economies investment increases the contribution among domestic firms to the national economy. The results, which are consistent across models, indicate that Pakistan's economy is more likely to receive FPI from emerging and developed economies, but the relative intensity of local government efforts, regardless of economic size. Moreover, an increase in likelihood will generate FPI from developed countries.

**Subjects:** Economics; History of Economic Thought; Finance; E12



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Dr Misbah Sadiq PhD in Finance. She is actively producing research in the area of management, behavioral finance, investment strategy and financial risk management.

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Ms Ankasha Arif is doing PhD Economics from Quaid-e-Azam University, Pakistan. She has published several papers in Scopus and ABDC index journals.

### PUBLIC INTEREST STATEMENT

It is acknowledged that foreign private investment has significant role towards sustainable economic growth and financial development of any economy. However, it has been commonly assessed using income or consumption and expenditure measures. To attract foreign investments; the countries have to provide a sound ground to investors. If these initial conditions are ensured through sound policy initiatives in Pakistan then the transmission mechanism towards sustainable investment can be achieved. As investment is considered to be an important indicator of growth, Pakistan is focusing on the provision of a business-friendly environment to safeguard the interest of investors in the country. This acts as a motivation for us to undertake a more holistic approach in our study to fill the literature gap for Pakistan with the objective explore and analyze the synergies of economic, financial, and governance characteristics that might have the potential to lead the economy towards the path of sustainable foreign portfolio investment in Pakistan.

**Keywords:** Economic growth; foreign private investment; developed and emerging economies; generalized least squares

## 1. Introduction

The debate about three Es in development i.e. economics, environment, and equity has evolved. This has led policymakers to shift their focus towards the development of a framework that incorporates tools and goals of sustainability. As economic growth can be enhanced by investment, business activities and innovation (Domestic and international private business and finance-UN) therefore sustainable development goals (SDGs) call all stakeholders of development i.e. household, firms, multinational corporations and financial organization to play their part in the achievement of goals. There is a dire need for research and development by the private sector to come up with strategies that can complement SDGs. However, important roles have to be played by public policies by ensuring a safe business environment and sound regulatory framework for business entities for financing in development. Economic, social and governance (ESG) indicators and socially responsible investment (SRI) have to be incorporated in business strategies to play key roles in the sustainability path with better perspectives. The financial and non-financial impact of investment has to be considered together to ensure sustainability.

Encouraging steps have been taken by organizations like Morgan Stanley by focusing on the positive socio-environmental impact of new investment portfolios with low startup costs from 5000 USD (Morgan Stanley Access Investing). Around 8.71 USD trillion investment has taken place in ESG portfolios in 2016 according to ESG trade group (US SIF Foundation Releases, 2016 Biennial Report on US sustainable, responsible and impact investing trends). Though a bidirectional relationship between stable and financial systems is focused by Addis Ababa Action Agenda goals of financial markets are still mostly short term in practice; for instance, focus on profits every quarter or fluctuations on stock prices; which needs to be orientated towards long-term goals (Uroos et al., 2021). The corporate performance index of McKinsey shows despite the financial crisis after 2007; there is a deviation away from long-term goals by corporations. Alongside institutional investors, who is seen as a source of long-term investments and holding up 71 USD trillion in long-term liabilities, are tending to invest more on liquid and short-term assets instead of focusing on the long term.

To ensure economic sustainability, the issue of investment needs to be addressed (Arasu et al., 2021). The Financial Stability Board (FSB) is focusing on less reliance on international institutions without causing financial exclusion and instability. The agenda of deep insight of less reliance on corresponding banking, clear guidance Financial Action Task Force, domestic capacity building and tools for the proper function of correspondence bank has been taken up by FSB in November 2015. The impact of regulatory change on the motivation behind the investment mechanism for development is brought into notice by FSB by encouraging countries to provide a positive environment for financial inclusion and stability. The analysis of financial regulatory reforms e.g., over the counter derivative and Basel III etc. published by FSB showed a positive impact of reforms mainly owing to real sector access to credit 2016 ("Domestic and international private business and finance", UN website). The emerging markets along with developing countries are coping well with reforms with better coverage of local banks and less reliance on global banks (Shabbir and Yaqoob, 2019).

The long-term investment is affected by a compensation mechanism i.e. reward for rigorous risk-taking which creates bubbles and instability (Shabbir and Wisdom, 2020). The coping criteria for such risk factors is set in 2009 as Principles and Implementation Standards for Sound Compensation Practices (P&S) (Global Shadow Banking Monitoring Report, Global Shadow Banking Monitoring Report 2015, n.d.). According to P & S, an independent board should look into the reward system and alignment of compensations following performance; capital needs and long-run business interest of firms along with limiting and transparent measures of compensation dispersal (Yikun et al., 2021). Alongside the domestic investment, foreign private investment (FPI) constituting foreign portfolio

investment and foreign direct investment (FDI) are considered as an important driver of total investment with the potential to lead a country towards the path of prosperity. For this purpose, financial transfers from the Northern part of the globe to the Southern one were proposed (Jun et al., 2021).

To attract foreign investments, the countries have to provide a sound ground to investors. The financial institutions, investment policies, ease of starting a new business, correct proportion of taxes and good governance, etc. are potential indicators to attract FPI. If these initial conditions are ensured through sound policy initiatives in Pakistan then the transmission mechanism towards investment can be achieved. As investment is considered to be an important indicator of growth, Pakistan is focusing on the provision of a business-friendly environment to safeguard the interest of investors in the country. China-Pakistan Economic Corridor is evidence of investment potential in Pakistan along with the Generalized System of Preferences (GSP) status given by the European Union (*Economic Survey of Pakistan, 2017–18*). Under the Constitution of Pakistan, Article: 24 Protection of property rights (2013), protection is given to foreign investment in Pakistan along with the Protection in Economic Reforms Act 1992; Section 8 (UNCTAD Compendium of Investment Laws, 1992).

Recently, Government of Pakistan is considering a reduction in the advance tax rate in the capital market from 0.02% to 0.01% and relaxation to investors to take forward capital losses by 3 years along with proposition of minimizing dividend's income tax (PM Imran Khan agrees to ease taxation on equity trading, 2018). Hence, we want to find what is the collective importance and impact of the above-mentioned channels on foreign portfolio investment through the economic growth trajectory which needs to be evaluated in detail for Pakistan by focusing on domestic and international factors. This acts as a motivation for us to undertake a more holistic approach in our study to fill the literature gap for Pakistan with the objective explore and analyze the synergies of economic, financial and governance characteristics that might have the potential to lead economy towards the path of foreign portfolio investment in Pakistan. In sections 2 and 3, we will give the overview of investment and growth trends in Pakistan and literature review respectively followed by methodology in section 4. The results and discussion are given in section 5 and finally, the study is concluded in section 6.

## 2. Overview of investment and growth trends in Pakistan

Pakistan has gone through multiple policy changes to increase productivity and growth. During 1950 and 1960, the private sector played an important part in development. Sectors like banking, basic industries, and insurance grew along with the increase in trade (M. S. Khan & Naseem, 1981). The focus was on domestic investment and FDI was restricted in banking, commerce and insurance sectors. The Economic Reforms' Order (1972) was issued by the Government of Pakistan (GOP) in January 1972 and later agro-processing companies and steels manufacturing etc. were taken under the umbrella of nationalism (ESCAP, 1995). Excessive government intervention reduced the private investor's confidence though the foreign investment category was left uncontrolled by the government. Steps were taken to promote FPI by Foreign Private Investment (Promotion and Protection) Act 1976 in areas of technology, physical and human capital development through mutual equity coordination with domestic investors and ensuring financial security. Despite all efforts, policies did not yield promising results due to weak financial arrangements and overshadowing power of the public sector. Later in the 1980s, the concept of mixed economy with mutual participation of the public-private sector reappeared. The private sector was allowed to participate in the fields of cement, steel, and petroleum, etc. alongside the public sector. However, due to the role of the public sector in the industry, the inflow of FDI was not promising. Industrial Policy Statement of 1984 was an important step to boost up the confidence level of the domestic investor but the explicit idea of privatization was not mentioned thereby it restricted FDI. There was a requirement of approval by the Federal Government and Central Investment Promotion Committee to set up projects with investment above 3 million, foreign exchange requirement above 50 million, secondhand machinery's an import and few other projects significantly related to national security. Alongside, projects with FPI needed to be approved by the Investment Promotion Bureau.

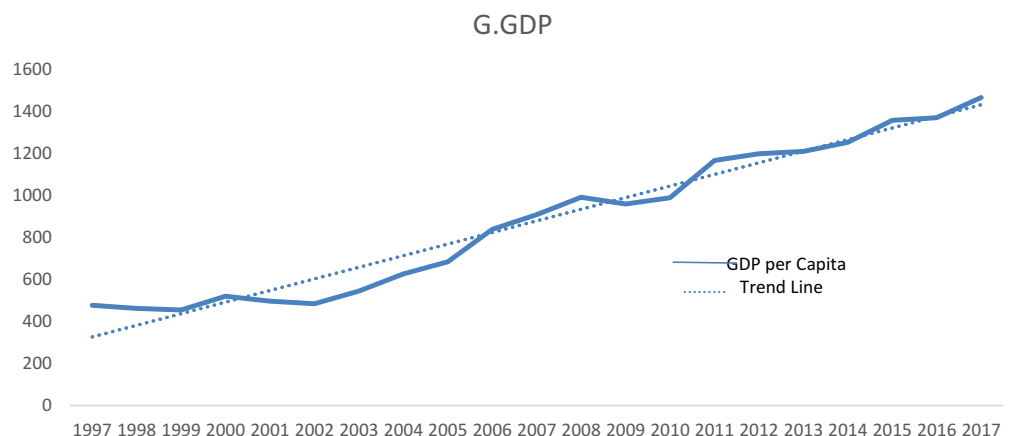
The GDP per capita of Pakistan, as shown in Figure 1, increased from 461.2 USD in 1998 to 519.5 USD in 2000. Though many sanctions in 1998 were imposed including withdrawal of foreign assistance and credit guarantees for USA, IMF and World Bank and many other countries. Energy and food prices increased suddenly. But later few sanctions were uplifted which supported the economy (Crock, 1998).

However, a later downward trend emerged in 2001 and GDP per capita reduced. Global events e.g., 9/11 attacks in the USA, reduced world trade patterns and fewer commodity prices slow down Pakistan's economic growth also. In 2003–2004, growth in the construction sector was seen along with better credit availability for the private sector. Steps were taken to implement programs related to poverty alleviation and trade enhancement. Then, a gradual increase was seen till 2005 but high energy prices and earthquakes in 2005 were major hindrances in growth for the year 2006–07. In 2007–08, the agriculture and manufacturing sector could not achieve the targets because of energy crises and political unrest while the service sector was stable. Afterward, a reduction was seen until 2008 with a recovery period of 2009. With a plunge in 2010, Pakistan has been able to enjoy a moderate increase in the GDP per capita from 2011 to 2017. In 2014, the government took impressive steps for structural reforms resulting in improvement in the GDP per capita resulting from better growth rates in all sectors. In 2016, the industrial and service sector showed recommendable improvement along with a better current account balance. Government spending on infrastructure increased the aggregate demand for construction and related sectors. The successful steps taken in Zarb-e-Azb to fight against terrorism improved the confidence of investors. The low inflation and oil prices also played an important role in reducing the cost of business. The measures taken to support the agriculture sector improved economic outlook in 2017–18 according to the economic survey of Pakistan 2017–18.

The proportion of investment influx in Pakistan from different parts of the world is shown in Figure 2. The greatest proportion of investment is coming from the USA followed by the United Kingdom. Investment from countries like the Netherlands, Hong Kong, Italy, and Japan are relatively stable and continuous from the period of 2000–2016. As mentioned above, a more international competition for foreign investment has increased to the share of Pakistan has not improved much because of business and policy challenges in various avenues. However, investment from China and France has increased over the period. These investments have helped Pakistan to bridge the investment gaps in Pakistan. The technology and industrial growth are boosted by such investments (Ahmad & Ahmed, 2002) and the financial crises of 2008 did not hinder investment inflow in the country. The investment for CPEC projects and China's commitment to "further deepen cooperation with Pakistan" are acting as signals for investment potential in Pakistan (Foreign Ministry Spokesperson Geng Shuang's Regular

**Figure 1. GDP per Capita.**

Data source: World Bank.





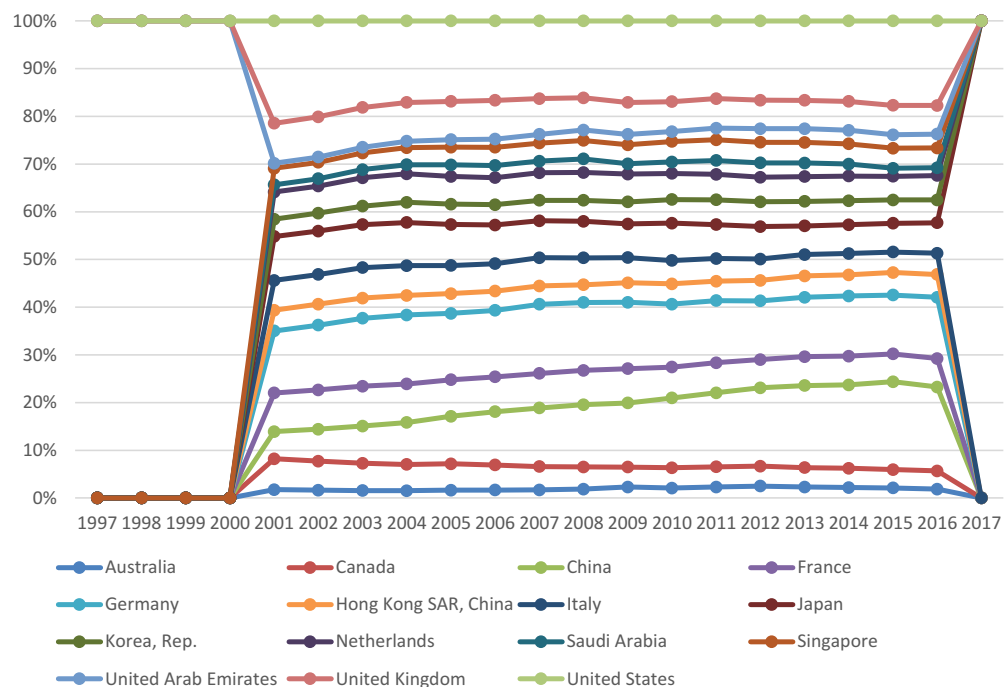
Press Conference on January 2, Foreign Ministry Spokesperson GengShuang's Regular Press Conference on 2018). Belt and Road Initiative (BRI) by China is supported by France who is showing eagerness to do more investment in Pakistan where 40 companies are already currently working (France keen to increase investments, bilateral trade with Pakistan, 2018). Mutual corporations in sectors like renewable energy, water, agriculture, pharmaceuticals, and agriculture are major focuses of France ("France desires for boosting trade with Pakistan, 2019). Deals of over 20 billion dollars have been signed between Pakistan and Saudi Arabia in February 2019 which is expected to create a positive spillover effect on economy and cushions the shock of loan repayment to the International Monetary Fund (Rizvi, 2109). So, the overall discussion implies that Pakistan is trying hard to cope with challenges of investment and pursuing a target to create a better and friendly business environment.

### 3. Review of literature

In literature, the factors influencing the foreign investment in a country are discussed in detail. Scaperlanda (1967) analyzes whether the formation of the European Economic Community has an impact on the "international capital allocation" by focusing the FDI by the USA and Western parts of the European countries between 1951 and 1964. The study finds that the formation of the new economic community has no significant impact on capital allocation. Scaperlanda and Mauer (1969) study reveal that during 1952–1966, only the market size of the host economy has a significant factor in determining the United States of America's (US) FDI amongst other factors i.e. differences in tariff rates, annual FDI rate of the USA and European Economic Community and GDP of countries.

In a cross-sectional analysis of 32 countries for the period of 1962–1968, Griffin (1970) studies the relationship between economic growth, domestic savings, and foreign capital flows. The study concludes that less foreign capital has the potential to improve the domestic saving and ratio of export and capital which might be able to cover up the gap created by less FDI and hence increases economic growth (Saleem, Shabbir, & Bilal khan, et al., 2020). Christian and Pagoulatos (1973) find that infant financial markets in countries are not able to create capital formation and economic growth while analyzing the domestic stock market in 60 economies for the years 1962–1966. The relationship between the stock of FDI and the value of export and import is studied by Smits (1988) for 30 economies for 1978 and finds a strong correlation

**Figure 2. Investment in Pakistan by developed countries.**



exists between the export, GDP and FDI in the countries where the population is less. Tsai (1991) studies the impact of Taiwanese reforms to attract foreign investment in the country and concludes that the incentive system is not strong enough to attract investment in the country.

There exists no relationship between banking sector development and economic growth for 25 transitional economies from 1993 to 2000 and current economic growth is inversely related to previous period credit availability (Koivu, 2002). However, a strong financial system is a key to attract FDI according to Alfaro et al. (2002). Credit growth leads to economic growth in the absence of hyperinflation and inflation below 5–6% (Miller, 2016; Rousseau & Wachtel, 2002). Internal credit for the private sector has a little impact on economic growth in eight Eastern and Central European states from 1996 to 2011 (Dudian & Popa, 2013). A significant and positive impact of bank credit and deposit liabilities on the long-run growth rate is observed in Ethiopia from 1971 to 2010 Yu et al. (2020). So, the policymakers should focus on managing banking credit with the potential to increase domestic investment leading to long-run economic growth (Murty et al., 2012).

The emerging markets have to speed up the growth path of foreign investment; a potential contributor of growth; as they are allocating a lot of funds worldwide alongside developed countries Ejaz et al. (2017). With FDI, different national and international targets could be achieved; for example, FDI by China is an important factor for targeting secure natural resources (Zweig & Jianhai, 2005). On the other hand, policymakers in different countries are striving hard to attract foreign investment in their countries. Different factors affect the investor's confidence in the decision-making process of investment in a foreign country. For example, a potential cost arises in the form of liability of foreignness (Hymer, 2009) as the foreign investor is unaware of the geographical, socio-economic, cultural and political characteristics of the recipient country. They represent the psychic distances between the developed and developing economies where entry barriers and the psychological differential between two developed economies are narrower than amongst developed and developing economies and this leads to a fall in the proportion of investment in a particular country (Ronen & Shenkar, 2013).

So, it is of utmost importance to cater to these differences as they are major hurdles in attracting FDI. Domestic savings could be reduced by foreign capital hence it hurts economic growth (Griffin, 2009). Whereas, a positive impact of foreign capital inflows on economic growth occurs for Pakistan from 1975 to 2004 and foreign capital is an important source of modification of the structure of the economy (T. Shabbir & Mahmood, 1992; Mohey-ud-din, 2007). As the credit market matures with less regulation; its impact can be observed through an increase in output and welfare (Clemens & Heinemann, 2010). Another important factor is exchange rate transmission through the monetary policy which has a positive impact on the economic growth of Malaysia for 1971–2009 as studied by Kogid et al. (2012).

The impact of FDI on the economic growth of a country is also discussed in detail in the literature. In Nigeria, FDI helped the economy to enhance capital flows and technology along with better managerial functioning. But FDI can create challenges for a country if local enterprises are not keeping up with the pace of growth (Edozien, 1968). FDI can be a source to increase economic growth. The innovation, R&D, human and physical capital should be improvised through investment (Todaro, 1994). FDI can promote growth in the country until it becomes sufficient in investment (Aremu, 1997). Recipient country of FDI gets great advantages like the accessibility of capital, employment of labor and spill-over effect in production and innovation (Bobonis & Shatz, 2007). However private capital does not have a significant impact on economic growth in Nigeria from 1980 to 1997 and FDI can be extractive for the manufacturing sector (Ayashagba&Abachi, 2002). Similarly, FDI is not a cause of economic growth in Russia from 1996 to 2003 as studied by Ledyeva and Linden (2006). Study of risk factors affecting FDI in Pakistan from 1961 to 2003 shows that exchange rate, tax rate, share price index, private sector credit and tariff rates have a significant impact on FDI in the long run and short-run (Aqeel & Nishat, 2004). However, in the SAARC countries, a positive link between FDI and economic growth exists (Abbas et al., 2011).



Alongside other factors, the impact of good governance in the growth path has to be analyzed. Good governance encompasses the rule of law, less corruption, political stability, voice, and accountability (Liu et al., 2020). FDI can be attracted to a country by improving the political stability and rule of law. The performance of European economies that were wealthy in the sixteenth century has worsened now mainly owing to weak political institutions instead of geographical factors (Acemoglu et al., 2001). The restrictive trade, administrative measures, and size of the informal economy have negative impacts on gross national products (Roll & Talbott, 2003). Whereas, a study reported that governance is not an important driver of growth while studying granger causality between growth and provincial level governance in China from 1985 to 2005 (Wilson, 2016).

Li et al. (2021) analysis the data of 85 countries for the entry regulations for new firms shows that a high cost of entry for most of the countries. Higher levels of the informal economy, corruption, and weak democracy are more prevalent in these countries; supporting public choice theory; where political hierarchy gets more benefit from entry barriers. The facilities provided by local governments to ease the investment procedures have a major role in improving market size. Ease of doing business is used as an indicator to analyze the set of complementary factors i.e. protecting investors, starting a business, property registration, etc. (Djankov et al., 2002).

Innovations, technology, and R & D are important contributors to growth (Solow, 1957). The importance of R & D in the growth of the country is urged as most technological progress requires, at least at some stage, an intentional investment of profit-seeking firms or entrepreneurs (Grossman & Helpman, 1993). Foreign R & D alongside domestic R & D plays an important role in economic growth especially in the case of the more open economy (Coe & Helpman, 1995). The R & D conducted by multinational companies contributed almost 80% in total R & D in the USA in 1982 (Dunning, 2013). High human capital in China constituting around 1.7 million people in R & D is a major contributor. The innovation capacity has increased and several new patents granted in 1995 were 41,881 which increased to 301,632 in 2007 leading economy to the path of prosperity (Annual Statistics of Science and Technology, 2007). Patents contribute significantly to factor productivity (Kim et al., 2009) and an indirect relationship of patents also exists with growth through the channels of capital and factor accumulation and R & D (Iwaisako & Futagami, 2011). Time series analysis for Pakistan from 1971 to 2008 suggests a long-run relationship between R & D and economic growth (J. Khan & Khattak, 2013).

International trade through technological change has a long-run impact on growth in 47 countries from 1970 to 1990 (Schneider, 2002). Trade volume, human capital, and investment have a positive relationship with economic growth in the long run in Pakistan from 1960 to 2011 (Umer, 2014). Trade restriction can hinder the growth path in the long run so policy stance should be chosen carefully. In Cote d'Ivoire, the presence of both short- and long-term relationships of trade openness on economic growth is observed from 1965 to 2014 and capital formation plays an important bonding factor in this regard. The relationship between exchange rate and economic growth for a period of 1976–2010 for Pakistan shows that the exchange rate affects investment volume, import substitution industry and FDI which in turn increases the economic growth in Pakistan (Aman et al., 2013). Whereas, International trade opens venues of technological advantages to a business and helps entrepreneurs to get access to bigger markets. However, if the domestic demand is very high then production would be consumed locally and trade openness will not help in economic growth (ULLAH., 2018).

In literature, a mixed trend of taxes are observed depending upon the nature of methodology and sample used. The tax structure for investment affects the location of the plant along with R & D activities etc. but the taxes on portfolio investments do not have a significant impact owing to home bias (Gordon & Hines, 2002) in portfolio investments. Investors are less concerned about income tax imposed on the rate of return of portfolio investments in 147 funds in the USA (Dickson, 1994). If a change in marginal tax rate has a strong impact on the world interest rate then the location of FDI will be affected but most studies have mentioned that strong integration of financial markets nullifies the impact of the country's domestic savings and taxes on investment decisions Arif and Shabbir (2019). The panel data analysis of seventy countries for the period of 1970–1997 shows a negative relationship of growth with statutory corporate tax

rate and no relationship with top statutory personal income tax. Whereas when the impact of taxes in OECD and other countries are seen, corporate income tax came out to be more distortionary for developing countries (Lee & Gordon, 2005).

Several studies have similar results with our study such as Saleem, Shabbir, & Khan, et al. (2020) examined the impact of south Asian trade missions on exports. Shabbir and Muhammad (2019) investigated the dynamic effect of Foreign portfolio investment on domestic stock prices in Pakistan. The findings of trade and exchange rates are the same as in our study. Whereas, GDP growth impact on other policy variables is higher in this study as relative to Shabbir and Muhammad (2019) study. Nguyen et al. (2020) examined the impact of the informal economy on the economic growth of Pakistan. Moreover, results of some variables from (Arif et al., 2020; Khan et al., 2021; Saleem et al., 2019) for instance; (GDP, GDP growth and Exchange rate) are also similar to in our study.

#### 4. Methodology

The objective of this study is to investigate the impact of economic growth along with taxes, technology, trade openness and exchange rate regarding foreign private investment (FPI) in Pakistan. This study has included seventeen emerging and developed economies such as, Australia, Canada, China, France, Italy, Hong Kong, Germany, Japan, Korea, Netherlands, Saudi Arabia, Singapore, Switzerland, UAE, U.K, USA and Other Countries (general countries) as FPI source to investigate the impact on foreign portfolio investment through the channel of economic growth in Pakistan. The dependent variable taken in our analysis is FPI which consists of both FDI plus foreign portfolio investment (FPI) from these seventeen countries. We would be using two models where the dependent variable is defined as “value of foreign portfolio investment” and in the second model “number of investments” as a count variable is included in the model.

The proxy of the independent variable (economic growth) is taken as GDP. Whereas other variables included in the analysis are Taxes, Technology (Patent as proxy), Trade openness (imports + exports), GDP per capita and exchange rate are control and instrumental variables for this study. The FPI is taken as the dependent variable for this study. The data set for GDP, exchange rate, GDP growth rate, FPI, and trade have taken from Pakistan Bureau of statistics. The tax data has been collected from the federal board of revenue (FBR), Pakistan. Finally, the technology (Patent as proxy) data set has been taken from the World Development Indicator (WDI, 2018). Due to the constrain of the data set of FPI, this study consists of only 1996 to 2017. However, there was no data set for all seventeen plus countries before 1996, that's why this study has taken data only twenty-two (22) years for seventeen (17) emerging and developed countries. However, we didn't find any comprehensive study on this topic in the context of the Pakistan economy, that's why we have conducted this study to examine the impact of economic growth on foreign private investment.

Moreover, this study estimates the value of investments in our unbalanced panel data set through the use of random effects from generalized least squares (GLS). Therefore, several approaches, for instance, an augmented Solow model (Mankiw et al., 1992) widely used in the literature for control variables. The below model is estimated as;

$$FPI\_VALUE_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 PAT_{it} + \beta_4 TRADE_{it} + \beta_5 G\_GDP_{it} + \beta_6 EX_{it} + \varepsilon_{it} \quad (1)$$

where  $FPI\_VALUE_{it}$  is the value of FPI in year  $t$  ( $t = 1, \dots, T$ ) from country ( $i = 1, \dots, I$ ). Mostly, GLS technique is used for linear data set (Baltagi et al., 2005). The suitability of the random effects test is determined after running the Hausman test. While the second estimation of the model seeks the counts of developed economies investment in Pakistan. This study has implied the Poisson and negative binomial models. Cameron and Trivedi (2013) and Hilbe (2011) explained the better understanding regarding adverse binomial methodology. The second model of this study is defined as:

$$FPI\_COUNT_{it} = f(\beta_1 GDP_{it} + \beta_2 TAX_{it} + \beta_3 PAT_{it} + \beta_4 TRADE_{it} + \beta_5 G\_GDP_{it} + \beta_6 EX_{it}) \quad (2)$$

where  $FPI\_COUNT_{it}$  is the value of FPI in year  $t$  ( $t = 1, \dots, T$ ) in countries  $i$  ( $i = 1, \dots, I$ ). Both negative and passion binomial models estimation indicates likelihood-ratio test and preferred the models of undesirable binomial. The argument could be made that an increase in developed economies investment in Pakistan is causing more opportunities for domestic investors and local governments to remove barriers and adopt modern technology to ease their businesses.

## 5. Data analysis and interpretation

### 5.1. Descriptive analysis

The purpose of this descriptive statistics is to explain and summarize the data through a formal way. This test further informs us about the usage of parametric and in-parametric tests. It is essential for qualitative and quantitative research to identify that sample of our study is normally distributed. It also describes the characteristics of the entire sample or population. The mean tables explain the average values among the variables. The standard deviation tells us the deviation of each mean with respect to each variable. The maximum and minimum values indicate that range among the variables in the particular sample.

The above Table 1 shows the summary statistics for the variables included in the analysis. The table displays the number of observations as well as the mean, standard deviation, minimum, and maximum descriptive statistics. The above table shows the values for GDP, foreign private investment (FPI), taxes, patents, trade openness, the growth rate of GDP per capita and exchange rate. However, 374 observations have taken in this study and all values are near to origin in mean and standard deviation columns. The descriptive statistics show a range of smaller value as (0.002) for FPI and greater value (0.087) for the exchange rate, whereas the rest of the values of the variables lies in between of both values. Furthermore, in the maximum column of descriptive statistics the smaller value (0.529) as taxes and greater value (2.053) for the exchange rate.

### 5.2. Correlation analysis

The below Table 2 summarizes the results of the correlations association among the variables. The Pearson correlation (PC) indicates to what extent, there is an association of population exists between a dependent variable with other independent and explanatory (control and Instrumental) variables. This study develops a hypothesis to better understand the correlation among variables. The null hypothesis shows that there is zero correlation between the dependent and independent variables. This means that no relationship exists between economic growth (SEG) and FPI and other explanatory variables. Whereas, the alternative hypothesis of this study explains that a correlation present between SEG, FPI and other explanatory variables. The below table indicates that a correlation among variables, it could be a positive or negative relationship, but no zero relationship found here. The dependent and independent variables of this study as FPI, and GDP have a positive correlation as mentioned in the below table. It means that foreign investment has a positive but significant impact on the economic growth of Pakistan. Whereas,

**Table 1. Descriptive statistics**

Variables	Observations	Mean	S.D	Minimum	Maximum
FPI	22	0.063	0.341	0.002	1.141
GDP	22	0.002	0.004	0.004	1.932
Taxes	22	0.054	0.021	0.003	0.529
Patents	22	0.043	0.042	0.016	0.562
Trade	22	0.039	0.049	0.012	0.531
G.GDP	22	0.004	0.061	0.005	1.298
EX	22	0.231	0.565	0.087	2.053

the rest of all explanatory variables have positively significantly association expect trade and GDP per capita at some extent.

These variables have a strong relationship with the dependent variable. However, the negative sign of GDP growth and trade become when taxes are increased by the government, so growth rate shrink and investors either stop foreign investment or decrease the investment inflow in particular countries. The trade sector is also effected from a sudden increase in taxes or tax policies. The three variables as taxes, trade, and GDP growth have a bidirectional and negative relationship among them. Whereas, rest of the variables have a positive, unidirectional and significant impact on the dependent variable. The above correlation table indicates the highest correlation between two variables is as exchange rate and GDP growth with (0.845). However, minimum or less correlation exists between two variables as GDP growth and taxes (−0.085). Whereas, the rest of all variables correlation found between (−0.085 and 0.845) range.

The results are presented for both GLS and negative binomial model estimations in Table 3. The results regarding the GLS model specified in Eq. (1) which uses the value of investments as the dependent variable as well as results from the negative binomial model specified in Eq. (2) which uses the number of investments (count) as the dependent variable. It is noted that most of the results regarding these target countries are similar due to industrial composition and geographical differences. Irrespective of the nature of the dependent variable used, the results indicate that as GDP increases, FPI also increases in the country hence the impact for Pakistan's economy is highly significant and positively related to the location and choice of emerging and developed countries investment. These results indicate the presence of emerging and developed economies investment increases the likelihood among domestic firms to contribute to their national economy. In both models, FPI is also significantly drawn for the promotion of economic cooperation among these countries. The findings of this study show that Pakistan economy is more likely to receive FPI from emerging and developed economies, but the relative intensity of local government efforts, regardless of economic size, will increase the likelihood of generating FPI from developed countries. More specifically, due to random effects negative binomial models implicitly accounting for conditional marginal effects for each variable, we can interpret the results of our count model. When using the count of FPI projects as the dependent variable, in addition to the presence of foreign investment and large economic size, geographic distance is a significant factor where the local government is more likely to be chosen as FPI locations by foreign firms than geographically distant regions of Pakistan. According to count modeling estimations, high corporate tax rates may also draw FPI.

## 6. Conclusion

The objective of this study is to test the hypothesis of potentially significant effects of economic growth on the sustainability of the foreign portfolio investment in Pakistan. The ever-changing international business environment and pressures to enhance investment in the domestic market are creating challenges to achieve economic growth. Alongside that economic, financial and governance maturity of a country play a vital role to determine growth trajectory. The domestic and international pressures from these dimensions have to be incorporated into the development framework for the economic security of a country. This study has analyzed the above-mentioned factors in detail to develop an understanding of their impact on the market size of Pakistan.

In the case of emerging and developed economy investment, the measurement for efficiency is typically either the quality or quantity of generated investments toward the Pakistan economy. Both models of FPI show the promotion of economic cooperation toward Pakistan from these emerging and developed countries. It is noted that developed economies' investment increases the likelihood among domestic firms to contribute to their national economy. It is also observed from analysis that Pakistan's economy is more likely to receive FPI from emerging and developed economies, but the relative intensity of local government efforts, regardless of economic size, will increase the likelihood of generating FPI from developed countries. It is observed to gain a holistic view regarding the

**Table 2. Correlations analysis among variables**

<b>Pearson's correlations</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1 FPI	1.000						
2 GDP	0.012	1.000					
3 Taxes	0.014	0.432	1.000				
4 Patents	0.056	0.445	0.598	1.000			
5 Trade	0.021	0.059	- 0.062	0.763	1.000		
6 G.GDP	0.032	0.063	- 0.085	0.132	0.341	1.000	
7 EX	0.134	0.373	0.531	0.673	0.765	0.845	1.000

**Table 3. Generalized least squares and negative binomial model estimations**

Years (1996–2017)	FPI value model	FPI count model
FPI	-	-
GDP	0.521*** (0.027)	0.144*** (0.074)
Taxes	0.102 (0.934)	0.152* (0.083)
Technology	0.131 (0.172)	1.254 (0.871)
Trade	0.022 (0.435)	- 0.242 (0.401)
G.GDP	0.401 (0.601)	0.321 (0.410)
EX	0.509 (0.612)	0.723 (0.315)
Constant	35.811 (32.951)	11.041 (17.163)
Number of observations	22	22
Adjusted R2	0.182	
LLH		-118.638
AIC		1.472

efficacy of investment from developed economies, we estimate the impact of economic growth against both the values and counts of FPI from emerging and developed market economies.

The Pakistani economy is facing several challenges such as (war against terrorism, political instability and financial crises of Pakistan economy) from the last couple of decades and foreign private investment includes both (FPI and FDI has highly appreciated in this regard. This FPI is not only promoted our economy but a positive impact on Pakistan labor forces and provided various jobs and investment opportunities. However, after the 11 September 2001 issue, terrorisms arose in Afghanistan a neighbor of Pakistan. Due to terrorism, Pakistan's economy badly effected and needed much more foreign investment in Pakistan. Furthermore, (21,748) Civilians died, (6740) Security Forces Personnel lost their lives while battling against terrorists, (33,617) terrorists were killed in war of terrorism from 2003 to 2017.<sup>1</sup> The total death from the terrorism of all people is (62,105) in this period.

The future researchers may use different policy and instrumental variables to check the robustness among variables. They may also use panel countries' data set such as (south Asian countries, southeast Asian countries, Asian Pacific countries, Gulf economies and MENA region countries) to examine the foreign investment on domestic stock markets instead of economic growth. The future researchers will check the impact of foreign investment on existing and new industrial collaboration in a certain set of countries. However, industrial collaboration plays a vital role in the process and development of any country. Whereas, FPI is directly or indirectly involved with industrial collaboration.

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#### Note

1. <http://www.satp.org/>

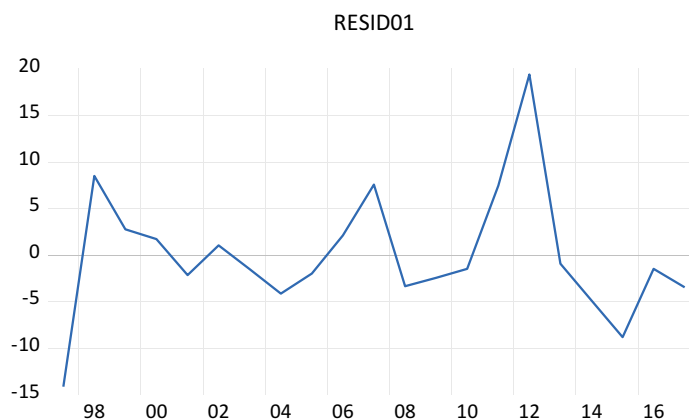
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## Appendix 1



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