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IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) ON ECONOMIC GROWTH OF PAKISTAN (SECTORIAL ANALYSIS)

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ABSTRACT

This study demonstrates the direct relationship between Foreign Direct Investment (FDI) and the economic growth of Pakistan, focusing on the effects of uneven distribution. The agricultural sector has struggled to enhance FDI because of insufficient investment initiatives, slow technology adoption, and resistance to political and administrative changes. The technology-driven sector attracted the most foreign direct investments, aiming to enhance labor productivity, while other industries fail to maximize their potential. Because of regulatory limitations and external disruptions, the service sector has similarly not consistently gained from FDI. Significant macroeconomic factors like inflation, capital formation, and exchange market activity play a key role in determining the utility of an investment, with inflation being the most destabilizing. The study highlighted the necessity of liberal pro-business policies and political stability in the nation to attract FDI. Engaging with China and India clearly illustrates how structured policy strategies, incentives, and infrastructure investments create an avenue for FDI. The findings urge Pakistan to embrace extensive policy reforms focused on modern technology, regulatory adjustments, and investment-friendly measures.

Keywords: *Foreign Direct Investment (FDI), Gross Domestic Product, Foreign Direct Investment for Primary Sector, Foreign Direct Investment for Secondary Sector, Foreign Direct Investment for Services Sector, Gross Fixed Capital Formation, Exchange Rate, Inflation, Gross National Income.*

INTRODUCTION

Foreign direct investment in underdeveloped countries is one of the main sources of economic growth; on the other hand, some aspects of capital formation and gross domestic product growth are also associated, these aspects fluctuating by the country to country geopolitical stability, technological advancement, environmental background, and the geographically. In the framework of FDI perform vibrant character in economic growth, the main objective of this research to evaluate and scrutinize the impact of multiple domestic sectors on FDI on Pakistan's GDP.

These multiple theories interpretations made opinions about connectivity or relationship amongst foreign direct investment with economic growth and these research papers were observed, (Abadata, 2024), (Mohd Thas Thaker, 2024), (Karahan, 2024), (Srinivasan, 2011), (Alfaro, 2003), (Zhang, 2007), (Makki S. S., 2004), (Kinoshita, 2002) and (Borensztein, 1998), an additional. On behalf of sample (V.N., 1996) viewing in this research paper where the literate and skilled workforce is available in those countries concentrating on raised exports rather than replacement of import regulation the foreign direct investment is additionally substantial in these countries. (Zhang, 2007) In this research paper the foreign direct investment plays more significant role where the countries' infrastructure, polices and direction regarding foreign direct investment and trade substantial and well developed. (Kinoshita, 2002) Convey in this study that the country only has positive impact of foreign direct investment when it will be the wholesome allocation of technology to the host country. Similarly (Carkovic, 2005) reported in this associated study that at micro level growth of foreign direct investment major impact preserved as uncertain.

However, in order to draw in international investors, there is evidence these days that host nations provide incentives, and businesses have some concerns. This argument is supported by the fact that, generally speaking, both at the micro and macro levels, there is a lack of experimental support and sign for positive effects that FDI has on the host nation. For instance, (Lipsey, 2002)functioned on small scales and found that it is a beneficial influence, howeverafter studying on the larger scales, he contended that even still there was no reliable relationship amongst growth and foreign direct investment, it is still necessary to look into all the factors and situations that could result in positive spillovers. (Kinoshita, 2002), (Xu, 2000) and (Alfaro,

2003) stated that for FDI to have a favorable impact, well-established financial institutions, significant level of education, and sufficient facilities are essential. (Blomstrom M. &., 2003) According to their literature review, local factors perform an important role in the adoption of modern and foreign skills and technologies, and impacts are neither easy nor automatic.

(Weinhold, 2001) It was determined that throughout the last 20 years, foreign direct investment has grown by more than 17% annually in developing nations. According to prevalent theories in research, foreign direct investment may produce or boost a nation's level of growth in several ways. The country's capital and financial resources are increased by foreign direct investment, which also raises the growth rate of the nation's overall output.

Another important route is through international corporations that are involved with cutting-edge, contemporary research and development. Additionally, multinational firms are a major source of technology transfers and international direct investment. Multinational corporations have been the main drivers of foreign direct investment for the past century. Their assets are larger than those of the majority of economies; in fact, if we look at the 100 largest economies in the world, we find that 51 of them are multinational companies (global business), while the remaining 49 are countries. This startling statistic indicates that these global businesses are in charge of running the world's economies. The combined transactions of the top 200 multinational firms in the world account for more than 25% of global economic activity, or nearly the same as the US GDP ($18 trillion). (Cavanagh, 2000)

History and Background of Pakistan's FDI

FDI in South Asia has an extensive background, however. It clearly began with the East India Company's entry in 1604, when the world was split in two. Shortly after that, the Cold War broke out, which resulted in India joining the Soviet Union and Pakistan joining the American bloc. Pakistan was among the economies with the fastest rates of growth in the 1960s, with a GDP growth rate of over 9% at one point. At that time, Pakistan received assistance from other countries in the form of aid and FDI.

Savings and investment levels are crucial for capital formation and for raising its rate; in fact, greater the level of these two factors, the higher the

level of capital formation. We know that because of the low per capita GDP in developing nations, local savings always fall short of the desired amount. (Khan M. &., 2011)

The World Bank reports that in 2023, Pakistan's gross domestic savings as a percentage of GDP was 6.3818%, which is extremely low. Foreign direct investment is one of several strategies to close the gap between planned investment and domestic savings. (Zaidi, 2004)Economic policy must be permitted in order to draw in foreign investment and increase FDI. To achieve this, government entities can take a variety of actions, such as easing restrictions on financial institutions and providing incentives like tax breaks and tariff reductions. (Zaidi, 2004)

Pakistan experienced instability in politics in the 1990s, but both sides saw hugeFDI in the 2000s; in Pakistan, the majority of these investments went into the banking and telecommunications industries, among other service sectors. In contrast, foreign direct investment was employed in production sectors such as software and autos. However, right after Musharraf's rule, investment left Pakistan, as well as the economy of the country has been struggling ever since. In contrast, India remains one of the world's most developing economies, second only to China.

Trend of FDI over the Prior Ten Years

FDI inflows by country

China is the country that invests the larger amount in Pakistan, according to the below chart. However, we can also observe a noticeable drop in foreign direct investment from the USA, UK, and other western nations, while Middle Eastern FDI varies liable on the political relationship between Pakistan and the Kingdom of Saudi Arab. (Annex Table– I)

Inflows of FDI by Sector

According to the below table, investment in various sectors varies, which is a result of the governments' focus at the time. For example, we can observe a significant amount of capital being invested in the energy industry during the 2013–2017 periods, during the Prime Minister Nawaz Sharif's period, as the governing body placed a strong emphasis on these two industries. We are currently witnessing a resurgence of investment in the oil and gas and electricity sectors. However, the communication (IT & telecom) sector saw a significant decline. (Annex Table – II)

Problem Description and Research Justification

There are numerous examples demonstrating the positive and large effects of FDI on growth rate. For instance, a 1% rise in foreign investment results in a 0.07% rises in China's GDP. (Agrawal, 2011)Research on the effects of FDI by sector shows that it has a good effect on industries such as manufacturing however an adverse effect on the agricultural sector, and the findings in the service industry are not entirely obvious. (Alfaro, 2003)The apparent image provided by this investigation will be contributed to the research in a variety of methods.

Research Objective

The primary goal of the research is to not only figure out how foreign direct investment affects Pakistan's economic growth but also to propose and indicate strategies and measures that can assist government officials in raising the amount of national income, that will raise the standard of living. Since foreign direct investment in the agricultural industry has had an adverse effect in emerging nations, the manufacturing industry is better equipped to incorporate new technologies over all other industries. (Alfaro, 2003),This is mainly a result of insufficient facilities and rising unemployment (in the Punjab region, it is illegal to operate crushing equipment to chop wheat) brought on by the usage of advances in technology in the agricultural sector.when we examine the international economy during the last 30 years, we observe that

China and India are the two nations that are expanding the fastest. During this period of time, the globe experienced an extensive downturn from 2007 to 2009, yet their GDP continued to rise at a rate of 7% to 9%. Foreign direct investment was crucial to both of these nations' development, as evidenced by (Agrawal, 2011), A one percent rise in foreign direct investment within China would result on an additional 0.07% growth in the gross domestic product of China, while a one percent increase in foreign direct investment in India would result in a 0.02% growth in the gross domestic product of India.

LITERATURE REVIEW

Although this proof of foreign direct investment is quite older, we may state the fact the East Indian Company served as the forerunner of current foreign direct investment strategies in the 21st century. Despite their cruel and unforgiving background and objectives, we can't consider these individuals responsible for being the first contemporary company that utilized foreign direct spending to earn financial gain. A study of the literature will provide an accurate depiction regarding the effect of FDI in economic development, however there's several adverse instances as well, which are the result of corrupt behavior and ineffective governance. The globe's objectives and interactions shifted when the Second World War, as well as the League of Nations was founded to encourage harmony and economic development to this purpose. The IMF and the World Bank both were established right after the completion of the World War-II.

(Abadata, 2024) Observe the factors and the effect of the Chinese FDI inflow on the economy of Rwanda. Examines secondary data from 2007 to 2020 obtained from the World Bank and National Statistics of Rwanda by regressing the variables using Stata software. The variables covered include market potential, trade volume, infrastructural development and human resources and found out that although these factors encourage FDI positivity, the net effect on the whole economy of Rwanda is not statistically significant.

(Mohd Thas Thaker, 2024) Examine the impact of FDI on the economic growth of Afghanistan,1990 to 2019time series data was taken anduses as ARDL test to measure the effect of FDI on economic growth and differentiate between the short and long run relationship. Findings indicate the F bound cointegration test authenticates the long run relationship existing between the variables. In both the long-run and short-run results, it is clear that foreign direct investment has critical negative effects on the economic growth in a

prolonged time. On the opposing, trade openness does not have a long run effect on economic rises, but adverse effects are apparent in the short run.

(Karahan, 2024) Investigates the connection from FDI to economic appreciation in RCEP nations within the time frame of 1980–2020, with the help of the Hatemi-J asymmetric causality test specifically dealing with non-linear dynamics. Included in the data are the inward FDI stock to GDP ratio of countries and the GDP per capita data for the countries integrated in the RCEP bloc. The findings suggest that positive FDI shocks significantly explain economic growth, supporting the FDI led growth hypothesis while negative FDI shocks and income shocks on FDI do not seem statistically significant. The study emphasizes the requirement for sustaining growth by enhancing multinational investment and it creates contributions via methodology by applying a non-linear causation approach as opposed to the usual linear approaches.

(Kumari, 2015) Based on the United Nations convention report regarding trade and development the organization reached the conclusion in the research they conducted the fact that an expanded and open economics is more attractive to foreign shareholders, whereas autonomous financial organizations and established facilities are additionally crucial for attracting FDI. India ranked third during foreign investors in the year 2005 and remained among the leading five countries in 2009 over foreign corporations looking for investment opportunities. FDI and GDP have an overall beneficial connection, but inflation and FDI have an adverse connection, with inflation serving as an indication of instability in the economy.

(Agrawal, 2011) In their research on FDI along with its effect upon GDP, they discovered that the it's having an important and beneficial effect on the GDP. They examined data across borders between both India and China while discovered that a 1% rise in FDI would raise GDP of China by 0.07% alongside a 1% raise in FDI would raise GDP of India from 0.02%. China benefits significantly from FDI than India, according to additional research.

(Martínez San Román, 2013) And (Adam, 2009) Although vital facilities such as democratic governance, equitable socioeconomic conditions, higher education, and relaxed financial systems constantly exist in developing nations, contemporary progress concepts recommend that technical breakthroughs be transferred from FDI.

(Balasubramanyam, 1996), (Kumar, 2005) and (Adam, 2009). (Nath, 2005) In addition to transferring technology, additional positive effects on FDI include the acquisition of administrative and organizational abilities, knowledge of the market, and approaches to marketing.

(Adam, 2009) claims that foreign direct investment has two roles in expansion: it boosts economic activity through accumulating investment and increasing the overall measure of manufacturing. However, models of dependency claim that because of its dependence upon foreign investment, FDI has a detrimental outcome upon economic development and financial inequality. Because investment establishes monopolistic in industries such as manufacturing, foreign direct investment additionally contributes towards the inadequate use about finances, indicating that the economic system is not functioning to its full capacity.

(Alfaro, 2003) The research article that the seemed most pertinent to our matter examined nationally representative data to figure out how FDI affected different industries. It discovered that although FDI had a beneficial influence on the manufacturing industry in general, it's had adverse effects on the primary or agriculture industry and the unknown impact on the industry of services.

(Bende-Nabende, 2003) The investigation provided a demonstration for the aforementioned notion. Research discovered it, particularly underdeveloped nations such Thailand and the Philippines, the long-term effects of FDI inflow are substantial and favorable. However, the impacts are detrimental to economy with greater strength, such as Japan and Taiwan. They have additionally come to an understanding of FDI produces a generally good long-term effect upon economies in developing nations, while it results in a detrimental effect on the nations with advanced economies.

(VU, 2009) Throughout this qualitative research, they used sector-specific sets of information gathered from six nations of the OECD. As both established and developing nations, scholars attempted towardsinspect the impacts of FDI on economic expansion by industry. Using across the nation regression, however, they discovered significant FDI has beneficial as well as adverse impacts, depending on whether it's having a direct effect on economic activity or the amount of productivity of workers. Researchers additionally discovered different outcomes in multiple nations as well as industries.

Certain industries experienced beneficial effects, while others experienced adverse consequences. The financial services alongside property sectors experienced notable adverse consequences.The only industries that benefit greatly from FDI are minerals extraction and quarrying. They additionally reached their conclusion that although efficiency varies by sector, FDI is more efficient and labor-productive in particular sectors.

(UNCTAD, 1999) Characteristics like low-cost materials that territorial uniformity was suppressed by the remarkable expansion of internationalization in opposition to unpredictable governing structures and subpar economic governance in underdeveloped countries. Global companies contributed significantly through the economic development of underdeveloped nations by lowering trade obstacles. 100 countries implemented 599 reforms to legalization between 1991 and 1996, but 76 the economy, primarily Asian, only implemented 151 revisions to their legalization strategies in 1997.

(Solow, 1957) claimed within his expansion model (Solow Growth Model) that the investments and technological improvements are actually the key drivers of a nation's long-term financial development, in addition to FDI is an important driver for technological transmission. Despite the work of Solow model's shortcomings, his claimed that these two factors determine a nation's long-term output development. Based to the Solow Growth Model, technical breakthroughs will boost development once a nation has stabilized.Over the past 500 years, the wealthiest nations have had the most innovations, and their economic systems have grown rapidly. When we examine the worldwide economy, we observe that European nations tend to be extraordinary abilities following the middle ages, referred to as the Renaissance. Era, with innovative ideas and contemporary innovations playing a major role in their economic growth. Over the last two centuries, the nation of America has dominated the worldwide economy. Technologies can be lawfully transferred across one nation to another in our global age thanks to foreign direct investment.

(Ali, 2014) Determines that price inflation with FDI could have a detrimental long-term consequence for Pakistan's economy. During his examination, he bases the figures upon Granger causality principle along with the Johannsen co-integration method. The information is utilized between 1972 and 2013.

(Javaid, 2016) The effect that FDI has on Pakistan's GDP is investigated in this article. Data collected by the scholar spans 1966 to 2014. For combined

short-term and long-term outcomes, and autoregressive distributed lag-error correction model (ARDL-ECM) strategy is applied. The study comes to the conclusion that throughout the short and long term, foreign direct investment significantly and favorably affects Pakistan's GDP. During the longer term, inflation and increases in population additionally have a major impact on GDP; finally, trade and gross fixed capital formation have no discernible impact on Pakistan›s economic expansion.

(Khan M. &., 2011) utilized the panel co-integration and Granger causality on data collected from the year 1981 towards 2008 and discovered that throughout the long run, there's proof of an independent causal connection among FDI and GDP, while short-term findings indicate that there is a causal connection in both directions within FDI and GDP. They additionally discovered this, in Pakistan, FDI stimulates expansions in the primary and service sectors while attracting expansion in the industry of manufacturing.

(Khan S. A., 2017) She applied data collected through panel from 1997 to 2016 to examine a sector-wise impact of FDI for worker efficiency. She discovered that there exists an impact that spills over in different industries and that FDI has a positiveinfluence on productivity of workers to various industries in Pakistan.

(Dar, 2016) utilized VECM to examine the sector-wise effects of FDI. They compiled the data considering the researchers were unable to collect the appropriate sector-wise data of FDI in Pakistan, and they also placed the following industries in the main industry: dietary habits, beverages, sugar, nicotine, genuine leather and textiles, paper and cardboard, and rubber and rubber products. The secondary industry included substances and elements, drugs and agricultural products, petroleum-based goods and petroleum purification, minerals and rocks, concrete, elementary metallic substances, solid products, gas exploration and extraction economic categories, heavy and light machinery apart from electrical, electrical appliances, technological devices, automobiles, constructing, power, and lubricants utilized for production and retailing as well as wholesale tourism and travel. shipping, storage and exchanges, and monetary policy businesses. They were unable to determine any correlation across FDI and GDP.

(Khan M. &., 2011) The investment and savings levels are crucial for the creation of capital along with raising its velocity; in fact, the greater the

combination of both of these variables, the greater the amount of the creation of capital. We understand that because of the low average GDP in developing nations, regional savings usually fall short of the desired amount.

METHODOLOGY

Although academics have employed a variety of methods in the past to determine the connection among FDI and economic development within a country like Pakistan, the data from panels have been utilized consistently across every research study (Khan M. &., 2011) and (Dar, 2016). Evaluation of time series is additionally covered in certain publications, although it does not appear in the context of Pakistan (Alfaro, 2003). I concentrated upon the majority of important research that has been published by trustworthy publishers with the objective to obtain the most effective design and prevent undetermined modeling issues. The relationship with GDP and FDI represents one of these more inaccurately assessed ones, particularly when these models have been published.

FDI possesses a complicated and dynamic background in Pakistan; in fact, it currently has a significant impact over the country's economy as well as has links with global politics. Aside beyond that, FDI has always been a significant component of funding to Pakistan. Similar to Pakistan, finding information in poor nations is extremely challenging. As stated within the title for my matter, foreign direct investment has a positive effect upon three main areas: primary, secondary, and services. To accomplish this, I must obtain data pertaining to multiple sectors. For the primary sector, I have looked at food, food packaging, beverages, tobacco & cigarettes, sugar, textiles, paper & Pulp, Leather and leather products, rubber and rubber products, chemicals, petro chemicals, petroleum refining, oil & gas explorations. To identify the secondary sector, I have included compounds and components, pharmaceuticals & OTC products, cosmetics, fertilizers, cement, ceramics, basic metals, metal products, machinery other than electrical, electrical machinery, electronics (consumer & Industrial), transport equipment (automobile, motorcycles, cars, buses, trucks, vans & trial), power (thermal, Hydel & coal based), construction and the services sector, I have included trade, tourism, transport, storage facilities, communication (telecommunications, information technology hardware & software & postal and courier services), financial businesses, social service, personal services and others.

(Khan M. &., 2011) used (Pedroni, 1999) Based on the panel co-integration

approach, they used the panel dynamic least-squares approach to examine the relationship across the different factors and discovered that, in Pakistan FDI stimulates expansion throughout both the primary and service sectors while, in the manufacturing sector, it either magnetizes or results in rises. (Dar, 2016) Have using Vector Error Correction Model (VECM) and panel co-integration for figuring out the connection among economic development and FDI. They discovered that the panel co-integration technique produced data that indicated relationships between FDI and GDP, but they were unable to identify sector-specific connections. Even the primary sector has identified a short-term correlation between FDI and GDP.

Therefore, there are currently many different methods that have been published to determine the relationship and co-integration with FDI and GDP. Since it is outside the purview of my investigations, I will not include every method as well as justification that has been employed throughout the publications; instead, its time concentrate on this estimating method with the assistance of the existing literature.

I employed time series dataset throughout this research, therefore my approach is divided into three sections. There are other methods to determine the unit root in time series data, however I used the Augmented Dicky-Fuller test in this investigation, Johansen co-integration test (CVAR) based on the findings of our unit root test and for examine the long-run relationship between variables in second part &in third step the victor error correction module (VECM) used for short run relation and at last we examine the correlation of GNI and GDP & others.

Augmented Dicky-Fuller Test (ADF)

The ADF test was establishedthrough American statisticians David Dickey and Wayne Fuller in 1979. It is popular statistical technique used to define unit root is existing in a time series model. Howeverit is a regression-based test that is frequently used in econometrics and statistical research and a common starting point in applied macroeconomics, based on null hypothesis that a unit root is existent in the model, the alternative hypothesis is usually stationarity or trend-stationarity (Politis, 2013).

Johansen Cointegration Test (CVAR)

Famous statistician Professor Johansen working in econometrics provide mathematical and statisticalco-integrated vector autoregressive analytical

model in 1995. However, it is a framework that combines co-integration and variables differences to study both short-run and long-run effects in a single model. (Johansen, 1995)

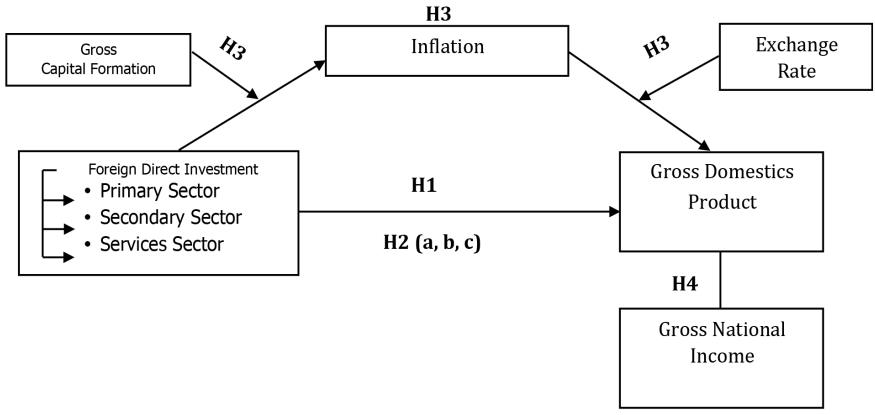
Victor Error Correction Module (VECM)

VECM is an econometrics model use for long run equilibriumconnection and short-term dynamic forces amongst several time series variables. (GRANGER, March, 1987)

Software Applicable

To examine the augmented dickyfuller test (ADF) for regression-based test in a time series module, Johannsen cointegration test for combines cointegration and variables differences to study both short-run and long-run effects in a single model and victor error correction module for long run equilibriumconnection and short-term dynamic forces amongst several time-series variables the EViews 12 version software is apply for findings and results.

THEORETICAL FRAMEWORK OF RESEARCH



Hypothesis

Main Hypothesis

1. H1: FDI impacts on the economic growth of Pakistan.

Sectorial Hypothesis

2. H2a: FDI in the primary sector impact on Pakistan's GDP.
3. H2b: FDI in the secondary sector impact on Pakistan's GDP
4. H2c: FDI in the services sector impact on Pakistan's GDP

Supporting Hypotheses:

5. H3a: Exchange rate fluctuations effects of FDI on Pakistan's GDP.
6. H3b: Gross Capital Formation effects of FDI on Pakistan's GDP.
7. H3c: Inflation as mediates the connectionamongst FDI and Pakistan's GDP growth.

Effective Hypothesis

8. H4: Economic growth effects on GNI per capita growth

Research Design

The components of a researcher's chosen research methods and approaches are defined as research design. Minimum bias in data and maximum accuracy in data collecting are requirements for an effective research design. The researcher obtains the expected results with a very low margin of error.

Functional Provisions and Models

I created three distinct functions that look into the outcomes of particular sectors in order to evaluate the sector-wise impact of foreign direct investment on growth. The variables that serve as controls in each model remains the same, while the main variable is changed, Equations given below: -

Model: 1 GDP= B0 + B1Fdi_Pri+ B2GFCF + B3ER + B4Inf + ui
Model: 2 GDP= B0 + B1Fdi_Sec + B2GFCF + B3ER + B4Inf + ui
Model: 3 GDP= B0 + B1Fdi_Ser + B2GFCF + B3ER + B4Inf + ui
Model: 4 GNP= B0 + B1Fdi_All + B2GFCF + B3ER + B4Inf + GDP+ ui

GDP	=	Gross Domestic Product
FDI_Pri	=	Foreign Direct Investment for Primary Sector
FDI_Sec	=	Foreign Direct Investment for Secondary Sector
FDI_Ser	=	Foreign Direct Investment for Services Sector
GFCF	=	Gross Fixed Capital Formation
ER	=	Exchange Rate
Inf	=	Inflation
GNI	=	Gross National Income

COLLECTION OF DATA

Our study will look at how foreign direct investment (FDI) has affected Pakistan's GDP by sector between 2011 and 2023. The World Bank and

World Performance Indicators, an extremely trustworthy data gathering source, with the State Bank of Pakistan are the sources of our statistics.

Gross domestic product (GDP) is the independent variable (IV) in my model for economic growth, and the dependent variables are foreign direct investment (FDI). While inflation, exchange rate (ER) and gross fixed capital formation (GFCF) can lead to multicollinearity. However, we have examining the effectiveness of gross domestic product (GDP) on gross national income (GNI), moreover they have historically had a direct relationship with FDI. The impact of FDI in Pakistan by sector is determined in this study using by using secondary data for the period from 2011 to 2023.

Data sources list as follows:

- State Bank of Pakistan
- Economic survey of Pakistan
- World Bank data base

Variables Briefing and Justification

Gross Domestic Product (GDP)

GDP is a gauge measuring a nation's financial and economic activity. It highlights the total marketplace worth of products and services across a nation's borders over a specific time period. Spending by government agencies directly is included in GDP; however, these expenditures typically increase the economic system's pace of growth. (Keynes, 1936) Through these expenditures, nations build their physical infrastructure and give the population greater healthcare and educational opportunities, which boosts their productivity and capability levels. GDP is frequently employed throughout literature for a stand-in for development in the economy.

Foreign Direct Investment (FDI)

The majority of economists believe that FDI has an important beneficial effect on GDP, whereas a few consider that it may have an adverse effect. FDI is defined to be an investment performed by a nation or someone towards another nation's economy. It differs from direct investments such as portfolio investments that invest directly in the stock exchange. I employed FDI in a variety of sectors to this research. To do the aforementioned, Combined data from these sectors into three main sectors: primary, secondary, and services.

I included exactly the same sectors that were utilized in earlier publications for this collection of data. (Ayesha, Sarfaraz 2017), (Khan & Khan, 2011) and (Daar, Taj, Bhatti 2016)

Gross Fixed Capital Formation (GFCF)

GFCF creation, that encompasses new as well as existing assets of corporations, governments, and individuals, is utilized over local investment. These are also inconsistencies due to the GFCF does not indicate the net values for assets that remain constant throughout the economic system were not disposed ofliquid resources and subsurface assets are not accounted for in GFCF economic reserves; just land worth is.

Exchange Rate (ER)

FDI as well as exchange rates are directly correlated; the higher currency exchange rate, the greater the likelihood of FDI due to the inexpensive price and large profitability. An excessive conversion rate slows GDP development. Throughout our research, we converted US dollars to foreign currencies, and the quantity of the domestic currency delivered for every penny of foreign currency was one value.

Inflation (Inf.)

Inflation may be utilized as a stand-in for macroeconomic turmoil and usually results from by uncertainties. In Pakistan's situation, politically unpredictability led to significant economic instability, particularly in the 1990s, which subsequently effect generated a substantial fall in foreign direct investment. According to the beliefs, destabilization as well as growth in the economy is negatively correlated (Fischer, 1993) and (Bruno and Easterly, 1998). The governing body will allocate additional resources and funds in order to stabilize the economic situation if it experiences uncertainty and that instability keeps getting worse. The rate of inflation per year may be used to regulate it (Ogbuagu, Patricia and Ifionu, 2013). Using inflation to be a stand-in for uncertainties Whenever inflation occurs, lowering the amount of foreign direct investment will raise the value of locally produced inputs, raising the value of manufacturing.

Gross National Income (GNI)

The entire revenue received by a nation's citizens, both inside and outside its borders, for a given time period, such as a year, is known to be the gross national income. It covers all funds received from local businesses as well

as any net income received through overseas sources, such as earnings by foreign business endeavors or funds transferred home by foreigners. Because it includes contributions received by foreigners and does not incorporate recorded salary revenues of foreign employees throughout the country, GNI provides a picture of the financial condition of a country and the wellbeing of its residents. A nation's standard of life is commonly assessed using its GNI per capita. Although gross national income is frequently used in conjunction with other metrics, it does not show or depict any proportion of the difference across the rich and the poor, ecologically friendly aspects, or the general standard of living.

EXPERIMENTAL ANALYSIS

In this phase, we will talk about the findings from the experiment that came through the provided data. In accordance with my methodology, we will evaluate and explain the unit root results in the first stage, in second step we will going to examine and described the results ofaugmented dicky fuller test (ADF) and Johansen cointegration test (CVAR), and at end in third part we analyze the relationshipbetween the variableby Vector Error Correction Model (VECM) and at last we examine the correlation of GNI with GDP and other variables.

Augmented Dickey Fuller Unit Root Test Result Discussion

To find out if the variables in a dataset have a unit root or are stationary, do the group unit root test. With a probability value of 0.7966, for example, the Levin, Lin, and Chu t* test, which is predicated on the idea of a shared unit root process, is unable to rule out the null hypothesis. However, with a probability of 0.2137, the Im, Pesaran, and Shin W-statistic test, which considers individual unit root processes, likewise fails to reject the unit root hypothesis. However, with probabilities of 0.0083 and 0.0107, respectively, the Fisher ADF and PP tests show stationarity at the usual significant levels. These contradictory findings imply that whereas certain variables may be steady, others may not be. Therefore, first differencing or another transformation will be required to ensure stationarity for subsequent econometric research, such as cointegration or regression modeling to examine legitimate correlations between GDP (the dependent variable) and the independent variables. (Annex Table-III)

Johansen's Cointegration Test and Discussionof Primary Sector

The Johansen cointegration test for GDP and FDI_PRI was performed

among 2013 and 2023, taking into account a linear deterministic pattern with a lag interval of 1 to 1 for a total of 11 samples throughout that period. While the tracing statistic for "None" (25.98531) is higher over the crucial value (25.87211) with a p-value of 0.0484, the trace test result shows one co-integrating model at the level of 5%, thus discrediting the null hypothesis of no co-integration. However, at a p-value of 0.2598, the trace statistic (7.902189) for "At most 1" is over the critical threshold (12.51798), indicating that the null hypothesis has not been rejected for at most one co-integration.We do not reject the null hypothesis of at most one co-integration in the case of "At most 1," since the trace statistic (7.902189) is below the critical threshold (12.51798) with a p-value of 0.2598. On the other hand, neither "None" (18.08313 < 19.38704, p = 0.0765) nor "At most 1" (7.902189 < 12.51798, p = 0.2598) reject the null hypothesis at the 5% significance level, indicating that there is no proof of co-integration in the highest eigenvalue test. (Annex Table-IV)

Johansen's Cointegration Test and Discussion of Secondary Sector

Using a linear deterministic trend and a lag interval of 1 to 1, the Johansen co-integration test was applied to GDP and FDI_SEC for the 11-observation period from 2013 to 2023. According to the findings of the trace test, the null hypothesis of no co-integration is not rejected at the 5% significance level by either the "None" hypothesis (21.16372 < 25.87211, p = 0.1726) or the "At most 1" hypothesis (4.149664 < 12.51798, p = 0.7203). As the "None" condition (17.01405 < 19.38704, p = 0.1070) and the "At most 1" condition (4.149664 < 12.51798, p = 0.7203) do not exceed the critical values, the greatest frequency analysis similarly fails in rejecting the null hypothesis. (Annex Table – V)

Johansen's Cointegration Test and Discussion of Services Sector

Using a linear deterministic pattern and a lag duration of 1 to 1, the Johansen cointegration test was utilized to GDP and FDI_SERV, encompassing 11 samples from 2013 to 2023. According to the findings obtained from the trace test, the null hypothesis of no cointegration is not rejected at the significance level of 5% by either the "None" hypothesis (21.44115 < 25.87211, p = 0.1615) or the "At most 1" hypothesis (5.535514 < 12.51798, p = 0.5214). As the "None" condition (15.90564 < 19.38704, p = 0.1493) and the "At most 1" condition (5.535514 < 12.51798, p = 0.5214) do not exceed the critical ranges, the maximum eigenvalue test similarly fails to reject the null hypothesis. (Annex Table – VI)

Vector Error Correction Model (VECM) Result and Discussion of Primary Sector

GDP is the dependent variable in this VAR analysis, whereas FDI PRI is the independent variable, INF is the mediating variable, and ER AVG and GFCF are the moderating variables. The FDI PRI (-1) coefficient on GDP is negative (-5.928559) and not statistically significant, indicating that the prior period's foreign direct investment had little effect on GDP growth in the near future. Inflation is not a significant mediator between FDI and GDP, as evidenced by the mediator, INF (-1), having a weak negative significance effect on GDP (-0.356997). Constant currency exchange rates can promote economic growth, however, as seen by the large positive coefficient (5.547520) of ER AVG (-1) as a moderator on GDP. Although as a moderator, GFCF (-1) has a negative coefficient (-1.554203) in relation to GDP, indicating that historical gross capital creation has no short-term positive impact on GDP. After controlling for levels of equality, the low adjusted R-squared (0.0487) suggests poor predictive ability; the F-statistic suggests that the whole model is not highly significant. The GDP R-squared value is 0.4811, which explains 48% of the fluctuations in GDP. These findings suggest that while FDI and GFCF don't have significant direct effects, exchange rate volatility may be affecting GDP growth. We must carry out more thorough studies, such as mediation and moderation testing or even structural equation modeling, in order to obtain more precise insights. (Annex Table – VII)

Vector Error Correction Model (VECM) Result and Discussion of Secondary Sector

With FDI_SEC as the independent variable, INF as a mediator, and ER_AVG and GFCF as moderators, the VAR analysis examines GDP as the dependent variable. Foreign direct investment in the secondary sector directly boosts economic growth, as evidenced by the positive (6.423498) and statistically significant coefficient for FDI_SEC. Furthermore, inflation (INF) and GDP have a positive correlation (0.770787), indicating that it may influence economic activity and mediate the relationship between FDI and GDP. Among the moderators, ER_AVG (-1) has a positive and substantial correlation with GDP (5.474859), suggesting that exchange rate fluctuations can influence economic growth by either increasing or decreasing the effect of foreign direct investment. However, GDP (-1.763392) is negatively impacted by GFCF (-1), which measures gross capital formation. This implies that past

gross capital formation may be impeding economic expansion, maybe as a result of capital allocation errors or inefficiencies. GDP's R-squared value is 0.545651, meaning that around 54.57% of the variation in GDP can be explained by the factors provided. But when degrees of freedom are taken into consideration, the level of explanation drops, as evidenced by the low adjusted R-squared value of 0.167302. Finally, the F-statistic indicates that the model's overall significance is modest. (Annex Table – VIII)

Vector Error Correction Model (VECM) Result and Discussion of Services Sector

With FDI_SERV as the independent variable, INF as a mediator, and ER_AVG and GFCF as moderators, the VAR results center on GDP as the dependent variable. In terms of GDP, the unconditional dyad's FDI_SERV coefficient is positive (1.324372), indicating that foreign direct investment in services contributes to economic expansion. The t-statistic, however, is rather modest (0.17969), suggesting that this result might not be very important. However, inflation (INF) has a significant positive impact on GDP (0.767392), confirming its function as a mediator in the GDP-FDI relationship. This implies that the way FDI influences economic production can be influenced by inflation patterns. The exchange rate average (ER_AVG) significantly boosts GDP (5.241167) when the moderators are considered, suggesting that changes in exchange rates can spur GDP growth. This emphasizes how crucial currency stability is in boosting or impeding the impact of FDI on economic performance. On the other hand, GFCF has a negative coefficient (-1.579707), indicating that historical levels of capital formation may not always translate into comparable GDP growth results, perhaps as a result of inefficient capital allocation. The model can account for roughly 44.23% of the variation in GDP, according to its R-squared value of 0.442299. Nonetheless, the model's overall explanatory power or possible overfitting are called into question by the modified R-squared (-0.022452). Finally, the F-statistic of 1.101505 indicates that the model is not very significant. (Annex Table – IX)

Correlation of GNI with GDP & others

Some intriguing information regarding the relationship between GNI and other economic factors may be found in the correlation matrix. In this case, GDP is clearly the independent variable, and GNI is the dependent variable. Furthermore, FDI acts as a moderating element, as do inflation (INF), the

average exchange rate (ER_AVG), and gross fixed capital formation (GFCF). A significant positive correlation of 0.9948 between GDP and GNI was discovered, underscoring the importance of GDP in determining national income. It is important to note, nevertheless, that there is a modest negative correlation between GDP and FDI (-0.0314), indicating that foreign direct investment does not substantially contribute to any short-term GDP growth. At -0.0334, FDI has an even lower negative correlation with GNI as a mediator. suggesting that other economic factors may have an impact on its effect on national income. Inflation (INF) has a negative impact on income and economic growth, as evidenced by its significant inverse association with GDP (-0.6034) and GNI (-0.5889). Remarkably, it also has a negative correlation (-0.2739) with foreign direct investment (FDI), indicating that inflation may discourage foreign investment and reduce its ability to promote economic growth. The average exchange rate (ER_AVG), one of the moderating factors, has a positive connection with inflation (0.7321) but a negative correlation with GDP (-0.4190) and GNI (-0.4402). This suggests that exchange rate swings could exacerbate inflationary pressures, which in turn affect income levels. The moderately positive association between GFCF and GDP (0.5375) and GNI (0.5035) indicates that fixed asset investments can boost national income and economic growth. Its negative relationships with ER_AVG (-0.3954) and inflation (-0.7251), however, suggest that ambiguous macroeconomic conditions may be impeding efficient capital investment. In general, GDP shows up as a powerful predictor of GNI, whereas FDI plays a very minor role as a mediator. Inflation has a negative impact on GDP and national income, and changes in the exchange rate appear to make inflationary trends worse. Although capital creation investments are essential for generating income development, they are frequently impacted by erratic macroeconomic variables. The findings' primary conclusion is that increasing investment and promoting economic growth require stable exchange rate and inflation regimes. (Annex Table X)

CONCLUSION

The study's conclusions demonstrate how important foreign direct investment (FDI) is to Pakistan's economic expansion. GDP growth is directly impacted when investment moves into one industry while another has difficulties. But according to the research, agriculture hasn't actually profited from FDI, primarily because it isn't adjusting to new rules and is locked in antiquated technology. The industrial sector, on the other hand, has

experienced tremendous expansion as a result of FDI, drawing investments that have increased output. Sadly, other industries haven't been able to capitalize on the potential that comes with foreign investment. The field that focuses on integrating technology to increase labor efficiency is paradoxically the one that is seeing the most growth in foreign direct investment. Though inconsistent and frequently impacted by shifting regulations and outside shocks, the service industry has benefited somewhat from foreign direct investment. The effectiveness of these investments is also greatly influenced by other macroeconomic factors, such as inflation, capital formation, and currency rate stability, with inflation acting as a significant deterrent. Political stability and pro-business government policies are essential for drawing in and keeping foreign direct investment (FDI), according to historical trends of investment inflows. On the international front, nations like China and India have effectively tapped foreign direct investment (FDI) by means of robust policy frameworks, sector-specific incentives, and infrastructure support.

RECOMMENDATIONS

In order to ensure that foreign direct investment flows in a sustainable manner, the government must implement some investor-friendly policies, such as tax incentives, streamlined regulatory procedures, and eased business operations. We also need to fortify our institutional frameworks to effectively reduce bureaucratic obstacles and combat corruption.

We should concentrate on luring industrial and high-tech sectors that can yield the largest economic returns in order to significantly increase foreign direct investment (FDI). Improving policy support and infrastructure for agriculture is also essential to increase FDI absorption. Additionally, as IT and telecoms are known for their robust growth potential, we must invest in them to revitalize the services industry.

In order to increase our sources of foreign direct investment (FDI), we must strengthen our trade ties with both our neighbors and international economic organizations. Attracting investments in vital sectors such as manufacturing, energy, and infrastructure through a variety of programs, such as the China-Pakistan Economic Corridor (CPEC), should also be a priority.

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Annexure

Table - I

Country	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	2021 -22	2022 -23	2023 -24
China	126.1	90.6	695.8	340.8	1,048.30	763.2	1,311.90	130.8	846.6	751.6	531.6	432.2	568.2
UK	205.8	633	157	169.6	151.7	215.4	304.6	185	119.1	141	31.8	65	268.2
USA	227.7	227.1	212.1	223.9	15.7	45.7	161.7	88.1	99.2	166.4	249.6	89.3	137.3
Hong Kong	80.3	242.6	228.5	136.2	187	123	183.6	171	190.7	157.2	137.7	101	358.5
Switzerland	129.9	149	209.8	-6.5	59.5	101.7	78.5	21.2	62.8	61.7	146.2	134	28.7
U.A.E.	36.8	22.5	-47.1	235.3	114.6	120.1	-4.4	103.7	-44	115.7	143.9	180.1	87.3
Italy	200.1	199.4	97.6	115.4	105.4	61.5	56.6	51.9	57.4	36.3	34.8	8.6	1.9
Netherlands	22.3	-118.7	5.5	-34.5	29.9	457.6	100.3	69	133.2	96.9	104.1	71.9	71
Austria	69.1	53.3	53.8	24.8	42.7	21.7	27.4	7.6	3.8	1	0	-0.3	-1.7
Japan	29.8	30.1	30.1	71.1	35.4	57.7	59.8	117.3	52.5	-13	-12.3	183	10.9
Turkey	3.3	0.5	7.9	43.4	16.9	135.6	29.8	73.8	26.1	13.4	-0.3	17.6	11.1
Others	-310.5	-73	47.7	-285.7	585.8	303.4	470.5	343	1,076.20	305.7	500.7	173.4	360.2
Total	**820.7**	**1,456.50**	**1,698.60**	**1,033.80**	**2,392.90**	**2,406.60**	**2,780.30**	**1,362.40**	**2,597.50**	**1,820.50**	**1,867.80**	**1,455.80**	**1,901.60**

(https://invest.gov.pk/statistics is the source)

Table - II

Sector	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	2021 -22	2022 -23	2023 -24
Oil & Gas	629.4	559.6	502	300.5	249	146	372	349.8	311.4	251	195.3	135.1	303.6
Financial Business	64.4	314.2	192.8	256.4	289	297.3	400.3	286.5	274.8	236.4	405.3	275.1	208
Textiles	29.8	13.9	-0.2	43.9	20	15.5	49.7	76.8	37.7	2.6	3.6	11.5	2.4
Trade	25.3	5.1	-3.2	50.6	26.6	32.6	143	76.3	43.2	115.9	79.9	45.3	68
Construction	72.1	47.7	28.8	53.5	36.9	8.3	40.4	70.2	20.9	31.1	36.5	19	15.2
Power	-84.9	26.8	71.4	303.8	1,153.40	716	1,179.50	-323.9	765.6	911.7	737.6	622.6	799.9
Chemicals	30.5	96.3	-47.1	94.9	60.3	88.5	5.4	48.9	24	0.9	29.3	49.7	19.7
Transport	104.6	18.7	44.1	2.7	6.2	166.8	163.5	56.9	-1.5	-93.6	34.8	40.2	-12.8
Communication (IT&Telecom)	-313	-381.7	434.2	62.2	241.4	-49.2	113.5	-55.7	664	117.1	118.9	59.3	-129.9
Others	282.2	873.8	375.2	-103.4	121.3	1,071.20	375.7	739.2	457.4	247.4	226.6	198	627.5
Total	**820.7**	**1,456.4**	**1,698.6**	**1,033.8**	**2,392.9**	**2,406.6**	**2,780.3**	**1,362.4**	**2,597.5**	**1,820.5**	**1,867.8**	**1,455.8**	**1,901.6**

Table - III

Group unit root test: Summary
Series: GDP, FDI_PRI_, FDI_SEC, FDI_SERV_, GFCF, INF_, FDI_ER_AVG_, GNI
Date: 03/14/25 Time: 15:37
Sample: 2011 2023
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.82941	0.7966	9	106
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.79358	0.2137	9	106
ADF - Fisher Chi-square	35.4316	0.0083	9	106
PP - Fisher Chi-square	34.5634	0.0107	9	108

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table – IV

Date: 03/10/25 Time: 07:03
Sample (adjusted): 2013 2023
Included observations: 11 after adjustments
Trend assumption: Linear deterministic trend (restricted)
Series: GDP FDI PRI
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.806779	25.98531	25.87211	0.0484
At most 1	0.512459	7.902189	12.51798	0.2598

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.806779	18.08313	19.38704	0.0765
At most 1	0.512459	7.902189	12.51798	0.2598

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table – V

Date: 03/10/25 Time: 07:23
Sample (adjusted): 2013 2023
Included observations: 11 after adjustments
Trend assumption: Linear deterministic trend (restricted)
Series: GDP FDI SEC
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.787057	21.16372	25.87211	0.1726
At most 1	0.314250	4.149664	12.51798	0.7203

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.787057	17.01405	19.38704	0.1070
At most 1	0.314250	4.149664	12.51798	0.7203

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table – VI

Date: 03/10/25 Time: 07:34
Sample (adjusted): 2013 2023
Included observations: 11 after adjustments
Trend assumption: Linear deterministic trend (restricted)
Series: GDP FDI_SERV_
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.764482	21.44115	25.87211	0.1615
At most 1	0.395424	5.535514	12.51798	0.5214

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.764482	15.90564	19.38704	0.1493
At most 1	0.395424	5.535514	12.51798	0.5214

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table – VII

Vector Autoregression Estimates
Date: 03/14/25 Time: 19:21
Sample (adjusted): 2012 2023
Included observations: 12 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	FDI PRI	INF	ER AVG	GFCF
GDP(-1)	-0.318072	0.007010	0.857034	5.547520	0.064563
	(0.38407)	(0.01726)	(0.31067)	(1.11088)	(0.10003)
	[-0.82817]	[0.40604]	[2.75870]	[4.99383]	[0.64541]
FDI PRI (-1)	-5.928559	0.203611	6.791562	7.478270	-2.087778
	(8.52885)	(0.38338)	(6.89883)	(24.6688)	(2.22141)
	[-0.69512]	[0.53109]	[0.98445]	[0.30315]	[-0.93985]
INF (-1)	-0.356997	0.013332	0.969383	3.181846	-0.080079
	(0.24358)	(0.01095)	(0.19702)	(0.70452)	(0.06344)
	[-1.46566]	[1.21762]	[4.92013]	[4.51636]	[-1.26226]
ER AVG (-1)	-0.030830	-0.002351	0.128670	1.404483	-0.013445
	(0.03029)	(0.00136)	(0.02450)	(0.08760)	(0.00789)
	[-1.01793]	[-1.72693]	[5.25205]	[16.0323]	[-1.70430]
GFCF(-1)	-1.554203	0.041048	1.742563	11.40712	-0.030586
	(1.31151)	(0.05895)	(1.06086)	(3.79340)	(0.34159)
	[-1.18505]	[0.69628]	[1.64260]	[3.00710]	[-0.08954]
C	37.04799	-0.323433	-46.77989	-260.0123	18.37776
	(21.2439)	(0.95495)	(17.1838)	(61.4458)	(5.53315)
	[1.74393]	[-0.33869]	[-2.72232]	[-4.23157]	[3.32139]
R-squared	0.481087	0.605703	0.951764	0.991735	0.687442
Adj. R-squared	0.048659	0.277122	0.911567	0.984847	0.426977
Sum sq. resids	33.89573	0.068491	22.17767	283.5703	2.299431
S.E. equation	2.376823	0.106842	1.922571	6.874716	0.619063
F-statistic	1.112525	1.843388	23.67750	143.9854	2.639290
Log likelihood	-23.25756	13.96850	-20.71234	-36.00258	-7.113794
Akaike AIC	4.876260	-1.328084	4.452056	7.000431	2.185632
Schwarz SC	5.118713	-1.085630	4.694510	7.242884	2.428086
Mean dependent	3.780236	0.196411	8.910985	140.9122	15.39434
S.D. dependent	2.436850	0.125663	6.465087	55.84764	0.817803

Determinant resid covariance (dof adj.)	0.408981
Determinant resid covariance	0.012781
Log likelihood	-58.97738
Akaike information criterion	14.82956
Schwarz criterion	16.04183
Number of coefficients	30

Table – VIII

Vector Autoregression Estimates
Date: 03/14/25 Time: 19:46
Sample (adjusted): 2012 2023
Included observations: 12 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	FDI SEC	INF	GFCF	ER AVG
GDP(-1)	-0.288171	-0.019828	0.770879	0.079789	5.474859
	(0.35035)	(0.02307)	(0.31845)	(0.09818)	(1.09065)
	[-0.82253]	[-0.85963]	[2.42072]	[0.81268]	[5.01980]
FDI SEC(-1)	6.423498	-0.182889	2.713171	1.350831	-1.321446
	(5.42020)	(0.35685)	(4.92674)	(1.51894)	(16.8735)
	[1.18510]	[-0.51252]	[0.55070]	[0.88933]	[-0.07832]
INF (-1)	-0.323513	-0.023177	1.035162	-0.077709	3.209724
	(0.23048)	(0.01517)	(0.20950)	(0.06459)	(0.71751)
	[-1.40363]	[-1.52736]	[4.94111]	[-1.20312]	[4.47341]
GFCF(-1)	-1.763392	0.002833	1.683346	-0.077214	11.46978
	(1.23745)	(0.08147)	(1.12479)	(0.34678)	(3.85227)
	[-1.42502]	[0.03477]	[1.49659]	[-0.22266]	[2.97741]
ER AVG (-1)	-0.028794	0.002986	0.106162	-0.010902	1.388330
	(0.02277)	(0.00150)	(0.02070)	(0.00638)	(0.07089)
	[-1.26443]	[1.99166]	[5.12887]	[-1.70836]	[19.5840]
C	37.05130	0.107705	-42.36293	17.97895	-257.0400
	(19.6581)	(1.29422)	(17.8684)	(5.50892)	(61.1971)
	[1.88479]	[0.08322]	[-2.37083]	[3.26361]	[-4.20020]
R-squared	0.545651	0.493197	0.946668	0.683189	0.991617
Adj. R-squared	0.167027	0.070860	0.902225	0.419180	0.984631
Sum sq. resids	29.67834	0.128639	24.52049	2.330721	287.6196
S.E. equation	2.224048	0.146423	2.021571	0.623260	6.923626
F-statistic	1.441142	1.167782	21.30057	2.587747	141.9414
Log likelihood	-22.46033	10.18665	-21.31488	-7.194890	-36.08765
Akaike AIC	4.743388	-0.697776	4.552480	2.199148	7.014609
Schwarz SC	4.985841	-0.455322	4.794933	2.441602	7.257062
Mean dependent	3.780236	0.218827	8.910985	15.39434	140.9122
S.D. dependent	2.436850	0.151904	6.465087	0.817803	55.84764

Determinant resid covariance (dof adj.)	0.128865
Determinant resid covariance	0.004027
Log likelihood	-52.04794
Akaike information criterion	13.67466
Schwarz criterion	14.88692
Number of coefficients	30

Table – IX

Vector Autoregression Estimates
Date: 03/14/25 Time: 19:58
Sample (adjusted): 2012 2023
Included observations: 12 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	FDI SERV	INF	GFCF	ER AVG
GDP(-1)	-0.235122	-0.008761	0.767392	0.108562	5.241167
	(0.40253)	(0.01658)	(0.33750)	(0.10339)	(1.08063)
	[-0.58411]	[-0.52835]	[2.27377]	[1.04999]	[4.85011]
FDI SERV (-1)	1.324372	-0.355138	-1.159827	1.448205	-15.06356
	(7.37026)	(0.30361)	(6.17957)	(1.89314)	(19.7863)
	[0.17969]	[-1.16971]	[-0.18769]	[0.76498]	[-0.76131]
INF (-1)	-0.387000	-0.020575	1.004543	-0.088472	3.190059
	(0.24823)	(0.01023)	(0.20813)	(0.06376)	(0.66640)
	[-1.55905]	[-2.01207]	[4.82662]	[-1.38758]	[4.78704]
GFCF(-1)	-1.579707	-0.038853	1.769913	-0.044697	11.50926
	(1.35990)	(0.05602)	(1.14020)	(0.34931)	(3.65081)
	[-1.16163]	[-0.69356]	[1.55228]	[-0.12796]	[3.15253]
ER AVG (-1)	-0.016935	0.001491	0.112479	-0.009298	1.397150
	(0.02288)	(0.00094)	(0.01918)	(0.00588)	(0.06141)
	[-0.74029]	[1.58235]	[5.86438]	[-1.58248]	[22.7502]
C	34.12513	0.840750	-43.46035	17.26934	-255.2461
	(21.6275)	(0.89093)	(18.1335)	(5.55528)	(58.0615)
	[1.57786]	[0.94368]	[-2.39669]	[3.10863]	[-4.39613]
R-squared	0.442299	0.500033	0.944299	0.673292	0.992347
Adj. R-squared	-0.022452	0.083395	0.897882	0.401036	0.985970
Sum sq. resids	36.42937	0.061819	25.60954	2.403530	262.5512
S.E. equation	2.464054	0.101505	2.065976	0.632920	6.615024
F-statistic	0.951690	1.200160	20.34373	2.473008	155.6085
Log likelihood	-23.69007	14.58340	-21.57561	-7.379453	-35.54050
Akaike AIC	4.948346	-1.430566	4.595935	2.229909	6.923417
Schwarz SC	5.190799	-1.188113	4.838389	2.472362	7.165870
Mean dependent	3.780236	0.161787	8.910985	15.39434	140.9122
S.D. dependent	2.436850	0.106022	6.465087	0.817803	55.84764

Determinant resid covariance (dof adj.)	0.288407
Determinant resid covariance	0.009013
Log likelihood	-56.88160
Akaike information criterion	14.48027
Schwarz criterion	15.69253
Number of coefficients	30

Table – X

	GNI	GDP	FDI	INF	ER AVG	GFCF
GNI	1.000000	0.994824	-0.033392	-0.588871	-0.440181	0.503477
GDP	0.994824	1.000000	-0.031431	-0.603438	-0.419042	0.537506
FDI	-0.033392	-0.031431	1.000000	-0.273945	-0.064382	0.005520
INF	-0.588871	-0.603438	-0.273945	1.000000	0.732136	-0.725099
ER ...	-0.440181	-0.419042	-0.064382	0.732136	1.000000	-0.395373
GFCF	0.503477	0.537506	0.005520	-0.725099	-0.395373	1.000000