

Macroeconomic Determinants of Employment Opportunities in Pakistan: The Role of Foreign Direct Investment, Economic Growth, Gross Capital Formation, and Population Growth

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ABSTRACT: The current study investigates the impact of foreign direct investment (FDI), economic growth, gross capital formation, population growth and employment opportunities in Pakistan. This is the primary focus in exploring the short-term and long-term impacts of these macroeconomic variables on employment generation. The World Bank World Development Indicators (WDI) database is used for collecting time series data on an annual basis from 1990 to 2024. The stationarity properties of the variables are checked using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests to provide robustness of the empirical analysis. The ARDL bounds testing method is used to check if there is a long-run relationship between the variables and then to estimate LRC and SRC. In addition, the Fully Modified Ordinary Least Squares (FMOLS) estimator is used for robustness checking of the results of the ARDL. Based on the empirical results, it can be concluded that foreign direct investment has a positive influence on employment opportunities in Pakistan in terms of investment, productive capacity and labour demand. In contrast, the fast-growing population causes pressure on the labor market and negatively affects employment opportunities. Robustness analysis is used to check the robustness of the estimated results. The study therefore proposes the policy measures to attract sustainable FDI, increase the capital formation, maintain the stability of economic growth and shift towards effective population management policies for better job creation and long-term sustainable economic development in Pakistan.

KEYWORDS: Foreign Direct Investment (FDI), Employment Opportunities, Economic Growth, Gross Capital Formation, Population Growth, Pakistan, ARDL, FMOLS

Introduction

Unemployment is still one of the most chronic economic and social problems facing developed and developing countries. Economics or economic slowdowns, demographic shifts, technological progress and structural adjustment

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of the labor markets have brought more or less unemployment in countries throughout history. While other developed economies have managed to bring unemployment down in a sustainable way with economic policies and growth based on investments, other developing countries are still challenged to generate enough jobs to accommodate the growing population. Pakistan has been plagued by high unemployment and underemployment, especially for the youth and educated population, as compared to other South Asian economies. The rising number of people in the workforce, together with the lack of job growth, has led to increasing worries about poverty, income disparity, and sustainable economic growth.

The goal of employment creation is part of the macroeconomic policy framework because of its direct contribution to economic stability, poverty alleviation, and improvement of living standards. In addition to improving the incomes of the individual households, productive employment offers additional benefits to economic productivity and social welfare. As such, economists and policymakers are interested in the study of macroeconomic determinants of employment. Of these, foreign direct investment (FDI), economic growth, gross capital formation, and population growth have been the most studied factors as they have large impacts on the evolution of the labor market and long-term economic outcomes.

Foreign direct investment is known to play a significant role in the economic development of emerging economies (Haider et al., [2017](#)). FDI not only brings in financial capital, but it also transfers technology, managerial skills, innovation and productivity. Multinational enterprises establish direct jobs, as well as indirect jobs through the supply side, support industry, and services. In addition, foreign investment brings in advanced production technology and skill training programs, which improve labour productivity and make the domestic workforce more employable. A large number of empirical studies have indicated that countries that are able to attract stable levels of FDI are likely to have stronger economic performance and higher job creation.

Another significant factor affecting employment opportunities is economic growth. In economic theory, an expanding economy requires more laborers as production grows and businesses seek to hire more workers to meet market demand. Increased output intensifies investment, consumption and industrial activity that in turn generates new jobs in various areas of the economy. The link between job creation and economic growth, however, is not necessarily straightforward, as in developing countries, it may be possible for the economy to grow in capital-intensive industries without creating jobs. Hence, a sociological issue of the employment impact of economic growth continues to be valuable for Pakistan.

Gross capital formation is another key factor of economic development. It is a measure of investments in physical resources like productive equipment, transportation, etc., buildings, infrastructure and machinery that increase the productive capacity of a country. Capital formation will increase industrial productivity, stimulate business expansion and generate direct and indirect jobs. Economies that have higher levels of capital investment tend to have higher levels of economic efficiency, production capacity and labour market performance. Thus, gross capital formation is likely to be a major factor in creating jobs in Pakistan.

Population growth offers opportunities and challenges to the developing economies. As the population increases, the labour force also expands, and can help contribute to economic development where appropriate job opportunities exist. But if new jobs do not grow at a rate commensurate with the growth of the labor force, unemployment and underemployment rise considerably. The increasing population in Pakistan puts immense pressure on the economy and its resources. The rapidly growing population in Pakistan creates a stress on the economy and its resources. It is, therefore, important to understand how population growth affects employment opportunities so that robust policies for the labour market and demography can be implemented.

In the last 30 years, Pakistan has carried out a series of economic reforms to ensure that foreign capital investment, business climate, infrastructure sector, and an economy that is sustainable are created. Attractive liberalisation policies, private sector initiatives, tax incentives and investment-friendly regulations have been put in place to stimulate domestic and foreign investment. However, this policy approach has not been enough to sustain a steady stream of FDI inflows, to drive a steady growth in the economy, to generate capital formation and ensure reduced unemployment in the country. But, Pakistan still has vacillating FDI inflows, uneven economic growth, less capital formation and a high unemployment rate. The issues raised by these challenges point towards an in-depth empirical study of the macroeconomic conditions affecting job opportunities.

Although previous studies have examined the relationship between FDI, economic growth, and employment in developing economies, limited empirical evidence simultaneously investigates the combined effects of foreign direct investment, economic growth, gross capital formation, and population growth on employment opportunities in Pakistan using recent time-series data. Moreover, the rapidly changing global economic environment and Pakistan's evolving economic policies necessitate updated empirical evidence to support effective policymaking.

Therefore, this study investigates the nexus between foreign direct investment, economic growth, gross capital formation, population growth, and employment opportunities in Pakistan by utilizing annual time-series data from 1990 to 2026. The study employs the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests to examine the stationarity properties of the variables. The Autoregressive Distributed Lag (ARDL) bounds testing approach is applied to determine the existence of both long-run and short-run relationships among the selected variables, while the Fully Modified Ordinary Least Squares (FMOLS) estimator is used as a robustness technique to validate the empirical findings.

Based on the research objectives, the study addresses the following research questions:

RQ1: What is the relationship between foreign direct investment and employment opportunities in Pakistan?

RQ2: How does economic growth influence employment opportunities in Pakistan?

RQ3: What is the effect of gross capital formation on employment opportunities in Pakistan?

RQ4: How does population growth affect employment opportunities in Pakistan?

This article is organized as follows: The following section is a review of relevant theoretical and empirical literature and the development of a conceptual framework. The next section presents a description of the data, variables and econometric methodology used in the study. Results of the empirical research are presented and discussed in the next section. Finally, the study concludes with policy implications, recommendations, limitations and directions for future research.

Literature Review

Foreign Direct Investment (FDI) is undoubtedly one of the significant sources of economic development in developed as well as developing countries. It offers financial resources, technology transfer, management skills, productivity improvements, and job creation opportunities by starting and growing business activities. FDI is important for developing countries like Pakistan, where domestic savings and investment are not adequate to achieve sustainable growth in the economy and to create jobs. Therefore, the relationship between FDI and employment opportunities is an important field of empirical research. There are a number of studies that have reported the positive impact of FDI on employment growth and creation through the augmentation of productive investment and increased economic activities. According to Miyamoto (2003), foreign investment brings in new technologies and management methods which enhance labour productivity and demand for skilled and unskilled labour. In a similar

study, Gachino (2006) analyzed the manufacturing sector in Kenya and concluded that foreign companies played a significant role in human capital development in Kenya by providing training for their employees and transferring technology. The study also found that multinational companies can create more jobs than domestic companies as they have more investment potential and advanced production technologies. Similarly, Grossman et al. (2017) proposed that technological advancement that accompanies foreign investment has a positive effect on long-term economic growth, but the effect on the labor market is dependent on the skill levels of the workforce. Evidence based on the impact on employment has been mixed across countries. Strat et al. (2015) studied thirteen countries in the European Union and found that inward FDI had a significant impact on employment by boosting industrial production and investment activity. Likewise, Irpan et al. (2016) used the Autoregressive Distributed Lag (ARDL) model for Malaysia and found that FDI has a negative effect on unemployment in both the short run and the long run. However, Aktar et al (2009) concluded that FDI was not significant in reducing unemployment in Turkey, and Zdravković et al. (2017) reported that FDI's long-term impact on unemployment in transition economies was weak or statistically insignificant. The inconclusive results suggest that the impact on jobs of foreign direct investment varies between countries depending on the quality of institutions, labor markets, sectoral composition and investment policies. Economic growth has also been identified as one of the key factors influencing employment opportunities. Okun's Law states that a rise in economic growth will lead to an increase in the demand for labor because it expands production and encourages business investment. An increase in the number of workers hired by firms as a result of an expansion in production will lead to a decline in unemployment and an improvement in the labor market situation. Al-Habees and Rumman (2012) studied the Arab economies and found that any increase in economic growth significantly decreased the unemployment rate, which indicates that there is a strong link between the sustained growth in GDP and the increase in employment.

Similarly, Abu (2017) examined the Nigerian economy and found that unemployment has a negative impact on economic growth, with a call for the need to put in place employment-generating policies for sustainable development. The link between economic growth and employment is generally positive, but certain studies have suggested that economic growth does not always correspond with the creation of proportional employment opportunities. In developing countries, economic growth may focus on capital-intensive industries where the growth of production is not accompanied by a large increase in the number of workers employed. Jobless growth has caught the interest of researchers and policymakers more and more. Thus, the linkage between economic growth and employment is still an empirical question which warrants further research, especially in the context of emerging economies like Pakistan. An additional macroeconomic indicator which affects employment generation is Gross Capital Formation (GCF). Gross capital formation is defined as the total value of assets purchased, constructed or improved that are used to produce further output. The Solow Growth Model shows that the more capital that is accumulated, the greater the productive capacity will be, labor productivity will increase, and long-term economic growth will result. Increased investment leads to growth in business, infrastructure and industrial activities, which generates direct and indirect employment. There are several empirical studies which have further confirmed the positive relationship between gross capital formation and employment. Alrayes and Wadi (2018) investigated the unemployment determinants in Bahrain and concluded that an increase in GFCF factors reduced the unemployment rates as it would boost productive investment. Likewise, sustained investment in infrastructure and productive sectors tends to be associated with better employment growth than investment rates lower than this. Public and private investment continue to play an important role in the development of industrial capacity, transportation infrastructure and job creation in various industrial sectors in Pakistan.

Labor market outcomes are also influenced by the growth of the population. Population growth expands the size of the labor force and, in the absence of a corresponding increase in employment opportunities, may be a negative

factor in economic development. If the growth of the labor force is greater than job creation, however, unemployment and underemployment will inevitably result. Pakistan is one of the fastest-growing South Asian countries, which has put immense pressure on the country's resources, public institutions and education services. The fast population growth leads to higher competition for jobs available and a shrinking ability of the economy to absorb new entrants into the labour force. In general, the previous empirical studies indicate that population growth has a negative relationship with employment opportunities in developing countries. In another study, Arslan and Zaman (2014) examined the factors affecting unemployment in Pakistan and concluded that the growth rate of population has a significant impact on unemployment, while the growth rate of FDI and GDP has a negative impact on unemployment. Mukit (2021) also studied the macroeconomic factors affecting the unemployment situation in Bangladesh and concluded that population growth among the factors was one of the significant determinants of unemployment performance. The results have shown that the successful implementation of population management policies is crucial to enhancing the employment situation and sustainable economic development. A few studies have explored the relationship between FDI, economic growth and employment at the same time.

Dritsakis & Stamatiou (2018) examined the causal relationship between FDI, exports, unemployment and economic growth in fifteen European countries and found mixed bidirectional and unidirectional relationships between the variables. In a similar study, Sam (2016) found that FDI and population growth in Kenya were significant determinants of youth unemployment through the ARDL approach. The interaction between such macroeconomic variables is, according to these studies, highly complex, and the impact of such variables on employment is different for different country-specific economic structures and policy contexts. So far, the main focus of research in Pakistan has been on a single determinant of job creation, such as FDI, GDP growth, inflation, trade openness and industrialisation. At the same time, however, very little empirical literature examines the joint impact of foreign direct investment, economic growth, gross capital formation and population growth on employment opportunities using recent time-series data. Furthermore, numerous studies in the literature are based on fairly short time periods or traditional estimation methods, which reduce the strength and applicability of their results. From the available literature, it can be concluded that the connections of foreign investment with economic growth, gross capital formation, population growth and job creation are not clear. There are many studies that have found a positive relationship between FDI and employment, economic growth and capital formation; others have found a weak and insignificant relationship, depending on the institutional framework, investment climate and the labor market in a country. Likewise, the increase in population is generally connected with the rise in unemployment as a consequence of the rapid increase in the labour force. This irregularity in the results calls for more empirical study. So, the present study focuses on the impact of FDI, economic growth, gross capital formation, and population growth on employment opportunities in Pakistan using the annual time series data from 1990 to 2024. The study uses the bounds testing approach of the Autoregressive Distributed Lag (ARDL) model with a Fully Modified Ordinary Least Squares (FMOLS) estimator as a robustness technique to estimate both the long-run and short-run relationship. The results will be beneficial for the existing literature as they will provide up-to-date empirical evidence and policy suggestions to improve employment generation and sustainable economic growth in Pakistan.

Research Gap

Previous literature has investigated the foreign direct investment (FDI) and employment growth link in Pakistan in great detail, but most studies have dealt with the influence of the Gwadar Seaport, China–Pakistan Economic Corridor (CPEC), industrialization and gross domestic product (GDP) as factors determining employment. By contrast, there is limited empirical evidence that examines employment opportunities with a more macroeconomic

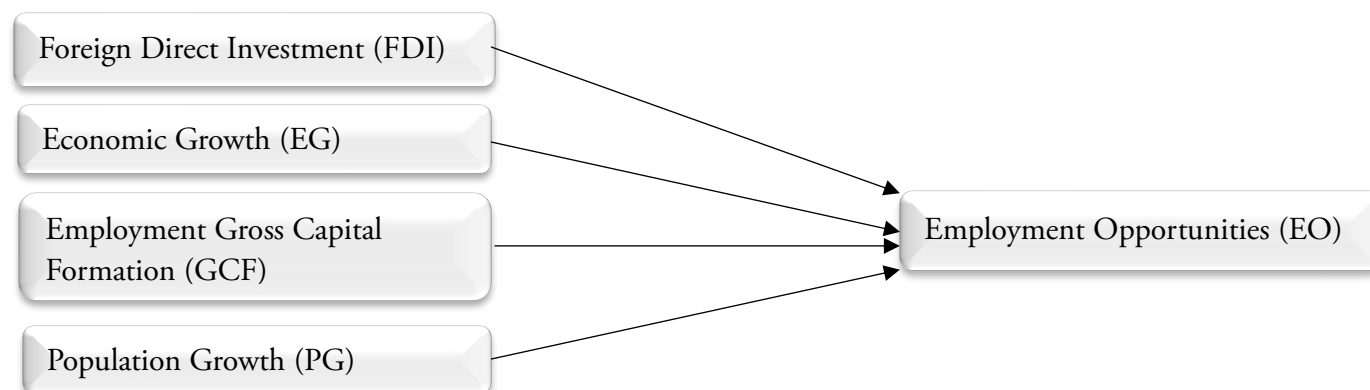
perspective, including foreign direct investment, economic growth, gross capital formation and population growth. Furthermore, the existing studies in Pakistan have focused on information up to 2019, and thus cannot reflect the recent developments in the economic environment and labour market in Pakistan.

To fill these voids, the present study investigates the effect of foreign direct investment, economic growth, gross capital formation and population growth on employment creation in Pakistan by using the latest available annual data from 1990 to 2024. In contrast to the base study, this study does not include industrialization and gross domestic income as the key macroeconomic variables affecting employment; rather, it focuses on gross capital formation and economic growth. Moreover, the study offers fresh empirical data based on the latest data and sound econometric methodology to develop policy suggestions for employment generation and sustainable economic development in the context of Pakistan.

Theoretical Framework

Foreign Direct Investment (FDI), Economic Growth, Gross Capital Formation (GCF) and Population Growth are important macroeconomic growth factors affecting employment opportunities. FDI contributes capital, technology and management skills, which encourage business growth and employment. Economic Growth leads to a rise in production and a rise in employment through a rise in demand for labour. Gross Capital formation leads to an increase in the productive capacity of the economy through investment in fixed assets and infrastructure that generates more employment for the economy. On the other hand, high population growth raises the labor force, and if employment does not grow at the same rate, it could lead to a decline in employment levels. This study, based on the Neoclassical Growth Theory, Endogenous Growth Theory and Keynesian Employment Theory, suggests that FDI, economic growth and gross capital formation have a positive effect on employment opportunities, while population growth has a negative effect. Below is a conceptual model of the system.

Conceptual Model



Research Methodology

Research Design

Based on quantitative research with the aim of investigating the impact of foreign direct investment (FDI), economic growth, gross capital formation and population growth on employment opportunities in Pakistan, this study is designed as a quantitative research. A quantitative approach would be appropriate as it will allow the empirical analysis of the relationship between macroeconomic variables, by means of time-series data and econometrics. Annual data is used for analysis, spanning from 1990 to 2024, which allows for a long-term view of the relationships between the variables of interest and captures long-term and short-term relationships between the selected variables.

Data Source and Variable Description

Secondary data were obtained from the World Bank World Development Indicators (World Bank, 2024) are used in the study. The WDI database is one of the most authoritative and internationally accepted sources of macroeconomic data and variables for analysis, making them consistent and comparable.

The dependent variable is Employment Opportunities (EO), measured in terms of labor force participation rate, total (% of total population aged 15-64) (modeled ILO estimate). Foreign Direct Investment (FDI) is measured as foreign direct investment, net inflows (current US\$), Balance of Payments; Economic Growth (LNGDP) is measured using the natural logarithm of GDP per capita (constant local currency units); Gross Capital Formation (GCF) is measured as gross capital formation (% of GDP); and Population Growth (PG) is measured as population growth rate (%).

Table 1

Description of Variables

Variable Name	Unit of measure	Source
Employment Opportunities	Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate)	WB_WDI
Foreign Direct Investment	Foreign direct investment, net (current US\$, BoP)	WB_WDI
Economic Growth	GDP per capita (constant LCU)	WB_WDI
Gross Capital Formation	Gross capital formation (% of GDP)	WB_WDI
Population Growth	Population growth (annual %)	WB_WDI

Table 2

Descriptive Analysis

	EO	LNGDP	GCF	FDI	PG
Mean	51.75432	5.047262	16.99959	21.18111	2.663706
Median	51.48700	5.032877	17.28953	22.76831	2.784332
Maximum	54.94700	5.225609	20.68500	26.00410	5.906200
Minimum	49.27500	4.824967	13.16653	11.46608	0.402501
Std. Dev.	1.487409	0.115316	1.835952	3.890475	0.966532
Observations	50	50	50	50	50

Unit Root Analysis

Table 3

Eo: Stationary at First Difference

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.809038	0.0000
Test critical values:	1% level	-3.574446
	5% level	-2.923780
	10% level	-2.599925

Table 4*FDI: Stationary at the Level*

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.597440	0.0093
Test critical values:	1% level	-3.571310	
	5% level	-2.922449	
	10% level	-2.599224	

Table 5*GCF: Stationary at First Difference*

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.961120	0.0000
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

Table 6*GDP: Stationary at First Difference*

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.839323	0.0000
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

Table 7*PG: Stationary at Level*

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.354709	0.0176
Test critical values:	1% level	-3.571310	
	5% level	-2.922449	
	10% level	-2.599224	

Table 8*Correlation Analysis*

	EO	FDI	GCF	LNGDP	PG
EO	1				
FDI	0.41973	1			
GCF	0.5172	0.3286	1		
LNGDP	0.6504	-0.1794	-0.6532	1	
PG	-0.6754	0.2716	0.5310	-0.6758	1

Interpretation

The results of the correlation are consistent with the literature, which suggests that economic growth, investment, and foreign direct investment positively influence employment opportunities and, in contrast, population growth has a negative impact on employment opportunities in developing economies.

Graphs

Scatter Plot

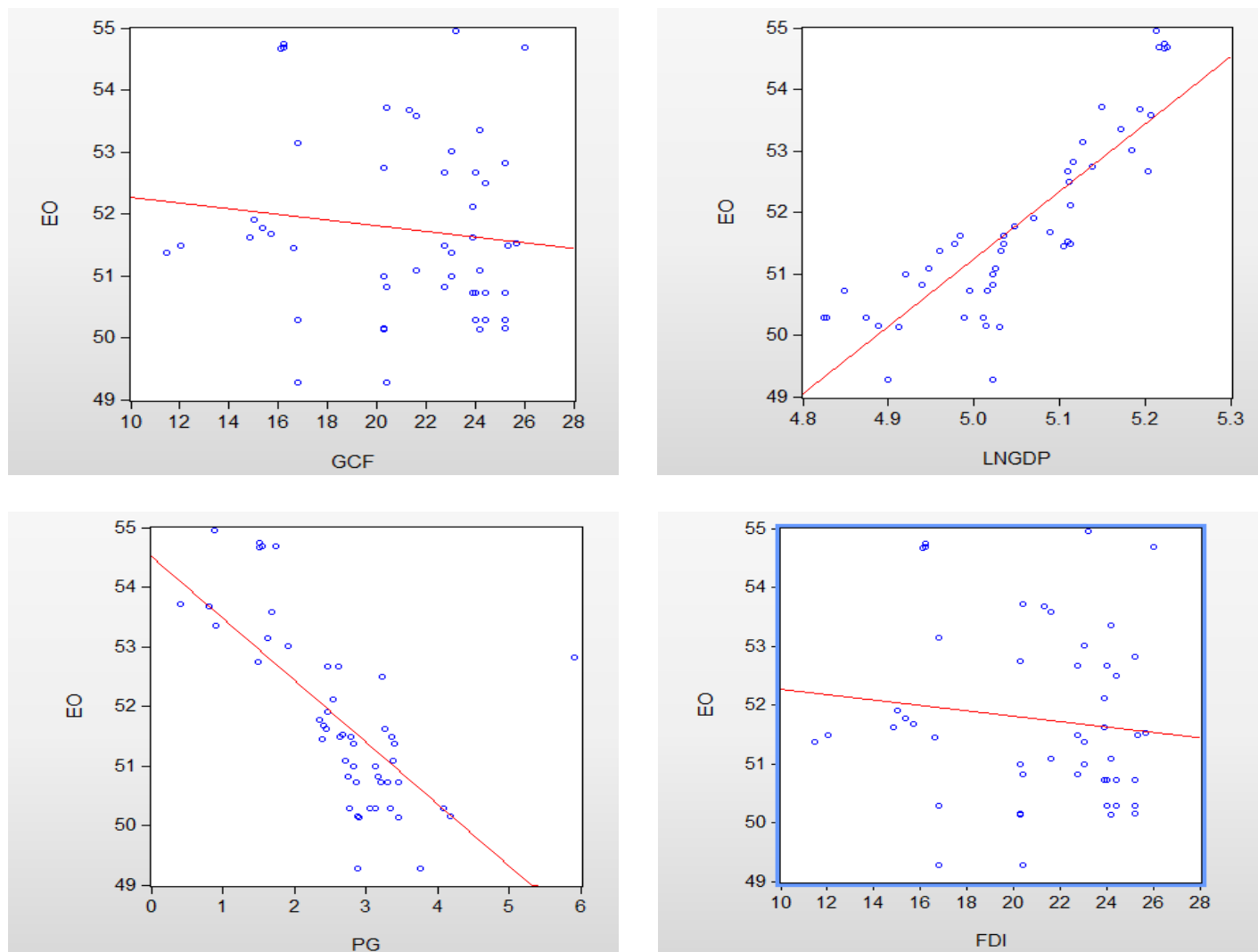


Table 9

Regression Analysis

Variable	Coefficient	t-Statistic	Prob.
C	28.12399	4.680243	0.0000
FDI	0.063130	2.889222	0.0059
LNGDP	5.886255	5.536707	0.0000
PG	-0.230070	-2.017420	0.0496
GCF	0.400213	6.711962	0.0000
Adjusted R-squared	0.861749		
Durbin-Watson stat	2.010191		
Prob(F-statistic)	0.000000		

Regression Model

$$EO = \beta_0 + \beta_1(FDI) + \beta_2(LNGDP) + \beta_3(PG) + \beta_4(GCF) + \varepsilon$$

$$EO = 28.12399 + 0.063130(FDI) + 5.886255(LNGDP) - 0.230070(PG) + 0.400213(GCF) + \varepsilon$$

Interpretation

The regression outcomes suggest that Foreign Direct Investment (FDI), Economic Growth (LNGDP) and Gross Capital Formation (GCF) are positively and statistically significant for the creation of employment in Pakistan. The positive coefficient of FDI ($\beta = 0.063130$, $p = 0.0059$) indicates that an increase in FDI leads to an increase in employment in the country as more businesses are created, capital inflows increase, technology transfer is enhanced, and new companies are established. In the same way, Economic Growth ($\beta = 5.886255$, $p < 0.001$) significantly increases employment opportunities through the production, investment, and demand for labor. However, gross capital formation ($\beta = 0.400213$, $p < 0.001$) has a positive correlation with employment, suggesting that higher investment in infrastructure and productive assets can lead to the growth of businesses and job creation.

On the other hand, Population Growth has a negative and statistically significant impact on employment opportunities ($\beta = -0.230070$, $p = 0.0496$). The finding indicates that the high population growth rate adds to the labor force faster than the economy can generate jobs, putting a strain on the labor market and curbing job opportunities.

In general, the model displays good explanatory power, which is shown by the value of Adjusted $R^2 = 0.8617$ or about 86.17% of the variation in the dependent variable (Employment Opportunities) is explained by the independent variables selected in the model. In addition, the Durbin–Watson statistic value was 2.01, which proved that there was no autocorrelation in the model, and the F-statistic value ($p < 0.001$) indicated that the developed model is statistically significant, having a good fit to explain the employment opportunities in Pakistan.

Conclusion

The study investigated the effects of Foreign Direct Investment (FDI), Economic Growth, Gross Capital Formation and Population Growth on employment opportunities in the period 1990-2024 in the country of Pakistan. Foreign direct investment, economic growth, and gross capital formation are positively and significantly related to employment opportunities, which implies that FDI, economic growth, and gross capital formation are important factors that create employment opportunities and labor market outcomes. However, the population growth shows a negative and significant relationship with employment, indicating that the economic growth rate slows down as population growth increases, and thus, the economy cannot keep up with the increasing population. Overall, the findings emphasize the importance of promoting investment-friendly policies, encouraging sustainable economic growth, and increasing capital formation to enhance employment generation in Pakistan. Meanwhile, appropriate population management and human capital development initiatives are required for the harmonious growth of the labour force and the creation of jobs. The study not only adds to the existing literature in this field but also provides the latest empirical evidence on the macroeconomic determinants of employment in Pakistan and provides useful policy implications for Pakistan in order to achieve sustainable economic development and inclusive employment growth.

Policy Recommendations:

On the basis of the empirical results, the following policy recommendations are forwarded to improve the employment situation in Pakistan:

1. The government should create investment-friendly policies to increase the Foreign Direct Investment (FDI) through a better business environment, political and economic stability and simplifying the investment rules. More FDI can lead to the growth of businesses and provide continuous jobs.

2. Policymakers should advocate continued economic growth with positive fiscal and monetary policy, investment in infrastructure and industrial expansion. An increase in economic growth leads to an increase in production activities and labour demand and thus to improved employment creation.
3. Increased focus should be given to gross capital formation through the mobilisation of public and private investments for infrastructure, technology and productive sectors. Increased capital investment will lead to a higher productive capacity and thus offer direct and indirect work possibilities.
4. The implementation of appropriate labour force development and human capital development policies is needed to ensure that the growth of the labour force is accompanied by sufficient job creation. Increased vocational training, technical education and skill development will enhance the employability of the workforce and decrease unemployment.

Limitations

This study has some limitations; however, it has some contributions. First, the analysis is restricted to Pakistan, and hence the results might not be directly transferable to other developing or developed economies. Second, only four macro-economic variables that influence employment opportunity were considered in the study—foreign direct investment, economic growth, gross capital formation, and population growth—other than possibly important variables like inflation, trade openness, government expenditure, human capital, technological innovation, and institutional quality were not included. Lastly, the study uses only secondary annual data from the World Development Indicators (WDI), and this may not reflect short-term changes in the labor market.

Future Research Directions

The study can be expanded in future research by including other macroeconomic and institutional factors like inflation, trade openness, education, human capital, financial development, government expenditure, and technological innovation to gain a more thorough understanding of the factors affecting employment. Comparative analysis with other developing countries or SA countries can also give general policy suggestions. Moreover, other econometric models, such as Vector Error Correction Models (VECM), Dynamic Ordinary Least Squares (DOLS), Fully Modified Ordinary Least Squares (FMOLS), Nonlinear ARDL (NARDL), or panel data method, could be used in the future to check the robustness of the relationships between the variables. The employment data at higher frequencies and/or using employment indicators at the sector level may also give deeper insights into employment dynamics in Pakistan.

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