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Effect of Internal and External Investment on Economic Growth and Unemployment of Pakistan

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Abstract

This study focuses on the impact of internal and external investments on the unemployment rate and economic growth in Pakistan. The study uses data consisting of the period 1984-2019. For the empirical estimation of the results, the Autoregressive Distributed Lags (ARDL) Model was used for short-run and long-run ARDL-Bound test approach use. The study's empirical results suggest that internal investment increases the short-run as well as long-run GDP growth in Pakistan. Similarly, internal investment also decreases the long-run as well as short-run unemployment in Pakistan. On the other hand, foreign investment has only a short-run favorable impact on both Pakistan's unemployment and economic growth. The short-run effect of foreign investment did not transmit into the long run because empirical evidence depicts the foreign investment's insignificant impact on the unemployment rate and economic growth of Pakistan in the long run. The findings of the study ended with the policy measures and suggestions to channel the effect of foreign and internal investment.

Keywords: Internal Investment, External Investment, GDP Growth, Unemployment

Introduction

Foreign direct investment (FDI) has emerged as a crucial source of external resources inflow to the low-and middle-income countries. It is also an important source of capital formation in an economy. While its share is declining over time globally, its economic importance in an economy is meritorious. The effect of FDI is considered as a growth-oriented phenomenon in the developing economies (Khan, 2007). The outcomes of FDI in recipient economies are associated with lowering unemployment, enhancing productivity, increasing foreign reserves, stabilizing the exchange rate, boosting exports, and enlarging the momentum of technology transfer. The prospective benefit of FDI to the recipient economy is the deployment of raw materials

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produced locally, enrichment the modern techniques of management, access to better and new technology, ease to current account deficit, and enriching the human capital stock level by providing access to training related to job.

In the literature on growth-stimulating factors, the growth-accelerating role of FDI is well documented by Solow (1956); Swan (1956); Grossman and Helpman (1991). Similarly, amongst others, Lucas (1988); Romer (1986), in the theoretical framework of the neoclassical growth model, the FDI inflow may increase technological progress (which is exogenous in the model) by enhancing the level of capital formation and technology advances (Todaro & Smith, 2006). Modern growth theory considers technological progress as an endogenous variable and states that FDI may play an important role in technology creation, its spill-over effect, higher technology advances, and improvement the human capital accumulation which have an everlasting effect on economic growth (Grossman & Helpman, 1991). Both models acknowledged the impact of Foreign Direct Investment (FDI) on the economic growth of an economy.

FDI is also associated with the increasing return to scale for local enterprises due to external economies of scale (Bhagwati, 1994) it also increase the investment in the research and developments (R&Ds) in local enterprises (Calvo & Sanchez-Robles, 2001). It has been also observed that FDI inflows increased toward developing countries amid the period of 1985 to 2000. The estimated share of FDI in 1990 was 17.4% and it approaches to 26.1% on 2000. While the phenomena for Pakistan is not different being the developing country. The volume of FDI inflow increase almost 20-fold in 2006 when compare with the level of 1990 (WDI, 2008). The developing economies endeavor to attract more FDI and increase their share in global FDI inflow by presenting tax heaven policy, incentive-related reforms, and tax credit policies for local foreign investors rather than the local ones.

The interaction of domestic and foreign investment is becoming important because they may simultaneously affect the outcome of economic growth. In developing economies, domestic investment is associated with higher returns due to unexploited potential. The presence of higher public investment may turn up as improving the infrastructure and lowering the cost of doing business. This presence of high returns may attract foreign investors to benefit from the presence of higher returns by investing in new technology and replacing the existing capital stock. The effect of FDI on the domestic capital is mixed in nature because FDI may cause a crowding in or out impact on the level of domestic investments. The crowding in is beneficial to FDI receiving country while not benefiting if FDI is working as crowding out. In this state, the researcher needs to dig out the effect of internal and external investment on unemployment and economic growth in a developing economy like Pakistan. This current study is an attempt to dig out the effect of external and internal investments on unemployment and economic growth in Pakistan.

Research Objectives

1) To empirically examine the effect of internal investment on economic growth in Pakistan.
2) To conduct an empirical analysis to examine the impact of external investment on economic growth in Pakistan.
3) To empirically investigate the impact of internal investment on unemployment in Pakistan.
4) To empirically analyze the effect of external investment on unemployment in Pakistan.

Significance of the Study

The present study aims to investigate the impact of both internal and external investments on the unemployment rate and economic growth in Pakistan. Economic growth is becoming important because it is directly linked to the reduction of poverty and unemployment. In this study, we will examine the channel in which foreign investment and domestic investment may help boost economic growth and soften the unemployment level. The unemployment execution seems, by all accounts, to be the most dangerous worry for Pakistani policymakers as the nation is hailed as bragging one of the world's most noteworthy youth unemployment rates. This study may help policymakers in achieving the natural rate of unemployment and also maintain economic growth at the desired level. This study may help development economists understand the channel through which foreign and domestic investment affects economic growth and unemployment levels.

Hypotheses of the Study

H01: Internal investment does not affect the economic growth in Pakistan.
H02: External investment does not affect the economic growth in Pakistan.
H03: Internal investment does not affect the unemployment rate of Pakistan.
H04: External investment does not affect the unemployment rate of Pakistan.

Review of the Literature

Foreign Investment, Domestic Investment and Unemployment

Falki (2009) investigated the FDI-growth nexus for Pakistan from 1980 to 2006. The findings suggest the negative but insignificant nature of the relationship of FDI with the economic growth of Pakistan. It implies that FDI does not affect the economic growth of Pakistan. The lack of skilled and educated labor which is unable to utilize the technological changes. Shahbaz and Rahman (2012) investigated the effect of FDI, financial development, and imports on the output level in Pakistan with quarterly data from 1990 to 2008. The findings suggest that FDI, financial development, and imports possess a significantly positive relationship with the real GDP of Pakistan.

Furthermore, bidirectional in nature causality is depicted in the variable. However, the robust causality observed from the FDI, financial development, and real GDP growth to imports. Rahman and Shahbaz (2013) investigated foreign capital inflow and foreign goods and services inflow (imports) to economic growth in Pakistan with a quarterly data set of 1990-2008. The findings suggest that inflows of foreign capital and imports possess a significant positive to growth. However, the strong in nature causality observed towards inflows of foreign capital, and imports to real GDP.

Abbas, et al. (2011) investigated the FDI-economic growth nexus for SAARC member countries. The findings of the fixed effect model suggest a positive nexus of FDI with economic growth. While the consumer price index does not mean to economic growth due to its insignificant relationship nature. The study's findings imply that FDI is a complement to economic growth with higher human capital in a country. Gudaro, et al. (2012) analyzed the impact of FDI on Pakistan's GDP. The estimates of the multiple linear regression model imply a significantly positive relationship between the FDI and GDP. The negative in nature association between the inflation factor with the GDP. The findings of the study suggest some policy measures to attract FDI because it is crucial to middle-income countries' economic growth. The FDI benefits the host country through technology transfer, increasing the competition for the local input market, higher human capital development, and also increasing the corporate profit tax. Ahmad, et al. (2012) investigated the directional relation between FDI and other explanatory variables in Pakistan's economic growth. The results of the study are victims of the positive association between the FDI and GDP in the short run and also in the long run. The findings of the study further suggest some policy measures to attract foreign capital inflow and also invite foreign investors because FDI is crucial to middle-income countries' economic growth.

Malik (2015) analyzed the trade openness, FDIs, and GDP growth in Pakistan. The findings of the study suggest that FDI has a favorable effect on Pakistan's economic growth. Similarly, the domestic capital and trade openness also have favorable effects on Pakistan's economic growth. Ali and Hussain (2017) analyzed the impact of FDI and its association with the GDP growth of Pakistan by using a period of 1981 to 2015. The findings of the study revealed that FDI has a positive effect on Pakistan's GDP growth. This short-run positive effect may transmit to the long-run growth of Pakistan. Finally, some policy measures suggested by the study to bring the FDI at the targeted level and further attract foreign investors. Jawaid and Saleem (2017) investigated the nexus of FDI, remittances, external debts, and GDP growth in Pakistan. For the empirical analysis, the period consists of 1976-2015. The cointegration model results show that FDI hurts long-run growth. The negative effect is due to a lack of skilled labor to absorb the effect of technological advances which in turn results in a higher unemployment rate and lower economic growth. Their findings also show that external debt as well as remittances have a positive impact on the GDP's growth.

Foreign Investment, Domestic Investment and Unemployment

Maqbool, et al. (2013) studied the important factors that affect unemployment in Pakistan. For this purpose, the data consists of the period from 1976 to 2012. The factors that affect unemployment include the FDI, population growth, GDP, inflation rate, and external debt. For estimation, of the short-run results, the ARDL model is preferably used. The estimates suggest that GDP and FDI decrease the unemployment rate in both the long- and well as short-run. The population's growth and inflation are negatively associated with the unemployment rate in both the long- and well as short-run. Further, the existence of the short-run and long-run Philips curves is also confirmed. Cheema and Atta (2014) worked on the major covariates of unemployment in Pakistan by using the ARDL bound approach. The findings suggest that unemployment has a significant positive effect on the output gap. However, it has a significant negative effect on economic uncertainty. Moreover, gross capital formation and trade openness have a significantly positive effect on the unemployment rate of Pakistan. The study recommends that the output gap needs to be reduced or the flip side, the attention required to increase the GDP. Furthermore, policies related to trade restrictions are required and public-private partnerships are required to boost the level of investment domestically.

Mahmood, et al. (2014) examined the association of unemployment with the multiple factors affecting unemployment directly or indirectly. The determinants of the unemployment rate are the FDI, GDP, inflation, budget deficit, population growth rate, literacy rate, and labor force. The findings of the study evident the positive effect of the labour force on unemployment. However, the negative effect of FID and inflation is also observed on unemployment. Zeb, et al. (2014) explored the effect of FDI on the unemployment rate of Pakistan along with other covariates like inflation, corruption, and population size. For the empirical analysis, the data consist of the period from 1995 to 2011. The estimates of the multiple regression model suggest that FID favorably contributes to the economy by reducing the level of unemployment in the economy. Moreover, corruption control has a favorable effect on the unemployment rate while the population size is positively associated with the unemployment rate. The effect of FDI and domestic capital on the unemployment rate of South Africa by using the data of period covered quarterly data 1970 to 2014. For the empirical investigation, the autoregressive distributive lag (ARDL) cointegration model was used. The findings of the study suggest that domestic investment hurts the unemployment rate. The FDI does not reduce the unemployment rate because it is statistically insignificant. It implies that domestic capital is accumulated by keeping in view the skill level of the existing labor force which in turn creates employment opportunities.

Tsaurai (2018) examined the role of FDI in the employment creation process by using the panel of BRICS countries from 1994 to 2014. The findings of the pooled ordinary least squares (OLS) and fixed effects on human capital level, economic growth, FDI,

and financial development are important in the generation of employment process. The findings of the study further recommend that human capital level, economic growth, and financial development complement FDI in the process of employment generation. For this purpose, steps need to be undertaken for the better effect of FDI on the employment generation. Imtiaz, et al. (2020) analyzed the factors affecting the youth unemployment rate in Pakistan. The observed factors affecting the youth unemployment rate of Pakistan are a lack of investment opportunities, political instability, an outdated agriculture sector, and excessive population size. The findings of the study unveiled the fact that young age people (15-24) are largely affected by the existing level of recession. It is due to the relatively high youth bulge in Pakistan and this situation will be more severe in the long run. For this purpose, there are some policy measures needed to tackle this severe unemployment situation. It is required to provide an adequate employment environment, policy assessment, and examination to provide jobs to youth. The findings of the study suggest that steps enhance investment opportunities, better the political instability, update the agriculture sector, and normalize the population size.

Mazher, et al. (2020) examined the effect of foreign remittances and foreign investment on the unemployment of Pakistan. The data for the analysis consists of the period from 1972-2014. The study applied the ARDL bound testing approach to estimate the long-run and short-run results. The findings of the study suggest that both foreign investment and foreign remittances decrease unemployment in the long and short run. While the effect of foreign remittances is insignificant statistically in the short-run. The findings of the study suggest that in the long-run policy measures are required to increase the level of foreign remittances and foreign investment which may help in decreasing the level of unemployment.

Research Gap

Unemployment and economic growth will always remain a stubborn problem in Pakistan. The major cause of unemployment in Pakistan is the surge in the population size over time because the available resources do not increase in the same pattern as the increase in the population size. Pakistan is currently placed in the list of top 10 high-population countries and 6th in position. The population growth of Pakistan is 1.93 percent and this same growth is then further transmitted to the labor force which increases the three million potential workers in the labor force annually (World Bank, 2019). The current study is an attempt to embark on the role of domestic and foreign investment in economic growth and unemployment. However, the existing literature in the context of Pakistan, according to the best of our knowledge, Cheema & Atta (2014); Imtiaz, et al. (2020); Maqbool, et al. (2013) did not compare the outcome of foreign and domestic investment on unemployment. While in the context of investment and economic growth the study of Rahman (2014); Gul & Naseem (2015); Falki (2009) just limited to foreign investment and ignored the role of domestic

investment. The current study also incorporates the role of institutional quality in determining the economic growth and unemployment of Pakistan.

Research Methodology

Data and Sources

The analysis of the impact of foreign investment and domestic investment on unemployment and GDP growth comprises 1984 to 2019. The data's definition and associated sources are mentioned in Table 1.

Table 1. Definition of the Variable

Sr. #	Variables	Description	Units	Source
1	GDP	Annual growth of Gross Domestic Product	Percentage	WDI
2	LF	Labour Force participation rate	Percentage	WDI
3	OPEN	Trade Openness is a composite of export and import to GDP	Percentage	WDI
4	DOMK	The gross fixed capital formation to GDP ratio represents the domestic investment	Percentage	WDI
5	FDI	The foreign direct investment inflows to GDP ratio represents foreign investment	Percentage	WDI
6	UNEM	The unemployment rate is the number of unemployed people in proportion to the labor force	Percentage	IMF
7	REM	Remittances inflows to GDP ratio	Percentage	WDI

Econometric Models

To estimate the impact of internal as well as external investment on unemployment and GDP growth of Pakistan this study will use the different economic factors which effects the economic growth and unemployment of Pakistan. The relationship estimation will be done by using the following model:

$$GDP_t = \alpha_0 + \alpha_1 LF_t + \alpha_2 REM_t + \alpha_3 DOMK_t + \alpha_4 FDI_t + \alpha_5 OPEN_t + \varepsilon_t \quad (1)$$

$$UNEM_t = \beta_0 + \beta_1 LF_t + \beta_2 REM_t + \beta_3 DOMK_t + \beta_4 FDI_t + \beta_5 OPEN_t + \varepsilon_t \quad (2)$$

Where,

GDP_t = Growth of Gross domestic product
UN_t = Unemployment rate
LF_t = Labour force participation rate
REM_t = Remittances to GDP ratio
$DOMK_t$ = Domestic investment
FDI_t = Foreign investment
$OPEN_t$ = Trade openness as a composite of exports and imports as GDP percentage

ε_t= Error terms

$\alpha's$ and β's are the slope coefficients whereas ε_t is the error term and "t" is a time trend in this model.

Equations 1 and 2 will be run by using the ARDL model to figure out short-run coefficients and the ARDL to Bound testing approach for the long-run estimates.

Empirical Results and Discussion

Descriptive Analysis

We presented the statistics related to descriptive analysis are in Table 2. The period consists of 36 years from 1984 to 2019. The average value of the domestic capital to GDP ratio is almost 15% with a maximum of 19% and a minimum of 12%. The domestic capital to GDP ratio is relatively less dispersed as confirmed form the standard deviation and range which is the gap between maximum values. The skewness suggests that domestic capital is negatively skewed but this value is near to zero. The value of Kurtosis is less than 3 which indicates the domestic capital is platykurtic which implies that most of the values are away from the mean and less frequent data is around the mean. The domestic capital is normally distributed as confirmed by the probability value of the Jarque-Bera test as evident in the acceptance of the 'null hypothesis' about the normality distribution of the series as a confirmed probability value of more than 0.1.

The average value of foreign direct investment is almost 0.97% of the GDP with a maximum of 3.6% and a minimum of 0.17%. The FDI is relatively less dispersed as confirmed by the standard deviation and range which is the gap of maximum value. The average value of the GDP growth of Pakistan is almost 4.5% with a maximum of 7.7% and a minimum of 0.98%. The GDP growth of Pakistan is relatively more dispersed as confirmed by the standard deviation and range which is the gap between minimum-maximum values. The average value of the labor force of Pakistan is almost 50.85% with a maximum of 53.03% and a minimum of 48.53%. The labor force of Pakistan is relatively more dispersed as confirmed form the standard deviation and range which is the gap between maximum values. The average value of the trade openness of Pakistan is almost 32.40% with a maximum of 38.49% and a minimum of 25.30%. The average value of the trade openness of Pakistan is almost 32.40% with a maximum of 38.49% and a minimum of 25.30%. The average value of the remittances in Pakistan is almost 4.77% with a maximum of 8.28% and a minimum of 1.31%. The average value of the unemployment rate in Pakistan is almost 5.55% with a maximum of 8.30% and a minimum of 3.10%.

Table 2. Descriptive Statistic

	DOMK	FDI	GDP	LF	OPEN	REM	UNEM
Mean	15.866	0.973	4.499	50.853	32.403	4.773	5.556
Median	16.051	0.730	4.782	50.805	32.919	4.657	5.900
Maximum	19.129	3.668	7.706	53.033	38.499	8.284	8.3
Minimum	12.521	0.179	0.989	48.53	25.306	1.311	3.1
Std. Dev.	1.684	0.802	1.865	1.181	3.577	2.037	1.480
Skewness	-0.166	2.183	-0.143	-0.084	-0.393	0.075	-0.027
Kurtosis	2.057	7.120	2.333	2.365	2.429	1.893	2.498
Jarque-Bera	1.498	54.052	0.791	0.646	1.418	1.873	0.382
Probability	0.473	0.0000	0.673	0.724	0.492	0.392	0.826
Sum	571.166	35.039	161.953	1830.695	1166.506	171.811	200.00
Sum Sq. Dev.	99.233	22.506	121.753	48.842	447.911	145.166	76.669
Observations	36	36	36	36	36	36	36

Correlation Analysis

We depict the correlation matrix of the variables in Table 3. The purpose of this practice is to confirm the association of the dependent and independent variables in isolation. Moreover, the association of the two independent variables may help in detecting the potential problem of multicollinearity. The range of the coefficient of the correlation is from -1 to +1. The sign indicates the direction association among the variables while the magnitude indicates relationship intensity among variables. If the absolute value is near 1 then strong relationship in nature, and if the value is near zero it indicates a weak relationship among the variables.

The domestic capital is positively associated with the GDP growth of Pakistan. While this relationship is not strong when we compare the magnitude. On the flip side, the correlation coefficient for domestic capital is negative for the unemployment rate of Pakistan. While this relationship is weak when we see the size. It implies that domestic capital is benefiting the economy of Pakistan by lowering the unemployment rate and enhancing the level of GDP growth at the same time. The remittance to GDP ratio is positive with the GDP growth of Pakistan. In the correlation matrix, unemployment and GDP growth are depicted as negative as confirmed by the sign of the correlation coefficient. However, this relationship is extremely weak because the absolute value of the coefficient is less than 0.01. We did not find a strong correlation among the independent variable from the correlation matrix which indicates the lack of multicollinearity in the estimated regression model which we will depict in the next section. The interesting fact from this correlation analysis is the behavior of the trade openness in effecting the GDP growth and unemployment. This variable depicts the positive impact on GDP growth as well as unemployment, however, other variables are not experiencing this practice.

Table 3. Correlation Matrix of the Variable used in the Analysis

	DOMK	FDI	GDP	LF	OPEN	REM	UNEM
DOMK	1.000	0.248	0.215	-0.672	0.593	-0.342	-0.378
FDI	0.248	1.000	-0.122	0.064	0.221	-0.264	0.148
GDP	0.215	-0.122	1.000	-0.182	-0.13	0.164	-0.089
LF	-0.672	0.064	-0.182	1.000	-0.573	0.235	0.512
OPEN	0.593	0.220698	-0.128	-0.573	1.000	-0.271	-0.446
REM	-0.342	-0.264	0.164	0.235	-0.27	1.000	-0.441
UNEM	-0.378	0.148	-0.089	0.512	-0.446	-0.441	1.000

Regression Analysis for GDP Growth Model

Testing of Unit Root

Augmented Dickey-Fuller, in short, ADF test stated in Table 4 to check the stationarity of the variables. The variables such as foreign direct investments (FDI) and GDP growth (GDP) are stationary at the level. However, all the rest variables are not stationarity at level. While, all the variables: foreign direct investments (FDI), GDP's growth (GDP), domestic capital (DOMK), remittances (REM), the labor force (LF), and trade openness (OPEN) are stationary at differences. The pattern of the series represents the implication of the ARDL model to figure out the short-run results.

Table 4. Testing of Unit Roots

At zero difference (level)				
Outcome and explanatory variables	**Intercepts**		**Intercept with Tend**	
	t-stat value	**prob-values**	**t-stat value**	**prob-values**
GDP	-3.550999**	0.0123	-3.799626**	0.0285
DOMK	-1.690245	0.4273	-2.675518	0.2521
FDI	-2.957073**	0.0494	-2.996751	0.1478
REM	-1.285751	0.6252	-4.467714***	0.0011
OPEN	-2.000235	0.2854	-2.409433	0.3686
LF	-1.187717	0.6687	-4.002685	0.0178
First Difference of series				
	Intercepts		**Intercept with Tend**	
	t-stat value	**prob-values**	**t-stat value**	**prob-values**

GDP	-7.130150***	0	-7.010804***	0
DOMK	-5.249876***	0.0001	-5.168607***	0.001
FDI	-3.915874***	0.005	-3.852623**	0.0256
REM	-4.467714***	0.0011	-5.447613***	0.0005
OPEN	-5.828328***	0	-5.738148***	0.0002
LF	-7.612170***	0	-7.499912***	0

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Co-integration Test

In Table 5, we reported the ARDL F test. The variables such as foreign direct investment (FDI), domestic capital (DOMK), remittances (REM), labor force (LF), and trade openness (OPEN) tested to ensure the being of the long-run relationship with our dependent variable GDP growth (GDP). Finally, we can reject the null hypothesis about the lack of a long-run relationship because the F stat value is above the level of the upper bound values.

Table 5. Bound Test

F-statistics= 11.08878, k= 5		
Levels of Significance	**Lower bound values**	**Upper bound values**
10.00%	2.260	3.350
5.00%	2.620	3.790
2.50%	2.960	4.180
1.00%	3.410	4.680

Short-Run and Long-Run Results

We presented the short-run coefficients in Table 6 which are related to the influence of external and internal investment on growth specifically in the context of Pakistan. Table 11 is related to long-run results. The short-run coefficient of the domestic capital suggests that domestic capital is positively associated with the GDP growth of Pakistan and this effect is statistically significant. This type of finding of the study is by the correlation analysis. The estimated coefficient suggests that if the domestic capital ratio to GDP increases with 1 unit point then GDP growth will increase by 2.5 unit points in the short run. The basic economic model of Cobb-Douglas suggests that capital is a positive function of output level. The role of physical as well as human capital is crucial in this context. The physical capital contributes to raising the output level differentially. The engine of growth that puts growth on an ever-increasing track is the role of human capital. The higher output is associated with higher national income. The long-run estimates advocate that domestic capital is positively associated with the GDP growth of Pakistan. It depicts that a one-unit-point increase in the

domestic capital to GDP ratio is associated with a 0.4 increase in GDP growth in the long run. The findings of the study are consistent with the previous study states the positive relationship between domestic capital on economic growth (Hassen & Anis, 2012; Omri, 2014).

The coefficient of foreign direct investments suggests that FDI is positively associated with the GDP growth of Pakistan, this effect is statistically significant. The study's findings are consistent with the previous study which states a positive relationship between FDI to economic growth (Omri, 2014). The short-run result of FDI is not in line with the correlation analysis. The estimated coefficient suggests that if foreign direct investment as a percentage of GDP increases by 1 unit point then GDP growth will increase by 1.98 unit point in the short-run. The basic economic model of Cobb-Douglas suggests that capital is a positive function of output level. The role of physical as well as human capital is crucial in this context. The physical capital contributes to raising the output level differentially. The engine of growth that puts growth on an ever-increasing track is the role of human capital. The higher output is associated with higher national income. The FDI as a technology transfer helps in equipping the labor with modern technology and skills that contribute to the process of development. The long-run estimates suggest that foreign direct investment does not affect the GDP growth of Pakistan because it is positive but statistically insignificant. This finding is consistent with the study of Falki (2009).

The short-run coefficient of the remittances suggests that it does not affect the GDP growth of Pakistan because this effect is positive, and insignificant under the prism of statistically. This impact, however, is not by the depiction of the correlation analysis. While the long-run results, on the other hand, are consistent with the correlation analysis. The long-run result suggests that if remittance as a share of GDP increases by a unitary point then GDP growth increases by 0.40 unit points. This finding is consistent with the study of Hussain and Anjum (2014). The developmental impact of remittances is also consistent with the (Shair & Anwar, 2023; Shair, et al., 2023). The remittances impact in the long run transmit when they are utilized at the household level, on the other side, it supports the foreign exchange market to smoothly function the forex market for the stability of the exchange rate.

The short-run coefficient of the labor force suggests that it is negatively associated with the GDP growth of Pakistan and this effect is statistically significant. The finding of the study is in line with the correlation analysis. The estimated coefficient suggests that if the labor force increases by 1 unit point then GDP growth will decrease by 1.45 unit points if other things remain the same in the short line. The long-run estimate of the labor force is consistent with the short-run findings. It also depicts the negative effect of the labor force in the long run. It suggests that if the labor force increases by 1 unit point then GDP growth decrease by 0.42 unit points. The findings are consistent with the (Falki, 2009; Maestas, et al., 2023; Wijaya, et al., 2021). The growth-curbing effect of the labour force is considerable because due to unskilled labor addition in the

labour force and the lack of opportunities to untapped the potential to raise the livelihood of the inhabitants.

The short-run coefficient of the trade openness suggests that it does not affect the GDP growth of Pakistan because this effect is positive and statistically insignificant. The short-run effect of trade openness is not in line with the correlation analysis. While the long-run results are consistent with the correlation analysis. The estimated long-run coefficient is negative for trade openness. The long-run result suggests that if trade openness increases by one unit point then GDP growth increases by 0.16 unit points. The findings of the study are consistent with the findings of (Yanikkaya, 2003; Jawaid, 2014). The error correction coefficient is negative and statistically significant. It depicts that 49% of the adjustment is made in a year in case of deviation from the long-run path.

Table 6. Short-Run Results of GDP Growth

Covariates	Coefficient	St. Errors	t-Stat value	Prob. value
D(GDP(-1))	2.447297*	1.076526	2.273328	0.0721
D(GDP(-2))	1.453002*	0.696227	2.086966	0.0913
D(GDP(-3))	1.043233**	0.384993	2.709745	0.0423
D(DOMK)	2.565282***	0.467826	5.483412	0.0028
D(DOMK(-1))	-0.003895	0.417617	-0.009327	0.9929
D(DOMK(-2))	-0.57948	0.31338	-1.849129	0.1237
D(FDI)	1.986306**	0.684879	2.900228	0.0338
D(FDI(-1))	1.894487**	0.610372	3.103825	0.0267
D(FDI(-2))	-4.316698**	1.191974	-3.62147	0.0152
D(FDI(-3))	3.664261**	1.041399	3.518595	0.0169
D(REM)	0.097016	0.27332	0.354954	0.7371
D(REM(-1))	-2.052486***	0.327614	-6.264947	0.0015
D(REM(-2))	1.462668**	0.526597	2.777584	0.039
D(REM(-3))	-0.94712	0.677593	-1.397771	0.221
D(LF)	-1.451180**	0.4356	-3.331452	0.0207
D(LF(-1))	-1.091925**	0.371822	-2.936684	0.0324
D(LF(-2))	1.360451**	0.457359	2.974577	0.031
D(OPEN)	-0.362060**	0.11074	-3.269467	0.0222
D(OPEN(-1))	0.107759	0.092739	1.161956	0.2977
D(OPEN(-2))	0.409661**	0.137956	2.969499	0.0312
CointEq(-1)	-0.491489**	1.229648	-3.652662	0.0147
R-squared	0.982181			
Adj. R-squared	0.889523			
Durbin-Watson statistics	2.163266			

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Table 7. Long-Run Estimates of GDP Growth

Long-run model				
Covariates	**Coefficient**	**St. Errors**	**t-Stat value**	**Prob. value**
DOMK	0.408344***	0.078658	5.191419	0.0035
FDI	0.101773	0.098042	1.038054	0.3468
REM	0.401977***	0.02839	14.159021	0
LF	-0.422660**	0.121614	-3.475424	0.0177
OPEN	-0.163693***	0.01725	-9.489171	0.0002
C	22.981039**	7.139235	3.218978	0.0235

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Regression Analysis for Unemployment Model

Unit Root Test

The Augmented Dickey-Fuller, in short, ADF test reported in Table 8 to check the stationarity of the variables. The variable such as foreign direct investment (FDI) is stationary at the level. However, other variables are not stationarity at the level. On the other hand, all the variables: foreign direct investment (FDI), unemployment rate (UNEM), domestic capital (DOMK), remittances (REM), labor force (LF), and trade openness (OPEN) are stationary at differences. The pattern of the series represents the implication of the Autoregressive Distributed Lag (ARDL) model to figure out the short-run results.

Table 8. Unit Root Test

At zero difference (Level)				
Outcome and explanatory variables	**Intercepts**		**Intercept with Tend**	
	t-stat value	**prob-value**	**t-stat value**	**prob-value**
DOMK	-1.690245	0.4273	-2.675518	0.2521
FDI	-2.957073**	0.0494	-2.996751	0.1478
REM	-1.285751	0.6252	-4.467714***	0.0011
OPEN	-2.000235	0.2854	-2.409433	0.3686
LF	-1.187717	0.6687	-4.002685	0.0178
UNEM	-1.643259	0.4505	-1.117191	0.9116
First Difference of series				
Outcome and explanatory variables	**Intercepts**		**Intercept with Tend**	
	t-stat value	**prob-value**	**t-stat value**	**prob-value**
DOMK	-5.249876***	0.0001	-5.168607***	0.001

FDI	-3.915874***	0.005	-3.852623**	0.0256
REM	-4.467714***	0.0011	-5.447613***	0.0005
OPEN	-5.828328***	0	-5.738148***	0.0002
LF	-7.612170***	0	-7.499912***	0
UNEM	-4.754281***	0.0005	-4.931802***	0.0018

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Co-Integration Test

In Table 9, we reported the ARDL F test. The variables such as foreign direct investment (FDI), domestic capital (DOMK), remittances (REM), labor force (LF), and trade openness (OPEN) were tested to confirm the existence of the long-run relationship with our dependent variable unemployment rate (UNEM). Finally, we reject the null hypothesis about the lack of a long-run relationship because the F stat value is higher than the upper bound values.

Table 9. Bound Test

F-statistics= 18.96830, k= 5		
Levels of Significance	**Lower bound values**	**Upper bound values**
10.00%	2.26	3.35
5.00%	2.62	3.79
2.50%	2.96	4.18
1.00%	3.41	4.68

Short-Run and Long-Run Results

We presented the short-run estimates of the external and internal investment on the GDP growth of Pakistan in Table 10. On the other hand, long-run results are presented in Table 11. The short-run coefficient of the domestic capital suggests that it is positively associated with the unemployment rate of Pakistan and this effect is statistically significant. The similar effect is also confirmed by the study of Chowdhury and Hossain (2014). The finding of the study is not in line with the correlation analysis. The estimated coefficient suggests that if domestic capital as a percentage of GDP increases by 1 unit point then unemployment will increase by 0.34 unit points in the short line. The long-run estimates suggest that domestic capital is negatively associated with the unemployment rate of Pakistan. It depicts that a one-unit-point increase in the domestic capital-to-GDP ratio is associated with a 0.11-unit-point decrease in the unemployment rate in the long run. The finding is consistent with the finding of Arestis (2007).

The short-run coefficient of the foreign direct investment suggests that FDI is negatively associated with the unemployment rate of Pakistan and this effect is statistically significant. Similar results were also confirmed by the study of

Hisarciklilar, et al. (2014). The short-run result of FDI is not in line with the correlation analysis. The estimated coefficient suggests that if foreign direct investment as a percentage of GDP increases by 1 unit point then the unemployment rate will decrease by 0.28 unit points in the short run. The long-run estimates suggest that foreign direct investment does not affect the unemployment rate of Pakistan because it is negative but statistically insignificant. This finding is consistent with the findings of Grahovac and Softić (2017).

The short-run coefficient of the remittances suggests that it does not affect the unemployment rate of Pakistan because this effect is negative and statistically insignificant. The short-run effect of remittances on GDP growth is not in line with the correlation analysis. While the long-run results are consistent with the correlation analysis. The long-run result suggests that if remittance as a percentage of GDP increases by one unit point then the unemployment rate will decrease by 0.72 unit points. This finding is consistent with the study of Asad, et al. (2016). The effect of remittances on labor market outcomes emerges because it creates entrepreneurial activities at the micro level which helps households to create or expand business and generate employment perspectives (Shair & Majeed, 2020).

The short-run coefficient of the labor force suggests that it is positively associated with the unemployment rate of Pakistan and this effect is statistically significant. The finding of the study is in line with the correlation analysis. The estimated coefficient suggests that if the labor force increases by 1 unit point then the unemployment rate will increase by 0.42 unit point if other things remain the same in the short line. The long-run estimate of the labor force is consistent with the short-run findings. It also depicts the positive effect of the labor force in the long run. It suggests that if the labor force increases by 1 unit point then unemployment increases by 0.24 unit points. This finding is consistent with the study of Ahn and Hamilton (2022).

The short-run coefficient of the trade openness suggests that it does not affect the unemployment rate of Pakistan because this effect is positive and statistically insignificant. The short-run effect of trade openness is not in line with the correlation analysis. The long-run results are inconsistent with the correlation analysis while consistent with the short-run result. The estimated long-run coefficient is positive but statistically insignificant. The finding is consistent with the results of Nwaka, et al. (2015). The error correction coefficient is negative and statistically significant. It depicts that 75% of the adjustment is made in a year in case of deviation from the long-run path.

Table 10. Short-Run Estimates of Unemployment

Covariates	Coefficient	St. Errors	t-Stat value	Prob. value
D(UNEM(-1))	0.029639	0.099176	0.298856	0.7737
D(UNEM(-2))	-0.263138**	0.087967	-2.991307	0.0202
D(DOMK)	0.337377***	0.067023	5.033777	0.0015

D(DOMK(-1))	-0.119178	0.081463	-1.462976	0.1869
D(DOMK(-2))	0.409422***	0.077431	5.287564	0.0011
D(FDI)	-0.282062*	0.137038	-2.058278	0.0786
D(FDI(-1))	0.540576**	0.17908	3.018624	0.0194
D(FDI(-2))	-0.470230**	0.13726	-3.425826	0.011
D(REM)	-0.078648	0.078112	-1.006866	0.3475
D(REM(-1))	-0.145603	0.090625	-1.606665	0.1522
D(REM(-2))	0.347087***	0.094422	3.675895	0.0079
D(REM(-3))	0.358480***	0.09715	3.689967	0.0078
D(LF)	0.438499**	0.145761	3.008343	0.0197
D(LF(-1))	0.617163***	0.13322	4.632658	0.0024
D(OPEN)	0.033528	0.027756	1.207931	0.2663
D(OPEN(-1))	0.127633***	0.029924	4.265214	0.0037
D(OPEN(-2))	-0.050695	0.028088	-1.804845	0.1141
D(OPEN(-3))	-0.086092**	0.024792	-3.472493	0.0104
CointEq(-1)	-0.754060***	0.161388	-4.672339	0.0023
R-square	0.994863			
Adj. R-square	0.977251			
Durbin-Watson stat	2.778965			

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Table 11. Long-Run Estimates of Unemployment

Covariates	Coefficient	St. Errors	t-Stat value	Prob. value
DOMK	-0.116058**	0.05236	-2.21654	0.0623
FDI	-0.255760	0.143408	-1.783448	0.1177
REM	-0.723659***	0.073939	-9.787263	0.0000
LF	0.249367**	0.127671	1.953202	0.0917
OPEN	0.071858	0.058802	1.222027	0.2612
C	-3.946507	7.767596	-0.508073	0.6270

* indicates 1%, ** indicate 5%, and *** indicate 10% significance level, respectively

Conclusion and Recommendations

This study examined the effect of internal and external investment on the economic growth and unemployment of Pakistan. The econometric models' aftermath depicts that domestic capital is assert more effect in the long run than short-run in increasing GDP growth and lowering the unemployment rate. It also depicts that in the long run, the effect of an increase in economic growth is transmitted to lower unemployment. It implies that a higher level of domestic capital ensures the technological advances and productivity of the labor and it takes time for the labor to fully equip the capital. The fact is also confirmed from the study that the higher level of capital is associated with

a rise the unemployment in the short-run and, on the other hand, lower in the long-run. It implies that in the short-run, the installation of new machinery and technology advances worse-off the low-skilled labor due to lack of operational knowledge. However, in the long when getting a higher level of education and training makes the labor to operationalize the technology advanced capital. It in turn decreases unemployment in the long run.

The effect of foreign direct investment is favorable in the short run because it has higher economic growth and lower unemployment. It implies that higher foreign direct investment may increase the foreign reserve to support the current account deficit which helps in stabilizing the exchange rate and other macroeconomic variables. The favorable effect of FDI is not transmitted in the long run because it does not affect the economic growth and unemployment of Pakistan. It supports the fact that FDI is associated with a higher level of technology and innovations while the labor of Pakistan is unable to exhaust this given change and is unable to create new opportunities due to a lack of skilled labor force in Pakistan.

Based on short-run and long-run estimates, this study suggests some policy measures to increase economic growth and decrease the unemployment rate of Pakistan. The measures are as follows. Although domestic capital is more important to the long-run economic growth and unemployment of Pakistan. Moreover, steps need to be undertaken to offset the adverse effect of domestic capital on short-run unemployment. For this purpose, there is a need to highlight the factors affecting the domestic capital. These factors may be from textbook literature or empirical literature. FDI increases economic growth and lowers the unemployment of Pakistan in the short run. However, this effect did not transmit to long-run economic growth and unemployment. Therefore, to make this effect strong in the long run, it is required to examine the role of FDI as a complement to human capital. Moreover, need to list down the other complement to make the effect of FDI stronger and transmit in the long run.

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