



## Envisaging the Role of FDI for Unemployment Reduction in Pakistan

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### PAPER INFO ABSTRACT

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*The era of last century gave birth to the phenomenon of globalization. Access to the markets and transfer of resources enhanced the economic activities worldwide. Various studies depict that foreign direct investment (FDI) inflows induct a vital role in the economic advancement and they pose apparent impacts on the employment generation process. FDI is also a cause of technology transfers for imparting skills to the workers. This study analyses the role of FDI in reducing the unemployment in Pakistan. The study uses vector errors correction model (VECM) on the time series data over the span of 1991-2023. The results observe long-run impacts of FDI along with its short-run influences on the employment levels in the economy. This impact is of positive nature which ultimately ensures unemployment reduction in the country by giving rise to the FDI inflows. Moreover, these results forecast the regulation of short run shocks at a higher speed of adjustment in the long run. Henceforth the authorities are recommended to commence and implement the FDI magnetizing policies for improving the employment conditions in the country.*

## 1 Introduction

In defining FDI, one should consider that it is not only confined to the simple transit of money but it is considered now being a measurement of the foreign ownership of the domestic productive assets such as the farms, the firms and the factories. It also includes other intangible possessions like contemporary technologies, market skills and administrative capabilities. FDI is a mode of transfer of the capital and resources from one country to the other. It portrays many effects on the economies of the host and the donor countries. The mutual benefits of FDI are reaped in its essence and substance effectively if its sole aim is based on the issues of development and welfare.

Economic writings have been subjugated by FDI over the previous three decades, especially the expansion fields of economics because of the exceedingly receivable forthcoming benefits to the host country. The impacts so witnessed spread over a vast array; from manipulating of the output, reducing the unemployment, modifying income levels, accelerating trade, influencing economic progress, removing the balance of the payments problems and hence providing common well-being to the public of the host country. Thus, the diverse impacts of FDI on an economy make it a catalytic agent for the progress and prosperity of the economy.

Foreign Direct Investment poses a momentous function for unemployment reduction in an economy. Often a direct and positive affiliation exists between FDI and employment. As firms are operated in Pakistan like developing nations, they entail both skilled as well as unskilled workers. In Pakistan, labor is a cheap source and it is accessible in abundance. Hence, FDI offers employment to each and

every section of the economy. It contributes a major part in the total employment opportunities. It not only creates job facilities in the host country but also helps a lot in economic stability, growth and development. In developing nations, the inland financial markets lack capital and capabilities and therefore the foreign direct capital inflow plays a vital part in building their economies. FDI inflows serve being resource for spreading out of the business opportunities and an engine in generating employment opportunities for the people.

The present scenario of FDI inflows into Pakistan are not of the levels of sufficing the national requirements. There is an “insufficiency breach” between the stock and flow of FDI for the country. The reports of the State Bank of Pakistan illustrate declining trend in the foreign direct investment in recent past in nearly all of the sectors. This down turning drift has immense impacts on to the economic uplift and the advancement of the Pakistan’s economy. The circumstances the circumstances, as the FDI inflows went down from 2006-07 to 2011-12 and then raised till 2018. After that the FDI inflows of Pakistan showed an alternate tend of rise and fall till the present year. .and trended upwards after that (Economic Survey of Pakistan, 2023).

The foreign investors had reluctant behavior for embarking their investments in Pakistan. It was mainly due to worsening law and order conditions at first and secondly due to the lack of power capacity. Ongoing global slowdowns further deteriorated the already weakening situation of the economy. The revival of the FDI was primarily due to the reduction in the terrorist activities in the country. This brought back the confidence of foreign investors in the economic prospective of Pakistan due to better power provisions and refined security conditions. The Covid-19 brought also a decline in the FDI inflows for about two years. In being nonexistence of the capital assets, growth of the economy is not viable and it will certainly augment the dependency upon the foreign borrowings and thus initiating a vicious cycle leading to the phenomenon of debt trap. This can only be avoided with the enough inflows of FDI by providing an attractive environment for the foreign investors and firms.

The state of unemployment can be improved in the country by bringing the substantial improvements in the capital inflowing phenomena. The present situation of FDI and employment is tried to be envisaged in the present study. To know the relationship and causal behavior of FDI and employment in the economy of Pakistan is important for policy purposes. This significance of the association between FDI and unemployment is the core objective of carrying out this study. This research work aims at evaluating the relationship between the imperative variables of FDI and unemployment.

1.1 *Objectives:* Following objectives have been set for the analysis of the study:

- To substantiate Objectives: Following FDI and the unemployment reduction.
- To explore possible causality of FDI onto the unemployment reduction.

1.2 *Hypotheses:* For conceptualizing the analysis, following hypotheses have been constructed:

- $H_{10}$  = FDI has positive relationship with unemployment rate in Pakistan

$H_{11}$  = FDI shows inverse association with unemployment rate in Pakistan.

- $H_{20}$  = FDI does not cause unemployment in Pakistan

$H_{21}$  = FDI causes unemployment rate in Pakistan.

## 2 Literature Review

Many articles have been studied to grasp the theoretical and conceptual links and lapses of the study. A few important research works being reviewed are described in the following passages:

in Pakistan and Sohail (2020) analyzed the impacts of FDI on and the foreign remittances onto unemployment in Pakistan. They took the relevant statistics for the duration of 1972 up to 2014. The

analysis was done through the ARDL approach. The results depicted that FDI as well as foreign remittances had affectively and positively affected the employments in the country in long run. Furthermore, the study revealed insignificant results. The authors recommended that the government should launch policies to increase FDI inflows for increasing the employment opportunities in the country.

Rehman and Bakar (2018) searched the perceptions of existing inflows of FDI into the manufacturing sector in reference of the emerging economies. The study examined and synthesized relevant existing theoretical and empirical literature. At first, it drew the indications of FDI and manufacture sector in Pakistan. Secondly, the work identified the collected works based on academic and observed understandings from the accessible literature. The study underwrites to the extent of FDI and manufactures' growth by favorably investigating and producing prevailing notions and exploration on FDI inflows and growth of the manufactures.

Suleman and Amin (2015) examined the impacts of sectorial FDI on the industrial growth in Pakistan by constituting a production function of Cobb-Douglas format taking data from 1997 up to 2011. This study was analyzed through three diverse tests of co integration based on Johansen, Kao residuals and Padroni residuals to examine the long run liaison amid sectors based FDI and industrial growth of Pakistan. Results of the study discovered a positive and significant effect of the sectorial FDI over the industrial growths in Pakistan.

Firebaugh (2010) has revealed that foreign direct investment affects the poor nations depressingly. Whilst spotlighting the coefficients of the external capital supplies, scheming for fresh investments, this has been conceived that a negatively signed coefficient for the capital stocks. It does echo "reliance effect" that hinders the economic growths. As the capital supply is comes being denominator for calculating the investment rate, then as long as the larger will be the capital stocks; the lesser will be the rate of investment, for the assumed levels of future investments. The exploration of data points employed in reliant studies predicts that a negative sign coefficient of the stocks of capital poses for beneficial investment effect, never a destructive impact.

Rehman, Jaffri and Ahmad (2010) substantiate the effects of foreign investments' inflows into Pakistan. Taking in the figures of the FDI and remittances from the persons working abroad, the inflows affect much on the balances of the Pakistani Rupees' real exchange rate. This work extracted data from the secondary sources and employed the methodology of Behavioral Equilibrium Exchange Rate (BEER) to examine the impacts of external capital inflows onto the equilibrium of the exchange rates of Pakistani currency for the duration from seventh month of 1993 up to third month of 2009. This work visualized that enormous external FDI inflows in addition of the large amounts workers' remittances have been meaningfully valued-up the equilibrium exchange rates for Pakistani rupees on an equilibrium state.

Miankhel, Thangavelu and Kalirajan (2009) examined an inventive affiliation between GDP, FDI and exports Over the six nations including Chile, India, Mexico, Malaysia, Pakistan and Thailand. For the study, the datasets spread over the years of 1970 to 2005. Then the computations of the findings point out that in the selected nations; there occurs validation of the exports escorted growths. Howsoever, in case of long run, the study identifies GDP growth being the collective factors that influence growths in the exports. In views of Pakistani economy and FDI inflows regarding India nonetheless for Mexico and the Chile display diverse short run-oriented relationships.

Adewumi (2007) performed a research work for the effects of the FDI inflows onto economic growths in case of developing nations. Even if the work was founded on African countries, yet it may be exemplified over advance countries in a broad-spectrum. The employed regression examination leads to the conclusive remark that the contribution of the FDI for economic oriented growths is enumerated being positive. Nevertheless, the study also argued that certain specific economies do not illustrate positive inputs of the FDI to growths. This trend is observed because of the facts that

some effects of the FDI within the hosting nation, as technology, skilled achievements etc., can't be calculated in quantities and thus it may capture a considerable time to pose the effects on the growths.

Ghatak and Halicioglu (2006) accentuated onto FDI and economic growths all over the world for the duration from 1991 to 2001. The study constructed renewed experimental authentication over the affiliation amid FDI inflows and economic growths established from the single-equation and simultaneous equations approximations for 140 nations by means of macroeconomic variables. The results point towards the constructive and significant valuation of coefficients of FDI is accomplished from OLS procedure for the per-capita real GDP regression bases. As per findings, there does exist a positively oriented significant affiliation amid per-capita real GDP and the FDI inflows.

Mullick (2004) accentuated on to the GDP growths of Pakistan by means of the economic factors along with the socio-economic based indicators following terrorism outbreaks afterwards 11<sup>th</sup> September, 2001. The study samples comprise of the time series-oriented data sets over the years of 1980-2003. This work takes the percentage variation of real GDP as being dependent variable and for the independent variables, the study takes account of US economic aids, overall investments, external reserves, rates of unemployment and the indices of stock exchange etc. Logs-Logs OLS analysis of the samples recommends that dependent variable possesses positive influences through the described economy-based causes.

Alfaro (2003) investigated the impacts of the FDI inflows onto the economic growths in the sectors relating to the services alongside the manufacturing activities. This very study concluded that FDI inflow brings an inverse impact onto the growths of the primary sectors, which henceforth could be justify that the sectors of mining extraction and the agriculture had negligible extents for host nation. The outcomes of the work express though a positive yet the non-significant impacts of FDI on economic growths what seems vague in nature. It might not be indispensable that FDI is all the times values worthy for the host nations. It might be concerned extremely onto the economic scenario based reliance of the nation. Henceforth the attraction diversities of the FDI inflows into every sector affecting naturally.

Agarwal (2000) made analysis of the collisions of FDI inflows with that of the GDP growth. That work had time series oriented cross-sectional examination of the panel type data patterns relating to five nations from South Asian region. These countries comprise Bangladesh, India, Pakistan, Nepal and Sri Lanka. The study findings estimated that FDI inflows in these nations are connected with the domestic investors and it also viewed the presence of compliance amid the two factors was also being established. The findings also pointed out the negative influence of the FDI inflows onto the GDP rates of growth previously of 1980 and thence a positive effect afterwards. The study proposed that FDI aggregates added additional growth to GDP than the borrowings from foreign sectors in the region of South Asia. Thus, the findings indorse that FDI inflows should be favored onto the external borrowings.

The studies described above analyzed the impacts posed by FDI onto the economies of various nations. The research works explain the consequences of the FDI over the growth of the economy extensively and effectively but impacts due to FDI on to the employment have only been taken in focus by a single recent study of Mazher et al. (2020). That very study also analyzed the combined effect of FDI and foreign remittances on unemployment and not the sole impact of FDI on employment levels. Further on, most of the relative studies use the econometric technique of OLS and lack the applications of long run association and causation methodologies. The novelty of conducting present study is the venture of finding a nexus of FDI and unemployment reduction. The originality of the study is also in employing the technique of VECM for finding out long run along with the short run association amid FDI and unemployment by adjusting the short run shocks for the economy of Pakistan.

### 3 Data and Methodology

The structural arrangement for the overall execution of the analysis is framed in the following lines:

#### 3.1 Data Set and Sample Period

For the proposed model of the study, data on FDI, unemployment and GDP were taken from within the various periodicals of the Economic Survey of Pakistan. Data on foreign exchange is derived from within the database of World Bank shown as World Development Indicators (WDIs). The patterns of the data have been collected on an annual based frequency over the fiscal years from 1990 to 2016, a total of 27 years. The data collected is secondary in nature and logarithmic in structure.

#### 3.2 Model

For the study, the subsequent model has been set for the analysis:

$$UMP = f (FDI, GDP, EXR) \text{-----} (1)$$

The econometric format of the model is

$$UMP = \beta_0 + \beta_1 FDI + \beta_2 GDP + \beta_3 EXR + \varepsilon \text{-----} (2)$$

Here, UMP is unemployment, FDI stands for foreign direct investment inflows, abbreviation GDP represents the gross domestic product and EXR attributes for official computed exchange rates.

#### 3.3 Variables

- **Unemployment:** Here unemployment levels are the depending variable. Unemployment may be demarcated as being the state of out of job people for a definite duration of times. It does take here as the number individuals out of the total labor force of the country who are unemployed one way or the other.
- **Rate of Exchange:** The study takes in the official exchange rate. Here it is an exogenous variable expressing the rates at what the central bank manages the exchanges of the local currency for the currency of another country being agreed upon in the foreign exchanges markets. Concerning this study, the official exchange rate of US dollars in Pakistani rupees is adopted.
- **Foreign Direct Investment:** The Foreign Direct Investment also serves here as an exogenous variable for the article. It defines the direct investments by the foreign nationals made in the productive activities within the country. The FDI counts in millions of 2015 constant US dollars.
- **GDP:** GDP is also being taken as an exogenous variable for corroborating the study. It here well defines the sum total approximate values of the goods and services produced within the geographical boundaries of the country per annum. It is taken in the billions of 2015 constant US dollars.

To harmonize the comparative statistics of the variables, the data have been converted into logarithmic form. Hence the values were made compatible for measuring the sharp influences of the data. The logarithmic version of the model is thus written as under:

$$LUMP = \beta_0 + \beta_1 LFDI + \beta_2 LGDP + \beta_3 LEXR + \varepsilon \text{-----} (3)$$

Here L represents log of the respective variable under consideration.

#### 3.4 Methodological Framework

The rationale of this article is to evaluate the supportive role of FDI inflows for the unemployment reductions in Pakistan. The study takes four potential variables to examine the impacts in order to

observe any possible empirical relationship. The study contains time series data and hence following procedure is executed for the analysis as per the requirement and nature of the data:

- The Augmented Dickey Fuller (ADF) test has been employed for knowing the stationarity of the study's data. The ADF test used here has following pattern of regression:

$$\Delta X_t = \mu + \beta t - 1T + \sum_{i=1}^n \gamma \Delta X_{t-i} + \epsilon_t \quad \text{----- (4)}$$

Here X denotes the variable to be tested for stationarity with t or T denoting time.

- The Johansen test of co-integration was run for predicting any long-term relationship between FDI and unemployment rates. The Johansen Co-integration test is expounded on maximum likelihood estimation framework for k-dimensional vector autoregressive (VAR) models of the order q:

$$X_t = A_0 + B_1 \Delta X_{t-1} + B_2 \Delta X_{t-2} + \dots + B_k + 1\Delta X_{t-q} + 1 + \epsilon_t \text{----- (5)}$$

Wherever a k × 1 vector containing the stochastic natured variables. Henceforth A0 presents a k × 1 vector of the constants, B<sub>k+1</sub> is (k+1) × (k+1) here a matrix of the parameters, and ε<sub>t</sub> is a k × 1 vector of errors terms.

- Vector error correction models (VECM) has been used for finding out short run along with the long run consequences pertaining the study. The errors corrections models can be formulated as under:

$$\Pi_t Z_{t-1} = a_1 (b_1 W_{t-1} + b_2 X_{t-1} + b_3 Y_{t-1}) + a_2 W_{t-1} + a_3 X_{t-1} + a_4 Y_{t-1} \text{----- (6)}$$

This model is for single lag length of the variables W, X and Y. Π is a matrix pertaining to long run association with Π = a\*b. Here 'a' is for speeds of the adjustments and 'b' denotes the matrix containing coefficients.

#### 4 Estimation and Results

As per the strategic layout of the methodology, the estimates were obtained with the help of the statistical package and related description of findings is narrated thereafter.

##### 4.1 The Unit Root Test

The current study makes usage of augmented Dickey-Fuller (ADF) test of unit root to examine the possible stationarity being found (Dickey & Fuller, 1981).

**Table 1**  
**ADF Test Found Unit Root Values**

Variable	At level		At the first differences		Results
	With the intercepts	With the intercepts and the trends	With the intercepts	With the intercepts and trends	
LUMP	-1.049 (0.7174)	-3.219 (0.0573)	-5.878 (0.0001)	-5.739 (0.0006)	I(1)
LFDI	-1.501 (0.5168)	-3.073 (0.0591)	-3.682 (0.0113)	-3.634 (0.0479)	I(1)
LGDP	-0.444 (0.8831)	-2.855 (0.1930)	-3.603 (0.0135)	-3.637 (0.0488)	I(1)
LEXR	-1.981 (0.2926)	-2.197 (0.4698)	-3.251 (0.0292)	-6.593 (0.0497)	I(1)

\*Probability values are given in the parentheses.

On the basis of the probability values, the employed ADF tests show that all variables are co-integrated having first order, I (1). They possess unit root at levels but they become stationary at first difference. This is thus appropriate to employ VECM as all the variables have stationarity of I (1). If the variable would have been of different orders of integration (I(0), I(1)), then ARDL technique was

suitable to use here (Nkoro&Uko, 2016). Additionally, it is necessary to test long run co-integration amongst the variables for employing VECM technique.

#### 4.2 Johansen Co-integration Test

Co-integration method framed by Johansen is employed for inspection the possible co-integration association between unemployment, FDI, GDP and exchange rate. Suitable lag span of the equations for constituting the Johansen co-integration test is figured out by process of minimizing the eminent Akaike information criterion (AIC) (Akaike 1974), Schwarz information criterion (SIC) (Schwarz 1978) and Hannan Quinn information criterion (HQIC) (Hannan& Quinn 1979).

**Table 2**  
**Selection Criteria of VAR Lag Length H**

Lags	logL	LR	FPE	AIC	SIC	HQIC
0	83.83993	NA	1.52e-08	-6.653327	-6.456985	-6.601238
1	195.3962	176.6307*	5.41e-12	-14.61635	-13.63463*	-14.35590
2	215.9610	25.70604	4.21e-12*	-14.99675*	-13.22967	-14.52794*

Specifies lag order being chosen by the criteria

Hence the co-integration test was performed over the origin of the lag length orders equalizing to 2 being chosen through AIC and HQIC.

On the basis of selected lag lengths of the variables, thence the Johansen Co-integration approach was applied which comprises the following two tests to check the status of long run association.

**Table 3**  
**Unrestricted Co-Integration Rank Test (traces)**

Hypothesize	Trace	0.05	
No. of CE(s)	Eigenvalues	Statistics	critical values
			Probability**
None *	0.838006	77.49842	47.85613
At the most 1 *	0.548596	35.63385	29.79707
At the most 2 *	0.446840	17.33981	15.49471
At the most 3	0.149386	3.721337	3.841466

**Table 4**  
**Rank Test of Unrestricted Co-integration (maximum Eigenvalues)**

Hypothesize	Max-Eigen	Max-Eigen	0.05	
No. of CE(s)	Eigenvalues	Statistics	critical value	Probability**
None *	0.838006	41.86457	27.58434	0.0004
At the most 1	0.548596	18.29404	21.13162	0.1192
At the most 2	0.446840	13.61847	14.26460	0.0631
At the most 3	0.149386	3.721337	3.841466	0.0537

Here trace Eigen-value tests' outcomes diverse results as compared to the maximum Eigen value tests, so the outcomes relating to maximum Eigen-value tests should be employed. It pertains so due to the reason that maximum Eigen-value tests have greater illustrative efficiency versus the instructive efficiency of the trace Eigen-value test (Johansen, 1991). Thus, there is evidence of the existence of single co-integration equation among unemployment, exchange rate, GDP and FDI in the economy of Pakistan.

4.3 The Vector Errors Correction Model

The study model was estimated using Restricted VARs (VECM) with 2 lags as being chosen by the lag selection criteria and henceforth at the specification of one Co-integration equation specified by the Johansen test of co-integration. Then the targeted model is selected for further manipulation from the system of VECM which is presented in equation form as following:

$$D(UEM) = C(1) * (UEM(-1) - 0.0377 * FDI(-1) + 0.91604 * GDP(-1) - 1.2507 * EXR(-1) + 0.0424) + C(2) * D(UEM(-1)) + C(3) * D(UEM(-2)) + C(4) * D(FDI(-1)) + C(5) * D(FDI(-2)) + C(6) * D(GDP(-1)) + C(7) * D(GDP(-2)) + C(8) * D(EXR(-1)) + C(9) * D(EXR(-2)) + C(10) * (-7)$$

From the computation of the above model, the results of VECM are checked for short run and the long run influence of independent variables on dependent variable in lines of the study.

Table 5

VECM (Dependent Variable: D(LUMP))

Impact of LUMP on	Null Hypothesis	Wald test statistic	Prob.
LFDI	C(4) = C(5) = 0	12.096	0.0011
LGDP	C(6) = C(7) = 0	0.2943	0.7575
LEXR	C(8) = C(9) = 0	6.944	0.0089
ECT <sub>1</sub>	Coefficient -0.8646	t-statistic -6.7145	Prob. 0.0000

The VECM results point out the presence of long run equilibrium causality among the study variables on 5% level as the errors correction term stands negative and it has significance at 0.05 levels. ECT is -0.8646 which depicts that the system possesses 86% speeds of adjustments towards the equilibrium position in the long run scenario for the possible short run shocks of disequilibria. Applying Wald test on VECM illustrates that there does exist short run relationship amid FDI and UMP as well as EXR and UMP but no short-term causality was detected between GDP and unemployment.

The diagnostic tests on the VECM model are given in detail in the appendices. A compact view of the outcomes of diagnostic tests is displayed in the underneath table:

Table 6

Diagnostic Tests

<b>Goodness of Fitness of the model:</b>	<b>R<sup>2</sup> = 0.9124</b>	<b>Adjusted R<sup>2</sup> = 0.8518</b>
<b>Overall Significances of the model:</b>	F-statistic = 15.047	Probability = 0.0000
<b>Serial correlations LM Test:</b>	Observe R <sup>2</sup> = 3.7422	Probability = 0.1540
<b>Heteroskedasticity Test (BrueschParagan Godfrey):</b>	Observed R <sup>2</sup> = 14.670	Probability = 0.2600
<b>Test of Normality:</b>	JB = 0.5028	Probability = 0.7777

The statistic of R-squared designates that 91.24 % disparity is shielded in the specified model and henceforth the model may be considered as a good fitted model. The probability value of the F statistic comes 0.000 % being lesser than 5 %, thus it does prove thorough significance of concerning model. Probability value of the LM serial correlation test is 15.40 % being more than 5% which ultimately directs us for no rejection but acceptance of null hypothesis of the no serial correlations. Heteroskedasticity tests have value of probability being 26 % > 5% signifying that we should not discard null hypothesis of the homoskedasticity. Then the value relating probability of the Jarque Berra comes as 77.77 % far greater than 5% and thus displays that we may not reject the normality based null hypothesis of residuals. The findings of almost all the tests indicate goodness of the study's model and they conclude reliability as well as the validity regarding the results.



## 5 Conclusion

Through this study, it has been tried to conceptualize the importance of the inflows of FDI onto the unemployment reduction within Pakistan. The study comprises the four variables including the FDI, unemployment levels, the exchange rate and the GDP. All of these variables have been put up within the economic setup of Pakistan in real terms at their level values. Johanson Co-integration and VECM approaches have here been employed in order to establish long and short run relationships and causality senses among the afore declared variables.

The rationale of using VECM instead of other analysis techniques (e.g., ARDL etc.) was to ascertain the short run impacts along with the long run affiliation amid FDI and unemployment. The empirical investigation divulges that there is a long run association and long run as well as short-run causality among the variables of the model. The analysis shows that the short run shocks in the impacts of FDI on unemployment reduction can be adjusted in the long run at a rapid speed of adjustment (86%).

In the views to quantify the patterns of the affiliation, the regularized output depicts that FDI is negatively interconnected to unemployment levels, the causes confirm that due to the inflows of FDI additional employment chances are availed that verily reduce the unemployment in the economy. The improvements in employment level substantiate the role of FDI in job creation phenomena. Thus, the reduction in unemployment can be brought by attracting more and effective inflows of foreign capital and technology via FDI. This will ultimately stimulate the growth and development of the country.

These findings confirm the findings of past studies which describe that FDI inflows to an economy increase the employment opportunities in the economy. In a particular manner, the findings of this work affirm the outcomes of the study of Mazher et al. (2020). Howsoever, in addition of the results of the above cited study, this study also establishes significant short run impacts of FDI inflow onto the employment reduction along with the long run effects. This study explores that short run shocks in the effectiveness of the FDI inflows on unemployment reduction are adjusted in the long run at a greater speed.

Over the bases of the findings, following few recommendations are made:

- The authorities relating to the monetary decisions should accentuate on unchanging exchange rates for switching in the higher levels of FDI into the country.
- Operational procedures should be embarked on to tackle the security issues for the sufficient inflow of FDI.
- Activities must be launched to provide skills to the laborers, by which way they can be put in pace with the scientifically innovative atmosphere.

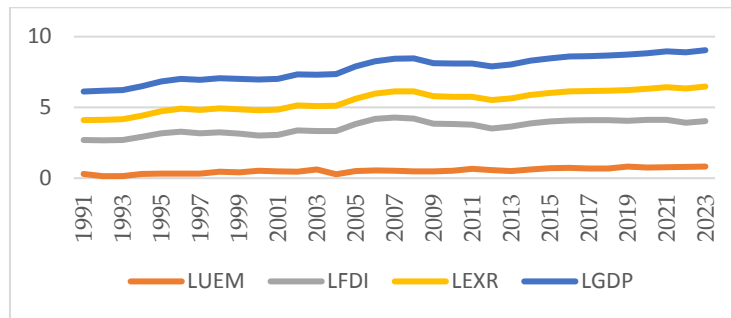
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APPENDICES

A-1. Traces of the variables of the model



A-2. Estimation of VECM

$$D(UEM) = C(1)*(UEM(-1) - 0.0377*FDI(-1) + 0.91604*GDP(-1) - 1.2507 *EXR(-1) + 0.0424) + C(2)*D(UEM(-1)) + C(3)*D(UEM(-2)) + C(4) *D(FDI(-1)) + C(5)*D(FDI(-2)) + C(6)*D(GDP(-1)) + C(7)*D(GDP(-2)) + C(8)*D(EXR(-1)) + C(9)*D(EXR(-2)) + C(10)$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.000819	0.003633	-0.225556	0.8238
C(2)	-0.573473	0.197212	-2.907902	0.0087
C(3)	-0.497491	0.180588	-2.754836	0.0122
C(4)	0.000165	0.000171	0.963230	0.3469
C(5)	-0.000360	0.000192	-1.874457	0.0755
C(6)	0.010508	0.029514	0.356024	0.7256
C(7)	0.023829	0.028296	0.842129	0.4097
C(8)	-0.003996	0.018279	-0.218607	0.8292
C(9)	-0.000426	0.022592	-0.018845	0.9852
C(10)	0.129764	0.278740	0.465540	0.6466
R-squared value	0.498062	Mean depending Var		0.174652
Adjusted R-squared value	0.272190	S.D. depending Var		0.751812
S.E. of regression	0.641384	Akaike Information Criterion		2.210826
Sum squared residuals	8.227479	Schwarz Criterion		2.677892
F-statistic	2.205061	Durbin-Watson statistic		2.361611
Prob(F-statistic)	0.067603			

A-3. Diagnostic Tests on VECM

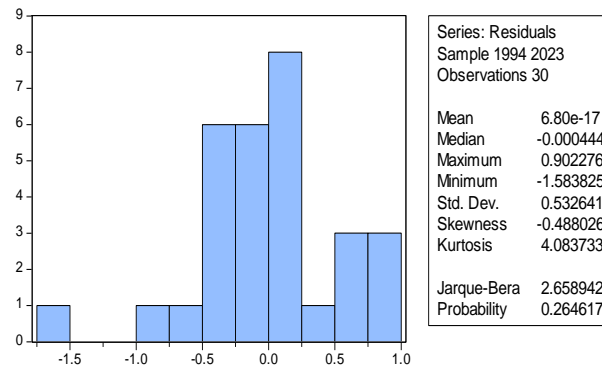
A-3.1. The Breusch-Godfrey LM Test of Serial Correlation:

F-statistic value	1.196041	Probability. F(2,18)	0.2812
Observed R-squared	1.377781	Prob. Chi-Square value (2)	0.2405

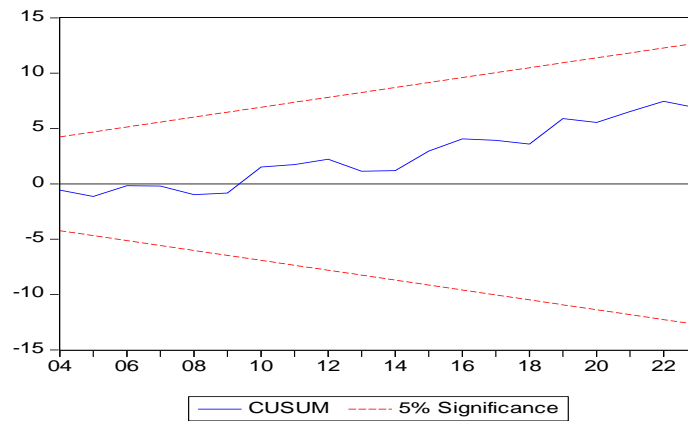
A-3.2.

The Breusch-Pagan-Godfrey Test for Heteroskedasticity:

F-statistic value	1.728708	Probability. F(12,18)	0.1262
Observed R-squared	12.46179	Probability. Chi-Square (12)	0.1318
The Scaled Explained SS	14.07062	Probability. Chi-Square(12)	0.0799



**A-3.3. Test of Normality:**



**A-3.4. Stability Test**

**Appendix B:**

**Data Sheet**

FY	UEM	FDI	EXR	GDP	LUEM	LFDI	LEXR	LGDP
1991	1.963766	258.414	25.083	104.573	0.29309	2.412316	1.399379	2.01942
1992	1.403459	336.479	28.107	112.631	0.1472	2.526958	1.448814	2.051658
1993	1.402569	348.557	30.566	114.611	0.146924	2.542274	1.485239	2.059226
1994	1.952511	421.025	31.443	118.895	0.290593	2.624308	1.497524	2.075164
1995	2.08896	722.631	36.079	124.795	0.31993	2.858917	1.557254	2.096197
1996	2.137809	921.976	41.112	130.843	0.329969	2.96472	1.613969	2.11675
1997	2.100979	716.253	45.047	132.175	0.322422	2.855066	1.653666	2.121149
1998	2.881832	606.112	49.501	135.541	0.459669	2.782553	1.694614	2.132071
1999	2.63971	532	53.648	140.502	0.421556	2.725912	1.729554	2.147683
2000	3.325128	308.101	61.927	146.488	0.521808	2.488693	1.79188	2.165802
2001	2.987773	383.099	59.724	151.694	0.475348	2.583311	1.776149	2.180968
2002	2.84314	823.201	57.752	155.499	0.453798	2.915506	1.761567	2.191728
2003	4.096047	534.302	58.257	164.483	0.612365	2.727787	1.765348	2.216121
2004	1.922527	1118.005	59.514	176.896	0.283872	3.048444	1.774619	2.247718
2005	3.112398	2201.023	60.271	188.427	0.493095	3.342625	1.780108	2.275143
2006	3.554976	4273.121	60.738	199.543	0.550837	3.630745	1.78346	2.300036
2007	3.442696	5590.098	70.408	209.186	0.536899	3.747419	1.847622	2.320533
2008	3.022171	5438.031	81.713	212.745	0.480319	3.735442	1.912291	2.327859
2009	3.057957	2338.407	85.194	218.769	0.485431	3.36892	1.930409	2.339986
2010	3.290041	2022.191	86.343	222.284	0.517201	3.305822	1.936227	2.346908
2011	4.546515	1326.117	93.395	228.594	0.657679	3.122582	1.970324	2.359065
2012	3.770567	859.034	101.629	236.404	0.576407	2.93401	2.007018	2.373655
2013	3.259553	1333.314	100.103	246.797	0.513158	3.124932	2.000447	2.39234

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<b>2014</b>	4.234076	1778.077	103.456	258.334	0.626759	3.249951	2.014756	2.412182
<b>2015</b>	5.123904	2019.176	102.562	270.556	0.709601	3.305174	2.010986	2.432257
<b>2016</b>	5.329678	2265.875	112.864	285.509	0.726701	3.355236	2.052555	2.45562
<b>2017</b>	4.783423	2576.341	115.455	298.165	0.679739	3.411003	2.062413	2.474457
<b>2018</b>	4.932541	2496.743	121.834	316.507	0.693071	3.397374	2.085769	2.500383
2019	6.453904	1737.482	150.036	324.412	0.809823	3.23992	2.176195	2.511097
2020	5.793214	2234.654	161.838	320.279	0.76292	3.34921	2.209081	2.505528
2021	6.023176	2147.336	205.868	341.055	0.779826	3.3319	2.313589	2.532824
2022	6.241236	1339.273	256.834	362.167	0.795271	3.126869	2.409653	2.558909
2023	6.642116	1625.235	274.174	372.455	0.822306	3.210916	2.438026	2.571074

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**Data Source: Pakistan Bureau of Statistics and World Bank with calculations by researchers**