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Impact of Employment Rate, Exchange Rate and Foreign Direct Investment on Worker's Remittances and Economic Growth

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Abstract - Due to increasing saving-investment gaps and binding constraints on aid/loans, surging unemployment rates and foreign exchange fluctuations can make people in developing countries (like Pakistan) particularly more susceptible to economic miseries. Considering the above, we examine the role of remittances, employment rates and exchange rate in either alleviating or increasing economic growth using Pakistan's data for over the 1972 through 2019 period. We correct for data biases using employment rate, exchange rate and foreign direct investment on remittance and economic growth in Pakistan. We conclude that Remittances does not appear to share a long-run co-integration with Exchange rate, foreign direct investment and employment rate. However, exchange rate does indeed share a long-run co-integration with foreign direct investment and employment.

Keywords: Remittances, Economic Growth, Domestic Investment, Employment Rate, Exchange Rate, Foreign Direct Investment, Pakistan.

JEL classification: F24, F43, E24, F21, E22, N75.

I. INTRODUCTION

The exchange rate is of paramount concern in an open economy as it distresses the macroeconomic variables, including GDP, remittances FDI, capital flows, inflation, and international reserve. Most economists and policymakers are certain that the increase in exchange rate moves towards a competitive advantage of the international trade level. Exchange rate fluctuations affect domestic export goods to become cheaper than the international trade, by this the export volume increased and the import volume decreased. It also changes the FDI and remittance volume, which further worsen off the growth effects and the level of GDP.
One important factor, among many others, is the exchange rate in Pakistan, as it is frequently fluctuated and has shown variability in the external value of the domestic currency, which further alters the real value of foreign investments accompanied by compromised economic growth. The effect of exchange rate fluctuations on macroeconomic variables for the most part the international trade has also been unfavourable for macroeconomic stability, since the late 1970's, the very point at which the exchange rate invigorated from undaunted to adaptable framework. The study in hand examines if higher exchange rate may be reduced, by making vulnerability about inevitable benefits from send out exchange. Whereas, genuine conversion scale is crucial to decide foreign direct investment (Khan et al., 2012).

Remittances inflows as of now establish around 33% of financial flows related streams to the developing world. These inflows are straightforwardly received by the groups of remitters, accordingly has direct effect on neediness decrease and high development rates (Adams & Page, 2005; Acosta et al., 2008) in receiving countries. Further, remittances reduce the present record shortfalls of the getting nation as they are treated as pathetic current private exchanges to be balance of payments (BOP) accounts.

A few investigations find 1negative relationship between Economic Growth and Exchange rate while a few discovers positive relationship and some studies presume that there is no connection between economic development and exchange rate. Najid (2012) finds an immediate relationship among inflation and economic growth. This study used time series data for the time length of (1971-2011) of Pakistan. The author believes that inflation boost the yield level as well as builds the effectiveness of the economy. However, the author additionally makes reference to that inflation should to be moderate in any case results might be spiteful. On the other hand, numerous studies discover an immediate relationship among inflation and monetary development (Shazad, 2011; Naseer, 2012; Mubarik, 2005) while different studies

like (Quartey, 2010) confirms a negative connection between these two variables like. Ahamd (2012) finds no relationship among inflation and financial development.

Remittances have some similar points of interest as they don't make future repayment obligation like capital flows and the recipient countries don't have to agree to certain political and financial conditions like foreign aid. In addition, outside guides go to the administration and work as open guide while remittances go to the family units and work as private guide. The spending idea of the government is to a great extent unique in relation to that of individual family units as government spends a noteworthy bit on development projects while families spend more on utilization purposes hence actuating consumer price index (CPI). While a few investigations infer that a high inflow of remittances lower destitution and invigorates monetary development (for example Acosta, Baerg, and Mandelman, 2009; Giuliano and Ruiz-Arranz, 2009), a few investigations propose that remittances can actuate expansion in the beneficiary economies (for example Balderas and Nath, 2008; Narayan, Narayan and Mishra, 2011; Nisar and Tufail, 2013; Khan and Islam, 2013).

This study contributes in literature though investing an emerging issue related to developing countries like Pakistan. Pakistan economy facing a huge gap in saving and investment and unfair required constraints on aid and loans. The immediate impact of this phenomena inflates the unemployment rates and volatility in foreign exchange (Morina et al., 2020). It further makes people vulnerable to economic desolations in developing countries. Owing to this there is dire need to investigate this channel in case of Pakistan economy because it has been done in existing literature.

II. LITERATURE REVIEW

Financial development experts and policymakers, as of late, have created unmistakable fascination for surveying the job of remittances in the monetary improvement of Africa and other developing nations especially Pakistan. Remittances have become a critical source of outside trade in creating nations. In 2004, for example, transient remittances of US$126 billion turned into the second most significant source of remote trade income to creating nations. This was the year where outside direct speculation (FDI) to creating nations remained at US$165 billion with net expert development help (ODA) adding up to US$79 billion.

Morina et al. (2020) argued that any economy with huge gap in saving and investment ultimately faced the problem of high unemployment rate and depreciation in domestic currency value. Soava et al. (2020) explored the causal linkages between employment labour force and economic growth of Europe union countries. They concluded that the investment and employment labour force have large significant impact on economic growth but there is a minor impact of remittances on economic growth in case Europe union countries. Paul et al. (2018) found relationship between exchange rate volatility and economic growth. The outcomes showed that every single autonomous variable have a positive and huge impact on financial development. They applied some symptomatic residual diagnostic tests to affirm the steadiness of the model. They concluded that some financial and fiscal measures are to be taken to build the fare of non-petroleum products. Comes et al. (2018) investigated the impact of foreign direct investment on economic growth on central and eastern European countries. They found that there is significant long run relationship between foreign direct investment and economic growth.

Bashir and Luqman (2014) examined the long run impact of real exchange rate. The examination reasons that genuine conversion scale is deteriorated by terms of exchange and Price level. While exchange limitations and laborers' remittances are applying negative impact on exchange rate of Pakistan over the long run.Roy and Rahman (2014) led an experimental analysis on the relationship between remittance and inflation rate, and growth in case of Bangladesh. They found significant relationships among the variables through Johansen and Juselius cointegration analysis. They concluded that the inflow of the worker's remittancessurges the inflation in economy which finally effect the economic growth.

Khan et al. (2012) investigated the effectiveness of exchange rate and its relationships with FDI and economic growth. The results indicated that there is no sign of long run relationships among exchange rate, FDI and economic growth. But they found negative significant relationship between exchange rate and economic growth. As the domestic currency depreciated, it effects growth of economy in case of Pakistan. They also concluded that there is Granger causality between FDI, exchange rate and economic

growth. Biswas and Dasgupta (2012) advocated the relationship between real exchange rate and foreign direct investment. The Johansen test is utilized to set up a long run connection between the realexchangerate and important macroeconomic factors. The outcomes proposed that FDI and Worker'sremittances influence real exchange rate emphatically. They also concluded that the FDI and exchange rate movement are changing together. Adenutsi and Ahortor (2008) concluded the effect of Remittances, Exchange Rate, and Monetary Policy. Results of the study showed that remittances have significantly impact on monetary aggregates, exchange rate, interest rate, and the domestic price level, and practically monetary and exchange rate policies should be specially expressed and selectively directed to attract global remittances in Ghana

The review of the studies shows that there are theoretical and empirical relationships among employment rate, exchange rate and foreign direct investment on worker's remittances and economic growth. But there is no particular study who specifically explored this channel in case of Pakistan. That is why the main focus of this study is to empirically investigate this channel.

III. METHODOLOGY

This section based onmethodology, results and interpretation of the outcomes. The main of this study to explore the channel in which we evaluate the impact of employment rate, exchange rate and foreign direct investment on worker's remittances and economic growth. Time series data is used for the year of 1972 to 2019.The data are collected from Pakistan Economic Survey and World Bank. We employed descriptive stats, unit root testing, Johansson's co-integration Analysis for long run relationship and Pairwise Granger causality test to check causal linkages.The function form of model is:

$$GDPG_t = f(REM_t, FDI_t, EXR_t, ELF_t, DI_t) \quad (1)$$

It can be written in econometrics form:

$$GDPG_t = \beta_0 + \beta_1 REM_t + \beta_2 FDI_t + \beta_3 EXR_t + \beta_4 ELF_t + \beta_5 DI_t + \varepsilon_t \quad (2)$$

where

The GDP is gross domestic product (constant US $ in millions). The REM is remittances (constant US $ in millions). The EXR is exchange rate (LCU per US$, period average). The DI is domestic investment (constant US $ in millions). The FDI is foreign direct investment(Constant US $ in millions). The ELF isemployed labour force (millions). The ε_t is error term. While the β_0,β_1,β_2, β_3, β_4 and β_5 are the coefficients of variables. In this study we are following the theory of remittances presented by (Poirine, 1997).

IV. RESULTS AND DISCUSSION

Descriptive Statistics deals with the concepts and methods concerned with the summarization and illustration of the important structures of variables.Results of the table shows the detailed information about the individual variable of the data that is used in the study. No of observations are 46 years for the analysis of the study.

Table: 1 Descriptive Statistics

	GDP	REM	EXR	DI	FDI	ELF
Mean	88053.45	4935.168	44.35073	13558.1	1032.091	35.841
Maximum	304951.8	19808	121.8241	44200.83	5590	57.420
Minimum	6324.884	139	8.681383	1072.121	-400	18.559
Std. Dev.	8353.75	5605.37	34.089	11558.58	1303.914	12.441
Skewness	1.192069	1.584579	0.667008	1.067736	2.173531	0.467

Kurtosis	3.176876	4.276288	2.155557	2.964239	7.468145	1.904
Jarque-Bera	10.95451	22.37224	4.881501	8.742908	74.48409	3.976775
Probability	(0.004)	(0.000)	(0.0870)	(0.0126)	(0.000)	(0.1369)
Sum	4050459	227017.7	2084.484	623672.7	47476.16	1648.72
Sum Sq. Dev.	3.14E+11	1.41E+09	53456.92	6.01E+09	76508680	6965.155
Observations	48	48	48	48	48	48

Source: Software E-Views 9

The average value of GDP is 88053.45 for the given data. The standard deviation value of 8353.75. The average REM is 4935.168 with the standard deviation value of 5605.373. Similarly, average value of the EXR, DI, FDI and ELF are 44.35073, 13558.1, 1032.091 and 35.84174 respectively with their values of standard deviation are 34.08969, 11558.58, 1303.914 and 12.44111 respectively. The skewness test values show that all the variables are positively skewed in the table 1. The values of the kurtosis of GDP, REM, and FDI show that data distribution is Leptokurtic. While the values of EXR, DI and ELF reveals that data distribution is Platykurtic.

Unit Root Test

The first and most significant aspect for econometric modelling is to test the unit root of series.If there is unit root in the series it means that series has long run dynamics. To explore these dynamic, we can apply cointegration analysis. We used augmented Dickey Fuller test for the testing of unit root. The results of testing given below in table 2:

Table: 2 Unit Root Test

	ADF at Level		ADF at 1st Difference	
Variables	t-Statistic	Prob.*	t-Statistic	Prob.*
GDP	1.46808	1.0000	-5.96839	0.0001
REM	-0.55695	0.9768	-7.07684	0.0000
EXR	-0.70551	0.9666	-4.67526	0.0026
DI	-0.27093	0.9892	-8.23006	0.0000
FDI	-3.26733	0.0851	-5.04477	0.0009
ELF	-1.46836	0.8258	-3.93924	0.0185

Source: Software E-Views 9

The results in table 2 indicate that all the variable are nonstationary at level but they stationary at first difference. As the variables are nonstationary that is why we can employ cointegration analysis. We employed Johansen and Juselius (JJ) cointegration for the testing of long run relationships. The results of trace and maximum eigen values are given in table 3 and 4:

Table: 3 Trace Statistics

Unrestricted Cointegration Rank Test (Trace)		
Hypothesized	Trace	0.05

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.764578	186.201	95.75366	0.0000***
At most 1	0.728437	122.5604	69.81889	0.0000***
At most 2	0.514091	65.20371	47.85613	0.0005***
At most 3	0.339289	33.44737	29.79707	0.0182**
At most 4	0.188466	15.21206	15.49471	0.0451**
At most 5	0.127942	6.023566	4.841466	0.1041

Source: Software E-Views 9, Note: *, **, ***, show the significance level 10%, 5%, 1% respectively.

Table: 4 Max-Eigen Statistic

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.764578	63.64061	40.07757	0.0000***
At most 1	0.728437	57.35669	33.87687	0.0000***
At most 2	0.514091	31.75634	27.58434	0.0137**
At most 3	0.339289	18.23531	8.13162	0.0013***
At most 4	0.188466	19.188491	7.2646	0.0008***
At most 5	0.127942	6.023566	3.841466	0.0141

Source: Software E-Views 9, Note: *, **, ***, show the significance level 10%, 5%, 1% respectively.

The findings for the multivariate co-integration study for all the series is shown in the tables.

Table: 5 Bi-Variate Co-integration

Variables	Eigenvalue	Trace Statistic	0.05 Critical Value	
GDP REM	0.309982	21.34177	15.49471	Co-Integrated
	0.107745	5.016127	3.841466	
GDP EXR	0.565061	36.8649	15.49471	Co-Integrated
	0.005275	0.2327	3.841466	
GDP DI	0.399079	29.86781	15.49471	Co-Integrated
	0.155931	7.458942	3.841466	
GDP FDI	0.418992	32.93088	15.49471	Co-Integrated
	0.18571	9.039282	3.841466	
GDP ELF	0.342438	27.59334	15.49471	Co-Integrated
	0.187716	9.147833	3.841466	
REM EXR	0.156288	16.496003	15.49471	Co-Integrated
	0.00042	4.018482	3.841466	
REM DI	0.209417	15.58525	15.49471	Co-Integrated

	0.110373	5.14595	3.841466	
REM FDI	0.186592	17.44551	15.49471	Co-Integrated
	0.030404	4.358514	3.841466	
REM ELF	0.20818	19.67269	15.49471	Co-Integrated
	0.095207	4.402159	3.841466	
EXR DI	0.548668	37.30386	15.49471	Co-Integrated
	0.05092	2.299522	3.841466	
EXR FDI	0.269515	17.3696	15.49471	Co-Integrated
	0.077545	3.551549	3.841466	
EXR ELF	0.340919	19.25007	15.49471	Co-Integrated
	0.020383	0.906104	3.841466	
DI FDI	0.329249	29.40837	15.49471	Co-Integrated
	0.235868	11.83664	3.841466	
DI ELF	0.308244	19.92338	15.49471	Co-Integrated
	0.080828	3.708401	3.841466	
FDI ELF	0.349323	19.12391	15.49471	Co-Integrated
	0.004881	0.215273	3.841466	

Source: Software E-Views 9

The Bi-Variate Co-integration existence is tested by looking at the trace statistic and the critical value.When the value oftrace statistic is more than critical value, it indicates that there is long run relationship between the variables.Outcomes of the table 5 indicate that GDP has a long-run co-integration association with REM, EXR, DI, FDI and ELF. While REM has long-run co-integration with EXR, DI, FDI and ELF and EXR also has co-integration relation with DI, FDI and ELF a long-run. Similarly, Di is cointegrated with FDI and ELF in long-run. Moreover, in the long-run FDI is co-integrated with ELF. When the variables are cointegrated we can run Granger causality testing without making the variables stationary. The results of run Granger causality testing given in table 6:

Table: 6 Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
REM does not Granger Cause GDP	43	0.01627	0.9971
GDP does not Granger Cause REM		2.55619	0.0705
EXR does not Granger Cause GDP	43	9.02496	0.0001
GDP does not Granger Cause EXR		4.4489	0.0093
DI does not Granger Cause GDP	43	0.38563	0.764
GDP does not Granger Cause DI		2.79327	0.0542
FDI does not Granger Cause GDP	43	3.84066	0.0175
GDP does not Granger Cause FDI		3.81797	0.0179
ELF does not Granger Cause GDP	43	5.22198	0.0043
GDP does not Granger Cause ELF		3.44122	0.0268
EXR does not Granger Cause REM	43	1.83536	0.1582
REM does not Granger Cause EXR		0.55211	0.65
DI does not Granger Cause REM	43	3.10866	0.0383
REM does not Granger Cause DI		1.02977	0.391
FDI does not Granger Cause REM	43	1.95738	0.1378

REM does not Granger Cause FDI		1.47649	0.2373
ELF does not Granger Cause REM	43	1.41723	0.2536
REM does not Granger Cause ELF		3.15679	0.0364
DI does not Granger Cause EXR	43	1.86413	0.1531
EXR does not Granger Cause DI		18.8259	0.0000
FDI does not Granger Cause EXR	43	2.91901	0.0472
EXR does not Granger Cause FDI		3.09363	0.039
ELF does not Granger Cause EXR	43	6.81776	0.0009
EXR does not Granger Cause ELF		0.44681	0.7211
FDI does not Granger Cause DI	43	6.80748	0.0009
DI does not Granger Cause FDI		3.76269	0.019
ELF does not Granger Cause DI	43	2.56109	0.0701
DI does not Granger Cause ELF		1.39637	0.2597
ELF does not Granger Cause FDI	43	6.39642	0.0014
FDI does not Granger Cause ELF		1.27127	0.2988

Source: Software E-Views 9 Note: *, **, ***, show the significance level 1%, 5%, 10% respectively.

Table 6 represent the results of the Pairwise Granger Causality Test. According to the results, GDP does not Granger Cause REM with value of the probability 0.0705, means GDP does Granger Cause REM. When the Gross Domestic Product of the economy increased it become the cause to increase in the Remittances. It shows, GDP has unidirectional relation with the REM. EXR does not Granger Cause GDP with value of the probability 0.0001, means EXR does Granger Cause GDP and GDP does not Granger Cause EXR with value of the probability 0.0093, show GDP does Granger Cause EXR. Bi-directional relationship exist between the EXR and GDP. GDP does not Granger Cause DI with value of the probability 0.0542, indicate GDP does Granger Cause DI. GDP has unidirectional relation with the DI. FDI does not Granger Cause GDP with value of the probability 0.0175, predict FDI does Granger Cause GDP and GDP does not Granger Cause FDI with value of the probability 0.0179, predict GDP does Granger Cause FDI. Therefore, this finding shows the bi-directional relationship exist between the FDI and GDP. ELF does not Granger Cause GDP with value of the probability 0.0043, display ELF does Granger Cause GDP and GDP does not Granger Cause ELF with value of the probability 0.0268, display GDP does Granger Cause ELF. This finding shows the bi-directional relationship exist between the ELF and GDP. DI does not Granger Cause REM with value of the probability 0.0383, represent DI does Granger Cause REM and show the existence of uni-directional association of DI with REM. REM does not Granger Cause ELF with value of the probability 0.0364, means REM does Granger Cause ELF and also show the existence of uni-directional association of REM with ELF. Similarly, EXR does not Granger Cause DI with value of the probability 0.0000, explore EXR does Granger Cause DI and show the existence of uni-directional association of EXR with DI. FDI does not Granger Cause EXR with value of the probability 0.0472, show FDI does Granger Cause EXR and EXR does not Granger Cause FDI with value of the probability 0.039, show EXR does Granger Cause FDI. This finding shows the bi-directional relationship exist between the FDI and EXR. ELF does not Granger Cause EXR with value of the probability 0.0009, explore ELF does Granger Cause EXR and indicate the uni-directional association of ELF with EXR. FDI does not Granger Cause DI with value of the probability 0.0009, explore FDI does Granger Cause DI and DI does not Granger Cause FDI with value of the probability 0.019, explore DI does Granger Cause FDI. This conclusion shows the bi-directional relationship happen between the FDI and DI. ELF does not Granger Cause DI with value of the probability 0.0701, means ELF does Granger Cause DI and explore the existence of uni-directional association of ELF with DI in the economy. Similarly, ELF does not Granger Cause FDI with value of the probability 0.0014, means ELF does Granger Cause FDI and discover the existence of uni-directional relation of ELF with FDI in the Pakistan.

V. CONCLUSION

The key aim of the study is to investigate theimpact of Employment rate, Exchange rate and Foreign Direct Investment on Remittance and Economic Growth in Pakistan. Time series data is used for the year of 1972 to 2019 in the context of Pakistan. Theoutcomes of the Bi-Variate Co-integration indicate that GDP has a long-run co-integration association with REM, EXR, DI, FDI and ELF. While REM also haslong-run co-integration association with EXR, DI, FDI and ELF. The EXR has co-integration relation with DI, FDI and ELF a long-run. Similarly, DI is cointegrated with FDI and ELF in long-run. Moreover, in the long-run FDI is co-integrated with ELF.The results of the Pairwise Granger Causality test show, GDP does Granger Cause REM. When the Gross Domestic Product of the economy increased it become the cause to increase in the Remittances. It shows, GDP has unidirectional relation with the REM. EXR does Granger Cause GDP and GDP does Granger Cause EXR. Bi-directional relationship exist between the EXR and GDP. GDP does Granger Cause DI and it means, GDP has unidirectional relation with the DI. FDI does Granger Cause GDP and GDP does Granger Cause FDI. Therefore, this finding shows the bi-directional relationship exist between the FDI and GDP. ELF does Granger Cause GDP and GDP does Granger Cause ELF. This result also shows the bi-directional relationship exist between the ELF and GDP. DI does Granger Cause REM and show the existence of uni-directional association of DI with REM. REM does Granger Cause ELF and also show the existence of uni-directional relationship of REM with ELF. Similarly, EXR does Granger Cause DI and show the existence of uni-directional association of EXR with DI. FDI does Granger Cause EXR and EXR does Granger Cause FDI. This finding shows the bi-directional relationship exist between the FDI and EXR. ELF does Granger Cause EXR and indicate the uni-directional association of ELF with EXR. FDI does Granger Cause DI and DI does Granger Cause FDI. This conclusion shows the bi-directional relationship happen between the FDI and DI. ELF does Granger Cause DI and explore the existence of uni-directional association of ELF with DI in the economy. Similarly, ELF does Granger Cause FDI and discover the existence of uni-directional relation of ELF with FDI in the Pakistan.Based on empirical results the study suggested that remittances have positive influence on Pakistan's economy by proper using of remittances in development sector. It is concluded that the increased remittances inflow is fruitful for the economy of Pakistan.

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