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NEXUS BETWEEN THE EXCHANGE RATE SPILL-OVER MOVEMENT AND MACROECONOMIC VARIABLES IN SOUTH ASIAN COUNTRIES

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Abstract *The objective of this study was to examine the relationship between the Exchange Rate spill-over and Macro Economic Determinants in selected South Asian Countries (Afghanistan, India and Pakistan). The study employed 10 years of data from 2011 to 2021 of macroeconomic variables such as TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate. The result evidenced that selected macroeconomic variables changes doesn't have any connection in the changes of ER of India, Pakistan and Afghanistan. The ER changes are highly autocorrelated and act highly independence in the last ten years. Moreover, the depreciation of currency values replicates economic instability and drastically straight fall. Asian countries operating their currency based on a managed floating ER regime. It's marking a market-determined ER regime of the currency with provision for timely intervention by the central bank. Managed float regime is an international financial environment in which ERs fluctuates from day to day, but central banks attempt to influence their countries' ERs by buying and selling currencies to maintain a certain range. This study would be useful to the retail investors to speculate and arbitrage and (economic policy) policymakers to monitor, Forecasting and Simulation the ER movements.*

Keywords: *Exchange Rate, Macroeconomic, Investments, Economic Policy, Forecasting and Simulation*

JEL Code: *F31, N1, G11, D04, F47*

INTRODUCTION: EXCHANGE RATE IN SOUTH ASIAN REGION

It was straightforward to get de jure exchange rate (ER) classifications for the year 1998 because the International Monetary Fund (IMF) obtained this information from national sources. With modifications in 1977 and 1982, the annual report on Exchange Arrangements and Exchange Restrictions of the IMF was specifically based between 1975 and 1998 on self-reporting of national policies by individual nations. Since 1998, the IMF has included collected unofficial national policies, as determined by the staff of the Fund, to its method for categorising currency rates. In response to claims that there may be significant disparities between de facto and de jure policies, this change was made. Despite the many benefits of the IMF's ER coding update, the IMF no longer keeps a list of the regimes (including the fact that the current set of categories is more extensive than the older one). Other Asian nations have established numerous compromises (currency baskets, crawling bands, adjustable pegs, etc.). Vietnam officially maintains a creeping peg and band on the US dollar, while India, according to the Reserve Bank of India (RBI), "monitors and manages the ERs with flexibility, along with the capacity to intervene as and when necessary, without a stated purpose or a pre-announced target or a range." The trade-weighted ER serves as a temporary goal to make sure that the inflation (INF) target is fulfilled and according to state policy, Singapore manages its currency in relation to a basket of foreign currencies. Although Malaysia and PRC both formally implemented the currency basket system in July 2005, Singapore's has a more strategic focus. It was replaced with a currency basket system, which is most appropriately characterised as being more mechanical (i.e., keeping the trade-weighted ER within a certain band as a goal in and of itself). Pakistan seems to operate more on flexible, spontaneous pegs. Overall, it is evident that Asia has a wide range of ER systems, proving that "one size does not necessarily fit all."

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These ideas are based on two approaches to the balance of payments which have been industrialised since the late 1960s: the financial approach and the asset market or portfolio balance approach. These contemporary ER theories can be contrasted from more conventional ones, which are based on trade flows and only provide explanations for long-term or annual ER movements (Benita & Lauterbach, 1960). There are three steps in the viewpoint of REER. In the case of India, nominal ERs are typically announced in terms of the United States dollar ($), and details on ERs of EXP markets is also accessible in terms of the dollar. The first is the estimate of the two-sided nominal ERs of the country under reflection, in comparison with its trading partner country (Talpsepp, 2012). The Ngultrum was introduced, and the Bhutanese government has compared it to the Indian Rupee. Bhutanese currency does not have a fixed ER in relation to other major international currencies. The Bhutanese government may withdraw from it whenever it pleases using its own sovereign floating ER (Moyo1 & Mapfumo, 2015). The ER is one of several macroeconomic elements that are considered to be mostly important for India's economic growth. Gross Domestic Product, the rate of inflation, and the interest rate all have an impact on the ER. The ER is the price at which domestic currency is exchanged for foreign currency. Depreciation is the loss of value in a currency (Janus & Riera-Crichton, 2015). Production growth in Afghanistan has slowed to an anticipated 1.0% in 2018, down from 2.7% the previous year. Despite weak agricultural output, growth stays respectable at 0.6% on average in 2018, thanks to decreased local food costs and currency support from major trade partners. Scarcity is expected to increase and intensify. The pace of monetary growth accounts for population growth, most notably historical per capita incomes (Nwagbara & Nwabugo, 2011). Because the inflation rates of the nations are so closely linked, the actual effective ER remained stable. In the monetary division, gross non-performing loans account for 12.4% of total loans, notwithstanding good capital capacity and acceptable provisioning. The current account deficit is expected to shrink to 17.2% of Gross Domestic Product in 2018/19 due to continued EXP growth (Devereux & Lane, 2001). The Reserve Bank of India can relax capital controls by floating the maximum level of FII investment in government and corporate debt instruments, while European Central Banks can impose greater limitations. The government has the ability to create a stable political and economic climate. However, much is dependent on the global economic outlook and the destiny of the Eurozone, which will determine the future of the INR (Hegwood & Nath, 2014). The industrialization process has begun, and the textile and construction industries have dominated the industrial sector, with textile and yarn EXP accounting for the majority of the contribution. On the other hand, the tertiary sector still has a long way to go, but the only financial sector that has managed to curlicue through time has been banks (Willett, 2001). A different model for growth-driven EXP was developed, however the influence of Gross Domestic Product growth on EXP expansion was likewise shown to be minor and insignificant. The inconsistency force might be caused by time-series approaches in the literature, which can cause causal directions to shift sporadically (Jin, 2015). ER management and the survival of Nigeria's industrial subsector identifies a poor productive base as a fundamental concern confronting the industrial sector and investigates how depreciation of the Naira impacts the survival of Nigeria's industrial subsector. The findings show that manufacturing size consumption has a favourable association with the ER and EXP (Uzochukwu & Emmanuel, 2014). In Egypt, there is a causal link between the market index and the consumer price index, as well as the ER, money supply and interest rate. The same is true for Tunisia, except for consumer price index, which had no causal link via the market index. The findings also revealed that in two nations, the four macroeconomic parameters were co-integrated with the stock market (Barakat, Elgazzar & Hanafy, 2016). Increasing the real interest rate can help to reduce ER volatility. Similarly, in one nation study, ER volatility and central bank activity are unfavourably associated, implying that central bank action can attenuate ER swings (Benita & Lauterbach 2007). Market-based ER arrangements to ensure that the Naira's to real ER continues its path of sustainable stability (Ali, Isaiah et al., 2015). The findings show that industrial capacity consumption is positively related to the ER and EXP (Uzochukwu & Emmanuel, 2014; Nanda, Sahoo & Biswal, 2023), provided an in-depth analysis of the relationship between macroeconomic indicators and the Indian stock market performance during the pre-Corona pandemic period. The study found that significant implications for investors, policymakers and financial analysts in making informed decisions related to the stock market. The study recommended for those interested in understanding the dynamics of the Indian stock market during the pre-Corona pandemic period. Joshi, Sharma and Khanuja (2022) explored the relationship between open interest and volatility in the commodities market. The authors used econometric models such as the Vector Autoregression model and the Granger causality test to analyse the data. The results of the study indicated a positive relationship between open interest and volatility in the commodities market. The study also revealed that there was a bidirectional causality between open interest and volatility in most of the commodity futures contracts. The study had significant implications for investors and market participants as it highlights the importance of open interest in predicting market volatility. The study suggested for those interested in understanding the dynamics of the commodities market and the importance of open interest in predicting

market volatility. Shefali and Kour (2022) found that there were significant differences in the risk and returns of stocks listed on the NSE. The study also revealed that stocks in the information technology and pharmaceutical sectors had higher returns and lower risk compared to other sectors. The study exhibited that significant implication for investors and market participants as it highlights the importance of analysing the risk and returns of stocks before investing. The suggested for those interested in understanding the dynamics of the Indian stock market and the importance of analysing the risk and returns of stocks before investing. Pachiyappan and Chandrakala (2022) analysed the relationship between gold prices and five macroeconomic factors, namely ER, crude oil price, inflation rate, interest rate and stock market index. The results of the study indicated that there was a long-term relationship existence between gold prices and the macroeconomic factors. The study also depicted that ER, crude oil price and inflation rate had significant impact on the volatility of gold prices.

Statement of Problem

The US Fed's commitment to raise rates more aggressively in the coming months would put pressure on the rupee and cause the dollar index to rise significantly. This might force the Indian rupee to fall even more, to between 82 and 83.5. The rupee fell to a low of 81.2 on Friday and is now trading at 80.96. The rupee plunged to an all-time low after the US Federal Reserve hiked interest rates and took a hawkish stance. Foreign currency risk consists of three components: transaction risk, economic risk, and translation risk. The ER of the US dollar to the Indian rupee has fluctuated from Rs. 45 in 2012 to Rs. 82 in 2022. Whereas the US dollar to Afghan Afghani rose from 52.20 to 86.50 in 2022, and the US dollar to Pakistan jumped from Rs 98.45 to 218.25 in 2022, foreign currency risk is a key risk to consider for exporters, importers and enterprises that do business in international markets.

The Indian rupee plummeted because of a drop in global oil prices, due to the oil industry's heavy demand for the US dollar and as markets anticipated a big rate hike from the US Federal Reserve next week. According to a foreign currency dealer at a private bank, oil companies have intervened to buy dollars since traders predict no action until the 79.90 level. The rupee is under pressure, according to a different dealer, since a 75-basis point rate hike by the Fed looks to be a given conclusion and the central bank is expected to send out hawkish signals during its policy meeting. Currency values tumbled across Asia as investors worried about global economic development. The dollar has strengthened since the Federal Reserve sent hawkish signals last week, prompting the rupee to experience its worst weekly performance in 1.5 years. According to her, the ongoing crisis between Russia and Ukraine, rising crude oil prices and tightening global financial conditions are just a few of the worldwide factors leading to the Indian rupee's slide versus the dollar. Analysts concurred that the euro is experiencing worldwide pressure from a number of angles.

Objectives of the Study

- To analyse the normality and distribution of ER and Macroeconomic Performance in selected South Asian countries.
- To investigate the linear degree of relationship between ER and Macroeconomic Performance in selected South Asian countries.

The Hypotheses of the Study

Hypotheses are framed based on the objectives

- NH1: There is no normality and distribution of ER and Macroeconomic Performance in selected South Asian countries.
- NH2: There is no linear degree of relationship between ER and Macroeconomic Performance in selected South Asian countries.

RESEARCH METHODOLOGY

Nexus between the changes of ER and Macroeconomic Determinants in Selected South Asian Countries during the study period. The performance of ER and macroeconomic to everyone in the south Asian region need to be studied. The study is of the Ex post facto kind. The study used samples from three South Asian countries: Afghanistan, India and Pakistan. The study relied on secondary data. Based on the literature analysis and conceptual theory, the study chose variables TIN- Total Investment, INF- Inflation, IMP- Imports, EXP- Export, GTE- Government Total Expenditure, GNL- Government Net Lending, and ER- Exchange Rate. The ER, INF, TIN, volume of IMP and EXP of goods and services, government total spending and government net loans were all used in the study the required data is obtained from the database of the IMF. This research spans the years 2011 through 2021. The current research examined the following aspects of the firm's performance. The analytical tools employed such as descriptive Statistics (to analysis the normality of ER and macroeconomic performance). Correlation (to study linear degree of relationship between ER and macroeconomic performance).

Analysis of Normality for Sample Countries

Table 1: Normality Exchange Rate and Macroeconomic Performance for Afghanistan from 2011 to 2021

	Afghanistan						
	EXP	**GNL**	**GTE**	**IMP**	**INF**	**ER**	**TIN**
Mean	-9.076	-1.77923	0.027168	-1.45811	-0.28586	-0.04086	-0.04826
Maximum	0.704719	1.724247	0.140903	1.485788	3.056587	0.071543	0.207801
Minimum	-79.472	-6.32203	-0.01743	-4.48314	-2.04168	-0.0993	-0.24393
Std. Dev.	24.79776	2.244546	0.045904	1.787362	1.357249	0.055967	0.125184
Skewness	-2.64183	-0.66347	1.615639	-0.30296	1.402957	0.75525	0.491974
Kurtosis	8.031632	3.102153	4.845083	2.584864	4.978609	2.563759	3.101581
Jarque-Bera	22.18095	0.737996	5.768955	0.224784	4.911686	1.029964	0.407696
Probability	0.00015	0.691427	0.055884	0.893694	0.085791	0.597511	0.815586

Source: International Monetary Fund, Pacific Excahnge Rate and computed by using E-views.

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – EXP, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate.

Table 1 Results of Normality between Exchange Rate and Macroeconomic Performance in Afghanistan.

Mean and Std. Dev: This tables shows that the mean value of GTE, Nominal ER, TIN, INF, IMP, GNL and EXP were 0.027168, -0.04086, -0.04826, -0.28586, -1.45811, -1.77923 and -9.076 respectively, where lower than the value of the standard deviation (SD) of the selected variables were 24.79776 (EXP) 2.244546 (GNL), 0.045904 (GTE), 1.787362 (IMP), 1.35749 (INF), 0.055967 (ER) and 0.125184 (TIN) respectively during the period under study. Whereas GTE recorded the positive mean and a highest mean (0.027168) among the selected variables. In indicates that the mean returns values are negative and lower than the standard deviation, which mean risk is highly associated than the returns (negative).

The Mean value of all selected macroeconomic variables are higher dispersion and returns are lower than the standard deviation values respectively, which indicates that risk is higher than returns and the returns of variables are negative expect EXP returns. Therefore, the risk is strongly associated with the selected variables. These selected macroeconomic variables are under performance, particularly EXP and its lead negative returns to the growth of the country.

Skewness: The value of skewness was -2.64183, -0.66347, 1.615639, -0.30296, 1.402957, 0.75525 and 0.491974 respectively for EXP, GNL, GTE, IMP, INF, ER and TIN. Totally there was four variable s such as GTE, INF, ER, and TIN noted as a positive skewness in the study period and the distribution has long right tail. Whereas, EXP, GNL, IMP are negatively skewed and distribution has long left tail.

The EXP, GTE and INF value are higher than -1 and +1, the data are highly skewed. Whereas other variables are moderately skewed. The acceptable values of skewness fall between -3 to +3, the selected variables' values of skewness falls within the -3 to +3 so the skewness distribution is acceptable.

The positive skewness of a distribution of GTE, INF, ER and TIN indicates that these variables changes may bring strong positive impact on economic and capital market. An investor may expect frequent small losses and a few large gains from the investment. The positively skewed distributions of investment returns are generally more desired by investors since there is some probability of gaining huge profits that can cover all the frequent small losses.

The negative skewness of the distribution of EXP, GNL and IMP indicates that these variables changes may bring strong negative impact on economic and capital market. An investor may expect frequent small gains and a few large losses. In reality, many trading strategies employed by traders are based on negatively skewed distributions.

Despite the fact that strategies based on negative skewness may provide stable profits, an investor or a trader should be aware that there is still a probability of large losses. Thus, it is imperative to properly assess the risks of the trading strategies and include the skewness of the returns in the assessment.

A positive skew could be good or bad, depending on the mean. A positive mean with a positive skew is good, while a negative mean with a positive skew is not good. Only GTE is secure positive mean and positive skew which indicate that the performance is good.

Whereas, if a data set has a positive skew, but the mean of the returns is negative, it means that overall performance is negative, but the outlier months are positive.

EXP, GNL and INF are recorded a negative skew and it is generally not good, because it highlights the risk of left tail events or what are sometimes referred to as "black swan events." While a consistent and steady track record with a positive mean would be a great thing, if the track record has a negative skewed then you should proceed with caution.

Kurtosis: Kurtosis measure the "Peakiness of risk" of the probable distribution of the data. Kurtosis values were 8.031632 (EXP), 3.102153 (GNL), 4.845083 (GTE), 2.584864 (IMP), 4.978609 (INF), 2.563759 (ER) and 3.101581 (TIN) respectively.

The kurtosis value of EXP, GTE, and INF are higher than value 3, which denotes that these variables are peak distribution and it represent leptokurtic. leptokurtic indicates a positive excess kurtosis. The leptokurtic distribution shows heavy tails on either side, indicating large outliers. In finance, a leptokurtic distribution shows that EXP, GTL, and INF are deficit and shortfall. This leads to risker and negative impact on economic and stock market. The investment returns may be prone to extreme values on either side. Therefore, an investment whose returns follow a leptokurtic distribution is considered to be risky.

Among the macroeconomic variables, GNL (Government Net Lending), TIN value are around 3 which describe that the mesokurtic distribution and it represent symmetric distribution. This two variables' data is normally performed and exhibit moderate risk associated.

The kurtosis value of import and ER are below 3, which denotes that platykurtic distribution shows a negative excess kurtosis. The kurtosis reveals a distribution with flat tails. The flat tails indicate the small outliers in a distribution.

In the finance context, Import and ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these two variables during the study.

Probability of Jarque-Bera: This test confirms that the GNL, IMP, ER, TIN are not normally distributed at 1%, 5%, 10% level of significance, whereas EXP (0.00015), GTE (0.055884) and INF (0.085791) are lower than 10% significant level. Hence, NH: there is no normality among ER and Macroeconomic Performance in Afghanistan were partially accepted.

Table 2: Normality Exchange Rate and Macroeconomic Performance for India from 2011 to 2021

India							
	EXP	**GNL**	**GTE**	**IMP**	**INF**	**ER**	**TIN**
Mean	-0.8168	-0.02792	-0.00483	-2.3206	-0.08883	-0.04323	-0.00655
Maximum	6.311902	0.061456	0.031922	2.427614	0.287195	0.057059	0.084598
Minimum	-6.84299	-0.0957	-0.02792	-20.6439	-0.41837	-0.12759	-0.11276
Std. Dev.	3.248904	0.051213	0.019745	6.677071	0.241323	0.05704	0.060528
Skewness	0.474107	0.142343	0.594075	-2.31884	0.175849	0.333987	-0.20404
Kurtosis	4.338753	2.092738	2.096073	7.070833	1.706327	2.366198	2.205747
Jarque-Bera	1.121403	0.376738	0.92866	15.86655	0.748867	0.353289	0.332233
Probability	0.570808	0.828309	0.628556	0.000359	0.687679	0.838078	0.846947

Source: International Monetary Fund, Pacific ER and computed by using E-views.

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – EXP, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – ER.

Table 2 Results of Normality between Exchange Rate and Macroeconomic Performance in India.

Mean and Std. Dev: The descriptive statistics of India given in the Table 2 have shown that the mean return values of GTE, TIN, GNL, ER, INF, EXP and IMP were -0.00483, -0.00655, -0.02792, -0.04323, -0.08883, -0.8168 and -2.3206 respectively were higher than the standard deviation (SD) values 3.248904 (EXP), 0.0512213 (GNL), 0.019745 (GTE), 6.677071 (IMP), 0.241323 (INF), 0.05704 (ER) and 0.06528 (TIN) respectively during the period study. It indicates that the mean returns values are negative and lower than the risk standard deviation (SD). The risk is highly associate than returns of selected macroeconomic variables.

The mean value of all selected macroeconomic variables are higher dispersion and returns are negative and lower than the standard deviation values (risk) respectively, which indicates that risk is higher than returns and the returns of variables are negative returns. Therefore, the risk is strongly associated with the selected variables. These selected macroeconomic variables are poor and shortfall, which lead to negative returns to the growth of the country.

Skewness: The value of skewness was 0.474107, 0.412343, 0.594075, -2.31884, 0.175849, 0.333987 and -0.20404 respectively for EXP, GNL, GTE, IMP, INF, ER and TIN. Among the selected variables five variables (EXP, GNL, GTE, INF and ER) noted as a positive skewed and the distribution has long right tail. A positive skewness indicates that the tail on the right-hand side is longer than the left-hand side that means the bulk values lie to the left of the mean. Whereas IMP and TIN are negative skewed and the distribution has long left tail.

The IMP value is higher than -1, the data is highly skewed. Whereas other variables skewed values fall in between -0.5 to 0.5 which denotes moderately skewed. The acceptable values of skewness fall between -3 to +3, the selected variables of the study all variables' values of skewness falls within the -3 to +3 so the skewness distribution is acceptable.

The positive skewness of a distribution of EXP, GNL, GTE, INF and ER indicates that these variables changes may bring strong positive impact on economic and financial market. An investor may expect frequent small losses and a few large gains from the investment. The positively skewed distributions of investment returns are generally more desired by investors since there is some probability of gaining huge profits that can cover all the frequent small losses.

The negative skewness of the distribution of IMP and TIN indicates that these two variables' changes may bring strong negative impact on economic and capital market. An investor may expect frequent small gains and a few large losses. Many trading strategies employed by traders are based on negatively skewed distributions.

Even though strategies based on negative skewness may provide stable profits, an investor or a trader should be aware that there is still a probability of large losses. Thus, it is imperative to properly assess the risks of the trading strategies and include the skewness of the returns in the assessment.

A positive skew could be good or bad, depending on the mean. A positive mean with a positive skew is good, while a negative mean with a positive skew is not good. None of the selected macroeconomic variables are secure positive mean and positive skew which indicate that no variables performed good during the study.

All data set has a positive skew, but the all mean of the returns is negative, it means that overall performances of all selected variables are negative, but the outlier months are positive.

IMP and TIN are recorded a negative skew and it is generally not good, because it highlights the risk of left tail events or what are sometimes referred to as "black swan events." While a consistent and steady track record with a positive mean would be a great thing, if the track record has a negative skew then you should proceed with caution.

Kurtosis: Kurtosis measure the "Peakiness of risk" of the probable distribution of the data. Kurtosis values were 4.338753 (EXP), 2.092738 (GNL), 2.096073 (GTE), 7.070833 (IMP), 1.706321 (INF), 2.366198 (ER) and 2.205747 (TIN) respectively.

The kurtosis value of EXP and IMPare higher than value 3, which denotes that these variables exist peak distribution and it represent leptokurtic. Leptokurtic indicates a positive excess kurtosis. The leptokurtic distribution shows heavy tails on either side, indicating large outliers. In finance, a leptokurtic distribution shows that EXP and IMP are deficit and shortfall. This leads to risker and negative impact on economic and stock market. The investment returns may be prone to extreme values on either side. Therefore, an investment whose returns follow a leptokurtic distribution is risky.

The kurtosis value of GNL, (GTE), IMF, TIN and ER are below value 3, which exhibits that platykurtic distribution and it shows a negative excess kurtosis. It reveals a distribution with flat tails. The flat tails indicate the small outliers in a distribution.

In the finance context, GNL, GTE, INF, TIN and ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these five variables during the study.

Probability of Jarque-Bera: The probability value of Jarque Bera of EXP, GTP, GNL, INF, ER and TIN are higher than 1%, 5%, 10% level of significance, whereas Import probability value is lower than 1% significant level. This test confirms that selected variables are not normally distributed. Hence, NH: there is no normality among ER and Macroeconomic Performance in India were accepted.

Table 3: Normality Exchange Rate and Macroeconomic Performance for Pakistan from 2011 to 2021

	Pakistan						
	EXP	**GNL**	**GTE**	**IMP**	**INF**	**ER**	**TIN**
Mean	-8.340	-0.074	1.225	-0.074	-0.016	-0.052	0.536
Maximum	0.272	0.303	12.112	3.759	0.405	0.005	5.405

Pakistan							
	EXP	**GNL**	**GTE**	**IMP**	**INF**	**ER**	**TIN**
Std. Dev.	20.982	0.460	3.826	1.546	0.331	0.052	1.712
Skewness	-2.647	-1.746	2.666	1.444	-0.600	-0.659	2.660
Kurtosis	8.051	5.087	8.108	5.088	2.326	2.013	8.092
Jarque-Bera	22.310	6.898	22.712	5.292	0.789	1.130	22.600
Probability	0.000	0.032	0.000	0.071	0.674	0.568	0.000

Source: International Monetary Fund, Pacific ER and computed by using E-views.

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – EXP, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – ER.

Table 3 Results of normality between Exchange Rate and Macroeconomic Performance in Pakistan.

Mean and Std. Dev: The descriptive statistics of Pakistan given in the Table 3 have shown that the mean value of INF, ER, IMP, GNL, EXP, TIN and GTE were -0.016, -0.052, -0.074, -0.074, -8.340, 0.536 and 1.225 are lower than the standard deviation (SD) of the sample variables were 20.982 (EXP), 0.460 (GNL), 3.826 (GTE), 1.546 (IMP), 0.331 (INF), 0.052 (ER) and 1.712 (TIN) respectively during the period under study.

The mean return values of EXP, GNL, GTE, IMP, INF, ER and TIN are lower than risk (SD) value, which indicate that risk is higher than mean return during the study period.

The Mean value of all selected macroeconomic variables are higher dispersion and returns are negative and lower than the standard deviation values (risk) respectively, which indicates that risk is higher than returns and the returns of variables are negative returns. Therefore, the risk is strongly associated with the selected variables. These selected macroeconomic variables are poor and shortfall, which lead to negative returns to the growth of the country.

Skewness: The value of skewness was -2.647, -1.764, 2.666, 1.444, -0.600, -0.659 and 2.660 respectively for EXP, GNL, GTE, IMP, INF, ER and TIN. Among the selected variables (GTE, IMP and TIN) noted as a positive skewness and the distribution has long right tail. A positive skewness indicates that the tail on the right hand side is longer than the left hand side that means the bulk values lie to the left of the mean. Whereas EXP, GNL, INF, and ER are negatively skewed and the distribution has long left tail.

The EXP, GNL, GTE, IMP, and TINvalues are higher than -1 and +1, The data are highly skewed. Whereas other variables moderately skewed. The acceptable values of skewness fall between -3 to +3, The selected variables values of skewness lie within the -3 to +3 so the skewness distribution is acceptable.

The positive skewness of a distribution of GTE, IMP and TIN indicates that these variables changes may bring strong positive impact on economic and financial market. An investor may expect frequent small losses and a few large gains from the investment. The positively skewed distributions of investment returns are generally more desired by investors since there is some probability of gaining huge profits that can cover all the frequent small losses.

The negative skewness of the distribution of EXP, GNL, INF and ER indicates that these five variables' changes may bring strong negative impact on economic and capital market. An investor may expect frequent small gains and a few large losses. Many trading strategies employed by traders are based on negatively skewed distributions.

Even though strategies based on negative skewness may provide stable profits, an investor or a trader should be aware that there is still a probability of large losses. Thus, it is imperative to properly assess the risks of the trading strategies and include the skewness of the returns in the assessment.

A positive skew could be good or bad, depending on the mean. A positive mean with a positive skew is good, while a negative mean with a positive skew is not good. GTE and TIN variables are secure positive mean and positive skew which indicate that variables performed good during the study.

IMP data set has secured a positive skew, but the mean of the returns is negative, it means that overall performance of all selected variables is negative, but the outlier months are positive.

EXP, GNL, INF and ER are recorded a negative skewed and it is generally not good, because it highlights the risk of left tail events or what are sometimes referred to as "black swan events." While a consistent and steady track record with a positive mean would be a great thing, if the track record has a negative skew, then you should proceed with caution.

Kurtosis: Kurtosis measure the "Peakiness of risk" of the probable distribution of the data. Kurtosis values were 8.051(EXP), 5.087(GNL), 8.108(GTE), 5.088(IMP),

2.326(INF), 2.013(ER) and 8.092(TIN) respectively.

The kurtosis value of EXP, GNL, GTE, IMP, and TIN are higher than value 3, which reveals that these variables exist peak distribution and it indicate leptokurtic. Leptokurtic exhibits a positive excess kurtosis. The leptokurtic distribution shows heavy tails on either side, indicating large outliers. In finance, a leptokurtic distribution shows that EXP, GNL, GTE, IMP and TIN are deficit and shortfall. This leads to risker and negative impact on economic and stock market. The investment returns may be prone to extreme values on either side. Therefore, an investment whose returns follow a leptokurtic distribution is risky.

The kurtosis value of Inflation and ER are below value 3, which exhibits that platykurtic distribution and it shows a negative excess kurtosis. It reveals a distribution with flat tails. The flat tails indicate the small outliers in a distribution.

In the finance context, INFand ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these five variables during the study.

Probability of Jarque-Bera: The probability value of Jarque Bera of INF and ER, are lower than 1%, 5%, 10% level of significance, whereas probability value of EXP, GNL, GTE, IMP and TIN are higher than 10% significant level. This test confirms that selected variables are not normally distributed. Hence, NH: There is no normality among ER and Macroeconomic Performance in Pakistan were accepted.

Relationship between Exchange Rate and Macroeconomic Performance in South Asian Region

This section investigated on relationship between ER and Macroeconomic Performance in South Asian Region. This study covered on sample countries Afghanistan, Bangladesh, Bhutan, India and Pakistan as follows:

Table 4: Results of Correlation between Exchange Rate and Macroeconomic Performance of Afghanistan during the Period from 2011 to 2021

		TIN	INF	IMP	EXP	GTE	GNL	ER
TIN	Pearson Correlation	1						
	Sig. (2-tailed)	-						
INF	Pearson Correlation	0.086	1					
	Sig. (2-tailed)	0.814	-					
IMP	Pearson Correlation	-0.293	0.096	1				
	Sig. (2-tailed)	0.411	0.792	-				
EXP	Pearson Correlation	-0.058	0.060	-0.531	1			
	Sig. (2-tailed)	0.873	0.868	0.114	-			
GTE	Pearson Correlation	0.034	-0.017	0.464	**-0.874****	1		
	Sig. (2-tailed)	0.926	0.962	0.177	**0.001**	-		
GNL	Pearson Correlation	-0.045	-0.084	-0.382	-0.110	.191	1	
	Sig. (2-tailed)	0.901	0.819	0.276	0.762	0.597	-	
ER	Pearson Correlation	**-0.318**	**-0.596**	0.042	0.344	-0.362	-0.100	1
	Sig. (2-tailed)	**.0370**	**0.069**	0.908	0.331	0.304	0.783	-

**. Correlation is significant at the 0.01 level (2-tailed).

Source: International Monetary Fund database and computed by using SPSS.

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate.

Table 4 Results of Correlation between Exchange Rate and Macroeconomic Performance in Afghanistan.

The correlation of Afghanistan given in the Table 4 it is clear from the Table that ER and Macroeconomic Performance were not correlated with each other. GTE and EXP (-0.874) were only have a significant relationship during the study period. The correlation analysis of Afghanistan, reveals that there was a significant and negative correlation exist between ER with TIN (-0.318) at 5% and INF (-0.596) at 10% significant level. It indicates that when increases in ER, decreases in total investment and inflation vice versa.

Whereas, other selected variables are not significantly correlated during the study period. For the investors and policy maker of Afghanistan, these two macroeconomic variables TIN and INFcould help to estimate the movement of ER and its shocks. Hence, NH 6.4: There is no relationship among ER and Macroeconomic Performance in Afghanistan is partially accepted.

Table 5: Results of Correlation between Exchange Rate and Macroeconomic Performance of India during the Period from 2011 to 2021

		TIN	INF	IMP	EXP	GTE	GNL	ER
TIN	Pearson Correlation	1						
	Sig. (2-tailed)	-						
INF	Pearson Correlation	0.289	1					
	Sig. (2-tailed)	0.418	-					
IMP	Pearson Correlation	**0.420**	0.455	1				
	Sig. (2-tailed)	**0.065**	0.440	-				
EXP	Pearson Correlation	-0.338	-0.130	-0.016	1			
	Sig. (2-tailed)	0.339	0.721	0.964	-			
GTE	Pearson Correlation	-0.030	-0.213	-0.257	-0.221	1		
	Sig. (2-tailed)	0.934	0.554	0.474	0.540	-		
GNL	Pearson Correlation	0.309	0.115	-0.134	-0.040	.214	1	
	Sig. (2-tailed)	0.385	0.753	0.712	0.912	0.554	-	
ER	Pearson Correlation	0.257	-0.024	0.183	-0.440	-0.005	-0.157	1
	Sig. (2-tailed)	0.473	0.948	0.613	0.203	0.988	0.664	-

Source: International Monetary Fund database and computed by using SPSS.

Note: TIN – Total Investment, INF – Inflation, IMP – Imports, EXP – Export, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate.

Table 5 Results of Correlation Matrix between Exchange Rate and Macroeconomic Performance in India.

The correlation results of India given in the Table 5 it is clear from the Table that ER and Macroeconomic variables are not significantly correlated with each other, expect IMP and TIN (0.420) are positive and significantly correlated. The correlation analysis of India reveals that none of the selected macroeconomic variables correlated with changes of ER during the study period. It indicates that any changes in macroeconomic variables doesn't cause change the ER. Therefore, ER of India is highly auto correlated and its react and response depends on its own changes and its shocks. There might be some other variables could influence significant which are not used in the study. Hence, NH 6.5 there is no relationship among ER and Macroeconomic Performance in India is accepted.

Table 6: Results of Correlation Matrix between Exchange Rate and Macroeconomic Performance of Pakistan during the Period from 2011 to 2021

		TIN	INF	IMP	EXP	GTE	GNL	ER
TIN	Pearson Correlation	1						
	Sig. (2-tailed)	-						
INF	Pearson Correlation	-0.088	1					
	Sig. (2-tailed)	0.808	-					
IMP	Pearson Correlation	-0.286	-0.470	1				
	Sig. (2-tailed)	0.422	0.171	-				
EXP	Pearson Correlation	0.141	-0.069	0.118	1			
	Sig. (2-tailed)	0.697	0.851	0.746	-			
GTE	Pearson Correlation	**0.999****	-0.077	-0.311	0.119	1		
	Sig. (2-tailed)	**0.000**	0.833	0.382	0.743	-		
GNL	Pearson Correlation	**-0.880****	-0.012	0.227	-0.205	**-0.878****	1	
	Sig. (2-tailed)	**0.001**	0.973	0.529	0.570	**0.001**	-	
ER	Pearson Correlation	**-0.613**	0.118	0.345	-0.036	**-0.612**	0.417	1
	Sig. (2-tailed)	**0.059**	0.745	0.329	0.921	**0.060**	0.231	-

**. Correlation is significant at the 0.01 level (2-tailed).

Source: International Monetary Fund database and computed by using SPSS.

Note: TIN – Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate.

Table 6 Results of Correlation between Exchange Rate and Macroeconomic Performance in Pakistan.

The correlation of Pakistan given in the Table 6 it is clear from the Table, TIN and GTE (0.999), TIN and GNL (-0.880), GTE and GNL (-0.878), ER and TIN (-0.613), ER and GTE (-0.612) were significant relationship during the study period. The correlation analysis of Pakistan reveals that there was a more negative correlation with in sample variables then positive correlation each other. TIN and GET secured positive and significant highly correlated which is near to one, and it denotes that when TIN increases, GET also increases, vice versa. This exhibits the collinearity exist in this model. TIN and GTE have been controlling the other variables relationship. Whereas correlation of TIN and GTE are significant and highly negative correlated with GNL, it reveals that when TIN and GTE goes up, GNL goes down vice versa.

The correlation of ER with TIN and GTE is significant and negatively correlated. It indicates that when increases in ER, decreases in TIN and GTE, vice versa.

For the investors and policy maker of Pakistan, these two macroeconomic variables could help to estimate the movement of ER and its shocks AH 6.6 there is relationship among ER and Macroeconomic Performance in Pakistan is partially accepted.

CONCLUSION

The study results the ER spill over and Macro Economic Performance in South Asian Region using the return data from (2011 to 2021). Using the study of normality of descriptive statistics, relationship of correlation in South Asian Region. The study results found that the Mean value of all selected macroeconomic variables are higher dispersion and returns are negative and lower than the standard deviation values (risk) respectively, which indicates that risk is higher than returns and the returns of variables are negative returns. These selected macroeconomic variables are under performance, poor and shortfall and its lead negative returns to the growth of the country such as Afghanistan, India and Pakistan.

In Afghanistan, GTE, INF, ER and TIN indicates that these variables changes may bring strong positive impact on economic and capital market. Whereas EXP, GNL and IMP indicates that these variables changes may bring strong negative impacted. IMP and ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these two variables during the study. Afghanistan, these two macroeconomic variables TIN and INF could help to estimate the movement of ER and its shocks.

In India, EXP, GNL, GTE, INF and ER indicates that these variables changes may bring strong positive impact on economic and financial market. IMP and TIN indicates that these two variables' changes may bring strong negative impacted.GNL, GTE, INF, TIN and ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these five variables during the study. ER of India is highly autocorrelated and its react and response depends on its own changes and its shocks.

In Pakistan, GTE, IMP and TIN indicates that these variables changes may bring strong positive impact on economic and financial market. EXP, GNL, INF and ER indicates that these five variables' changes may bring strong negative impacted. INFand ER are shown lighter impact on economic and stock market. The platykurtic distribution of the investment returns is desirable for investors because there is a small probability that the investment would experience extreme returns. Therefore, the existence of risk is low in these five variables during the study. The correlation of ER with TIN and GTE is significant and negatively correlated. It indicates that when increases in ER, decreases in TIN and GTE , vice versa.

The ER changes are highly auto correlated and act highly independence in the last ten years. Moreover, the depreciation of currency values replicates economic instability and drastically straight fall down. Asian countries operating their currency based on a managed floating ER regime. It's marking a market-determined ER regime of the currency with provision for timely intervention by the central bank. Managed float regime is an international financial environment in which ERs fluctuate from day to day, but central banks attempt to influence their countries' ERs by buying and selling currencies to maintain a certain range. This study would be useful to the retail investors to speculate and arbitrage and (economic policy) policymakers to monitor, Forecasting and Simulation the ER movements.

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