The Inflation, Exchange Rate and Stock Market returns Nexus: An Empirical Evidence from Pakistan

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ABSTRACT

The present study looks into the casual short and long-run associations between stock traded use as a proxy of stock market returns of Pakistan and macroeconomics indicators namely exchange rate, consumer price index used as a proxy of inflation, gross domestic products, unemployment, gross national expenditure, and interest rate by using time series analysis from (1960 to 2020). To highlight the stationarity of the data use Augmented Dickey Fuller Unit Root test, inflation and interest rate becomes stationer at level and other macroeconomics variables stationer at first difference. With the mixture of level and the first difference has been applying Auto-Regressive Distributed lag model and co-integration technique. For diagnostic used Breusch-Pagan-Godfrey and serial correlation LM test and Ganger causality test. Outcomes express the long time period affiliation betwixt stock market returns of Pakistan and macroeconomics variables including exchange rate, interest rate, and unemployment they are significant and negatively affect the stock market returns in long duration. By applying Granger causality test conclude no causal relationship exist among all variables. There Consumer price index and gross national expenditure negatively associated but its results are insignificant. Only GDP positively related to stock market returns in the long period. The findings of the research favorable for policy makers who interested in the long run relationship among the exchange rate, inflation, GDP, interest rate and unemployment and stock market returns.

Keywords: Augmented Dickey Fuller test, Auto Regressive distributed log model, inflation, exchange rate, stock market returns and gross domestic expenditure.

INTRODUCTION

In recent centuries developing countries facing a lot of economic problems like inflation, unemployment, poverty, population growth, shortage of resources, scare human capital, poor infrastructure and corrupt system and institution. And many economic problems are facing by the developed countries i.e., inequality, high level of unemployment, poor household, large area of derelict land and air, water and land pollution. But the most alarming problems are facing by the developing countries, the main problems are those that create roadblock and stopped further development, like inflation.

Asian counties are facing many problems. Inflation can be seen as a cause of the devaluation of a domestic currency on global money market. Developing countries will often use export economic strategies to increase growth they have face many problems. Pakistan is an Asian country while the economic condition of Asian countries is characterized as developing countries. Monetary policy can change the courses of real economic activity both in short and long time period. Excess in supply create inflation (clarida et.al 1999). Inflation reduces the actual return on investment, hence rises fear of investors (Schofmam and Schweitzer 2000). After inflation exchange rate is very important in macroeconomics variables. Real exchange rate plays vital role in free trade market in developing countries in Pakistan the domestic inflation threaded from external prices. Stocks variations in import price, appreciation/ depreciation of exchange rate (Ali et.al). Continues increase in the capital movement and rise in world trade make rate of exchange as a main tool of equity price and profitability (Kim, 2003). If financial sectors of any country become developed so the economic growth also increases. Stock market provides roots to investors for investment (Alam and Rashid).

Target of present work to look over the relation betwixt stock market as well as macroeconomics factors

- To find out the influence of macroeconomic factors on stock returns.
- Investigate the relationship of between stock market returns, inflation, exchange rate, gross domestic product, unemployment, interest rate and gross national expenditure in the context of Pakistan.
- To see the causality among variables separately and combine.
- Check the long and short-run both relationship among dependent and independent variables.

From 1930s large number of empirical and theoretical studies was employed to look into the links betwixt SMR and other economic factors. It is vital for the researcher to understand on how the relationship work. Different studies opinion about the relation of inflation and stock market returns are different. Some explain positive and some inverse relationship explain (Elmahgop 2020). Results explain SMR are putt off against inflation in long time period not in short but black economy promote the stock price (Akmal 2007). Fisher hypothesis 1930 predict positive links betwixt inflation and stock market returns(Adusei.M 2014)in temporary inverse links but in the long duration positive relationship exit in inflation and stock market returns. The study found there is no causality relationship between macroeconomics variables and SEM price in Pakistan (Afzal et.al). The exchange rate found to be negatively associated with stock market returns (Liu and Shrestha 2008). The association among stock price and exchange rate has preoccupied the brain of economist for the reason that both of them play major role in the influencing the development of a country s economy (Mgammal 2012). Relationship was positive between stock market prices(Mgammal 2020). Stock returns may provide an effective hedge against inflation in Nigeria (Mukolu and llugbemi).On the empirical evidence it is concluded that inflation has positive relation with exchange rate volatility(Ali et.al 2015). Here we also discussed the CPI, EXR and SMR Nexus in Pakistan.

On the basis of data that we collected from the world development indicator the relation and trends of these variables in the Pakistan from 1960s are the following;

Figure 1: inflation, exchange rate and stock market
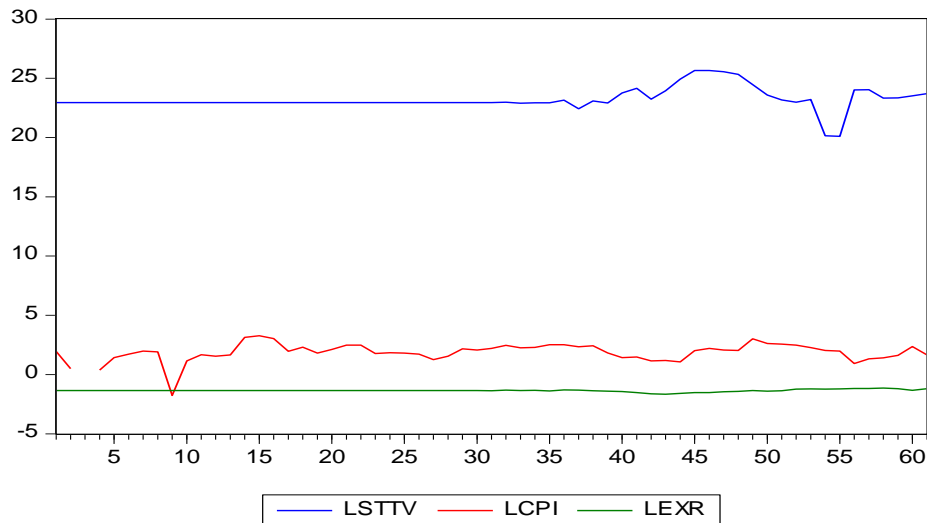
Sources: evaluation is done by E-views 9

In the above graph treaded represented with blue lines and inflation (CPI) represented with red lines and exchange rate with the help of green lines these lines show their trends during 60 years journey of Pakistan. Some old surveys explore invers correlation and some positive connection. For better understanding that study started.

Literature Review

Khan et al. (2020) probes the impact of macroeconomics variables namely prices of oil, remittance and exchange rate on stock market of Pakistan (KSE) and utilized a novel dynamic autoregressive distributed lag model for annually time series data starting from1985 to 2017. Used augmented dickey fuller unit root test for stationarity. And used ARCH model for test the heteroscedasticity. The results of dynamic model disclosed that prices of oil, remittance, inflow and foreign direct investment had a positive effect but exchange rate had a negative effect on the development of Pakistan stock market. That work also recommended that the government should made stable and attracted for exchange rate for foreign investors and for all other stock holders.

Duca 2020, the study soughed to analyzed relationship in inflation and malts stock returns. Study used the monthly data of 139 observations. The study founded that stock returns was positively affected by the previous month stock returns and negative effect take place where the inflation factors taken three and four months to effect returns. Negative inflation and stock returns relationship and interest rate and money supply contribute in short terms.

Munir (2020) investigated about China, Pakistan and India's returns of market and the outcomes of macroeconomics variables namely demographic structure of population namely young earning age and old age. Data of Pakistan China and India used from 1991 to 2017 and employed autoregressive distributed log model. The results indicated that in peak age investment had positive impact on returns of market but in retirement age withdraw their money that had invers effect on stock market returns.

Elmahgop and Sayed (2020) investigated the impact on Sudan stock exchange market. The study used time series data from September 2003 to December 2019 and used autoregressive distributed lag model for results. Macroeconomics or control variables were money supply, exchange rate Murabaha profit margin. The results showed that inflation had significant and negative impact on stock market both in short and long-run especially in developing countries like Sudan. Firstly, policy makers control inflation with polices. And concentrate on both short and long-run.

Mukhtar (2020) investigated Fisher's hypothesis to explain the direct link betwixt stock market and inflation rate. In this content used panel dataset of 56 countries from 1950 to 2018 for above average countries, for below average countries separate countries separately. And for many other like countries of high income, upper –mediate-average countries and lower income countries. The results indicated that the Fisher hypothesis holds in the world economics except for lower-middle income countries but it holds in its weak form.

Ihtisham-ul-haq (2020) investigated the market returns and terrorism relationship with used daily time series data of Pakistan from 7 October 1999 to May 2016. For the econometrics results used GARCH and EGARCH models. The result investigated that the terrorisms had significant effect on stock market returns and volatility in PAKISTAN. Negative terror news had more volatility as compared to positive news. The terrors effect the investors to invest in stock market of Pakistan. Terror must be explained for the need of stability in financial market.

Younis et al. (2020) investigated the links of Pakistan stock exchange and macroeconomics indicators. For analysis, time series data used from (December 1991 to December 2017). The result reflects that there was invers relation of internal and external debt, inflation, GDP, foreign direct investment on KSE-100 index, while, EXR and IR had a significant positive impact on the KSE-100 index. Moreover, money supply found out to be a variable which had no influence on KSE100 index. The results of vector auto regression revealed that out of eight macroeconomic variables only money supply could be excluded in future research as it had no impact on KSE-100 index.

Iwegbu (2020) explained Nigeria stock market returns and the impact of inflationary expectations in financial crises and in the post-financial crisis era. For model explanation study used Fisher's effects. From 1st quarter 2007 to 4th quarter 2018. For stationarity of data used ADF test, for long run cointegration used ARDL model and for stability used bound test. The result finally founded those inflationary expectations was most important determinant of Nigeria stock market returns. The fisher's hypothesis rejected in the post global financial crisis era.

Ali (2020) examined relationship of stock market of Pakistan volatility with EXR and prices of gold emerging market. Used monthly and daily data from third quarter 2001 to second quarter 2018. For result used MGARCH model. Gold price and exchange rate were equally best in bullish of stock market used regression approach 2001 to 2018. In that study sample time was divided into two categories one was from 2001 to 2007 and other was 2008 to 2018. Daily stock market performance the rate of exchange and gold price negatively associated.

Alametal.2020 investigate the impact of macroeconomics factors on SMK Evidence from Pakistan and china. Main purpose of that study to inquiry the relation exit betwixt the china and Pakistan stock exchange with macroeconomics factors GDP, (BOT), (FDI) ,(IR), (M2) and(KER) Karachi exchange rate and yearly data from (1995 to 2019) used to find out the results. Macroeconomics had an important role in any exchange inversely economy. Results explained increasing interest rate of the bank was not favor of a dynamics stock market which cases of effect on the stock exchange as well as on economy especially on Pakistan. That study is supportive for foreign and domestic investors hence to investment in both stock exchange.

Mukolu and Iiugbemi 2020 examined the study about the links between inflation and stock market price in NIGERIA by used data that curled between (1987 to 2018) from the central bank of NIGERIA. Ordinary least square were employed to analyze the data. The relationship between the macroeconomics variables and price according to the Fisher's (1930) hypothesis shares put off against inflation. The result of the study suggested that stock market returns provided an effective hedge against inflation in NIGERIA that was explained by the Fisher's hypothesis (1930) that was about the relationship of inflation and stock market returns. That was imply that investors in making good portfolio decisions perhaps view equities as long-term holding against inflation erosion of purchasing power. More realistic price level was needed for monetary policy to urge investors in stock market.

Basheer et al. (2018) study examine the both short-run and long-run relationship between stock market of Pakistan and macroeconomics variables namely money supply, interest rate, exchange rate, inflation rate. Used the time series data from 30th June 2019 to 30th 2018. To investigate the stationarity in the data used augmented dickey fuller unit root test that explained that some variables stationer at level some and some stationer at first difference. Used the Johann-Julius 1990 cointegration and vector error correction model techniques. The analysis concluded that in the long run exist relationship between stock market returns of Pakistan and Macroeconomics variables. In the short run equilibrium correct at 7.22. The findings of the study were valuable for policy makers.

Ndiovu (2018) study explain the association of macroeconomics variables inflation, money supply, exchange rate, interest rate and used quarterly data from the year first quarterly 1981 to 4th quarter of 2016. For the stock exchange of South Africa. To understand the variables relationship used unit root test, co-integration test, vector error correction model. CPI, IR, and M2 positive relation in the long run on the other hand the EXR had negative impact on SMR. Causality exists in rate of interest and rate of exchange for money supply.

Data and Methodology

This part gives the variables that are selected on the basis of theoretical and empirical basis to find the relationship between inflation, exchange rate and stock market returns in Pakistan.Stock traded used as dependent variable and as a proxy of stock market returns. Inflation, exchange rate, GDP, unemployment, gross national expenditure and interest rate use as an independent variable.

To explain the relationship between stocks traded value and macroeconomics variables of Pakistan, for example exchange rate, CPI inflation, GDP, unemployment, gross national expenditure, and interest rate collected data from the period (1960 to 2020).

The study grounded on the secondary data and data is collected from WDI (world development indicator 2020).

In in time series data stationarity effects will be for short time period and their effects as the series returns to long time mean values. Then again non-stationarity means data that have permanent components and trend. To verify the stationarity of the data used augmented dicker fuller unit root test that is the extended form of dicker fuller unit root test which is introduced by David Dicker (1976) and Wayne Fuller in (1979) which introduced extra lagged. Augmented fuller unit root test applied to check the null hypothesis whether the unit root present or not in the auto correlated model. The null hypothesis shows that data is not stationer and there exit unit root test while H1 hypothesis demonstrate that data is stationer and unit root test is absent.

The checking of stationarity of data considered as a main step in estimation of integration and methodology. There are more chance to reject null hypothesis. In ADF test p value have more important role in the acceptance and rejection of hypothesis such as lower the p-value or below then the 5% it means favor of rejection of null hypothesis that is unit root is absent.

There exist many co-integration tests in econometrics for research models that helps researcher toward discover long relationship plus temporary dynamics between dependent and independent variables such as Engle and Granger (1987) approach, bound test of co-integration and ARDL model Pesaran et al (2001), but the ARDL model is the most famous and important model of 20th century which is developed by Pesaran et al (2001). But there are some requirements of ARDL model for used. The first requirement of the ARDL model is that model must be have appropriate lag length which prefer to that indicator that are integrated at the level or first difference and mixture of both but the second difference integration is not acceptable. It means the model is rejected. That is based on the OLS estimators. Without losing any results it explains the both short and long run results. That test differentiates in long run both explanatory and dependent indicators. Recent studies have explained that ARDL Co-integration techniques are batter then other conventional Co-integration techniques (Akmal.S.M 2007)

To overcome the problem the need to verify the stationarity in the data through the ADF test. The most important fact is that the ARDL model is easy to use their found many other ways such as f statistics represents Pesaran et. Al. (2001) to verify dynamic relationship. If the value of F-statistics is lies above the critical value and upper bound value 5% its means long time period links exist betwixt endogenous and exogenous variables. They not only discovered long time period relationship but parameterizing the model into error correction model (ECM).

In bound test check the relationship among variables with the help of upper and lower bound. In which the main factor is the value of F- statistics. If the f-statistics value greater than from upper bound it mean our model is good and acceptable.

To statistically check the relation of stock market returns in Pakistan with macroeconomics variables we have to specify the following model with the help of statistical equation.

$$stock\ traded\ total\ value = f(\ exchange\ rate, inflation(cpi), GDP, unempolyment,\\ gross\ national\ expenditure, intertest\ rate)$$

$$\ln sttv = \beta O + \beta 1\ln(EXRt) + \beta 2\ln(CPIt) + \beta 3\ln(GDPt) + \beta 4\ln(UNt) + \beta 5\ln(GNEt)$$
$$+ \beta 6\ln(IRt) + ut$$

Results

This part of the study gives results of unit root and short-run long-run estimation of ARDL model and diagnostics analysis of study.

To check the data is ADF and PP tests. The results we attained after estimation that are the following,

Table 1: Augmented Dicker Fuller Unit Root Test

	ADF				
Variables	**Level**		**1st difference**		**Results**
	intercept	Trend and intercept	Intercept	Trend and intercept	
LSTTV	-3.212	-3.326	-8.268	-8.192	1st difference
	(0.022)	(0.071)	(0.000)	(0.00)	
LCPI	-4.787	-4.802	-9.950	-9.873	At level
	(0.000)	(0.001)	(0.000)	(0.000)	
LEXR	-1.477	-1.547	-6.740	-6.729	1st difference
	(0.538)	(0.801)	(0.000)	(0.000)	
LGDP	-1.091	-2.558	-6.868	-6.877	1st difference
	(0.713)	(0.300)	(0.000)	(0.000)	
LUN	2.249	1.280	-5.549	-6.004	1st difference
	(0.000)	(0.999)	(0.000)	(0.000)	
LGNE	-2.457	-4.232	-8.021	-7.986	1st difference
	(0.130)	(0.364)	(0.000)	(0.000)	
LIRS	-6.929	-4.805	-5.219	-5.381	At level
	(0.000)	(0.001)	(0.000)	(0.000)	

Table explain that consumer price index used as a proxy of inflation and interest rate stationery at level and other variables i.e., stock market returns, exchange rate, gross domestic product, unemployment and gross national expenditures ratio is lie on 1st difference so the results are mixture of level and first difference so we used ARDL model in our study. The bound test estimations used before applying ARDL model to check the long run relation among series of variables.

DESCRIPTIVE ANALYSIS

Descriptive analysis is the explanation of overall mean, median, maximum, and minimum values. That are the following

Table 2: Descriptive Analysis

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtos
LSTTV	23.230	22.950	25.667	20.106	0.941	- 0.021	6.975
LEXR	-1.352	-1.347	-1.137	-1.654	0.098	-0.664	4.739
LCPI	1.877	1.970	3.283	-1.768	0.758	-1.850	10.408
LGDPC	24.440	24.480	26.474	22.044	1.315	-0.113	1.884
LUN	-0.251	-0.499	1.536	-0.916	0.622	2.035	5.536
LGNE	4.662	4.666	4.718	4.595	0.032	-0.286	2.162
LIRS	1.762	1.828	1.918	1.131	0.172	-2.412	7.606

Source: Author's own calculation using E-views 9.

To look into the impact of inflation and EXR on SMR table 2 explain the descriptive analysis of the model with the help of mean, medians standard deviation, Skewness and kurtosis of selected variables of the model. As stock traded total value is as dependent variable with mean value 23.23 while exchange rate, consumer price index, GDP, unemployment, gross national expenditure and interest rate as independent variables with mean value -1.35, 1.87, 24.44,-0.25, 4.66 and 1.76 with standard deviation values 0.94,0.09, 0.75, 1.31, 0.62, 0.03 and 0.17. The Skewness values shows in negative and positive Skewness such as unemployment is positive skewed but other variables such as stock traded total value, consumer price index, exchange rate, gross national expenditure, gross national expenditure are negatively skewed. In the above table the kurtosis values shows the peskiness and flatness of values as compared to normal distribution. In above table SSTV, CPI, EXR UN and interest rate showed the peaked values because here the values are greater the 3 on the other hand GDP and GNE have lower values than 3.

CORRELATION MATRIX

Correlation shows the link and relationship between the two or larger than two variables either are positively correlated or negatively correlated. The correlation matrix values exist between -1 and +1, if the values are near to the +1 its mean the variables are perfectly positively correlated if the values are -1 its mean variables perfectly negatively correlated.

Table 3: Correlation Matrix

	LSTTV	LEXR	LCPI	LGDP	LUN	LGNE	LIRS
LSTTV	1.000						
LEXR	-0.464	1.000					
LCPI	-0.032	0.069	1.000				
LGDP	0.239	0.150	0.174	1.000			

LUN	-0.139	0.614	-0.117	0.580	1.000	
LGNE	-0.189	0.514	0.078	0.035	0.256	1.000
LIRS	0.067	-0.561	0.074	-0.571	-0.950	-0.296	1.000

Source: evaluation done by applying E-views 9.

In table 3 shows the links among different macroeconomics terms with value of –o.46 exchange rate is inversely connection to stock trade total value that is utilize as a delegate of stock market returns that is dependent variable. The consumer price index (CPI) is also negatively linking with stock market returns it mean when inflation increase stock market decrease. But only the GDP and IR are positively associated with dependent variable because when GDP increase stock market returns are also increase. The value of unemployment and gross national expenditure are inversely associated with stock market returns. At the same time exchange rate is only negatively relates to interest rate but with other independent variables its relation is positive. If we check the CPI correlation we can see the relation between inflation and unemployment is negative. But with other factors that have positive relation. GDP and IR have negative association. And interest rate and gross national expenditure are negatively associated because when interest rate increase the expenditure of any government and individual also decrease.

Asymmetric Auto Regressive Distributed Bound Test

The approximate results of Auto Regressive Distributed lag bound test is represented in the table 4.

Table 4: Bound test

Test statistic	value	k
F – Statistics	8.316	
Critical value Bounds	1_0	1_1
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Results: are done by applying E –views 9.

Conclusion: Co – integration Exist

After applied the bound test experiment, Table 4 results where the value of f-statistic is 8. 3072 but the critical bound value is 3.61 at 5% which shows significant worth is less as compared to f-statistics because results shows f value is greater that is suitable and clearly prove that stock traded total value has a wide connection with its selected independent indicators in the model.

The evaluation of long run integration is as follows;

Table 5: Evaluation of Long Run Coefficient

Variables	Coefficient	Std. Error	t- statistic	Prob.
LEXR	-5.209	1.653	-3.151	0.002
LCPI	-0.224	0.142	-1.577	0.121
LGDPC	0.186	0.107	1.738	0.088
LUN	-2.658	0.685	-3.877	0.003
LGNE	-2.042	3.706	-0.551	0.584
LIR	-9.715	2.290	-4.240	0.000
C	37.972	20.174	1.882	0.066

Source: Assessment are done through E-views 9.

Table 6: AIC criteria for Model selection

R- Square	Ad. R-square	F-statistics	Prob. F-statistics	Durbin-Watson
0.754	0.689	11.526	0.000	2.145

Sources; Evaluation is done by applying E-views 9

In the above table 5 shows the results that achieved through Auto Regressive Distributed Lag technique. As result showed that some variables relation with dependent variable is positive and some have negative relation with dependent variable stock market returns that is stock traded total value. In table 5, exchange rate act as negatively with stock market returns which shows that it is significant under the probability value of 0.0029 at 5 percent. A one percent expansion in exchange rate it means -5.2099 percent reduction in stock market returns. Such kind of results occur especially in the long run situation. Exchange rate proved to be negative associated with stock market returns (Alam 2014). Negative associations founded in EXR and SMR   (Mgammal 2012), Khan. M. I (2020), Faridullaha et.al (2014), Ali. A (2020), Bhunia (2020)**.**

The majority conditions showed that exist invers relation betwixt stock market returns and exchange rate. The most important element of any developing country economy is EXR. Exchange rate plays an important function in trade of any country. A high value currency of any country makes a country imports less expensive but and a low valued country currency makes country import high priced. A sky-high exchange rate can be awaited to decline a country balance of trade and low exchange rate can be anticipate to boost it so the stock market returns decrees when exchange rate increase because stock market trade decrease and profit of companies also decrease. Many studies investigate negative relation for example Ali (2020), Naseem (2019), Alam (2014) and Jamaludin (2017), Ndiovu (2018), Faridullaha et al (2014), Muktadir-al-Mukti explain the negative relationship betwixt exchange rate and stock market returns of Pakistan.

The negative consumer price index used as proxy of inflation reacted as negatively with stock traded value that is a proxy of stock market returns. Its mean a one present increase in inflation cause - 0.2245 % decrease in stock traded that is used as the proxy of stock market returns of Pakistan. But here the probability is 0.1218 which is not significant even at 10%. But many studied reviews reveal the negative dealings betwixt inflation and stock market returns. The depreciation of Pakistan rupee casus the stock market returns to lower and vice versa (Alam 2014). Inflation rate maintain negative relationship with all shares price index (Mukolu, M.O and Llugbemi, A. O 2020) and many other studies of Duca. J (2020), Pervaiz. J (2018), Ammar (2020), (Basheer, 2014), Ramzan. I. when inflation increase our currency value also depreciate and our stock market returns also decrease.

Gross domestic product shows a positive relationship with stock trade that is used in this model as a proxy of stock market returns in Pakistan. GDP positively correlated with stock market returns with 0.0889 probability at 5 percent level which shows the significant relation. Its mean 1 present increase in GDP cause 0.1860 increase in stock market returns because when GDP increase the income of that country's people also increase and invest into business therefore stock market increase. But on the other hand when GDP decrease people consumption and investment in business also decrease because their income decrease. So the gross domestic product and stock market returns have positive relationship.

The negative unemployment reacted as negatively with the stock trade that is the proxy of stock market returns with probability 0.0003 which shows that it is significant at 5% because it value is less than 0.05 present. A one percent increase in unemployment cause - 2.6589 decrease in stock market returns because when people income decrease due to unemployment they are not able to spent or invest money in business and so stock market returns decrease (Basheer et al., 2019; bin Hidthiir et al.,2019). Gross national expenditure negatively associated with stock market returns with 0.5843 probability that shows GNI is insignificant. But the results shows the negative association when 1 percent increase in GNI its mean -2.0426 decrease stock market returns.

Interest rate shows negative relationship with stock traded that is used as a proxy of stock market returns in Pakistan with 0.0001 probability that shows significant results and strong invers relation of interest rate with stock market returns because that is less than 0.05%. If one percent increase interest rate its mean -9.7158 percent down stock market returns. Interest rate proved to be negatively associated with the stock market returns (Alam 2014). When interest rate increase people prefer to deposit and earn more profit and avid to invest in business so the stock market returns decrease. Many studies reveal the negative relation of stock market returns and interest rate. Such as Khalid. W and Khan. S (2017), Faridullaha et al (2014). Muktadir-al- Mukti (2012).

In the other table explain the model selection criteria in which the Durban Watson test value is exit among 2 to 4. Its value is 2.1455 that is good .Its mean we can select this model probability value is 0.0000 and the R square value is 0.71 % so our model is good and we can use it.

The short run analysis explains the shocks of exogenous variables on endogenous variable in limited or short period of time which explain the relationship between them. The main

important point in short run analysis results of co-integration must harmful and consider able in its value.

Table 7: Short Run Cointegration

COINTEGRATION FORM

VARIABLES	Coefficient	Std. Errors	t-Statistics	Prob.
D(LSTTV(-1))	0.384	0.121	3.168	0.002
D(LEXR)	2.474	1.708	1.448	0.154
D(LCPI)	-0.182	0.111	-1.641	0.107
D(LGDP)	0.151	0.093	1.623	0.111
D(LUN)	-0.837	0.537	-1.558	0.126
D(LGNE)	8.135	4.018	2.024	0.048
D(LIRS)	-5.355	2.195	-2.245	0.019
COINTEQ(-1)	-0.815	0.119	-6.841	0.000

Sources: Assessment is done by E-views 9.

Figure 2:
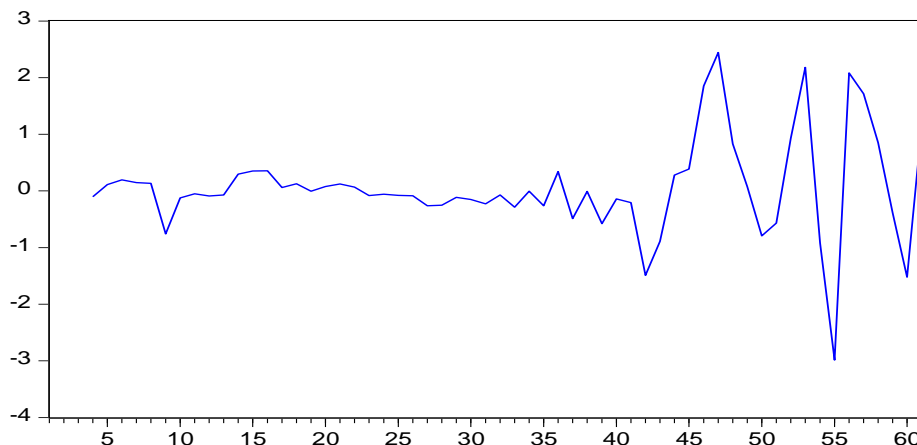
Source: Assessment are done by E-views 9.

The short run cointegration results shows that exchange rate coefficient results represents that it is concerned to stock market returns positively but here it is insignificant. It means it is a long run phenomenon. A one present rise in the positive exchange rate brings 2.4741 percent increase in stock market returns. Here the inflation also reacted as negatively but its probability value 0.1076 shows that is insignificant its mean that is also long run phenomenon the negative sign of coefficient shows that one percent increase in inflation negatively brings -0.1829 decrease in stock market returns.

In the short run the gross domestic product is positively associated with stock traded that is used as a representativeof stock market returns. But probability value 0.1114 shows there is no long run relation exist between stock market returns and GDP. But the positive relation shows that when one present increase in GDP brings 0.1517 percent increase in stock market traded.

Unemployment coefficient shows that negatively related with the stock market returns but its probability value shows the insignificant relation. Its means between stock traded that is used as a substitutes of stock market returns have no any short run relation only long run relation exist between them. Coefficient value shows that when unemployment increase one percent it brings negatively -0.8373 percent decrease in stock market returns.

Here the gross national expenditure positively associated with stock market returns its coefficient value shows that with 8.1352 positive relation. And its value of probability 0.0489 shows significant relation. It shows that between stock market returns and GNI exit both long run and short run relation. When one present increase GNI it's bring 8.1352 percent increase in the stock traded that is used as a proxy of stock market returns. There exist a string relationship between them. Interest rate shows significant relation with the stock market returns with the probability value 0.0194 present that explain the significant relation between them. Its means between interest rate and stock market returns exist both short run and long run relation. Its coefficient value -5.3250 shows negative association. Rate of interest increase 1% its mean -5.3250 percent decrease the stock market returns. Its mean there exit negative relation between them.

Table 7 shows small lope estimation of variables that present Coint Eq (-1) value is -0.8150 and its t- statistics value is -6.8418 here the coefficient sign shows that it is negative and numerically significant with the probability of 0.0000. The probability rate presents extreme causality between dependent and independent variables.

HETEROSCEDASTICITY TESTS

Table 8: Heteroscedasticity Test Breusch-Pagan-Godfrey

Test statistics	Value	Prob. (2,43)	Null hypothesis	Decision s
F. statistics	3.436	0.372	No hetero exist	Reject H1
Serial correlation LM test				
F. statistics	4.557	0.216	No heteroskedasticity exist	Reject H1

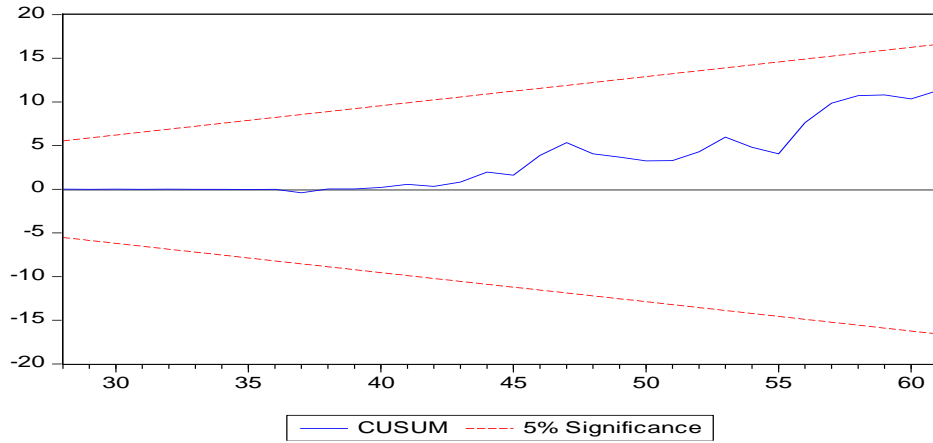**Sources: Evaluation is done by applying E-views 9**

In final model study apply heteroskedasticity test to find out either hetero exist or not firstly apply Breusch-Pagan-Godfrey test the F statistics value is 3.4362 that is greater than the five % with probability value 0.3728. These results shows that in final model we rejected the alternative hypothesis H1 our model is significant with probability value.

Study for further information apply LM test to deduct the serial correlation. Above values of F Statistics explain no serial heteroscedasticity not exist and with prob. Value 0.2160prove our model well.
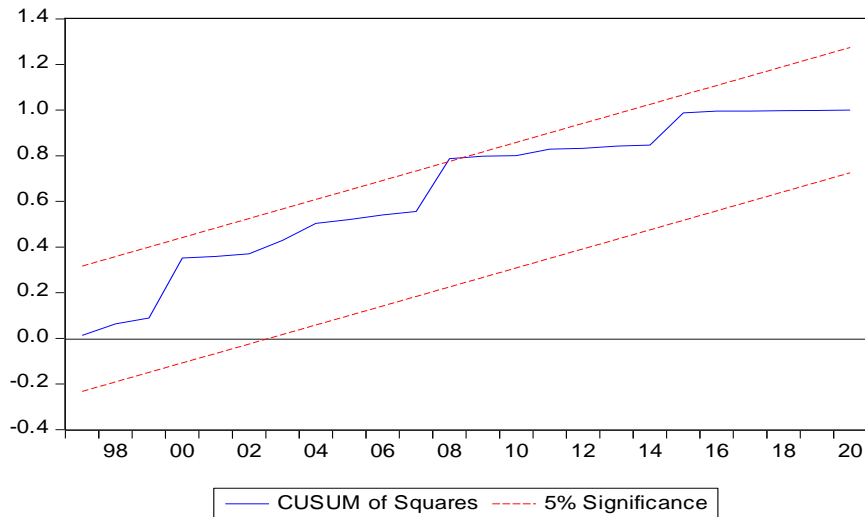
 STABILITY TEST

To verify the model reliability either stable or not, plots the cusum and cusum square test

Figure 3

Source: evaluations are done by applying E- views 9.

Figure 4 square Cusum test

Sources; Evaluation is done by applying E-views 9

In the Cusum graph to critical bounds are represented with the help of dotted lines while stability of data shows with the help of strong line. Stability of cusum the strong line which is our data line must be between in these two critical bounds. If strong line deviates ether above the critical line or below it means data is not stable. Within the limits data is

significant at 5%. In the cusum square line of data lies in two dotted lines so data is significant at 5%.

GRANGER CAUSALITY TEST

To check the all variables relation with each other represented by the Granger Causality test its table are the following;

Table 9: Granger Causality Test

LEXR with LSTTV	6.192	0.003
LSTTV with LEXR	0.003	0.996
LCPI with LSTTV	0.519	0.597
LSTTV with LCPI	1.123	0.332
LGDPC with LSTTV	0.430	0.651
LSTTV with LGDPC	0.274	0.769
LUN with LSTTV	23.401	5.E-08
LSTTV with LUN	1.637	0.200
LGNE with LSTTV	1.814	0.176
LSTTV with LGNE	0.726	0.482
LIR with LSTTV	2.824	0.061
LSTTV with LIR	0.306	0.732
LCPI with LEXR	0.382	0.684
LEXR with LCPI	0.736	0.483
LGDP with LEXR	1.084	0.345
LEXR with LGDP	1.074	0.348
LUN with LEXR	0.688	0.506
LEXR with LUN	2.651	0.079
LGNE with LEXR	1.767	0.180
LEXR with LGNE	2.540	0.088
LIRS with LEXR	1.742	0.184
LEXR with LIRS	9.639	0.000
LGDPC with LCPI	0.611	0.546
LCPI with GDPC	1.153	0.323

LUN with LCPI	0.480	0.621
LCPI with LUN	0.912	0.407
LGNE with LCPI	0.454	0.637
LCPI with LGNE	0.845	0.435
LIRS with LCPI	0.439	0.646
LCPI with LIRS	0.912	0.407
LUN with LGDPC	0.258	0.773
LGDPC with LUN	1.799	0.175
LGNE with LGDPC	0.241	0.786
LGDPC with LGNE	1.585	0.214
LIRS with GDPC	0.386	0.681
LGDPC with LIRS	2.247	0.115
LGNE with LUN	0.094	0.910
LUN with LGNE	0.994	0.376
LIRS with LUN	0.728	0.487
LUN with LIRS	16.064	3.E-06
LIRS with LGNE	0.592	0.556
LGNE with LIRS	0.680	0.510

Sources: Evaluation is done by applying E-views 9

In table 9 study investigate the causal relationship among all variables such as dependent and independent variables. No any causal link with exchange rate of STTV, and no relation of STTV with EXR, no causal relationship of STTV and CPI and CPI with STTV, no causal relation of STTV with GDPC and no relation OF GDPC with STTV. No any causal relationship of STTV with unemployment and UN with STTV. No casual relation of STTV with GNI and GNI with STTV. At the end no any relation of STTV with IR and IR with STTV.No any causality exist except exchange rate have causality with unemployment with probability value 0.0797 but unemployment does not have any relation. Exchange rate have causality relation with expenditure with p value 0.0882. But expenditure does not have any relation. EXR does have causality with interest rate by p value 0.0003 but interest rate not have. Remaining indicators does not have any causality with each other.

CONCLUSION

The data is collected with the help of world development indicator since 1960 to 2020. This study used stock traded as dependent variable and as a proxy of stock market returns,

and exchange rate (EXR), consumer price index (CPI) as a proxy of inflation, (GDP), (UN), and gross national expenditure (GNE) and interest rate (IR) as an independent variable. To check the statistical impacts of exchange rate, inflation, GDP, unemployment, interest rate, and GNE enrolment on stock market returns, employed the ADF, ARDL model. The ARDL model has ability to generate both short-run and long-run asymmetries in a given model. Study observed that exchange rate, unemployment, and interest rate size have statistically significant and negative effect on stock market returns in long run. It is necessary for the government to control the unemployment and interest rate for the growth of stock market returns.

Then again our model shows that GDP and stock market returns are positively associated and their results and size are significant in long time period and also in short time. But in the short run their results are insignificant. CPI and GNI are negatively associated with stock market returns and their results are insignificant. The ending showed that exchange rate, inflation and interest rate are most important in the development of stock market returns.

Some polices with respect to increase the stock market returns are the following: To stable the inflation is the responsibility of the government for the technical pattern of the stock market returns. An exchange rate is very useful tool government can used to improve the export and import for the betterment of real sectors and capital market. So, the government should want to make polices to stable the exchange rate. Monetary policy plays an important role in setting a realistic and stable price level that will be urge investors to put their money in stock market.

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