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Association Between Economic Growth, Tourism, Selected Macroeconomic Variables and Covid-19 Scenario: Empirical Evidence from Pakistan

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ABSTRACT

Tourism is the world's fastest-growing industry and one of the major contributors to economic growth in various economies. While the government of Pakistan is making efforts to revitalize the tourism sector, this research paper attempts to identify the association between economic growth, tourism, and other macroeconomic variables including, exchange rate, current account balance, inflation, and the covid-19 scenario in Pakistan from 1995 to 2020. For this purpose, Co-integration is tested by using the ARDL model to examine if there is a long-term or short-term association between these variables in the covid-19 scenario. Hence, according to the ARDL bound test results, there is an existence of cointegration in covid-19 while without covid-19 there is no cointegration found among variables. Furthermore, it is found that in the long-term, tourism and current account balance have a positive and statistically significant association with economic growth while inflation has a negative and statistically significant association with economic growth. The exchange rate has positive and covid-19 have a negative but insignificant impact on economic growth. Furthermore, the Granger causality test is used to determine whether a variable is worthwhile to predict another variable or not. Therefore, Granger causality test reveals a one-way causality from economic growth to exchange rate, current account balance to economic growth, and exchange rate. Hence results concluded that the current account balance is one of the most important variables for the economy of Pakistan. Consequently, it is suggested that growth in the tourism industry during covid-19 has the ability to reduce the current account deficit which leads to a steady exchange rate and economic growth in Pakistan.

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1. INTRODUCTION

Tourism is considered a vital factor in the growth of an economy by majority governments, which is one of the major reasons for its vast promotion (Ivanov & Webster, 2007). The effects are not just limited to economic and environmental aspects as studied by Daniel J, Francois, Ugur, Jeyhun, and many more. Studies have also been conducted on other factors affecting tourism like ethnicity conducted by (Milman et al., 1988). The main focus of this paper is on the economic aspects of tourism in light of the recent pandemic covid -19 in the case of Pakistan.

Tourists travel for several diverse reasons including sports, health, culinary, wine, education, business, etc. (Camilleri, 2018). Tourism helps in the enhancement of GDP directly and indirectly by reducing the current account deficit, improving the exchange rate, and helping in curbing inflation. In many developing countries tourism can be considered a major variable of economic growth especially due to its multiplier effects including positive effects on foreign exchange earnings and balance of payment (Khan et al., 2020).

The tourism industry contributes 10.2% to the world economy by the production of by the addition of 9.9% of jobs throughout the world in 2016 alone. 6% is added to the global merchandise, 30% of international service trade, and 9.8%of global GDP in 2014 (Sadia 2020). Due to the immense potential of growth embedded in the tourism sector, governments, professionals, and scientific communities' emphasis on active funding, marketing, and designing beneficial perception image of the national tourism sector to enhance the economic growth (Beata, 2021). After the advent of covid -19 tourism industry is one that has been affected severely due to government policies and public travel preferences.

One of the major variables in line that are affected by tourism is the current account deficit. Higher revenues from the tourism industry can provide enhancement in service balance which can lead to a decline in the current account deficit (Telatar, 2020) Many countries that are dependent upon the tourism industry for their economic growth have been significantly affected by the arrival of this pandemic. Latin America and the Caribbean used to have earnings from tourism or tourism receipts significantly larger than their current account balances are now facing unparalleled shocks due to covid-19 (Mooney & Zegarra, 2020). In the case of Pakistan, some previous have suggested that there is a relationship in long run between tourism and the balance of payment deficit (Rafiq et al., 2021).

Inflation is another important macroeconomic variable that can experience positive as well as negative relationships with tourism growth and in turn increase or decrease economic progress (Shaari et al., 2018). It may even have no relationship with tourism (Naidu et al., 2017). Whether a country faces progressive impacts or an adverse impact depends entirely on the structure of an individual country.

Theoretical background of selected variables of the study concerning economic growth.

Tourism and Economic Growth

Tourism has been considered a variable of growth for many nations specially the developing nations. Pakistan being a developing nation has been focusing a lot on improving the tourism potential of Pakistan. The Potential of Pakistan includes adventure tourism, religious tourism and cultural tourism. Tourism many times is also considered as part of trade therefore many scholars associate trade-led growth theory or export led growth theory with tourism and trade.

Exchange Rate and Economic Growth

Various scholars and researchers have made in depth analysis among exchange rate and economic growth. Appreciation, Depreciation, Overvaluation and Undervaluation of the currency can all have impacts on economic growth. In case of developing countries like Pakistan overvaluation is likely to have adverse impacts and undervaluation is most likely going to have a positive impact on economic growth. The undervaluation of

the currency cheapens the products of the country and therefore increases the comparative advantage and compatibility of the exports of the country because of the devalued currency. A study conducted by (Hussain et al., 2019) investigates the importance of a strong currency on economic growth in case of Pakistan.

Inflation and Economic Growth

Inflation is a widely studied variable by researchers, for some it has a prominent effect on the purchasing power of the consumers and industries, while others claim that it does not have a very strong effect and therefore the relationship is debatable. Its relation with economic growth tends to vary depending on the economic situation of the country. In case of Pakistan attempts are made by Central bank to control the inflation rate to ensure a steady growth. A recent study conducted on this aspect is by (Hayat et al., 2021) by Wavelet transformational approach where it was found that the inflation-growth rate is not straight forward in every case , it can be unidirectional on some time scales and bi directional on the other.

Current Account Balance and Economic Growth

Current account of any country is a vital economic indicator. Countries that face higher import bills and lower export revenues faces current account deficits. Current account deficit of any country can have immense impacts on the economic growth of any country. A study conducted by (MELIKE & FAZIL, 2021) indicate policies that improve the current account balance have found to have adverse effects on economic growth due to causal relation between GDP and militarization. Furthermore Energy imports and energy shocks also have a strong impact on the current account balance. The economic growth is therefore forced to reduce due to imported raw material and intermediary goods.

Objectives of the Study

1. To investigate the influence of tourism and macroeconomic variables on economic growth, that can help in improving flow of sources of income.
2. To study the impact of tourism and macroeconomic variables on economic growth in covid-19 scenario.
3. To check the direction of causality between variables of the study so that policy makers can target appropriate variables in the policies to increase economic growth.

2. LITERATURE REVIEW

There are various research studies previously done by researchers on the tourism industry and its impact on economic growth, however, few of them are used references. (Aarif Mohammad Khan, Sana Naseem, 2021) incorporates panel study for The Gulf cooperation council (GCC) countries based on the individual countries from 2000-2018. Dumitrescu –Hurlin panel causality test has been applied revealing no existence of causality between the variables tested with economic growth. Although no causation is present between tourism growth and economic growth and tourism expenditure and economic growth, two-way causality is found between tourism expenditure and tourism growth.

While (Nyoni et al., 2021) investigated in Zimbabwe the effect of International tourism development from 2000-2017. The tourism growth model has been adopted in the study, suggested by (Balaguer & Cantavella-Jordá, 2002). By applying Autoregressive Distributed Lag (ARDL), Error Correction Model (ECM) granger causality test it is found that the tourism-led growth hypothesis was found to be valid both in the long run and short run. It was further found that Economic driven tourism growth hypothesis is found only in the long run.

Whereas (Liulov et al., 2020) studies the relationship of economic growth with tourism during the pandemic covid-19. The paper focuses on analysis on changes in the tourism industry, focusing on domestic road tourism of Ukraine and EU countries post-soviet, and its recovery because of quarantine restrictions. This paper intent

to discover the fluctuations in the tourism sector to predict the revival in the tourism industry after pandemic restrictions were practiced. The extrapolation model of ARIMA is applied for the forecast. The forecast has been conducted with both conditions with the restrictions as well as without restrictions. The results depicted a significant effect due to the measures of quarantine and modest potential to recover from tourism recession.

In another research study (Ghosh, 2020) researches on asymmetric impact of covid-19 of Chinese tourist arrivals in Australia by a newly devised index for the pandemic (Discussion and Pandemic Index (PI)) conceptualized by Baker et al (2020). The data has been collected from the first quarter of 1996 to the first quarter of 2020. The methodology adopted is the non-linear ARDL model. The results depict that a 10 percent decline is followed by a percentage increase in uncertainty. On the other hand if uncertainty declines by one percent there is a 0.22 percent rise in tourist arrivals.

Moreover (Deb & Nafi, 2020) inspects the effect of Covid -19 on tourism of Bangladesh. The analysis from the sources reveals that pandemic inversely affects the industry of tourism and travel. Likewise examinees tourism industry of Malaysia with impacts of Covid-19. The situation has been inspected on the very early stages of covid-19 spread. The number of total recovered cases and deaths has been taken on global level as well as a national level. The impact on the airline industry is inspected depicting significant losses to the industry. Impact on hotel business was also negative showing cancellation of room bookings and losses in revenues in the hotel industry. To reduce the severity of the situation some packages were also introduced by the Malaysian government like tax incentives and restructuring of loans by the Ministry of Finance (2020) and Prime Minister's office (2020).

While (Jaipuria et al., 2021) predicts the arrival of foreign tourists in India using artificial neural networks. Additionally, four different scenarios are analyzed with and without lockdown. Monthly data of overseas visitors has been utilized from 30 April 1989 to 31 March 2020 and tourists' foreign exchange earnings (FEE) are collected from January 1993 to March 2020. The findings suggest that the tourism sector needs to be reconstructed to keep the FEE above USD 11790.53million. If it is maintained at the level where policies are reformed at least USD 13351.07 million of FEE can be maintained.

An additional study (Akadiri & Akadiri, 2021) scrutinizes the impact of tourism on economic growth as a predictable indicator on tourism island states and also the other way round. Furthermore, the exchange rate has also been used for enhanced results. The data has been collected from World Development indicators (2017) from 1995 to 2016. The islands selected for the panel study are chosen based on where the economy's sole reliance is on tourism as a source for growth in the economy. The study has been conducted for examination of causal direction to investigate if the direction is a one-way link or is it present both ways.

Whereas (Yazgan Pektas & Unluonen, 2020) evaluated the relationship between tourism in Turkey and inflation by descriptive analysis. The consumer price index is analyzed concerning the number of tourists arriving from 2004-2018, income from tourists, spending per person on average, overnight stays on average, and inflation. It was found that since tourism is a periodic factor, inflation is observed to rise in this period. During 2004 and 2018 inflation was highest. Moreover from 2017-2018 Tourism demand is depicted to have increased but tourism income, average expenditure per person, and the usual overnight stays declined. Therefore not only inflation is found to have a relationship with tourism but also different factors like the global economic crisis and the tourists that do not want to spend much appear to favor Turkey.

The paper further advises conducting the analysis of the taken series in time series for better results. While the impact of exchange rate and tourism has been studied by (Akay et al., 2017) on the tourism balance of Turkey from 1998-2011. Johansen's maximum likelihood technique has been implied to evaluate the long-run impact of exchange rate and income on tourism, Moreover, the error correction model has been used for short-run analysis. The most significant variable to affect the tourism balance is income. Additionally, foreign income

and exchange rate positively affect the tourism balance while domestic negatively affect the Turkish tourism balance.

Additionally (Rasheed et al., 2019) conducts a study for the examination of tourism with a deficit in the balance of payment in long run during 1976 and 2015 in Pakistan. The methodology used is the Autoregressive distributed lag (ARDL) model. The results concluded to have an indirect relationship between tourism and the BOP deficit. Additionally, there is evidence of positive relationships in the long run of deficit of BOP with deficit balance of trade, the deficit in fiscal balance and real effective exchange rate. It was concluded to take steps for the growth of tourism as it reduces the balance of payment deficit in Pakistan.

However (Munir & Iftikhar, 2021) explore the asymmetric effect on the tourism industry of South Asian countries on FDI and exchange rate both in the long and short term linear and non-linear. The data of five countries including Pakistan, Bangladesh, India, Nepal, and Sri Lanka has been collected annually from 1995 to 2019. The methodology adopted in the study is Panel Linear and non-linear Autoregressive Distributive Lag (ARDL) model. The results conclude that in the long-term when FDI and exchange rate increases tourism declines and vice versa. Furthermore, FDI is found to have asymmetric behavior on tourism for Pakistan, Sri Lanka, India, and Bangladesh in the short run, while the exchange rate has an asymmetric impact on tourism in the case of Pakistan, Nepal, India, and Bangladesh. Unidirectional causality was also observed, from FDI, exchange rate, the partial negative sum of FDI, and the partial positive sum of exchange rate towards tourism and from tourism to partial positive sum of FDI and partial negative sum of the exchange rate. The results depict the need to attract FDI and use the channel for expansion the of the tourism industry.

One more research (Harvey & Furuoka, 2019) investigates in Singapore the role of tourism, real exchange rate, and economic growth if there are any asymmetric effects from 2005-2015. Disaggregated data has been collected from major eleven tourist destinations including the USA, China, France, Germany, India, Indonesia, United Kingdom, Japan, Philippines, Malaysia, and Thailand. This paper focuses on exploring tourism led-growth by adapting the methodology of ARDL in both linear and non-linear approaches. The results portray that in the short-run exchange rate is found to be significant in most cases. The results found mostly are determined based on the country in comparison and they are specific about the partner. Depreciation of Singapore's currency is found to have a positive impact on income from trade but the results might not be the same in long run. Further, it is concluded that it might be supportive for Singapore to adopt a policy of managed float exchange rate but it still does not solve the problem of sustainable economic growth in the long run.

Furthermore (Ongan & Özdemir, 2018) explore the effects of real exchange rate changes of USD with the Mexican peso and Canadian dollar respectively between the period of 1996 January till 2016 June. Both linear and Non-linear ARDL cointegration has been applied. The nonlinear ARDL model developed by Shin et al has been applied because it can scrutinize depreciation and appreciation in the USD separately. The outcomes of the study show that when the USD depreciated against the Mexican peso and Canadian dollar there is a positive response from Mexican and Canadian tourists. Moreover, asymmetric effects are found to exist on US tourism against Mexico, using the Nonlinear ARDL model, when USD appreciates or depreciates. But the same changes have symmetric effects in the case of Canada.

While in another research study (Meo et al., 2018) inspects the effects of oil prices, exchange rates, and inflation on tourism demand in the case of Pakistan. Time series analysis has been conducted from 1980-2015. While Asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework are utilized. The results depicted that in the long run asymmetric association between exchange rate, inflation, and tourism demand exists.

However (Dhaoui et al., 2017) explore the relationship between tourism demand and macroeconomic determinants in Tunisia. Data has been collected from 1971-2014 on monthly basis. The methodology applied

is ARDL and Granger causality. The three different unit roots all show that the series are integrated at I (1) and therefore the result for stationarity is robust. Further, the ARDL results depict that long-run tourism demand affects GDP positively and significantly. In the long run, tourism demand is not affected by the exchange rate. While in the short run there is a significant negative tourism impact of the lagged exchange rate. Also a positive and significant short-run impact on tourism demand.

Furthermore (Soofi et al., 2018) conducts a study to highlight various determinants of tourism in the Organization of Islamic Cooperation (OIC) countries. The variables included in the study are GDP per capita, population, real exchange rate, Consumer price index (CPI), and Trade openness. The method applied is of Panel model GLS to explore the association among the selected variables. Data collected is from 2004-2016. The findings show that GDP per capita and the real exchange rate have a positive effect on tourist receipts. An appropriate rate of exchange for the promotion of tourism has been suggested by the authors, further suggesting that although CPI has a positive effect but is still insignificant in the explanation of tourism demand.

Contribution of Study

1. This paper makes a unique contribution to the literature with reference to Pakistan, being a pioneering attempt to investigate the impact of tourism and selected macroeconomic variables on economic growth in covid-19 scenario.
2. The macroeconomics variables taken in this study have not been incorporated in a single model in the previous literature as per my research framework. While the time span of the annual time series data used in this study is also latest.

3. DATA AND METHODOLOGY

Table 1: Data Source

Series	Denoted by	Measure	Source	Type of variable
Gross Domestic Product (Economic growth)	GDP	US $	World Bank	Dependent Variable
Tourism Receipt	tr	US $	World Bank	Independent Variable
Exchange Rate	exch	US $	World Bank	Independent Variable
Consumer price index (inflation)	CPI	Index	SBP	Independent Variable
Current account balance	CAB	US $	World Bank	Independent Variable
Covid-19	cov19	Dummy Variable	_	Independent Variable

Above **table 1** shows that for this research study annual data of GDP, tourism receipts, exchange rate, consumer price index (inflation), current account balance, and Covid-19 as a dummy variable has been taken from World Bank and SBP which spans from 1995 to 2020. All the variables are measured in terms of dollar and then converted into logged series. This study tried to investigate the long-term or short-term association between economic growth, tourism, and other macroeconomic variables as well as causality between them by identifying the integration of series through Augmented Dickey-Fuller unit root and Phillip Perron test to determine that no variable is integrated of order II, also we tested the existence of cointegration in the model and finally we identified the causality between the variables of the model.

Hypothesis

The study will test the following hypothesis:

H1: There is a significant long-run association between tourism, selected macroeconomic variables and economic growth during covid-19 scenario.

H2: There is granger causality between variables of the study.

4. RESULTS AND DISCUSSION

ADF and Phillip Perron Unit Root Tests:

Table 2: ADF and Phillip Perron Unit Root Test

Series	Order of Integration I(0)	p-value of ADF Test	p-value of Phillip Perron Test	Null hypothesis: H0= series has a unit root (series is non-stationary)	Order of Integration I(1)	p-value of ADF Test	p-value of Phillip Perron Test	Null hypothesis: H0= series has a unit root (series is non-stationary)
LGDP	Level	0.77	0.779	Accept H0	1st Difference	0.015	0.001	Reject H0
LTR	Level	0.753	0.738	Accept H0	1st Difference	0.003	0.003	Reject H0
LEXCH	Level	0.872	0.895	Accept H0	1st Difference	0.012	0.040	Reject H0
LCPI	Level	0.223	0.207	Accept H0	1st Difference	0.000	0.000	Reject H0
CAB	Level	0.048	0.230	Accept H0	1st Difference	0.018	0.020	Reject H0
Since series with p-value ADF and P.P test of all the series is greater than 0.05 so accept H0 hence they all are non-stationary at level at 5% level of significance.					Since p-value of ADF and P.P test of all the series is less than 0.05 so reject H0 hence they all are stationary at 1st Difference at 5% level of significance.			

Augmented Dickey-Fuller and Phillip Perron tests are applied to identify the level of integration of series. The results of the ADF and P.P test shown in **table 2** depict that the level of integration of all the series at 1st Difference I (1) at a 5 % level of the confidence interval. However, due to the small data size ARDL model is more feasible to check cointegration.

ARDL Bound Test

Table 3 a: ARDL Bound Test in covid-19 scenerio

Model	Order of Lag	ARDL Bound Test (F-stats)	Significance level	Lower Bounds	Upper Bounds	Cointegration
LGDP= c + LTR + LEXCH- LCPI -LCAB - COV19	1	4.635457	10%	2.26	3.35	Yes
			5%	2.62	3.79	
			2.50%	2.96	4.18	
			1%	3.41	4.68	
H0= No longrun relationships exist						

Table 3 b: ARDL Bound Test without covid-19 scenerio						
Model	**Order of Lag**	**ARDL Bound Test (F-stats)**	**Significance level**	**Lower Bounds**	**Upper Bounds**	**Cointegration**
LGDP= c + LTR + LEXCH- LCPI -LCAB	1	2.142628	10%	2.45	3.52	No
			5%	2.86	4.01	
			2.50%	3.25	4.49	
			1%	3.74	5.06	
H0= No longrun relationships exist						

ARDL bound test is used to identify the level of relationship between the dependent and independent variables of a model which is introduced by (Pesaran et al., 2001). Results of the ARDL bound test during covid-19 in **table 3a** depicted that at lag 1 the value of F-stats is greater than the upper bound at 10, 5, and 2.50 % level of confidence interval hence null hypothesis has been rejected indicating the existence of cointegration in the model. Since the variables are cointegrated both ARDL (short-run) and ECM (long-run) model has been specified. However Results of the ARDL bound test without covid-19 in **table 3b** depicted that at lag 1 the value of F-stats is less than the upper bound at all the levels of confidence interval hence null hypothesis has been accepted indicating the non-existence of cointegration in the model.

ARDL and ECM Model:

$$dlgdp_t = c + \beta_1 ltr_{t-1} + \beta_2 lexch_{t-1} + \beta_3 lcpi_{t-1} + \beta_4 cab_{t-1} + \beta_5 cov19_{t-1} + \sum \beta_{11} dltr_{t-1} + \sum \beta_{22} dlexch_{t-1} + \sum \beta_{33} dlcpi_{t-1} + \sum \beta_{44} dcab_{t-1} + \sum \beta_{55} dcov19_{t-1} + \lambda ECT_{t-1} + \varepsilon_t$$

Table 4: ARDL Cointegrating And Long Run Form (1,0,0,0,0,)				
ARDL Short-run Coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LTR)	0.695 *	0.094	7.363	0.000
D(LEXCH)	0.090	0.112	0.808	0.429
D(LCPI)	,-0.129 *	0.020	-6.422	0.000
D(CAB)	0.147 ***	0.082	1.795	0.089
D(COV19)	-0.044	0.029	-1.515	0.147
CointEq(-1)	-0.331	0.102	-3.233	0.0046
ARDL Long Run Coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LTR	2.094 *	0.508	4.122	0.001
LEXCH	0.272	0.260	1.046	0.309
LCPI	,-0.389 *	0.109	-3.585	0.002
CAB	0.443 **	0.197	2.259	0.037
COV19	-0.133	0.083	-1.599	0.127
C	,-28.117 *	9.418	-2.986	0.008
, **, indicates the level of significance at 1%, 5%,and 10% respectively.**				

Table 4 shows the outcomes of ARDL short-run and ECM long-run models. According to the outcome of the Short-run model impact of tourism and current account balance on economic growth (GDP) is positive and statistically significant at 1 and 10% level of significance respectively. The impact of inflation (CPI) is also

statistically significant but negative at 1% level of significance while other variables are statistically insignificant. Furthermore, the sign of coefficient for the cointegration equation (ECM) indicates convergence or divergence from equilibrium while the value of coefficient indicates the speed of adjustment. In this model coefficient of the cointegration equation is statistically significant and negative which means the existence of a long-run association among variables is robust as well as there is convergence towards equilibrium while the speed of adjustment is 33%. Hence hypothesis H1 (There is a significant long-run association between tourism, selected macroeconomics variables and economic growth in covid-19 scenario) has been accepted at 1% level of high significance. Whereas the long-run model indicates that tourism and current account balance has a positive and statistically significant impact on economic growth. On the other hand CPI has a negative and statistically significant impact on economic growth. However, exchange rate and covid-19 have respectively positive and negative but statistically insignificant impacts on economic growth.

Residual Diagnostics:

Table 5 :Heteroskedasticity Test: ARCH			
F-statistic	0.042	Prob. F(1,22)	0.838
Obs*R-squared	0.046	Prob. Chi-Square(1)	0.83
H0: There is no heteroscedasticity			
At 5% level of significance.			

Table 5 shows the outcome of the ARCH test for heteroskedasticity according to which the p-value of observed R-squared is greater than 0.05 hence null hypothesis has been accepted which indicates there is no heteroscedasticity in the model at a 5% level of significance.

Table 6: Breusch-Godfrey Serial Correlation LM Test			
F-statistic	1.07	Prob. F(1,17)	0.315
Obs*R-squared	1.48	Prob. Chi-Square(1)	0.223
H0: There is no autocorrelation			
At 5% level of significance.			

However, **Table 6** shows the conclusion of the Breusch-Godfrey serial correlation LM test introduced by Trevor S. Breusch and Leslie G. Godfrey (Breusch & Godfrey, 1981) to check autocorrelation in the model according to which the p-value of observed R-squared is greater than 0.05 hence null hypothesis has been accepted which indicates there is no autocorrelation in the model at 5% level of significance.

Table 7: Histogram Normality Test			
Jarque-Bera	0.14	P-value	0.932
H0: There is a normality			
At 5% level of significance.			

Moreover, **Table 7** shows the results of the histogram normality test to check the normality of the model which indicates that the p-value Jarque-Bera is greater than 0.05 hence null hypothesis has been accepted which indicates the model is normal at 5% level of significance.

Stability Diagnostics:

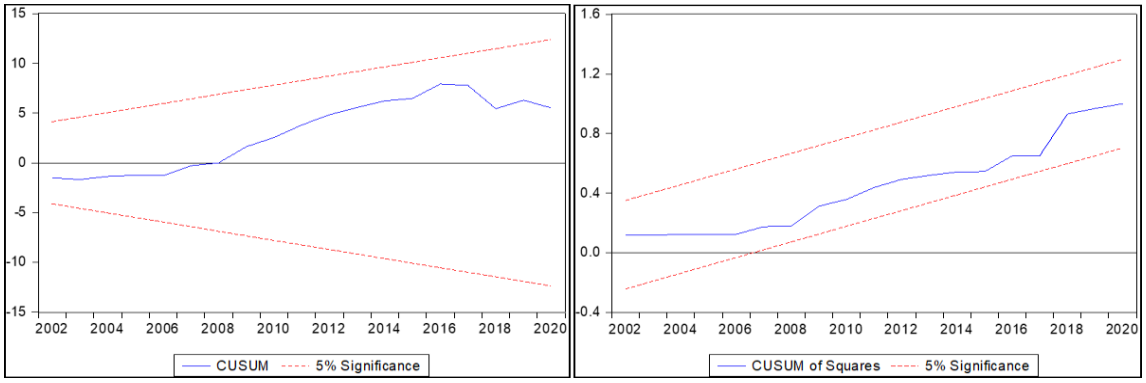

Figure 2. CUSUM and CUSUMSQ Stability Test.

Furthermore, stability of the ARDL model has been identified by using the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) stability diagnostic tests introduced by (Brown et al., 1975). Both techniques have been shown in **Figure 2**, according to both techniques ARDL model is stable at a 5 % level of significance.

Granger Causality test:

To detect the causality or direct of association between the variables of the model granger causality test has been applied which is introduced by (Granger, 1969) this technique determines whether a variable is worthwhile to predict another variable or not.

Table 8: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
LTR does not Granger Cause LGDP	25	2.236	0.149
LGDP does not Granger Cause LTR		0.166	0.687
LEXCH does not Granger Cause LGDP	25	0.002	0.966
LGDP does not Granger Cause LEXCH		3.280 ***	0.084
LCPI does not Granger Cause LGDP	25	0.084	0.775
LGDP does not Granger Cause LCPI		0.464	0.503
CAB does not Granger Cause LGDP	25	5.177 **	0.033
LGDP does not Granger Cause CAB		1.441	0.243
LEXCH does not Granger Cause LTR	25	0.920	0.348
LTR does not Granger Cause LEXCH		0.257	0.617
LCPI does not Granger Cause LTR	25	0.272	0.607
LTR does not Granger Cause LCPI		0.964	0.337
CAB does not Granger Cause LTR	25	0.018	0.894
LTR does not Granger Cause CAB		0.970	0.335
LCPI does not Granger Cause LEXCH	25	1.941	0.178
LEXCH does not Granger Cause LCPI		0.077	0.783
CAB does not Granger Cause LEXCH	25	28.226 *	0.000
LEXCH does not Granger Cause CAB		0.000	0.990
CAB does not Granger Cause LCPI	25	1.984	0.173
LCPI does not Granger Cause CAB		2.110	0.160

, **, indicates the level of significance at 1%, 5%,and 10% respectively.**

As ARDL bound test indicates existence of cointegration so, there is a possibility of the existence of causality which indicates direct or indirect reationship between variables. Therefore Granger causality test has been used to find out the existence of causality. The outcomes shown in **table 8** indicates that there is a one-way causality from economic growth (LGDP) to exchange rate (LEXCH), from current account balance (CAB) to economic growth (LGDP), and from current account balance (CAB) to exchange rate (LEXCH) at 10% 5% and 1% level

of significance. Hence H2 is partially accepted for one way causality between economic growth to exchange rate and current account balance to economic growth and exchange rate.

CONCLUSION

Our study's results reveal that there is long term association among selected variable in covid-19 scenario while without covid-19 there is no cointegration found among variables. Therefore, in covid-19 scenario the impact of tourism and current account balance on economic growth (GDP) of Pakistan is statistically significant and positive both in the short and long run which suggests the investment in the tourism sector can be beneficial both for the economy as well as for economic well-being of the nation. The impact of inflation (CPI) on GDP is statistically significant and negative in both the short and long run. Whereas other macroeconomic variables are statistically insignificant in short-run. Moreover, exchange rate and covid-19 have respectively positive and negative correlation but statistically insignificant impact on economic growth, also the impact of covid-19 is not yet clear as we need more data for the forthcoming years to realize the true impact on the economy in the post-Covid-19 years. Finally, Granger causality test outcomes specify that there is a one-way causality from economic growth (LGDP) to exchange rate (LEXCH), from current account balance (CAB) to economic growth (LGDP), and from current account balance (CAB) to exchange rate (LEXCH). Therefore, granger causality reveals that current account balance is one of the major economic variables for the economy of Pakistan which directly cause economic growth and exchange rate. Hence it is suggested through this study by promoting tourism industry in covid-19 policy makers can improve current account balance which leads to steady exchange rate and economic growth in Pakistan.

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