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Determinants Of Export Earnings Of Pakistan

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Abstract

The study is conducted to investigate the impact of macroeconomic variables on the export earnings of the Pakistan. The time series data were taken from WDI. Auto Regressive Distributed Lagged Model is used. The results indicate that GDP, Exports and FDI have positive and, Inflation and Imports have negative impact on dependent variable. The long and short run stability of ARDL model is analyzed with the help of CUSUM chart, shows stability of the Model. Granger Causality Test show unidirectional causality between Exports and FDI, Exports and GDP and Imports and FDI. It is concluded that determinants have strong and significant impact on dependent variable.

Keywords: FDI, Export Earnings, GDP, export, import, , ARDL

INTRODUCTION

Generally, transfer of commodities from one person to other is known as trade, and similarly, the transfer of good and services among the nations is called international trade. For the development and prosperity of the whole world, the international trade is very important and essential as every nation gains from the mutual trade. In the present globalization era, the international trade has an important role to improve the economic performance and stability. Both Classical and Modern economists are of the view that international trade is very important for the prosperity of any country. The growth and development of the global economy depend heavily on international trade.. (Singh. T, 2010).

Exports are a key component of every nation's economic development in the context of international trade, which consists of both imports and exports. Therefore, it is crucial for emerging nations to grasp the role and significance of exports and international commerce in achieving their goals for national economic progress and prosperity. If the exports of any country are more than its imports, then it is good for the economic prosperity and economic development of the country. Every country exports the commodities in which the country has absolute advantage (Schumacher, R. 2012).

Pakistan trade situation

The major part of Pakistan exports is consisting of the primary or semi-processed agricultural commodities, which earn less for Pakistan as compared to finished goods. In 1950, Pakistan adopted an import substitution policy, whose basic aim was to reduce the magnitude of the imports and increase the exports by improving the quality and quantity of the local commodities to compete the international market changes. Under this policy the different industrial units were established and developed across the country and the economic performance and output was sufficiently improved (Gulzar & Li, 2018). Since 2014 the export earning

of Pakistan are declining and the performance of exports is unimpressive. As compare to exports of other developing countries the performance of Pakistan is very despairing as there is a consistent fall in the exports to GDP ratio. Again the government of Pakistan announce a boost up package to improve exports in 2016 (Atif. R.M et al, 2017). Instructional and institutional issues in Pakistan are the basic reasons of the poor performance of the Pakistan exports as compare to other developing countries. So it is the dire need of the time to handle these issues to enhance and improve the export productivity of exports (Malik et al, 2017). After that the exports of Pakistan increased in the goods in which Pakistan has comparative advantage, such as cloth, textile, vegetables, leather, minerals and animals but lagging back in the commodities in which Pakistan has negative comparative advantage such as chemicals, electronics, machinery, metals, fuels and transport (Atif. R.M et al, 2017). Exports have the power of backbone of Pakistan economy and viewed as the major engine of the growth (Shah et al, 2015). The domestic factors and international market condition is very important to determine the performance of Pakistani exports. On the other hand, it was observed that in Pakistan demand side variables are more sensitive as compare supply side variables (Akbar. M et al, 2001The most important factors influencing the growth of Asian exports are FDI, real exchange rate, and income from abroad (Ahmad et al. 2017). shows the link between Bangladesh's export earnings and inflation, interest rates, and exchange rates is favourable. (Islam. M.S et al 2019).

Pakistan Export earning

Major portion of Pakistan exports is based on agricultural goods and about 60% of the Pakistani export is textile which also related to agriculture sector. Most of the wheat and cotton is grown in the province of Punjab, which is the largest agrarian province of Pakistan. Services is also a major source of export earning in Pakistan. In 2019, total export earning of Pakistan was 30.7 billion USD out of which the share of cotton was about 3.24 billion USD.

Overview of Pakistan history of exports

From the very first day of its independence Pakistan is suffering from balance of payment deficit issue, and numerous evolutionary policies are being launched and adopted to accelerate Pakistan's economic growth. These policies helped for enhancing Pakistan's export earnings to some extant but those policies were fruitful for a limited period or short run and were unable to stabilize the export earing of Pakistan for long run. International trade helps to meet the goal of economic development which is the basic target of every country of the world. For that purpose, Pakistan is trying to diversify its exports to high quality finished goods but due to unfair able socio-economic environment and insufficient resources the exports of Pakistan are limited to few products.

Objectives of the study

To investigate empirically the major macroeconomic variables which have their impact on the earning of Pakistan though exports.

Hypothesis

H_{01} = Imports does not have significant impact on Pakistan's Export Earnings.

H_{02} = Inflation rate doesn't have significant impact Pakistan's Export Earnings.

H_{03} = FDI does not has significant effect on Pakistan's Export Earnings.

H_{04} = GDP doesn't have significant impact over Pakistan's Export Earnings.

METHODOLOGY

Current study "Determinants of Export Earnings of Pakistan" conducted with the aim that to explore both the relationship as well as the influence of selected macro-economic variables over earning from export in Pakistan. For the purpose to achieve the objectives, time series data is taken from

Economic Survey of Pakistan and WDI for the tie period 1976-2018. Many macro-economic variables are directly and indirectly related to exports earning of Pakistan out of which GDP, Imports, FDI and inflation are selected as these are the most relevant variables. To achieve the impact of these variables, regression model was used, as regression model is the most appropriate technique for the analysis of this type of data, as dependent variable is quantitative and continuous variable.

The Model

The dependent variable, exports earning of Pakistan, depends on many macroeconomic variables so the model could be specified as:

$$\textit{Export earnings} = f\left(\textit{inflation, imports, foreign direct investment and gross domestic product}\right)$$

This research aims to empirically investigate the effect of independent variables in the model on the dependent variable. For analyses the following econometric model is used.

$$\mathbf{Ex} = \beta_0 + \beta_1 \mathbf{INF} + \beta_2 \mathbf{IMP} + \beta_3 \mathbf{FDI} + \beta_4 \mathbf{GDP} + \mu$$

Where,
Ex = Export earnings
IMP = Imports
INF = Inflation rate.
FDI = Foreign Direct Investment
GDP = Gross Domestic Product
$\beta_0, \beta 1, \beta 2, \beta 3, \beta 4$ are the intercept and the slopes of the related coefficients while μ is the Error Term.

To evaluate both short and long run impact of independent variables (GDP, FDI, Inflation and Imports) on the dependent variable (Export Earnings of Pakistan), time series data were taken from WDI (World Development Indicator). The value of all variables is take in billion USD.

DATA ANALYSIS

In the analysis section correlogram, ADF, F Test. Wald Test, ARDL model, ECM and CUSUM & CUSUMQ are used. In current data set only inflation is stationary at level while all other variables show stationary at first difference. Considering this case, Bound's Test approach is applicable through ARDL for the reliable and significant results of the order of integration among the variables

Results of ARDL Model

Variables	R. Coefficient	S. Error	T-Value	P-Value
D [Exports (-1)]	0.22793	0.04329	2.88108	0.005
D [Exports (-2)]	0.53491	0.54356	4.29421	0.000
D (Exports (-3)	0.49691	0.31305	2.10221	0.039
D [FDI (-1)]	0.20596	0.20177	2.14124	0.040
D [FDI (-2)]	2.12403	0.75362	4.60323**	0.000
D [FDI (-3)]	1.53266	0.03465	3.75600	0.000
D [GDP (-1)]	0.16827	0.08823	2.21501	0.031
D [GDP (-2)]	0.11080	0.08945	2.86110	0.005
D [GDP (-3)]	0.03939	0.11342	2.38221	0.030

D [Imports (-1)]	-0.06051	0.03452	-2.86002	0.005
D [Imports (-2)]	-0.30353	0.21352	-2.16747	0.042
D [Imports (-3)]	-0.10597	0.24531	-1.67080	0.099
D [Inflation (-1)]	-2.21069	0.21095	-2.24321**	0.011
D [Inflation (-2)]	-1.70069	0.31216	-2.61032**	0.010
D [Inflation (-3)]	-1.37874	0.70795	-2.29784	0.041
FDI (-1)	2.91399	0.43123	4.14714***	0.000
Exports (-1)	2.70100	0.21564	3.61211***	0.001
GDP (-1)	0.12143	0.03872	3.64321***	0.000
Imports (-1)	-0.61049	0.16538	-3.37515***	0.003
Inflation (-1)	-0.00309	0.07561	-2.16513**	0.051
C	3.11487	0.03321	3.20237***	0.002
R^2 = (0.82)	**F-statistic =(4.1105)**	**P-value= (0.00196)**	**D. Watson = (1.70)**	

Calculation from Data, WDI 1976-2018

***, significant at 1%, **, significant at 5%, and * significant at 10%.

From the above table it is clear that the export earning of Pakistan is significantly affected by the all five variables used in this study i.e Exports, FDI, GDP, Imports and Inflation. But the impact of exports, FDI and GDP is positive and the impact of imports and inflation negative on the dependent variable. The impact of FDI on the export earing is statistically significant, and progressive, magnitude of the impact is 3 times, which means that if there is 1 billion increase in the FDI it will increase the exports earnings by 3 billion. Same significantly positive response from export is depicts in table and the figures show that its magnitude is 2.6 times, which means that 1 billion rise in exports will increase the exports earnings by 2.65 billion. GDP has also positive and statistically significant impact on the export earnings, if there is 1 billion increase in the GDP it will leads to 0.12 billion increase in the export earning of Pakistan. The imports have statistically significant negative impact on export earning, if imports increase by 1 billion it will decrease the export earnings of Pakistan by 0.60 billion. Inflation has also negative impact which is also statistically significant, if there is 100% increase in inflation it will leads to 0.002% decrease in the export earning of Pakistan. In the above table the value of R2 = 0.82 which shows that the model is well specified as it shows that about 82% change the regressands is due to the respective regressors in the current model. F- Statistic is also statistically significant; Durban Watson shows that the correlation among the variables is very week.

ARDL Dynamic model through Error correction mechanism

As there, co-integration exists among the variables, long run and short run dynamics of variables are estimated through ARDL

Long Run Relationship among the variables

Variables	R: Coefficient	S: Error	T-Value	P-Value
Exports (-1)	1.20512	0.32359	3.6235***	0.001
Exports (-2)	0.03067	0.43851	2.2070	0.032
Exports (-3)	0.29471	0.54072	3.54454	0.002
Exports (-4)	0.12917	0.36711	2.35213	0.021

FDI (-1)	2.14752	0.78282	2.74309**	0.008
FDI (-2)	1.59353	1.39774	2.24008	0.034
FDI (-3)	0.31681	1.36939	2.20105	0.041
FDI (-4)	1.98562	0.89514	2.24211**	0.028
GDP (-1)	0.04610	0.06312	2.72870	0.009
GDP (-2)	0.15246	0.06839	2.22836**	0.029
Imports (-1)	-0.50139	0.13281	-3.67133***	0.000
Imports (-2)	-0.22291	0.25311	-2.70099	0.009
Imports (-3)	-0.17078	0.26680	-2.20107	0.031
Imports (-4)	-0.19079	0.23338	-4.28736	0.000
Inflation (-1)	-1.09751	1.33728	-3.66021	0.000
Inflation (-2)	-1.03249	0.38910	-3.62136	0.002
Inflation (-3)	-1.08890	0.15875	-2.27321**	0.028
Inflation (-4)	-2.11589	0.14199	-3.56703	0.003
C	0.34843	0.99684	3.49121***	0.006
R^2 =(0.99471)	**F-statistic = (**208.8200**)**	**P-value= (0.0000)**	**D. Watson = (1.7514)**	

Calculation from Data, WDI 1976-2018

***, significant at 1%, **, significant at 5%, and * significant at 10%.

Result in the above table indicate that, Imports, GDP, Inflation and FDI have significant impact on the export earnings of Pakistan, it is further noted that the impact of exports and imports is highly significant. The impact of GDP, FDI and exports is positive while the impact of imports and inflation is negative on the export earnings of Pakistan. When FDI increases by 1 billion it brings 2.14 billion increase in the export earnings of Pakistan and the result is statistically significant. When exports increases by 1 billion it brings an increase in the export earnings of Pakistan by 1.2 billion. All the upshots are statistically highly significant. When there is 1 billion increase in GDP of Pakistan it brings 0.15 billion increase in the export earnings of Pakistan and the result is statistically significant. If the imports of Pakistan increases by 1 billion it will decrease the export earnings of Pakistan by 0.5 billion and the result is statistically significant. In case of inflation, if inflation increases 100% than due to this, the exports earnings of Pakistan will decrease by 109% and this result is also statistically significant.

Short run relationship among the variables

Variables	R: Coefficient	S. Error	T-Values	P-Value
D (Exports (-1)	0.54415	0.66179	2.82225	0.006
D (Exports (-2)	0.28894	0.14041	2.84881**	0.005
D (Exports (-3)	0.00634	0.60633	2.01046	0.050
D (Exports (-4)	0.11110	0.75071	2.21479	0.030
D (FDI (-1)	2.03585	0.01938	2.86013*	0.005
D (FDI (-2)	1.01213	0.02887	2.98373*	0.004
D (FDI (-3)	0.55407	0.39755	3.62264*	0.001
D (FDI (-4)	3.15324	0.77320	4.07816***	0.000

D (GDP (-1)	0.03464	0.08079	2.62877**	0.011
D (GDP (-2)	0.07334	0.08066	4.90935	0.000
D (Imports (-1)	-0.44059	0.35415	-3.24409	0.002
D (Imports (-2)	-0.10586	0.21436	-3.41386	0.001
D (Imports (-3)	-0.06493	0.43706	-2.86857	0.005
D (Imports (-4)	-0.31606	0.20335	-2.21188**	0.031
D (Inflation (-1)	-0.79299	0.84087	-5.94307	0.000
D (Inflation (-2)	-0.07509	0.08537	-3.22101	0.002
D (Inflation (-3)	-0.18747	0.04790	-2.21786**	0.031
D (Inflation (-4)	-0.12467	0.59043	-2.11100	0.040
ECT (-1)	-0.93381	0.29211	-2.26118	0.008
C	0.79227	0.665475	2.13189**	0.041
R^2 (0.7561)	**F-statistic (2.9377)**	**P-value (0.013205)**	**D. Watson (2.0051)**	

Calculation from Data, WDI 1976-2018

***, significant at 1%, **, significant at 5%, and * significant at 10%.

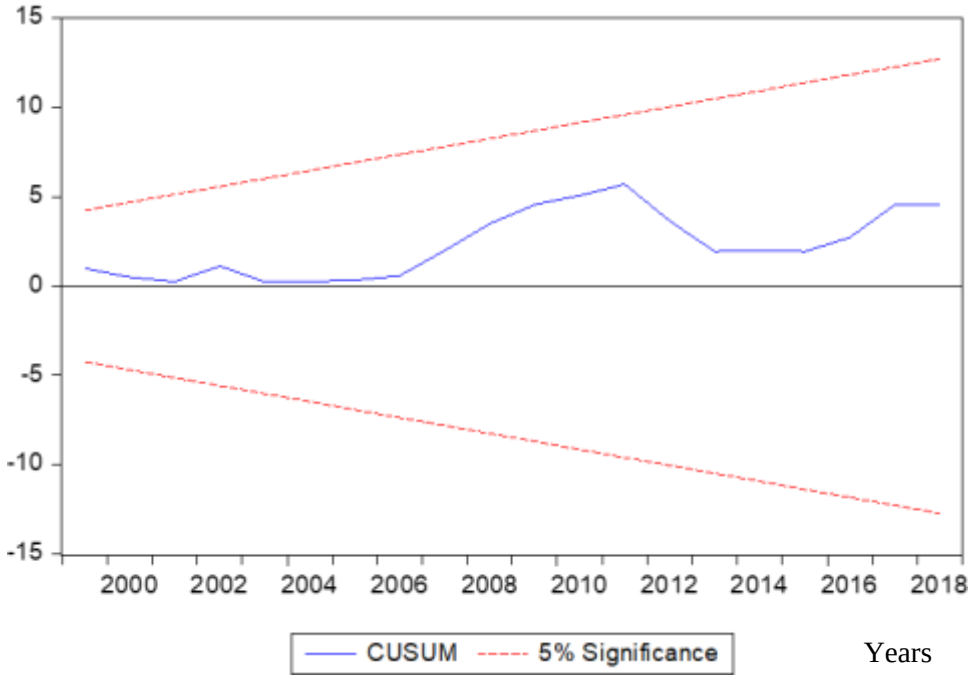
In the above table, the results obtained from error correction model and lagged error correction term. 0.933 is the obtained value of ECT (-1) coefficient which is negative yet significant. It shows that if there, disequilibrium exists in the earlier year for either short or long run, then 93% equilibrium will take place in the current year. Both GDP and exports have statistically significant positive impact on export earnings. Inflation is the only variable which has negative impact on Pakistan's export earning, while all other variables in the study have significantly positive impact.

Stability of the Model

Cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) are used for stability analysis of the predicting coefficients in both short and long run analysis, used here, to estimate the stability of the ARDL model.

The coefficients of alternative hypotheses are not necessarily same in all periods, but on the other hand, coefficients of null hypothesis are same in all periods, provided that the value of CUSUM and CUSUMQ is stable at 5% level than the model is said to be stable.

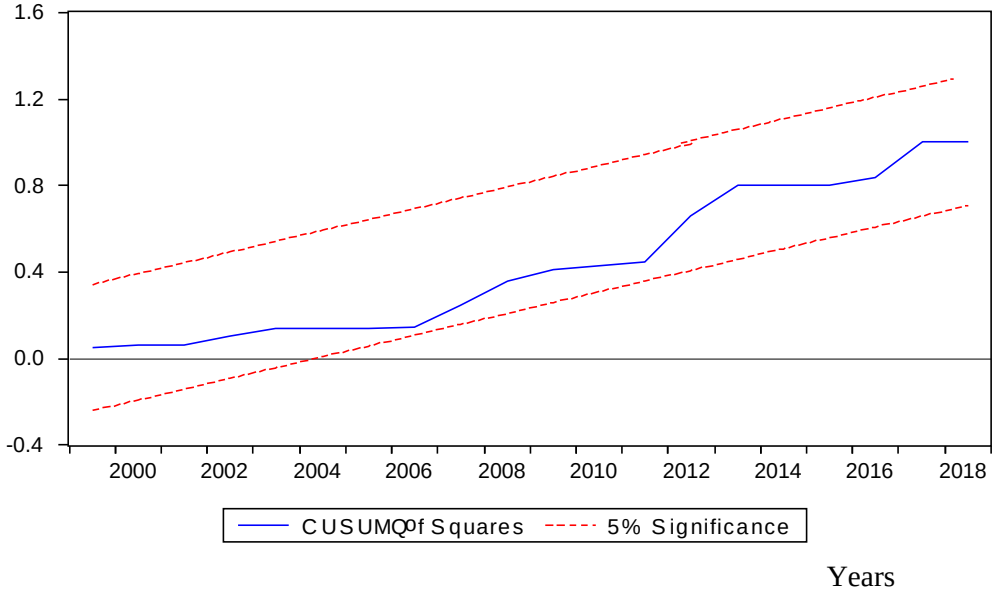
Figure of CUSUM of Recursive Residuals:



Calculation from Data, WDI 1976-2018

In the above figure the graph of CUSUM is plotted, which shows that the its value lies in the acceptance or significance level, which indicates that the model is stable.

Figure of CUSUMQ of Recursive Residuals:



Calculation from Data, WDI 1976-2018

The above figure shows that the vales of coefficients of CUSUMQ lies in the acceptance region, so it proves that our model is stable.
The above two figures of the CUSUM and SUSUMQ show that the residuals of the both tests are occurring in the acceptance region, it means that both the tests ensures the stability model used in this research.

Granger Causality Test

The granger causality test is used for analyzing the dependence of one variable with other. The relationship between explanatory variables and export earnings of Pakistan is displays in the following table.

Results of Granger Causality Test

Null hypothesis	Observation	F-statistics	P-Values
FDI does not Granger cause exports	41	1.25971	0.2959
Exports does not Granger cause FDI		4.88733	0.0132
GDP does not Granger cause Exports	41	1.31905	0.2800
Exports does not Granger cause GDP		0.48327	0.0025
Imports does not Granger cause Exports	41	2.60056	0.0881
Exports does not Granger cause Imports		0.48237	0.6212
Inflation does not Granger cause Exports	41	0.48511	0.6196
Exports does not Granger cause Inflation		2.92203	0.0667
GDP does not Granger cause FDI	41	1.25166	0.2982
FDI does not Granger cause GDP		2.33775	0.1110
Imports does not Granger cause FDI	41	6.46289	0.0040
FDI does not Granger cause Imports		1.98622	0.1520
Inflation does not Granger cause FDI	41	0.11398	0.8926
FDI does not Granger cause Inflation		0.91629	0.4091
Imports does not Granger cause GDP	41	0.89840	0.4162
GDP does not Granger cause Imports		3.12728	0.0559
Inflation does not Granger cause GDP	41	0.57097	0.5700
GDP does not Granger cause Inflation		0.46636	0.6310
Inflation does not Granger cause Imports	41	1.18184	0.3183
Imports does not Granger cause Inflation		0.95357	0.3949

Calculation from Data, WDI 1976-2018

The results show that unilateral causation exists in FDI and exports. It means exports has to cause FDI, and the value of F- Statistics the significance of results at 5% level and this value is 4.88. Similarly, the result shows that unilateral causation exists in GDP and export, which means export affects GDP, but on the same time GDP does not Granger causes the exports and this is indicated in the probability and the value of F-Statistics which is statistically significant at 5% level. As the probability of both imports and exports are insignificant at 5% level so it means that here exists no granger causality among

imports and exports. The findings of above table show that there no granger causality among inflation to exports and among exports to inflation as the values of F-statistics have insignificant probability values. Outcomes also depict that no granger causation exists among GDP to FDI and FDI to GDP, and both have insignificant values of F-statistics on the basis of probability values. Unilateral granger causation exists between imports and FDI, as the value of F-Statistics is significant but the value of F- statistics is insignificant for FDI, which means that FDI does not granger causes imports. There is no granger causation between inflation & FDI and FDI & inflation as in both cases the value of F-Statistics is insignificant on the bases or relevant probabilities.

CONCLUSION

It is concluded, by using the data of Pakistan for the years 1976- 2018, which is analyzed through Auto Regressive Distributed Lag Model (ARDL) and obtained results show that there is strong and significant impact of all the determinants on the export earnings of Pakistan. The outcomes of this research postulate that all of determinants i.e FDI, GDP, imports, exports and inflation, have remarkable significant impact on the export earnings of Pakistan. The impact of FDI, GDP and exports is significantly constructive which means that with the growth in these variables the export earnings of Pakistan also increases. The values of the coefficients of inflation and imports are negative which indicates that the impact of these two variables is negative on the export earnings of Pakistan.

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