



Impact of disaggregated exports of goods and services on economic growth of Pakistan

Muhammad Sufyan¹

ARTICLE DETAILS	ABSTRACT
History Revised format: Aug, 2020 Available Online: Sep, 2020	This study examined the impact of disaggregated exports on economic growth of Pakistan. Explore the relationship between dependent variables GDP and independent variables primary commodities, semi-manufactured, manufactured goods, domestic investment exports and employed labour force. The annual time series data used from 1970 to 2018. In this research study, unit
Keywords Primary commodities, Semi manufactured, manufactured goods, Exports, Domestic investment, Employed LF, Pakistan, ARDL	root test has been applied to check the stationary of the data. The study also applied Autoregressive Distributed Lag (ARDL) method to co-integration and to estimate the long run and short run relationship between dependant variable and independent variables. The result of ARDL approach shows that manufactured goods has negative and significance others are positive and significant impact of domestic investment, exports, and employed labour force on economic growth of Pakistan.

¹National College of Business Administration & Economics Multan Campus

1 Introduction

Exports have become a major share of national income as it engaged economists to account National income in each possible perspective for developing as well as developed countries. Increased exports sharpen the level of economic growth among countries. As exports of a country increases it will involve more domestic investment and labour force to meet the new level of increased exports. Higher domestic investment results in more Primary goods, Manufactures goods and Semi manufactured goods. With primary goods, countries can be better off. Developing countries have a large share and elastic supply of Employed labour force (ELF). Many studies are conducted for examine the impact of Employed labour force, Primary goods, Manufactures goods and Semi manufactured goods on Economic Growth (GDP). Investment and exports have a negative effect on economic development, and economic growth is caused by investment and exports in the short run. The outcomes can be seen as an indication that investment and exports are important in the Gabonese economy and are described as a growth factor because they cause short-term economic growth (Bakari, 2017). Secondly, the empirical findings indicate that there is a short-run nexus between goods exports and economic growth in Malawi, with no evidence of a long-run connection between goods exports and economic growth (Bokosi, 2015). In contrast, Naqvi and Azdic found positive impact by experiments conducted exports increased by the percentage of 5%, 10%, 15% in first three simulations. The result of this study increased in the exports has good impact on the variable of macroeconomics i.e. GDP public and private consumption (Naqvi, 2018 and Adzic,

2018). Moreover, Short-run and long-run conclusions have shown that exports, human capital and the formation of capital have a major and positive effect on Pakistan's GDP growth (Adeel, 2015 and Sial, 2015). Wright et al also stated there is a strong positive relationship between exports and growth. Further, it is apparent that the composition of those exports is important in determining the strength of growth. (Greenaway, 2014; Morgan, 2014 and Wright, 2014). In addition to this Sheridan also found positive effect on economic growth as for sustainable economic growth, rising manufacturing exports are significant. Only after a threshold stage of growth is reached does this relationship hold. Before the transition from reliance on primary export goods to production of export goods is beneficial, an economy must obtain a minimum level of employed labour force (Sheridan, 2014).

Research Questions

- What is the impact of disaggregated exports on economic growth of Pakistan?
- What is the impact of primary commodities (exports) on Pakistan economy?
- What is the relationship between semi-manufactured exports and economic growth of Pakistan?
- What is the impact of manufactured goods on economic growth of Pakistan?

Research Objectives

- To identify impact of disaggregated exports on economic growth of Pakistan.
- To know the impact of primary commodities (exports) on Pakistan economy.
- Identify the relationship between semi-manufactured exports and economic growth of Pakistan.
- To investigate the impact of manufactured goods on economic growth of Pakistan.

2 Review of Literature

Dada et al (2019) investigated usage of historical data from Nigeria to disaggregate the study of the effect of foreign trade on economic development. From 1981 to 2017, they used the variables oil import, oil export, oil import, and oil export. GDP, aggregated government spending and the index of consumer prices are other variables. The Central Bank of Nigeria emerged from these factors. They were generated with and without the dummy variable of recession and calculated using the FMOLS equation. At this step, the variables are nonstationary. After first differentiation, they are stationary and all variables exhibit an I (1) phase. The conclusion shows that non-oil trade, in contrast to oil trade, has a positive effect on economic development. In this time, the negative impact of oil trade has decreased marginally. Naqvi et al (2018) investigated The CGE model analysis uses the data given in SAM 2007-08 for Pakistan by Darosh et al (2012) to analyse the influence of Pakistan's exports on major aggregates of the economy. Via these tests, exports grew by 5 percent, 10 percent and 15 percent in the first three simulations. The rise in exports as a result of study had a good effect on the macroeconomics component, i.e. Public and personal use of GDP. Bakari (2017) explored the effect of exports on Gabon's economic growth by applying the co-integration analysis and error correction model to the yearly time series from 1980 to 2015. In the long term, the outcome indicates that investment and exports have a detrimental impact on economic development. And economic growth is triggered by investment and exports in the short run. The results can be seen as an indicator that investment and exports are important in the Gabonese economy and are presented as an engine of growth because they are short-term causes of economic growth. Tang et al (2017) observed taking data from 1974 to 2013, they calculate the impact of exports in the economic growth of Malaysia through the neoclassical growth model. Previous research has split exports into four components, namely tourism, electricity and electronics (E&E), palm oil and rubber. They conduct the cointegration, causality of Granger and the tests for variance decomposition. Our findings

indicate that only tourism, E&E and palm oil exports have a major long-term impact on economic development. The findings of the long-term evaluation and the findings of the decomposition of universal variance consistently indicate that tourism is relatively more important than the three non-tourist exports, particularly in explaining Malaysia's long-term economic development. SIAL et al (2015) observed the export growth nexus by applying the ARDL technique over the year of 1973-2013 in the Pakistan. Finding of the study shows that the effect of the exports, human capital and capital formation is positive on the Pakistan's economy. Results of the causality show bi-directional relationship between the exports and GDP in the long run and the short run in the country. Shah (2015) explored the effect that agricultural exports have on Pakistan's macroeconomic results. The key results of the Johansen co-integration technique show that there is a negative relationship between agricultural exports and Pakistan's economic development, whereas non-agricultural exports have a positive impact on growth. This study indicated, on the basis of empirical evidence, that Pakistan could make structural changes to agricultural exports by turning its agricultural exports into value-added goods. Khan, Salam and Batool (2015) explored the results with the help of vector autoregressive (VAR) technique. The existence of a long-term relationship in the model was verified by empirical findings. The outcome of the normalised co-integration equation implies that an increase of one percent in trade liberalisation has a positive effect of about 0.09 percent on GDP growth. Likewise, a one percent increase in exports of agricultural raw materials has a roughly 0.10 percent positive impact on GDP, while a one percent increase in imports has a roughly -3.6 percent negative impact on Pakistan's GDP growth. Barton (2014) explored Neither the revenues nor the adverse effects of exports are equally distributed in space by the resource-based export-driven and continuously growing Chilean economy. Their study relies, on a regional graphical scale, on the hypothetical system of the financial crises and Dutch disease. We recognise and generally increase export specialisation, which is partly related to high volatility, both in GDP growth and in export growth. They examine how the degree of export specialisation between territories in Chile is related to regional growth in GDP and regional growth in exports. From 1991 to 2010, they learned how external factors, such as high commodity prices, and how US dollar exchange rates foster specialisation and relatively stimulate non-mineral exports, especially in Chile's highly specialised mineral regions. This result demonstrates the role of the theory of Dutch disease on a regional scale. Acharyya et al (2013) explored the export growth relation has disaggregated the extent of disaggregation, both at country and export levels, with an emphasis on the diversification and structure of countries' exports. The dissimulation and composition of exports can be significant drivers of economic growth after adjusting for the impacts of other variables such as lagged sales expenditure and infrastructure. Exports can improve the country's GDP and exports of high technology can also lead to the growth of production. The relationship with nations is getting better. Even though the data set is divided into four sub-panels based on the relationship between economic development, these findings are clearer. Mohamed et al (2012) observed the long-term relationship between Tanzania's export trade and economic growth with the help of the Vector Autoregressive Technique (VAR) was developed in Tanzania between 1980 and 2009. We will never find differentiation from the facilities of goods and services from this. The first model indicates the relationship between service exports and development. And the second model demonstrates the relation between commodity exports and development. The results of these models can demonstrate that there is a long-term nexus between service exports and Tanzania's economic development.

3 Data and Methodology

Data Source

The present study is used the time series data from the time span of 1970 to 2018. It was taken from various sources as WD, Pakistan economic survey various issue. Transparency of data sources in present study is that data is obtained from those sources which are generally accepted or worldwide approved.

Model Specification

The mathematical model of the study is this;

$$GDP = f(PCOM, SEMIM, MANG, EXPORTS, DI, ELF)$$

The econometric model can also be written as:

$$GDP = \beta_0 + \beta_1 PCOM + \beta_2 SEMIM + \beta_3 MANG + \beta_4 EXPORTS + \beta_5 DI + \beta_6 ELF + \mu_i$$

Taking the log of econometric model $\ln GDP = \beta_0 + \beta_1 \ln PCOM + \beta_2 \ln SEMIM + \beta_3 \ln MANG + \beta_4 \ln EXPORTS + \beta_5 \ln DI + \beta_6 \ln ELF + \mu_i$

$$4 \ln EXPORTS + \beta_5 \ln DI + \beta_6 \ln ELF + \mu_i$$

Here,

GDP = Gross Domestic Product

PCOM = Primary commodity

SEMIM = Semi-manufactured

MANG = Manufactured goods

EX = Exports

DI = Domestic investment ELF =

Employed labour force μ_i =

Disturbance Term

β_0 = Intercept $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ = Slope

of Coefficients

The general equation of ARDL can be shown as:

$$\Delta(LGDP) = a_0 + \sum_{i=1}^A a_{1i} \Delta(GDP)_{t-i} + \sum_{i=1}^B a_{2i} \Delta(PCOM)_{t-i} + \sum_{i=0}^C a_{3i} \Delta(SEMIM)_{t-i} +$$

$$\sum^{D=0} a_4 i \Delta(MANG) t - i + \sum^{E=1} a_5 i \Delta(EXPORTS) t - i + \sum^{F=0} a_6 i \Delta(DI) t - i + \sum^{G=1} a_7 i \Delta(ELF) t - i + a_8(LGDP) t - i + a_9(PCOM) t - i + a_{10}(SEMIM) t - i + a_{11}(MANG) t - i + a_{12}(EXPORTS) t - i + a_{13}(DI) t - i + a_{14}(ELF) t - i + \mu_i$$

The mentioned equation represents the general equation of ARDL:

Where, $\alpha_0 =$

Intercept

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7 =$ Short run co-efficient of variables $\alpha_8,$

$\alpha_9, \alpha_{10}, \alpha_{11}, \alpha_{12}, \alpha_{13}, \alpha_{14} =$ Long run co-efficient of variables μ_i

$=$ Disturbance term

To build long-term ties between variables, we construct null and alternative hypotheses.

4 Results and Discussion

Descriptive Statistics

Descriptive statistics define the data's basic features. Central tendency uses the three measures, mean median and mode for the measurement of a random variables (Gujarati,2004).

Table 5.1 Descriptive Statistics

	GDP	PCOM	SEMIM	MANG	EXPORT	DI	ELF
Mean	96973.1	110334.9	93336.8	498646.9	11969.1	14697.7	37.52
Median	61413.9	34548.5	63213	171761.5	9804.43	9629.3	32.2
Maximum	312570.1	454351	391151	1793901	30699.2	46336.9	61.71
Minimum	6324.88	1510	914	947	855.556	723.257	19.24
Std. Dev.	92493.5	144855.3	112802.3	616992.1	9758.50	13011.6	13.30
Skewness	1.08414	1.25389	1.31411	1.008647	0.62546	0.99999	0.399
Kurtosis	2.80720	2.91905	3.49385	2.455595	1.98054	2.75447	1.718
Probability	0.00875	0.00184	0.00078	0.012704	0.07396	0.0	0.102

SOURCE: software Eviews 9.0

Table 5.1 present the basic features of the data of every variable. Dependent variable is Gross Domestic Product (GDP) but the Primary commodities (PC), Semi manufactured (SEMIM), Manufactured goods (MANG), Exports (EX) Domestic investment (DI) and Employed labour force (ELF) are the independent variables of the model. Numbers of the observations are 48 years from 1970 to 2018. The mean, median, maximum and minimum values of the Gross domestic product (GDP) are 96973.17, 61413.99, 312570.1 and 6324.884 respectively in percentage. The first row shows the average of Log of GDP is (96973.17) respectively, in percentage. The mean value of PCOM, SEMIM, MANG, EXPORTS, DI and ELF is

(110334.9), (93336.8), (498646.9), (11969.16), (14697.7) and (37.5211) respectively in percentage. Dispersion of data of every variable is measured by the standard deviation in descriptive statistics. Highest value of standard deviation is 144855.3 of Primary commodity (PCOM) in this model of the study. The values of the standard deviation of other variables like Gross domestic product (GDP), Semi manufactured (SEMIM), Manufactured goods (MANG), Exports (EX), Domestic investment (DI) and Employed labour force are 92493.51, 112802.3, 616992.1, 9758.504, 13011.61, and 13.30059 respectively in percentage. Here we see that LGDP is positive skewed. All independent indicators like PCOM, SEMIM, MANG, EXPORTS, DI and ELF are positively skewed. In statistics, kurtosis is used to measure flatness of data set relative to Normal distribution. Kurtosis general value is 3. If the value found greater than 3, this situation referred as Leptokurtic. If the value found less than 3, this situation referred as Platokurtic. In the Descriptive Statistics LGDP, PCOM, MANG EXPORTS, DI and ELF value is less than 3; it means platokurtic and rest of indicator is SEMIM Leptokurtic.

5.4 Unit Root Test

The Augmented Dickey Fuller (ADF) test for unit root will be used to escape from the spurious regression consequences and to pick the correct econometric methodology. In table 5.3, the outcome of the ADF test is stated in order to test the stationary variables.

Table 5.2 Unit Root (ADF) Test

	Level	1st Difference	
	Trend & Intercept	Trend & Intercept	
LGDP	-----	-9.28624 (0.0000)	I(1)
PCOM	-3.65993 (0.0353)	-----	I(0)
SEMIM	-----	-8.62284 (0.0000)	I(1)
MANG	-----	-8.79394 (0.0000)	I(1)
EXPORTS	-----	-7.98705 (0.0000)	I(1)
DI	-----	-7.56433 (0.0000)	I(1)
ELF	-----	-6.85041 (0.0000)	I(1)

SOURCE: software Eviews 9.0

All above finding shows that all indicators are not stationary at same level. It is observed that GDP, SEMIM, MANG, EXPORTS, DI and ELF are stationary at first difference and PCOM is stationary at level.

According to ADF test, the ARDL technique will be applied to check the co-integration link. So, in our analysis, ARDL technique can be used to measure complex nature of indicators.

Autoregressive Distributed Lag (ARDL) Approach

The ARDL approach is well suited to exploring long-term relationships within macroeconomic series in small sample sizes among several techniques. The ARDL approach is used to establish short-term and long-term relationships. This approach is particularly useful because it illustrates the presence of short-term and long-term outcomes. In order to get over the shortcomings of Johansen co-integration and Engle Granger methods, Pesaran et al. (2001) established the ARDL approach to co-integration. Mixing autoregressive and distributed lag models is the ARDL method. Restricted numbers of observations, such as 30-80 observations, can be applied to this new system. So, because of various reasons given as follows, we have used the Autoregressive Distributed Lag (ARDL) method. The ARDL co-integration method provides impartial and reliable outcomes.

1. The single ARDL equation produces simultaneous short-run and long-run outcomes.
2. It is also possible to apply the ARDL approach to those variables that are integrated with $I(0)$ or $I(1)$ or a combination of both, and it is not necessary for this approach to incorporate all variables in the same order. The Auto Regressive Distributive Lag protocol will be applied to evaluate the co-integration relation according to the ADF test results, since the ADF results indicate that not all variables are in the same order and ARDL can be implemented in this situation. Thus, with the mixture of the $I(0)$ and $I(1)$ sequence, the ARDL approach can be used in our research to calculate the complex existence of variables.

Table 5.4 Short run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(GDP(-1))	0.002422	0.117603	0.020591	0.9837
DLOG(GDP(-2))	-0.24832	0.074725	-3.32319	0.0021
DLOG(PCOM)	0.013876	0.01612	0.860775	0.3951
DLOG(SEMIM)	0.019872	0.050855	0.390763	0.6983
DLOG(MANG)	-0.12117	0.056411	-2.14796	0.0385
DLOG(DI)	0.37009	0.051936	7.125872	0
DLOG(EXPORTS)	0.151865	0.04325	3.511346	0.0012
DLOG(ELF)	0.791177	0.18693	4.232477	0.0002
CointEq(-1)	-0.58689	0.051356	-11.4281	0
Cointeq = LOG(GDP) - (0.0236*LOG(PCOM) + 0.0339*LOG(SEMIM) -0.2065				
*LOG(MANG) + 0.6306*LOG(DI) + 0.2588*LOG(EXPORTS) + 1.3481				
*LOG(ELF))				

SOURCE: software Eviews 9.0

In the short-run table the probability value of primary commodity (PCOM) is (0.3951) is insignificance and there is no impact on GDP. The probability value of semi manufactured goods (SEMIM) in the short-run is (0.6983) insignificance with the (GDP). The value of manufactured goods (MANG) in the sort-run is (0.0385) shows negative and significant link with the dependent indicator GDP. One-percent increase in manufactured goods (-0.12117%) change in (GDP). The value of domestic investment (DI) is (0.0000) shows the positive and significant link with the DV (GDP). The results show that, if one-percent increases in labour force, it will bring (0.37009%) increase in GDP. The value of exports (EX) is (0.0012) also shows the positive and significant link with the DV (GDP). The results show that, if one-percent increases in exports, it will bring (0.151865%) increase in GDP. The value of employed labour force (ELF) is (0.0002) also shows the positive and significant link with the DV (GDP). The results show that, if one-percent increases in employed labour force, it will bring (0.791177%) increase in GDP.

Long Run Results

The Auto Regressive Distributed Lag framework was used to measure the relationship between disaggregated exports and economic growth in Pakistan, taking data from 1970 to 2018. The report will also discuss the outcomes of short-term and long-term descriptive variables.

Table 5.3 ARDL Long-run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(PCOM)	0.023643	0.028203	0.838316	0.4074
LOG(SEMIM)	0.03386	0.084654	0.39998	0.6915
LOG(MANG)	-0.20646	0.085568	-2.4128	0.021
LOG(DI)	0.630591	0.056858	11.09057	0.0000
LOG(EXPORTS)	0.25876	0.090132	2.870886	0.0068
LOG(ELF)	1.348076	0.221893	6.075356	0.0000

SOURCE: software Eviews 9.0

Note: significance level 5%

The long-term result below indicates that GDP has a statistically significant effect on macroeconomic factors (MANG, EX, DI and ELF) and insignificant on (PCOM), (SEMIM) or on macroeconomic performance of Pakistan. Primary commodity (PCOM) is (0.4074) positive and statistically insignificance with the economic growth. If one percent increases in inflation rate it will bring (0.4074%) increase in economic growth and there is no impact on the dependent indicators (GDP). The value of coefficient of semi manufactured goods (SEMIM) is (0.6915) also shows positive and insignificant relationship with the dependent variable GDP. If there is one percent increase in capital investment, it will bring (0.6915%) increase in economic growth and there is no impact on the dependent indicators (GDP). The value of coefficient of manufactured goods (MANG) is (-0.20646) and value of probability is (-0.20646) show negative and significant link with the dependent variable GDP. If one-percent increase in manufactured goods, then GDP will be change by (-0.20646%). The value of domestic investment (DI) is (0.0000) shows the positive and significant link with the DV (GDP). The results show that, if one-percent increases in labour force, it will bring (0.630591%) increase in GDP. The value of exports (EX) is (0.0068) also shows the positive and significant link with the DV (GDP). The results show that, if one-percent increases in exports, it will bring (0.25876%) increase in GDP. The value of employed labour force (ELF) is (0.0000) also shows the positive and significant link with the DV (GDP).

The results show that, if one-percent increases in employed labour force, it will bring (1.348076%) increase in GDP.

5 Conclusion and Policy Recommendations

The intent of the present paper is to explore the effect of disaggregated exports on GDP in Pakistan. The present study uses the data for time period of 1970 to 2018. The present study reviews various literatures which are related to disaggregated exports and GDP. Through the previous literature reviews, the study investigated the positive link between exports of goods and GDP. Firstly, we applied descriptive statistics on data. In the next step, the findings of ADF test shows that GDP, SEMIM, MANG, EXPORTS, DI and ELF are stationary at first difference and PCOM is stationary at level. The present study also applies ARDL Approach to find the long run and short run relationship between dependent indicators and independent indicators. In long time and short time period findings manufactured goods positive and significant, domestic investment, exports and employed labour force changes put positive and significant impression on GDP of Pakistan and primary commodities, semi manufactured insignificant impression on GDP. Balance of trade plays vital role in the economic development of Pakistan. Govt. of Pakistan and policy makers should make suitable policy. Most of the time, the Pakistan is facing the problem of excess balance of trade. So, the policy makers should take into consideration the different trade policy tools like balance of trade control the excess imports and to get the economic stability. Trade policies play very important role in the economic development of Pakistan. Government of Pakistan and policy makers should make suitable policy.

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