ABSTRACT: This study explores the relationship between total exports and economic growth as well as export composition (manufactured & semi-manufactured) and economic growth in Pakistan. Non-export GDP variable is used as a proxy of economic growth as suggested in export – growth literature. The empirical results reveal that unidirectional causality prevails from total exports to economic growth and from manufactured exports to economic growth in Pakistan. Furthermore, semi-manufactured exports and economic growth have no relationship. These evidences illuminate that emphasis has to be given to the promotion of manufactured exports.

Keywords: Export composition; economic growth; causality analysis; Pakistan

1. INTRODUCTION
Developing countries have great concern about the economic growth and development. Among the other determinants of economic growth, exports may also be a key factor. Export led growth hypothesis (ELGH) postulates that expansion in exports contributes its share to unleash growth process. The voluminous empirical debate is documented on causal link between exports and growth, both in developed as well as in developing countries, but the results are mixed. [1] elucidates that growth in export enhance economic growth; therefore, export promotion policy is better than import substitution. [2] explains the benefits of exports growth i.e. exports (i) increase specialty and enhance comparative advantages, (ii) make contribution in economies of scale due to extension in market size (iii) offer better capacity utilization and (iv) contribute in more rapid technological changes. Growth-led export is an opposite phenomenon. Enhancement in productivity reduces unit cost, which boost exports. Moreover, if domestic production increases more than the domestic market’s demand the opportunity to sell the goods in the foreign markets can be a good option for the producers. Besides, exports and economic growth may be independent due to the results of development and structural changes process in an economy. Bidirectional causality is another aspect i.e. expansion in exports growth stimulates economic growth and again enhancement in economic growth stimulates exports growth [3].

Although numerous studies available on the relationship between overall exports and economic growth however, numerous studies have also used disaggregated data of exports in order to find the linkage between different segments of exports and economic growth (see; [4-11]). One of the reasons for using different sectors of exports are to identify that which particular sector of exports influences economic growth more pronounced or/and vice versa [8] and [5] asserts that exports-led growth relation may be valid due to some or a particular category of exports, which might be overlooked at composite level of exports. [12] defends exports decomposition analysis on two grounds. First, it is possible that ELGH may not be valid at aggregate level, but the same may be neglected for a certain export sector.

Secondly, if ELGH is supported at aggregate level then disaggregated analysis can further underline the relationship. These are the major reasons which compel to find the linkage of manufactured as well as semi-manufactured exports and growth in Pakistan because these two sectors of exports have bulk share in total exports. In addition to that association in total exports and growth of Pakistan is also analyzed in this study for comparison purposes.

This paper contributes in export – growth empirical literature with the analysis of causal evidence between total exports and non-export GDP as well as export composition (manufactured & semi-manufactured exports) and non-export GDP in Pakistan. For empirical analysis models are formulated by including some important, crucial and potential variables, as suggested in the literature, in order to overcome the problem of specification biasness. [13] approach is applied to examine cointegration among the variables whereas [14] approach is applied to explore causality between the above mentioned concerned variables.

After a brief introduction, the plan of this study is as follows. Section-II explains the overview of exports performance in Pakistan. Model specification; methodology and data issues are discussed in section-III. Section-IV reveals empirical results and section-V consists of summary and conclusions.

2. OVERVIEW OF EXPORT PERFORMANCE IN PAKISTAN
At the time of inception of Pakistan in 1947, the industrial sector was based on some textiles & sugars mills and a few cement factories, therefore, in order to protect infant industries, import substitutions policy was adopted in 1950s decade with some endeavors to promote exports [15]. During early time span of Pakistan history, Pakistan’s exports were based on only a few primary commodities. In the year 1948-49, raw jute, raw cotton, raw wool, hides and tea were the five major commodities of exports which turned up to 99 percent of total export earnings. These reached up to 93 percent in 1951-52 and further shrank up to 75% during the year 1958-59 [16]. Decade of 1960s witnessed export bonus scheme but the coverage of export bonus scheme was very small. Although huge devaluation occurred in the arena of 1970s, however, anti-export bias remains existed in Pakistan.
due to export taxes. After mid of 1980s, some measures were taken by Government of Pakistan to excel export. The notable measures were; establishment of two export processing zones, rebates on excise & sales tax, compensatory rebates on various items and facilitation measures in order to imports of raw materials for export related industries, among the others [17]. But during 1980s Pakistan’s trade regime remained under the influence of import-substitution [15]. In 1990s Pakistan focused on outward-looking policy and numbers of initiatives were taken by the government. In sum, after late 1980s Pakistan changed its policy stance towards outward looking policy which still prevails.

3. MODEL SPECIFICATION METHODOLOGY AND DATA

3.1. Model

To meet the objectives of this study the following model is used. Most of the studies used overall output i.e. GNP or GDP as a proxy of growth.[5] elucidates that as exports are part and parcel of national accounting identity of the output hence the results of causal relationship between total output and exports may become dubious. Moreover, some researchers made discrimination between total output and output without exports and used the latter variable (see: [4][5][10][18][12]). Following them, we also use non-export GDP. Besides that, bivariate model may nullify export-led growth hypothesis but with the expansion of model by including potential relevant variables the results may be changed [10]. [19] argues that difference in empirical results regarding relationship between exports and economic growth might be occurred due to non-inclusion of important variables like labor and capital. Therefore, we use Labor (L) and Capital (K) variables in our models in order to avoid misspecification problem.

In addition to that, it is pointed out by [20] that import is a crucial factor and due to omission of import variable, the model may predict spurious results about the interaction between exports and growth.[10][18] stress that instead of using total imports; import of capital goods is to be used. This study also incorporates capital goods import variable in the models in order to avoid misspecification problem.

The first model is expressed in the following equation form.

\[ NXY = f(L, K, MEX, SMEX, CIMP) \]

Where

- \( NXY \) = Non-export GDP
- \( L \) = Labor (Total labor force)
- \( K \) = Capital (Measured as Gross Fixed Capital Formation)
- \( MEX \) = Manufactured exports
- \( SMEX \) = Semi-manufactured exports
- \( CIMP \) = Capital Goods Import

Although, the foremost objective is to examine the linkage in export composition and non-export GDP but, in addition to that, we also explore total exports and non-export GDP nexus. For this purpose, another model is built which is a modified version of equation (1) and this model is presented in the following equation.

\[ NXY = f(L, K, EX, CIMP) \]

1. This table shows quinquennial details from the year 1971 to 2006 and annual details for the year 2007 & 2008. Moreover, these are fiscal years. Complete yearly details, including primary exports, can be seen from Economic Survey of Pakistan (various issues) and/or from Statistical supplement of Economic Survey of Pakistan 2008.

2. This study confines to only two category i.e. semi-manufactured exports and manufactured exports for empirical analysis purpose.
3.2 Methodology
In this study time series data are used and such data are usually non-stationary. OLS estimation may produce spurious results if non-stationarity exists. Hence it is of paramount importance that non-stationarity is to be examined of all data series. In this regards, different tests are used to examine unit roots in the data\(^3\). Augmented Dickey Fuller (ADF) test is being extensively used by the researchers hence, this study also exercises ADF test. This test can be performed with the following two equations.

\[
\Delta Y_t = \mu + \alpha Y_{t-1} + \sum_{i=1}^{k} c_i \Delta Y_{t-i} + \epsilon_t
\]

(3)

\[
\Delta Y_t = \mu + \beta t + \alpha Y_{t-1} + \sum_{i=1}^{k} c_i \Delta Y_{t-i} + \epsilon_t
\]

(4)

The differences between Equation-2 & 3 are constant (\( \mu \)) and trend (\( \beta \)). Equation 3 carries only constant whereas equation 4 contains constant as well as time trend. The lagged terms, mentioned in these equations, are used to eliminate autocorrelation and lag length can be determined with certain lag selection criteria. This study adopts the procedure suggested by [21] regarding the selection of the equation.

Different tests are used in empirical studies in order to examine cointegration such as [22] and [13] etc. However, [13] test is superior and overcome the shortcomings of Engle & Granger (1987) test. Therefore, we applied this test and isbriely explained below.

\[
\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + \epsilon_t
\]

(5)

Where

\[
\Pi = -(I - \sum_{j=1}^{p-1} A_j)
\]

\[
\Gamma_i = -\sum_{j=i+1}^{p} A_j
\]

Co-integration can be found with ranks (\( r \)) of the \( \Pi \) matrix. If rank (\( r \)) = 0; it means that no co-integration exists, however, if rank (\( r \)) \( \leq (n-1) \) then there are (n-1) co-integration relation. The ranks are sorted with the help of values of the following trace and maximum eigenvalue statistics.

\[
\lambda_{\text{trace}} (r) = -T \sum_{i=r+1}^{k} \ln(1 - \lambda_i)
\]

\[
\lambda_{\text{max}} (r, r+1) = -T \ln(1- \lambda_{r+1})
\]

[13] causality technique is applied to find causal relationship. There are numerous reasons to prefer Toda – Yamamoto Causality test. One, Granger causality test results are called spurious if the data series are non-stationary at level unless the variables at levels are co-integrated. Second, error correction model proposed by [22] and the vector autoregressive error-correction model [13] can be used as alternatives for testing causality among economic time series variables. But the applications of these tests are cumbersome and complex procedures [23]. [13] proposed a simple test which is based on augmented VAR (\( k + d_{\text{max}} \)) regardless whether co-integration prevails or not? In Augmented VAR (\( k + d_{\text{max}} \)) \( k \) is the lag length which can be measured with certain Criteria e.g. Akaike Information Criterion (AIC) Schwartz Information Criterion (SIC) etc. whereas \( d_{\text{max}} \) is maximum order of integration. [24] explained that the augmented VAR can also be jointly estimated through “seemingly unrelated regression (SUR) method because this technique is more efficient. After that Wald test is used on lag (\( k \)) to have the results of causality.

3.3 Data
For estimation of the above models, this study uses annual data from FY-1971 to FY-2008. Following [10] this paper calculated non-export GDP (NXGDP) as real GDP net of real exports. Data on Labor force, overall exports, manufactured & semi-manufactured exports are extracted from Economic Survey of Pakistan (various issues) whereas real GDP and GFCF data were collected from Hand Book of Pakistan Economy 2005 and State Bank of Pakistan’s annual reports. GDP deflator is used to make the data in real form\(^4\). Moreover, all the variables are transformed into natural logarithm.

4. EMPIRICAL FINDINGS
For the sake of knowing about the order of integration, this study employed ADF test as to whether all the series used in this studies are stationary or not? Table-2 shows the results of the ADF test.

\[
\lambda_{\text{trace}} (r) = -T \sum_{i=r+1}^{k} \ln(1 - \lambda_i)
\]

\[\lambda_{\text{max}} (r, r+1) = -T \ln(1- \lambda_{r+1})\]

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4 GDP deflator is also taken from Hand Book of Pakistan Economy 2005 and Annual Report of SBP 2008. Moreover, the base year of GDP deflator is FY-2000.
Johansen’s co-integration procedure is employed. The results are presented in Table 3 which indicates that two co-integration vectors exist. So long run relationship prevails among the variables. As far as Equation-2 is concerned (total exports and non-export GDP case), again [13] approach is applied in to find long run relationship because total exports too is stationary at first difference hence there may be the possibility of long run relationship. Co-integration results of this case are shown in Table 4.

In this case, AIC, FPE and LR criteria confirmed that the lag length of VAR is two. Moreover, Autocorrelation LM test is also again applied on this particular VAR which shows no autocorrelation. At lag length two, it is clear that there exist three co-integration vectors. Multivariate co-integration evidence reveals that these variables are co-integrated.

Table 2: ADF unit roots test

<table>
<thead>
<tr>
<th>Variables</th>
<th>At Level</th>
<th>Intercept</th>
<th>At 1st Difference</th>
<th>Intercept &amp; trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnNXY</td>
<td>-0.2756</td>
<td>-4.7511*</td>
<td>-1.8816</td>
<td>-1.6575*</td>
</tr>
<tr>
<td>lnL</td>
<td>0.1169</td>
<td>-6.5469*</td>
<td>-1.8727</td>
<td>-6.4458*</td>
</tr>
<tr>
<td>lnK</td>
<td>-0.1145</td>
<td>-5.1994*</td>
<td>-2.0571</td>
<td>-5.0832*</td>
</tr>
<tr>
<td>lnEX</td>
<td>0.2774</td>
<td>-7.5827*</td>
<td>-3.1052</td>
<td>-7.4819*</td>
</tr>
<tr>
<td>lnMEX</td>
<td>-2.1018</td>
<td>-5.8731*</td>
<td>-3.4161</td>
<td>-8.2258*</td>
</tr>
<tr>
<td>lnSMEX</td>
<td>-2.1127</td>
<td>-5.8262*</td>
<td>-2.4100</td>
<td>-5.7687*</td>
</tr>
<tr>
<td>lnCIMP</td>
<td>-0.9197</td>
<td>-6.2147*</td>
<td>-2.2841</td>
<td>-6.2031*</td>
</tr>
</tbody>
</table>

Note: * show significance at 1%.

Table 3: Johansen Co-integration Test of Manufactured and Semi-manufactured Case

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intercept &amp; trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnNXY</td>
<td>95% C.V.</td>
</tr>
<tr>
<td>lnMEX</td>
<td>95% C.V.</td>
</tr>
<tr>
<td>lnSMEX</td>
<td>95% C.V.</td>
</tr>
<tr>
<td>lnGFCF</td>
<td>95% C.V.</td>
</tr>
<tr>
<td>lnL</td>
<td>95% C.V.</td>
</tr>
<tr>
<td>lnCIMP</td>
<td>95% C.V.</td>
</tr>
</tbody>
</table>

Table 4: Johansen Co-integration Test Results for Total Export Case

<table>
<thead>
<tr>
<th>Variables</th>
<th>Modified Wald Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnNXY</td>
<td>8.750317</td>
</tr>
<tr>
<td>lnMEX</td>
<td>(0.013)</td>
</tr>
<tr>
<td>lnSMEX</td>
<td>5.5423</td>
</tr>
<tr>
<td>lnGFCF</td>
<td>5.1755</td>
</tr>
<tr>
<td>lnL</td>
<td>0.2118</td>
</tr>
<tr>
<td>lnCIMP</td>
<td>4.5674</td>
</tr>
</tbody>
</table>

Table 5: Toda–Yamamoto Causality test results – Manufactured & Semi-manufactured case

<table>
<thead>
<tr>
<th>Variables</th>
<th>lnNXY</th>
<th>lnMEX</th>
<th>lnSMEX</th>
<th>lnGFCF</th>
<th>lnL</th>
<th>lnCIMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnNXY</td>
<td>(0.013)</td>
<td>1.349714</td>
<td>1.5228</td>
<td>0.5565</td>
<td>8.6963</td>
<td></td>
</tr>
<tr>
<td>lnMEX</td>
<td>6.1918</td>
<td>0.9373</td>
<td>0.8933</td>
<td>5.5561</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnSMEX</td>
<td>5.4468</td>
<td>-</td>
<td>1.8251</td>
<td>10.4176</td>
<td>2.5616</td>
<td></td>
</tr>
<tr>
<td>lnGFCF</td>
<td>2.9233</td>
<td>3.2320</td>
<td>-</td>
<td>5.1908</td>
<td>1.6942</td>
<td></td>
</tr>
<tr>
<td>lnL</td>
<td>1.8025</td>
<td>3.1114</td>
<td>1.3753</td>
<td>-</td>
<td>1.6374</td>
<td></td>
</tr>
<tr>
<td>lnCIMP</td>
<td>13.4930</td>
<td>15.2588</td>
<td>8.4873</td>
<td>6.0456</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

July-August
null hypothesis to total exports and non-export GDP. Moreover, imports of capital goods also stimulate economic growth. Moreover, this technique is also applied for examining causality between total exports and economic growth is concerned [14] approach is also applied. The major outcomes are mentioned at Table-5 which reveals that total exports granger cause non-export GDP but not vice versa. Table 6 shows that unidirectional causality exists from total exports to non-export GDP in Pakistan. Again these results are consistent with the result of manufactured exports and economic growth relationship.

5. CONCLUSION
This study empirically envisage causal linkage in economic growth as well as total exports and two important categories of exports i.e. semi-manufactured exports and manufactured. Some important variables are included in the models as suggested in the literature on export – growth to avoid misspecification. Using modern times series econometric techniques, this paper unveils unidirectional causality from manufactured exports to economic growth in Pakistan. However, semi-manufactured exports has no any significant role in growth process of this country. Further, this study found unidirectional causal link from total exports to economic growth. These results illuminate the importance of manufactured export for long-run economic growth in Pakistan and suggest that emphasis should be given to manufactured export sector of total exports because of its significant contribution in economic growth of this country.

REFERENCES


