Trade Openness and Financial Development Nexus: An Empirical Study of Pakistan

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ABSTRACT

The focus of this research is to seek nexus between the openness of trade (TO) and financial development (FD) within Pakistan’s economy. This data was carried out through time series from 1971 to 2011 and famous econometric techniques were used. The previous literature proved that there is a positive association between the trade openness along with financial development. The ADF, Johansen Co-integration as well as, Granger Causality test was used for unit root stationarity, long run association and casual association respectively. The conclusion of this research study illustrated a significant and positive association between the trade openness along with financial development. Furthermore, the Granger Causality analysis depicts unidirectional association linking financial development and trade openness. It is concluded that economic policies intended to trade openness along with financial development contain an optimistic effect on economic expansion of Pakistan.

Key words: Trade openness, financial development, economic policies, developing countries.

INTRODUCTION

OT and liberalization has been mentioned as a significant measure of FD and economic development of any nation, after investigating successive review of theoretical and empirical literature, it is found that openness to trade is a significant and major factor. Though OT be dependent upon many endogenous factors, that is, specialization, macroeconomic and political stability and FD. These are some prerequisite conditions to acquire maximum benefit of trade openness. Whereas open economies grew faster than the close economies. (Mamoon and Murshed, 2006; Sachs and Warner, 1995). The proposed study has an objective to explore and evaluate the association between FD along with OT in case of Pakistan.

LITERATURE REVIEW

Sachs and Warner (1995) considered and found the causal connection between economic development and OT of Pakistan, using data from 1980 to 2009 and unit root test for long run association and granger casualty tests for the direction of causality. Empirical results showed that the import and export are positively affected by economic development and FD. They also recommended and concluded that the developing countries should follow the policies of openness to strengthen their economic growth. Numerous studies conducted in the case of Pakistan investigated the link among OT, trade liberalization and economic development (Khan and Qayyum, 2007; Kemal, 2003; Iqbal et al, 1998).

Ito (2005) used panel data of 87 developing countries for 1980 to 2000 and found that financial openness is necessary for FD whereas, OT is a pre-requisite for financial openness. Chaudhry et al. (2010) empirically investigated the association between OT and economic growth of Pakistan by employing data from 1972 to 2007. Their results demonstrated a strong association among variables and the results also depict the short run and long run association and confirmed that education and OT is helpful to attain sustainable economic growth.
Baltagi et al. (2009) tried to investigate whether the financial and OT lead to FD or not and found that openness has significantly determined the banking sector development. It proved that closed economies are set to more advantages and benefits by opening trade and capital accounts.

Hanh (2010) examined the link among financial development (FD) and openness of trade (OT) as well as, financial openness (FO) in twenty-nine Asian countries. The study based on annual data 1994 to 2008 showed two-way causality between the said two variables and as well found a heterogeneous connection between FO and FD. GMM estimator and Pedroni Co-interaction models were used and it was observed that the inclusion of financial crisis in models may possibly bear on the association between FD, OT and FO.

Atif et al. (2010) explained the economic development is highly correlated with OT and FD. They employed data from 1980 to 2009 and measured the effect of OT and liberalization on FD and growth by employing bound test. The outcomes revealed that OT and FD are directly related in the long run with the country economic growth, whereas, the results showed bidirectional causality between trade openness (OT), money supply (M2) and growth of the economy in the short run. The seminal literature there has highlighted the effect of FD and OT on growth in underdeveloped countries (Barro, 1991; Edwards, 1993; World Bank, 1989; Yucel, 2009).

The addition by Sala-i-Martin and Roubini (1995) highlighted the significance of both OT as well as, FD for the growth of the nation. Bhattacharyya (2012) analyzed the association in the middle of liberalization of trade liberalization and economic institutions and found that the variation in economic institution can be explained by trade liberalization. Husain (2007) studied and marked from literature that trade liberalization is positively associated with economic growth and poverty cutback. Khan (2006) analyzed that the trade and FO reforms played significant role in improving the development of Pakistan’s economy.

Levchenko (2004) discussed in this study, trade and FD are linking the developed and developing countries and found that theoretically and empirically, there is a much dissimilarity between them. A large, financially intensive country has the comparative advantage and more developed financial system as compared to the developing ones. Therefore, demand for external finance in poor countries decline and internal financial system deteriorates. They used data from 77 different countries on FD and found that OT is related to the financial system; the more rapidly FD of rich nations the slower the FD in poor ones. Moreover, the corrosion of the domestic financial system may be injurious to the deprived nation for gains as of trade. In fact, the big arrangement of pragmatic proved that FO and FD is beneficial in lowering volatility and increasing growth (Helpman et al., 1985; Levine and Ross, 2003; Mona et al., 2012).

Yucel (2009) studied and investigated the association among FD, OT and economic growth; a research for the Turkish economy. The annual data were taken from 1989 to 2007 on a monthly basis with new techniques, that is, ADF was used for unit root and JJ Co-integration for long run association respectively and the Granger causality test also used. He concluded that the OT is significant and positive, whereas, the FD has an indirect association with the growth of the economy. Meanwhile, the Granger Causality test disclosed the bidirectional causality in the middle of the given variables which showed OT and FD significantly affects growth. Many studies depict the same significant association between both variables (Mona et al., 2012; Cameron, 1967; Goldsmith, 1969) later and several studies verified this association (McKinnon, 1973; (Khan, 2006; Kemal, 2003; (Atif et al., 2010).

Appraised OT was used in developing the economy’s vulnerability in three different levels “macro”, “micro” and “miso” and it was concluded that OT entail welfare discounting in the long run for household or some economies. Gregorio et al. (1995) considered 100 countries for the time period of 1960 to 1989, and accomplished conclusion that FD guide enhances the economic growth. Roubini et al. (1995) studied that there is negative correlation between the bank reserve ratio and growth akin to a substitute for financial suppression that is not expected to be affected by economic growth. Orestes proved the association between economic growth and FD in the US and Germany, by employing quarterly records and four different proxies. Ersoy and Deniz (2011) examined long run association between FO and OT and also found a unidirectional causality association between.

Historical background

In the beginning of Pakistan, being an agricultural country had a very feeble financial, social and political sector along with a very poor infrastructure. Until the 1980’s, Pakistan strongly constrained and restricted its trade system. Foreign imports were far-off from domestic market due to high rates of tariff and (barriers) non-tariff. Whereas, in early 1990’s Pakistan adopted a Structural Adjustment Program (SAP) projected by the IMF and the World Bank and adopted openness policy for trade with the financial sector. This policy got force and momentum during the nineties through the lessening of trade barriers, import duties and eradication of a range of subsidies (Siddiqui and Iqbal, 2005). Therefore, the share of Pakistan in world export declined from 22 to 18% and has remained sluggish since this period. All Asian economies achieved lots of benefits from these policies except Pakistan (Hussain, 2007).

METHODOLOGY

This research study employed time series data taken from
the WorldBank and economic survey of Pakistan covering period 1971 to 2011 annually. Money supply as % of GDP as well as, Trade as % of GDP were taken as variables determining the association between trade and FO. It is believed that a move up in OT increases the trade base of the country. Higher OT divuls the success of trade liberalization (Chaudhry et al., 2010; Montalbano, 2011). Three different tests were employed, that is, Johansen Co-integration test, ADF and Granger Causality test.

Unit root test

This is given as:

\[ Y_t = \rho Y_{t-1} + u_t - 1 \leq \rho \leq 1 \]  \hspace{1cm} (1)

Where:

\( u_t \) is white noise error term.

If \( \rho = 1 \) unit root Equation (1) becomes a random walk model. It explains non-stationary stochastic process. Consequently, just regress \( Y_t \) on its first lagged values \( Y_{t-1} \) and determination of the estimated \( \rho \) is statistically equivalent to 1. If it is true, then, \( Y_t \) will be non-stationary. This is the empirical expression in unit root test. For a hypothetical basis, subtract \( Y_{t-1} \) from the both sides of Equation (1):

\[ Y_t - Y_{t-1} = \rho Y_{t-1} - Y_{t-1} + u_t = (\rho - 1)Y_{t-1} + u_t \]  \hspace{1cm} (2)

Equation 2 therefore becomes:

\[ \Delta Y_t = \delta Y_{t-1} + u_t \]  \hspace{1cm} (3)

Where \( \Delta \) and \( \delta = (\rho - 1) \) are the first-difference operators.

As a result, an alternative (1), we estimate (3) and made the hypothesis \( \delta = 0 \). If \( \rho = 1 \) that is, a unit root indicating the time series is non-stationary. When we proceeded to estimate (3), and if \( \delta = 0 \), (3) will befall:

\[ \Delta Y = (Y_t - Y_{t-1}) = u_t \]  \hspace{1cm} (4)

Since \( u_t \) is an error term and it is stationary, therefore, it first differences of a random walk time series are stationary.

### Table 1. Unit root test.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>ADF</th>
<th>1st Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2</td>
<td>0.496</td>
<td>-5.559*</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>0.386</td>
<td>-7.352*</td>
<td></td>
</tr>
</tbody>
</table>

* shows 1% level of significance.

The augmented Dickey-Fuller test

Let’s assume here that the error term \( U_t \) is uncorrelated. In contrary, if error term \( U_t \) is correlated, then employ Dickey-Fuller test which is developed by Dickey and Fuller. This test took “augmenting” the last three empirical equations along with logs values of \( \Delta Y \), dependent variable (Johansen and Juselius, 1990). Thus, the ADF regression can be measured as:

\[ \Delta Y_t = \beta_1 + \beta_2t + \delta \Delta Y_{t-1} + \alpha \sum_{i=1}^{m} \Delta Y_{t-i} + \epsilon_t \]  \hspace{1cm} (5)

Where:

\( \epsilon_t \) represent error term (white noise)

\( \Delta Y_{t-1} = (Y_{t-1} - Y_{t-2}), \Delta Y_{t-2} = (Y_{t-2} - Y_{t-3}) \) and \( \Delta Y_{t-3} = (Y_{t-3} - Y_{t-4}) \) etc number of lagged in ADF \( \delta = 0 \) and the ADF follows the same asymptotic distribution as the DF statistic, therefore, the same critical values can be used.

### RESULTS

As time series data exhibits the problem of non-stationary, it is essential to be familiar with the order of integration of variables. To find the order of integration, we employed the ADF test. The results from the Table 1 revealed that the money supply (M2) and trade openness (T) are stationary at first difference at the 1% level of significance.

Prior to finding the Johansen Co-integration between variables, it is important to take the lag length of variables because the Johansen Co-integration test is based on vector autoregressive model (VAR) which is sensitive to lag length. In order to overcome this issue, we employed the lag length information criteria and picked out the one lag length on the basis of Hannan Quinn information criterion and Schwarz information criterion as noted in Table 2.

To discover the long run association between variables, we used the Johansen Co-integration test. The result mentioned in Table 3 shows that there exist a long run association between money supply (M2) and trade openness (T).
Table 2. Lag length selection criteria.

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>76.26061</td>
<td>NA</td>
<td>4.92E-05</td>
<td>-4.243463</td>
<td>-4.154586</td>
<td>-4.212783</td>
</tr>
<tr>
<td>1</td>
<td>97.77839</td>
<td>39.34680*</td>
<td>1.81E-05</td>
<td>-5.24448</td>
<td>-4.977849*</td>
<td>-5.152439*</td>
</tr>
<tr>
<td>2</td>
<td>102.1595</td>
<td>7.510544</td>
<td>1.78e-05</td>
<td>-5.266260*</td>
<td>-4.821875</td>
<td>-5.112858</td>
</tr>
</tbody>
</table>

*Shows lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level); AIC: Akaike information criterion; SC: Schwarz information criterion; FPE: Final prediction error; HQ: Hannan-Quinn information criterion.

Table 3. Johansen cointegration test.

<table>
<thead>
<tr>
<th>Co-integration test</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho</td>
<td>Hi</td>
</tr>
<tr>
<td>r=0</td>
<td>r≥1</td>
</tr>
<tr>
<td>r≤1</td>
<td>r≥2</td>
</tr>
</tbody>
</table>

Table 4. Pairwise granger causality tests.

<table>
<thead>
<tr>
<th>Null hypothesis</th>
<th>Observed</th>
<th>F-statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2 does not Granger cause T</td>
<td>36</td>
<td>2.29148</td>
<td>0.0762</td>
</tr>
<tr>
<td>T does not Granger cause M2</td>
<td>0.72031</td>
<td>0.6144</td>
<td></td>
</tr>
</tbody>
</table>

To determine the causal association between variables, we used Pairwise Granger Causality test. The results in Table 4 revealed that unidirectional causality exists between variables, that is, M2 Granger caused T.

**Conclusion**

The brief review of literature and outcomes of this empirical study illustrated the long run nexus between the financial development and trade openness for the Pakistan's economy. Unit root test for first order Co-integration shows the long run association between (M2) Money Supply and (T); both variables also proved stationary at first difference, whilst, the leg length information criterion was picked for one leg length on the basis of Schwas and Hannan Quinn information criterion. Furthermore, this study verified that there is a unidirectional association between both variables, whereas, the Granger Causality test depicts the existence of a uni-causal association runs from financial development to trade openness. It is further concluded that economic policies intended for financial development and trade openness have a positive and significant effect on the economic growth.

**REFERENCES**


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