The Effect of Trade Liberalization on Expenditure Structure of Pakistan

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Abstract
Demand side public policy plays a risk reducing role for imperfect sectors of the developing economies through public investment during liberalization. Public sector investment, composition and structure play an important role to determine the comparative advantage for the productive sector. This study explores the effect of trade liberalization and trade tax revenue on the expenditure structure of Pakistan during 1975-2016. Autoregressive Distributed Lag approach has been used for examining the long run co-integration among the expenditure structure and trade liberalization and Vector Error-Correction model is used for short run dynamics of the concerned variables. The empirical result shows that trade tax revenue has a positive impact on the expenditure structure in the long run but not in the short run. Trade liberalization, budget deficits and defense expenditure have negative associations with expenditure structure.

Keywords: Average Tariff rate, Trade Tax Revenue, Expenditure Structure
JEL Classification: F10, F13, H71,

I. Introduction
Twenty first century came with the phenomenon of globalization or economic integration. In such environment, all industrial and developing economies opened their borders for trade in goods and services. It has also been accepted that trade liberalization improves economic efficiency and spurs economic growth through spillover effects Krueger (1997). While in the case of developing economies, trade liberalization has inconclusive results (Rodriguez and Rodrik, 2001). Most of the developing economies, protect their imperfect sector from the global competition by a variety of tariff and nontariff restrictions. The main reason of protection is to strengthen the domestic infant industries and acquiring the revenue through trade barriers.

During the recent decades, particularly after the emergence of the WTO in 1995, many countries of the world have pursued the policies of trade liberalization. Trade liberalization is generally advocated on the ground that it can improve economic efficiency and super economic growth through its spillover effects. However, many developing economies have been largely dependent upon their trade tax revenue as its makes significant share of their total revenue. This phenomenon can have important fiscal policy implications, especially for developing countries. In such scenario, the government of developing countries has no tendency to compensate their loss of revenue through domestic collection of taxes. This may create problems for public investment in physical infrastructure, while some expenditure components may be difficult to reduce such as politically-sensitive expenditure on military and social security spending (Khattry and Rao, 2002). During liberalization, it is essential for developing countries to formulate proper policy for generation of trade revenue or substitution of trade revenue, so that public investment in physical plus social infrastructure may not be hurt.
In the modern era of globalization, public sector performance gained more importance due to foreign competition among trading countries. According to Rodrik (1998), trade liberalization improved, the government role, especially in developing economies for comparative advantages with the help of public spending structure. Government spending for infrastructure development played a risk-reducing role in those economies which bear heavy external risk in the form of foreign competition. In the initial stages of trade liberalization, the public sector provides protection in the form of different types of duties and subsidies to imperfect sectors. At a later stage, imperfect sectors attain comparative advantage due to public sector intervention. In this regard, Khattri (2003) investigated the fiscal effects of trade liberalization particularly for developing countries. On the fiscal side, the trade liberalization process is more likely to lead towards an extensive decrease in free trade barriers which reduce trade tax revenue. Reduction in trade, tax revenue may reduce the total tax over GDP ratio in those economies which are highly dependent on trade taxes. Normally, these economies use foreign debt, aid and deficit financing to meet the fiscal need. In this case, the debt servicing and geopolitical government expenditure may lead to further reduction in public investment in social and economic infrastructure development. A large number of development theories, the provision of social overhead capital or infrastructure development is move helpful in productive activities especially in developing nations. Nondevelopment expenditure has less effective for productive activities. In case of developing countries, the share of non-development expenditure is usually more than the development expenditure. Further, these countries have no ability to change the expenditure structure due to unsophisticated administration, low political will and geopolitical issues.

The objective of this study is to explore the effect of trade liberalization on the ratio of development and non-development expenditure ratio termed as the expenditure structure of Pakistan. There are two main categories of expenditure i.e. development and non-development which are utilized to provide compensation domestic infant industry during liberalization. Higher share of development expenditure means more provision of public goods. The rest of the paper will discourse the following sections such as literature, theoretical and empirical results of trade liberalization and its effect on expenditure structure.

2. Literature Review
Trade liberalization or trade openness has so many socioeconomic impacts on trade countries. A large number of studies are conducted to investigate the impact of liberalization on government expenditure for different regions, blocks and countries with different types of data set. In literature, on the relationship of liberalization and government expenditure has different outcomes with different measures of trade liberalization and different components of government expenditures. In this regards, most promising work for OEDC countries done by Cusack (1997), Garret and Mitchell (2001), Kittel and Winner (2005), Dreher (2006). They concluded that different measures of liberalization and different components of government expenditures were negatively correlated. While, on the positive relationship between liberalization and government spending in OECD countries done by Hicks and Swank (1992), Huber et al. (1993), Garret (1995), Bernauer and Achini (2000), Ali and Rehman (2015), Ali (2015), Ali and Bibi (2017), Sajid and Ali (2018), Audi and Ali (2017), Ali (2011), Ali and Naeem (2017), Ali and Chani (2013), Swank (2001) and Bretschger and Hettich (2002). They empirically investigated the liberalization and government expenditure with a different data set they found that liberalization has positively related to expenditure.
The relationship of liberalization and government spending a large number of studies investigated developed and developing countries with a different data set. Such as Alesina and Wacziarg (1998) Rodrik (1998), (2001) and Adsera and Boix (2002) found that liberalization has a positive impact on different components of government expenditure. Figlio and Blonigen (2000) for South Carolina Kaufman and Segura-Ubiergo (2001) for Latin American investigated that liberalization has negative impact on expenditure. For, US a country specific study investigated by Balle and Vaidya (2002) found a positive association between liberalization and government expenditure.

Khattry and Rao (2002) analyzed the impact of liberalization on the tax level and structure of government expenditures for large countries' data set, with main emphasis on low income countries. They concluded that rapid trade liberalization process caused a fiscal squeeze in developing countries. As a result of fiscal squeeze, it created a series of problems for low income countries to meet the rising fiscal needs and they severely depended on internal and external debt. Moreover, results indicated that the above factors also contributed to decline in infrastructure spending or development expenditure.

To co-integration analysis Morley and Nicholas (2000) investigated the effect government expenditure on economic growth in Egypt. The empirical outcomes show that expenditure has a positive impact on growth while trade has no significant impact. Abizadeh (2006) analyzed the role of government against trade liberalization policy. He found that size of the government squeeze as economy moves to liberalization especially in small economies. Islam (2004) investigated the relationship between trade liberalization and government size for 6 developed nations with contrary specific and cross-section data analysis. The empirical results vary country to country, while cross-section results show no significant impact on government size. Balle and Ashish (2002) empirically investigated the effect of trade liberalization on government spending for USA and later in state level. They found that trade liberalization has positive impact on welfare and health expenditure.

Khattry (2003) empirically investigated the impact of trade liberalization on government expenditure for a large number of countries, with more empathizes on developing countries. He developed the idea for developing countries face trade revenue loss during liberalization. This fiscal squeeze caused by reduction in social and physical capital spending. External debt utilized to overcome revenue loss for politically sensitive geopolitical expenditure. The empirical results of fixed-effects regression show that trade liberalization has negative impact of trade revenue at the first stage and that these factors has contributed to decline the provision of public goods.

Dreher et al. (2008), Ram (2009), Moore and Maurizio (2011) and Benarroch and Pandey (2011) empirically investigated the impact of trade revenue and trade liberalization on government expenditure\textsuperscript{1}. The results show no clear cut direction of trade liberalization and expenditure. Moreover, trade liberalization has significant impact on trade revenue. In the case of developing countries trade revenue was negatively related to education, health, social security and housing spending.

\textsuperscript{1} For the relationship of trade liberalization and different government expenditure components, they used a large numbers of data sets for developed and developing nation’s empirical investigation.
Sáenz et al. (2013) explored the link between trade openness and public expenditure for Spain in the period of 1960-2000. They used error correction method for short run and long run cointegration and also used Granger test for causality. They found a strong positive casual correlation between several measures of trade openness and public expenditure in the case of Spain. Recently, Turan and Mesut (2016) investigated the impact of trade liberalization and economic growth in government size for Korea and Turkey. The results found that GDP per capita positive impact on government size in the long run for both nations. However, trade liberalization has negative impact on government size for Turkey but not in the case of Korea.

When we review the literature on trade liberalization and expenditure structure, we find hardly any study in detail in case of Pakistan. Some studies reflect macroeconomic determinant, component and composition of public expenditure and other reflect economic consequences independently. Most of the empirical investigating developed nations and concluded that trade liberalization have no significant effect on government expenditure or government size while in case of developing nations trade liberalization have serious implications for expenditure structure. Pakistan is a good case study because it has more concentration towards liberalization during last twenty years.

3. Theoretical Framework, Method and Data
Trade liberalization or reduction in tariff rates causes to decrease in revenue, which is called “income effect”. The income effect puts a pressure on the budget deficit. The revenue loss which may cause a cut in public spending in crucial sectors like health, education, and infrastructure development is “substitution effect”. According to Abe (1992), trade liberalization or reduction in tariff rate may reduce the revenue and this revenue loss may put a budgetary pressure. Budget deficit leads to cut in government development expenditure as compare to non-development expenditure and the consequences of the expenditure structure limit the availability of public goods and services.

For expenditure structure model, Alesina and Wacziarg (1998), Shelton (2007), Dreher et al., (2008) analyzed the relationship between trade liberalization and different components of government expenditure. Specifically, development and non-development expenditure may be used to respond the volatility, which may be the result of trade liberalization. Dreher et al., (2008) using two different data sets analyzed the impact of liberalization on composition government expenditure. Rodrik (1998) found a strong positive association between trade openness and the size of the government, as in more liberalized economies, people demand an expanded role of government for the provision of social insurance subject to external risk. To examine the hypotheses that trade liberalization and trade revenue have no impact on expenditure structure. The empirical model is given below:

\[
\frac{DEX}{NDEX} = g(\text{ATR}, \text{TR}, \text{Y}, \text{BD}, \text{DS}, \text{UGE}, X)
\]

DEX/NDEX = ratio development expenditure and non-development expenditure measure as expenditure structure over time, ATR = Tariff rate weighted mean, all products (%) as measure of trade liberalization, TR=Trade tax revenue as a share of total tax revenue, Y= GDP per capita growth (annual %), BD = Fiscal balance as a share of GDP, DS = Interest payments on external debt (% of GNI), UGE= Underground economy as a share of GDP, X= other control variables.
The major data sources are Handbook of Statistic on Pakistan Economy publish by State Bank of Pakistan (2017), Pakistan Economic Survey 2016-17 published by the Ministry of Finance, Government of Pakistan and World Development Indicator (WDI) by the World Bank (2017). For the size of the underground economy, data estimated by Gulzar et al. (2010). We use a moving average for remaining four years' observation. The data on average tariff rate is taken from Pakistan Customs Tariff annual report various issues (Custom Wing) Federal Board of Revenue, Government of Pakistan. This study uses a bound testing approach to co-integration developed by Pesaran et al. (2001) and Paresh (2005). Autoregressive distributed lag approach has following advantages over previous approaches. First, it produces more reliable results for small data sets. Second, it is appropriate for different order of integration of variables. Third, it is an easy approach to transform long run coefficients to short run through re-parameterization. This approach follows two steps for empirical estimation. First, it computes F-statistics of bond testing, which is based at Pesaran et al. (2001) and Paresh (2005). Second, by using the error correction mechanism the short run results are obtained. For the empirical analysis study uses the time period from 1975 to 2016.

4. Empirical Results
This study uses DF-GLS unit root tests for examining the stationary level of the variables because this test is more appropriate when the data is based on different indices and quality variable for analysis. The results of DF-GLS are presented in table 1. The estimated results under a mixed level of stationary we employ ARDL co-integration approach for short run and long run relationship of variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>DF-GLS test at Level</th>
<th>DF-GLS test at 1st Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculated values</td>
<td>Lags</td>
</tr>
<tr>
<td>Develop/non-develop expenditure ratio</td>
<td>-1.84376</td>
<td>0</td>
</tr>
<tr>
<td>Average tariff rate</td>
<td>-0.4988</td>
<td>1</td>
</tr>
<tr>
<td>Trade revenue as a share of tax revenue</td>
<td>-0.3115</td>
<td>1</td>
</tr>
<tr>
<td>Real per capita growth</td>
<td>-2.1837**</td>
<td>1</td>
</tr>
<tr>
<td>Budget deficit as a share of GDP</td>
<td>-1.098</td>
<td>0</td>
</tr>
<tr>
<td>External debt servicing as a share of GDP</td>
<td>-1.1531</td>
<td>0</td>
</tr>
<tr>
<td>Political stability</td>
<td>-2.9616**</td>
<td>1</td>
</tr>
<tr>
<td>Underground economy as share of GDP</td>
<td>-0.52710</td>
<td>0</td>
</tr>
<tr>
<td>Subsidies as share of total expenditure</td>
<td>-1.52238</td>
<td>1</td>
</tr>
<tr>
<td>Defence expenditure as share of total expenditure</td>
<td>-1.88623</td>
<td>0</td>
</tr>
</tbody>
</table>

*, **, *** shows level of significant at 1%, 5%, and 10%
After confirmation of stationarity of the variables, now we move towards the lag selection procedure. The Schwarz information criterion is used to choose to lag order of ARDL model. The empirical results of different criterion suggest one optimum lag length for the above model. The empirical results are presented in table 2 for F-statistic, the empirical results confirm that some long run linear combinations exist between our concerned variables.

**Table-2**
ARDL Cointegration Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>F-Statistic (Calculated)</th>
<th>At 95%</th>
<th>At 90%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>Expenditure structure (1)</td>
<td>5.9012**</td>
<td>2.9341</td>
<td>4.4230</td>
</tr>
<tr>
<td></td>
<td>(1,0,0,1,0,0,0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditure structure (2)</td>
<td>4.2911***</td>
<td>3.4562</td>
<td>4.6213</td>
</tr>
<tr>
<td></td>
<td>(1,0,0,0,1,0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**, *** level of significant at 5% and 10%**

The long run empirical coefficients are presented in table 3. The results show that trade liberalization has negative and significant relationship with expenditure structure. The coefficient estimates suggest that a one unit increase in trade liberalization, on average, will cut 0.05 too.09 units in expenditure structure at 5 percent level of significance. In a developing country like Pakistan, the trade liberalization reduces the expenditure ability of the government because of the revenue loss. However, in case of developed countries where the direct tax is greater than the indirect tax, the trade liberalization has positive impact on expenditure as proposed by Benarroch and Pandey (2011) Sáenz et al. (2013).

The empirical coefficient of GDP growth shows positive and significant impact on the expenditure structure in Pakistan. The level of economic development may improve the domestic tax collection as well as expenditure explained in Wagner’s law. This law explains that the demand for public services is usually income elastic; an increase in public goods and services cause economic development which may be possible through increased tax revenue. The trade revenue shows that a one unit increase in trade, tax revenue will by 5 percent point on average, improve expenditure structure at 5 percent significance level. These results are consistent with Moore and Maurizio (2011). Moreover, the political stability and defense expenditure has a significant and negative impact on expenditure structure. It means that the share of non-development expenditure is higher when the economy experiences more political stability as well as high defense expenditure. Thus, foreign and domestic loans were used to meet the non-development expenditure. Another important reason of low tax base was extensive tax evasion and size of the informal sector in the economy.

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2 The F-statistic calculated 5.9012 and 4.2911 which are greater than the critical bound value proposed by Pesaran et al, (2001).
Now, in second model we include budget deficit, external debt servicing and size of the underground economy. The budget deficit and foreign debt have a negative and significant impact on expenditure structure. The result shows that external factors have more pressure on the government to allocate more resources on non-development expenditures as a share of development. The estimated results show that underground economy as a share of GDP has negative and significant relationship with expenditure structure in Pakistan.

Table-3
Long Run Coefficient of ARDL Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expenditure structure</th>
<th>Expenditure structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.5699*</td>
<td>2.2024[0.002]</td>
</tr>
<tr>
<td>Average tariff rate</td>
<td>.05731**</td>
<td>1.9084[0.042]</td>
</tr>
<tr>
<td>Trade revenue as a share of total tax</td>
<td>.01573**</td>
<td>2.1803[0.023]</td>
</tr>
<tr>
<td>Real per capita growth</td>
<td>.06170*</td>
<td>2.9610[0.002]</td>
</tr>
<tr>
<td>Budget deficit as a share of GDP</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>External debt servicing as a share of GDP</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Political stability</td>
<td>-.07347**</td>
<td>-2.2189[0.024]</td>
</tr>
<tr>
<td>Underground economy as a share of GDP</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Subsidies as a share of total expenditure</td>
<td>.05372</td>
<td>1.4251[0.136]</td>
</tr>
<tr>
<td>Defence expenditure as a share of total</td>
<td>-.03420***</td>
<td>-1.6901[0.075]</td>
</tr>
</tbody>
</table>

Note: *, **, *** level of significant at 1% 5% 10%.

The short run results of the above models are presented in table 4. Trade liberalization and trade revenue have negative impact in the short run. Improvement in average tariff rate leads to enhance the trade revenue. Trade revenue increase development expenditure due to total collection of domestic tax collection. When expenditure structure is used as dependent variable, we add two new independent variables like subsidies and defense expenditure. The results show that defense expenditures have a negative impact on expenditure structure and are statistically significant at the 10 percent level of significance. The negative sign of the coefficient of a lag error correction term is -6610 and -5806 in model three and four respectively, it is statistically significant at 1 and 5 percent level of significance.
### Table-4

Short Run Coefficient of ARDL Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expenditures Ratio (1,0,0,1,0,0)</th>
<th>Expenditures Ratio (1,0,0,0,1,0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.1852*</td>
<td>2.4247[0.009]</td>
</tr>
<tr>
<td>ΔAverage tariff rate</td>
<td>-.05011*</td>
<td>-2.2010[0.003]</td>
</tr>
<tr>
<td>ΔTrade revenue as a share of tax revenue</td>
<td>.04952**</td>
<td>-2.004[0.033]</td>
</tr>
<tr>
<td>ΔReal per capita growth</td>
<td>.01096*</td>
<td>2.7012[0.008]</td>
</tr>
<tr>
<td>ΔBudget deficit as a share of GDP</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>ΔExternal debt servicing as a share</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>ΔPolitical stability</td>
<td>-.02339**</td>
<td>-2.361[0.013]</td>
</tr>
<tr>
<td>ΔUnderground economy as share of</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>ΔSubsidies as share of total expenditure</td>
<td>.00407</td>
<td>1.322[0.267]</td>
</tr>
<tr>
<td>ΔDefence expenditure as share</td>
<td>-.01967***</td>
<td>-1.538[0.068]</td>
</tr>
<tr>
<td>Lag error correction term</td>
<td>-.3184*</td>
<td>-2.701[0.000]</td>
</tr>
<tr>
<td>R² and D.W</td>
<td>.6610/ 2.1143</td>
<td></td>
</tr>
</tbody>
</table>

Note: *, **, *** level of significant at 1% 5% 10%. [] represent Prob. Value.

5. Conclusions and Policy Implications

According to free trade theories, trade liberalization policy improves society’s welfare through its various channels under the perfectly competitive market conditions, but on the other hand, one channel may cause to reduce the welfare due to trade revenue loss. The trade revenue loss automatically creates fiscal changes at domestic level. The empirical results show that trade tax revenue has a positive impact on the expenditure structure in the long run but not in the short run. Due to trade liberalization, revenue loss of income has considerably adverse influence on fiscal structure in case of Pakistan. The income effect of trade revenue has negative due to trade liberalization. Trade revenue has a major share in the total tax collection in Pakistan. While, trade liberalization itself puts an adverse effect on expenditure in the long run. The substitution effect of trade revenue loss also put an adverse impact on development expenditure in Pakistan. So, the net effect of trade liberalization policy faces trade revenue loss at the first stage. Trade revenue loss due to trade liberation policy creates regressive fiscal performance, for developing economies like Pakistan at the second stage. Trade liberalization, budget deficits and defense expenditure have negative associations with expenditure structure. Nondevelopment expenditure on debt servicing is increasing due to devaluation of the local currency as well as other expenditure on geopolitical
issues like defense and some internal and external conflicts. Underground economy use as a proxy for administration capacity and corruption has a negative impact on the expenditure structure, but most surprising result of political stability shows the negative relation with expenditure structure. It means that the share of non-development expenditure is higher as compared to development expenditure as a more stable political condition in Pakistan. For the policy implication, the government should improve the tariff rate on one hand. On the other hand, the government should improve domestic fiscal administration structure during trade liberalization. We should also improve the development expenditure as compared to non-development expenditure to make economic risk neutral against trade revenue loss as well as foreign trade competition. Furthermore, the economy of Pakistan has heavily depended on external debt for fiscal needs. In the context of the results of the study, the debt servicing has negative impact on the fiscal structure of Pakistan. Even though, Pakistan has so many problems in the form of a large proportion of the poor segment of society, political instability and a large share of undocumented economy. For the policy suggestion, the government should enhance the internal sources for fiscal requirements rather than external sources of public finance.

References


