Twin Deficits: An Empirical Analysis in the Case Pakistan

Masood Mashkoor Siddiqui

Department of Commerce, Federal Urdu University of Karachi, Karachi, Pakistan

Abstract: Twin deficit was investigated in this study by employing the data of 1971 to 2008 in the case of Pakistan. For econometrics evidence this study is used JJ cointegration approach and rolling window estimation method. The results of JJ cointegration verify long run relationship among the budget deficit and trade deficit.

Key words: Budget Deficit • Trade Deficit • JEL Classification: C11 • C15 Co-integration

INTRODUCTION

Theoretical and empirical literature show different explanation of twin deficit. According to Keynes [1] the trade deficit is positively related with budget deficit i.e. budget deficit leads to a trade deficit and, a trade deficit improve only when surplus in budget. Mundell/Fleming [2, 3] stated that government deficit spending increases in the case of international capital mobility. When domestic interest rate is higher than world interest rate there is possibility of net capital inflow from abroad and the domestic currency will appreciate. Thus current account balance deteriorates due to rise in imports and fall in exports. Conversely no relationship between the twin deficits has suggested by the Ricardian Equivalence Hypothesis (REH).


Mulkhtar et al. [14] examined the long run relationship exists between the two deficits and also showed bidirectional causal relationship. Acaravey [15] concluded that a long run relationship exists between budget deficit and current account imbalances and empirical results also indicate that the direction of causality runs from the budget deficit to the current account deficit. Thus the aim of this empirical work was to determine the association between these twin deficits in the case of Pakistan by employing the annual time series data from 1971 to 2009. This study provided empirical evidence by using the JJ cointegration and rolling window estimation method.

Theoretical Background: Positive relationship between trade deficit and budget deficit has proposed by the Keynesian model of open economy. This model in mathematical form we can write as

\[ Y = C + I + G + (X - M) \] (1)

Whereas in equation-1 Y (gross domestic product) is the sum of C (private consumption expenditures), I (gross private domestic investment expenditures), G (government expenditures) and X-M (net exports). Conversely, this relationship explain as in equation-2.

\[ Y = C + S + T \]  

(2)

Replacing (2) in (1) and reorganized expression as,

\[ (X - M) = (S - I) + (T - G) \]  

(3)

Equation (3) proposes net exports equal private and public savings. The Mundell Fleming Model explains that the increase in the government’s budget deficit could lead to an increase in the trade deficit through increased consumer spending\(^1\). Furthermore, the Keynesian absorption theory argues that an increase in the budget deficit would induce domestic absorption and therefore import expansion, causing a current account deficit.

**Estimation Methods and Empirical Results:** This empirical work is used annual data from 1971-2008. Data has taken from State Bank of Pakistan, various publication and Pakistan Economic Survey. Both trade deficit and budget deficit has used as percentage of the GDP (Gross Domestic Product) for econometric estimation this study has used natural logarithms forms. For estimation evidence this empirical investigation is used augmented dickey fuller unit (ADF) root test in order to determine the order of integration and long run relationship between among the variables is determined by using the JJ cointegration and rolling regression methods.

Table 1 indicates that the both variables GDP and LTD are integrated order one. These results are supported that we can apply the JJ cointegration method to investigate the long run relationship. Johansen [16] cointegration test is based on the two statistics i.e. \( \lambda_{max} \) and \( \lambda_{trace} \) statistics. If these statistic (\( \lambda_{max} \) and \( \lambda_{trace} \)) show the different results in favor of cointegration vectors then Johansen [14] proposed \( \lambda_{raw} \) has based to conclude the results. So this empirical investigation is used the \( \lambda_{trace} \) to determine the long run vectors between the variables.

Table 2 represents the result of JJ-cointegration method to long run relationship. The results confirm the long run relationship between trade deficit and budget deficit and also specify that there are two cointegrating vectors.

**Rolling Regression Results:** This study also employs the rolling window estimation, the main advantage of this method, it estimated the coefficients of each observation in the sample. Figure 1 demonstrates that before 1986 and 1996 to 1999 the trade deficit significantly affect on the budget deficit and 1987 to 1991 the trade deficit reduce the budget deficit. From, 1992 to 1995 and 2000 to 2007 trade deficit near zero impact on budget deficit.

Figure 2 explains that the before 1986 the budget deficit almost zero impact on the trade deficit and 1987 to 1991 budget deficit reduce trade deficit. Budget deficit highly and positively leads the trade deficit from 1992 to 2008 except the 2000 and 2001.

In conclusion, relationship between the twin deficits was empirically tested in this empirical research by employing the JJ cointegration and rolling regression estimation model. The results of JJ cointegration method confirmed the long run relationship between budget deficit & trade deficit. Rolling regression results have showed before 1986 and 1996 to 1999 the trade deficit significantly effect on the budget deficit and conversely budget deficit cause trade deficit from 1992 to 2008 except the 2000 and 2001.

---

\(^1\)See Fleming [2]; Mundell [1].
Table 1: Unit Root Results

<table>
<thead>
<tr>
<th>Regressor</th>
<th>ADF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBD</td>
<td>-1.37</td>
</tr>
<tr>
<td>LTD</td>
<td>-1.71</td>
</tr>
<tr>
<td>ΔLBD</td>
<td>-6.31*</td>
</tr>
<tr>
<td>ΔLTD</td>
<td>-5.66*</td>
</tr>
</tbody>
</table>

Note: *: 1% level of significant

Table 2: Co-integration Results

<table>
<thead>
<tr>
<th>Hypothesized</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>24.33</td>
<td>18.39</td>
<td>0.00</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>8.52</td>
<td>3.84</td>
<td>0.00</td>
</tr>
</tbody>
</table>

REFERENCES