BUDGET IMBALANCE IMPACT UPON THE CURRENT ACCOUNT IN ROMANIA

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Abstract

One of the significant issues of the policies laid down to accomplish public financial balance is their impact upon trade exchanges synthetically represented by the current account. Specialized literature has defined the so-called twin deficit expressing the simultaneous existence of a budget deficit and a current account deficit. Consequently, setting up commercial policies, fiscal-budget policies, and policies helping to achieve public financial balance should consider the existence as well as the meaning of the causal relationship between a budget deficit and a current account deficit.

Keywords: *public financial balance, budget deficit, current account deficit*

JEL Classification: *H60, H61, H62*

1. Introduction

The theories on public financial balance actually approaching budget deficit and its impact upon the economy have outlined the presence of a causal relationship between a budget deficit and a current account deficit. When the two deficits occur simultaneously, there is a twin deficit.

As far as Romania is concerned, the author has econometrically tested whether or not a twin deficit existed during 2000-2013. For this purpose, the author has used the Granger causality test allowing the identification of the long-term relationship between a budget deficit and a current account deficit.

The test does not emphasize the causality between the two variables in the usual sense of the term, but only expresses a statistical feature showing the

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information included in the data. The *budget deficit* variable determines the *current account* deficit if forecasting the values of the *current account deficit* variable can be better accomplished by the past values of the *current account* and *budget* deficits than by the past values of the *current account deficit.*

The test makes the difference between the historic behaviour of time series according to the ability of explaining the current values of budget and current account deficits without testing them directly, setting several hypotheses and imposing a certain priority when determining the variables.

2. Testing the Presence of the Twin Deficit

In order to perform such an analysis, the author has used monthly data regarding the national public budget deficit and current account deficit taken from the National Romanian Bank Annual Reports as well as from the National Romanian Bank Monthly Bulletins.

Table 1: Data Series Used to Test the Presence of the Twin Deficit

Symbol	Description
CAD	Current account deficit
NPBD	National public budget deficit

In order to apply the Granger test, one should first check whether the current account deficit and the national public budget deficit are cointegrated.

The cointegration relationship between the two non-stationary series exists only if one can identify a combination between a current account deficit and a national public budget deficit which should be stationary.

In order to do that, the series must be integrated by the same order, which is why the ADF (Augmented Dickey-Fuller) and PP (Phillips-Perron) unit root tests are used.

A prerequisite for a time series (y_t) to be random walk is $y_t = y_{t-1} + \varepsilon_t$, where ε_t is a random stationary series. The y series has a constant estimated value and the variance increases with time.

The random walk series is difference stationary since the first difference is stationary.

$$y_t - y_{t-1} = (1 - L)y_t = \varepsilon_t \quad (1)$$

A difference stationary series is called ”integrated” and is marked by *I(d)*, where d is an integration order. An integration order is the number of unit roots included in a series or the number of differentiation operations so that a series could be stationary.

The random walk series above is or must be I (1).

A unit root checks whether or not a time series is stationary, with the Dickey-Fuller and Phillips-Perron tests used in this respect.

Another testing method is the use of self-correlation quotients. Here, in order that a series should be I(1) (or random walk), the self-correlation quotient for a time series must be as close to 1 as possible and the self-correlation quotient for the first difference must be lower than 1.

The Dickey-Fuller Test

In order to describe this test, there is a first order AR (1) self-regressive process, namely:

$$y_t = \mu + \varphi y_{t-1} + \varepsilon_t \quad (2)$$

where μ and φ are parameters and ε_t is a white noise. *y* is a stationary series if $-1 < \varphi < 1$. If $\varphi = 1$, *y* is a non-stationary series. If $\varphi > 1$, the *y* series is explosive.

The series stationarity hypothesis can be assessed by checking whether the absolute value of φ is lower than 1. The test regards a unit root as a null hypothesis: $H_0 : \varphi = 1$. The test goes on by estimating an equation where there have been deductions on both sides: $y_{t-1} : \Delta y_t = \mu + \gamma y_t + \varepsilon_t$

where $\gamma = \varphi - 1$, and the null hypothesis is $H_0 : \gamma = 1$. To check a null hypothesis, one uses the *t* test.

If a series is correlated for a larger number of lags, the white noise assumption is not followed. The ADF and PP tests use different control methods for a high order serial correlation. The ADF test accomplishes a parametric correlation for high order correlations assuming that the *y* series is a *p* order (AR (p)) self-regressive process and it adjusts the test methodology.

The ADF controls high order correlations by adding differences of various lags of a dependent variable on the regression right side.

ADF AR(p)

$$\Delta y_t = \mu + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \delta_2 \Delta y_{t-2} + \ldots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t \quad (2)$$

It is used subsequently in order to test $H_0 : \gamma = 1,\ H_1 : \gamma < 0$.

A significant result Wayne A. Fuller has reached is that the asymptotic distribution for the statistic t of γ is not dependent on the number of lags used in the first difference included in the ADF regression. However, the assumption that *y* is an AR process can be restrictive most of the times.

Said E. Said and David A. Dickey have proven that the adf test is valid even if a series includes a moving average component. Table 2 shows the results of the unit root test for the variables used.

Table 2: Stationarity Tests for Current Account and National Public Budget Deficits

VARIABLES	STATISTICAL ADF	CRITICAL VALUE		STATISTICAL PP	CRITICAL VALUE		LAG	PERIOD
CAD	-0.288882	1% 5% 10%	-3.358822 -2.767718 -2.465956	-0,547589	1% 5% 10%	-3.358580 -2.767612 -2.465909	1	2000-2013
CAD	-0.118857	1% 5% 10%	-3.369068 -2.767826 -2.465013	-0.432298	1% 5% 10%	-3.358580 -2.767612 -2.465909	2	2000-2013
CAD	3.804128	1% 5% 10%	-3.369568 -2.768044 -2.465130	0.822881	1% 5% 10%	-3.358580 -2.767612 -2.465909	4	2000-2013
Δ CAD	-8.603710	1% 5% 10%	-3.369068 -2.767826 -2.465013	-13.64882	1% 5% 10%	-3.358822 -2.767718 -2.465956	1	2000-2013
Δ CAD	-9.21519	1% 5% 10%	-3.369316 -2.760934 -2.465071	-13.71770	1% 5% 10%	-3.358822 -2.767718 -2.465056	2	2000-2013
Δ CAD	-8.403813	1% 5% 10%	-3.369823 -2.768156 -2.465290	-15.57322	1% 5% 10%	-3.358822 -2.767718 -2.465956	4	2000-2013
NPBD	-0.506611	1% 5% 10%	-3.358822 -2.767718 -2.465956	-0.45503	1% 5% 10%	-3.358580 -2.767612 -2.465909	1	2000-2013
NPBD	-0.487216	1% 5% 10%	-3.369068 -2.767826 -2.465013	-0.45658	1% 5% 10%	-3.358580 -2.767612 -2.465909	2	2000-2013
NPBD	3.931131	1% 5% 10%	-3.369568 -2.768044 -2.465130	0.64728	1% 5% 10%	-3.358580 -2.767612 -2.465909	4	2000-2013

VARIABLES	STATISTICAL ADF	CRITICAL VALUE		STATISTICAL PP	CRITICAL VALUE		LAG	PERIOD
Δ NPBD	-20.13360	1% 5% 10%	-3.369068 -2.767826 -2.465013	-23.42096	1% 5% 10%	-3.358822 -2.767718 -2.465956	1	2000-2013
Δ NPBD	-9.87510	1% 5% 10%	-3.369316 -2.768934 -2.465071	-29.04350	1% 5% 10%	-3.358822 -2.767718 -2.465956	2	2000-2013
Δ NPBD	-14.27360	1% 5% 10%	-3.369823 -2.768156 -2.465290	-32.45508	1% 5% 10%	-3.358822 -2.767718 -2.465956	4	2000-2013

It can be noticed that the two fiscal variables are integrated by the same order, namely I(1), therefore the indicators are cointegrated and the Granger test can be applied.

The results of the Granger causality test are shown in the following table:

Table 3: Granger Causality Test between Current Account Deficit and National Public Budget Deficit

Pairwise Granger Causality Tests
Sample: 2000:01 2013:12
Lags: 4

Null Hypothesis	Obs	F-Statistic	Probability
CAD does not Granger Cause NPBD	164	9.4618	1.4E-08
NPBD does not Granger CAD		13.5359	5.4E-11

3. Conclusions

The probabilities reached show that one should reject the null hypothesis according to which a national public budget deficit does not determine a current account deficit and vice-versa. It leads to the conclusion that the two indicators develop a bidirectional causality relationship which means one can consider the presence of a twin deficit in Romania.

The presence of a twin deficit requires prudence when fiscal-budgetary and commercial policies are laid down as they influence one another.

4. References

- Dickey, D.A.; Fuller, W.A. (1979) Distribution of the Estimators for Autoregressive Time Series with a Unit Root, *Journal of the American Statistical Association*, 74 (366), p. 427-431.
- Fuller, W.A. (2009) *Sampling statistics*. New Jersey: John Wiley & Sons.
- Phillips, P.C.B.; Perron, P. (1988) Testing for a Unit Root in Time Series Regression, *Biometrika*, 75 (2), p. 335-346.
- Said, E.S.; Dickey D.A. (1984), Testing for Unit Roots in Autoregressive Moving Average Models of Unknown Order, *Biometrika*, 71, p. 599-607.
- Săvoiu, Gh. (2011) *Econometrie (Econometrics)*. Bucharest: Universitară.
- BNR (2000-2012) Annual Reports of the Romanian National Bank. Available at http://bnr.ro/PublicationDocuments.aspx?icid=3043.
- BNR (2000-2013) Monthly Bulletins of the Romanian National Bank. Available at http://bnr.ro/PublicationDocuments.aspx?icid=1182.