

ANALYZING THE FISCAL DEFICIT AND THE CURRENT ACCOUNT DEFICIT IN VIETNAM A VAR APPROACH

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The relation between current account and fiscal policy of Vietnam has been investigated from different perspectives by many economists and policy-makers. For example, some study whether or not there exists a relationship between fiscal policies and current accounts as per the twin deficits hypothesis. When the deficit in current accounts is quite great, the point is whether amendments to the fiscal policy can help deal with external imbalances.

Issues related to fiscal and current account deficits contain significant implications for vital long-run policies. If a current account deficit occurs perpetually, it will adversely impinge on national economic health due to the fact that it is related to asset outflow and liabilities burden imposed on next generations. The higher the fiscal deficit, the heavier the liabilities burden. This can be explained that a country, to finance deficits, must borrow foreign loans. Thus, this paper is to investigate the relation between fiscal and current account deficits in Vietnam through conducting the Granger test of the Vector Autoregressive (VAR) Model. In order to explain the relationship between these kinds of deficit, a vector of variables, viz. interest rate (R), exchange rate (E), and GDP (Y) will be taken into account.

Keywords: fiscal deficit, current account deficit, VAR model, fluctuation, budget overspend

1. Theoretical summation and research model

a. Theoretical summation:

The causality between fiscal and current account deficits can be examined from the following aspects:

Firstly, the fiscal deficit can result in a current account deficit. Based on the Flemming-Mundell model (1963), effects of fiscal policies depend on many various factors, especially the exchange rate. Under the fixed exchange rate system, fiscal stimuli (such as tax reduction or subsidy) will increase the income or the price level, thereby exacerbating current accounts. Vice versa, under the floating exchange rate, an increase in governmental spending can cause the IS curve to edge up to

the right and thereby forcing a rise in interest rate. This can immediately attract international capital flows and accordingly appreciate the value of domestic currency. Consequently, the exportation is reduced and the health of current accounts also gets pale and drawn. In sum, this model implies that fiscal deficits eventually widen trade gaps under both fixed and floating exchange rates. Vamvoukas (1999), Piersanti (2000), and Leachman & Francis (2002) have found sufficient evidences to support this perspective.

Secondly, it is hypothesized that there is not any causality between the fiscal deficit and the current account deficit. This hypothesis is based on the Ricardo's equivalence theorem (1989). That is: $Y = C + I + G + X - M$ (*)

Where, Y is income; I represents private investment; G is governmental expenditure, X is export, and M represents import.

From the perspective of income, we have $Y = C + S + T$ (**); where, S is private savings and T is tax-take.

From (*) and (**), the new equation will be produced as $X - M = (S - I) + (T - G)$

With $CA = X - M$, the above equation can be rewritten as follows:

$$CA = (S - I) + (T - G) \quad (1)$$

This is to say, the current account will equal the sum of net savings of the private sector and the government's net savings. Supposedly, the governmental expenditure (G) soars up without any rise in tax-take (T). If the public have the knowledge of the fact that the current increase in loans will surely result in a rise in taxes in time to come, they will try their best to make big savings so as to make up for a decrease in future disposable income. Consequently, the rise in G will pull S to an equivalent high. This means that merely C (consumptions) will go down and CA is constant. In sum, any fiscal deficit will not bring in current account deficit. Evans (1989), Enders & Lee (1990), and Kaufmann, Scharler & Wincler (2002) have tested the causality between fiscal policy and current account deficit; and their results correspond to the Ricardo's equivalence theorem.

Thirdly, the causality between current account deficit and fiscal deficit is unidirectional, from the former to the latter. Anoruo and Ramchnder (1998) found that the fiscal deficit led to the current account deficit in the Philippines, India, Indonesia and Korea. They noted that developing countries had employed fiscal policies to soothe away economic and financial turmoil caused by imbalance of trade. The economic recession produced by a great current account deficit not only causes an increase in budget expenditure but also reduces tax-take. Khalid and Theo (1999) found the same results in Pakistan and Indonesia. These researches concluded that the perpetual deficit in current accounts can curb the economic growth and revitalize fiscal deficits. Development of economies with high openness (i.e. trades play a vital role), is considerably influenced by the current account balance. Researches by Islam (1998) for the case of Brazil, by Kouassi, Mougoue and

Kymm (2004) for the case of Korea supported this theory. In short, there are a lot of evidences that prove that current account deficits generate fiscal deficits in developing countries.

Finally, there exists a bidirectional relation between fiscal deficit and current account deficit. Empirical researches by Biswas, Tribedy and Saunders (1992), and Normandin (1999) supported this theory. They conclude that budget cuts are not an effective way of tackling current account deficits. Actually, adopting new policies on interest rates, exchange rates and foreign trades along with budget cuts is the good option for analyzing the model (Ferry Ardiyanto, 2006).

b. Research model:

This research employs the Granger causality test (1969) based on the VAR model. Overall, the research paradigm test whether or not the time series X can Granger-cause Y if the known past value of the former can help explain the latter. VAR model is an expansion of the autoregressive model in which many variables are taken into account. It is a system of simultaneous equations, that is, one equation contains Y_t as a dependent variable and X_t as an independent variable, and another one contains Y_t as an independent variable and X_t as a dependent variable. Each equation will utilize the lag time of explanatory variables (independent variables). Furthermore, to explain the causality between two kinds of deficit, it is needed to attend to control variables which include interest rate, exchange rate, and GDP. The money variable is added to the model with a view to examining the transmission effect of these variables as analyzed in the Mundell-Fleming model (1963). Accordingly, the official model can be determined as follows:

$$\begin{aligned} (FD/Y)_t &= \sum_{i=1}^n \alpha_i L^i (FD/Y)_t + \sum_{i=1}^n \beta_i L^i (CA/Y)_t + \sum_{i=1}^n \gamma_i L^i X_t + \varepsilon_t \\ (CA/Y)_t &= \sum_{i=1}^n \alpha_i L^i (CA/Y)_t + \sum_{i=1}^n \beta_i L^i (FD/Y)_t + \sum_{i=1}^n \gamma_i L^i X_t + \varepsilon_t \end{aligned}$$

Where,

FD/Y: the ratio of fiscal deficit to GDP

CA/Y: the ratio of current account deficit to GDP

L^i : Lag operator at time i

X: Vector of control variables R, E and Y

c. Hypotheses:

Based on the equations (2) and (3), model hypotheses (H_0) can be described as follows:

$$\beta_1 = \dots = \beta_t = 0 \text{ (for each equation)}$$

According to the null hypothesis (H_0), current account deficits do not result in fiscal deficits as in the regression equation (2); and vice versa, fiscal deficits do not generate current account deficits as in the equation (3), either.

2. The circumstance of Vietnam

a. Trend of fluctuations in fiscal deficit and current account deficit in Vietnam:

The trend of fluctuations in fiscal and current account deficits in Vietnam within the period 1990-2010 is presented in Figure 1. From the outset of its economic reform, Vietnam has promoted public financial reforms (i.e. reforms in taxation and management of public expenditure) with a view to achieving fiscal discipline; and thus the national budget has been improved very much in comparison with the previous period (1986-1990), budget overspend is kept at 3% of GDP. The source to make up for overspend is from domestic and foreign loans instead of increases in the money supply. However, after the 1997 financial crisis, the government has executed economic stimulus policies so as to stimulate the domestic market demand, and narrow down the decrease in GDP and promote the export. These policies included important amendments to the fiscal policy, such as tax deduction as per the 2nd and 3rd stages of the tax reforms, and increasing the fiscal deficit in a hope of enhancing public investments, thereby restructuring the economy. Figure 1 shows that fiscal deficit expedited in the period 1998-2002 and amounted to 4.3% of the GDP in 2000 in particular. The economic recovery in the next years helped the government control budget overspend better and keep it at a low level. In the period 2003-2007, the budget overspend, on average, is kept at 1% of the GDP; the budget some years even sees a surplus, such as a surplus of 0.2% in 2004 and 1.3% in 2006. Yet, it is unfortunate that the 2008 crisis caused Vietnam's budget deficit to skyrocket, reaching a record high of 7.7% of the GDP (2009) within the past two decades.

Besides, Vietnam's current account is always negative in the period 1990-1998 due to large trade gaps. Yet in 1999-2001, the current account

achieved a surplus within three consecutive years, and the highest surplus of 4% of the GDP fell in 1999-2000, then this high fell down to 2% of the GDP in 2001. As of 2002, the current account has suffered deficit. When Vietnam became a WTO member in 2007, its tariff barriers have been gradually lifted with a view to meeting requirements of WTO and promoting multilateral liberalization. In the years 2007 -2010, Vietnam's foreign trade value increased by 30% p.a. as compared to 2006. Yet the current account deficit is getting larger, reaching 14% of the GDP in 2009.

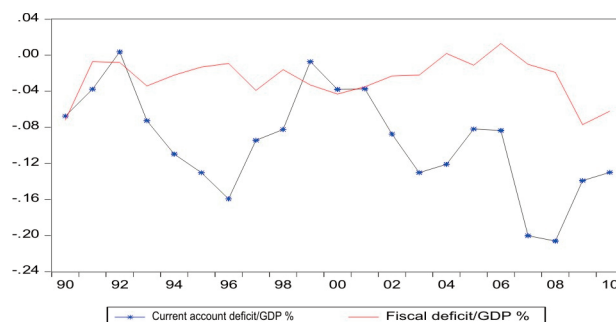


Figure 1: Trend of fluctuations in fiscal deficit and current account deficit in Vietnam

Source: ADB (2010)

b. Trend of fluctuations in exchange rate and interest rate:

Figure 2 reflects the trend of fluctuations in exchange rate and interest rate. As illustrated in Figure 2, the exchange rate within the period 1991-1996 was quite stable, around VND11,000 to the dollar. This is to say, the government did employ a fixed exchange rate in this period. Yet after the 1997 financial crisis, the government had to adjust the exchange rate from time to time. From 1998 to 2000, the value of domestic currency was depreciated around 30% as compared to the US dollar (the exchange rate moved from VND11,149 to the dollar in 1997 to VND14,514 to the dollar in 2000). Till the period 2001-2007, the economy regained its health, the exchange rate varied between VND15,403 and VND16,054 per US dollar. Yet, after the 2008 financial crisis, the exchange rate fluctuated wildly and the value of domestic currency plummeted substantially.

To tackle the high inflation rate at the late 1980s, the market interest rate terribly soared up around 208% p.a. In the 1990s, after taking control over the hyperinflation, the SBV gradually

lowered the interest rate so as to regain the economic health; and as a result, the market rate went down to 9% p.a. Due to the effects of the 1997 financial crisis, the interest rate rose to 11.4% p.a. (1998). From 1998 to 2007, the interest rate was cut and it stayed somewhere between 7% and 8%. Yet, the 2008 global financial crisis once again caused the interest rate to fluctuate wildly. In 2010, the interest rate on deposits increased to 14% p.a. The fall in interest rate was perhaps excused by the SBV attempt to renew its mechanism of implementing the monetary policy. From 1990 to 1998, Vietnam's monetary policy just aimed at controlling the money supply employing such instruments as credit ceilings, and interest rate frame and ceilings. As of 1999 when the financial liberalization was implemented, the SBV stopped setting interest rate frame and ceilings, and allowed agreed-upon interest rates instead.

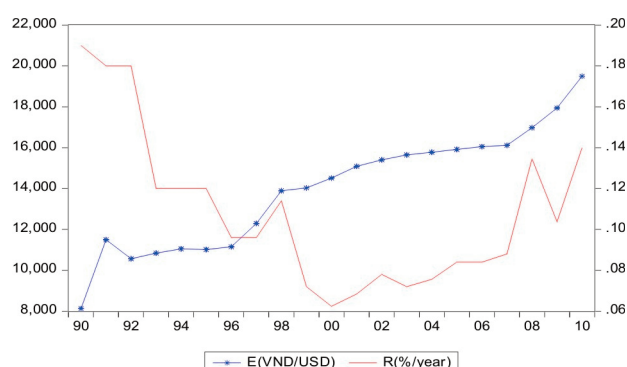


Figure 2: Trend of fluctuations in exchange rate (E) and interest rate (R)

Source: ADB (2010)

3. Numerical data and test of research model

a. Numerical data:

This research utilizes numerical data of the period 1990-2009 quoted from "Key Indicators for Asia and the Pacific 2010" by ADB. Just data concerning Vietnam will be collated, including: (i) ratio of fiscal deficit to GDP, (ii) ratio of current account deficit to GDP, (iii) interest rate (borrowing rate p.a.), and (iv) exchange rate and GDP (based on current price). For the foreign trade deficit alone, the export turnover in US dollar as per the FOB price and the import turnover in US dollar as per the CIF price will be collated to calculate the trade gap and its ratio to GDP. Due to the fact that this publication just contains data of the year 2009 backward, the 2010 data must be

based on MPI estimates. The numerical data for running the research model are summed up in Table 1.

Table 1: Numerical data for running the research model

Years	CA (%/GDP)	FD (% GDP)	Y (VND billion)	R (%)	E (VND/ USD)
1990	-6.7%	-7.2%	41,955	19%	6,482
1991	-3.8%	-0.7%	76,707	18%	10,037
1992	0.4%	-0.8%	110,532	18%	11,202
1993	-7.3%	-3.4%	140,258	12%	10,641
1994	-11.0%	-2.2%	178,534	12%	10,965
1995	-13.0%	-1.3%	228,892	12%	11,038
1996	-15.9%	-0.9%	272,036	9.60%	11,032
1997	-9.4%	-3.9%	313,623	8.40%	11,683
1998	-8.2%	-1.6%	361,016	9.60%	13,268
1999	-0.7%	-3.3%	399,942	5.40%	13,943
2000	-3.8%	-4.3%	441,646	4.80%	14,167
2001	-3.7%	-3.5%	481,295	6.24%	14,725
2002	-8.7%	-2.3%	535,762	7.44%	15,279
2003	-13.0%	-2.2%	613,443	6.48%	15,509
2004	-12.1%	0.2%	715,307	6.96%	15,746
2005	-8.2%	-1.1%	839,211	7.80%	15,858
2006	-8.3%	1.3%	974,264	7.80%	15,994
2007	-20.0%	-1.0%	1,143,715	8.19%	16,105.1
2008	-20.6%	-1.9%	1,485,038	13.34%	16,302.3
2009	-13.9%	-7.7%	1,658,389	10.15%	17,065.1
2010*	-13.0%	-6.20%	1,934,850	14%	18,932

NB: *Estimates by the Ministry of Planning and Investment

Source: ADB (2010)

b. Testing the research model:

- Unit root test:

Before testing the VAR model with time-series data, it is necessary to run a unit root test or a stationarity test for such the time-series data due to the fact that the VAR model just works in case all variables of the model are stationary. The augmented Dickey-Fuller (ADF) test is executed to test the stationarity of all variables with the following hypotheses:

$H_0: \rho = 0 \Rightarrow$ There exists a unit root, or the time series is not stationary

$H_1: \rho < 0 \Rightarrow$ No unit root is present, or the time series is stationary

The point is that if the ρ t-stat (computed within the model) has a negative value larger than 5% value of the ADF table, the hypothesis H_0 will be rejected, or no unit root is present and the variable is stationary. Otherwise, the variable has a unit root. From the research model, the unit root test for variables FD, CA, R, E and Y is as follows:

Table 2: Unit root test for original variables

Vari-ables	Lag length	ρ t- stat	5% value of the ADF table	Unit root
CA	1	-3.27	-3.00	Absent
FD	0	-4.11	-3.00	Absent
R	0	-2.32	-3.00	Present
E	1	-0.89	-3.00	Present
Y	1	7.7	-3.00	Present

Table 2 shows that FD and CA do not have a unit root while R, E and Y do. Thus, it is needed to turn to study difference series by transforming these variables into percentage differences, i.e.:

DR = dlog (R)

DE = dlog (E)

DY = dlog (Y)

Table 3: Unit root test for differences of variables

Vari-ables	Lag length	ρ t- stat	5% value of the ADF table	Unit root
DR	0	-4.8	-3.00	Absent
DE	0	-4.55	-3.00	Absent
DY	0	-6.26	-3.00	Absent

Table 3 shows that the variables have no unit root after examining difference series; or in other words, these variables are all stationary.

- *VAR model lag length selection criteria:*

Many methods can be used for determining the lag length when running the VAR model. Based on data about CA, FD, dlog(R), dlog(E), and dlog(Y), we search for structure and lag length of the VAR model. Results are presented in the Table 4. The Table 4 shows that four criteria suggest a lag value of 2. They are (i) FPE (Final prediction error); (ii) AIC (Akaike information criterion); (iii) SC (Schwarz information criterion); and (iv) HQ (Hannan-Quinn information crite-

Table 4: Selection of lag length

VAR Lag Order Selection Criteria

Endogenous variables: XN F DE DR DY

Exogenous variables: C

Date: 02/19/11 Time: 22:04

Sample: 1990 2010

Included observations: 18

Lag	LogL	LR	FPE	AIC	SC	HQ
0	134.0675	NA	4.07e-13	-1.434084	-1.409351	-1.430673
1	171.9728	50.54031*	1.11e-13	-1.577475	-1.429080	-1.557013
2	218.3124	36.04195	2.45e-14*	-18.14582*	-15.42524*	-17.77069*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

rion). No criterion suggests a lag value of 0, and only one method suggests a lag value of 1 (LR). Thus, the lag value of 2 is chosen to estimate the VAR model and Granger causality test.

- VAR testing results:

With endogenous variables CA, FD, DE, DR, DY, and the lag length of 2, the VAR model has been tested (see Appendix 1), and then the Granger Causality test is also run (see Appendix 2). The testing results are summarized in Table 5.

Table 5: Summation of VAR and Granger causality testing results

Dependent variables	Independent variables (Explanatory variables)	Signs	VAR (2) Granger causality
FD	CA	+	Absent
	DE	-	Absent
	DR	+	Absent
	DY	+	Absent
CA	FD	-	Present
	DE	+	Absent
	DR	-	Absent
	DY	+	Present

Via Table 5, it is possible to draw a conclusion that the hypothesis of fiscal deficit not causing the current account deficit is null and rejected. Whilst, the hypothesis of current account deficit not causing the fiscal deficit is not nullified; furthermore, it is probably concluded that fluctuations in GDP have direct impacts on the current account deficit. And, there is not any Granger-causality between interest rate, exchange rate and fiscal deficit and current account deficit.

4. Conclusion and policy implications

a. Conclusion:

This research investigates the causality between fiscal deficit and current account deficit in Vietnam. The Granger causality test based on the VAR estimate shows that this causality is unidirectional, from fiscal deficit to current account deficit. The research results fit the Fleming-Mundell model (1963) and other ones like that of Vamvoukas (1999), Piersanti (2000), and Leachman and Francis (2002). Yet, the point is that the research does not figure out any effect of money-related variables on the current account deficit in

Vietnam.

Such the results seem significant to help work out appropriate solutions to the current problem facing Vietnam's government, that is, how to overcome the perpetual deficit in current accounts. Apparently, adjustments to the fiscal deficit such as cutbacks in public expenditure and reduction in budget overspend have impacts on the control over current account deficit in Vietnam.

When pointing out that the fiscal deficit generates the current account deficit, the research also determines some macroeconomic variables affecting both deficits. Of macroeconomic variables added to the VAR model, interest rate and exchange rate do not cause both deficits; yet it seems that fluctuations in GDP, such as any rise in income and spending, generate the current account deficit.

b. Policy implications:

Research results show that to tackle the current account deficit will be out of reach unless fiscal policies can manipulate the budget overspend. Accordingly, it is requested to change the concept of the role of public investment in the period of transition of Vietnamese economy. That is, public investment is supposed to improve the national competitive edges. Instead of scattered investments, the government should improve and deploy the infrastructural facilities in key economic zones; construct the traffic infrastructure to facilitate the transportation amongst regions; and close the gap in the economic growth among regions.

With the large volume of FDI capital poured into Vietnam thus far and the growth of the private sector, it is high time the government adjusted the public investment mechanism. To withdraw capital from various industries will enable the government to concentrate on planning macroeconomic projects at service of the healthy economic growth.

Besides, when the fiscal deficit does cause the current account deficit, it is not meant that it is merely by taking control over the fiscal deficit that the current account deficit can be reduced. Instead, the government should also ponder other exogenous variables that contribute to the current account deficit. As the research puts forth, GDP has a close relation with the current account deficit; thus, it shows the upward trend in mar-

ginal consumption of imported commodities in Vietnam. According to a survey by American Group – Grey Group conducted in 16 Asian countries, over 77% of Vietnamese consumers prefer foreign-made goods, while just around 40% of Asian consumers prefer domestic-made products. Thus, domestic products seem to be left out of distribution channels. For the garment and electronic industries in Vietnam, nearly 80% of raw materials are imported from China with a result that Vietnam has to suffer a perpetual trade gap (around 90% of Vietnam's trade gap is from the trade with China). The core explanation for this issue is that Vietnam has a small-scale production which is not backed up by supporting industries and relevant researches. This trouble has lasted for decades and there has not been any improvement corresponding to the industrialization and economic growth of Vietnam.

Eventually, the research of the causal relationship between interest rate, exchange rate and the trade gap does not have any statistical significance. It is implied that it would not be the effective remedy if the government adjusts the exchange rate merely to improve the trade balance. The depreciation of domestic currency cannot improve the trade balance yet exacerbates inflation. Above all, the monetary policies should aim at stabilizing the money supply and controlling inflation. It is also needed to have coordination between fiscal and monetary policies, and simultaneously, recognize the effects of each policy on the control over current account balance ■

References

1. ADB (2010), *Key Indicators for Asia and the Pacific*.
2. Abbas, Ali et al. (2010), *Fiscal Policy and the Current Account*, International Monetary Fund.
3. Anoruo, E., & S. Ramchander (1998), "Exports and Economic Performance: Evidence from Mexico", Working Paper, Mankato State University.
4. Barro, R. J. (1989), "The Ricardian Approach to Budget Deficits", *Journal of Economic Perspectives*, Vol.3, No.2, p.37-54.
5. Biswas, B., G. Tribedy & P. Saunders (1992), "Further Analysis of the Twin Deficits", *Contemporary Policy Issues*, Vol.10, p.104-108.
6. Enders, W. & B.S. Lee (1990), "Current Account and Budget Deficits: Twins or Distant Cousins", *Review of Economics and Statistics*, Vol.72 (3), p.373-381.
7. Evans, P. (1989), "Do Large Deficits Produce High Interest Rates?", *American Economic Review*, p.68-87.
8. Ferry Ardiyanto (2006), "Analysis of Current Account Deficits and Fiscal Deficits in Indonesia: A VAR Approach", retrieved from <http://www.bppk.depkeu.go.id/index.php/2008032151/jurnal-keuangan-publik/analysis-of-current-account-deficits-and-fiscal-deficits.html>,
9. Fleming, J.M. (1962), "Domestic Financial Policies under Fixed and under Floating Exchange Rates", IMF Staff Papers, November 1962
10. Granger, C. W. J. (1969), "Investigating Causal Relations by Econometric Models and Cross-Sectional Method", *Econometrica* 37.
11. Islam, M. F. (1998), "Brazil's Twin Deficits: An Empirical Examination", *Atlantic Economic Journal*, Vol.26, p.121-128.
12. Kaufmann, S., J. Scharler & G. Wincler (2002), "The Austrian Current Account Deficit: Driven by Twin Deficits or by Intertemporal Expenditure Allocation?", *Empirical Economics*, Vol.27, p.529-542.
13. Khalid, A.M, & W.G. Theo (1999), "Causality Tests of Budget and Current Account Performance: International Evidence of Twin Deficits", *Empirical Economics*, Vol.24, p.389-402.
14. Kouassi, E., M. Mougoue & K.O. Kymm (2004), "Causality Tests of the Relationship between the Twin Deficits", *Empirical Economics*, Vol.29, p.503-525.
15. Leachman, L. L., & B. Francis (1993), "Twin Deficits: Apparition or Reality?", *Applied Economics*, Vol.34, p.1121-1132.
16. Mundell, R. (1963), "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rate", *Canadian Journal of Economics and Political Science* No. 29 (November).
17. Normandin, M. (1999), "Budget Deficits Persistence and the Twin Deficit Hypothesis", *Journal of International Economics*, Vol.49, p.171-193.
18. Obstfeld, M. & K. Rogoff (1995), "Exchange Rate Dynamics Redux", *Journal of Political Economy*, Vol.103, p.624-660.
19. Piersanti, G. (2000), "Current Account Dynamics and Expected Future Budget Deficits: Some International Evidence", *Journal of International Money and Finance*, Vol.19, p.255-171.
20. Vamvoukas, G.A. (1999), "The Twin Deficits Phenomenon: Evidence from Greece", *Applied Economics*, Vol.31, p.1093-1100.