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Twin Deficits in Lebanon: A Time Series Analysis

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Abstract

This paper examines empirically using time series econometric tests the relationship between current account and budget deficits in the developing small open economy of Lebanon. The empirical results support the existence of a uni-directional causal relationship in the short run between the budget and current account deficits, indicating that rising fiscal deficits have started to put even more strain on the current account deficits in Lebanon. To avoid a future depreciation of the exchange rate and perhaps a fiscal and currency crisis, the Lebanese government will have to timely introduce fiscal adjustment measures to curb the negative implications of its rising budget deficits and public debt.

Introduction

The relationship between budget deficits and current account deficits has attracted a great deal of attention from academics and policy-makers. The theoretical and empirical literature that has examined the relationship between current account deficits and budget deficits may be divided into two strands. The Keynesian view argues that budget deficits have a statistically significant impact on current account deficits. For example studies by Fleming (1962), Mundell (1963), Volcker (1987), Kearney and Monadjemi (1990), and Haug (1996) have argued that government deficits cause trade deficits through the interest and exchange rate channels. In a small open economy IS-LM framework, an increase in the budget deficit would induce upward pressure on interest rates, thus, causing capital inflows. This will lead to an appreciation of the exchange rate through the high demand on domestic financial assets, leading to an increase in the trade deficit.

The second strand of the literature falling under the Ricardian Equivalence Hypothesis (Barro, 1989) argues that there is no relationship between the two deficits. In other words, budget deficits do not result in current account deficits. It is shown that changes in government revenues or expenditures have no real effects on the real interest rate, investment, or the current account balance.

Since the early 1990s, Lebanon has emerged to be a major debtor country. A heavy debt service burden, inadequate collection of taxes coupled with heavy government expenditures on infrastructure led subsequently to the emergence of recurrent budget deficits. Increases in the budget deficit have induced upward pressure on domestic interest rates, thus, causing capital inflows seeking investment in Lebanese Treasury Bills (TBs). This had led to the appreciation of the nominal exchange rate in between 1993-1995, and an appreciation of the real exchange rate since the mid 1990s, resulting in an increase in the trade deficit. On the other hand, Lebanon has always been a significant importer of goods and services, at a time when its export sector has been rather inefficient. The byproduct has been a huge gap between exports and imports and recurrent trade balance and current account deficits.

Against this backdrop, this paper aims to achieve two broad objectives. The first is to determine any cointegrating (or long-run) relationship between the two deficits for the case of the small open economy of Lebanon, and to identify the causal relationship (short-run) between the two and the direction of causality. The second is to study whether the recurrent budgetary deficits have started to put even more strains on the chronic current account deficits. And if that is the case, what are the implications on the exchange rate, interest rates and the balance of payment? Specifically, our results are expected to guide policymakers to fine tune prudent fiscal and monetary policies to avert further budget and current account deficits, enabling the central bank to mitigate the potentials of a future fiscal or currency crisis.

The rest of the paper is divided as follows. The next section highlights recent macroeconomic developments over the last three decades. Section 3 presents a review of related literature. The relationship between the current account and budget deficits is examined empirically in Section 4. The objective is to highlight whether there is any long-term relationship between the two deficits, and if any the direction of causality between the two deficits. Finally, the last section offers some conclusions and policy implications.

## Macroeconomic Developments: 1970-2006

Since the early 1990s, and in its efforts to rebuild its devastated infrastructure, the Lebanese government resorted to borrowing heavily from the domestic and international financial markets via the issue of TBs. Inadequate collection of taxes and heavy government expenditures on infrastructure, coupled with corruption and uncontrolled spending led to the widening of the gap between government revenues and government expenditures (Figure 1(a)). A heavy debt service burden coupled with low government revenues and high expenditures led subsequently to the emergence of recurrent budget deficits since the early 1990s (Figure 1(b)). The bulk of the Lebanese public debt has been accumulated via domestic borrowing, and the proceeds of which have been used to finance spending on infrastructure projects. By the end of 2006 total public debt stood at about United States Dollar (USD) 40 billion (Figure 1(d)); about 200 percent of GDP.

During the 1975-1990 period, the Lebanese government was unable to collect taxes. With no fiscal revenues to finance spending, the government had to resort to deficit financing especially during the 1989-1991 time period.[1] The central bank of Lebanon had to resort to printing money for the purpose of financing the recurrent budget deficits. This subsequently led to hyperinflation. The rate of inflation was at its highest historical levels of 490 percent and 100 percent in 1989 and 1991 respectively (Figure 1(e)).

This was coupled with several episodes of exchange rate depreciation, culminating into the 1989-1990 currency crisis, when the central bank had to abandon its pegged exchange rate regime and allowed the Lebanese Pound (LP) to float.

Figure 1 Evolution of Macroeconomic Indicators in Lebanon (USD Billion)
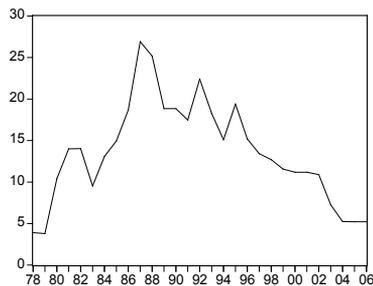
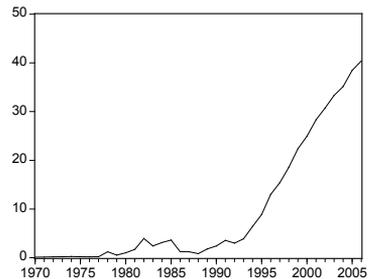(a) Government Tax Revenues and Expenditures
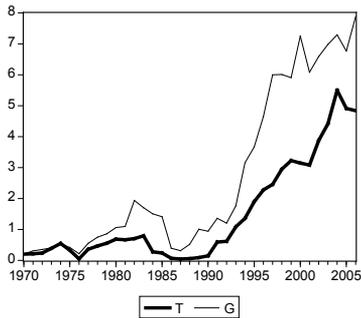
(b) Budget Deficit
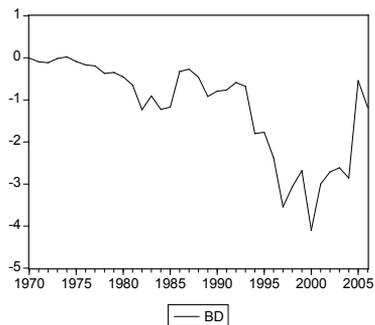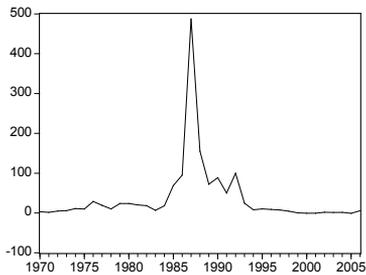
(c) Monthly TBs Rates(%)

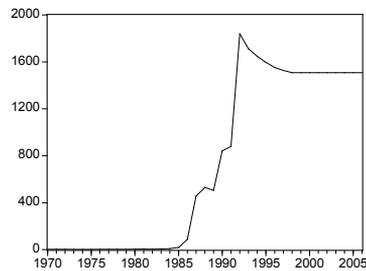(d) Total Public Debt

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1. With the exception of the 1989-1992 period, the Lebanese government has not resorted to financing budgetary deficits through seignorage revenues or through monetization of the deficit.

(e) Inflation Rates (in %; 1995=100)

(f) Exchange Rate LP/USD

In 1991, the Lebanese Pound experienced a steep depreciation to about LP1900/USD (Figure 1(f)). A highly volatile exchange rate and high inflationary pressures induced the central bank subsequently to shift its monetary policy targets and objectives, adopting price and exchange rate stability as its main goal. This was achieved through considerable hikes in interest rates exceeding in 1992 the 25 percent threshold (Figure 1(c)). Despite the containment of inflationary pressures of the late 1980s and early 1990s, Lebanon continued to experience real appreciations of its exchange rate, even after 1995 when the nominal rate was fixed at LP1500/USD.

Developments in the external sector indicate that Lebanon's exports have never exceeded the USD 2 billion level in between 1970-2006, at a time when Lebanon is a heavy importer of goods and services for a yearly average of USD 5 billion (Figure 2(a)). This has translated into a huge gap between exports and imports and recurrent trade balance and current account deficits (Figure 2 (b), and (e)). When grouped together, exports and imports appear to be diverging quite significantly over time (see Figure 2(a)). Subsequently, Lebanon has experienced chronic current account deficits since the mid 1980s.

However, and despite the recurrent trade and current account deficits, Lebanon has maintained and since the early 1970s a surplus in its capital account. After registering levels below the USD 2 billion in between 1970-1985, Lebanon's

capital account started registering significant surpluses since the early 1990s (Figure 2 (c)). These inflows have averaged around USD 5 billion per year since the mid 1990s. Remittances from Lebanese working abroad constitute a significant portion of these capital inflows, coupled with a dynamic banking system which has attracted significant bank deposits from the rich Gulf countries, as well as Arab capital seeking investment in Lebanon's TBs. In 2004, capital inflows registered significant increases to about USD 7.5 billion per year and have remained at that level in 2006. These continued capital account surpluses have offset the recurrent current account deficits and translated into no significant balance of payments (BOP) deficits over the period under consideration. The highest BOP deficit was registered in 1980 at about USD 2.5 billion, but was quickly offset by significant capital inflows in subsequent years, to resume its upward trend in the early 2000s (Figure 2 (d)). Despite the recurrent current account deficits, the Lebanese central bank has been able to accumulate foreign reserves starting early 1990s from capital inflows, thus offsetting the current account deficits by corresponding capital account surpluses. By the end of 2006, foreign reserves amounted to about USD 11.5 billion (Figure 2 (f)).

The balance of payment can, however, swiftly move into a deficit if for whatever reason there is a capital flow reversal. During the latest political turmoil some capital started flowing out of the country. However, these outflows were short lived and were swiftly contained. Given the presence of structural current account deficits, Lebanon's future economic policies should focus on containing any future real exchange rate appreciation, preserve a political and economic environment that is conducive to additional capital inflows, and further stimulate domestic savings. The international community has recently pledged to help Lebanon resolve its debt and deficit situation. However, this help is conditional on Lebanon's willingness to fight corruption and introduce some urgently needed fiscal reforms to its current economic system.

Figure 2 Evolution of Balance of Payment Components in Lebanon (USD Billion)

(a) Exports and Imports
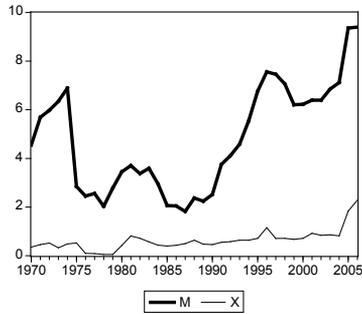
(b) Trade Deficit
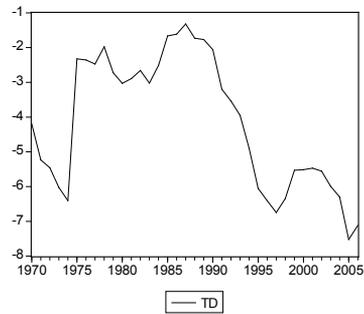
(c) Capital Account

(d) Balance of Payments

(e) Current Account

(f) Foreign Reserves

Source: IMF's Direction of Trade Statistics and International Financial Statistics, Banque Du Liban, and the Lebanese Ministry of Finance.

Review of Related Literature

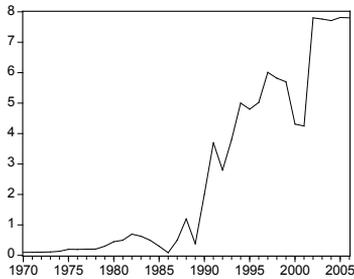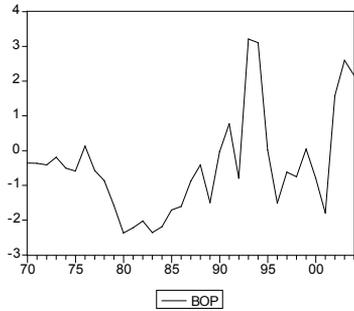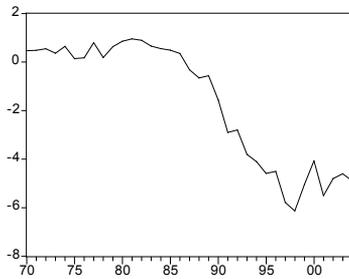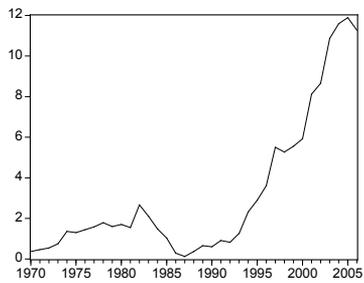There has been extensive theoretical literature testing the two schools of thought. However, the empirical evidence on the linkage between trade deficit and budget deficit are mixed. Abell (1990), and Rosensweig and Tallman (1993) used a simple identity to analyze the linkage between the budget deficit and current account deficit. This identity states that the government budget surplus is equal to the current account surplus plus the excess of investment over private savings. These studies found a strong linkage between trade deficit and budget deficit.

Hutchison and Pigott (1984) present a theoretical macro model relating budget deficits, interest rates, exchange rates and current account for an open economy under flexible exchange rates. They suggest that budget deficits are likely initially to raise domestic interest rates, which in turn push up the real exchange rate, leading to a current account deficit. The second part of the paper applies this model to the US. The main finding is that budget policy is mainly responsible for the current account deficits.

Feldstein (1992) examines the relation between budget and trade deficits in the 1980s. The author argues that the savings gap that drives the enlarged trade deficit is not due to the increased budget deficit but rather to a sharp decline in private saving. The budget deficit tends to raise real interest rates and to crowd out private investment and net exports. This has been the major explanation of the high current account deficit in the early 1980s. The paper also argues that the most serious adverse effect of this low saving rate is not on the trade balance but on long-term economic growth.

Other studies such as Bundt and Solocha (1988), Egwaikhide (1999), and Piersanti (2000) used complicated dynamic macroeconomic models such as the standard portfolio models and general equilibrium models to examine the relationship between the twin deficits. These empirical studies showed that the trade and budget deficits have a statistically significant positive relationship.

Enders and Lee (1990) develop a two-country model in which infinitely lived individuals view government debt as a future tax liability. The direct implication

is that substitution of taxes for government debt issue does not result in a current account deficit. However, the paper finds that temporary increases in government debt, regardless of the means used to finance spending can result in current account deficits. The paper then uses an unconstrained vector autoregression model that shows some patterns in the recent US data which appear to be inconsistent with the Ricardian Equivalence Hypothesis; a positive innovation in government debt is associated with an increase in consumption spending and a current account deficit.

Piersanti (2000) addresses the question of whether current account deficits are linked to expected future deficits. The paper uses a general equilibrium model to show the theoretical relationship between the two deficits. Then the paper estimates the econometric equation of the current account balance that incorporates forward looking economic agents, thus making it possible to analyze the effects of anticipated future budget deficits in the empirical analysis. The empirical results strongly support the view that current account deficits have been associated with large budget deficits during the 1970-1997 period for most industrial countries. The twin deficit relation clearly emerges from the data when future expectations of budget deficits are taken into account.

Most studies mentioned above examined the relationship between the twin deficits for developed countries. However, there have been very few empirical studies on developing countries. For example, Islam (1995) examined empirically the causal relationship between budget deficits and trade deficits for Brazil from 1973:1 through 1991:4. Using Granger Causality tests, the study showed a presence of bilateral causality between trade deficits and budget deficits.

Khalid and Guan (1999) used the cointegration technique proposed in Johansen and Juselius (1990) to examine the causal relationship between budget and current account deficits. The study was conducted for five developed countries (US, UK, France, Canada and Australia) and five developing countries (India, Indonesia, Pakistan, Egypt and Mexico). The study was conducted from 1950-1994 for developed countries and 1955-1993 for developing countries. The results suggest a higher statistically significant association between the two deficits in the long

run for developing countries than is the case for developed countries. Furthermore, the direction of causality for developing countries is mixed. For example, for India the direction of causality is bi-directional. The results for Indonesia and Pakistan indicate that the direction of causality runs from the current account deficits to budget deficits. This is because much of the current account deficit was financed by internal and external borrowings, contributing further to the huge national debt. Interest payments on these debts have increased over the years, leading these countries to running bigger budget deficits.

Vamvoukas (1999) explores the relationship between budget and trade deficits in a small open economy using annual data. The purpose of the paper is to test empirically the validity and rationale of the Keynesian proposition and the Ricardian equivalence hypothesis. The econometric methodology is based on cointegration analysis, error-correction modeling and a three variable Granger causality model. His empirical findings suggest that budget deficit has short- and long-run positive and significant causal effects on the trade deficit.

This paper adds to the limited existing literature on developing countries by studying and for the first time the relationship between the twin deficits within the Lebanese context and under a small open economy framework.

Empirical Methodology and Results

This section examines empirically the validity of the twin deficit hypothesis using time series yearly data for the small open economy of Lebanon, with relatively high budget and current account deficits over the period 1970-2006. The econometric analysis will help policy makers formulate appropriate policies to resolve the problems of budget and current account deficits. Furthermore, we examine the direction of causality if such a relationship exists. We use econometric techniques such as unit root tests, cointegration, and causality tests to accomplish these objectives. The data set was collected from the International Monetary Fund's Direction of Trade Statistics and International Financial Statistics, the Lebanese Central Bank and the Ministry of Finance. The methodology to perform cointegration test between two or more series requires first determining the order

of integration of each variable in a model. We use the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) (1988) tests to identify the order of integration.

The unit root test results are described in Table 1. It is clear that the budget deficit (BD) and current account deficit (CAD) series are sufficiently non-stationary that one cannot reject the hypothesis that there exists a unit root in the series. In addition, unit root tests on the balance of payment series indicate that it is non-stationary.

Table 1 Unit Root Tests

	BD	BOP	CAD	Critical Values	
Constant and Time Trend				5%	1%
PP (3)	-2.61	-2.77	-1.86	-3.55	-4.26
PP FD (3)	-6.85**	-6.39**	-6.07**	-3.55	-4.26
Constant					
PP (1)	-1.04	-2.38	-0.26	-2.95	-3.64
PP FD (1)	-6.95**	-6.35**	-6.11**	-2.95	-3.64
Constant and Time Trend					
ADF (1)	-2.20	-2.87	-1.77	-3.55	-4.26
ADF FD (1)	-5.06**	-6.07**	-4.58**	-3.55	-4.26
Constant					
ADF (1)	-0.88	-2.39	-0.26	-2.95	-3.64
ADF FD (1)	-5.14**	-5.98**	-4.60**	-2.95	-3.64

Source: Author's Estimates.
Notes: 1- PP is the Phillips-Perron test; FD is the first difference, and ADF is the Augmented Dickey Fuller. 2-The numbers in parenthesis are the proper lag lengths based on the Akaike Information Criterion (AIC). 3- A ** indicates rejection of the null hypothesis of non-stationarity at the 5% level of significance. 4- The numbers in italic are Mackinnon's Critical Values at the 5% and 1% significance level respectively.

Based on the results in Table 1, we may conclude that the first differences are stationary (are integrated of order zero, or I(0)), establishing that the series BD_t, and CAD_t are integrated of order one, or I(1).

After determining the order of integration, we next turn to perform tests for cointegration between the two series to identify any long-run relationship. For a two variable model, Engle and Granger (1987) developed a two-step procedure, which is commonly used to identify a cointegrating relationship between any two

tine series. An alternative test for cointegration is developed by Johansen and Juselius (1990). This test uses maximum likelihood method based on the trace of the stochastic matrix to determine the exact number of cointegrating vectors in the system. We use these methods to test for cointegration between Lebanon's budget and current account deficits.

We test for cointegration using Engle and Granger's two-step procedure as well as the Johansen maximum likelihood cointegration test. The former test is computed by performing two types of regressions

$$BD_t = \beta_0 + \beta_1 CAD_t + u_t , \qquad (1)$$

$$CAD_t = \beta_0 + \beta_1 BD_t + \eta_t . \qquad (2)$$

At the second stage, the ADF test is obtained as the t-statistic of ρ_0 in the following regressions

$$\Delta u_t = \rho_0 u_{t-1} + \sum_{i=1}^{p} \rho_i \Delta u_{t-i} + \sigma_t , \qquad (3)$$

$$\Delta \eta_t = \rho_0 \eta_{t-1} + \sum_{i=1}^{p} \rho_i \Delta \eta_{t-i} + v_t , \qquad (4)$$

where u_t and η_t are the residuals from the cointegrating regressions, and $\Delta u_t = u_t - u_{t-1}$ while $\Delta \eta_t = \eta_t - \eta_{t-1}$. One lag on the first difference of the cointegration residuals is included in the test regression to ensure the residuals from the ADF regression are serially uncorrelated.

The null hypothesis of no cointegration is tested against the alternative of co-integration. A large negative test statistic is consistent with the hypothesis of co-integration. The last column in Table 2 presents the computed ADF statistic for the coefficient ρ_0 in equations (3) and (4). The ADF tests reported in Table 2 provide no evidence against the null hypothesis of no cointegration among the budget deficit and the current account deficit. The computed ADF t-statistics are − 1.96 and

– 2.28, which falls below the 5% critical values of – 2.95. Thus, there is little evidence in favor of a cointegrating relationship among the series in equation (1) and (2). This finding indicates that there is no steady-state relationship between Lebanon's budget deficit and the current account deficit over the period under consideration. The presence of no cointegration has also been confirmed by performing the Johansen cointegration tests (see the remaining rows of Table 2).

Table 2. Cointegration Tests

Hypothesis			Critical Values			Engle-Granger Test	
Null	Alternative	λ - Trace Statistics	5%	1%			
r = 0	r ≥ 1	12.50	15.41	20.04	ADF(a)	ADF(b)
r ≤ 1	r = 2	0.40	3.76	6.65	-1.96 (-2.95)	-2.28 (-2.95)

Source: Author's Estimates.
Notes: 1-The Johansen Cointegration Likelihood Ratio Test is based on the Trace of the Stochastic Matrix. 2-The test allows for a linear deterministic trend in the data, and no constant. 3-r represents the number of cointegrating vectors. Maximum lag 1 year in VAR. 4- The asymptotic critical values are from Osterwald-Lenum (1992). 5-(a) and (b) refer to ADF test statistic on the residuals obtained from the above cointegrating regressions (1) and (2). The numbers in brackets are the 5% critical values.

Causality tests are used next to test the causal relationship between the two series, as well as to identify the direction of such causality. The issue of testing Granger causality in such scenarios has been the subject of considerable recent empirical literature.2 If all variables contain a unit root but are not cointegrated, then the estimation should be carried out through a Vector Autoregression (VAR) model with stationary time series (see Sims et al (1990) and Toda and Phillips (1993)). However, if the variables contain a unit root and are cointegrated, then Granger causality should be conducted through a vector error correction model (VECM).

Granger-Causality tests are used next to determine the direction of causality between budget deficit and current account deficit in Lebanon. As our earlier results suggest that the two series contain a unit root but are not cointegrated,

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2. See for instance Engle and Granger (1987), Sims, Stocks and Watson (1990), Toda and Phillips (1993), and Toda and Yamamoto (1995) among others.

and following Sims, Stocks and Watson (1990), and Toda and Phillips (1993), the causality tests involve estimation of the following VAR models but in first difference. The causality tests are conducted for 2 lags. Formally, let BD and CAD represent two series, Granger causality addresses the question whether BD is linearly informative about a future CAD. This would hold true only when the event BD precedes the event CAD. Stated differently, this presumes that the current and past observations of BD help in the forecast of CAD. To conduct the test, each series is represented as a difference vector autoregression and regressed on its lag and those of the other series as follows.

$$\Delta BD_t = \sum_{i=1}^{p} \alpha_i \Delta BD_{p-i} + \sum_{i=1}^{p} \beta_i \Delta CAD_{p-i} + \sigma_t \; , \tag{5}$$

$$\Delta CAD_t = \sum_{i=1}^{p} \alpha_i \Delta CAD_{p-i} + \sum_{i=1}^{p} \beta_i \Delta BD_{p-i} + \varepsilon_t \; . \tag{6}$$

The estimated parameters β's capture the impact of the exogenous variable (the independent variable) on the endogenous variable (the dependent variable). The causality tests consist of an F test for the null hypothesis:

$$H_o : \beta_1 = \beta_2 = 0. \tag{7}$$

For equation (6) in the model above, the null hypothesis is the difference budget deficit does not Granger cause the difference current account. The results which are summarized in Table 3 indicate that in the short run the budget deficit is causing the current account deficit at the 3 percent significance level, and that the current account deficit has no impact on the budget deficit. The latter result can be explained by the fact that the current account deficit was never financed by internal and/or external borrowings. While the two deficits are not related in the long run, there appear to be strong short run linkages between Lebanon's twin deficits. These empirical results are perfectly plausible. It is well known that the budget deficit phenomenon is relatively recent in Lebanon, and started emerging in late 1990s when public debt started soaring upward. The relationship

between the two deficits became more significant after public debt became even more significant in early 2000s, when the Lebanese government started being confronted with a significant servicing of that debt.

Table 3 Granger Causality Tests

Null Hypothesis	Number of Observations	F-Statistic	Probability
ΔCAD does not Granger Cause ΔBD	32	0.20	0.816
ΔBD does not Granger Cause ΔCAD	32	3.80*	0.035

Source: Author's Estimates.
Notes: A * indicates rejections of the null hypothesis at the 3% significance level.

These short term linkages from the budget deficit to the current account deficit are due to the huge rise in the Lebanese budget deficit, widening subsequently the current account deficit. The recent rise in the budget deficit has decreased total national savings in Lebanon leading to a widening of the already existent current account deficit. In this way, the budget deficit resulting from increased government purchases of goods and services is widening even further the nation's current account deficit.

However, the decrease in savings effect of increasing budget deficits in inducing a large current account deficit could be one aspect of Lebanon's twin deficits phenomenon. Another aspect is the positive effect of budget deficits on interest rates. Higher interest rates in Lebanon have attracted investment from abroad into Lebanese TBs, appreciating subsequently the exchange rate. The appreciation of the Pound implied cheaper imports and more expensive exports, pushing the trade balance towards a deficit. In other words, recurrent budget deficits in Lebanon have raised domestic interest rates which in turn pushed up the real exchange rate, leading to the further widening of the current account deficit.

Conclusions and Policy Implications

This paper has examined empirically the twin deficit phenomenon in Lebanon. Using a sample that spans the 1970-2006 period, this study has performed some econometric tests to analyze whether a short or long run equilibrium relationship between the two deficits exist. The empirical results indicate that rising fiscal deficits have started to put even more strain on the current account deficits in Lebanon. This is due to the fact that Lebanon has been running chronic current account deficits since the early 1980s, and recurrent budgetary deficits since the early 1990s. The empirical results suggest that a long-run relationship between the two deficits does not exist; while in the short run recurrent budgetary deficits have started to widen even further the current account deficits. This may be related to the fact that the Lebanese government has been suffering from corruption, inadequate government expenditure policies, and from inefficient revenue collection systems, which resulted recently into high fiscal deficits. In addition, the recent rise in the budget deficit has decreased total national savings in Lebanon, leading to a widening of the already existent current account deficit.

Granger causality test results support the existence of a uni-directional causal relationship between the budget deficit and the current account deficit. This is in line with earlier empirical studies from developing countries providing evidence supporting that budget deficits cause current account deficits in Egypt and Mexico, while the reverse is true for Indonesia and Pakistan, and some week evidence of bi-directional causality for India.

In the case of Lebanon, it is well known that the recurrent current account deficits since 1980, were mainly financed by surpluses in the capital account and not by resorting to external borrowing. The balance of payments data rarely indicate a deficit over the period prior to 1993. Fiscal policy was totally ineffective during the 1975-1995 period, and debt was virtually absent. However, this is no longer the case due to the accumulation of a significant public debt and its subsequent debt servicing after the Lebanese government started to tap international financial markets. Accumulated debt and budget deficits started to surface after 1993, when the Lebanese government started issuing Treasury Bills domestically to finance

its expenditures and has never issued TBs to cover its current account deficit. In other words, Lebanon's recurrent trade deficits were never financed via internal or external borrowings except recently. The constant capital inflows have been in the form of remittances from Lebanese working abroad, and in the form of bank deposits attracted from the rich Gulf countries. However, the recent huge surge in the foreign Lebanese debt since the early 2000s implies that Lebanon may have to rely more and more on external financing leading to further deteriorations in its current account and budgetary deficits in the near future. In addition, future servicing of the foreign accumulated debt may aggravate the deteriorating current account deficit and put more pressure on the current exchange rate peg to the US dollar.

Lebanese policy makers would need to move on several fronts to tackle the twin deficit problems: (1) stimulate national saving by reducing the budget deficit and reducing domestic interest rates, and increasing the rate of private saving; (2) introduce timely needed fiscal adjustment measures, enhance the tax collection system and actively fight corruption; and (3) tackle the future implications that may emanate from an expected depreciation of the exchange rate.

The permanent current account deficits have so far been offset by surpluses in the capital account due mainly to foreign investments in Lebanon. If for whatever reason these capital inflows decline, like during the recent political crisis, the Central bank will have to tap once again its foreign exchange reserves. During the recent political turmoil, the central bank lost the equivalent of USD 1 billion in trying to maintain its current peg to the dollar, decreasing its foreign reserves from USD 12 billion to USD 11 billion.

Given the current fiscal indicators, taping new international sources of financing is becoming more and more difficult, rendering the financing of the current external debt program unsustainable. Therefore, the government may be compelled to abandon its fixed exchange rate peg, and may have to introduce painful fiscal adjustment measures to generate the necessary foreign exchange from its own internal recourses to finance its external debt in the coming few years.

The only plausible solution is through the increase of gross investment via loans from the banking sector. It is well known that Lebanese banks' deposits have been experiencing significant increases since the mid 1990s. This is due to the Bank Secrecy Law, and the attractiveness of the banking system to Arab capital. Total bank deposits which stood at USD 65 billion by the end of 2006, may constitute an important source of loanable funds to the private sector. The government should work fast towards political stability and the creation of an appropriate investment climate to stimulate private investment.

References

Abell, J. D. 1990. Twin deficits during the 1980s: An empirical investigation. *Journal of Macroeconomics* 12(1): 81–96.

Barro, R.1989. The Ricardian approach to budget deficits. *Journal of Economic Perspectives* 3: 37–54.

Bundt, T. and Solocha, A. 1988. Debt, deficits, and Dollar. *Journal of Policy Modeling* 10(4): 581–600.

Cardia E. 1997. Replicating Ricardian equivalence tests with simulated series. *American Economic Review* 97(1): 65–79.

Egwaikhide, F.O. 1999. Effects of budget deficit on trade balance in Nigeria: A simulation exercise. *African Development Review* 11(2): 265–89.

Enders, W. and Lee, B. S. (1990). Current account and budget deficits: Twins or distant cousins? *The Review of Economics and Statistics* 72: 373–381.

Engle, R.F., and Granger, C.W.J. 1987. Co-integration and error-correction: Representation, estimation and testing. *Econometrica* 55: 251–76.

Feldstein, M. 1992. The budget and the trade deficits aren't really twins. *NBER Working Paper 3966*. NBER, Cambridge, MA.

Fleming, J. M. 1962. Domestic financial policies under fixed and under floating exchange rates. *International Monetary Fund Staff Papers* No. 10: 369–80.

Haug A.A. 1996. Blanchard's model of consumption: An empirical study. *Journal of Business and Economics Statistics* 14:169–77.

Hutchison M., Pigott C. 1984. Budget deficits, exchange rates, and the current account: Theory and U.S. evidence. *Economic Review*. Federal Reserve Bank of San Francisco.

Islam, N. 1995. Growth empirics: A panel data approach. *Quarterly Journal of Economics* 110: 1127–70.

Johansen, S., and Juselius, K.1990. Maximum likelihood estimation and inference on cointegration – with applications to the demand for money. *Oxford Bulletin of Economics and Statistics* 52(2):169–210.

Kearney, C. and Monadjemi, M. 1990. Fiscal policy and current account performance: International evidence on the twin deficits. *Journal of Macroeconomics* 12: 197–220.

Khalid, A. M. and Guan, W. T. 1999. Causality tests of budget and current account deficits: Cross-country comparisons. *Empirical Economics* 24: 389–402.

Mundell, R. A. 1963. Capital mobility and stabilization policy under fixed and flexible exchange rates. *Canadian Journal of Economics and Political Science* 29: 475–85.

Perron, P. 1990. Testing for a unit root in a time series with a changing mean. *Journal of Business and Economic Statistics* 8(2): 153–62.

Piersanti, G. 2000. Current account dynamics and expected future budget deficits: Some international evidence. *Journal of International Money and Finance* 19: 171–255.

Rosenswieg JA, Tallman E.W. 1993. Fiscal policy and trade adjustment: Are the deficits really twins? *Economic Inquiry* 31(4):580–94

Sims, C. A., Stock, J. H., and Watson, M.W. 1990. Inference in linear time series models with some unit roots. *Econometrica* 58: 113–44

Toda, H. Y. and Phillips, C. B. 1993. Vector autoregressions and causality. *Econometrica* 61(6): 1367–93.

Toda, H. Y. and Yamamoto, T. 1995. Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics* 66(2), 225–50.

Vamvoukas, G. A. 1999. The twin deficits phenomenon: Evidence from Greece. *Applied Economics* 31: 1093–1100.

Volcker, P. A. 1987. Facing up to the twin deficits. In Fink, R. and High, J. (eds.), *A Nation in Debt: Economists Debate the Federal Budget Deficit,* 154–61. Maryland: University Publications of America, Fredrick.

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