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Fiscal Deficits, Current Account Deficits and Short-Term Capital Inflow: The Experience of Selected Emerging Market OECD Economies

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Introduction

Fiscal deficit is expected to ensure an increase in aggregate demand and reduction of unemployment as well as financing towards huge economic capital outlays which can stimulate economic growth. The persistent increase in fiscal deficits is cited as either a cause or a symptom of economic weaknesses as a result of its adverse effects on macroeconomic variables. According to the Keynesian absorption theory, an increase in fiscal deficits would increase domestic absorption and import, the expansion of imports leads to the worsening of trade deficits which in turn leads to current account deficits. In addition, as fiscal deficits increase, the level of domestic investments decreases as a result of its crowd out effects on the economy associated with upward pressure on interest rates. The upward pressure on domestic interest rates leads to an increase in capital inflows and appreciation of the currency. As domestic currency appreciates, it undermines competitiveness, widens the current account deficit. Real exchange appreciation could lead to a sudden drying up of capital flows, causing an abrupt adjustment of the current account and aside that, its negative effect on investment could create major problems for macroeconomic management. Thus, theoretical and empirical arguments establish a strong association between fiscal deficits and current account deficit called twin deficits.

Keynesian framework establishes the effects of fiscal balance on capital account of BOP through interest rates and real exchange rate channels. Fiscal deficits trigger real interest rates to drive up which in turn encourages capital inflows because the domestic financial assets have become more attractive associated with higher expected yields; there is positive net capital inflow which improves capital account. Fiscal deficits also have an influence on capital account through real exchange rate. Tang (2014) reiterates that appreciation of real exchange rate due to increase in interest rate (proxies the price of the foreign financial assets) in the foreign exchange market has resulted from twin deficits, all things being equals, cheaper the foreign assets for domestic residents but more expensive the domestic financial assets for foreign investors. If exchange rate channel is stronger than interest rate channel, it implies capital account

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deficits in BOP showing the presence of third deficit called triple deficits (fiscal deficit, current account deficit and capital or financial account deficit). In Balance of payment framework, there is a connection between international trade and international capital flow meaning that there is a correspondence between net domestic outputs and short run foreign private flows. It implies that when domestic outputs is greater than domestic absorption representing current account surplus BOP, domestic capital tends to flow out while when domestic output is lower than domestic absorption representing current account deficit BOP, foreign capital tends to flow in. Net capital flows (inflows less outflows) respond to the saving-investment differentials between countries and they result in flow of real resources from countries with saving investment surplus to ones with saving-investment deficit, in reaction to current account imbalance (Obstefeld and Rogoff, 1996). These suggest a causal relationship exists between fiscal deficits, capital inflow and trade deficit.

In spite of the various studies on fiscal deficit and current account deficit (Twin Deficits), there is hardly any concrete empirical study that has been investigated to assess the causal relationship between short term capital inflows, fiscal deficit and current account deficit on emerging market OCED economies.

Theoretical Underpinning of the Study

The connection between the budget deficit and trade deficit can be derived from national account identity through income-output approach:

Gross Domestic Income (GDI) = C+S+T……..…eq.1
Gross Domestic product (GDP)= C+I+G+XM…….eq.2
where C is consumption, S is saving, T is tax, I is investment, G is government spending, X is export, M is import.
However, GDI =GDP……...eq3
C+S+T = C+I+G+X – M……..….eq4
S+T = I+G+X – M……..……..…….eq5
(S – I)= (G – T) + (X – M)……..……..…..……eq.6
from equation 6,
S – I= Saving Balance ……..……..……eq6a
G – T= Fiscal Balance……..……..……eq.6b
X – M= Trade Balance……...……..……..eq6c

The twice deficit will occur in the case of equation 6b and 6c (fiscal balance and trade balance) while triple deficit will occur in the case of equation 6a, 6b and 6c (saving balance, fiscal balance and trade balance). The triple deficit is shown on equation 6 by rearranging equation 5 in term of internal balance and external balance in an economy:

(S – I) + (G – T) = (X –M) or (X – M) = (S – I) + (G – T)…… ……...eq7

where (S –I) is saving gap (saving deficit), (G – T) is fiscal deficit and (X – M) is trade deficit.

Therefore, equation 7 displays the triple deficit which expresses imbalances as a result of negative values on both sides of equation 7 which will be even out in the case of triple deficit.

Equation 7 implies that for a given level of saving rate, fiscal deficit will crowd out private investment and lead to foreign capital inflows into the economy as a result of government excessive borrowing to finance its spending which is translated into current account deficit of balance of payment through increase in domestic interest rate, and real exchange rate appreciation according to Keynesian proposition.

Empirical Survey

Studies like Baharumshah et.al(2009), Beetsma et.al, (2008), Khalid and Guan (1999), Endegnanew et.al, (2012) have studied the relationship between fiscal deficit and trade deficit while few studies like Özdemir et al. (2014), Coban and Balikcioglu (2016) have studied relationship between fiscal deficit, current account deficit and capital account of balance of payment. Baharumshah et.al, (2009) use data from five Association of Southeast Asian Nations (ASEAN) countries and tested the validity of twin deficit hypothesis. According to the results, in Malaysia, Thailand and Philippines, budget deficit plays an important role for determining current account deficit. According to the results, there is one way causality from current account balance towards budget balance. There is absence of causality from budget balance towards current account balance. Van Bon (2014) investigates ten developing economies of Asia between 1985 and 2012 using GMM analyses and as a result, they found twin divergence between fiscal deficits and current deficits

Beetsma et.al (2008) examined the effects of public spending shocks for trade balances and budget balances in 14 European Union countries employing an annual panel VAR with exports and imports as separate variables. Their results are consistent with the twice deficit hypothesis.

Khalid and Guan (1999) examine the long-term relationship and causality between budget deficit and current account deficit for five developed countries (United States, United Kingdom, France, Canada and Australia) and five developing countries (India, Indonesia, Pakistan, Egypt and Mexico). Their empirical results show that such secular relationship exists in four developing countries, while no developed country exhibits such a relationship. The results on the direction of causality are mixed for developing countries with evidence supporting that the current account deficits cause budget deficits for Indonesia and Pakistan while the reverse is true for Egypt and Mexico.

Endegnanew et.al (2012) examine the empirical link between fiscal policy and the current account focusing on microstates defined as countries with a population of less than 2 million between 1970 and 2009. The paper employs panel regression and panel vector autoregression (VAR) on 42 microstates. Panel regression results show that a percentage point improvement in the fiscal balance improves the current account balance by 0.4 percentage points of GDP. Panel VAR results show that an increase in

government consumption results in real exchange appreciation but the effect on the current account after an initial deterioration dies out quicker in microstates than in the global sample. The result implies that fiscal policy has little effect on the current account in microstates beyond its direct impact on imports.

Kim and Roubini (2008) reveal in their study which implements VAR analysis for 1973- 2004 period that there is a negative relationship between budget deficits and current account for G7 Nations. The study described this case as the twin divergence concept as negative effect of twin deficits

Nickel and Vansteenkiste (2008) analyse the empirical relationship between fiscal policy and the current account of the balance of payments on 22 industrialised countries. The results show that for countries with debt to GDP ratios up to 90% the relationship between the government balance and the current account is positive, i.e. an increase in the fiscal deficit leads to a higher current account deficit. For very high debt countries this relationship however turns negative but insignificant, suggesting that a rise in the fiscal deficit does not result in a rise in the current account deficit. Estimating the same model for the 11 largest euro area countries shows that the relationship between the government balance and the current account turns statistically insignificant when the debt to GDP ratio exceeds 80%.

Yan and Yang (2008) demonstrate that foreign capital inflows and current account imbalances interact in different ways between developed countries and emerging market countries. Using the Granger non-causality test, the results find that foreign capital inflows Granger-cause the current account in the cases of emerging market countries, while a causal relation is negligently detected in the cases of developed countries. Indeed, distinct from developed countries, the current accounts of emerging market countries are susceptible to the influence of foreign capital inflows

Özdemir et al. (2014) observe that there is absence of causal relation between budget and current account deficits and asserted the invalidity of triple deficit for 17 transition economies over 2003-2011 period. In this study fixed effects methodology is employed in order to assess the impacts of budget deficit and savings deficit on current account. The outcomes provided supporting evidence for Ricardian equivalence hypothesis while they showed the invalidity of triple deficits hypothesis

Coban and Balikcioglu (2016) test Triple deficit hypothesis and pointed out coexistence of budget deficit, current account deficit and private savings deficits. The study aimed to examine three deficit hypotheses for 24 transition economies over 2002-2013 periods by employing dynamic panel data analysis. The study finds evidence of an interaction between current account deficit and savings-investment deficit

Akbaş and Lebe (2016) determine the validity of the triplet deficit hypothesis, which means the savings gap and budget deficit effect on the current account deficit. The empirical model is estimated for the G7 countries during the period between 1994 and 2011. The findings showed bi-directional causality between the current account deficit

and the savings gap and between the budget deficit and the savings gap are determined. The study indicates that savings gap has an important effect on the current account deficit and the budget deficit. That is, triplet deficit hypothesis.

In conclusion, most studies use insufficient economic theory in the determination of the right specification of variables by not including major driving factors of current account of balance of payment, budget deficit and capital inflows in the study such as interest rate differential and real exchange rate as control variables according to Keynesian framework argument. Due this, the present study tries to fill this gap.

Methodology

a. Data and Data Sources.

The study is carried out for ten emerging market OECD economies for the period 2011 and 2016 using annual data. The ten countries covered in the study are Argentina, Brazil, China, India, Indonesia, Mexico, Russia, South-Africa, South- Korea, and Turkey. In this study, the variables of interest are current account deficit, fiscal balance and short term capital inflows. The data used are all sourced from World Development Indicators (WDI), World Bank and OECD database.

Following Akinlo and Egbetunde (2010) that some macro-variables could have great impact on one and another i.e. current account, fiscal balance and short term capital inflows can impact each other and that their omission could bias the direction of causality among them. In view of this, we included some control variables: exchange rate and interest rate to avoid simultaneous bias (Gujarati, 1995) in our regressions

b. Panel Multivariate Co-integration Analysis and Error Correction Modeling

The study adopts panel cointegration and error correction model in order to investigate the long-run relationship between short term capital inflows (cf), fiscal deficit (bf) and current account deficit (ca) by using the panel cointegration technique due to Pedroni (1999). This technique allows for heterogeneity among individual members of the panel and is an improvement over conventional cointegration tests. Following Pedronis methodology, the causal cointegration relationship we estimate is specified as follows:

$$\Delta logca = b_0 + b_1\Delta logcf_{(t-1)} + b_2\Delta logbf_{(t-1)} + b_3\Delta logD_t + et\ldots\ldots\ldots\ldots eq8a$$

$$\Delta logbf = a_0 + a_1\Delta logcf_{(Ct-1)} + a_2\Delta logca_{(t-1)} + b_3\Delta logD_t + et\ldots\ldots\ldots\ldots eq8b$$

$$\Delta logcf_t = C_0 + c_1\Delta logca_{(t-1)} + c_2\Delta logbf_{(t-1)} + c_3\Delta logD_t + e_t\ldots\ldots\ldots\ldots eq8c$$

The residuals are then used to compute using the panel co-integration technique due to Pedroni (1999). In the presence of a cointegrating relationship, the residuals are expected to be stationary.

Prior to cointegration test, the data were subjected to stationary scan called stationary test using Augmented Dickey Fuller (ADF) test so as establish their univariate time series behaviour in order to determine the basic unit of observation. This

is to determine whether the sequence estimation should use the level, first or second difference of each time series before conducting the estimations. Thus, the evidence suggests that first differencing is sufficient or that these macro variables do not have two unit roots

Dynamic Panel Granger Causality based on Error Correction Model
The panel error correction version pertaining to our variables incorporated in our study is stated below:

$$\Delta logca_t = b_0 + b_1 \Delta logcf_{(t-1)} + b_2 \Delta logbf_{(t-1)} + b_2 \Delta logD_t + b_3 ecm_{(t-1)} + e_t \ldots eq9a$$

$$\Delta logbf_t = a_0 + a_1 \Delta logcf_{(t-1)} + a_2 \Delta logca_{(t-1)} + b_2 \Delta logD_t + a_3 ecm_{(t-1)} + e_t \ldots eq9b$$

$$\Delta logcf_t = c_0 + c_1 \Delta logca_{(t-1)} + c_2 \Delta logbf_{(t-1)} + c_2 \Delta logD_t + a_3 ecm_{(t-1)} + e_t \ldots eq9c$$

where ecmt−1 is the error correction term and et is the mutually uncorrelated white noise residual. The coefficient of the ecm variable contains information about whether the past values of variables affect the current values of the variables under study and D_t is the control variables (exchange rate and interest rate). The size and statistical significance of the coefficient of the error correction term in each ecm model measures the tendencies of each variable to return to the equilibrium.

In order to examine the short- and long-run causal linkages between current account deficit, fiscal deficit and short term capital inflow, following the previous works. Evidence suggests that once there is a long-run relation between the variables, in this case current account deficit, fiscal deficit, short term capital inflows and control variables, then there is a case for causality in one or more directions (Narayan and Smyth, 2005). Nonetheless, we could only establish the direction of the long-run causality between the variables by conducting a test of statistical significance (a *z*-test) on the lagged error-correction term in each equation. The direction of the short-run causal relationships between the variables could also be established by conducting a joint test of statistical significance (a *P*-value) of the explanatory variables in each of the equations (see Oh and Lee 2004; Narayan and Smyth 2005).

Empirical Analysis

Results of Co-Integration test

Panel cointegration test developed by Pedroni (1991) is commonly adopted in the literature to conduct test on long term cointegration relationship between non-stationary variables. Seven different test statistics were developed to test zero hypothesis defined as there are not any Pedroni cointegration regression, the four of these tests are consisted of in-group statistics (panel-v, panel-p, semi-parametric panel-t, and parametric panel-t), other three are consisted of intergroup (group-p statistics, semi-parametric group-t statistics and parametric group-t statistics)

Table 1: Pedroni Residual Cointegration Test

	Statistics	probability

Panel v-Statistic	2.348173	0.0094
Panel rho-Statistic	-1.645410	0.0499
Panel PP-Statistic	-1.760548	0.0392
Panel ADF-Statistic	-2.453225	0.0071
Group rho-Statistic	-1.330597	0.0917
Group PP-Statistic	-1.707593	0.0439
Group ADF-Statistic	-2.487288	0.0064

Table one shows Pedroni Panel cointegration test result. Considering fixed effect and trend model, the seven statistics show rejection of null hypothsis at least 10 percent significant level. These results support that there is cointegration relation among the variables in the long term

Table 2: Results of the Granger Causality Test

Table 2: Panel Data Granger Causality Tests								
Short Term Causality								***Long Term Causality***
Variables	***C***	***d(CD)***	***d(FD)***	***d(log(CI))***	***d(log(EX)***	***d(IR)***	***d(dependent lag(-1))***	***EC***
d(CD)	-0.20(7.05)***	-	0.83(4.55)***	-0.66(0.0007)***	0.14(0.008)***	-0.07(0.02)**	0.08(0.07)*	-0.98(-11.53)***
d(FD)	0.17(1.30)***	0.45(1,74)***	-	0.03(0.04)***	-0.16(4.00)***	0.005(0.75)	0.09(0.00)***	-1.24(-30.05)***
d(log(CI))	0.03(0.01)**	-0.01(0.52)	-0.07(0.002)***	-	-0.06(6.45)***	-0.02(0.20)	0.10(0.06)*	-1.24(-26.75)***

*, ** and *** imply statistical significance at the 10%, 5% and 1%levels, respectively for p-value and z-test

Note: the missing observations were generated based on normal imputation techniques, since the missing values are assumed to be linear functions of other observed values. For details see, (i) Honaker and King (2011) "Application of Modern Methods for Analysing Data with Missing Values based primarily on Multiple Imputations and Weighting Approaches" (ii), Maravall and Pena (2014) " Missing Observations and Additive Outliers in the Time Series Models: Interpolation using ARIMA processes

After establishing co-integrating relationships between capital inflow, budget deficit, current account deficit and control variables (exchange rate and interest rate), our finding discover tthe next is to test the direction of the causal relationships between these variables especially key variables of interests. The study conducts short-run causality test using P-value and test for the significance of the lagged error-correction

terms, ECMt−1, in order to establish the long-run causality between the explanatory variables and the dependent variable, using the z-test error correction model stipulated above.

Our results for the causality test are reported in table 2 which indicates both short term and long term panel granger causality test based on error correction model. According to findings, there is a bidirectional causality relationship between current account deficit and budget deficit which exist in both short term and long term causal relationship. From current account deficit equation, the evidence of positive short-run causal flow from fiscal deficit to current account deficit could be seen from the *p*-value of 4.55 associated with the joint statistical test of significance of fiscal deficit at one percent significance level**.** In case of reverse causality, fiscal deficit equation shows evidence of positive short term causal flow from current account deficit to fiscal deficit with p-value of 1.74 associated with the joint statistical test of significance of current account deficit at one percent significance level. The long-run causal flow between current account deficit and fiscal deficit is also bidirectional causality which was supported by the negativity and significance of the error correction terms of both equations, the current account deficit and fiscal deficit equations under one percent significance level of z-test. It implies that there is presence of twin deficits among the selected emerging market OECD economies in short term and long term. According to Mundell-fleming hypothesis, there are two-way causal relationships between budget and current account deficit and that there exist two channels in which budget deficit affects the current account: directly budget deficits to current account deficits and indirectly via its impact on interest rates, exchange rate and current account deficits. Lau and Baharumshah, (2006)

Causality relationship between current account deficit and short term capital inflow is reported to be unidirectional from short term capital inflow to current account deficit. The unidirectional causal relationship indicates a negative relationship with p-value of 0.007 associated with the joint statistical test of significance of short term capital inflow at one percent significance level. The result implies a unidirectional causality from foreign portfolio investment to current account deficit. The challenge with this result is that foreign portfolio investment is volatile and subject to sudden stops and reversals. This can potentially destabilise the country as the economy is exposed to external shocks. Surprisingly, there is an evidence of bidirectional causality in the long-run causal flow between current account deficit and short term capital inflow which is supported by the negativity and significance of the error correction terms of both equations, the current account deficit and short term capital inflow equations under one percent significance level of z-test. The implication is that on the long run, the current account deficit will be induced by speculative-led investment which dictates absence of basis for exchange controls and capital controls in order to limit the speculative capital inflows. Given the liquidity challenges in the economy, any attempt to limit the capital inflows would further exacerbate these liquidity challenges. (Manda, 2014)

Evidence of bidirectional causality relationship is reported between fiscal deficit and short term capital inflow in both short term and long term causal relationships. Fiscal deficit/Budget deficit equation reveals a positive short-run causal flow from short term capital inflow to fiscal deficit with p-value of 0.04 associated with the joint statistical test of significance of short term capital inflow at one percent significance level. In case of reverse causality, short term capital inflow equation shows evidence of negative short term causal flow from budget deficit to short term capital inflow with p-value of 0.002 associated with the joint statistical test of significance of short term capital inflow at one percent significance level. There is evidence of bidirectional causality in the long-run causal flow between fiscal deficit and short term capital inflow which is supported by the negativity and significance of the error correction terms of both equations, the fiscal deficit and short term capital inflow equations are under one percent significance level of z-test.

However, the short term and long term causality results support the feedback mechanism (bidirectional causality relationship) between current account deficit and fiscal deficit, between fiscal deficit and short term capital inflow in short term causality relationship under one percent significance level of p-value as well as the existence of long term causal relationship among the key variables of interest (current account deficit, fiscal deficit and short term capital inflow) which indicate existence of long term bidirectional causality under one percent significance level of z-test.

Concluding Remarks

The study analyzes the existence of relationship for ten emerging market OECD economies in the period 2000-2017 using yearly data by means of dynamic panel data analysis which reveal bi-directional causality relationship among the key variables of interest (short term capital inflow, fiscal deficit and current account deficit) in the long run. Similarly, short run causal relationship reports bi-causal relationship between the fiscal deficit and the current account deficits as well fiscal deficit and short term capital inflow except between current account deficit and short term capital inflow with a uni-causal relationship from short term capital inflow to current account deficit in short run.

According to twice deficit theory, there is a positive relationship between current account deficits and fiscal deficit. The study finds an evidence of causal relationship between current account deficit and fiscal deficit. Furthermore, the hypothesis of capital inflows is as the reason of current account deficit which is accepted in our study. The empirical results of these ten selected emerging market OECD economies data support the twin deficit phenomena based on a positive finding of cointegration tests that fiscal deficit, current account deficit and short term capital inflow are moving together in the short and long-run. This study tends to contribute to the few existing literature which is also important for policy implication, especially emerging market OECD economies.

However, there are several policy implications in this findings, a uni-directional causal relation from short term capital inflow to current account deficit indicates that volatile capital inflow reinforces current account deficit in this emerging market OECD

economies. Although short term foreign capital inflows is seem beneficial as a source of financing means for the current account deficit, its economic consequence may lead to balance of payments problems due to adverse effects on current account. So, there is a need for sustainability of current account deficits in emerging markets OECD economies, there not totally rely on volatile foreign capital inflows for financing the deficit.

Our findings support the existence of absence twin divergence relationship (twin deficit) in emerging market OECD economies. It implies that fiscal policy needs to be treated as a fully controlled policy variable (Biswas et al., 1992). Hence, there is a must to have budget cuts, or in other words, fiscal tightening that would tend to correct the current account deficits in order to reduce chronic current account deficits by increasing national saving through reducing the budget/ fiscal deficit and increasing private saving in these economies. With this fully controlled policy variable, there is possibility of achieving a trimmed down current account deficits.

Furthermore, a two way causal relationship between short term capital inflow and fiscal deficit implies the two parameters reinforce one another. More importantly, authorities of these economies must put in place a fully fiscal discipline policy that should ensure drastic curtailment of fiscal deficit and at the time create conducive environment to attract foreign remittances and also foreign investment which would help to generate healthy external balances. In addition, exchange rate stability can promote the exports sector, minimising external imbalances through creating critical surpluses in current account and including related comprehensive discipline policies that may be pursued which enable external sector, financial sector and fiscal sector and monetary sector to perform without creating adverse imbalances in those economies.

However, it is to note that this work is with a few of limitations. The countries involved are few; there is a need for more sample countries from emerging and developing countries in OECD economies in order to have robust study. Lastly, further work is needed to identify if there is triple deficits phenomenon having discovered further presence of twin deficit in emerging market OECD economies.

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