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The Impact of Budget Deficit on Current Account Balance in Selected Countries

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Abstract. This study empirically surveyed the impact of the budget deficit on the current account balance in the selected countries. The Panel ARDL model, as proposed by Pesaran and Shin (1999), was employed for model estimation, and annual time series data spanning from 1995 to 2019 was used. The budget deficit (BD) and other measures of the budget deficit (revenue deficit, fiscal deficit, and primary deficit) were used as proxies for the budget deficit, while CAB is a proxy for the current account balance. The budget deficit was decomposed into revenue deficit, fiscal deficit, and primary deficit to critically examine the effects of the budget deficit on the current account balance. The results from the Pedroni (1999; 2004) cointegration test led to the rejection of Ho of no cointegration. We examined the long-run relationship between the budget deficit and the current account balance and discovered that there is a negative but significant relationship that exists between the budget deficit and the current account balance. Thus, interactive effects on the budget deficit were found to have a significant impact on the current account balance, but their yields are low compared to before interaction. The coefficient of ECT obtained is negative and significant, indicating a long-run relationship between the variables of the model.

Keywords: Budget Deficit, Current Account Balance, ARDL Approach.

1. INTRODUCTION

Budget deficit has been a great element to determine economic growth and trades balances between and among economies in the world. Budget deficit, caused by increased government expenditures boosts inflation and lead to a deterioration of trade balance, irrespective of whether it is financed through bank or external borrowing. From the Keynesian Perspective, if budget deficit arises in an economy, a net inflow of foreign financial investment always accompanies a trade deficit, whereas a net outflow of financial investment always accompanies a trade surplus Egwaikhide F.O. (2002). Thus policy makers, scholars, economists and researchers have sought to investigate impact of budget deficit on current account. Numerous scholars such as Kahssay (2018), Wambui (2016), Ngakosso, A (2016), Mahuni (2017), Ateeq and Sumaira (2017), Sen and Kaya (2018a), Konya (2006), Coban and Balicioglu (2016), Bandy (2016), Goyal and Kumar (2018), Afonso et al. (2018), Rajasekar and Deo (2016), Garg and Prabheash (2017) among others have opined that budget deficit have great negative influence on current account and economic growth. Most of the studies focused on budget deficit's impact on current account balance, twin deficit hypothesis, and triple deficit hypothesis, without much interest on the influence of budget deficit on current account balance. The development of budget deficit is often traced to Keynesian inspired public expenditure led growth of 1970s. The causal link between budget deficit and current account balance has been analyzed extensively in the recent literature, largely because of its implications for long-term economic progress.

For developing economies like Africa and Asia, who depends heavily on foreign capital, an adverse change in foreign investors' behavior may trigger series of sharp and disorderly adjustments of external imbalances which, in turn have colossal negative influences on the economy (Chinn and Prasa, 2003; Miles-Ferretti and Razin, 1998). As warned by Rodrik, in his publication in 1999 that: "Openness to capital inflows can be dangerous to the economy if appropriate controls, regulatory apparatus and macroeconomic frameworks are not in place".

From a theoretical viewpoint, fiscal expansion could worsen current account balance and appreciation of the real exchange rate (Salvatore, 2006). These imbalances may hinder economic growth and undermine a nation's wealth creation. On the other hand, from a policy outlook, it is important to determine whether budget deficit can influence current account balance in a predictable manner. If rising current account deficits indeed occur due to escalating budget deficits, then the external balance cannot be remedied unless other policies that address government budget deficits are first put into place. In other words, if TDH is valid, a government can improve the economy's current account through contraction and vice versa. Therefore, policy recommendations will vary according to type of relationship that exist between the budget deficit and current account balance in a country.

For most Asian nations, budget deficit and current account have experienced dramatic changes following the world financial crisis of late 1990s. Taking Malaysia for instance, who experienced budget surpluses averaging 1.27% of gross domestic product (GDP) per year from 1993 – 1997, which was accompanied by current account balance averaging 6.35% of GDP per year. However, the condition upturned following the sharp depreciation of Malaysian ringgit in the late 1997, and the economy recorded an overall fiscal deficit between 1998 and 2009, averaging 3.59% per year, while its current account recorded successive surpluses (averaging 13.25% per year). In

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Indonesia, fiscal and current account balances have moved in the opposite directions since the outbreak of 1997 financial crisis. The fiscal balance swayed from a small positive percentage of GDP to a generally modest deficit in recent years due to fiscal stimulus packages that are linked with the global financial crisis. Meanwhile, the current account shifted from a deficit of 3% of GDP following the pre-financial crisis of 1990s to surplus of similar (but diminishing) magnitude. This was partly due to declines in both capital inflows and exports due to slower economic growth in the aftermath of the financial crisis and global economic recession late in the first decade of twenty-first century. The budget deficit and current account balances in China, Nepal, Taiwan, Philippines and Thailand also moved in opposite directions since late 1990s. China for instance, has recorded a large current account surplus of $300 billion (6% of GDP). Unlike China and most other Asian countries, India's current account position turned negative in mid-2005, reaching $17 billion in 2007 (Reserve Bank of India, Handbook of statistics on the Indian Economy, 2008).

A budget shortfall exacerbates the current balance by placing upward pressure on domestic interest rates, triggering capital inflows and exchange rate appreciation, which then translates into cheaper imports and relatively less competitive exports (Ephaphra, 2017). As exports experience a decline in international competitiveness, imports on the other hand gains momentum, thus outweighing the value of exports, consequently leading to current account bottlenecks. This statement is in line with the opinions of researchers such as (Fleming, 1962, Mundell, 1963, Kim and Roubini, 2008) to mention but a few.

From the African perspective, for instance, in Benin Republic; the budget deficit increased in 2016, reflecting the government's strategy to use domestic financing for capital investment projects. Real GDP growth averaged 4.2 percent in 2014–16 while inflation remained subdued. Meanwhile, external debt increased from 19.8 to 22.7 percent of GDP from 2014 to 2016, while total public debt increased from 30.5 percent of GDP in 2014 to 50.3 percent of GDP in 2016. Similarly, Nigeria recorded a Current Account surplus of 4468.61 USD Million in the first quarter of 2018. Current Account in Nigeria averaged 2467.09 USD Million from 2005 until 2018, reaching an all-time high of 10383.67 USD Million in the second quarter of 2008 when compared to a low value of -5695.27 USD Million in the third quarter of 2015. And then, Singapore's Current Account recorded a surplus of 15.6 USD bn in Mar 2018, compared with a surplus of 13.1 USD bn in the previous quarter. Singapore's Current Account Balance: 10.2 USD data is updated quarterly, available from Mar 1986 to Mar 2018, with an average value of 4.3 USD bn. The data reached an all-time high of 18.4 USD bn in Sept. 2017 when compared to a record low of -307.4 USD mn in Mar 1987.

From the foregoing, the macroeconomic bottlenecks emanating from budget deficit is enamors especially in some developing countries located in Asia and Africa. Thus, the interconnectedness of budget deficit and current account balance cannot be overemphasized; in that for a balance in current account to be steady, the size of the government should propagate some friendly fiscal policies towards it. The negative effects of budget deficit on current account balance occurs due to the fact that government are in short of resources to meet up with expenses in the long run. That is to say that their savings as well as revenues are not enough to meet their expenses which could be caused by the following factors (a) when government spending is greater than the revenue (b) economic shifts or (c) costly natural disasters and war. However, Fig 1. Below shows the effect of budget deficit on current account balance and economic growth in two selected Asian countries (China and Malaysia) and two selected African countries (Nigeria and South Africa).

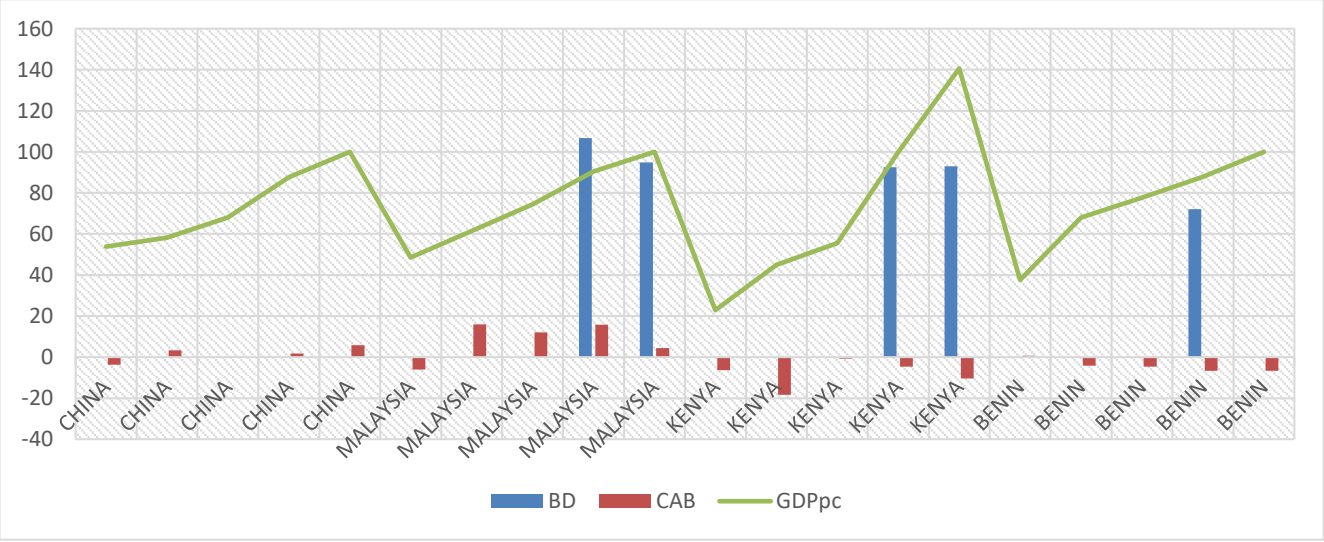

Figure 1.
The Impact of Budget Deficit on Current Account Balance and Economic Growth in Selected Asian and African Countries (1995, 2000, 2005, 2010 and 2015)
Source: Author's Concept; Data from World Development Indicator 2018.

Current account balance had scanty impact to economic growth in China for the period of 1995, 2000, 2005, 2010 and 2015, although there is no impact of budget deficit on economic growth in China. In Malaysia however, the case is different, there high impact of budget deficit on both economic growth and current account balance especially in 2010 and 2015 which could be attributed to the fact that the world economies had just recovered from 2008 economic meltdown. And the current account balance on its own has minute impact on economic growth. The evidence of budget deficit in Kenyan economy in 1995, 2000 and 2005 disappeared in the economy, but current account balance stood at negative values. The budget deficit in Benin Republic in the sampled period only surfaced in 2010 and posed negative impact to both economic growth and current account balance. In general, budget deficit suppresses the current account balance in both Asian and African economies.

Following the 1997, 1998 and 2008 financial crisis, most of the countries of the world was struck badly with exception of some Asian countries. The South Korean's budget deficit averaged 0.9% of the GDP between 1995 and 1997. The Philippines's budget deficit was 0.7% of the GDP. While other economies were running budget surpluses over the period like, Indonesia has a budget surplus of 0.3% of GDP, Thailand was 1.6%, Malaysia 4.3%. But paradoxically, Taiwan attack of budget deficit was as high as 6.7% of GDP. But in 1999 to 2000, deep recession engulfed Asian economies which made the governments to rack up big debts. For instance, by the end of year 2000, South Korean government debt totaled 70% of GDP, Indonesia 74%, Singapore 77%, Taiwan 15% and Thailand 30%. (Source: A publication titled "Asian Budget Deficit" Published by Emerging Market Indicators; August 12th, 1999 edition).

In Africa, the countries hardest hit by the oil price shocks (Angola, Nigeria, and Central African Republic) are still struggling to deal with the unusually large terms of trade shock and implied budgetary revenue losses. The pain from this shock continued to do damage to these economies, even with the risk of generating deeper difficulties both within and across borders if unaddressed. And some other commodity exporters, like Ghana, Zambia, and Zimbabwe, are also grappling with larger deficits in the context of already high levels and concerns about growth. Non-resource oriented countries like Cote d'Ivoire, Kenya and Senegal have generally been on high growth rates. However, while budget deficits have remained elevated for a number of years as governments rightly sought to social and infrastructure gap, vulnerabilities are now starting to emerge in some of these countries. In particular, public debt is on rise, and reliance on domestic financing as foreign financing declined, has increased borrowing costs. In some cases, arrears are emerging and nonperforming loans in the banking sector are increasing, even when there is a strong growth. (IMF, World Economic outlook, 2016).

In the past, many scholars such as Fajana (1993), Egwaikhide (1989), Ngakosso, A (2016), Mahuni (2017), Ateeq and Sumaira (2017), Sen and Kaya (2018a), Konya (2006), Coban and Balicioglu (2016), Bandy (2016), Goyal and Kumar (2018) among others have shown from their studies how budget deficits affects the economies and their studies mostly focus on impact of budget deficit to economic growth and twin deficit effects on economic growth. As scholarly as this topic may be, most of the reviewed studies centered on twin deficits with some concentrating on a specific country or an economic region. However, the novelty of this study is to examine the relationship between budget deficit and current account balance in selected 20 Asian and 40 African countries covering the period between 1995 and 2019. Also, we decomposed the budget deficit into revenue deficit, fiscal deficit and primary deficit to critically examine how budget deficit affects current account balance. The rest of this paper was organized into five sections. Section 2 sketches the relevant literature. Section 3 is where the theoretical framework, model specifications and data used for the study was discussed. Section 4 houses the empirical results analysis, while finding of the study, policy simulation results and conclusions are compiled in section 5.

2. THE OVERVIEW OF INTERPLAY BETWEEN BUDGET DEFICIT AND CURRENT ACCOUNT BALANCE

The national accounts framework is used here to define a clear link between budget deficit and current account balance. We use private savings, (Sp), which is defined as disposable income (income less taxes), $Y - T$, minus private consumption (C). Public (government) savings ($Sg = T - G$), is defined as the difference between direct taxes from households and firms, (T) and public expenditures, (G). By adding private and public savings, we obtain

$$S_t + S_t = (Y_t - C_t - T_t) + (T_t - G_t) = Y_t - (C_t + G_t) = S_t \quad (1)$$

Where S is national savings. Then with the national account identity,

$$Y_t = C_t + INV_t + G_t + N_t \quad (2)$$

Where INV is the investment and N is the net export. Then national savings can be written as:

$$S_t = Y_t - (C_t + G_t) = C_t + INV_t + G_t + N_t - C_t - G_t = INV_t + N_t \quad (3)$$

The current account balance, CA, is defined as 'payment received from abroad in exchange for currently produced goods and services, minus the analogous payments made to foreigners by the domestic economy. In the simplest case, the current account can be written as national savings minus investment. Furthermore, replacing N with current account and substituting for S yields

$$CA_t = S_t - INV_t - (G_t - T_t) \quad (4)$$

Equation (4) provides a convenient framework with which to examine the relationship between the budget deficit

(G − T) and the current account balanced, if private savings is almost equal to investment (S ≈ INV), then the budget deficit and current account will be directly correlated. In other words, the external account and budget deficit, labeled the twin deficit, will have to move in the same direction by the same amount (Fidrmuc, 2003).

Next, we look for a long term relationship between the current account and budget deficit. The current account identity states that the current account has to equal the capital and financial account, that is,

$$CA_t = B_{t+1} - B_t \quad (5)$$

Where B represents the capital and financial account change of an economy's net foreign assets. It follows that accumulated current account is equal to external debt associated with a particular period t $\sum_{i=1} CA_i = \sum_{i=1} B_i+1 - B_i$.

Observing from the equation, external debts generate a continuous flow of interest payments and possibly repayment or debt rescheduling at some point in the future (Fidrmuc, 2003). A country has to meet all of these liabilities by generating current account surplus. Therefore, the current account has to be sustainable to a particular point in time and the entire trajectory of the current account has to be considered. In addition to the illustrating the current account, as long-run phenomenon, this argument also highlights the importance of distinguishing between investment-induced and consumption-induced current accounts because only the former raises productivity and export capacity over the long-term. Literature have shown that the public sector may meet its financing needs through domestic and international financial markets (Fidrmuc, 2003; Bagnai, 2006). Considering the significant role of private investment in the inter-temporal approach to balance of payments, as discussed above, the long-run relationship between current account (CA), budget balance (BD) and investment (INV) all expressed in percentage of GDP, can be written as $CA_t = \beta_0 + \beta_1 BD_t \beta_2 INV_t + \varepsilon_t$ (6)

Equation 6 provides a useful framework for investigating the link between current account, budget deficit and investment. In equation 6, we expect the coefficients for budget deficit and investment to be negative and positive, respectively; that is, a budget deficit and high investment worsen the current account balance. The extent of large and highly sophisticated capital markets in developed countries makes it possible for these countries to finance public and private domestic needs through capital markets. Therefore, the correspondence between current account and budget balance in the long run, is expected to be highly correlated. It should be noted that in the absence of capital mobility, the two deficits cannot be "twins". Finally, it pertinent to expect that a high correlation between current account and investment is more likely to occur in developing countries like Asia and Africa.

The coefficient of budget balance and investment in equation (6) are expected to be equal to unity if a country is perfectly integrated into the world economy and budgetary and investment expenditures are financed on the world financial market. Consequently, if this restriction holds, then it validates a high degree of financial integration and perfect international capital mobility amongst the markets under investigation. On the other hand, if the coefficient for investment in equation in the current account equation is not significantly difference from zero (or near zero), this means that domestic investment is financed by domestic savings, dubbed the Feldstein–Horioka puzzle. According to Feldstein–Horioka (1980), a high portion of the investment is significantly different from zero and this implies that the financial market is perfectly decoupled from the world capital markets (no capital mobility). Investment is completely financed from domestic sources rather than global market, and this impedes current account balances.

3. REVIEW OF RELATED LITERATURE

Budget operations in an economy affects the level of aggregate demand, and changes in aggregate demand affects the level of employment and general prices. In the word of Musgrave, "Budget policy affects the division of total output between consumption and capital formation and thereby reduce the rate of economic growth (Musgrave and Musgrave, 2004). Economic theory however, has not automatically gave strong conclusion about the impact of budget deficit on current account balance; but economists has been theorizing on the effects of budget deficit on current account balance. Thus, under this section, we first present and discussed the reviews of related theories followed by the review of empirical literature on budget deficit, current account balance and economic growth.

3.1. Theoretical Literature

3.1.1. Keynesian Approach

3.1.1.1. Absorption Approach

Assuming savings investment gap is stable, an increase in government budget deficit will lead to a deterioration current account balance. Theoretically, this mechanism can be well analyzed using Keynesian income-expenditure approach. Which states that an increase in government expenditure will lead to increase in domestic absorption, which will lead to an increase in domestic or national income. Then increased national income will reduce imports and will eventually worsen current account balance which is the twin deficit hypothesis.

In the words of Felstein (1992) who states that it is not always inevitable that all the adjustments in the national income identity will come from net export. If for instance investment falls, then the adjustment in the

trade balance that is required by the increased deficit would be smaller. Income in the budget deficit will increase domestic absorption and thereafter domestic income increases. Increased income will induce imports and eventually will reduce the surplus or increase the deficits in the trade balance.

3.1.1.2. Mundell-Fleming Approach

It is based on a popular Mundel-Fleming model which poised that "an increase in budget deficit will induce upward pressure on increased rate, this will lead to inflow of capital and appreciation of exchange rate." The appreciation of exchange rate makes a county's exports less competitive and makes imports more attractive. Thereby worsening the current account balance under a flexible system. However, under a fixed exchange rate, budget deficit incremental will lead to higher real income or prices and will worsen current account balance. By the way of clearer explanations, running a persistent budget deficit will ultimately widen current account deficit in both fixed and flexible exchange rate regimes even though transmission mechanism are different (Salavatore, 2006). The Mundell-Fleming view poised that, there is an indirect relationship exists between public imbalances, domestic interest rates, transfer payments and current account balances (Ahmed and Aworinde, 2015).

If more emphases are is laid on this link in the short run, it is assumed that the model portrays a short run relationship between budget balance and current account balance through interest rate and exchange rate mechanism. Researchers such as Njoronge (2010) have found this link to be true, and also support for the role of intermediating variables like exchange rate and interest rates as explained by Mundell-Fleming model.

Thus, the Keynesians hypothesis concluded with the following brief assertions; firstly, that there exist a positive relationship between budget deficit and current account deficit, secondly, there is a unidirectional Granger causality that runs from budget deficit to current account deficit.

3.1.2. Ricardian Equivalence Hypothesis

The Ricardian equivalence hypothesis states that modern government finances their spending by two ways namely, taxing or borrowing. If it uses taxes, then current taxpayers fund government activities; if the government is to fund her activities by borrowing, the interest on the government debt must be paid by the future taxpayers. While deficits makes the government to avoid the needs to impose taxes when it spends, as this will just shift taxation to future taxpayers.

Keynesian economists assumes that if the government increase spending today holding tax constant, it will cause aggregate demand to increase. According to Ricardian equivalence hypothesis (REH), since the agents (taxpayers) are rational forward booking, they will be aware of paying back government expenditure in the future date, so that they will save enough of their current income, by reducing their consumption in order to save up for higher future taxes. (Barro, 1996). So government expenditure borrowing to finance tax cut will have no effect on consumption, as well as on aggregate demand.

This theorem assumes that any changes in government budget will offset changes in private savings, therefore, whether the government uses debt financing or taxes, it should not affect the current account balance. (Thomas, and Abderrezak, 1988). This theorem further poised that there is no granger causal relationship between budget deficit and current account deficit (Nickel and Vansteenkiste, 2008; Ratha, 2012).

3.1.3. Neoclassical Theories of Budget Deficit

The neoclassicals' are of the view that there exist three central features that plays an important determining the impact of budget deficits. They maintained that consumption of the each individual is determined as the solution to an intertemporal optimization problem, where both borrowing and lending are permitted at the market rate of interest. They further posits that, individual have finite lifespan and finally they posit that, market clearing are generally assumed in all periods. Ever since then, much literatures are built to check the validity of these aforesaid propositions. Hall (1978) formulated permanent income hypothesis, King (1983) and Hayashi (1985) states that consumers behave as though they solve an intertemporal optimization problem with access to perfect capital markets.

The neoclassical second characteristic (finite lifespan) defines the central difference between the neoclassical and Ricardian frame works. And the third characteristics (full employment) is the primary distinction between neoclassical and Keynesian paradigms.

3.2. Empirical Literature

In the study conducted by Bhat and Sharma (2018) examined the association between current account deficit and budget deficit in India from 1970 to 2015 using autoregressive distributed lag model (ARDL). In their findings, they accepted Keynesian proposition and rejects Ricardian equivalence theorem. The results find long-run relationship between current account deficits and budget deficit. Afonso et al. (2018) studied 193 countries over the period of 1980 – 2016 using fixed effects model and system Generalized Method of Moment (GMM) model. The result discovered that the existence of fiscal policy reduces the effect of budget deficit on current account, when there is an absence of fiscal policy, twin deficit hypothesis exists. Goyal and Kumar (2018), which investigates the connection that exists between oil shocks, current account balance and budget deficit as well as

exchange rate, in a structural vector autoregressive model for India over the period of 1996Q2 to 2015Q15. They discovered that the impact of oil stuns and differential effects of consumption and venture proposes compositional impacts and supply of oil stuns rule the conduct of the India's current account balance, directing total request channel, which implies that Ricardian hypothesis is not supported. In the study conducted by Rajasekar and Do (2016), they discovered the existence of long run relationship and bidirectional causality between budget deficit and current account deficit in India. Garg and Prabheesh (2017) investigated the twin deficit for India utilizing ARDL model and confirmed the existence of twin deficit hypothesis. Bandinger et al. (2017) carried a study on the role of fiscal rules in the relationship between fiscal and external balances in 73 countries over the period of 1985 – 2012. Their results confirmed the twin deficits hypothesis. In a study conducted by Litsios and Pilbeam (2017) in Greece, Portugal and Spain using ARDL model, the result disclosed that there is existence of negative relationship between savings and current account deficit in all the three countries.

Epaphra (2017) employed the Johansen Cointegration technique and Vector Error Correction Model (VECM) to investigate the legitimacy of the twin deficit theory in Tanzania. The results obtained from his empirical study suggests that the twin deficit theory is present in the Tanzanian Economy, implying that budget deficit worsen the current account balance. Akbas and Lebe (2016) studied the triple deficiency theory in G7 economies and it was valid as causality spanned from savings gap to current account deficit, from fiscal balance to current account deficit and from fiscal balance to savings gap. Sakyi and Opoku (2016) conducted a study on the twin deficiency theory in Ghana using macroeconomic data covering 1960 to 2013. Thus, using cointegration techniques, while controlling for structural breaks they made a finding that there is existence of twin divergence theory in Ghana. Baneng, Naape (2019) in his study titled "Is the so called movement between budget deficit and current account deficit applicable in South Africa" using ARDL bound testing approach and Granger causality analysis and discovered that budget deficit has positive impact on current account deficit and also there is a unidirectional causality between budget deficit and current account deficit in South Africa. Nikolaos, Antonakakis, et al. (2019) investigated the twin deficits hypothesis by employing long run cointegrating relationship between US budget and trade deficits from 1791Q1 to 2013Q4. The results of their study suggests that there existence of nonlinearities and structural breaks between trade and budget deficits, thus the study favoured twin deficits hypothesis. Kahssay (2018) investigated the twin deficit hypothesis in Ethiopia from 1976 to 2015 using VEC model and Granger causality test, the results shows that there is a negative and statistically significant link between current account deficit and budget deficit, while Granger causality test revealed the occurrence of bi-directional causality between the deficits at 5% level of significance.

Wambui (2016) carried out a study on twin deficit in East African Countries (Kenya, Uganda and Tanzania) using VAR-GARCH model for the period of 1980 to 2016. His study further utilized Bai and Perron Global Optimization approach to determine structural breaks and conditional heteroscedasticity in all the countries. The result suggests the existence of structural breaks in the countries with more in Uganda. Thus, budget deficit and current account balance was insignificance in Uganda. The study conducted by Ngakosso, A, (2016) does not support the Keynesian theory for the case study of the Republic of Congo, the study employed ARDL approach to cointegration and found that certainty, current account balance is only better when the budget deficit is combined in the analysis of economic policy to be implemented. Mahuni (2017) in his study confirmed a long run unidirectional reverse causality in Zambia using the VECM model. Ateeq and Sumaira (2017) in Pakistan, used the time series data spanning from 1972-2015 and the empirical result from cointegration techniques confirmed a one way causality running from external deficits to budget deficits in the long run. Sen and Kaya, (2018a) envisaged the validity of triple deficit hypothesis in post-communist countries using annual data on trade balance, private savings-investment balance and fiscal balance from 1994 to 2015. They employed Granger causality test to solicit the existence of causal relationship among the variables, and they adopted an approach as proposed by Konya (2006) which allows capturing to country heterogeneity and correctional dependencies of among countries. The study found that negative relationship exists between budget deficits and current account for Poland and Romanian, Russia, Ukraine, Czech Republic and Hungary.

Coban and Balikcioglu (2016) used a dynamic panel model to investigate the divergence of twin or triple deficit for 24 transition economies from 2002 to 2013 and current account balance, budget deficit and savings-investment gap a percentage of GDP was used and the findings in their study revealed no evidence to justify relationship between current account balance and saving deficits. On the other hand, there is an inverse relationship between fiscal balance (budget deficit) and current account balance which could be as a result of heavy taxes on import. Banday, (2016) researched the relationship between the current account deficit and budget deficit in Indian economy using time series data for years 1990 – 2013, while controlling for inflation rate and exchange rate. Thus, the study adopted cointegration analysis through which the existence of long run relationship among the variables were found. Also a bidirectional granger causality between fiscal deficit and current account deficits was discovered. Ramu (2017) investigated the long run relationship between fiscal deficit and current account deficit over the period of 1980 – 2013. The study used Johansen cointegration method and vector error correction model. The results found long run cointegration between fiscal deficit and current account deficit in India.

4. THEORETICAL FRAMEWORK

This study was underpinned on the popular Mundel-Fleming model which posits that "an increase in budget deficit will induce upward pressure on increased rate, this will lead to inflow of capital and appreciation of exchange rate." The appreciation of exchange rate makes a county's exports less competitive and makes imports more attractive. Thereby worsening the current account balance under a flexible system. However, under a fixed exchange rate, budget deficit incremental will lead to higher real income or prices and will worsen current account balance. In a clearer view, running a persistent budget deficit will ultimately widen current account deficit in both fixed and flexible exchange rate regimes even though transmission mechanism are different (Salavatore, 2006). The Mundell-Fleming view poised that, there is an indirect relationship exists between public imbalances, domestic interest rates, transfer payments and current account balances (Ahmed and Aworinde, 2015).

4.1. Reserch Methodology and Data Source

This study focus on the impact of budget deficit on current account balance in selected Asian and African countries and a time series data spanning from 1995 to 2019 was used. We incorporated the three main measures of budgetary deficits which includes (revenue deficit, fiscal deficit and primary deficit) in other to measure the budget deficit properly. Other variables include, current account balance, inflation rate, exchange rates, savings rate, capital flows from abroad, real gross domestic product, net current income, and balance of trade and transfer payments. Thus, the choice of both the scope and variables was informed by the availability of data in the selected countries and in the sampled year. For clearer view, we defined each of the variables below.

Budget deficit (BD) is refer to as the difference between all receipts and expenses in both revenue and capital account of the government. It occurs when the when government are in short of resources to meet all her expenses in the long run. Budget deficit is used by policy makers to ascertain the health of an economy. Budgetary deficit in an economy is primarily categorized into three main categories namely (revenue deficits, fiscal deficits and primary deficits). Revenue deficits (RVD) is measured by total revenue expenditure – total revenue receipts; fiscal deficits (FSD) is measured by total expenditure – total receipts excluding borrowings and primary deficits is measured by fiscal deficit – interest payments. Inflation rate (INF) is defined as the persistent rise in the general level of prices where a unit of currency buys less than it did in the previous periods. Inflation rate is often expressed as percentage, it reflects a decrease in the purchasing power of a nation's currency. The exchange rate (EXR) is the ratio of the price level abroad and the domestic price level. The main formula for calculation of exchange rate is EXR=eP*/P, where e is the norminal exchange rate, P* denotes the average price of a good, and P is the average price of the good. Real Gross Domestic Product (RGDP) is defined as the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. Calculated using the following formula: **GDP = C + G + I + NX**, or (consumption + government spending + investment + net exports). Financial deepening (FD) is an increase in ratio of money supply to GDP M2/GDP or price index. It refers to liquid money. The more liquid money is available in an economy, the more opportunities exist for continued growth. The current account balance is defined as the sum of the balance of trade (goods and services, exports minus imports), net income from abroad, and net current transfer. A positive current account means that the nation is a net lender to the rest of the world, while a negative current account balance means that the nation is a net borrower from rest of the world. Savings (SAV) is referred to aggregate of public and private savings held within the economy. It calculated using the following formula: Savings (S) = T – G. Where T = taxation and G = government spending. Savings can be negative or positive. If the outcome of the savings in an economy is negative, it implies that the economy is in budget deficit and if the outcome is positive, it implies that the economy is in budget surplus. Capital flow from abroad (CF) is the movement of money from abroad for the purpose of investment, trade or business product, including the flow of capital within corporations in form of investment capital, capital spending on operations, research and development. Net Current Income (NCI) is refers to as the amount an individual or firm earns after subtracting taxes and other deductions from gross income. Balance of Trade (BOT) is the difference in the value between the country's exports and imports. Transfer payments (TRP) is seen as a redistribution of income and wealth by the means of the government making a payment, without goods and services being received in return. Typical examples are subsidies or benefit payments by the government. The data for the variable was sourced from the World Bank's World Development Indicators (WDI) 2019 edition.

4.2. Model Specification

This paper adopts the Auto-Regressive Distributed Lag (ARDL) model following extensive studies by Manasseh et al. (2024b), Manasseh et al. (2018a) and Manasseh et al. (2017) who have used ARDL in their respective studies. The ARDL model, widely used in time-series econometrics, makes several key assumptions to ensure its reliability and validity. First, it assumes that the data is stationary in its levels or first differences (Pesaran & Shin, 1999). Specifically, the ARDL model can handle variables that are integrated of order zero (I(0)) or one (I(1)), but it cannot handle variables that are integrated of order two (I(2)) (Pesaran et al., 2001). Second, it assumes that there is a long-run equilibrium relationship between the variables being analyzed. This assumption

is tested using the bounds testing approach, which determines if the variables are cointegrated. Additionally, ARDL assumes that there are no significant structural breaks in the data, and the model should be appropriately specified to capture both short-run dynamics and long-run relationships. However, the ARDL as specified by Pesaran and Shin (1999) for this study is presented below.

$$\Delta InCAB_{i,t} = \tau_0 + \sum_{k-1}^{n} ב_{i,k}\,\Delta InCAB_{t-k} + \sum_{k-1}^{n} \psi_{1,j}\,\Delta InBDFI_{i,t-j} + \sum_{k-1}^{n} \psi_{2,j}\,\Delta InMEVI_{i,t-j} + \sum_{k-1}^{n} \psi_{3,j}\,\Delta InBOT_{i,t-j} + \sum_{k-1}^{n} \psi_{4,j}\,\Delta InTRP_{i,t-j} + \beta_1 InCAB_{i,t-1} + \beta_2 InBDFI_{i,t-1} + \beta_3 InMEVI_{i,t-1} + \beta_4 InBOT_{i,t-1} + \beta_5 InTRP_{i,t-1} + א_i + \varepsilon_{i,t} \quad (1)$$

Where $CAB_{i,t}$ is the current account balance as well as dependent variable, CAB_{t-k} denotes the lag of dependent variable, $BDFI_{i,t-j}$ is the indicators for budget deficit which encompass – budget deficit (BD), fiscal deficit (FSD), primary deficit (PRD) and revenue deficit (RVD), $MEVI_{i,t-j}$ denotes the macroeconomic indicators – inflation rate (INF), exchange rate (EXR), savings rate (SVR), capital flow from abroad (CF), and net current income (NCI) which also represent the key explanatory variables, while the control variables include $BOT_{i,t-j}$ balance of trade and $TRP_{i,t-j}$ transfer payments. β is the long-term coefficient and Δ is the first differenced operator. Equation 1 is estimated using the dependent variable's lag to account for endogeneity issues and country-specific effects (Hao, 2006). It is expected that ב>0, suggesting that an increase in budget deficit will retard current account balance in selected Asian and African countries and this explains the apriori assumptions of the parameters in equation (1). The lag length in the study is ascertained using the Akaike information criterion (AIC). The ARDL model is particularly valued for several reasons in comparison to other estimation techniques. One major advantage is its flexibility in dealing with variables of different orders of integration, unlike traditional cointegration methods such as the Johansen test, which requires all variables to be integrated of the same order (I(1)) (Pesaran et al., 2001). This makes ARDL more robust when working with real-world data, where it is common to have mixed integration orders. Another key benefit of the ARDL model is its ability to estimate both short-run and long-run relationships simultaneously, which is crucial in understanding how variables adjust over time in response to changes (Pesaran & Shin, 1999). This feature is particularly useful for policy analysis and forecasting, as it provides insights into both the immediate effects and the eventual equilibrium state. Moreover, ARDL is also advantageous in small sample sizes, where other methods like error correction models (ECMs) or Johansen cointegration tests may suffer from low power (Narayan, 2005). Furthermore, ARDL does not require the variables to be strictly stationary, which allows for more flexibility and practical applicability. This makes it a more accessible tool for researchers working with time-series data, especially in developing countries or when historical data is limited. As a result, ARDL has become increasingly popular in empirical research on economic and financial relationships. The study used the error correction model (ECM) as shown in equation (4) to ascertain the short-run dynamics after establishing the long-run connections between variables. Pesaran et al. (1999, 2001) state that the conditional ARDL (p, q … q) error correction term (ECT) may be expressed as follows:

$$\Delta InCAB_{i,t} = \tau_0 + \sum_{k-1}^{n} ב_{i,k}\,\Delta InCAB_{t-k} + \sum_{k-1}^{n} \psi_{1,j}\,\Delta InBDFI_{i,t-j} + \sum_{k-1}^{n} \psi_{2,j}\,\Delta InMEVI_{i,t-j} + \sum_{k-1}^{n} \psi_{3,j}\,\Delta InBOT_{i,t-j} + \sum_{k-1}^{n} \psi_{4,j}\,\Delta InTRP_{i,t-j} + א_i + \vartheta_i + \varepsilon_{i,t} \quad (4)$$

Where Δ represents the first difference while $\vartheta_{i,t}$ is the coefficient of ECM for short-run dynamics, ECM shows the speed of adjustment in long-run equilibrium after a shock in the short run.

5. EMPIRICAL RESULTS AND DISCUSSION OF FINDINGS

This section houses the results and discussion of findings in the study. In order to study the impact of budget deficit on current account balance, we selected 20 Asian countries and 40 African countries and made choices of variables and period of study based on availability of data. Thus, we carried out descriptive statistics to ascertain the nature of the variables used in the study. Also, bearing in mind that times series data in panel studies are mostly characterized by Stationarity problems, we employed Levin, Lin and Chu, Im, Pesaran and Shin, Combined ADF and Fisher, as well as Combined PP and Fisher unit root tests to test if the variables are stationary. Thus, other pre and post OLS estimation tests were carried out following Pesaran et al. (20001) to ensure that our estimates does not yield spurious results as well as to satisfy the assumptions of the ARDL (p, q) which include cross sectional dependency test, normality test, Breusch-Godfrey Serial Correlation LM test, Ramsey reset test, and White Heteroscedasticity test. We equally employed Pedroni and Kao cointegration test to ascertain the long run relationship between the variables. Thus, below are the results of the descriptive statistics.

5.1. Descriptive Statistics

In panel studies, descriptive statistics are used to describe the basic features of the data in the study. It gives a

brief summary of the behavior of the variables such as their sample, and quantitative description of the variables as well as the average values of the variables used in the study. From table 1, the minimum and maximum coefficients are -1.86 and 8.82. That is the least and highest values in the series. Also, the Jarque-Bera statistics are all statistically significance at 1 percent significant level, implying that the variables are normally distributed. In the light of this, the behavior of the variables in the descriptive analysis depicts that there is no evidence of serial correlation among the variables. Thus, any form of unobserved serial correlation and heteroscedasticity was corrected using Newey-West Hac estimation procedure.

Table 1: Summary of Descriptive Statistics

Variable	Acronyms	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis
Current Account Balance	CAB	1.43	1.53	3.88	-3.85	1.26	-0.66	3.87
Budget Deficit	BD	4.56	4.58	4.97	1.73	0.21	-7.02	92.68
Revenue Deficit	RVD	4.54	4.58	5.54	1.86	0.28	-3.32	30.74
Fiscal Deficit	FSD	1.65	1.69	6.34	-5.88	1.24	-0.79	6.04
Primary Deficit	PRD	1.56	1.59	6.33	-5.88	1.34	-0.76	5.70
Inflation Rate	INF	0.11	0.05	2.63	-0.27	0.73	31.38	1101.15
Exchange Rate	EXR	0.45	0.00	5.38	0.00	0.58	1.31	7.21
Savings Rate	SVR	2.92	2.98	4.20	-1.12	0.72	-1.48	6.90
Capital Flows From Abroad	CF	4.07	4.07	7.39	0.78	0.96	0.14	3.61
Net Current Income	NCI	0.31	-0.03	8.82	-7.69	3.083	0.31	2.61
Balance of Trade	BOT	1.72	2.06	3.93	-4.86	1.56	-1.21	4.55
Transfer Payment	TRP	0.17	0.00	7.78	0.00	0.68	7.01	61.59

5.2. Correlation Test

In order to gauge the strength of relationship that exists between the variables in the models, we carried out correlation test for all the variables in the specified models in the study (model 1-8). In model 1, there is negative correlation between budget deficit and current account balance, likewise in models 2. However, it conformed to the apriori economic expectation. The negative correlation that exist between budget deficit and current account balance stems from the fact that in most African and Asian countries, the government seldom prudency in fiscal policy. A typical example is cases where government uses funds meant for other sectors of the economy due to political gains. In model 3 and 4, there is negative strong correlation between budget deficits, all the variables in the models except TRP with real gross domestic product (RGDP). Also, the interactive variables have strong negative relationship with current account balance. The relationship that exist between current account balance, budget deficit and other variables are positively correlated.

Table 2: Correlation matrix.

	CAB	BD	RVD	FSD	PRD	INF	EXR	SVR	CF	NCI	BOT	TRP
CAB	1.000											
BD	-0.829	1.000										
RVD	-0.974	0.298	1.000									
FSD	-0.781	-0.115	-0.002	1.000								
PRD	-0.974	0.071	0.005	0.048	1.000							
INF	0.904	-0.180	-0.064	0.063	-0.039	1.000						
EXR	-0.959	0.045	0.067	-0.027	0.189	-0.031	1.000					
SVR	-0.711	0.035	0.047	0.036	-0.358	0.019	0.089	1.000				
CF	0.422	-0.122	-0.053	0.066	0.061	0.178	0.086	0.906	1.000			
NCI	-0.059	0.503	-0.959	-0.036	0.093	-0.036	0.067	-0.728	0.177	1.000		
BOT	-0.214	-0.229	-0.124	0.824	-0.748	0.068	0.047	0.036	-0.013	0.089	1.000	
TRP	-0.789	-0.044	0.422	0.044	-0.897	0.018	-0.053	0.066	0.012	0.086	0.906	1.000

5.3. Unit Root Tests

In order to avoid spuriousness of the estimates which normally occur in time series data, we followed Manasseh et al. (2018) and employed Levin, Lin and Chu (LLC), Im Pesaran and Shin (IPS), Combine ADF, PP and Fisher unit root tests (see table 2 below). What informed our combination of LLC, IPS and Combined ADF-Fisher and PP-Fisher unit root test was based on their advantages. LLC allows for heterogeneity of individual deterministic effects and assume homogenous auto-regression for the variables in the model, IPS on the other hand allows for residual serial correlation and heterogeneity of the dynamics and error variances across groups as well as the mean of ADF statistics computed for each cross-section units in the panel and Fisher test is non-parametric in nature.

Table 3: Summary of Unit Root Results.

Variables	LLC	IPS	ADF-Fisher	PP-Fisher	Order of Integration	
					Level	First Difference
BD	-2.294**	-3.293**	119.0**	122.3***		
	(0.010)	(0.000)	(0.016)	(0.006)	I(0)	-
CAB	-6.833***	-7.645***	257.7***	260.3***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-
INF	-45.95***	-28.04***	708.3***	709.5***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-
EXR	-16.80***	-15.60***	300.6***	315.4***		
	(0.000)	(0.000)	(0.000)	(0.000)	-	I(1)
SVR	-24.42***	-24.66***	751.0***	1356.***		
	(0.000)	(0.000)	(0.000)	(0.000)	-	I(1)
CF	-29.06***	-11.05***	145.8***	153.0***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	I(1)
NCI	-26.97***	-27.24***	837.7***	1001.***		
	(0.000)	(0.000)	(0.000)	(0.000)	-	I(1)
BOT	-5.151***	-5.528***	225.4***	243.4***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-
TRP	-5.535***	-8.259***	307.6***	512.6***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-
RVD	-20.40***	-23.12***	716.9***	773.7***		
	(0.000)	(0.000)	(0.000)	(0.000)	-	I(1)
FSD	-14.85***	-21.50***	676.6***	705.2***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-
PRD	-14.24***	-20.12***	634.5***	651.6***		
	(0.000)	(0.000)	(0.000)	(0.000)	I(0)	-

Note: The p-values, ***, ** and * represents the level of significance

Panel unit root tests are governed by the assumption that the variables are integrated of order I(0) or I(1) and not I(2) or above, if any variable is integrated of order above I(0) or I(1) the estimates of the variable would go boosted. The LLC, IPS, ADF-Fisher and PP-Fisher tests for each of the variables shows that the null hypothesis (there is unit root) could be rejected at 1 percent level of significance, except for Budget deficit (BD) in LLC, IPS and ADF-Fisher tests which was stationary at 5 percent level of significance. In panel ARDL analysis, when the variables are integrated of either order I(0) or I(1), we move ahead to test for cointegration since the assumption of the ARDL is justified.

5.4. Cointegration Tests

Haven found that the variables are integrated of order I(0) and I(1), we move to examine if the variables have long run relationship. To do this, we employed Pedroni and Kao cointegration tests. Out of three key panel cointegration tests in the literature which include Pedroni (1999; 2004), Kao (1999) and Fisher-type using Johansen methodology (Maddala, and Wu, 1999), we chose Pedroni (1999; 2004) and complement it with Koa (1999) test as a robust check. What informed our decision was that Pedroni and Kao tests are based on Engle-Granger (1987) two-step (residual-based) cointegration. Also, Pedroni test assumes cross sectional dependence which is found to inherent in the series for the study.

Table 4: Pedroni and Kao Cointegration Results.

	1	2	3
		Within Dimension	
Panel-V Statistic	-1.136*	-5.503***	-4.164*
Panel-rho tatistic	2.505*	5.913***	-2.123***
Panel-PP tatistic	-5.390***	-3.514***	-16.20***
Panel-ADF taistic	-4.733***	-1.951**	-15.73***
		Between Dimension	
Group rho-Stat	-6.989	8.090***	4.863*
Group PP-Stat	5.691	-2.427**	-4.221***
Group ADF-Stat	4.875	-0.963*	-16.41***
		Robust Check: Kao Cointegration Test	
ADF-Stat	-7.338***	5.017***	-6.364***
Prob.	0.000	0.000	0.000

Note: ***, ** and * represent 1%, 5% and 10% percent level of significance respectively.

The null hypothesis is "no cointegration" against the alternative hypothesis "cointegration"; and the decision rule is to reject the null hypothesis is the calculated p-value is less than (α=0.05), accept if otherwise. From the results in table 4, the P-values of the variables of models 1-3 of within dimension and between dimensions are less than 0.05; implying there is existence of long run relationship between the variables of the model. As a way of robust check, to ascertain if there is truly existence of cointegration between the variables, we complemented Pedroni cointegration test with Kao (1999) cointegration test. With null hypothesis "no cointegration" and

decision rule "reject the null hypothesis if p-value is less than 0.05" otherwise, do not reject. From the result, we observed that the P-values of the Kao cointegration test for all the models are less than 0.05.

5.5. ARDL Estimation

Haven ascertained that the variables are cointegrated at level and first difference, we further estimated the models using panel autoregressive distributed lag method of estimation. Before the estimation, we observed all the assumptions of ordinary least squares (OLS) model by carrying out OLS pre and post estimation tests (normality, Breusch-Godfrey Serial correlation LM, Ramsey reset test and White heteroscedasticity tests) for all the models and their outcomes shows that the models are normally distributed, well specified and their error terms are serial uncorrelated and homoscedastic. In order to choose the specific model to be utilized in the estimation, we carried out the hausman test for all the specified equations and the results suggests that random effects is the best for the estimation since the p-values of the estimated hausman test are greater than 0.05 (see table 7).

However in this study, in other to critically look into budget deficit's impact on current account balance, we employed the following variables; current account balance (CAB), budget deficit (BD), revenue deficit (RVD), fiscal deficit (FSD), primary deficit (PRD), saving rate (SVR), inflation rate (INF), exchange rate (EXR), capital flow from abroad (CF), net current income (NCI), balance of trade (BOT) and transfer payment (TRP). Following Abiad et al (2009), we employed three measures of budget deficit to critically ascertain how budget deficit affects current account balance in the sampled countries. From the result of presented in table 6a, in model 1, we discovered the budget deficit have negative influence on current account balance. This implies that budget deficit hinders current account balance and economic growth. Increase in budget deficits will rise national debt, causes international trade bottlenecks, lead to higher debt interest payments, increase aggregate demand and may cause crowding out effect on the economy. It results when a country's expenditure is greater than revenue receipt. In the extreme ends, government may resort borrow from other countries to meet up with her demands. Apart from the effects of budget deficit, the finding from the result also tallied with the "Mundel-Fleming" model which states that "increase in budget deficit will induce upward pressure at increased rate in the economy, which will lead to inflow of capital and appreciation of exchange rate, thereby worsening the current account balance under flexible exchange rate system. In a clearer view, running a persistent budget deficit will ultimately widen current account deficit in both fixed and flexible exchange rate regimes even though transmission mechanisms differs across nations (Salavatore, 2006). The findings of this results corresponds to the studies of Goyal Kumar (2018), Afonso et al. (2018), Bhat and Sharma (2018), Rajasekar and Do (2016), Garg and Prabhaesh (2017), Bandiger et al. (2017), Litsiors and Pilbeam (2017), Eparphra (2017) and Sakyi and Opokun (2016) among others who claimed that budget deficit deteriorate, current account balance and economic growth.

We extended our research on the impact of budget deficit on current account balance by replacing budget deficit with three main measures of budget deficit (revenue deficit (RVD), fiscal deficit (FSD) and primary deficit (PRD)) in the model and regressed it with other variables using current account balance as the dependent variable; as in model 2. The result of the model shows that RVD, FSD and PRD depicted negative impact on current account balance at 10% and 1% significant levels. This is in line with the discoveries of Litsiors and Pilbeam (2017), Eparphra (2017) and Sakyi and Opokun (2016) among others who claimed that budget deficit deteriorate, current account balance and economic growth as earlier stated. Also, it further supports the assertion of "Mundel-Fleming" model which poised that increase in budget deficit deteriorate current accounts balance. Thus, balance of trade (BOT), transfer payments (TRP), exchange rate (EXR) and net current income (NCI) have positive impact on current account balance. This implies that a unit increase in, BOT, TRP, EXR, and NCI would enhance current account balance by the magnitude of 1.539336, 0.165664, 0.002516 and 0.306696 all things being equal.

Table 5: ARDL Long Run Results.

Variable	Dependent Variable: InCAB		
	Model 1	**Model 2**	**Model 3**
InBD	-0.188***	-0.935**	0.063***
	(0.000)	(0.029)	(0.005)
InFSD	1.539***		
	(0.000)		
InPRD		0.664***	
		(0.001)	
InRVD			-0.231***
			(0.000)
InINF	-0.038***	0.057***	0.804
	(0.000)	(0.004)	(0.578)
InCF	0.466**	0.516***	0.074
	(0.046)	(0.000)	(0.578)
InBOT	2.350***	-0.143	0.0316
	(0.000)	(0.584)	(0.258)
InTRP	0.105***	0.696	0.464**
	(0.000)	(0.866)	(0.017)
InD(EXR)	0.804	-0.885**	0.939
	(0.935)	(0.012)	(0.569)
InD(SVR)	-0.116***	0.371	0.985
	(0.009)	(0.251)	(0.447)
InD(NCI)	0.058***	0.097**	0.606***
	(0.002)	(0.038)	(0.000)
Hausman Test	14.91	8.695	1.523
	(0.060)	(0.469)	(0.635)
Normality Test	48.53	79.64	0.726
	(0.000)	(0.000)	(0.000)
Serial Correlation Test	8.164	8.317	0.334
	(0.104)	(0.084)	(0.966)
Ramsey Reset Test	-0.052	-0.439	0.334
	(0.000)	(0.022)	(0.000)
Heteroscedasticity Test	1.381	1.028	0.738
	(0.199)	(0.414)	(0.586)

Note: ***, **, and * denotes 1%, 5% and 10%, (.) denotes the probability value.

5.6. Short-Run Dynamics

The cointegrating equation (ECM) measures the short-run impact of each of the variable in the model. It also measures the rate at which the long run relationship is accounted for in the short-run. The coefficients of the error correction model for models 1, 2, and 3 include (-0.081, -0.460, and -0.925). The speed of adjustment of current account balance to changes in budget deficit measures is about 8%, 46%, and 92% respectively to ensure full convergence to its equilibrium level. Though, the speed of adjustment of current account balance to changes in the measures of budget deficit were discovered to be faster for some models and faster in some models. Based on these findings, the study therefore concludes that a long-run relationship exists between budget deficit and economic growth in Asia and Africa supporting the studies conducted by Goyal Kumar (2018), Afonso et al. (2018), Bhat and Sharma (2018), Rajasekar and Do (2016), Garg and Prabhaesh (2017), Bandiger et al. (2017), Litsiors and Pilbeam (2017), among others.

Table 6: Short Run Elasticities.

Variable	Model 1	Model 2	Model 3
ECM(-1)	-0.081***	-0.460***	-0.925***
	(0.000)	(0.000)	(0.000)
ΔIn(BD)	0.626***	-0.885***	-0.025***
	(0.000)	(0.003)	(0.008)
ΔIn(FSD)	0.119		
	(0.325)		
ΔIn(PRD)		0.598	
		(0.552)	
ΔIn(RVD)			0.086
			(0.122)
ΔIn(INF)	0.024	-0.022	0.774
	(0.368)	(0.398)	(0.487)
ΔIn(INF)	-0.440	-3.880	-0.428
	(0.368)	(0.184)	(0.771)
ΔIn(CF)	0.294	-5.062	0.027
	(0.830)	(0.383)	(0.133)
ΔIn(BOT)	0.478	0.324	-0.311
	(0.651)	(0.724)	(0.301)
ΔIn(TRP)	-0.830	-0.034	0.022
	(0.923)	(0.290)	(0.515)
ΔIn(EXR,2)	-0.068	-0.035	-0.417***
	(0.056)	(0.507)	(0.006)
ΔIn(SVR,2)	0.922	-0.936	-0.292
	(0.089)	(0.067)	(0.479)
ΔIn(NCI,2)	0.978	-0.228	-0.081
	(0.887)	(0.523)	(0.451)

Note: ***, **, and * denotes 1%, 5% and 10%, (.) denotes the probability value

5.7. Wald Test

As propounded by Abraham Wald (1945), Wald test measures in panel studies how close the unrestricted estimates in a model come to satisfy the restriction. It has an asymptotic chi squared (X^2) distribution under the null hypothesis that if the restrictions are true, then the unrestricted estimates should come close satisfying the restrictions. In other words, the null hypothesis states that the coefficients of the dependent variable and explanatory variables are simultaneously equal to zero. If the test fail to reject the null hypothesis, it suggests that removing the variables from the model will substantially harm the fit of the model, since the predictor with a coefficient that is very small relative to its standard error is generally not doing much to help predict the dependent variable. However, another reason this test is used in the study is to ascertain if there is existence of long run relationship between the variables in the models. From table 6, the p-values of the F-statistic for all the models are statistically significant and less than α=0.05, implying the existence of long run relationships between the variables. Also, the coefficients of the F-statistics are greater than T-statistics in the absolute terms and the value of computed F-statistics when compared to Pesaran et al. (2001) F-table value, exceeds the upper critical level (4.00). Therefore, we reject the null hypothesis and conclude that coefficients of the dependent variable and explanatory variables are not simultaneously equal to zero, suggesting there is existence of long run relationship between the variables of the models.

Table 7: Wald Test.

Tests	Model 1	Model 2	Model 3
T-Statistic	-3676***	2.305**	3.455***
F-Statistic	1352***	5.314**	11.93***
Chi-Square	1351***	5.314**	11.93***
d.f	(1, 148)	(1, 148)	(1, 148)

Note: ***, ** and * represents 1%, 5% and 10% levels of significance.

5.8. Interactive Effects Summary

The interaction effect between budget deficit (BD) and savings arte (SVR) is 0.000015, while budget deficit have a negative significant influence on current account balance with the magnitude of 19.24% before interaction. The result obtained from interaction of BD*CF is 0.100237, it is positive compare to -0.192488 value before interaction. The BD*NCI, BD*BOT and BD*TRP have positive and significant influence on current account balance after interaction. Following the 2008 financial crises, most countries particularly in developing countries located in Africa and Asia was severely stroked and created lots of macroeconomic bottlenecks – unemployment increase, trade imbalances, and increase in government spending which outweighs government savings and hinder growth and development (Algieri, 2013). Revenue deficit, was one of the measures of budget deficits which occurs when revenue expenditure is greater than total revenue receipts of government. Savings rate (SVR) was found to be enhanced after interaction with revenue deficit, RVD*CF, RVD*NCI and RVD*TRP positively influenced current account balance after interaction by the magnitude of 18.44%, 6%, and 84% respectively. The

rational for interacting revenue deficit with balance of trade, exchange rate and inflation rate was to see how fiscal policies in Asia and Africa affect international trade. However, after interacting RVD*BOT, RVD*INF and RVD*EXR they still exert negative influence on current account balance. Fiscal deficit was also interacted with the model variables and the result revealed to us that interaction of SVR, NCI, TRP and INF have negative impact on current account balance, while the interaction of CF, BOT and EXR were positively related to current account balance. The interaction effects of PRD*SVR and PRD*CF have positive impact on current account balance after interaction. While interacting BOT, NCI, TRP, INF and EXR exerted negative but significant impact on current account balance. The results of the interaction between fiscal deficit (FSD), savings rate (SVR), net current income (NCI), transfer payment (TRP), and inflation rate (INF), although statistically significant, but impacted negatively on current account balance even after interaction.

Table 8: The Interactive Effects Summary.

Interactive Variables	Before Interaction	After Interaction
DLn(BD)*DLn(SVR)	-0.192***	0.015*
DLn(BD)*DLn(CF)	-0.192***	0.237***
DLn(BD)*DLn(NCI)	-0.192***	0.373***
DLn(BD)*DLn(BOT)	-0.192***	0.759**
DLn(BD)*DLn(TRP)	-0.192***	0.917***
DLn(BD)*DLn(INF)	-0.192***	0.189***
DLn(BD)*DLn(EXR)	-0.192***	-0.464***
DLn(RVD)*DLn(SVR)	-0.232***	5.234***
DLn(RVD)*DLn(CF)	-0.231***	0.494**
DLn(RVD)*DLn(NCI)	-0.231***	0.979**
DLn(RVD)*DLn(BOT)	-0.231***	-0.183***
DLn(RVD)*DLn(TRP)	-0.231***	0.918**
DLn(RVD)*DLn(INF)	-0.231***	-0.398*
DLn(RVD)*DLn(EXR)	-0.231***	-0.920***
DLn(FSD)*DLn(SVR)	-0.093*	-0.056*
DLn(FSD)*DLn(CF)	-0.093*	0.617***
DLn(FSD)*DLn(NCI)	-0.093*	-0.350***
DLn(FSD)*DLn(BOT)	-0.093*	0.710***
DLn(FSD)*DLn(TRP)	-0.093*	-0.695***
DLn(FSD)*DLn(INF)	-0.093*	-0.864***
DLn(FSD)*DLn(EXR)	-0.093*	0.569***
DLn(PRD)*DLn(SVR)	-0.135***	0.314***
DLn(PRD)*DLn(CF)	-0.135***	0.239***
DLn(PRD)*DLn(NCI)	-0.135***	-0.812*
DLn(PRD)*DLn(BOT)	-0.135***	-0.540***
DLn(PRD)*DLn(TRP)	-0.135***	-0.559**
DLn(PRD)*DLn(INF)	-0.135***	-0.269***
DLn(PRD)*DLn(EXR)	-0.135***	-0.053*

Note: ***, ** and * represents 1%, 5% and 10% levels of significance.

While capital flows from abroad (CF), balance of trade (BOT) and exchange rate (EXR) rhymed with apriori economic expectations. In the same vein, when savings rate (SVR) was interacted with primary deficit, it yielded a positive estimate which is positively related to current account balance (CAB) against its behavior when interacted with fiscal deficit (FSD). Capital flow from abroad, also impacted current account balance positive. Surprisingly, PRD*NCI, PRD*BOT, PRD*TRP PRD*INF, and PRD*EXR showed negative influence on current account balance (CAB). In view of the above results, macroeconomic atmosphere is a strong factor that could adequately help to solve the problem of budget deficit for achievement of stable current account balance in Africa and Asia.

6. SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

This study focus on impact of budget deficit on current account balance selected Asian and African countries. In this study budget deficit was measured by employing all the measures of budget deficits which include (revenue deficit (RVD), fiscal deficit (FSD) and primary deficit (PRD)), while current account balance (CAB) was the dependent variable. Other variables we employed include savings rate (SVR), capital flows from abroad (CF), balance of trade (BOT), net current income (NCI), transfer payment (TRP), inflation rate (INF) and exchange rate (EXR). However, real gross domestic product (RGDP) a proxy to economic growth, was used as robustness check in the model. We used annual time series data spanning from 1995 to 2019, sourced from World Bank's world development indicator (WDI) 2019 edition and the model was regressed using panel autoregressive distributed lag model (PARDL) as proposed by Pesaran et al. (2001). Owing to the fact that time series data are often characterized by some special characteristics in behavior, we subjected all the variables to pre and post OLS estimation tests which include unit root test, cross sectional dependency test, normality test, serial correlation test, ramsey reset test, heteroscedasticity test, correlation test, pedroni cointegration test, kao cointegration test, and wald test. We employed four (4) unit root tests (Levin, Lin and Chu test, Im, Pesaran and Shin, Combined ADF-Fisher and Combined PP-Fisher). From the result obtained, all the variables of the model was found was

found to be stationry and integrated of order I(0) or I(1) and not I(2) and above. In the cross section dependency test, evidence of serial correlation was discovered, but we use Newey-West Hac estimation procedure to correct any form of serial correlation, autocorrelation and heteroscedaticity found in the model.

We employed Pedroni (1999; 2004) test, complemented by Kao (1999) cointegration test as the robustness check (see table 4). From the seven outputs of the panel cointegration tests (Panel-v statistic, Panel PP-statistic, Panel ADF-statistic, Group rho-statistic, Group PP-statistic and Group ADF-statistic, the result from Pedroni cointegration test suggests that there is existence of long run cointegration between the variables of the model and Kao (1999) test confirmed existence of cointegration between the variable of the model. Hence, this makes us to reject the null hypothesis (H0) of no cointegration. From the correlation matrixes for models 1-8, negative correlation was found between budget deficit and current account balance. Also, we performed Wald test for two purposes (a) to ascertain if all the explanatory variables are good fit for the model so as to determine which variable that would not give the model a good fit in the long run. (b) To ascertain if there is existence of long run relationship between the variables. Following the outcome of the model, we reject the null hypothesis and conclude that coefficients of the dependent variable and explanatory variables are not simultaneously equal to zero, suggesting there is existence of long run relationship between the variables of the models.

Hausman test was corried out to select the model that would suit the estimation process for the study and the outcome portrayed that random effects is the best for the study since the P-values of the hausman test for all the model are greater than 0.05. The panel ARDL estimated results (See: Table 7) also revealed significant though negative long run relationship between budget deficit and current account balance, which implies that budget deficit hinders achievement of current account balance. The short run dynamic parameter from the error correction term in concomitant with the long-run estimates also depicts short-run causality effects signifying that current account balance is strongly affected by the independent variables. The speed of adjustment from the long-run equilibrium hoisted at 8%, 5%, 49%, 11%, 2%, 0.9%, 18% and 19% across all the models 1 – 8 respectively.

The result of robustness check (models 3 and 4) showed contrast outcomes of the models. In the light of this, model 3 rhymed with the apriori economic expectation since there is negative and significant impact of budget deficit and economic growth, and other variables such as BOT, TRP, EXR, SVR and NCI have positive influences on economic growth. In contrary to this findings, BOT, TRP, EXR, SVR and NCI impacted the economic growth negatively in model 4, while only fiscal deficit had negative influence on economic growth. To this effect, the contrast feature observed from model 3 and 4 in relation to economic growth could be attributed to effects of favourable fiscal policies in the sampled countries over the years studied. Furthermore, more investigation were carried out on the interactive effects of some variables like SVR, CF, NCI, BOT, TRP, INF and EXR on budget deficit proxied with BD, RVD, FSD and PRD. We aimed at determining if the interactive influence will affect the impact of budget deficit on current account balance. Hence, the interactive effect was discovered to affect budget deficit which influence current account balance significantly (see table 9).

There would be great benefit, if Asian and African nations maintain healthy fiscal policies. Following our findings on the impact of budget deficit, revenue deficit, fiscal deficit and primary deficit on current account balance, to maintain a healthy current account balance and economic growth in Asia and Africa, the monetary authorities' should make policies that supports, cutting government spending, increasing of tax, and achievement of economic growth.

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