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Twin Deficits or Distant Cousins? Why the Distinction Matters for Banks in Kenya

Josea Kiplangat* and Jared Osoro**

Abstract

This paper seeks to determine the interaction mechanism between the domestic imbalance and the external imbalance in Kenya and why it matters for banks. Whenever an economy has is on a path of soaring fiscal and current account deficits like Kenya has been over the past decade, concerns on the implication in stability is palpable. The influence of the imbalance on banks' behaviour crucially depends on whether one deficit occasions the other in short order, hence the twin moniker, or not. If the two are twins, then the interaction between them has an influence on economic growth and consequently bank profitability. We demonstrate that the two deficits not only exert a direct influence on the economy but also indirectly affect financial sector performance via their impact on growth. While this finding endears itself to the twin deficit conclusion, the channel of influence is through the implication of the imbalances on stability more than it is through growth. We argue that while banks seldom miss the opportunity to maximise earnings from positions they take in both money and foreign exchange markets on the back of the twin deficits, policy makers ought to maintain a focus on how financial stability could be assured through regulation at the first level and pursuit of sustainability in each of the imbalances.

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1.0 Introduction

Whenever an economy is on a path of soaring fiscal and current deficits has Kenya has been over the past decade, the concern is often on their ramification on economic stability. The average annual fiscal deficit as a share of GDP of 7.4 has resulted in net government debt as a share of GDP to rise from 34.8 to 70.7 percent by end of 2023. Over the same period, the current account deficit as a share of GDP at 7.8 in 2013 widened to 9.3 before closing, albeit gradually to 5.2 by the beginning of 2023.

Even as policy makers and financial sector regulators are concerned about the implication of the connectedness of the two deficits on stability and consequently growth, banks seldom miss the opportunity to maximise earnings from positions they take in both money and foreign exchange markets. While the assumption is that there are regulatory safeguards and measured risk taking by financial market players, the state of play points to the disconnect between wider macroeconomic stability issues and possible financial stability concerns linked to the two deficits.

There is evident intellectual focus on whether the deficits are twins or not. If the Keynesian thinking prevails, then there are two channels through with the two deficits are connected. One is that the fiscal deficit increases will be assumed to increase the absorption of the economy, trigger import expansions, consequently worsens the trade deficit. The other is that a widening fiscal deficit occasions domestic interest rates to rise in a manner supportive of domestic currency appreciation, thereby contributing to a widening trade deficit.

But if the Barro-Ricardo Equivalence thinking prevails, then a widening fiscal deficit that is essentially a debt-financed government spending will be associated with future tax increases. Therefore, with rational expectations, people will save based on anticipated future tax increases to pay off current debt. With the offsetting effect, the widening fiscal deficit will not have a stimulating effect on the economy and therefore at best little effect on the economy's external balance.

Whether the two imbalances are twins or distant cousins is an empirical question, the determination of which, we contend, should not be an end in itself. The essence of this paper is to take the conversation a step further and establish the implication of the relationship between the imbalances on Banks behaviour. We argue that the banks' market behaviour is ultimately revealed in their intermediation conduct towards profit maximization.

This paper therefore anchors its analysis on how the two deficits matter for the profitability of the banking system. Unlike the conventional literature on bank profitability, we make a case for a nuanced approach to understanding the subject by acknowledging that the potential effect of the two deficits, considered individually and collectively, remains underexplored. Persistent current account deficit may indicate underlying economic vulnerabilities, such as overdependence on foreign capital, which can influence market stability and ultimately profitability of banks. High fiscal deficits can lead to increased government borrowing from the domestic market, crowding out private sector credit and potentially reducing bank profitability.

The essence of this paper is beyond merely understanding the drivers of bank profitability even when the spotlight is on the external and domestic imbalances. The holistic picture arising from the injection of macroeconomic imbalances into the understanding of banks behaviour is an acknowledgment that the dynamic interaction of the economy and the banking system is key in appreciating potential sources of fragility running from the former to the later and back. The policy interest of the paper hinges upon whether financial market players take a short-term or long- term view base on their perception as influenced by the nexus between the two imbalances and market stability.

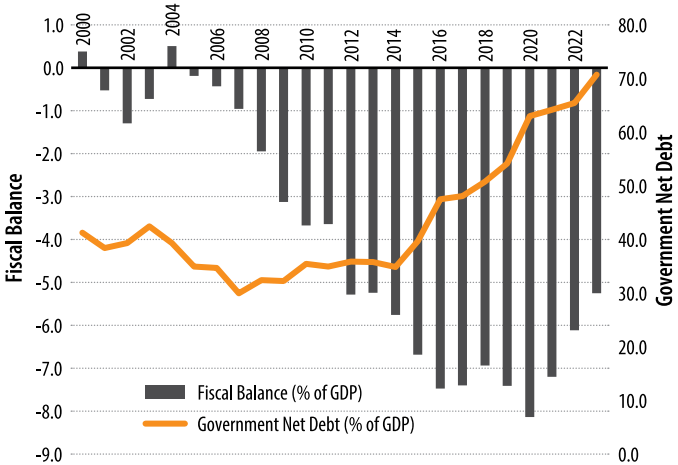
We demonstrate that the two deficits not only exert a direct influence on the economy but also indirectly affect financial sector performance via their impact on growth. While this finding endears itself to the twin deficit conclusion, the channel of influence is through the implication of the imbalances on stability more than it is through growth. We argue that while banks seldom miss the opportunity to maximise earnings from positions they take in both money and foreign exchange markets on the back of the twin deficits, policy makers ought to maintain a focus on how financial stability could be assured through regulation at the first level and pursuit of sustainability in each of the imbalances.

The rest of the paper is organised as follows: Section two provides the analytical context that if slowed by a review of the relevant literature in section three. The empirical assessment is undertaken in section four, upon which conclusions and policy inferences are drawn in section 5.

2.0 Context

The contextual basis that bolsters this paper's analysis is the stark two regime of the two imbalances in Kenya over the past two decades. The negative fiscal balance that could evidently be characterised as being within comfortable levels for the 2000 – 2013 period transitioned to a steady deterioration in the subsequent period (Figure 1). The evolution of the fiscal balance position occasioned a similar trajectory in net public debt as a share of GDP that was stable in the first phase before transitioning to a steep rise in the subsequent phase.

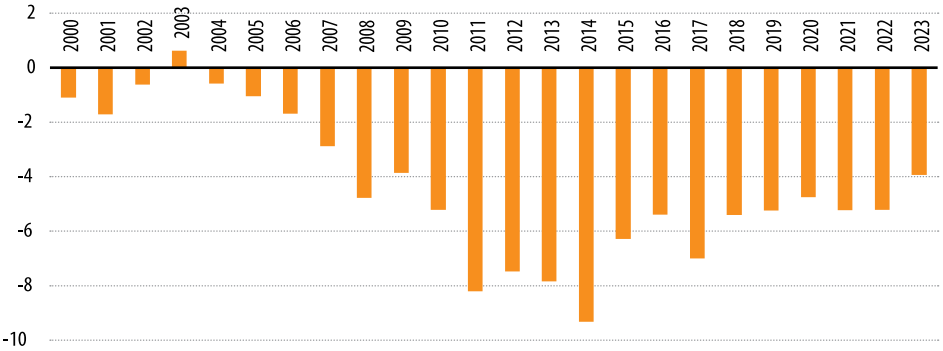
Figure 1: Fiscal Balance and Net Public Debt



Source: The National Treasury

A similar two regime external balance position, almost coincidental to the domestic balance, is observed over the past two decades. The low and stable current account deficit in the 2000 – 2010 period morphed into a fast-widening imbalance, albeit with some modes narrowing post 2017 (**Figure 2**).

Figure 1: Fiscal Balance and Net Public Debt

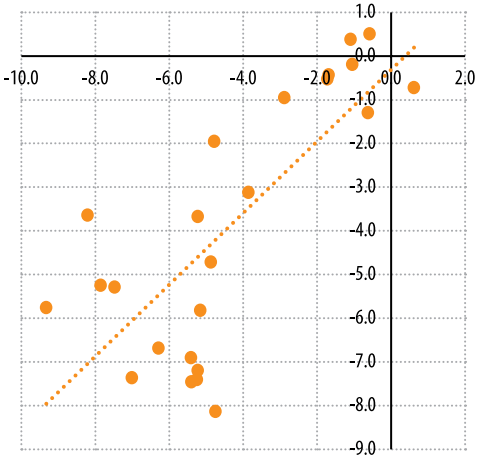


Source: IMF World Economic Outlook Database

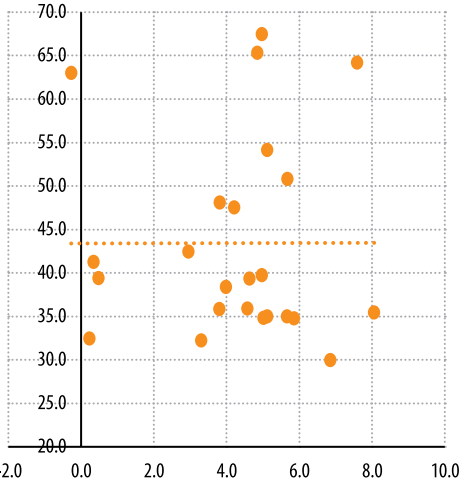
Based on the foregoing, the stylized fact is that a strong association between fiscal deficit and current account deficit in Kenya is by no means a confirmation that they are twins. As **Figure 3** shows, while the fiscal deficit – current account deficit nexus is apparent (**3a**), the relationship between the debt build-up and economic growth is tenuous (**3b**). That neither negates the Keynesian thinking, nor confirms the Barro-Ricardian Equivalence thinking.

Figure 3: Domestic – External Imbalances and Economic Growth

3 (a) Fiscal Deficit : Current Account Deficit Association - 2000- 20023 (% of GDP)



3 (b) Net Govermnent Debt (% og GDP): Real GDP Growth Association - 2000 - 2023



Whether or not the distinction between the two schools of thought matters depends on the underlying understanding of what macroeconomic imbalances entail. At a basic level, when an economy's fiscal deficit (surplus) leaves the debt/GDP ratio largely unchanged, its fiscal position is deemed sustainable albeit from an accounting standpoint (Cuddington, 1999).

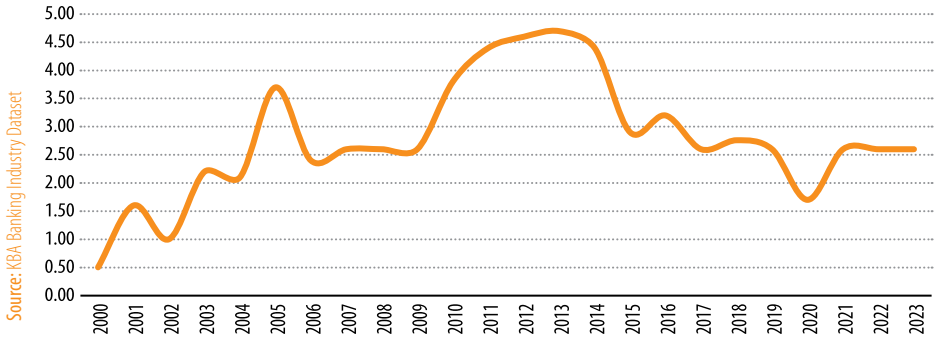
Similarly, an economy's solvency hinges on the present discounted value of its primary balances at a given time fully covering external debt accumulations. So long as this intertemporal solvency condition is not violated, that economy's current account deficit is sustainable (Carranza, 2002).

Based on the outlined basic understanding, a deficit or a surplus may well be a desirable outcome and thus necessarily a sign of imbalance, for it may for example be reflecting an efficient international allocation of capital. If we take the sustainable positions as above defined to be the norm, then any material deviations from it is considered a macroeconomic imbalance. If such deviations remain uncorrected over time, they will result in untenable savings/investment balance and expectations of a self-correction arising through market adjustments will put to focus the issue of banking system stability.

Expectations of market adjustment to the imbalances is underpinned by a banking system in Kenya that is well-developed compared to peer economies and comprised of a mix of local and international banks. The banking industry has a diversity attribute that include market players that large from large well established commercial banks to smaller and niche banks that serve specific market segments.

The market is characterized by a high degree of concentration, with a few large banks controlling a significant portion of total assets, deposits, and lending. **Figure 4** shows that the Return on Assets (ROA) exhibits high variability, with significant peaks observed in 2006 and 2007, indicating strong bank

Figure 4: Return on Assets



Source: KBA Banking Industry Dataset

profitability during those years. However, post-2007, the ROA showed a gradual decline, especially after 2014, reaching a low in 2020 before slightly improving in 2021 and 2022.

We posit that the external and domestic imbalances as contextualised above bring out one key aspect: the two imbalances have a strong connection but with a blurred link to economic growth. Out of that emanates three linked aspects that anchor the contribution of the paper.

- One, the imbalances may be exacerbated by some exogenous circumstance but are inherently stemming partly from economic polies and partly by the inertia to correct the undoing of such policies.
- Two, because by the logic that macroeconomic imbalances stem from economic policy, they are lagged indicator of other variables that reveal themselves at a pace or in a direction that is not commensurate with the overall balanced development of an economy.
- Three, the inherent risk arising from foregoing two aspects is potential lack of sustainability in positive economic performance and overall liquidity challenges.

Fiscal and current deficits can impact bank balance sheets through several transmission channels. Firstly, deficits can lead to higher government borrowing, increasing the overall interest rates in the economy. This can affect banks' cost of funds, potentially squeezing their net interest margins. Secondly, deficits can crowd out private sector borrowing, reducing banks' lending opportunities and thus impacting their loan portfolios.

Additionally, deficits can lead to inflationary pressures, eroding the value of banks' assets and affecting their profitability. Moreover, deficits may signal macroeconomic instability, leading to increased credit risk and higher loan loss provisions for banks. Overall, fiscal and current deficits can significantly influence banks' balance sheets through these various channels, highlighting the importance of sound fiscal policies for maintaining financial stability. It is through the two imbalances that a connection between sovereign risks and banking industry risks are connected. This is, for instance, illustrated by the 2024 downgrade by Moody's of sovereign as well as key banks credit ratings[2].

2. https://www.moodys.com/researchandratings/region/africa/kenya/042085

3.0 Literature

There is a complex interplay of micro level and macro factors that influence bank profitability, with literature leaning more towards the former. Literature on the multifaceted relationship between fiscal deficit, current account deficit and the adjustment of the banking system in response to the imbalances remains scant. That by no means indicates that such relationship is less deserving of attention, especially cognizant that the channels of such relationship are worth of understanding.

One of the primary mechanisms through which fiscal deficits impact bank profitability is through interest rates and currency fluctuations. Specifically, increased government borrowing to finance deficits often drives up interest rates, which can enhance banks' net interest margins but may crowds out private sector lending (Makambi, Muhindi and Nduku, 2017). But for banks, higher interest rates could mean higher funding costs and reduced net interest margins.

Banks in developing economies are often heavily exposed to government securities, and any deterioration in fiscal health can directly impact their balance sheets through increased credit risk and higher levels of loan-loss provisions[3]. This increases the perceived riskiness of government securities, affecting banks' asset quality and profitability (Panizza and Presbitero, 2014). In addition, persistent deficits can contribute to inflationary pressures, influencing monetary policy and potentially increasing operational costs for banks. Budget deficits also affect economic growth, with increased government spending potentially boosting bank profitability in the short term, but prolonged deficits might slow growth and impact profitability negatively.

3 Elevated public debt can affect banks' credit risk exposure and the valuation of government securities they hold. When fiscal deficits lead to concerns about debt sustainability, it can result in higher risk premiums and potential downgrades of sovereign credit ratings.

Current account deficits affect bank profitability through several interconnected channels. Current account deficits exert pressure on exchange rates[4] and inflation, impacting the valuation of banks' foreign assets and liabilities and altering their overall risk profile (Silva, 2021). The persistence of the Current account deficits often led to currency depreciation, which can cause banks to face losses from currency mismatches and increased loan defaults. In response, central banks may raise interest rates, which can initially boost banks' net interest margins but also reduce loan demand and increase credit risk. Persistent Current account deficits tend to drive up borrowing costs, squeezing banks' profit margins and creating liquidity challenges. Additionally, high Current account deficits can signal economic instability, impacting economic growth and increasing credit risks. Overall, the relationship between Current account deficits and bank profitability is shaped by a complex interplay of exchange rate risks, interest rate adjustments, funding costs, economic conditions, and policy interventions.

Empirical studies have provided mixed evidence on the relationship between fiscal deficits, current account deficits, and bank profitability. For instance, Magdalena, Lucian, and Maria (2021) argue that in Central and Eastern Europe countries, fiscal deficits boosted bank profitability albeit not an optimal long-run solution for achieving profit persistence. Similarly, fiscal expansion often leads to higher public sector borrowing, providing banks with lucrative lending opportunities, and this can support bank profitability. This is particularly relevant in contexts where private sector credit demand is weak. Agenor and Montiel (1999) highlight that in many developing economies, banks profit from lending to the government, which is perceived as a safer borrower compared to private entities.

Conversely, several studies highlight the negative impact of fiscal deficits on bank profitability through the crowding-out effect, and more importantly through the negative effect on economic growth (Ehigiamusoe and Lean, 2020). Relatedly, Lalon, Afroz and Khan (2023) found evidence that high fiscal deficits are associated with the increased cost of borrowing which ultimately crowds out private investment, leading to a decline in bank profitability due to reduced loan growth and higher default rates. Similarly, high fiscal and current account deficits can also lead to macroeconomic instability, which adversely affects bank profitability.

The macro level channels of influence of bank behavior complements bank-level and country level factors. Empirical literature on bank profitability has primarily focused on internal bank characteristics such as size, capital adequacy, asset quality, and management efficiency among others. The relationship between bank size and profitability has been extensively

4 Additionally, currency fluctuations resulting from current account deficits can lead to exchange rate risk, affecting the value of foreign currency-denominated assets and liabilities.

studied. Larger banks benefit from economies of scale, which can reduce costs and enhance profitability (Grzeta, Zikovic and Tomas, 2023; Abu, Awad & Ellis, 2024; Nguyen, 2024; Yakubu & Musah, 2024) as the spread their fixed costs over a larger volume of business, resulting in cost efficiencies. However, some findings suggest that too much size can also lead to diseconomies of scale and increased complexity, potentially reducing profitability (Raftis, Karpetis, Papadamou and Spyromitros, 2024).

Loan growth is a crucial driver of bank profitability as it directly impacts interest income (Ni, Ren & Choi, 2024). However, rapid loan growth can also lead to higher risk if not managed properly. Gupta and Bansal (2024) and Ramlall (2024) suggest that while loan growth can boost profitability through increased interest earnings, it can also elevate credit risk, potentially leading to higher default rates and loan losses. Operational efficiency, measured by cost-to-income ratios, directly influences bank profitability. A lower cost-to-income ratio, reflecting higher operational efficiency, is typically associated with higher profitability. Studies by Olson and Zoubi (2011), Saif- Alyousfi, (2022), Lamers, Present and Vander (2022) and Ozili and Ndah (2024) indicate that banks with lower cost-to-income ratios tend to exhibit stronger financial performance.

The relationship between liquidity and bank profitability is multifaceted. While maintaining adequate liquidity is essential for stability and confidence (Al-Matari, 2023; Pak, 2020), it often involves a trade-off with profitability (Tran, Lin & Nguyen, 2016). High liquidity is generally associated with lower risk and stability, but it can also imply lower profitability if excess liquidity is not effectively utilized in income- generating activities (Osoro and Kiplangat, 2022). Goddard, Molyneux and Wilson (2004) highlight the trade-off between liquidity and profitability, where maintaining high liquidity can reduce potential returns on investments. Adelopo, Vichou and Cheung (2022) indicate that higher liquidity ratios are associated with lower profitability, as liquid assets typically yield lower returns compared to loans and other investments (Al-Matari, 2023).

Similarly, Tran, Lin and Nguyen (2016) finds that the impact of liquidity on profitability varies significantly across banks of different sizes. Specifically, large banks and small and medium-sized banks (SMBs) experience these effects differently due to their distinct operational scales and market positions. Large banks typically have more diversified portfolios and greater access to interbank markets (Ardekani, 2024), allowing them to manage liquidity more efficiently. Small and medium banks, more so in the interbank market face greater liquidity management challenges due to the fragmented nature of the market (Bai, Weiss, Murinde and Green, 2021; Osoro and Muriithi, 2017), and thus together with their limited access to capital markets and reliance on core deposits make them more vulnerable to liquidity shocks.

Credit risk, defined as the risk of default by borrowers, is a critical determinant of bank profitability. High

levels of non-performing loans (NPLs) can erode profitability through increased provisioning costs and reduced interest income. The relationship between credit risk and profitability is well-documented in the literature. Nguyen (2024) and Elekdag, Malik and Mitra, (2020) find that higher credit risk, reflected in increased NPLs, adversely impacts bank profitability. Further, Issaka, Anarfo and Aveh (2022), corroborate these findings, indicating that high NPL ratios continue to undermine profitability. The impact of asset quality on profitability varies significantly across banks of different sizes (Gupta & Bansal, 2024). Large banks often have diversified portfolios and sophisticated risk management practices, which can mitigate the adverse effects of poor asset quality. In contrast, small and medium-sized banks, with limited diversification and less robust risk management frameworks, are more vulnerable to fluctuations in asset quality (Laryea, Ntow-Gyamfi & Alu, 2016).

Capital adequacy, often measured by the capital adequacy ratio, is a key indicator of a bank's financial health and stability. Higher capital adequacy ratios are associated with lower risk and greater resilience to financial shocks (Coccorese and Girardone, 2021), which can enhance profitability through reduced funding costs and improved bank profitability as documented by studies such as Gupta and Mahakud (2020), Gupta and Mahakud (2020), and Coccorese and Girardone (2021).

Market competition is a crucial determinant of bank profitability (Le and Ngo, 2020; Tan, 2020). Increased competition can lead to narrower interest margins as banks vie for customers by offering better rates on deposits and loans. Le, T. D., and Ngo, T. (2020) and Olszak and Kowalska (2023) finds that intense competition can erode market power, reducing profitability corroborating the evidence of the Structure-Conduct-Performance hypothesis. However, competition can also drive efficiency improvements and innovation, potentially enhancing profitability (Zoghlami and Bouchemia (2021) in line with the efficient structure hypothesis posits that competitive pressures force banks to optimize operations, leading to cost reductions and increased profitability.

Diversification of income sources can enhance bank profitability by reducing reliance on traditional interest income (Ochenge, 2022). Non-interest income, derived from fees, commissions, trading, and other financial services, can provide stable revenue streams and mitigate the impact of interest rate fluctuations. Studies by Stiroh (2004) and Nguyen, Parsons and Argyle (2021) indicate that banks with diversified income structures tend to exhibit higher and more stable profitability.

However, diversification strategies should be carefully managed to avoid overexposure to volatile income sources. Relatedly, the ratio of interest income to total income reflects a bank's business orientation, and indirectly the extent of bank diversification (Mehzabin, Shahriar, Hoque, Wanke, & Azad, 2023). Banks with a higher reliance on interest income may experience more stable revenue streams, but they are

also more sensitive to interest rate fluctuations (Duho, Onumah and Owodo, 2020).

At the country level, macroeconomic factors influence bank profitability. The overall economic environment significantly affects bank profitability. Higher economic growth often leads to increased demand for banking services, improved asset quality, and lower default rates, all of which boost profitability (Tercero-Lucas, 2021). Studies by Albert Azzi and Gambacorta (2009), Tan and Floros (2012), and Klein and Weill (2022) find that during economic expansions, increased economic activity drives higher demand for loans and financial services, boosting profitability. Conversely, economic downturns can lead to higher default rates, reduced loan demand, and increased provisioning for loan losses, adversely affecting profitability.

Inflation has also an impact on bank profitability. On one hand, moderate inflation can increase the nominal value of loans and interest rates, enhancing profitability. Katırcıoglu, Ozatac and Taspınar (2020) suggests that inflation can positively impact profitability by enabling banks to charge higher interest rates. On the other hand, high inflation can lead to economic instability and higher default rates, negatively affecting profitability (Le and Ngo, 2020). Studies by Tan, and Floros, (2012) and Katırcıoglu, Ozatac, and Taspınar (2020) find evidence that high inflation is negatively associated with profitability.

The reviewed literature illustrates that the economywide dimensions, especially the external and domestic imbalances, inform the banking industry profit seeking behaviour. The macro factors have a strong connection to the bank-specific attributes, to the extent that they influence market liquidity, asset quality and opportunities for business diversification.

4.0 Data and Methodology

4.1 Econometric Specification

Our econometric approach is based on the estimation of the following panel model

$$y_{i,t} = \delta y_{i,t-1} + \sum_{s=0}^{p} \gamma_s FD_t + \sum_{s=0}^{p} \tau_s CD_t + + \sum_{s=0}^{l} \alpha_s X_{i,t} + \sum_{s=0}^{l} \vartheta_t M_t + \epsilon_{i,t}$$

where i denotes the bank, and t denotes the time. The dependent variable is yi,t, which represents financial markets behaviour which in the paper is proxied by bank profitability, which is measured using the return on assets and return on equity. The domestic imbalance and external imbalances are respectively FD and CD. Xtincludes bank-specific and country macroeconomic controls at time t. $\epsilon i,t$ is the disturbance, with vi the unobserved bank-specific effect and uit the idiosyncratic error.

This is a one-way error component regression model, where $vi \sim (IIN(0, \sigma 2)$ is

independent of $uit \sim (IIN(0, \sigma 2).X$ included in the regression model includes bank size proxied by the natural logarithm of total assets, bank diversification proxied by interest income to total income ratio, capital adequacy proxied by the total capital to risk-weighted assets, costs of funds, liquidity risk proxied by the loan-to-deposit ratio, the asset quality proxied by the loan loss provisions to total loans ratio as well as bank efficiency proxied by the cost-to-income ratio and this is informed by the extant literature. M_t is capture by two macroeconomic variables, especially inflation rate and real GDP growth rate.

4.2. Data description and sources

This study utilizes a comprehensive dataset comprising bank-level data from 37 commercial banks operating in Kenya, spanning the period from 2002 to 2022. The dataset includes detailed financial and operational information for each bank, enabling an in-depth analysis of key determinants of bank profitability. The bank- level

data covers variables such as Return on Assets (ROA), Return on Equity (ROE), bank size (measured by total assets), capital adequacy, income diversification (interest income to total income ratio), funding costs, liquidity risk (loan-to-deposit ratio), asset quality (loan loss provisions to total loans ratio), and the cost-to-income ratio.

In addition to the bank-specific variables, the study also incorporates macroeconomic data to capture the broader economic environment in which these banks operate. Key macroeconomic indicators include the current account balance as a percentage of GDP, the central government balance as a percentage of GDP, the inflation rate, and the real GDP growth rate. These variables provide a contextual understanding of how external economic conditions influence bank profitability over time. The integration of both bank-level and macroeconomic data allows for a comprehensive analysis of the factors driving profitability in the Kenyan banking sector over the two-decade study period.

Table 1 below provides the descriptive statistics. The descriptive statistics reveal significant variability across key profitability metrics, bank-specific characteristics, and macroeconomic indicators for Kenyan banks from 2002 to 2022. For instance, the mean Return on Assets (ROA) is 2.31 percent with a standard deviation of 2.44 percent, and the Return on Equity (ROE) averages 15.25 percent with a much higher standard deviation of 16.58 percent, indicating diverse financial performance among banks. Bank size, as measured by the natural logarithm of total assets, shows a mean of 9.99 with a standard deviation of 1.56, reflecting the presence of both large and small institutions.

The cost-to-income ratio, which averages 76.43 percent with a standard deviation of 13.31 percent, highlights differences in operational efficiency. On the macroeconomic front, the persistent fiscal deficit is evident with a mean central government balance of -4.11 percent of GDP, while the inflation rate fluctuates with a mean of 7.56 percent and a range from 1.97 percent to 15.11 percent. These figures underscore the diverse operational strategies, challenges, and economic conditions that have shaped the profitability landscape for Kenyan banks during the study period.

Table 1: Summary statistics

	N	Mean	SD	Min	Max
Return on Assets	788	2.31	2.44	-5.53	7.11
Return on Equity	788	15.25	16.58	-43.49	45.34
Natural Logarithm of Total Assets (Bank Size)	788	9.99	1.56	7.27	13.07
Interest Income to Total Income Ratio (Bank Diversification)	776	53.88	15.71	8.64	90.52

	N	Mean	SD	Min	Max
Total Capital to Risk-Weighted Assets (Capital Adequacy)	787	23.55	10.59	9.14	56.94
Funding Costs	788	4.45	2.44	0.61	10.63
Liquidity Risk (Loan-to-Deposit Ratio)	613	50.08	20.00	18.38	99.96
Loan Loss Provisions to Total Loans Ratio (Asset Quality)	788	10.47	11.60	0.08	77.14
Cost-to-Income Ratio	707	76.43	13.31	50.04	99.86
Current Account Balance (% of GDP)	788	-4.84	2.91	-10.38	0.77
Central Government Balance (% of GDP)	788	-4.11	2.63	-8.39	0.06
Inflation Rate	788	7.56	3.23	1.97	15.11
Real GDP Growth Rate	788	4.46	2.03	-0.30	8.10

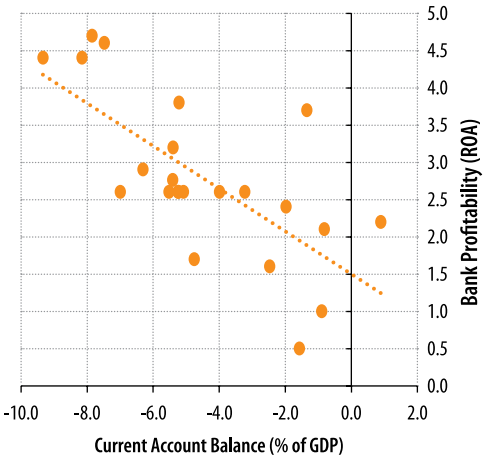
4.3 Macroeconomic Imbalances and bank profitability: A Scatter Plot and Correlation Analysis

A correlational analysis of the relationship between key macroeconomic variables— specifically, the current account balance and central government balance as a percentage of GDP—and bank profitability, as measured by return on equity (ROE) and return on assets (ROA), over the period 2000-2023 is examined. The analysis focuses on understanding how external and fiscal imbalances have influenced the profitability of the banking sector. As Figure 4a shows, a negative correlation is observed between the current account balance (% of GDP) and bank profitability metric ROA suggesting that periods of higher economic imbalance (i.e., more negative current account deficits) are associated with higher bank profitability. Larger current account deficits may create a more volatile and dynamic economic environment, potentially leading to increased demand for financial services, higher interest margins, and greater profitability for banks.

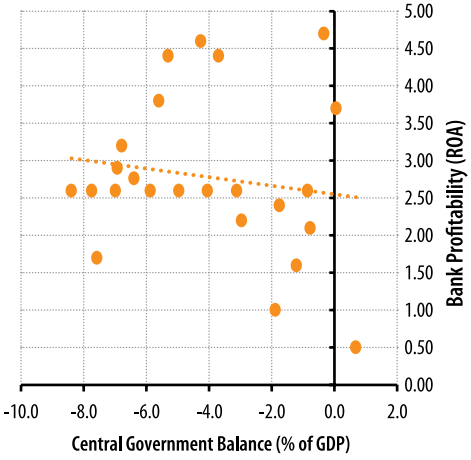
Similarly, a negative correlation between the central government balance (% of GDP) and bank profitability is observed as shown in Figure 4b, suggesting that that higher fiscal deficit, despite representing economic imbalances, are associated with enhanced bank profitability. During periods of larger fiscal deficits, banks may benefit from higher government borrowing needs, which can increase lending opportunities and margins. Additionally, the economic conditions driving these deficits may spur greater financial intermediation, further boosting profitability. However, it is important to note that bank-level heterogeneity could lead to divergent results across individual banks, reflecting differences in their business models, risk appetites, and exposure to government versus private sector lending.

Figure 4: Scatter Plot of twin deficits and bank profitability

4(a): Correlation between Current Account Balance (% of GDP) and Bank Profitability (ROA)



4(b): Correlation between Central Government Balance (% of GDP) and Bank Profitability (ROA)



The correlation matrix in **Table 2** reveals key relationships between variables influencing bank profitability in Kenya. A strong positive correlation exists between Return on Assets (ROA) and Return on Equity (ROE) (0.855), indicating that improvements in asset returns are closely tied to equity returns. Bank size shows a modest positive correlation with both ROA and ROE, suggesting that larger banks may experience slightly better profitability, though size is not a dominant factor. The cost-to-income ratio has a very strong negative correlation with both ROA (-0.89) and ROE (-0.78), underscoring the critical impact of operational efficiency on profitability. This suggests that banks with higher costs relative to income tend to have significantly lower profitability.

Additionally, loan loss provisions (a measure of asset quality) are moderately negatively correlated with ROA and ROE, indicating that poorer asset quality is associated with reduced profitability. The interest income to total income ratio, reflecting income diversification, shows a weak negative correlation with profitability, suggesting that a higher reliance on interest income might lead to lower returns. Finally, macroeconomic variables such as the central government balance and current account balance exhibit weak correlations with profitability, indicating that while these factors do influence bank performance, internal operational efficiencies play a more significant role in determining profitability.

The correlation matrix highlights the relationship between the two deficits— represented by the central government balance and the current account balance—and bank profitability in Kenya. Both variables show weak correlations with profitability measures. The central government balance has a weak positive correlation with ROA (0.075) and ROE (0.087), while the current account balance exhibits a weak negative correlation with ROA (-0.09) and ROE (-0.08). From a correlational perspective, these weak relationships suggest that the two deficits—fiscal deficits and current account deficits—do not have a strong direct impact on bank profitability in the short term. However, the positive correlation with the central government balance implies that better fiscal management (smaller deficits or surpluses) might slightly enhance profitability, likely by contributing to a more stable macroeconomic environment.

Conversely, the negative correlation with the current account balance suggests that larger external imbalances (higher deficits) might marginally reduce profitability, possibly due to the increased economic risks and volatility associated with external debt and currency pressures. Overall, while these correlations are weak, they indicate that the two deficits could have some influence on bank profitability, albeit less pronounced compared to internal bank-specific factors.

Tabe 2: Pairwise correlations matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Return on Assets	1												
Return on Equity	0.855	1											
Natural Logarithm of Total Assets (Bank Size)	0.249	0.276	1										
Interest Income to Total Income Ratio (Bank Diversification)	-0.23	-0.23	-0.09	1									
Total Capital to Risk-Weighted Assets (Capital Adequacy)	0.185	-0.01	-0.42	-0.27	1								
Funding Costs	-0.2	-0.2	-0.21	0.435	0.013	1							
Liquidity Risk (Loan-to-Deposit Ratio)	-0.18	-0.26	0.093	0.463	-0.1	0.125	1						
Loan Loss Provisions to Total Loans Ratio (Asset Quality)	-0.37	-0.34	-0.34	-0.09	0.114	-0.07	0.182	1					

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Cost-to-Income Ratio	-0.89	-0.78	-0.37	0.372	-0.15	0.397	0.222	0.301	1				
Current Account Balance (% of GDP)	-0.09	-0.08	-0.42	-0.2	0.109	-0.25	-0.19	0.382	0.109	1			
Central Government Balance (% of GDP)	0.075	0.087	-0.47	-0.02	0.174	-0.18	-0.19	0.17	-0.04	0.416	1		
Inflation Rate	0.047	0.068	-0.09	0.05	0.01	-0.14	-0.08	-0.06	-0.04	-0.09	0.172	1	
Real GDP Growth Rate	0.096	0.101	0.077	0.004	-0.06	-0.05	0.017	-0.09	-0.12	-0.13	-0.01	-0.2	1

4.4 A two-stage analysis of the implications of twin deficits on economic growth and bank profitability – the Case of Return on Assets

We acknowledge that the endogeneity problem arises when one or more explanatory variables are correlated with the error term, leading to biased and inconsistent estimates in Ordinary Least Squares (OLS) regressions. This concern is particularly relevant when examining relationships involving macroeconomic indicators and financial sector performance, where reverse causality and omitted variable bias are common issues. In the context of this paper, economic growth may be endogenously determined by factors such as bank profitability and fiscal imbalances, potentially biasing the estimation of the impact of the twin deficits on growth and, consequently, on bank profitability.

To address these concerns and ensure the robustness of the results, the Two-Stage Least Squares (2SLS) method is employed[5]. The transmission mechanism in this study can be understood by analysing both the direct and indirect effects captured in the Two-Stage Least Squares (2SLS) model. In the first stage, the regression highlights how the twin deficits, represented by the fiscal deficit and current account deficit, directly impact economic growth[6].

5 By using instrumental variables (IV) that are correlated with the endogenous regressors (economic growth) but uncorrelated with the error term, 2SLS provides consistent estimates of the causal relationship between the twin deficits, economic growth, and bank profitability. This approach not only corrects for potential endogeneity but also strengthens the validity of the inferences drawn from the empirical model. Thus, 2SLS serves as a crucial robustness check, enhancing the credibility of the findings related to the transmission mechanism from the twin deficits to bank profitability through economic growth

6 By examining the coefficients on these two variables in the first-stage regression, we can assess the extent to which they influence growth. A significant relationship indicates that larger fiscal and current account deficits are associated with slower economic growth, confirming the hypothesized adverse effect of macroeconomic imbalances on the overall economy

4.4.1 First Stage: Impact of Twin Deficits on Economic growth

The first-stage regression, as the results in **Table 3** illustrates examines the determinants of real GDP growth, with a particular focus on the twin deficits—the fiscal and current account balances—along with several bank-specific and macroeconomic variables[7]. Several key findings emerge from the first-stage regression. First, the current account balance as a percentage of GDP is statistically significant ($p < 0.000$) with a coefficient of -0.169. This result indicates that a worsening current account balance (i.e., a larger deficit) is associated with a decline in GDP growth, suggesting that external imbalances have a contractionary effect on the economy. This aligns with the broad literature on external sector vulnerabilities, where persistent current account deficits can signal external dependency and currency instability, which in turn dampens growth prospects. Similarly, the central government balance as a percentage of GDP is also significant ($p = 0.002$) and negative, with a coefficient of -0.149. This finding supports the hypothesis that large fiscal deficits are harmful to economic growth, likely due to the crowding-out effect, whereby increased government borrowing raises interest rates and reduces private investment.

The negative relationship between fiscal imbalances and growth has been well- documented, particularly in emerging economies, where fiscal discipline is critical to maintaining macroeconomic stability. Moreover, inflation exhibits a large and significant negative effect on GDP growth (coefficient: -1.183, $p = 0.000$). This result underscores the destabilizing role of inflation in the economy, where high inflation rates reduce consumer purchasing power, distort price signals, and deter long-term investment. The magnitude of the coefficient suggests that inflation is a particularly detrimental factor in the growth process.

The exchange rate also emerges as a significant determinant of GDP growth (coefficient: -0.063, $p = 0.000$), with depreciation leading to slower growth. Exchange rate volatility can raise uncertainty for both domestic and international investors, increase the cost of foreign-denominated debt, and exacerbate inflationary pressures, all of which negatively impact growth.

7 The model explains approximately 18.75% of the variation in GDP growth, as indicated by an R- squared value of 0.1875. Although the R-squared is relatively low, this is typical for models of economic growth, which is influenced by a wide range of factors. The F-statistic of 12.19 ($p < 0.000$) suggests that the instruments collectively provide a strong explanation for the variation in GDP growth

Table 3: A two-stage analysis of the implications of twin deficits on economic growth and bank profitability – the Case of Return on Assets

First-stage regressions

Number of obs	= 570
F(13, 556)	= 12.19
Prob > F	= 0.0000
R-squared	= 0.1875
Adj R-squared	= 0.1685
Root MSE	= 1.7014

realgdpgrowthrate	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
returnonassets_w L1.	-.0306251	.0393311	-0.78	0.437	-.1078808	.0466306
banksize_w	-.0052044	.0793171	-0.07	0.948	-.1610023	.1505934
loantoassetratio_w	.0144803	.0089745	1.61	0.107	-.0031478	.0321085
bankdiversification	-.0076184	.0094978	-0.80	0.423	-.0262743	.0110375
capitaladequacy_w	-.0078261	.0096565	-0.81	0.418	-.0267938	.0111416
fundingcosts_w	-.0440959	.0405084	-1.09	0.277	-.1236641	.0354722
liquidityrisk_w	-.001578	.0053935	-0.29	0.770	-.0121722	.0090162
assetquality_w	-.0117831	.0127342	-0.93	0.355	-.0367961	.01323
coststototalassets_w	-.0172083	.0248051	-0.69	0.488	-.0659314	.0315148
currentaccountbalanceofgdp	-.1696948	.0263852	-6.43	0.000	-.2215216	-.117868
centralgovernmentbalanceofgdp	-.1494855	.0486279	-3.07	0.002	-.2450024	-.0539686
inflationrate	-.1839303	.0292052	-6.30	0.000	-.2412963	-.1265643
exchangerate	-.0631024	.0103112	-6.12	0.000	-.083356	-.0428489
_cons	10.425	1.119884	9.31	0.000	8.225275	12.62472

Instrumental variables 2SLS regression

Number of obs	= 570
Wald chi2(10)	= 612.32
Prob > chi2	= 0.0000
R-squared	= 0.5977
Root MSE	= 1.5946

returnonassets_w	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
realgdpgrowthrate	.3046231	.1060595	2.87	0.004	.0967502	.512496
returnonassets_w L1.	.6996016	.0503112	13.91	0.000	.6009935	.7982097
banksize_w	.0529499	.0620967	0.85	0.394	-.0687574	.1746573
loantoassetratio_w	.0358384	.0115206	3.11	0.002	.0132584	.0584183
bankdiversification	-.0388833	.0115176	-3.38	0.001	-.0614573	-.0163092
capitaladequacy_w	.0229797	.0101815	2.26	0.024	.0030243	.0429351
fundingcosts_w	.0506857	.0453934	1.12	0.264	-.0382837	.1396551
liquidityrisk_w	-.0071435	.0054399	-1.31	0.189	-.0178055	.0035185
assetquality_w	-.0367737	.0171667	-2.14	0.032	-.0704198	-.0031276
coststototalassets_w	-.0754681	.0365298	-2.07	0.039	-.1470651	-.0038711
_cons	-.4532781	1.048032	-0.43	0.665	-2.507383	1.600827

Instrumented: realgdpgrowthrate
Instruments: L.returnonassets_w banksize_w loantoassetratio_w bankdiversification capitaladequacy_w fundingcosts_w liquidityrisk_w assetquality_w coststototalassets_w currentaccountbalanceofgdp centralgovernmentbalanceofgdp inflationrate exchangerate

4.4.2 Second Stage: Impact of GDP Growth on Bank Profitability

In the second stage, the fitted values of GDP growth, derived from the first stage and driven by the two deficits, are used to estimate their effect on bank profitability, measured by return on assets (ROA). This captures the indirect effect of the two deficits on bank profitability, transmitted through economic growth. Essentially, the second-stage regression provides insights into how fiscal and external sector imbalances, by reducing economic growth, indirectly lead to lower bank profitability. This two-step process demonstrates that the two deficits not only exert a direct influence on the economy but also indirectly affect financial sector performance via their impact on growth.

The results suggest that economic growth has a statistically significant positive effect on bank profitability. The coefficient on real GDP growth is 0.304 ($p = 0.004$), indicating that a 1 percentage point increase in GDP growth leads to a 0.30 percentage point increase in ROA. This finding supports the theoretical proposition that stronger economic growth enhances bank profitability through higher loan demand, better credit quality, and a more favourable macroeconomic environment.

As the economy expands, banks benefit from greater lending opportunities and reduced non-performing loans (NPLs), thereby improving their bottom line. The lagged value of return on assets (L1) is also highly significant (coefficient: 0.699, $p = 0.000$), highlighting the persistence of bank profitability over time. This result is consistent with the literature on the dynamics of bank profitability, where past performance strongly predicts future profitability due to structural factors such as market power, competitive advantages, and cost efficiencies.

Among the bank-specific variables, the loan-to-assets ratio has a positive and statistically significant effect on profitability (coefficient: 0.0358, $p = 0.002$). This finding suggests that a higher loan-to-assets ratio increases bank profitability, likely by boosting interest income. However, this result should be interpreted cautiously, as an excessive focus on lending without proper risk management could lead to increased NPLs and, eventually, lower profitability.

Conversely, bank diversification has a negative and significant effect on profitability (coefficient: -0.0838, $p = 0.001$). This result implies that greater diversification into non- interest income activities may reduce profitability, possibly due to inefficiencies or higher operational costs associated with managing a diversified portfolio of services. The finding is consistent with the hypothesis that banks in emerging markets may not have fully optimized their diversification strategies, which could be costly if non-interest activities do not yield expected returns.

Capital adequacy is positively associated with profitability (coefficient: 0.0229, $p = 0.024$), suggesting that well-capitalized banks are better positioned to absorb shocks and maintain profitability.

This result supports the view that higher capital buffers enable banks to withstand periods of economic stress without resorting to expensive external financing, thus protecting their profit margins. Lastly, asset quality, measured by non-performing loans as a percentage of total assets, has a negative and statistically significant impact on profitability (coefficient: -0.0737, $p = 0.032$). This finding is consistent with the literature, as poor asset quality reflects higher levels of default risk, which require banks to set aside provisions for loan losses, thereby reducing net income.

4.4.3 Summary of Transmission Mechanism

The 2SLS results provide clear evidence of a transmission mechanism from the two deficits to bank profitability, operating through economic growth. In the first stage, the two deficits are shown to significantly depress GDP growth. These findings align with the broader literature on the harmful effects of macroeconomic imbalances on economic performance. In the second stage, GDP growth emerges as a key determinant of bank profitability, confirming the hypothesis that a favorable macroeconomic environment is essential for financial sector performance. Therefore, fiscal and external sector imbalances indirectly reduce bank profitability by slowing economic growth. These results underscore the importance of sound macroeconomic policies for fostering a stable and profitable banking sector.

5.0 Conclusion and Policy Implications

Insights arising from the foregoing analysis points to the observation that higher bank profitability in periods of economic imbalance is driven by lending to the government rather than the private sector. While this may provide short-term financial stability for banks, it poses significant risks to the broader economy, including reduced private sector dynamism, increased economic vulnerability, and potential long-term harm to economic welfare.

To safeguard the economy's future, it is essential to balance bank profitability with sustainable lending practices that support both public and private sector growth, ensuring a resilient and inclusive economic environment. The safeguards are assured by the prudential regulatory requirements as well as the bank-specific drivers of profitability. The two-step process demonstrates that the two deficits not only exert a direct influence on the economy but also indirectly affect financial sector performance via their impact on growth. While this finding endears itself to the twin deficit conclusion, the channel of influence is through the implication of the imbalances on stability more than it is through growth.

The inference of the imbalances being twins has implications for both banking practitioners and policy makers.

- First, a larger fiscal deficit, as reflected in the central government balance, marginally reduces ROA but significantly enhances ROE when the fiscal position improves. This suggests that banks benefit from a stable fiscal environment, which provides a more predictable economic context for lending and investment activities. Simultaneously, the current account balance's negative but insignificant impact on profitability highlights the broader economic risks associated with external imbalances. Banks operating in economies with twin deficits might face increased funding costs and macroeconomic instability, affecting the performance of their asset portfolios.

- Second, in environments characterized by twin deficits, banks ought to adopt a more cautious approach to portfolio management. They need to consider the potential volatility in interest rates and economic conditions that may arise from fiscal and external imbalances. To optimize their portfolios, banks could focus on diversifying their asset base to include more stable and liquid assets that can buffer against economic shocks. Moreover, banks might need to enhance their risk management frameworks to mitigate the risks associated with potential policy shifts aimed at addressing twin deficits, such as fiscal austerity measures or currency adjustments.
- Third, policymakers should recognize the impact of twin deficits on the banking sector's stability. To mitigate these effects, it is crucial to maintain fiscal discipline and pursue policies that reduce external imbalances. Regulatory bodies might consider encouraging banks to build capital buffers and liquidity reserves that can withstand the economic fluctuations associated with twin deficits.
- Fourth, persistency of the twin deficits should motivate a strategic response that includes scenario analysis and stress testing to anticipate and manage the potential impacts on bank portfolios. By focusing on operational efficiency, cost management, and conservative lending practices, banks can better navigate the challenges posed by fiscal and current account imbalances. Furthermore, diversifying income streams and enhancing non-interest income can provide additional stability and reduce the reliance on interest-sensitive assets.

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