**RESEARCH PAPER** 



# Macro-determinants of current account balance performance in selected African countries

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## Abstract

Most African countries are open to international trade as shown by their signatories to various trade agreements such as the Economic Partnership Agreement (EPA) with the EU, and the Forum on China-Africa Cooperation (FOCAC). However, these countries face persistent current account deficits and institutional underdevelopment. The existing literature investigates the underlying factors at country-specific levels while ignoring the role of institutions. Meanwhile, African countries are also rapidly transitioning towards economic integration with the establishment of the African Continental Free Trade Area Agreement (AFCFTA) to deepen intra-Africa trade. Therefore, for unionized policy proposition, this study controls for the effects of institutions and investigates the macro-determinants of the current account balance (CAB) performance using panel data from 2002 to 2020 for 20 African countries. To account for cross-country correlation and country-level heteroscedasticity, the study employed panel-corrected standard errors (PCSE) and feasible generalized least squares (FGLS) techniques for the governance indicators-related step-wise estimations. The results show that after controlling for the effects of institutions, income, trade openness, the price level, the interplay between manufacturing and financial sector development, and the money supply are the significant macro-determinants of the CAB performance in Africa. Further, the marginal info-graphics show that the predictive effects of value addition and financial development on the CAB increase positively with good governance and that improved governance could reverse any negative effects of trade openness on the CAB performance. Based on the findings, the study recommends inter alia that African countries pursue value-addition-oriented trade, zero Central Bank budgetary financing, and institutional quality improvement to enhance the performance of their CABs.

Keywords Macro-determinants · Governance · CAB · Panel analysis · Africa

JEL Classification  $E00 \cdot F32 \cdot B27 \cdot G30$ 

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# Introduction

When independence dawned upon Africa in the late 50s to the early 60s, there was high optimism that the economic managers could take advantage of the opportunity to design homegrown policies that would enable the continent to achieve internal and external economic balance (Gureech 2014). This optimism stemmed from the enthusiasm with which these countries sought their independence from colonial governance. However, nearly seven decades on, limited progress has been made towards the achievement of even an internal economic balance.

The economic managers of these countries are obsessed with traditional fiscal and monetary policies, which have not fundamentally moved their economies towards full employment (Bynoe 1994). This is due to the structure of these economies which are heavily dependent on the outside world, and the sheer lack of independence of the institutions responsible for the implementation of these policies.

Not only is the African continent lagging in terms of internal economic balance, but their external economic balance is also in disarray. Most African countries have recorded consistent deficits of over 5% in their balance of payments for several years in a row (Osakwe and Verick 2007). The balance of payments (BOP) sometimes referred to as the balance of international payments records the net monetary inflows and outflows of a particular country. BOP has four distinct components which are: current account balance, capital, and financial account balances, reserves balances, and the balancing items (net errors/omissions or statistical discrepancies).

The extent to which an economy or group of economies, depends on the external world, is one of the relevant determinations to make in analyzing the balance of payment position of these economies. In this regard, most African countries are highly dependent on the external world demonstrated by the relatively high volumes of exports and imports components in their gross domestic product (GDP). For instance, as far back as the 1960s, whereas the combined exports and imports for Asia stood at 12% and 14% of their GDP, respectively, and 22% and 23%, respectively, for Europe, the combined export and import volumes of all African countries except South Africa represented 21% and 26% of GDP, respectively (Abdel-Salam 1966). Since then, the export and import proportions of the GDP of African countries have been on an upward trajectory.

Most countries in the Sub-Saharan African region are signatories to at least one or more economic zones or organizations that are meant to promote trade among member countries. However, these countries continue to be losers from the policies that seek to liberalize trade among member countries with no significant improvements in living standards of the people. Indeed, it is unclear if African countries have benefitted significantly from the dividends of the open economy system, especially through the trade channel. It is important to mention that most advocates for trade liberalization emphasize the fact that trade is an income-generation activity that is expected to improve the living standards of the people of a participating country.

However, in the context of Africa, this appears to be a delusion as most of the advanced trading partners of Africa sometimes use the region as a dumping place for most of their products. Indeed, not only is Africa seen as a hub where inferior products are dumped, but it is also viewed as the source of raw materials to feed industries in the more advanced countries. Consequently, the African continent continues to grapple with long-term fiscal deficits, escalating public debts (Abille and Kiliç, 2023), and persistent balance of payment deficits.

Studies such as Eita and Gaomab (2012), Abdel-Salam (1966), and Gureech (2014) are some of the attempts at investigating the BOP problems of African countries. Most of these works exposed the balance of payment challenges of individual countries with few examining the underlying macroeconomic factors at the country-specific level. However, Africa is now integrating demonstrated by the African Continental Free Trade Area (AFCFTA<sup>1</sup> hereafter) and the Pan-African Payments and Settlement Systems (PAPSS<sup>2</sup> hereafter). Thus, the causes of persistent current account deficits of African countries in the context of increased attempts at trade integration is a critical developmental issue. The role played by institutional under-development in this outcome represents an open policy question. Further, given several moves aimed at pan-African integration, the determination of the causal factors at a continental level, not merely at a country level, is the need of the hour. Empirical studies have restricted themselves to time-series analysis involving non-institutional determinants of BOP. The present study examines the question at the level of the African continent by using panel data analysis and includes institutional variables in its set of explanatory variables. Besides using variables traditionally used in macroeconomic analysis, the paper extends the macro-variables to include value addition and financial sector development. Hence, it is a valuable addition to the research on an important question. The rest of the paper is organized as follows: "The literature" section presents a survey of the theoretical and empirical literature, the "Methods and sources of data" section describes our data, the "Estimation strategy" section presents the estimation strategies, the "Empirical findings and discussions" section presents the empirical findings and the conclusions and policy issues are discussed in the "Conclusions and policy directions" section.

# The literature

Theoretically, this study is located at the intersection of several theories of international trade and international economics. These include: the theories of absolute and comparative advantages (ACA hereafter), Heckscher–Ohlin (OH) model, elasticity, absorption, and monetary approaches to balance of payments. The ACA theories and the OH model underscore the need for countries with different endowments and capacities to engage in mutually beneficial trade (Smith 1776, p.787; Ricardo 1817, pp. 261–271; Ohlin 1933). The Elasticity, Absorption and Monetary (MABOP hereafter) approaches on the other hand analyze the dynamics of the balance of payments positions of countries relative to key macroeconomic indicators. Macro-factors such as the exchange rate, imports and exports prices, interest rate differentials, money supply, and national and foreign income are some of the variables commonly examined (Marshall 1923, p. 354; Lerner 1944; Alexander, 1952; Johnson, 1958).

<sup>&</sup>lt;sup>1</sup> "With the Secretariat in Accra, Ghana, the AFCTA is a free trade area that was established in 2018 and began trading on January 1, 2021. It was founded by the African Continental Free Trade Agreement, which brought together 54 of the African Union's 55 member countries. Since the founding of the World Trade Organization, the free-trade area has grown to be the world's largest in terms of the number of nations that participate."

<sup>&</sup>lt;sup>2</sup> "The Pan-African Payment and Settlement System (PAPSS) is a cross-border financial market infrastructure that enables payment transactions throughout Africa. It allows African countries to transact business in their denominated currencies."

In this regard, the elasticity approach is a partial equilibrium approach that analyzes the balance of payment dynamics in the face of exchange rate depreciation/devaluation. On the contrary, the MABOP and the absorption approach are general equilibrium approaches that analyze the balance of payment dynamics in terms of monetary dynamics and the residual income existing between aggregate domestic income and expenditures. Thus, the absorption approach is an in-country looking theory that assesses the extent to which aggregate domestic expenditures on domestically produced goods and services vary across countries. The MABOP theory on the other hand contends that the balance of payments dynamics is squarely a monetary phenomenon and hence BOP dynamics can best be analyzed using monetary dynamics.

Given that the combined effects of these approaches cover most of the important macroeconomic factors such as the exchange rate, import/export price levels, national income, and interest rate differentials among others, the current study relies on these theories to empirically examine the key determinants of the CAB positions of African countries while accounting for the role of governance.

On the empirical front, several studies have been conducted to assess the impacts of one or more potential determinants of the balance of payments on BOP dynamics in the context of Africa and elsewhere. Few of these studies examine the macroeconomic determinants of the BOP performance at some individual country levels in Africa. Some of the empirical literature is reviewed in brief as follows:

Olabisi and Sawyer (2020) surveyed the determinants of the demand for imports and exports in African countries through the analysis of the literature available in that regard. The findings pointed to a huge gap in the comprehension of the factors that influence the demand for exports and imports of African countries. It was therefore recommended that there is a need for more research that would aid more comprehension of the critical factors influencing the demand for the exports and imports of African countries. Indeed, the study of Olabisi and Sawyer (2020) is one of the tune setters for the current study with the focus being mainly on the macro-determinants of the CAB performance in Africa.

Further, motivated by the chronic current account deficit situation in South Africa, Kandiero (2007) researched the situation and the issues responsible and identified that there is no need to be overly worried about the current account situation as it is being financed by capital inflows backed by strong economic fundamentals. However, it is very important to keep an eye on the magnitude of the current account deficit to minimize the systemic risk associated with running such deficits for a very long time. It is important to point out that South Africa is one of the economic giants in Africa, yet this particular study exposes the weaknesses associated with her persistent balance of payments. It is also worthy of note that while this study delved into the underlying causes of the current account problems in Africa, macroeconomic factors were not the specific target: at least no mention is made of these factors. The study also took a time-series dimension which may not serve as a policy document for pan-African integration. Studies on important subject matters such as this should ideally take a panel dimension so that the policy recommendations therein could have a much wider surface area on which they are implemented.

Concerned about the deteriorating balance of payment situation of African countries, Moussa (2016) explored the trade and current account balances for countries in Sub-Sahara Africa. The aim was to examine the implications of the BOP performance for the Sub-Sahara African poverty situation. The research findings reveal that trade openness has led to consistent trade deficits in Africa. The implication is that the numerous trade agreements between African countries and the rest of the world have not yielded the needed dividends in favor of African countries. In other words, the paper identified that excessive trade openness could be inimical to economic growth in Sub-Saharan Africa. As paradoxical as this sounds, a critical observation of the data demonstrates that despite the numerous trade agreements African countries have signed and continue to sign with their development partners, the outcome has not led to any significant switch in their BOP situation from deficits to surpluses.

Gureech (2014) investigated the determinants of the balance of payment performance of Kenya using annual time-series data from 1975 to 2012. The results showed money supply, interest rate, real exchange rate, terms of trade, the openness of the economy, and political stability as the key determinants of BOP performance in Kenya. Although these factors are determined within the context of the Kenyan economy, they are common factors that affect the current account positions of most African countries. For instance, except for some Francophone countries, the central banks of African countries are not truly independent and sometimes, money supply is altered at the whims and caprices of political authorities which has implications for the balance of payments.

Closely related to the study on Kenya and with the aid of the cointegrated vector autoregressive methods, Eita and Gaomab (2012) assessed the macroeconomic determinants of the balance of payment performance for Namibia. It was identified that for Namibia, the fiscal balance, interest rates, and GDP are the main determinants of the BOP performance. In particular, interest rates and GDP were found to be positive stabilizers of the balance of payment situation in Namibia for which reason it was recommended that policymakers there give close attention to these factors to deal with issues of balance of payment instability. At least from the Kenyan and the Namibian experience, it can be easily established that the interest rate is another important determinant of the balance of payments in Africa. It is important to point out that Africa happens to be one of the regions noted for high interest rates on loans which sometimes scare domestic investors from borrowing to invest and increase production in African markets.

Further, Jebuni and Oduro (1994) explored the relationship between the trade balance, changing trade position, and the payments regime in Ghana. The study's outcome provided the rationale for why liberalization policies were not sustainable as a win–win situation in favor of Ghana. Based on these findings, the study provided useful recommendations as a policy guide based on the Ghanaian experience. It is instructive to note that this study was conducted at a time most African countries were implementing structural adjustment programs aimed at overcoming decades of decline in economic growth.

In addition, with the aid of the VECM approach, Sujianto (2020) researched the impact of macroeconomic factors like exchange rate, inflation, interest rate, and national income on the short and long-term balance of payment performance of Indonesia. The findings show that all the macroeconomic variables are critical in determining the long-term, rather than the short-term, balance of payment performance in Indonesia.

Moreover, Hussain (1999) has shown that the low rate of growth among some African vis-à-vis Asian countries can be attributed to low relative export expansion in the face of growing volumes of imports into these countries. This phenomenon is occasioned by the low magnitudes of their Harrod foreign trade multipliers which are measured by the income elasticities of exports and imports. A plethora of studies on BOP determinants and the J-curve exist in other countries. For instance, see (Downes 1982; Ozdamar 2015; Thirlwall 2019; Christensen 2016; Stockman 1985; Kanungo and Ahuja 2017; Killick 1996; Mushendami and Manuel 2017). It is important to note that almost all the studies on Africa are conducted at the individual country level and are time series in nature. Most importantly, these studies ignore the role of institutions or governance. This leaves a research gap that this study seeks to fill.

## Methods and sources of data

The study employs secondary data from 2002 to 2020 on the main macroeconomic determinants of the current account balance as predicted by economic theory and governance indicators to determine which of the factors are critical determinants of the CAB situation in 20 selected African countries. The criteria for the selection of these countries are strictly based on the availability of data on variables such as the current account balance (CAB), inflation, trade openness, GDP, money supply, index of financial development, index of value addition as well as data on the governance indicators. This period is chosen because 2002 is how far data on the governance indicators go for most African countries. It also covers the period within which most African countries intensified the implementation of trade liberalization policies such as the Economic Partnership Agreement with the EU, Forum on China and Africa Cooperation, and lately the AFCTA. Aside from the governance indicators, the choice of CAB determinants is strictly guided by economic theories such as the monetary, absorption, and elasticity approaches to the balance of payments. Data on variables like the current account balance (CAB), real exchange rate, broad money supply, inflation, trade openness, manufacturing, and domestic national incomes are sourced from the World Bank's World Development Indicators (WDI) database. Data on the index of financial development are obtained from the financial statistics of the International Monetary Fund (IMF), and data on the governance indicators are obtained as percentile rank from the database of the worldwide governance indicators (WGI). A short description of the variables, sources, and expected signs of the independent variables are reported in Table 1.

# **Estimation strategy**

The empirical section of this study commences with test of unit root on the variables to determine the order of integration and to ensure that all variables are integrated of at most order one. Since there are first- and second-generation panel unit root tests contingent on cross-sectional dependence, we employ the Pesaran (2004) test for cross-sectional dependence in balanced panels. The test statistic is given as:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \left( \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij} \right)$$

where  $CD \rightarrow N(0,1)$  under the null of cross-sectional independence with sufficiently large *T* and  $N \rightarrow \infty$ . The result of this test is reported in Table 2. From the table, it is clear that the *p* value of the chi-square statistic is less than the 1% level of significance. Thus, there is sufficient evidence to reject the null of cross-sectional independence. This implies that the countries in the panel are cross-sectionally dependent and second-generation tests are appropriate for investigating the stationarity properties of the series.

Based on the outcome of the cross-sectional dependency test, we conduct a unit root test on all the variables using the Pesaran (2007) tests for unit roots in cross-sectionally dependent panels. This is achieved by employing the cross-sectionally augmented Dicky–Fuller (CADF) and the cross-sectionally augmented Lin–Pesaran–Shin (CIPS) test statistics, which also account for any endogenous structural breaks in the data. Table 3 reports the

Table 1 Variable description	m, sources, and expected signs of regressors		
Variable	Description	Source	Expected sign
Current account balance	The sum of net exports of goods and services, net primary income, and net secondary income	World Bank (https://data. worldbank.org/indicator/BN. CAB.XOKA.GD.ZS)	N/A
Inflation	Year-on-year headline inflation as measured by differences in the consumer price index	World Development Indicators (https://data.worldbank.org/ indicator/FP.CPI.TOTL.ZG)	I
Trade openness	The sum of exports and imports of goods and services measured as a percent of GDP	World Bank (https://data. worldbank.org/indicator/NE. TRD.GNFS.ZS)	+
Domestic GDP	The sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products	World Bank (https://data. worldbank.org/indicator/NY. GDP.MKTP.CD)	-/+
Money supply	The sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors measured as a percent of GDP	World Bank (https://data. worldbank.org/indicator/ FM.LBL.BMNY.GD.ZS)	I
Exchange rate	Official rate at which each country's currency is exchanged for the US dollar	World Bank (https://data. worldbank.org/indicator/PA. NUS.FCRF)	-/+
Manufacturing	The net output of a sector after adding up all outputs and subtracting intermediate inputs as a percent of GDP	World Bank (https://data. worldbank.org/indicator/NV. IND.MANF.ZS)	+
Financial development	Measures the extent of the financial institutions and financial market development	IMF (https://data.imf.org/?sk= f8032e80-b36c-43b1-ac26- 493c5b1cd33b)	+
Governance indicators	Measures the strength of various institutions such as control of corruption, governance effective- ness, regulatory quality, political stability, rule of law, and voice and accountability	World Bank (https://databank. worldbank.org/source/world wide-governance-indicators)	+

Table 2         Test of cross-sectional           dependence Source: Author's	Summary of test	Test statistic
computations via STATA 16	Pesaran's test of cross-sectional independence	6.069 (0.000)

Table 3Results of CADF andCIPS unit root tests Source:Author's computations viaSTATA 16

Variables	CADF		CIPS	
	I(0)	I(1)	I(0)	I(1)
CAB	-1.822	-3.058***	- 1.855	-3.816***
REXCH	-2.494***	-2.199**	$-2.670^{***}$	-3.449***
TRADE	-2.437***	-2.915***	-2.223**	-4.015***
BMSS	-1.627	-2.814***	-1.801	-3.427***
LNGDP	-1.975	-2.869***	-2.068	-3.850***
INFLATION	-2.845***	-3.797***	-3.940***	-5.174***
MANUF	-1.536	-2.784***	-1.358	-3.378***
FD	-2.080*	-2.946***	-2.473***	-4.045***

Governance indicators are not included in the unit root tests because they are factor variables that rank the quality of governance institutions of countries on a scale of -2.5 (low) to 2.5 (high) quality of institutions

\*, \*\*, and \*\*\* denote the absence of unit root at the 10%, 5%, and 1% significance levels, respectively

results of these tests. From the table, it can be inferred that all the variables are at most integrated of order one.

Given the presence of cross-country serial correlation and country-level heteroscedasticity, it is clear that fitting a model that does not account for the non-spherical error structure to the data may undermine the efficiency of the estimates and the accuracy of inference (Bailey and Katz 2011). Even though Parks (1967) proposed the feasible generalized least squares (FGLS) estimator, which was popularized by Kmenta (1986) for fitting such data to improve the efficiency and accuracy of inference, Beck And Katz (1995) exposed the poor finite sample properties of the FGLS estimator. By way of Monte Carlo simulation, they showed that the standard errors of the FGLS estimator in finite samples have small confidence intervals that underestimate variability in the data by over 50% in most cases. To deal with this problem, Beck and Katz (1995) prescribed fitting such datasets with the ordinary least squares method and the subsequent estimation of the covariance matrix of the parameters with their proposed sandwich-type panel-corrected standard errors (PCSE) estimator. This estimator, though similar in spirit to the heteroscedasticity and autocorrelation consistent (HAC) estimator (MacKinnon and White 1985; White 1980), has a superior ability to explicitly account for the time-series-cross-sectional structure of the panel data. This makes the PCSE more robust to the non-spherical errors relative to the HAC model. The implementation of the PCSE technique is nothing but the calculation of the covariance matrix of the OLS parameters taking cognizance of the non-spherical error properties of the time-series-cross-sectional data. The routine for implementation of the PCSE model is readily available in most statistical packages, and for STATA, it is performed via the *xtpcse* command. Mechanically, however, the PCSE begins with fitting a linear model to the panel data as in Eq. (1).

$$Y_{i,t} = X_{i,t}\beta + \varepsilon_{i,t}; \quad i = 1, \dots, N, \quad t = 1, \dots, T$$
 (1)

where  $Y_{i,t}$  is the dependent variable which in this study is the current account balance (CAB) of each country at time t, and  $X_{i,t}$  is a vector of macro-factors including the governance indicators. The macro-factors include: real exchange rate (Rexch), trade openness (trade), broad money supply (BMSS), income (DGDP), value addition as measured by the volume of manufacturing (Manuf), inflation (INFL), and financial development (FD). The six governance indicators are governance effectiveness (GE), political stability and absence of violence (PS), regulatory quality (RQ), control of corruption (CC), and rule of law (RL). Included in the explanatory variables are the interactions between manufacturing and financial development (Manuf\*FD), that between manufacturing and governance and the interaction between trade and governance. Also included in  $X_{i,t}$  is a CFAzone which is interacted with the real exchange rate to capture the differential impact of the exchange rate for the countries in the CFA franc zone included in the study.  $\varepsilon_{i,t}$  is the contemporaneously correlated and country-level heteroskedastic error term, and  $\beta$  is the vector of parameters to be estimated whose covariances are estimated as per Eq. (2).

$$\operatorname{Cov}(\hat{\beta}) = (X^T X)^{-1} \{ X^T \Omega X \} (X^T X)^{-1}$$
(2)

where  $\Omega$  is an NT×NT non-unit matrix which incorporates the non-spherical error into the computation of the covariances of the estimated parameters. It is worth noting that under the spherical errors axiom,  $\Omega = \sigma^2 I$ , where I is an NT × NT identity matrix, reduces Eq. (2) to the usual OLS relation for covariance computation.

For operationalization, we estimate Eq. (1) in a step-wise fashion according to the governance indicators for a total of five models. This is done to avoid over fitting since the governance indicators are traditionally known to exhibit high level of correlation (Kraay et al. 1999) and for purposes of parsimony. For robustness checks, the FGLS model of Parks (1967) is also estimated.

## Empirical findings and discussion

This section presents the empirical results of the study and discussion of the results with the aim of providing the relevant policy implications of the study. In particular, it presents the descriptive statistics, correlation matrix, and the estimates of the panel-corrected standard errors model.

#### Descriptive statistics

Descriptive statistics summarize some of the important quantitative properties of a data set. It is important because it gives an idea of the nature of the data used for an analysis. The descriptive statistics of all the variables for the current study are reported in Table 1. From the table, the following observations can be made:

• For the 20 Sub-Saharan African countries included in the study, each variable consists of 308 observations for a total of 6,160 observations.

- The average current account balance for all the countries is a deficit of -3.356 which reflects the consistent and the persistent current account deficit phenomenon in Africa (Osakwe 2007; Høst-Madsen 1967). The average higher units of the selected countries' currencies required for a unit of the US dollar are indicative of the wide-spread currency depreciation phenomenon in Africa. For economies that depend heavily on imports, exchange rate depreciation is directly related to the price level because, although depreciation is expected to promote exports, it increases the average price of imported goods and services (Meniago and Eita 2017). Of particular interest is the huge deviation from the mean of the exchange rate of the African countries included in the panel.
- Another variable worth considering is the trade openness which has a mean value of 72.92%, a standard deviation of 37.38%, with minimum and maximum values of 20.72% and 225.02%, respectively. As noted in Oloyede et al. (2021), countries in the Economic Community of West African States (ECOWAS) and the South African Development Community (SADC) have their economies positively impacted by trade openness although the findings are not necessarily significant.
- Broad money supply which directly relates to the domestic credit of each country has a mean of 32.95% of GDP, a standard deviation of about 23.38% of GDP, with minimum and maximum values of 7.22% and 163.74%, respectively. The upward trajectory in terms of money supply for most African countries is responsible for domestic credit expansion in these countries, which leads to the depletion of their trade balances (Modugu and Dempere 2022).
- The average inflation is about 5.45% with a standard deviation of 5.28% away from the mean. The minimum and maximum values of inflation are -8.97% and 36.97%, respectively. The maximum value of 36.97% is indicative of the notoriety the African region has gained for high inflation levels. In fact the maximum inflation value of about 37% is 227% over and above the desired inflation threshold of 11.1% in Kelikume (2018) (Table 4).

## **Correlation analysis**

Economic variables move together in reality perhaps because of the almost inevitable relationships generally found to exist among these variables (Neal and Shone 1976). This relationship which does not necessarily imply causality is best described using correlation analysis. The correlation matrix of the variables under consideration is shown in Table 2. It can be seen from the table that independent variables such as real exchange rate, trade openness, broad money supply, national income, inflation, manufacturing, index of financial sector development, and the gamut of governance indicators generally have a weak correlation with the dependent variable—current account balance.

The correlation between inflation and the other variables also presents interesting insights. Although weak, inflation has a negative correlation with all variables except domestic income. Of particular interest are the correlations among inflation, CAB, and money supply. Some of the literature support a relationship between the domestic price

Variable	observation	Mean	Std. Dev	Min	Max
CAB	308	- 3.356	8.047	- 38.944	24.594
Rexch	308	713.51	1420.61	0.792	9565.08
Trade	308	72.96	37.38	20.72	225.02
BMSS	308	32.95	23.38	7.22	163.74
lnGDP	308	23.31	1.44	20.00	27.03
Inflation	308	5.45	5.28	- 8.97	36.97
Manuf	308	11.10	6.18	0.23	35.22
FD	308	0.18	0.14	0.0010	0.64
Goe	308	34.47	21.17	2.42	81.73
Pov	308	35.92	23.13	0.97	90.57
Req	308	37.06	18.34	6.70	84.14
Coc	308	35.03	22.74	0.53	86.06
Rol	308	35.55	20.63	2.35	83.66

Table 4 Descriptive statistics of the variables

Source: Author's computations via STATA 16

level and the CAB. See for instance, Hojman (1993) on the Chilean economy. The weak correlation between inflation and the CAB is, however, not unprecedented as Yiheyis and Musila (2018) found less evidence to support a strong correlation between the price level and the trade balance in Uganda (Table 5).

#### Estimates of the panel models

Table 3 reports the results of the panel-corrected standard errors (PCSE) and the feasible generalized least square (FGLS) model examining the relationship between the CAB and its determinants for the countries under consideration.

From the table, it can be seen that, although small in magnitude, the exchange rate appears to exert a significant negative effect on the CAB performance of the countries in all the models and the effect is more significantly negative for the countries in the CFA franc zone. The finding where short-term exchange rate depreciation adversely affects the CAB is consistent with the elasticity approach to balance of payments and the findings of Thahara et al. (2021), Šimáková (2014), and Awan et al. (2012). This, however, contradicts the findings of Stučka (2004), and Hussain and Haque (2014) and Khan et al. (2017) who identified a situation where short-run exchange rate depreciation improves the balance of payment performance. The mixed findings across studies in respect of the exchange rate show that African countries need to exercise discretionary caution when deploying exchange rate policies to improve the performance of their CAB due to the *beggar-thy-neighbor* feature of exchange rate policing as also observed in Hussain and Haque (2014).

The next determinant in the model is trade openness which exerts a significant positive effect on the CAB of the countries in almost all the models except the regulatory quality model. This finding is in line with the findings of a number of studies including Khan et al. (2017) on Pakistan, Ju et al. (2010) for selected developing countries, Blecker and Ibarra (2013) who found a rise in Mexico's equilibrium balance of payments post trade liberalization. The findings are, however, inconsistent with those of Santos-Paulino and Thirlwall

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
CAB	1												
(2) Rexch	-0.09	1											
(3) Trade	-0.11	-0.10	1										
(4) BMSS	-0.20	-0.24	-0.44	1									
(5) LnGDP	0.20	-0.01	-0.47	-0.04	1								
(6) Inflation	-0.04	-0.17	0.02	-0.03	0.12	1							
(7) Manuf	0.10	-0.03	0.07	0.05	0.04	-0.02	1						
(8) FD	-0.05	-0.14	-0.30	0.76	0.19	0.12	0.15	1					
(9) GE	-0.13	-0.28	0.21	0.69	0.04	0.10	0.08	0.66	1				
(10) PS	-0.03	-0.28	0.46	0.60	-0.32	-0.04	0.08	0.5	0.7	1			
(11) RQ	-0.02	-0.26	0.042	0.61	0.15	0.06	0.12	0.6	0.9	0.6	1		
(12) CC	-0.11	-0.30	0.32	0.62	-0.12	0.06	0.12	0.58	0.9	0.8	0.8	1	
(13) RL	-0.11	-0.31	0.20	0.66	-0.05	0.05	0.14	0.61	0.9	0.8	0.9	0.9	1

 Table 5
 Correlation matrix of the variables

Source: Author's computations via STATA 16

(2004). Even though African economies adopted trade liberalization later in their development histories, they are implementing liberalization policies rapidly and almost every African country is a signatory to at least one or more trade agreements. The Economic Partnership Agreement (EPA) is one such liberalization policy where most African countries are partners with the European Union. Here, it is important to note that the intra-continental trade liberalization leaves much to be desired in the context of Africa. The corollary of this is the low level of trade among these countries at least when compared with other continents like Europe and North America. A case in point is the most recent situation where Nigeria closed her borders to neighboring Benin for several months. The establishment of the African Continental Free Trade Area (AFCFTA) which has since been ratified by most African countries is expected to reverse this narrative and improve intra-continental trade in Africa.

The next variable is broad money supply which has a significant negative effect on the CAB performance of the countries across the models. This finding is consistent with the expectations of the study, the MABOP theory as well as the empirical findings of Aghevli (1975), Gureech (2014). The MABOP postulates that the balance of payment performance of a country deteriorates with increases in domestic money supply since the latter increases domestic credit, which depletes foreign reserves. The central banks of most African countries are not truly independent reflected in the amount of discretionary money supply in these countries, especially during election cycles. To the extent that money supply exerts a significant negative impact on the CAB of countries across the models, it is critical for these countries to strengthen the independence of their central banks backed by the political will to undertake independent monetary policies. Doing so complementarily with import substitution industrialization could help improve their CAB performances significantly.

Domestic national income is the next variable which presents an interesting counterintuitive finding. It exerts a significant positive effect on the trade balance of the countries. This finding is counterintuitive in the sense that, for import-driven economies like those in Africa, it is expected that an increase in domestic income leads to an increased marginal propensity to import and without a commensurate increase in the marginal propensity to export, the CAB worsens as noted in Kim (1996) for the UK. In this instance, however, an increase in domestic income is found to improve the CABs of these countries. Contrary to expectations, the findings could reflect the import substitution industrialization efforts of some of these countries. It is also a demonstration of the fact that policy makers in these countries do not face trade-offs between economic growth and the trade balance improvement in policy formulation. Further, this finding of a positive association between the domestic income and the trade balance is not unprecedented as Ur Rehman et al. (2020), for instance, have established: a positive asymmetric relationship between the transitory component of domestic income and the trade balance for Asian countries.

The next variable is inflation which exerts negative effects on the CAB of the countries. From an economic theory point of view, domestic inflation is expected to increase export prices and lead to export compression, which, if not accompanied by import compression, could worsen the performance of trade balance. However, with most African countries facing almost perfectly inelastic demand for imports, import compression is unlikely and therefore the finding of a negative association between inflation and the trade balance follows expectations. The finding is also empirically supported by the works of Hojman (1993), Barthélemy and Cléaud (2018) and Stockman (1985).

Finally, financial development–governance–indicators interactions are found to improve BOP performance better than manufacturing–governance–indicators interactions. This shows the importance of financial sector regulation in Africa. The complimentary role of manufacturing and financial sector development, although positive, is not generally significant in improving BOP performance in Africa (Table 6).

#### Marginal analysis

Given the complexities associated with the interpretation of regression analysis with interaction terms (Van Horn et al. 2015), marginal analysis is performed and the associated graphics are shown in Figure 1. From the figure and without recourse to the statistical significance, we can infer that the predictive effect of value addition on the current account balance of the countries turns more positive with increase in the financial development index. This shows that the calls to African countries to embrace value addition must come with calls for improved financial systems.

The marginal graphics further show that the predictive effect of manufacturing is positive and increases with governance as a principal component index of five governance indicators. However, the increase is not as sharp as the predictive effect of manufacturing with respect to financial development.

The average marginal effect of trade openness on the current account balance with respect to governance is initially negative and only turns positive at high levels of governance in excess of the 60th percentile. The import of this finding is that very high levels of governance is required to overturn the negative effects of trade openness on the current account balance of African countries.

## Conclusions and policy directions

To contribute to policy formulation for a successful pan-African economic integration, this study investigates the macro-determinants potentially responsible for CAB performance in Africa while controlling for the role of governance. In doing so, we are motivated by the

fact that governments of these countries are putting in major efforts at economic and trade integration. This is evident by the establishment and ratification by most of these countries of the AFCFTA agreement and the PAPSS platform. Observers have noted that the PAPSS is expected to boost intra-Africa trade and save the continent a whopping \$5 billion in transaction cost on the use of other international payment platforms (Ukpe 2022, Phillip 2022 and Ghana web 2022). Guided by the monetary, absorption, and elasticity approaches to balance of payments theories, the exchange rate, income, the price level, manufacturing, financial development, and the broad money supply are identified as potential determinants of the CAB performance in Africa. We examine the impact of these determinants on the CAB of 20 African countries within a panel framework. To account for cross-country correlation and country-level heteroscedasticity, the panel-corrected standard errors (PCSE) and the feasible least squares (FGLS) techniques are employed.

The results reveal that the performance of the current account balance is influenced positively by the level of trade openness, domestic income, some governance indicators, and the interplay between value addition and financial sector development. On the contrary and consistent with the MABOP theory, broad money supply and the exchange rate are found to have negative effects on the CAB performance with the effect of the exchange rate more negative for the countries in the CFA franc monetary zone. In line with the elasticity theory of BOP, the study finds evidence in support of a short-run negative effect of the exchange rate on the CAB performance. Further, the interplay between manufacturing and financial sector development is found to significantly improve the CAB performance in Africa.

The following recommendations are made based on these findings relative to trade balance performance in Africa:

- Even though most African economies are import-driven, the results show that these countries do not necessarily face a trade-off between growing their economies and maintaining favorable current account balances. For this reason, it is important for these countries to pursue investment policies that grow their economies through value creation and import substituting industrialization.
- Since excessive money supply deteriorates the CAB performance of these countries (see also Abille and Meçik 2023), it is important for them to pursue non-credit linked economic stimulus policies such as investment promotion and value addition to their vast natural resources. It is crucial for these countries to ensure the autonomy of their Central Banks and pursue a rigorous policy of zero Central Bank budgetary financing in order to ensure fiscal discipline and maintain price stability.
- Trade openness is found to have a positive impact on the current account balance performance in Africa. It is therefore important for these countries to open up their economies for international trade but with a strict tariff regime such that import of goods and services that can otherwise be produced locally are highly regulated. Thus, African countries can remain signatories to as many international trade agreements as possible, but these agreements should be fine-tuned to the benefit of the continent. It is important for these countries to give true meaning to the intra-Africa trade promotion initiatives such as the AFCFTA and the PAPSS platform in order to boost intra-Africa trade. This is expected to reduce Africa's over dependence on the external world.
- It is important for the African countries to recognize that unfavorable balance of trade cannot be entirely due to exchange rate disadvantages. The real issue is the relative value of their exports vis-a-vis imports, especially when trading with much more industrialized countries. It is recommended therefore that the African countries pursue rigorous economic restructuring policies toward higher industrialization and value addition

Table 6 Estim:	ates of the PCSI	E and FGLS Mod	lels							
Dep. var: CAB	Main: PCSE Es	stimates				Robustness: FG	LS Estimates			
	(1)	(2)	(3)	(4)	(5)	(9)	(7)	(8)	(6)	(10)
Exchange rate	$-0.0007^{**}$ (0.0003)	$-0.0006^{**}$ (0.003)	-0.0007** (0.0003)	-0.0009*** (0.000325)	$-0.0008^{**}$ (0.0003)	-0.0007 *** (0.0003)	$-0.0006^{**}$ (0.0003)	-0.0007** (0.0003)	-0.0009 *** (0.003)	$-0.0008^{***}$ (0.003)
CFAzone	-0.404* (1.044)	-0.790*(1.157)	0.943* (1.194)	-1.253*(1.004)	-0.413* (1.102)	-0.404* (1.282)	-0.790*(1.231)	0.943* (1.225)	-1.253* (1.245)	-0.413* (1.277)
Trade	0.0628* (0.0343)	0.0851 ** (0.0369)	-0.0367 (0.0330)	$0.102^{***}$ (0.0380)	0.0320 (0.0366)	$0.0628^{**}$ (0.0258)	$0.0851^{***}$ (0.0276)	-0.0367 (0.0275)	$0.102^{***}$ (0.0265)	0.0320 (0.0278)
Money supply	-0.0909 *** (0.0351)	$-0.129^{***}$ (0.0291)	$-0.170^{***}$ (0.0390)	$-0.0951^{***}$ (0.0284)	-0.128*** (0.0352)	-0.0909 *** (0.0330)	-0.129*** (0.0292)	$-0.170^{***}$ (0.0306)	$-0.0951^{***}$ (0.0288)	$-0.128^{***}$ (0.0324)
Lngdp	$1.060^{***}$ (0.319)	$1.411^{***}$ (0.336)	1.182*** (0.325)	0.857*** (0.272)	$1.070^{***}$ (0.299)	$1.060^{***}$ (0.325)	$1.411^{***}$ (0.331)	$1.182^{***}$ (0.324)	0.857*** (0.323)	1.070*** (0.328)
Manuf	0.137 (0.214)	-0.0171 (0.212)	0.0084 (0.254)	0.522** (0.245)	-0.186 (0.239)	0.137 (0.166)	-0.0171 (0.204)	0.0084 (0.208)	0.522** (0.204)	-0.186 (0.196)
Manuf*FD	0.583** (0.270)	0.467* (0.261)	0.839*** (0.266)	$0.630^{**}$ (0.253)	$0.619^{**}$ (0.263)	0.583* (0.339)	0.467 (0.327)	0.839*** (0.322)	$0.630^{*} (0.340)$	0.619* (0.337)
Inflation	-0.108 (0.104)	-0.114 (0.104)	-0.128 (0.113)	-0.100 (0.104)	-0.121 (0.108)	-0.108 (0.0904)	-0.114 (0.0889)	-0.128 (0.0900)	-0.100 (0.0890)	-0.121 (0.0919)
Trade*GE	-0.00117* (0.0006)					-0.00117** (0.0006)				
Manuf*GE	-0.00648 (0.00542)					-0.00648 (0.00448)				
GE	$0.143^{**}$ (0.0719)					$0.143^{*}$ (0.0759)				
Trade*POS		-0.0015*** (0.0006)					$-0.0015^{***}$ (0.0005)			
Manuf*POS		-0.0008 (0.0048)					-0.0008 (0.0044)			
SO4		$0.178^{***}$ (0.0549)					0.178*** (0.0593)			

	Main: DCSE F	etimatae				Pohnetnase: E	GI & Hetimatae			
Dep. val. CAL		countrates				NOUUSUICSS. 1			1	
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(10)
Trade*RQ			0.00191**					0.00191***		
			(0.0008)					(0.0007)		
Manuf*RQ			-0.0038 (0.0061)					-0.0038 (0.0052)		
RQ			-0.0609 (0.0919)					-0.0609 (0.0921)		
Trade*CC				-0.0019*** (0.0006)					-0.0019*** (0.0005)	
Manuf*CC				$-0.0141^{***}$ (0.0051)					$-0.0141^{***}$ (0.0046)	
СС				$0.271^{***}$ (0.0749)					0.271*** (0.0735)	
Trade*RL					- 0.0002 (0.0007)					-0.0002 (0.0006)
Manuf*RL					0.0033 (0.0056)					$0.003 \ 3$ (0.0048)
RL					-0.0181 (0.074)					-0.0181 (0.080)
Constant	-30.30*** (8.614)	-39.19*** (8.583)	$-25.06^{***}$ (8.588)	- 31.41*** (7.747)	-24.19*** (8.275)	-30.30*** (8.531)	-39.19*** (8.868)	$-25.06^{***}$ (9.010)	-31.41*** (8.249)	-24.19*** (8.928)
Z	380	380	380	380	380	380	380	380	380	380
No. of coun- tries	20	20	20	20	20	20	20	20	20	20
Models 1–5 a gross domesti	re the panel-cor c product, Manu	rected standard uf is manufactur	errors (PCSE) e ing, FD is finan	stimates, and 6- cial developmen	10 are the feasit t interaction, GH	ble generalized l E is governance	east squares (FC effectiveness, Po	iLS) estimates. OS is political s	Lngdp is the na tability, RO is 1	tural logarithm of egulatory quality,

CC is control of corruption, and RL is the rule of law. CFAzone is a dummy that takes the value of 1 if a country is in the CFA franc monetary zone. PCSE and FGLS models are estimated based on panel-level heteroskedastic and correlation across panels. Standard errors are in parentheses

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

Source: Author's computations via STATA 16



Average Marginal Effects of manuf [95% CIs] Average Marginal Effects of manuf [95% CIs]

Figure 1 Marginal effects of manufacturing, trade and FD Source: Authors' construct via STATA 16

to their natural resources in order to reverse the chronic deficits in their current account balances.

Finally, an important factor which is not included in the empirical model of this study for want of data is the interest rates differentials between African countries and their advanced trading partners. However, based on recent interest rate dynamics, it is critical for these countries to pay extra attention to their domestic interest rates so as to minimize the excessive capital flight from Africa. It is also important for African governments to collaborate with international institutions like the Financial Stability Board (FSB), the World Bank, and the International Monetary Fund (IMF) to curtail illicit flows from Africa.

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# Declarations

Conflict of interest The authors do not have any competing interests to disclose.

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