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# Financial System and Real Economy in a Monetary and Economic Community: A CFA franc Zone Dynamic Panel Study

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# Financial System and Real Economy in a Monetary and Economic Community: A CFA franc Zone Dynamic Panel Study

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## Abstract

Monetary and economic integration has become increasingly important in both policy and academic discussions, particularly in developing regions seeking macroeconomic stability and sustainable economic growth. The West African Economic and Monetary Union (WAEMU) and the Central African Economic and Monetary Community (CEMAC) represent two of the world's longest-standing monetary unions, operating under a common currency framework within the CFA franc zone. This study examines the relationship between the financial system and the real economy in these monetary unions over the period 2013-2023. Data were obtained from the World Development Indicators of the World Bank, the Central Bank of West African States (BCEAO), and the Bank of Central African States (BEAC). The empirical analysis employs dynamic panel estimation techniques, including fixed-effects, Difference Generalized Method of Moments (Difference-GMM), and System Generalized Method of Moments (System-GMM) estimators. The results from bivariate correlation analysis reveal significant deviations in banking credit and transferable deposits in Benin and Equatorial Guinea compared to other member countries. The baseline regression results indicate that transferable deposits and banking credit positively influence gross fixed capital formation. However, when financial variables are expressed as ratios to gross domestic product (GDP), broad money supply-to-GDP and credit-to-GDP exhibit negative effects on capital formation. Furthermore, the interaction between regulatory quality and financial system variables does not significantly alter the economic signs of the estimated coefficients. The findings suggest that the financial systems of the CFA franc zone have not supplied adequate financial resources to the real sector to support the level of capital accumulation required for sustained development. Regulatory quality appears insufficient to enhance the effectiveness of financial intermediation. Transferable deposits emerge as the most important channel through which the financial system contributes to capital formation and real-sector development.

JEL Classifications: D24, O55, E50

**Keywords: Gross fixed capital, CEMAC, WAEMU, CFA Zone, Credit-to-GDP, Financial System**

## Resumo

A integração monetária e econômica tem se tornado cada vez mais relevante, tanto em discussões de políticas públicas quanto no meio acadêmico, particularmente em regiões em desenvolvimento que buscam estabilidade macroeconômica e crescimento econômico sustentável. A União Econômica e Monetária do Oeste Africano (UEMOA) e a Comunidade Econômica e Monetária da África Central (CEMAC) representam duas das uniões monetárias mais antigas do mundo, operando sob um sistema de moeda comum dentro da zona do franco CFA. Este estudo examina a relação entre o sistema financeiro e a economia real nessas uniões monetárias durante o período de 2013 a 2023. Os dados foram obtidos a partir dos Indicadores de Desenvolvimento Mundial (World Development Indicators) do Banco Mundial, do Banco Central dos Estados da África Ocidental (BCEAO) e do Banco dos Estados da África Central (BEAC). A análise empírica utiliza técnicas de estimação em painel dinâmico, incluindo modelos de efeitos fixos, o Método dos Momentos Generalizado em diferenças (Difference-GMM) e o Método dos Momentos Generalizado em sistema (System-GMM). Os resultados da análise de correlação bivariada revelam desvios significativos no crédito bancário e nos depósitos transferíveis no Benin e na Guiné Equatorial, em comparação com os demais países-membros. Os resultados da regressão de base indicam que os depósitos transferíveis e o crédito bancário influenciam positivamente a formação bruta de capital fixo. Contudo, quando as variáveis financeiras são expressas como proporções do Produto Interno Bruto (PIB), a oferta monetária ampla em relação ao PIB e o crédito em relação ao PIB apresentam efeitos negativos sobre a formação de capital. Além disso, a interação entre a qualidade regulatória e as variáveis do sistema financeiro não altera significativamente os sinais econômicos dos coeficientes estimados. As conclusões sugerem que os sistemas financeiros da zona do franco CFA não têm fornecido recursos financeiros adequados ao setor real para sustentar o nível de acumulação de capital necessário para um desenvolvimento duradouro. A qualidade regulatória mostra-se insuficiente para aumentar a eficácia da intermediação financeira. Os depósitos transferíveis emergem como o canal mais importante por meio do qual o sistema financeiro contribui para a formação de capital e para o desenvolvimento do setor real.



**Mots clés : Capital fixe brut, CEMAC, UEMOA, Zone CFA, Crédit par rapport au PIB, Système financier**

## Introduction

A case for financial system is the perception that it ought to be viewed in its own right as a mechanism for resource mobilization; for the efficient allocation of credit; and for the pooling, pricing, and trading of risk (Roe, 1991). Financial system around the globe is highly cherished for its growth inducing responsibility by accumulating capital from the domestic arena and at the same time serves as a channel for foreign capital transfers. In the context of present study, a financial system is a complex network of financial institutions- banks, savings unions and other non-depository financial corporations with individual regulatory bodies. Financial system central tasks for national economies to function optimally include: (1) creation of credit instruments (2) conversion of savings into funding (3) Risks management. Banks emerge more prominent in the financial landscape of several developing countries. Banking institutions play exceptional role in the financial systems in every geography of the world however, it is a key credit institution in CFA franc economies (BEAC, 2016, 2022; BCEAO, 2017). Banks gain more prominence in the financial system architecture by being suited in the reduction of adverse selection and moral hazard problems associated with financial markets (Mishkin, 1996). Depository corporations make major private loans available to users from diverse savers and further ensure that it does not plunge into liquidity crisis from its loan contracts. Individual banking corporations are exceedingly important in CFA zone for transmission of monetary policy to targets. Growth inducing macroeconomic feedback makes sound financial system an essential pillar to the vast economy. There is relatively no controversy that financial system can have positive implication in virtually all countries. For instance, supply-leading hypothesis provides theoretical basis in support of financial system relevance in inducing real growth in the economy. Patrick (1966); Gabriel, Afamefuna & Baridam, (2016); Tadesse and Abafia (2019); Magaji, Darma & Igwe (2021) produce useful comments indicating that high growth economies are characterized by predominantly supply-leading role of the financial system. Given rising plans for economies to integrate the financial system is not left out. Financial sector is at the core of market economy given its role in financial intermediation and settlement of payments. Several regional countries in Europe and Africa are bounded by monetary or currency union (Diop, Dufrénot & Sanon, 2008).

Traditional literature on integrated financial system posits that member countries in a monetary union benefit from mutual cooperation. Little pessimism associated with currency union is known.

Excessive centralization of monetary policy in European cannot be disputed (Mursa, 2014). There is also the view that member states with high debt profiles command insufficient resources to bailout ailing banks (Mayes, 2020). By and large policy move to integrate financial system of historically identical countries has been on the rise since optimum currency areas postulations (Mundell, 1961; McKinnon, 1963). Fair attempts have been made to define prime conditions prior to full scale integration. Regional monetary integration is one of the necessary steps. As exemplified in CFA franc zone, their common monetary policy management has history of long survival in French speaking West and Central Africa (Wakeman-Linn & Wagh, 2008; Amadou, 2014; Ogbuabor *et al.* 2019). Member states in Central African Economic and Monetary Community (CEMAC[1] hereafter) and West African Economic and Monetary Union[2] (WAEMU) establish a single currency and central bank, and thus, relinquish their sovereignty in monetary policy by operating an extensively harmonized monetary sector with a policy expectation of reflecting in real economic activities. Some beneficial and risky consequences of single Central Bank have been formalized in the European Union (Fratianni & von Hagen, 1993; Dornbusch, Favero & Giavazzi, 1998; Dalla Pellegrina, Masciandaro & Pansini, 2011; Alexander, 2016). At least there is little room for domestic manipulation of central bank through powerful political actors. Moreover, and in the context of monetary zone member experiences, the financial system is generally recognized to be well-monitored. Conversely, in practice monetary union is not faultless. Internal economic peculiarities of member country potentially undermine monetary policy effectiveness resulting in divergencies in region-wide outcome. Of emphasis is Feldstein (2000) highlights that "one size fits all" monetary policy is not appropriate for constituent countries of the Economic and Monetary Union (EMU) and it will be even less appropriate as the EMU expands. Several risks[3] stemming from the banking sector highly contagious to the larger system are largely known. Accordingly, shocks can be amplified in an interconnected financial system of banks and investment funds (European Central Bank, 2021). Broadly speaking, while economic and financial institutions can be more vulnerable in monetary union arrangements[4],

[1] (CEMAC)—Cameroon, Chad, the Central African Republic, Equatorial Guinea, Gabon, and the Republic of Congo
[2] Also known by its French acronym- UEMOA (l'Union Economique et Monétaire Ouest Africaine) are Benin, Burkina Faso, Côte D'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo
[3] see for example Eisenberg and Noe (2001); Pederson and Brunnermeier, (2009); Georgescu (2015).
[4]This has not change in recent decades. Notable among this line of view is Baur (2012) conducts research comprising ten sectors in 25 major developed and emerging stock markets to analyze incidences of sector-specific contagion during the Global Financial Crisis of 2007-2009. Result tracked co-movement in returns, thus, recognizing the

interconnections between different financial institutions, households and businesses allow the financial system to work efficiently in good times (Covi, Montagna & Torri, 2019). Monetary union is expected to play more active role in the balanced development of member economies (Bhatia, 1988; Akume, Mukete & Njimanted, 2016).

However, it could be a matter of conjecture to postulate that integrated financial system in CFA franc zone produces greater benefits to the real economy. Amadou (2008) highlights outstanding financial integration benefits in WAEMU to include: (1) more opportunities for risk sharing and diversification (2) better allocation of capital among investment opportunities and (3) potential for higher growth. Investment in capital formation is a precondition for anticipated real economy growth. This is a vital concern because the franc zone is united in a collaboratively managed single monetary policy framework. Prevalent theoretical and empirical discussions on WAEMU and CEMAC have shown growth as implication from integration (Saab & Vacher, 2008; Patillo, Tsangarides & Van Den Boogaerde, 2008). Mougani (2014) argues that depth and quality of financial integration leads to economic growth in the monetary zone as range of savings and investment choices widen. Kombo and Koumou (2021) theorize that institutional quality in CEMAC translates to financial development. The authors fail to show that regulatory quality in CEMAC and WAEMU has doubtful positive implication to real economy in the 14 countries of region. Whether all the member countries in each monetary union fully conform to convergence based on financial system integration requires investigation. In addition, to the extent that CFA zone monetary integration supports the real sector has to the best of our knowledge remained unaddressed in theoretical or empirical analysis. We show that Benin republic and Equatorial Guinea considerably deviate from rest of CFA zone in the regional arrangement. Conservatively, skeptics did not make case in view of countries under monetary zone agreement. It is evident that CFA zone economies are bank-dependent.

This paper continues with section 2 to provide brief historical evolution and description of the CFA franc zone financial system and economies. Section 3 introduces empirical specification whereas in section 4 we present descriptive statistics and empirical results. It ends in section 5 as concluding remarks.

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existence of contagion among financial sector stocks across countries and between financial sector stocks and real economy stocks both across countries and within a country. Evidently multiple sectors were infected.

## 2 Historical Evolution of Financial System in CFA Zone

The CFA zone comprise two different but interrelated currencies issued by two different central banks. CEMAC and WAEMU are currency unions peg to the euro. Its evolution is due to formal efforts to consolidate on historical similarities and to integrate financial markets in a regional agreement. Each of the central banks- BEAC and BCEAO makes and defends CFA franc through the monetary policies of the six nations in CEMAC and the rest of the eight countries in WAEMU. Comparatively, it is argued that WAEMU is a close resemblance of the model of European Union (EU) as it mimics key EU institutions and practices (Piccolino, 2020). European monetary integration which though is new compared to Francophones monetary integration is a standard example of successful and beneficial system of optimal currency area. There are extensive literature discussions drawing attention to perspectives on monetary integration and fundamentals of a multi-country single optimal currency union (Mongelli, 2002; Amadou, 2008; Mougani, 2014). Regions in French speaking West and Central Africa abandoned autonomy over monetary policy for decades using CFA franc common currency as a symbol financial integration (Pattillo, Tsangarides, & Van Den Boogaerde, 2008; Harvey &Cushing, 2015). This pre-independence decision is part of French legacy outliving direct administration in some African states.

CFA franc zones financial systems run on regional set of monetary policy rules which holds all signatory economies together through a coordinated function of a supranational Central Banks. It represents a milestone achievement in the post independent French Central and West African states. The idea of coming together was to promote the objective of economic development. The next step is the creation of BEAC and BCEAO to manage monetary policy for each region in 1962 (Delechat, Ramirez & Veyrune, 2008; BCEAO, 2022). The CFA zone financial system is not as developed as some other states in the region although financial liberalization has been in place since 1980s due to banking sector occasional crises and reforms. In the WAEMU zone in particular, the financial system dominated by the banks are populated by banking firms with foreign ownership structure. There are 158 approved credit institutions including 132 banks and 23 bank-like financial institutions in the sector but these operate under condition seen to be precarious (BCEAO, 2022). Subsequent reforms had been implemented to connect the sector to international financial system. Adoption of international banking standard was part of reform policy informed by IMF pressure to connect the Union to the world. The strategy was the application of Basel I, II and III standards championed by BCEAO dominant influence. Basel II

and III standards were simultaneously adopted in 2016 of which implementation took off in 2018 to align with peer regulators (Illy & Ouedraogo, 2020).

Within the WAEMU is the West African Monetary Union (WAMU). One of its organs[5]-the Council of Ministers defines the monetary and credit policy of the Union with a view to safeguarding the value of the common currency and providing financing for businesses. Thus, WAMU is distinguished by the recognition of a common monetary unit, the Franc of the African financial community issued by BCEAO. Its organs function to strengthen monetary cooperation in the Union.

### 2.1 Economic and Social Dynamics in WAEMU and CEMAC

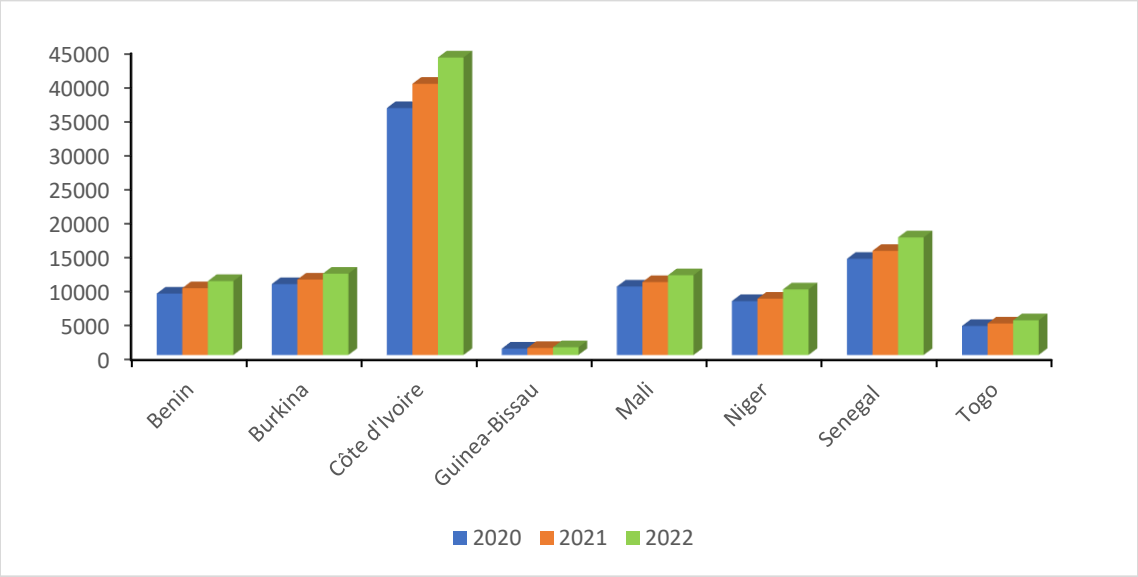
The West and Central African CFA zone member states have strong socio-economic similarities. The six member states have common currency, the CFA franc (XAF) which is pegged to the euro. Members of the economic community are diverse in per capita. For instance, in 2016 gross national income per capita ranged from US$370 in the Central African Republic to US$6,550 in Equatorial Guinea. From the point of outputs Cameroon, the Central African Republic, Chad, the Republic of Congo, Equatorial Guinea, and Gabon have a combined gross domestic product (GDP) of US$67,787,369,497 as of 2016 (World Bank, 2018). However, the zone sets impressive real growth record of 3.2% in 2022 first half from 1.5% in 2021. Bulk of the credits are mobilized for large enterprises taking up to 43.13% of the total volume. This is followed by 25.71% by SMEs and 27.18% by households in 2022 (BEAC, 2022).

Social situations have worsened in some countries. Repeated armed conflicts increase risk of uncertainty that hamper investments in the sub-regions. In a new report, Cameroon is still projected to having brighter economic prospect. Oil contribution to its national account is projected to rise to 862 billion in 2024 before falling to 747 CFAF billions by end 2027 (IMF, 2023). It is still fragile due to prolonged conflicts. Democratic system of government continues to be undermined by significant social conditions. Reflecting on the views of Coorey and Akitoby (2012), central Africa struggles to sustain inclusive growth despite oil wealth anticipated to generate sufficient employments for its fast-growing youth population. For decades change of leadership in Cameroon and Equatorial Guinea is practically impossible. Leaders in the two countries perpetually captured

[5] The highest authority of the union is Conference of Heads of State and Government. Other organs include-the Council of Ministers, the Banking Commission, the Regional Council for Public Savings and Financial Markets (CREPMF) and WAMU Securities Agency. See for instance, BCEAO, 2017.

the state. Consequently, transformation of "politico-economic" dynamics to a modern progressive system is of rare importance to national authorities which Gabon had initially put into practice since independence. Mali, Burkina Faso and Niger are in the hands of the military in French west African union. Gabon is the latest state in the CEMAC taken over by junta prior to conversion to civilian leadership. These form part of tendencies explaining institutional weakness in the zones. Thus, conflicting sovereignty problems are bound to take place in union of countries (Kindleberger, 1973) which the integrated system have no solution but to rely on external support for mitigation.

Like rest of Sub-Saharan Africa, primary products fetch bulk of exports for the respective unions. A critical differentiating component in the GDP is oil extraction found in large commercial quantities in some central African states. For the area as a whole, CEMAC zone has more of the oil exports to the world energy market. With the exception of Central African Republic (table 2), investment from oil extraction may be largely responsible for economic advantage of CEMAC[6] over WAEMU. Chad is the least producer with an estimated oil reserves from three fields in Doba basin estimated at 1.5 billion barrels (145 barrels per capita) but projected not to last long since production began in 2003 (Nachega & Wieczorek, 2012).




[6] Central African states in CEMAC is constituted by 6 states whereas WAEMU is a union of 8 West African governments.

**Figure 1: Nominal gross domestic product at market prices**

All countries in WAEMU are not privileged to produce all major cash crops-Groundnuts, cotton seeds, coffee and cocoa. Groundnut is the only cash crop cultivated by all union member countries (table 1). Majority are not oil exporters due to lack of crude oil deposits in commercial scale. Total GDP for the union worth 100628.4 (in billions of CFA francs). Côte d'Ivoire and Togo are the only large cocoa and coffee producing member states in the zone for export (BCEAO, 2016), yet these economies missed out from revenue on oil production in their national income accounts. Data on size of national outputs in BCEAO and BEAC areas almost illustrate deep equality in size of economy. Guinea-Bissau and Central African Republic each occupies position of smallest economies in terms of national outputs (fig.2) whereas Cameroon and Côte d'Ivoire depict the largest markets in each zone.

Table 1: Groundnut as cash crop produce in WAEMU (in tonnes)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|
| Benin | 136796 | 94523 | 154403 | 131790 | 129109 | 149762 | 144731 | 134323 | 137214 |
| Burkina | 346292 | 330624 | 340166 | 265322 | 310759 | 349688 | 335223 | 365887 | 497122 |
| Côte d'Ivoire | 81015 | 83 364 | 90 227 | 91 844 | - | - | - | - | - |
| Guinea Bissau | 46460 | 30696 | 36177 | 35431 | 44289 | 53047 | 60036 | 83 | 95 |
| Mali | 323103 | 323103 | 336027 | 33258 | 364202 | 515333 | 414144 | 421924 | 453102 |
| Niger | 315 | 254 | 406 | 396 | 292 | 343 | 403 | 483 | 527 |
| Senegal | 731210 | 1032651 | 1286855 | 527528 | 692752 | 677456 | 669329 | 1121474 | 1050042 |
| Togo | 42648 | 44528 | 46495 | 47369 | 31947 | 43226 | 40663 | 40903 | 42788 |

Source: BCEAO statistical year book

Often weaknesses in any of the member states is reasonably offset by strong economic performance in another economy. For instance, lower production of gold in Burkina Faso (-6.3%) and Senegal (-3.1%), was offset by higher production in Mali (+1.0%), Côte d'Ivoire (+7.5%) and Niger (+5.4%) (BCEAO, 2022). This underscores mutually beneficial economic reliance which could have been in existence since the historic 1962 plan to engage in authentic integration.

Table 2: Oil wealth in CEMAC zone (in Billion of CFA franc)

| | Cameroon | Chad | Congo Rep. | Gabon | Central African Rep*. | Equatorial Guinea |
|---|---|---|---|---|---|---|
| 2016 | 425.0 | 171.0 | 394.7 | 1557.3 | nil | 1129.1 |
| 2017 | 383.9 | 217.6 | 376.5 | 1575.5 | nil | 1238.3 |
| 2018 | 385.3 | 245.6 | 671.3 | 1861.0 | nil | 1176.9 |

Source: CEMAC (2018) * landlocked without crude oil in commercial scale

A CEMAC report[7] indicates that all economies experienced 2017 recession with no country in exception plunging the states into slight deterioration in monetary situation (CEMAC, 2018). As can be moderately compared too, the two economic zones almost independently target similar magnitude of gross fixed capital investment accumulation. In 2016 a total of CFAF 13623.3 billion worth of gross fixed capital was recorded in CEMAC against CFAF 13071.1 billion in French west Africa. With greater number of states advantage to WAEMU but poor petroleum output in contrast to central African economic community, the union's GDP in 2016 was quite in excess of CEMAC by approximately 41.9%. It also recorded greater performance in other critical real sector activities- manufacturing, primary, secondary outputs and tertiary (fig. 2).

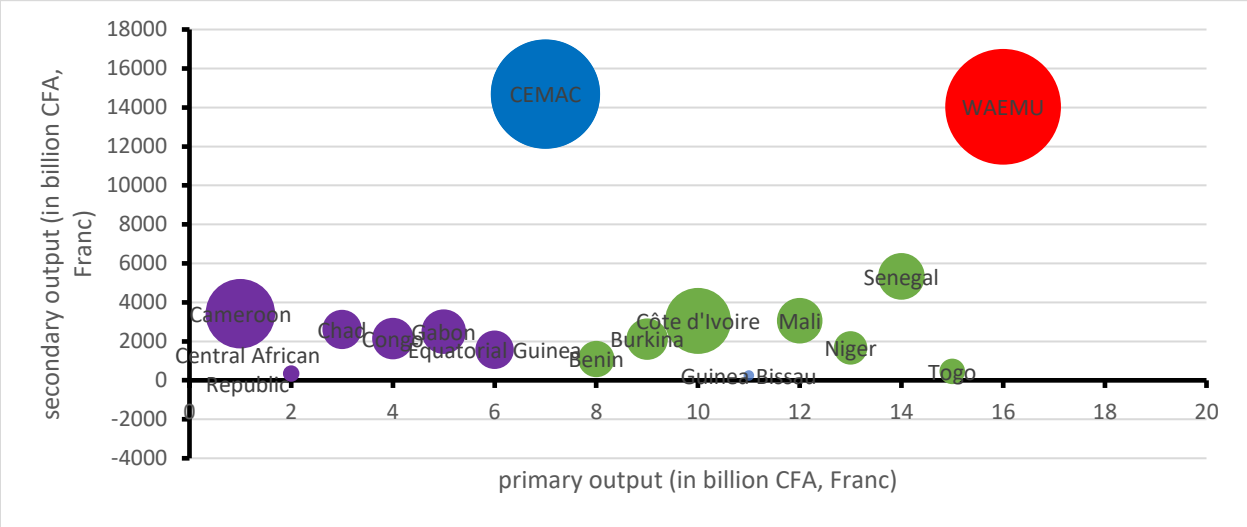



**Fig. 2: Gross domestic product at market prices in central and west African monetary zones**

[7] To overcome language difficulty in assessing comprehensive details contained in (Rapport interimaire de surveillance multilatérale 2017 et perspectives pour 2018) publicly distributed by COMMUNAUTÉ ÉCONOMIQUE ET MONÉTAIRE DE L'AFRIQUE CENTRALE and rest of other published documents in francophones have been translated using Google translate.

Moreover, the economic unity which is the original intention for creating six nations CEMAC has strong success coordinating well-structured monetary policy that does not harm union members development interest. However, as can be noticed in west African CFA zone commerce among the states is not encouraging. Members are relatively not in strong trade alliance both in import and exports but trade more with rest of the world outside the circle of their zones. The charter ratifying the unions does not seem vigorously to impose obligation to accelerate trade partnership. Perhaps commerce is hindered because members have homogenous commodities for exports.

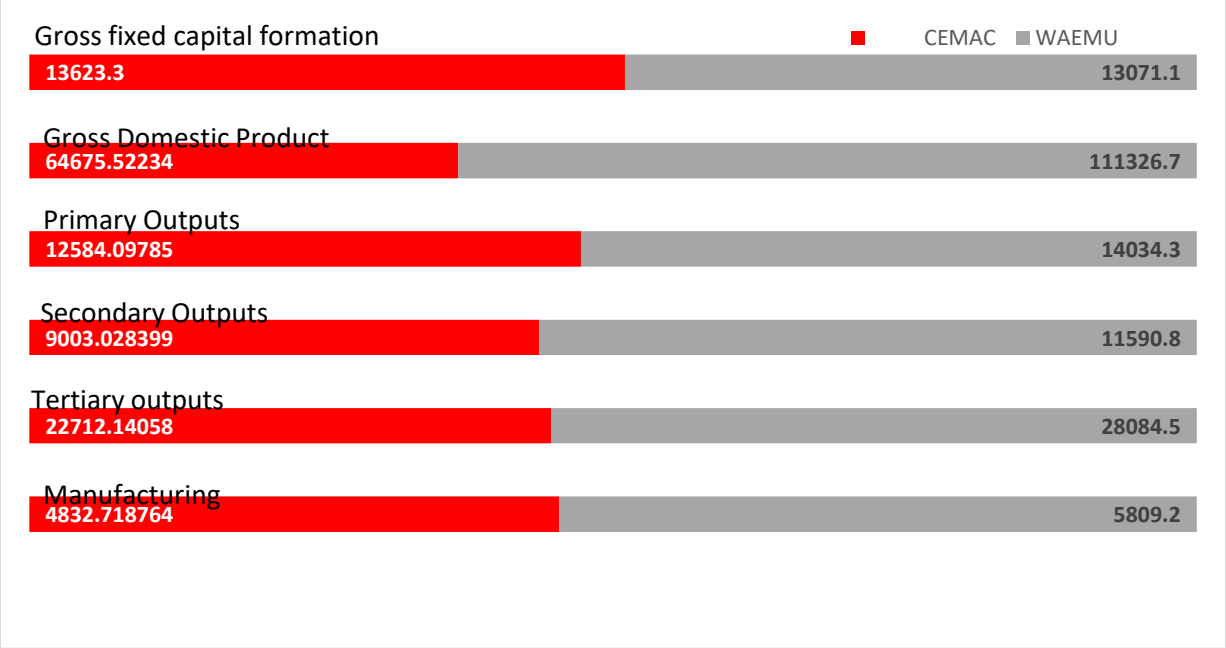



**Fig. 3: Real sector activities in CFA franc zones**

Côte d'Ivoire is one of the largest economies if not the most dominant in WAEMU that contributes bulk of the union GDP from several primary sources (fig.1). Senegal has impressive GDP unlike Guinea-Bissau that has extremely weak outputs. Agricultural commodities constitute 68.5% export of Côte d'Ivoire; 31.6% in Senegal's merchandise trade. Top trade partners are the European Union, China, Nigeria and the United States (World Trade Organization, 2023). Manufactures

constitute bulk of all the unions imports[8].Investment in capital formation in the two monetary unions are almost at equilibrium level although CEMAC investment is greater.

### 2.2 Some Related Literature on Financial System Effects on the Economy

There is extensive literature revealing some influential gains associated with existence of functional financial system in various economies which cannot be explicitly denied. Early theoretical insights from Patrick (1966) and Cameron (1967) conclude that financial intermediaries influence real growth rate. Diamond and Dybvig (1983) useful comments further affirm the role of banks in cutting down on investment waste due to premature liquidation and consequently increase productivity of investment by channeling fund to high-yielding technology. As later advanced in Bencivenga and Smith (1991) also in Pagano (1993) countries with competitive banking system importantly determine real growth rates by acting on savings rate. In same line of theoretical reasoning past authors had been preoccupied with discovering certain level of complexities as vital signs for efficient supply of capital from intermediary sector[9]. A wide consensus acknowledges financial development to be instrumental to the financial system prior to impacting on the economy. Some frontline studies in this regard- Goldsmith (1969), McKinnon (1973), Shaw (1973) document commendable instances where financial system development correlates with real growth. King and Levine employed cross-country regression involving size of banking sector relative to GDP to establish a causality that stretches from finance to output growth. Unlike in McKinnon and Shaw valuable idea, Awounang (2017) contends that financial system development is a channel to growth but through factor productivity as transmission mechanism. McKinnon-Shaw analysis further set a new stage discussing financial liberalization and repression as dimension to financial system development. Diaz-Alejandro (1985) on Latin America experience in the mid-1970s rather concludes that financial liberalization in the absence of fiscal reforms could generate financial crash consequences. Balassa (1989) standing on their foundation presents summary of empirical literature to conclude that higher real interest rates advance

[8] The unions member states export primary products to import commodities are vessels, medicaments, petroleum oils and motor cars. See for example world Trade Organization non-agricultural products on Congo, Burkina Faso, Togo and others for details.

[9] Financial development concept was immediately followed by other broad sets of emerging financial system development indicators- financial liberalization against repression (Akyüz, 1993; Arestis, & Demetriades, 1999); financial deepening; financial stability; financial inclusion and financial integration which is the last in sequencing designed to increase a country's financial system resilience and boosts economic growth. See for instance Rimmer (1999); Soumaré, Tchana and Kengne (2016); IMF (2015) developed a new index for measuring financial development.

financial intermediation, therefore, the increase in financial intermediation turns out to raise rate of growth in developing countries. In identical study, Fry (1997) response to financial repression-indiscriminate distortions of financial price (interest rate and foreign-exchange rate) argument accumulate data from 16 developing countries. The simultaneous equation model of data estimation evidently indicates growth impeding consequence since repression is equivalent to quasi-tax from economic growth perspective.

With respect to central Africa future studies deviate from traditional conclusions with discovery of emerging variables- Assessing quality of institution, Kombo and Koumou (2021) stress that control of corruption and compliance with laws and regulations contribute positively to CEMAC's financial development. Seppo (2020) first difference and system Generalized Method of Moments application on six CEMAC countries yielded evidence of adverse effects of quality of regulation and control of corruption on economic growth. Pagal (2022) show that financial system development has adverse influence on monetary stability in CEMAC. With the dominance of banking institutions, Louembé, Wang and Rathnayake (2023) conclude that banking intermediation-growth nexus displays positive association given credit proxies and growth/fixed capital formation. Ngong, Thaddeus and Onwumere (2020) find compelling evidence that banking stimulates agricultural productivity. Sodokin and Donou-Adonsou (2010) apply Feasible Generalized Least Squares to provide evidence that banks benefits from microfinance activities in WAEMU. At assessment of joint impacts of banks and microfinance on economic growth generalized two-stage least squares random effects instrumental variable regression show that lag of GDP, microfinance credit and joint interplay of banking and microfinance are important factors to stimulate growth. Emenalo, Gagliardi and Hodson (2018) that theoretically and in line with several comprehensive studies- Coulibaly (2015) survey of empirical gains from financial system development covering 19 Sub-Saharan African countries conclude that financial system development only positively impacts on Gambia due to being a channel for remittances inflow. In the reverse, remittances positively affect financial system development in (Niger, Senegal, Sierra Leone and Sudan).

### 2.3 Financial System in West and Central Africa Monetary Unions

In sub-Saharan African economies, the banking system performs more function of funneling resources to real economies than non-bank financial institutions which play minimal roles. Great economies in the region- Nigeria and South Africa are yet to achieve financial system unification

with any regional neighbour. Yet, the nature of financial systems in West and Central Africa is discernable. The financial system of most developing countries is characterized by booming banking industry. Fry (1995p.4-5); Rojas-Suarez & Weisbrod (1995p.4-11) assert that financial systems in developing countries is dominated by deposit money banks[10]. Member countries in WAEMU have common central bank, common currency, and pooled international reserves. By its institutional arrangement French Treasury is empowered to guarantee convertibility CFA franc common currency pegged with French currency. The pooled international reserves are not under the control of BCEAO being supranational central bank for French West Africa but under the custody of French Treasury in Paris (Medhora, 1992). However, former French colonies in Africa have mutually operated their economies and conducted monetary policies in a coordinated fashion through common institutional ownership and cooperation. CEMAC and WAEMU present a prime example of working monetary integration in developing countries bounded by a common CFA currency guaranteed by French Treasury.

The integrated landscape of the financial systems in CFA Franc Zone of West and Central African states quite deliberately have commercial banks as key institutions doing savings-investment dealings that affect real sector. The structure has not change since its inception in 1945. Banque Centrale des Etats de l'Afrique de Ouest (BCEAO) and Banque des Etats de l'Afrique Centrale (BEAC) issue a freely circulating common currency in the two economic and monetary communities. The banking system in particular is crucial network of liquidity providers intermediating between huge idle fund owners and those with insufficient resources required for investment in capital assets. Bernanke (1993) insists credit in the macroeconomy points to this conventional knowledge as major contributors to changes in goods market.

## 3 Empirical Specification and Econometric Model

Our choice of financial system explanatory variables is influenced by availability of monetary aggregates from the monetary sector. We select 14 African countries belonging to the Franc Zone monetary union to form part of the sample set. Of the total 8 are members of WAEMU and rest of 6 are members of CEMAC under monetary unification. The CEMAC countries that satisfy this

[10] Beck (2011) financial systems of Africa are highly less sophisticated in comparison to other systems around the world. Furthermore, having compiled data for 39 African countries the paper concludes that historical institutional determinants of cross-country variations in African financial system may not truly be of concern for financial systems depth in African context but could matter for financial system access.

criterion are: Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea and Gabon. Our regressors include size of transferable deposits as incorporated in IMF (2015) model, banking system credits to other sectors, and broad money supply. These indicators are mobilized by the banking system from the household and foreign savings to support investment by enterprises. To test for level of financial system development in the unions we construct broad money as percentage of GDP ($M_2/GDP$) to track the degree of financial intermediation ("financial deepening") supported in Cameroonian studies (World Bank, 1986). This has been extensively used being replicated in Mokhova and Zinecker (2014) modelling as robust indicator of monetary conditions in general. Mehl *et al* (2005) is a classic example adopting traditional intermediation measure. A critical explanatory variable is domestic credit provided by the banking sector to GDP. Broad money-to-GDP combination with bank credit-to-GDP potentially suggests that both ratios could be perfect substitute in econometric specification or at best private credit to GDP has greater capacity to explain financial system development status. Rather than substitute we combine broad money-to-GDP and credit-to-GDP as complements. Credit-to-GDP is likely to increase due to favourable economic state of a country and the interest rate is motivating due to flexible monetary policy. This measure has been dominant across several empirical analysis. Notable advocacy on banking credit-to- GDP is evident in King and Levine (1993), Levine, Loayaza and Beck (2000) and Demetriades and Law (2006). It can be a sign of banking system sophistication despite deterioration in significant macroeconomic conditions.

Accordingly, our source of data for Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo are available in Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO)[11]. For CEMAC member states variables and data are available in Bank of Central African States (BEAC). We include regulatory quality indicator to investigate whether cross-country differences in enforcement of rules in the banking system explain differences in real sector activities. Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The banking system is not an exception. Thus, as already argued by La Porta *et al* (1998, 1999, 2000) and later documented in Acemoglu, Johnson and Robinson (2005) that legal and regulatory system will fundamentally influence the capacity of the financial system to provide high-quality

[11] or Central Bank of West African States (English translation)

financial services. Data on regulatory quality is available in World Bank World Governance Indicator (WGI). All data set is a balanced panel data over a seven-year horizon.

To commence our empirical strategy, we first run a baseline regression to examine a rigorous approach the nature of bank-based financial system intermediation measures impacts on gross fixed capital formation in CEMAC and WAEMU case to detect a first-order causality.

In the interest of robustness standard research, we run alternative regression with GDP as dependent variable without much substitution to standing regressors. Several studies would suggest that monetary variables from the financial system would have a last-order causality on GDP but a first-order impact on magnitude of investment in physical assets and capital accumulated in the economy. We further decompose (credit and GDP) to remove cyclical values to arrive at steady-state growth level. Baseline cross-country estimator implies that the regression specification corresponding to Aizenman, Jinjarak, and Park (2013) takes this simple dynamic panel data method:

$$\Delta Y_i = \beta_0 + \beta_1 \Delta Y_{i(t-1)} + \Delta X_i' \beta + \Delta \varepsilon_i \quad (1)$$

**X** is a vector of control variables, **β** is vector of coefficients to be estimated, Y is GDP and ε implies the error term, $Y_{i(t-1)}$ is a lag term of dependent variable $Y_i$. For expository convenience the general specification of panel data estimation without despising heterogeneity of time invariant cross-country differences the new specification is expressed as follows:

$$GFC_{it} = \alpha GFC_{i,t-1} + \beta_1 TRANSFER_{i,t} + \beta_2 CREDITGDP_{it} + \beta_3 BROADGDP_{i,t} + \omega_i + \varepsilon_{i,t} \quad (2)$$

Where the subscripts $i$ and $t$ respectively denote country and time period, *TRANSFER* stands for transferable deposits, *CREDITGDP* represents banking sector credit-to-GDP, *BROADGDP* is broad money supply-to-GDP, $GFC_{it}$ is dependent variable which is a proxy for gross fixed capital for country $i$ $(i = 1, \dots, N)$; at time, $t$ $(t = 1, \dots, T)$, thus, we set the parameters at $(N = 1, \dots, 14)$ and $(T = 1, \dots, 13)$. $GFC_{it-1}$ is lagged dependent variable as internal instrument, $\alpha$ implies autoregressive (persistence) parameter, $\omega_i$ stands for country-specific fixed effects. We expect endogeneity to be present in the estimation when explanatory variables are correlated with error term: $Cov(X_i, \varepsilon_i) \neq 0$. We control endogeneity using moment conditions in the Generalized Method of Moment (GMM) framework. As it is the standard prescription in Arellano and Bond (1991), we introduce instrumental variable subject to the satisfaction of basic conditions: (1) highly

correlated with regressor, $Cov(X_i, Z_i) \neq 0$ (2) orthogonal to the error term $Cov(Z_i, \varepsilon_i) = 0$. We compare lagged value of dependent variable on Pooled Ordinary Least Square estimate with Fixed Effects outputs and the persistent parameter in GMM estimate. Fixed-effect specification is applied in Jiménez *et al.* (2014). The fixed-effect estimator is flexible enough to control for time-invariant country-specific factors that may affect gross fixed capital, thereby reducing the risk of omitted variables. This provides guidance on mode of result selection by identifying results with greater consistency and efficiency. The errors $\varepsilon_{it}$ are distributed as $N(0, \Sigma it)$. The choice of empirical framework and the regressors we incorporated in the study is guided by the existing literature and general notion that financial intermediation activities of any banking system revolve around deposits mobilization, liquidity transformation and regulation of money supply (King & Levine, 1993; Adrian & Shin, 2010; Cetorelli, Mandel & Mollineaux, 2012).

### 3.1 Robustness Test

To estimate a robustness model, we interact regulatory quality indicator on credit-to-GDP, broad money-to-GDP and transferable deposits on three econometric estimators: the fixed effect estimator, the difference GMM and the system GMM estimator. Regulatory governance is expected to moderate excessive credit growth over GDP. In such scenario extreme growth in credits could largely trigger procyclicality that endangers financial system soundness. A joint consideration of the three methods provides basis for comparative inference about plausible estimator of the model. Nevertheless, full reliance on fixed-effect estimator is potentially weak in the midst of endogeneity. Econometric specifications could have endogeneity problem due to omitted variables (not addressed despite integration of country-specific effects), measurement errors and reverse causality (Kpodar, Le Goff & Singh, 2019).

$$GFC_{it} = \alpha GFC_{i,t-1} + \beta_1 TRANSFER_{i,t} * REG_{i,t} + \beta_2 CREDITGDP_{it} * REG_{i,t} + \beta_3 BROADGDP_{i,t} * REG_{i,t} + \omega_i + \varepsilon_{i,t} \quad (3)$$

## 4 Descriptive Statistics and Empirical Results

Table 4.1: Bivariate Correlation of Size of Transferable Deposit in CFA Zone

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benin (1) | 1.000 | | | | | | | | | | | | | |
| Burkina (2) | -0.975 | 1.000 | | | | | | | | | | | | |
| Côte d'Ivoire (3) | -0.946 | 0.989 | 1.000 | | | | | | | | | | | |
| Guinea-Bissau (4) | -0.952 | 0.984 | 0.997 | 1.000 | | | | | | | | | | |
| Mali (5) | -0.969 | 0.996 | 0.997 | 0.996 | 1.000 | | | | | | | | | |
| Niger (6) | -0.953 | 0.989 | 0.999 | 0.999 | 0.998 | 1.000 | | | | | | | | |
| Senegal (7) | -0.933 | 0.974 | 0.995 | 0.996 | 0.990 | 0.996 | 1.000 | | | | | | | |
| Togo (8) | -0.939 | 0.985 | 0.999 | 0.994 | 0.995 | 0.998 | 0.997 | 1.000 | | | | | | |
| Cameroon (9) | -0.791 | 0.881 | 0.940 | 0.938 | 0.913 | 0.935 | 0.956 | 0.946 | 1.000 | | | | | |
| Central African Rep (10) | -0.907 | 0.963 | 0.983 | 0.979 | 0.976 | 0.980 | 0.986 | 0.989 | 0.958 | 1.000 | | | | |
| Chad (11) | -0.855 | 0.921 | 0.968 | 0.972 | 0.949 | 0.967 | 0.978 | 0.967 | 0.985 | 0.958 | 1.000 | | | |
| Congo Rep (12) | -0.596 | 0.715 | 0.804 | 0.803 | 0.760 | 0.800 | 0.831 | 0.910 | 0.929 | 0.800 | 0.917 | 1.000 | | |
| Equatorial Guinea (13) | 0.807 | -0.802 | -0.742 | -0.732 | -0.767 | -0.737 | -0.698 | 0.810 | -0.563 | -0.746 | -0.600 | -0.310 | 1.000 | |
| Gabon (14) | -0.762 | 0.806 | 0.876 | 0.899 | 0.855 | 0.881 | 0.902 | 0.874 | 0.946 | 0.882 | 0.954 | 0.886 | -0.483 | 1.000 |

WAEMU countries experience strong degree of positive correlation in size of transferable deposits among themselves (table 3). A uniform reason for this observation might not be universally convincing but it could be discerned that centrally coordinated monetary policy makes each economy behave in somewhat identical character that determines income, spending and savings patterns of economic agents in the union. It may therefore represent a dominant economic policy than any other group of policies. Nevertheless, the result is yet acknowledged to be mixed. Unfortunately, transferable deposits correlation does reveal a high negative association between Benin republic and rest of other French-speaking WAEMU and central African counterparts. Thus, we could definitively assert that Benin republic economy despite being in subjection to BCEAO monetary policy control is extremely detached from current financial system. The country has its own specific prospect and constrains. The variance implies that households in Benin republic behave differently conditioned by other socioeconomic factors. In addition, high negative correlation also underscores the fact that banking sector in Benin lags behind the WAEMU averages in terms of performance and also exhibits vulnerabilities (World Bank, 2018). Following this result, Benin republic households may be constrained by low level of income such that savings do not conform trends in other related economies. In addition, confidence in the banking system safety could influence decision to transfer surplus disposable income to deposits accounts. Greater

exposure to deposit losses implies that deposit taking institutions pose significant trust and reputation risks.

Equatorial Guinea transferable deposits negatively correlates with rest of CFA Franc zone members which underscore significant heterogeneity. Although the extreme deviation of Equatorial Guinea from the correlational norm seen among other CFA franc zone members is unexpected, it rather conforms to Gulde (2008) observation of uncommon challenge despite common currency in CFA zone. The correlation of this country is closely linked to small West African countries. Interestingly, we find a high positive correlation between Equatorial Guinea, Togo and Benin republic which might imply exceptional homogeneity despite the two West African state under monetary control of BCEAO. Correlation coefficients in these countries are 0.810 and 0.807 respectively. This means economic agents in these three countries reflect identical qualities or are collectively subjected to common socioeconomic impediments. In reality these countries represent small economies with ridiculously weak manufacturing sector.

Table 4.2: Bivariate Correlation of Bank Credits in WAEMU and CEMAC Centralized Monetary System

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benin (1) | 1.000 | | | | | | | | | | | | | |
| Burkina (2) | -0.955 | 1.000 | | | | | | | | | | | | |
| Côte d'Ivoire (3) | -0.933 | 0.816 | 1.000 | | | | | | | | | | | |
| Guinea-Bissau (4) | -0.937 | 0.880 | 0.969 | 1.000 | | | | | | | | | | |
| Mali (5) | -0.928 | 0.875 | 0.964 | 0.999 | 1.000 | | | | | | | | | |
| Niger (6) | -0.932 | 0.867 | 0.976 | 0.998 | 0.998 | 1.000 | | | | | | | | |
| Senegal (7) | -0.935 | 0.881 | 0.968 | 0.9995 | 0.9996 | 0.999 | 1.000 | | | | | | | |
| Togo (8) | -0.950 | 0.878 | 0.979 | 0.995 | 0.992 | 0.993 | 0.994 | 1.000 | | | | | | |
| Cameroon (9) | -0.872 | 0.821 | 0.938 | 0.985 | 0.988 | 0.985 | 0.985 | 0.966 | 1.000 | | | | | |
| Central African Rep (10) | -0.814 | 0.779 | 0.885 | 0.959 | 0.965 | 0.955 | 0.958 | 0.932 | 0.988 | 1.000 | | | | |
| Chad (11) | -0.776 | 0.733 | 0.887 | 0.938 | 0.946 | 0.945 | 0.941 | 0.905 | 0.979 | 0.975 | 1.000 | | | |
| Congo Rep (12) | 0.246 | -0.264 | -0.305 | -0.326 | -0.335 | -0.340 | -0.336 | -0.304 | -0.396 | -0.347 | -0.413 | 1.000 | | |
| Equatorial Guinea (13) | 0.643 | -0.734 | -0.616 | -0.714 | -0.722 | -0.718 | -0.719 | -0.650 | -0.768 | -0.751 | -0.802 | 0.569 | 1.000 | |
| Gabon (14) | -0.815 | 0.751 | 0.913 | 0.954 | 0.958 | 0.953 | 0.953 | 0.925 | 0.985 | 0.982 | 0.986 | -0.330 | -0.768 | 1.000 |

Another component of financial system is the instrument of credit to influence trends in productivity. In the CEMAC, Congo republic and Equatorial Guinea differ significantly in their bank credits history vis-à-vis other economies (table 4.2). The same is also obtainable in Benin. There is clearly no convergence of the two CEMAC and Benin republic economies to the objective of smooth integration. This might suggest institutional and regulatory quality weaknesses or the

single Central Banks monetary policy environment is less impacting leading to parallel movement in outlier countries. As plainly seen, Congo Rep and Equatorial Guinea have greater negative coefficients but unexpectedly correlate positively with Benin republic in West Africa. Financial conditions of the three countries differed because economic conditions significantly vary across these member states. Constâncio (2015) insight suggests that in the absence of such differences, financial stability in a banking union can be possible. Banking business in these countries may be signaling deterioration in their ability and wiliness to supply credits. It might be highest in Equatorial Guinea whose negative coefficient exceeded 0.5 both relative to CEMAC and WAEMU countries. Correlation coefficient for Senegal, Guinea-Bissau, Mali and Niger almost mutually equate to unity, thus, these economies have strong association.

Table 4.3. Summary Statistics

| | Mean | Maximum | Minimum | Standard Dev. | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| Broad money supply-to-GDP | 0.948222 | 1.732943 | 0.019773 | 0.563840 | 0.012499 | 1.389130 |
| Credits-to-GDP | 1.233747 | 5.235056 | 0.000619 | 0.764486 | 1.942915 | 10.43684 |
| Transferable deposits | 9.499880 | 14.97092 | 1.364721 | 3.452605 | -0.025203 | 1.931747 |
| Gross fixed capital | 9.528660 | 16.26290 | 3.380995 | 3.463167 | 0.632940 | 2.005693 |
| Regulatory quality | 32.06887 | 60.0000 | 8.095238 | 14.47186 | -0.049030 | 1.743500 |
| Obs. | 168 | 168 | 168 | 168 | 168 | 168 |

**Note:** All entries are in percentage terms and variables expressed in its original unit such as transferable deposit is converted using natural logarithmic function.

In the table 4.3, the mean of credit-to-GDP is extremely low given a magnitude of 1.234%. This is coupled with wide variation between its maximum and minimum values. A kurtosis coefficient of 10.43 indicates excessive high values in the distribution. This regressor has moderate standard deviation indicating lesser volatility from its original values. Gross fixed capital has a very low mean coefficient just the same it has very low minimum value of 3.38% with platykurtic distribution. Transferable deposits whose mean coefficient is approximately 9.5% is highly volatile given a standard deviation of 3.463. Deposits mobilization is very low in CEMAC and WAEMU. Broad money supply to GDP has a mean of 0.94822% with shallow gap between the maximum and minimum parameters whose corresponding values are between 1.73 and 0.0198. All the countries involved display minimum volatility given a 0.564 of standard deviation. However, volatility is instead very large in regulatory governance up to 14.47% of standard deviation. Thus, CEMAC and WAEMU countries banking system could be plausibly confronting unstable policy

conditions from the regulatory environment. The mean of 32.069 in regulatory quality depicts a very weak number with fat rails to the left. Its maximum value is 60% likely contributed by bigger economies in WAEMU.

Table 4.4. Baseline Regression Model

| | Fixed Effects | Differenced-GMM | System-GMM |
|---|---|---|---|
| **Panel A** | | | |
| Gross fixed capital (-1) | 0.778288*** | 0.664622*** | 1.912715 |
| Broad money supply | -0.168553 | -0.192307*** | 1.296887 |
| Transferable deposits | 0.208520 | 0.334360*** | -0.825407 |
| Credits | 0.035150 | 0.163636** | 0.142883 |
| Regulatory quality | -0.019844 | -0.029710*** | -0.266512 |
| **Panel B** | | | |
| Gross fixed capital (-1) | 0.582748*** | 0.439761*** | 1.195551*** |
| Broad money supply-to-GDP | -2.858291*** | -3.969437*** | 0.436821 |
| Transferable deposits | 0.416328*** | 0.559915*** | 0.002935 |
| Credits-to-GDP | -1.108683*** | -1.834022*** | -0.148131 |
| Observations | 154 | 140 | 140 |
| Number of countries | 14 | 14 | 14 |
| Prob(J-statistic) | | 0.259602 | - |
| AR(2) test (p-values) | - | 0.9999 | |
| Adj-$R^2$ | 0.862919 | | -7.072979 |

Note: ***, **, and * denote significance levels of 1%, 5%, and 10% respectively. denote $p < 0.01$, $p < 0.05$ and $p < 0.1$, respectively

Table 4.4 reports the results of two separate specifications. The empirical results vary across methods and models. Beginning with the panel A, the persistent parameter of gross fixed capital formation from fixed effect exceeds differenced-GMM. As it can be seen, the persistent parameter in fixed effect is 0.778 (77.8%) greater than 0.664(66.4%) in difference-GMM. This is statistically positive and significant. It is the basis validating the adoption of fixed effect in place of difference and system-GMM. In the result, broad money supply has a negative coefficient which indicates a decline in gross fixed capital. This suggests that monetary aggregates in the economic zone have adverse consequences on capital formation. It therefore represents a sharp contrast to *a priori* expectation since aggregate money in circulation does not seem to support the growth in rate of technological progress and the growth in factors of production. Such could imply the extent of shallow financial system of countries in the unions. A likely condition that may account for the negative broad money supply is the size of interest rate adjustment. By theory high interest rate from contractionary monetary policy raises the cost of debt in non-financial corporations. As a result, increasing cost of capital makes some investment projects less attractive to the detriment of capital formation. Although growth in the rate of interest can encourage firms to raise leverage

level in the capital structure for corporate tax shield benefit (Dhaliwal, Trezevant & Wang, 1992; Malenya *et al.* 2017), some of the firms could be prone to bankruptcy due to excessive leverage. The fear of bankruptcy implies that management might consider less of real assets investments. In addition, the outcome is also a matter of whether BCEAO and BEAC have for a long period repeatedly engage in monetary tightening to control inflation. On the other hand, it could be the case that capital formation failed to benefit from improved currency circulation because highly liquid households failed to invest in physical infrastructure but may rather opt for consumption spending. Thus, under such scenario it could be an indication that there may be short run excessive consumption expenditure in the WAEMU and CEMAC economic unions. Usually, surge in household consumption is a great risk to the general economy. Similarly, regulatory quality exerts negative influence on gross fixed capital. This could be orchestrated by information problems between the banking firms and borrower of which supervision and monitoring have not been able to mitigate to a very low level. Thus, regulatory quality seems not to be adequate in the two monetary unions. In Guinea-Bissau the regulatory quality is exceedingly low, as well as in Côte d'Ivoire, Niger, Togo and Mali. In CEMAC, Cameroon showed poor regulatory quality. However, the worst among all union members are Chad, Central African Republic, Congo Republic and Equatorial Guinea. Our result also highlights a non-significant positive private sector credits and transferable deposits vis-à-vis gross fixed capital formation. By *a priori* the influence remains quite weak since credits and deposits are insufficient to build capital accumulation that supports desired growth rate. It logically indicates that less transferable deposits are transformed into bank credits to manufacturing companies. It is also possible that resource mobilization in CFA Franc economies could be very weak. For instance, Equatorial Guinea and the rest in CEMAC have very few banks some of which are foreign-owned banks in its market. The situation might be critical in CEMAC whose banking industry is extremely oligopolistic and less competitive (African Development Bank Group, 2006; Saab & Vacher, 2008), unlike in West African union with larger number of banks (BCEAO, 2024). Lemma and Venkati (2016) argue that financing investment for economic growth and capital formation requires the economy to generate sufficient savings. Non-significant coefficient of transferable deposit implies that CFA economies are not generating adequate savings. This validate Amadou (2008a) claim of shallow financial depth in WAEMU whose regional banking system is yet relatively small.

In the panel B, the fixed effect and difference-GMM all produced statistically significant estimates at 1% significant level, thus, the results are robust across the two specifications. Given an excess of *GFC* persistent parameter in the fixed effect over difference-GMM, we proceed with estimates consistent with fixed effect. The coefficient in the broad money supply to GDP is significantly negative and robust across fixed effect and difference-GMM, implying that large money in circulation as a ratio to GDP amounts to adverse effects on *GFC.* Credit-to-GDP produced negative and significant coefficient. By theory a positive sign is expected. Yet result seems to suggests that credit is not growing naturally in line with overall economic activity. It is ultimately important to understand underlying factors responsible for the adverse effect of credit-to-GDP on *GFC.* Operating environment could play adverse roles. For instance, the result highlights obvious shortcoming in the monetary policy of regional central banks. Delechat, Ramirez and Veyrune (2008) observe that monetary policy framework in CEMAC to be specific had been mostly passive. Notwithstanding the likely role of lending rate, another obvious indicator is firmly known. Some conditional variable such as lack of market forces determine credit disbursement of banks in developing countries. According to theory, financial repression is dominant among developing countries (McKinnon & Grassman, 1981). Political directives against orthodox banking practice have been on ground among some African countries. High level military or influential executive powers and political actors in the economy can disproportionately enforce channeling of credits to unproductive borrowers through connected lending. Damette and Kouki (2022) uphold that Zimbabwean politicians are known for non-repayment of loans. Unfortunately, politically influenced loans from friendly bankers carry huge information asymmetry due to poor adherence to KYC requirements. Preliminary consideration in loans administration is creditworthiness of borrower. It has nothing to do with political elites. Worse is the luring of bank management to invest in political aspirant or power brokers. Consequently, important sectoral engines are often starved of liquidity. Banking credit influenced through political connection rarely enhances productivity of capital. This is consistent with Hasanov and Bhattacharya (2018) view that political process influences financial authorities in developing countries. Financial repression in French West and Central Africa may lead to negative credit-to-GDP effect on *GFC.* Thus, this is quite parallel to fundamental impacts credits should exert on capital accumulation target of a country. In conformity to Kumar (2020), politically motivated increased bank lending due to elections crowds out lending to manufacturing firms. For transferable deposits, a regression slope of

approximately 0.416% is obtained. This indicates that on average, a unit percent change in transferable deposits improves capital formation by a marginal rate of 0.416 percent.

Table 4.5. Robustness Test Regression Model

| | Fixed Effects | Differenced-GMM | System-GMM |
|---|---|---|---|
| Dependent variable: Gross fixed capital formation | | | |
| Gross fixed capital (-1) | 0.784226*** | 0.628721*** | 0.872974*** |
| Broad money supply-to-GDP*Reg. | -0.0000479 | -0.000486*** | 0.000131 |
| Transferable deposits*Reg. | 0.002651 | 0.006114*** | 0.053792 |
| Credits-to-GDP*Reg. | -0.00000942 | 0.000153*** | -0.000199 |
| Observations | 154 | 140 | 140 |
| Number of countries | 14 | 14 | 14 |
| Prob(J-statistic) | | 0.187889 | |
| AR (2) test (p-values) | | 0.9937 | |
| Adj-$R^2$ | 0.791530 | | |

*significant at 10%; **significant at 5%; ***significant at 1%

This section implements robustness checks to assess the reliability of our results. The robustness model specifications produced results that are similar to baseline regression estimates (panel B) despite the interaction with regressors. Taken collectively, each regressor retains its economic sign. Broad money supply-to-GDP interacted with regulatory quality accounts for a weak decline in *GFC*. Regulatory quality seems not to have aided in extensive deepening of the financial system in French CFA countries of Africa to positively deliver on capital accumulation. Interaction terms, *transferable deposits*reg* and *credits-to-gdp*reg* are statistically negative and insignificant. This implies that the lower a country's regulatory quality the weaker the efficiency of ratio of money supply to GDP impacts on gross fixed capital. Our estimates indicate that lack of robust regulatory quality is detrimental to the real sector of CFA franc zone. It adds to the decline in transferable deposits from initial 0.416% to approximately 0.0027%.

## 5 Concluding Remarks

We have studied financial system and the real economy in CFA monetary and economic zones domiciled in Central and West Africa. A bivariate correlation estimation on transferable deposits shows significant detachment of Benin republic and Equatorial Guinea from the rest of CFA zone financial system. With the rising advocacy for market integration transferable deposits and credits are key indicators to gauge the of financial integration. Benin and Equatorial Guinea implicitly undermine convergence criteria for their respective monetary union and economic community. The deviation of Benin republic from rest of French West Africa has consequences. A potential advantage in this regard is that shock to Benin republic from its internal system would have negligible impact on other jurisdictions but domestically stronger in economy central to the shock.

On a wider scale, shock momentum from rest of WAEMU would appear to be slow and weaker in affecting Benin republic financial system and the vast economy. The detachment of Benin reveals difficulty in actualizing full scale financial integration let alone economic integration in the community. This is because of breach of financial system convergence. Hence, it is necessary to suggest that BCEAO and BEAC monetary policy actions should first consider fixing primary policy instruments on case-by-case basis because of economic and financial system peculiarities of some members. This in turn is likely to mean making the monetary policy that is appropriate for Benin and Equatorial Guinea which basically means based on weighted average of each economy. Political, economic and fiscal dynamics should be of immense consideration in structuring monetary policy. This approach potentially carries sufficient flexibility for national growth-oriented strategies to combine with shared policies in responding to domestic, regional, and global developments. This could minimize differing results for Benin republic, Congo and Equatorial Guinea. High correlation among other countries underscores the power of coordinated policy formulated by a common central bank. This means monetary policies of BCEAO display almost perfect uniform effect on every member jurisdiction although Benin Republic is an exception. On credit to the economy, similar result is observed but on the contrary, Congo Republic and Equatorial Guinea in the CEMAC zone sustain intensive deviation from mutual policy. This is quite inappropriate for countries collaborating to form authentic financial integration and economic alliance.

According to baseline regression results, transferable deposits and credits are financial necessities to support capital formation in CFA African countries but only by a minimum magnitude. In terms of regulatory quality CEMAC members are highly backward. It has no impressive advantage to financial intermediation variables especially in facilitating credit creation for the real economy. Robust regulation of the banking industry can strengthen the capacity of the system to deliver necessary financial intermediation services that foster capital build-up over time. It is clear from our findings that *ceteris paribus* the real sector in the CFA common currency union is not sufficiently supplied with financial resources to facilitate development of requisite capital formation. There is negative dynamic relationship between broad money supply as a ratio of GDP against gross fixed capital. Financial depth is very low when scaled against international standards.

Bank deposits play pivotal role in spurring capital accumulation. Given its marginal positive impact on capital formation it is logically expected that such inadequacy is partly responsible for negative effects of credit-to-GDP on gross fixed capital in French Central and West Africa. Negligible influence of credit-to-GDP vis-à-vis to GFC could be corrected mainly from the angle of CEMAC whose credit portfolio hugely favours advanced enterprises. The BEAC needs to take steps in redirecting more credit flows to SMEs. Small and medium scale enterprises are supportive in physical capital investments in the real economy.

Member countries perform poorly with respect to regulatory quality which could be accelerated through policy. Internal governance of banks should be of utmost concern to regulators of the system. Each political jurisdiction should be empowered to constitute domestic supervisory committee to monitor rules enforcement structured by central banks for each union for constituent countries in the unions. This should be majorly constituted by risk managers of former staff in deposit money banks combined with corporate department staff of the various central banks. This is bound to support any Single System of Monitoring (SSM) implemented under the Banking Commisssion in CEMAC, (Commission Bancaire de l'Afrique Centrale (COBAC) responsible for harmonizing and controlling banking activities.

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