INFLUENCE OF MACROECONOMIC STABILITY ON FINANCIAL DEVELOPMENT IN DEVELOPING ECONOMIES: EVIDENCE FROM WEST AFRICAN REGION

ABSTRACT

This paper examines the effects of macroeconomic stability on the financial development in the West African region. Macroeconomic stability is measured based on the five variables of the Maastricht Criteria (inflation rate, real exchange rate, government debt, fiscal deficit and real interest rate). This study employs novel dynamic models on panel data. The results suggest that macroeconomic stability has significant effects on financial development in the region. Specifically, inflation rate, real exchange rate and fiscal deficit have negative effects. The effects of government debt and real interest rate are positive. This study confirms that the five macroeconomic stability variables are the determinants of financial development. Hence, developing economies should strive to achieve macroeconomic stability in order to drive financial development and to achieve sustainable economic development.

Keywords: Macroeconomic stability; financial development; economic growth; developing economies

JEL Classification: O47, G21, G23

I. INTRODUCTION

The nexus between financial development and economic growth has received considerable attention in recent years. Although the majority of studies conclude that financial development has the capacity to spur economic growth, but the degree of impact depends on the level of financial development (Ehigiamusoe and Lean, 2018; Law and Singh, 2014; Rioja and Valev, 2004a; Samargandi et al., 2015). For instance, Henderson et al. (2013) reported that a low level of financial development has no significant impact on economic growth, as demonstrated in many cases in developing countries. But Arcand et al. (2015) documented that when credit to private sector reaches 100% of GDP, the positive impact of financial development on economic growth vanishes. In between these two extremes, the degree of the positive impact of financial development on economic growth varies with the levels of financial development (Beck et al., 2014; Rousseau and Wachtel, 2011).

In essence, variations in the level of financial development across countries could be due to several factors, which include macroeconomic stability variables. Some empirical studies have examined the determinants of financial development. For instance, income level, current and capital account openness and financial openness have been identified as fundamental variables that affect financial development (Baltagi et al., 2009; Chinn and Ito, 2006; Law and Habibullah, 2009; Rajan and Zingales, 2003). But the impact of macroeconomic stability variables (inflation rate, real exchange rate, government debt, fiscal deficit and real interest rate) on the development of the financial system have not been thoroughly examined. It is fundamental to investigate the relationship between macroeconomic stability variables and financial development. There is theoretical evidence suggesting that poor macroeconomic performance has some harmful effects on financial sector development. For instance, low and stable inflation is a pre-condition to achieve an active and well-developed financial sector, while a high and volatile inflation rate has deleterious effects on financial development (Bittencourt, 2011). The dynamic relationship between real exchange rate and financial development has also been stressed in theoretical literature (Aghion et al., 2009; Elbadawi et al., 2012).

Furthermore, the theoretical link between public debt and financial development suggests that the banking sector that lends principally to the public sector causes the financial system to become inefficient and experience slow development. But, when the public debt held by banks is at a moderate level, it can support financial market development through the provision of collateral and benchmark of yield curve (Hauner, 2009; Ismihan and Ozkan, 2012). Moreover, fiscal deficit and financial development are also theoretically related since inflationary pressure of budget deficit is stronger in countries with undeveloped financial markets. In fact, public debt and fiscal crisis, as well as the associated hike in interest rate, could lead to a subsequent crisis in financial market (Ishaq and Mohsin, 2015; Neaime, 2015). Lastly, interest rate influences decisions on saving and investment, as well as the demand for financial services, instruments and intermediaries. High lending rate increase the cost of capital and discourage investors from borrowing money for investments. Negative real interest rates (resulting from financial repression[1] and credit control) may also reduce the incentives to save (gross domestic

[1] A term used to describe a situation where government policies or regulations (such as interest rate ceilings, credit ceilings or restrictions, liquidity ratio requirements, capital controls, high bank reserve requirements, etc) hinder the effective functioning of the financial intermediaries of a country. Arguably, financial repression inhibits efficient capital allocation and weakens economic growth (see Ang and McKibbin, 2007; Luintel and Khan, 1999; Naceur et al. 2008).

savings), thereby encouraging bank to take risk which could lead to a reduction in their profitability (Ang and McKibbin, 2007; Aydemir and Ovenc, 2016; Luintel and Khan, 1999; Naceur et al., 2008).

From the theoretical perspective, a study on the determinants of financial development is deemed fundamental because of the pivotal role of the financial system in economic growth and development. For instance, the theories of economic growth show that financial development has the capacity to influence economic growth by promoting capital accumulation and productivity growth (Beck et al., 2000; Rioja and Valev, 2004a). Moreover, the financial Kuznets curve hypothesis[2] stresses the vital role of the financial system in influencing income inequality (Beck, et al., 2007; Greenwood and Jovanovic, 1990; Jalil and Feridun, 2011). However, the ability of the financial sector to influence economic growth or development depends on the level of its development, which is itself determined by some macroeconomic variables.

Nevertheless, several developing countries have been facing severe macroeconomic instability in recent decades due to a combination of output volatility, inflation variability, exchange rate instability, severe government budget deficits, foreign payment deficits and growing foreign debt obligations (Ehigiamusoe and Lean, 2017; Serven and Montiel, 2004; Todaro and Smith, 2009). In essence, Dabla-Norris and Srivisal (2013) posited that financial development and macroeconomic volatility have a theoretical relationship. Dabla-Norris (2015) added that a major priority of the International Monetary Fund (IMF) is to promote financial deepening, economic growth and macroeconomic stability in developing countries. Consequently, a large number of developing countries have adopted certain macroeconomic policies with a view to ensuring macroeconomic stability. Therefore, it is important to examine the impact of macroeconomic stability variables on different dimensions of the economy, and one of those being financial system development. The findings of this study could be valuable in formulating appropriate government policies that would enhance the performance of the financial sector and macroeconomic variables, especially in developing countries.

This paper aims to address the gap in empirical study on the impact of macroeconomic stability variables on financial development by using annual panel data for the West African region from 1980 to 2014[3]. Balanced panels data are used for all the models. The variables used in this study are based on the Maastricht Criteria[4] of measuring macroeconomic stability. The region consists of 16 countries, namely Benin, Burkina Faso, Cape Verde, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

The West African region was chosen for this study because, despite various financial reforms and restructuring, the level of financial development is still low compared to other regions. For instance, the average credit to private sector relative to GDP[5] during 1980-2015 was 15.76% compared to 35.97%, 36.92%, 50.11%, 123.37% and 142.45% in Latin America, MENA

[2] A term used to describe the theoretical relationship between financial development and income inequality.
[3] With exception of models of government debt and fiscal deficit between 1990 and 2014 due to unavailability of data.
[4] The choice of variables based on the Maastricht Criteria is justifiable because it is more comprehensive than the ECOWAS Convergence Criteria variables, albeit similar. For instance, the five Maastricht Criteria variables are inflation rate, national debt relative to GDP, fiscal deficit relative to GDP, currency fluctuations and real interest rate. In comparison, the ECOWAS Convergence Criteria variables are inflation rate, fiscal deficit relative to GDP, central bank deficit financing and gross external reserves.
[5] World Development Indicators (2016) of World Bank.

region, Sub-Saharan Africa, OECD and East Asia respectively. Similarly, broad money supply relative to GDP in the West African region was 25.77% compared to 36.81%, 41.12%, 60.15%, 101.73% and 156.86% in Sub-Saharan Africa, Latin America, MENA region, OECD and East Asia respectively. These indicators suggest a much lower level of financial development in the West African region compared to other regions.

Many West African countries have experienced severe levels of macroeconomic instability in the past decades. For instance, in the 1980-2015 period, average inflation rates were exceptionally high in Nigeria (19.44%), Guinea (18.56%), Guinea-Bissau (27.57%), Ghana (27.86%) and Sierra Leone (34.53%). The average inflation rate for the entire region in the period above was 11.66%, which was significantly higher compared to 8.65%, 8.57%, 5.11%, 4.63%, 4.22% in Latin America, Sub-Saharan Africa, MENA region, East Asia and OECD respectively. The real exchange rate has also plummeted in recent years as the nominal exchange rate has continued to experience severe depreciation across the countries.

Furthermore, the dwindling government revenue across West African countries has continued to exacerbate the level of budget deficit, as the average fiscal deficit relative to GDP in the region stood at -3.01% during the 1990-2014 period. For the same period, the following countries had a greater fiscal deficit relative to GDP than the regional average: Gambia (-3.24%), Cote D'Ivoire (-3.40%), Togo (-3.61%), Guinea (-3.78%), Sierra Leone (-4.40%), Cape Verde (-5.97%), Ghana (-7.14%). In order to meet this deficit, most of the countries in the West African region resorted to domestic and foreign borrowing thereby causing soaring government debt. Consequently, the debt-GDP ratio in the region was 114.28% during this period. The debt-GDP ratio was exceptionally high in Mali (85.48%), Gambia (88.03%), Guinea (97.83%), Togo (102.66%), Sierra Leone (129.47%), Cote D'Ivoire (134.28%), Mauritania (138.04%), Guinea-Bissau (209.19%) and Liberia (401.68%). Domestic borrowing thusly aggravated the situation in the domestic money market by increasing the cost of capital (real interest rate), thereby crowding out potentially more productive private sector investment. During this period, the average real interest rate in the West African region was 6.72%.

The analysis of macroeconomic variables in the West African region indicates that the region has experienced macroeconomic instability in recent decades, since most of the variables exceeded the maximum values recommended by the Maastricht Criteria for macroeconomic stability. According to the Maastricht Criteria[6], the five indicators for macroeconomic stability of a country are low and stable inflation rate (within 3%), low currency fluctuation (within 3%), low government debt relative to GDP (within 60%), low budget deficit relative to GDP (within 3%), and low long-term interest rate (within 9%). Some studies have also shown highlighted these variables to be key indicators of macroeconomic stability (e.g. Ehigiamusoe and Lean, 2017; Serven and Montiel, 2004; Todaro and Smith, 2009).

The rest of the article is divided into five sections. Section 2 provides a critical review on the current understanding of the determinants of financial development. Section 3 explains the approach of using panel data in dynamic models. Section 4 is the reports of empirical results. Section 5 offers key conclusions and policy options for designing reform programs for financial systems.

[6] See European Commission Convergence Report 2014.

II. LITERATURE REVIEW

Several variables have been suggested in empirical literature as fundamental determinants of financial system development. For instance, La Porta et al. (1997) reported that legal rules and law enforcement quality (investor protection) affect the development of financial markets. In essence, countries with poor investor protection have narrower or smaller financial markets. This view was corroborated by Levine et al. (2000) who showed that legal and accounting systems that promote contract enforcement, creditor rights and accounting practices have the capacity to spur financial development and ultimately propel economic growth.

In addition, Chinn and Ito (2006) showed that a higher level of financial openness promotes equity market development particularly when a certain threshold level of legal development has been reached. They concluded that banking development and trade openness are prerequisites for equity market development and capital account liberalization respectively. Similarly, Baltagi et al. (2009) found that financial openness and/or trade openness have beneficial effects on banking sector development. Unlike the Rajan and Zingales (2003) hypothesis which documented that both financial and trade openness are prerequisites for financial development, Baltagi et al. (2009) concluded that either one by itself would still be beneficial to financial development.

Another key determinant is per capita real income. Evidence from the studies of Luintel and Khan (1999) and Boyd et al. (2001) showed that per capita real income has a significant positive impact on financial development. Ang and McKibbin (2007), Kim and Lin (2010) and Bittencourt (2011) also provided evidence in support of a positive impact of real GDP per capita. In contrast, Cherif and Dreger (2016) found that per capita income has insignificant impact on financial development in MENA countries.

The role of institutions in the development of the financial system has also been emphasized in empirical studies. Law and Habibullah (2009) examined the influence of institutional quality on financial market development in twenty-seven countries, and reported that institutional quality is a statistically significant determinant of both capital market and banking sector development. Cherif and Dreger (2016) also investigated the institutional determinants of financial development and reported that institutional conditions are fundamental for both banking and stock market development after controlling for other economic determinants. Fernandez and Tamayo (2017) posited that institutional arrangements influence financial development by worsening or ameliorating transaction costs and information frictions – the two key factors characterizing the development of the financial system.

This present study attempts to investigate whether a stable macroeconomic environment is a *sine qua non* for the development of the financial market, and should therefore be considered a key determinant too. The key macroeconomic stability variables according to the Maastricht Criteria are inflation rate, government debt, fiscal deficit, real exchange rate and real interest rate. There is sufficient theoretical and empirical support on the effects of these variables on financial development, as expounded below.

Inflation rate has been investigated in numerous empirical studies but without conclusive agreement on its effect. Some studies have demonstrated that low and stable inflation rates stimulate financial development. For instance, Abbey (2012) concluded that inflation rate has no long-run significant relationship with financial development in Ghana. This is corroborated by Cherif and Dreger (2016) who studied MENA countries, but contradicted by English (1999)

who found a long-run positive relationship. As for short-run effect, Abbey (2012) and Kim and Lin (2010) found evidence of a positive unidirectional causal relationship between inflation rate and financial development.

In contrast to the above, other studies have demonstrated that high and volatile rates have deleterious effects on financial development. Bittencourt (2011) showed that inflation rate has a negative and significant impact on financial development. Naceur and Ghazouani (2005) found that once inflation rate exceeds a certain threshold, it has a negative effect on financial sector performance. Boyd et al. (2001) also found a non-linear inverse relation between inflation rate and financial development. Kim and Lin (2010) found a long-run negative effect of inflation rate on financial development. Moreover, Akosah (2013) found that inflation rate has a long-run negative unidirectional causal relationship with financial development, while a short-run negative bidirectional causality exists between them in Ghana. Odhiambo (2012) corroborated the findings of the existence of a negative long-run relationship between inflation rate and financial development in Zambia. In summary, some studies conclude that a high inflation rate due to poor macroeconomic performance has a harmful effect on financial sector development whereas other studies conclude that a low and stable inflation rate is a precondition for achieving an active and strong financial sector.

Another variable with an inconclusive result is real interest rate. Luintel and Khan (1999) and Ang (2008) showed that real interest rate has a significant positive impact on financial development, contradicting a previous study (Ang and McKibbin, 2007) which found that real interest rate and financial repression have a negative effect on financial development. A low interest rate increases the risk of bank and its' effect on risk assets diminishes particularly for banks with a greater equity capital (Delis and Kouretas, 2011). Aydemir and Ovenc (2016) also posited that short-term interest rate has a short-run negative effect on banking profitability. Assefa et al. (2017) opined that interest rate has a significant negative impact on stock returns in developed countries. Thus, interest rate influences saving and investment decisions as well as the demand for financial services, products, instruments, and intermediaries. A high lending rate increases the cost of capital and discourages investors from borrowing money for investments. Similarly, a negative real interest rate occasioned by financial repression and credit control may reduce the incentive to save, thereby reducing gross domestic savings (Ang and McKibbin, 2007; Luintel and Khan, 1999; Naceur et al. 2008).

However, there is very limited empirical evidence on the effect of the rest of the three macroeconomic stability variables on financial development. The theoretical link between public debt and financial development has been emphasized in Hauner (2009) who posited that if the banking sector lends mainly to the public sector, it becomes inefficient and experiences slow development. However, when the public debt held by banks is at a moderate level, it can support financial market development through the provision of collateral and benchmark. The study also provided some evidence to support a detrimental relationship between public debt and financial repression. Similarly, Ismihan and Ozkan (2012) also contended that public debt could harm financial development in countries where government is the main recipient of bank lending. They added that the adverse effects of public borrowing or debt on financial development and macroeconomic outcomes are likely to be larger in countries with lower financial depth than otherwise.

There is a potential relationship between real exchange rate and financial development. Aghion et al. (2009) posited that the impact of real exchange rate volatility on productivity growth depends on the development of the financial sector. Elbadawi et al. (2012) also argued that

financial development has the capacity to alleviate the negative effect of real exchange rate overvaluation on growth.

Finally, Ishaq and Mohsin (2015) attempted to explain the relationship between fiscal deficit and financial development when they contended that inflationary pressure of budget deficit is stronger in countries with undeveloped financial markets, while Neaime (2015) argued that debt and fiscal crises can lead to a subsequent banking crisis. Ball and Mankiw (1995) and Rubin et al. (2004) argued that rising debt levels and/or fiscal deficit are correlated with economic growth because of their influence on investors' confidence on the ability of a nation to settle debt service payments. Thus, higher returns in form of higher interest rate is needed to persuade investors to keep financing the fiscal deficit. This hike in interest rate could lead to financial market crisis and inhibit growth.

The above review shows that the impact of key variables on financial development have been examined by previous studies. There are some empirical evidences to support significant positive effects of legal protection, trade and financial openness, income level, and maturity of national institutions on financial development, while the effect of inflation rate is inconclusive. This study differs from previous empirical studies in that it focuses on examining the impact of five macroeconomic stability variables (inflation rate, real exchange rate, government debt, fiscal deficit and real interest rate) on financial development and to develop dynamic models using data from the West African region. This is the first study that examines how these five variables affect the financial sector within dynamic models. This study employs novel empirical strategies that enable us to examine both the long-run and short-run impact of these variables on financial development as well as account for possible endogeneity.

III. DATA AND METHODOLOGY

III.1 Model Specification

The dynamic linear models used in this study are consistent with the models used in Ang and McKibbin (2007); Baltagi et al. (2009); Chinn and Ito (2006); Kim and Lin (2010); and Law and Habibullah (2009). The models[7] are given as follows:

$$FD_{i,t} = \alpha INF_{i,t} + \delta' Z_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (1)$$

$$FD_{i,t} = \beta RER_{i,t} + \delta' Z_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (2)$$

$$FD_{i,t} = \varpi DEB_{i,t} + \delta' Z_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (3)$$

$$FD_{i,t} = \psi DEF_{i,t} + \delta' Z_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (4)$$

$$FD_{i,t} = \varphi INT_{i,t} + \delta' Z_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (5)$$

where FD = financial development (proxy by credit to private sector relative to GDP, and alternatively by liquid liabilities relative to GDP for robustness checks); INF = inflation rate; RER = real exchange rate; DEB = government debt relative to GDP; DEF = fiscal deficit relative to GDP; INT = real interest rate; Z = set of control variables such as the lagged value of financial development, level of per capita income, government consumption expenditure relative to GDP and trade openness relative to GDP; i = 1, 2, …, N; t = 1, 2, …, T; η =

[7] Due to the presence of multicollinearity among the regressors, we follow a similar procedure utilized in Law and Habibullah (2009) to include one macroeconomic stability variable in the model at a time along with other control variables.

unobserved country-specific effect; μ = time specific-effect; and ε = independent and identically distributed normal error term[8]. Trade openness relative to GDP and government consumption expenditure relative to GDP are included in the model to capture the degree of a country's openness and the effect of government policy respectively (Bittencourt, 2011; Kim and Lin, 2010). Moreover, one-period lagged financial development is included in the model as one of the independent variables in order to capture persistence since there is a considerable level of persistence in financial development (Baltagi et al., 2009). All variables except inflation rate, fiscal deficit and real interest rate are transformed into natural logarithm before analysis.

III.2. Estimation Techniques

Since T>N in the panel, the estimation techniques employed in this study are Mean Group (MG) and Pooled Mean Group (PMG). The PMG model (Pesaran et al., 1999) assumes homogeneous long-run coefficients across countries but allows for variations in short-run coefficients, speed of adjustment, and error variances. The MG model (Pesaran and Smith, 1995) allows both long-run and short-run coefficients to differ across countries, as well as the speed of adjustment and the error variances. The Hausman test of homogeneity of long-run coefficients is conducted to ascertain the preferred model between MG and PMG.

III.3 Data Sources

The annual data used in this study covers the sample period from 1980 to 2014. The data for real GDP per capita, credit to private sector, government consumption expenditure, and trade openness are from World Development Indicators (2016). The data for inflation rate is from World Economic Outlook (2016). The data for government debt and fiscal deficit is from the Central Bank of the West African states. The data for real exchange rate is computed from nominal exchange rates and consumer price indices are obtained from World Development Indicators (2016).

IV. EMPIRICAL RESULTS

IV.1 Descriptive statistics and correlation analysis

A summary of the descriptive statistics and correlation analysis of the variables in the model are presented in Table 1. There are wide variations between the maximum and minimum values of each of the variables during the period. For instance, the mean value of credit to private sector relative to GDP was 15.43%, while the respective maximum and minimum values were 65.27% and 0.80%. The lower part of Table 1 shows the correlation analysis of the variables. All the macroeconomic stability variables (with the exception of real interest rate) have negative correlation with financial development indicators, while all the control variables (income level, government expenditure and trade openness) are positively correlated with financial development.

Insert Table 1 About Here

[8] Institutional factors are not included in the models because of unavailability of data on institutional factors in the West African region.

Figure 1 shows the trends of the average financial development (proxy by credit to private sector relative to GDP and liquid liabilities relative to GDP), inflation rate and real interest rate in the West African region during the 1980-2014 period. The graph demonstrates that financial development performed better during the period with lower and stable inflation rate (1996-2014) compared to the period with higher and unstable inflation rate (1980-1995). For instance, when inflation rate was 23.5% in 1987, credit to private sector and liquid liabilities were 15.1% and 21.5% respectively. But when inflation rate dropped to 5.38% in 2010, credit to private sector and liquid liabilities were 18.5% and 34.3% respectively. This suggests that high inflation impedes financial development in the region[9]. Conversely, financial development indicators are higher during periods of higher real interest rates. For example, in 1995 when real interest rate was 4.3%, credit to private sector and liquid liabilities were 11.5% and 21.1% respectively, compared to 20.2% and 35.6% when real interest rate was 13.5% in 2012. Figure 2 shows that government debt reduced substantially while fiscal deficit rose marginally during this period.

Insert Figure 1 About Here

Insert Figure 2 About Here

IV.2 Panel Unit Root Tests

Panel unit root tests are conducted to ascertain the order of integration of the variables using the tests proposed by Maddala and Wu (1999), Levin et al. (2002), Im et al. (2003), and Pesaran (2007). The results reported in Table 2 show that all the variables are integrated of order zero except real GDP per capita, credit to private sector, liquid liabilities and government debt which are [I(1)]. Since some of the variables in our model are integrated of order zero while the other variables are integrated of order one, we employ MG and PMG estimators. These estimators can be applied irrespective of the order of integration of the variables in the model because they are based on Autoregressive Distributed Lag (ARDL) model in error correction form of cointegration tests (see Pesaran and Smith, 1995; Pesaran, Smith and Shin, 1999; Demetriades and Law, 2006; Ehigiamusoe and Lean, 2018). Specifically, Pesaran and Smith (1995) and Pesaran, Smith and Shin (1999) posited that the MG and PMG estimators (approaches to cointegration test), unlike other cointegration techniques, do not require all the variables in the model to be stationary at the same level. They demonstrated that the dynamic panel ARDL can be applied even with variables that have different orders of integration, irrespective of whether they are I(0) or I(1) or a mixture of the two, which is a fundamental advantage of the ARDL model (see Ehigiamusoe et al., 2018; Samargandi et al., 2015).

Insert Table 2 About Here

IV.3 PMG Estimation Results

[9]The graphs should be interpreted with caution because they were plotted with the mean (average) values of all the countries in the region. For instance, the inflation rate for 1980 is the average inflation rate of all the countries for that year. One shortcoming of arithmetic mean is that it could be affected by extremely large or small values. Hence, it is necessary to focus on the regression results to ascertain the true relationship between the variables.

Table 3 reports the results of PMG estimation of the impact of macroeconomic stability on financial development in the West African region. It is shown that inflation rate has a significant long-run negative effect on financial development, albeit with no short-run effect. This suggests that an increase in inflation rate retards the development of the financial sector, while a decrease in inflation rate is necessary to achieve a deeper and more active financial sector. This is consistent with Kim and Lin (2010), Bittencourt (2011) and Haslag and Koo (1999) who found that inflation rate and financial development are negatively related.

Financial sectors are less developed in countries with higher inflation rates because they are associated with financial repression. Thus, high inflation rate reduces household sector's purchasing power, and decreases their saving capacity, thereby further reduces bank deposit and increases bank's default ratio. Moreover, high inflation rate is capable of promoting hedging and raises outflow of capital as well as inhibits economic activities (Anwar et al., 2017). Thus, Bittencourt (2011) noted that high inflation rate is capable of reducing the returns on savings, which in turn decreases savings and savers. Thereby causing severe information friction, reduce pool of borrowers, and leads to scarcer credit in the economy. Theoretical models based on imperfect credit market opined that, in the presence of information-type credit market friction with endogenous severity, high inflation rate causes greater credit rationing and distorts information flow, thereby worsening credit market frictions (Kim and Lin, 2010). Besides, high inflation rate could repress financial intermediation because it erodes the usefulness of money assets, and result in policy decisions that could distort the financial structure.

Insert Table 3 About Here

Real exchange rate is found to have a significant short-run negative effects on financial development, albeit the long-run impact is tenuous. This implies that a depreciation in real exchange rate will reduce financial development. The finding is consistent with Aghion et al. (2009) who reported that financial development and real exchange rate have a dynamic relationship. Fundamentally, real exchange rate uncertainty worsens the negative investment effects of domestic credit market constraints. They contended that borrowing of credit constrain firm and the appreciation of exchange rate reduce current earnings, leading to the decrease in borrowing and product introduction. The opposite holds at the time of exchange rate depreciation. Slavtcheva (2015) added that countries, with under-developed financial sectors, have higher inflation rates under flexible exchange rate regime. And in these economies, financial intermediaries tend to hold higher proportion of deposits as required reserves. Consequently, both higher inflation rate and greater reserves impede productivity growth and financial development.

The study also finds that government debt relative to GDP has a long-run positive effect on financial development, albeit with no short-run effect. This result suggests that government debt has no harmful effect on financial development in the region. This finding is consistent with Hauner (2009) and Ismihan and Ozkan (2012) who documented that government debt is only likely to cause harm to financial development in countries where government is the main recipient of bank lending. Therefore, the positive impact of government debt on financial development found in this study is not surprising. The impact could be positive or negative depending on whether the banking sector mainly lend to the private or public sector, as well as the degree of financial deepening of the banking sector (Hauner, 2009; Ismihan and Ozkan, 2012). Unlike the debt-growth nexus where the level of public debt determines the direction of

the relationship between public debt and economic growth (Reinhart and Rogoff 2010; Panizza and Presbitero, 2014; Woo and Kumar, 2015), public debt is only deleterious to the financial system in economies where government is the major recipient of bank lending (Hauner, 2009; Ismihan and Ozkan, 2012). Specifically, Hauner (2009) argued that a banking sector that lends principally to the public sector makes the financial system to become inefficient and experience slow development. But when the public debt held by the banks is moderate, it can support financial market development through the provision of collateral and benchmark. Moreover, Ismihan and Ozkan (2012) posited that the adverse effect of government borrowing or debt on financial development are only severe in countries with lower financial depth. Hence, the positive impact of government debt on financial development found in this present study suggests that the public sector is not the main recipient of banks' lending in the West African region. It also implies that the various banking sector reforms embarked upon by several West African countries in the last decades have improved the financial deepening of the sector. In essence, theoretical literature stresses the supportive role of government debt on financial development through the provision of collateral and benchmark (relatively safe asset). However, government debt may be helpful to financial development up to a certain threshold level. Beyond that level, it may turn harmful.

It is found that fiscal deficit relative to GDP has a significant long-run negative effect on financial development, albeit with no short-run effect. This suggests that an increase in fiscal deficit will adversely affect the development of the financial sector in the long-run. This is in agreement with Ishaq and Mohsin (2015) who contended that inflationary pressure of budget deficit is stronger in countries with undeveloped financial markets. Neaime (2015) also argued that fiscal crisis can lead to banking crisis. Fundamentally, unless financed from external sources, fiscal deficit usually compels the government to borrow from domestic financial markets through the issuance of bonds. Thus, the increased government borrowing often restricts private sector access to credit, thereby reducing the potentially more productive private sector investment. A decrease in investment reduces the demand for financial services, products and intermediaries, which have a negative effect on the development of financial sector.

Finally, real interest rate has a positive and significant effect on financial development, suggesting that an increase in real interest rate would increase financial development in the West African region. This is consistent with Luintel and Khan (1999) and Ang (2008). Basically, theoretical literature based on McKinnon-Shaw type models and endogenous growth posit that financial development is a positive function of real income and real interest rate. A positive real interest rate enhances financial development by increasing the volume of financial saving mobilization, as well as the volume and productivity of capital, thereby stimulating economic growth (Law and Habibullah, 2009). Thus, higher real interest rates stimulate average productivity of physical capital by discouraging investors from investing in low return projects. Financial development literature (e.g. McKinnon, 1973; Shaw, 1973) argued that ill-conceived government interventions such as interest rate ceilings, high reserve requirements and direct credit programs are the major causes of under-developed financial sector. They posited that interest rates ceiling, due to high inflation rates, causes negative real interest rates that dampens saving and causes excess demand for investable funds. Thereby, it reduces the volume of investment and productivity of capital, dampening the development of the financial sector.

In all the models in this study, the convergence coefficients are negative and statistically significant, suggesting the existence of long-run relationships between the independent variables and financial development. Also, the Hausman test statistics suggest that the PMG

models are the appropriate models[10]. Furthermore, the results of the set of control variables are consistent with Baltagi et al. (2009), Bittencourt (2011), and Kim and Lin (2010) who reported a significant role of income level, trade openness and government expenditures in the development of financial systems. According to Loayza et al. (2007), a high level of macroeconomic instability in most developing nations is the result of a combination of volatile macroeconomic policies, large external shocks, weak institutions, and microeconomic rigidities. The three major sources of volatility are exogenous shocks (arising from financial or good markets), domestic shocks (arising from self-inflicted policy mistakes or intrinsic instability in the development process), and weak shock absorbers (arising from weak financial markets which are supposed to diversify macroeconomic risks).

Mehran et al. (1998) observed that the financial system in many countries in the Sub-Sahara Africa experienced some weaknesses and vulnerabilities in the 1980s and early 1990s primarily because of the deterioration in macroeconomic conditions and a high level of political interference in the operations of financial institutions as well as unwholesome interest rate policies. They posited that macroeconomic instability exacerbated the challenges faced by the financial system during that period. As the fiscal deficit was high and continued rising, most governments resorted to borrowing from central banks (due to shallow financial markets) in order to meet financial requirements. This led to a high inflation rate, more bad loans and asset price bubbles, and further aggravation of asset portfolio of financial institutions.

IV.4 Robustness Checks

This study conducted some checks to ascertain the robustness of the estimation results. Firstly, the study used alternative proxy of financial development namely liquid liabilities relative to GDP. The use of liquid liabilities enables us to capture other aspects of financial development other than private sector credit. Liquid liabilities (M3) is a measure of financial depth and the overall size of the financial intermediary sector. It is more concerned with the capacity to provide transaction services by financial system rather than the capacity to channel funds from savers to borrowers (Khan and Senhadji, 2003). The PMG results presented in Table 4 are consistent with the earlier results obtained when financial development is proxied by credit to private sector. This result is consistent with Ehigiamusoe et al. (2017) who documented that the proxies of financial development produce similar results in finance-growth nexus. This view corroborated with Badeeb and Lean (2017) who utilized principal component analysis for modeling financial development.

Insert Table 4 About Here

Secondly, the study used Mean Group (MG) to complement the PMG estimator since the former allows for the long-run and short-run coefficients, the speed of adjustment and error variances to be differed across countries (Pesaran and Smith, 1995). The MG results (available upon request) are similar to the PMG results in terms of signs and significance of the coefficients. Moreover, we also employed Generalized Method of Moments (GMM) as proposed by Arellano and Bond (1991) to further ascertain the robustness of the regression results. The use of GMM enables us to address the issue of endogeneity. The results of the GMM estimation[11] presented in Table 5 corroborated with the earlier results obtained with

[10] Since the Hausman test statistic indicates that the PMG models are appropriate, the results of MG models are not presented but are available upon request. Note that the lag order was chosen based on Schwarz Information Criteria (SIC) subjected to a maximum lag of 2, resulting in ARDL (1,1,1,1,1,1) equation.

[11] GMM estimation results should be interpreted with caution because GMM estimator is more suitable for a panel data with N>T.

PMG estimator. There are evidences that inflation rate, real exchange rate and fiscal deficit have a negative impact, while government debt and real interest rate have a positive impact on financial development.

Insert Table 5 About Here

Finally, this study probed further to ascertain whether the relationship between financial development and macroeconomic stability was accentuated by the presence of structural breaks in the series. Therefore, this study conducted structural breaks test proposed by Bai and Perron (2003) and found structural breaks in some of the countries. To address this phenomenon, the study used dummy variable approach (where the years before the breaks take the value of 0, and the years after the breaks take the value of 1) and included the appropriate dummy variables in the regression models (see Wallack, 2003). The PMG results (available upon request) reveal that the relationships between financial development and macroeconomic stability variables are consistent with the earlier results in terms of the signs and significance of the coefficients (albeit the size somewhat differ). Nevertheless, the structural break dummies included in the regression are statistically insignificant, suggesting that structural breaks have no effect on financial development during the study's period.

The negative impact of inflation on financial development found in this study agrees with some previous empirical studies (e.g. Akosah, 2013; Bittencourt, 2011; Boyd et al., 2001; Kim and Lin, 2010; Naceur and Ghazouani 2005; Odhiambo, 2012) which reported that inflation rate has an adverse effect on the development of the financial sector. However, Abbey (2012) reported an insignificant relationship between the two variables in Ghana, and similar results were also documented in MENA region by Cherif and Dreger (2016). The differences in the empirical findings could be due to various factors such as differences in the level of financial development and inflation rates, differences in methodologies, data and periods covered by the studies, as well as inability of the studies to account for some econometric issues (e.g. heterogeneity, endogeneity, structural breaks). Similarly, the negative impact of real exchange rate on financial development found in this study is consistent with Aghion et al. (2009), Elbadawi et al. (2012) and Slavtcheva (2015), which demonstrates the dynamic relationship between financial development and real exchange rate. Moreover, the finding of this study on the relationship between financial development and real interest rate is consistent with Ang (2008) and Luintel and Khan (1999), although Ang and McKibbin (2007) reported otherwise. Essentially, some studies (e.g. McKinnon, 1973; Shaw, 1973) revealed that inappropriate government interventions, such as interest rate ceilings and high reserve requirements, impede the development of the financial system. There is also consistency between some empirical studies (e.g. Ishaq and Mohsin, 2015; Neaime, 2015) and the findings of this study regarding the impact of fiscal deficit on financial development. Finally, the empirical outcome of this study on the link between government debt and financial development agrees with Hauner (2009) and Ismihan and Ozkan (2012), who showed that government debt is only likely to harm financial development in countries where government is the main recipient of bank lending.

V. CONCLUSION

In summary, the objective of this study is to determine the effects of macroeconomic stability on the development of financial sector in the West African region. Evidence from the study indicates that variations in these five macroeconomic stability variables (inflation rate, real exchange rate, government debt, fiscal deficit and real interest rate) could explain variations in financial development in the West African region. More precisely, inflation rate, real exchange

rate and fiscal deficit have negative effects on financial development while the effects of government debt and real interest rate are positive. The results are robust to alternative proxy of financial development and alternative estimation techniques.

The implication of this finding is that reductions in inflation rate, real exchange rate and fiscal deficit have the capacity to accelerate financial development in the West African region. In essence, poor macroeconomic environment is repugnant to financial development in the region. Macroeconomic instability will affect the development of financial sector and hinder its capacity to accelerate economic growth and development.

This study therefore proposes the following policy recommendations. Countries should ensure macroeconomic stability if they wish to achieve a better financial development with a view to sustainable economic development. Specifically, the West African countries should employ the appropriate fiscal and monetary policies in order to lower and stabilize inflation rate. This is particularly important because a high and unstable inflation rate could also have a deleterious effect on other variables such as real exchange rate, real interest rate and economic growth rate. Furthermore, efforts should be made to lower fiscal deficit within the recommendations of the Maastricht Criteria. In this regard, the importance of effective Medium Term Expenditure Framework (MTEF) in ensuring fiscal discipline cannot be overemphasized. In addition, though government debt has yet to have any direct deleterious effect on financial development in the region, it does not suggest that excessive debt is good. Government debt could have indirect harmful effect on financial development through other variables (e.g. economic growth). This study shows that economic growth has a significant positive impact on financial development, and any variable that weakens economic growth could indirectly affect financial development. Finally, the countries should prioritize policies that can prevent the depreciation and fluctuations in real exchange rate in their development agenda.

This study has succeeded in unveiling the effects of macroeconomic stability on financial sector development in the entire West African region. However, we attempted to include governance and institutional variables (e.g. corruption, rule of law, bureaucracy, property rights, corporate governance) as control variables in our models, but unavailability of time series/long span panel data on these variables in West African countries limited us. Hence, when the long span data on governance and institutional variables in West African countries become readily available, future studies that include them as control variables in their models, will be more robustness. Moreover, the impact of macroeconomic stability on financial development could differ across the West African countries. Thus, as a further research agenda, this study recommends an examination of the effects of macroeconomic stability on financial development in the West African countries. This is fundamental because a greater macroeconomic stability may suggest a higher level of financial development in some countries, but not in others. Knowing where macroeconomic stability affects financial development, and where it does not, is fundamental for policy making. Finally, as we have shown the direct impact of government debt on financial development, future study should investigate the indirect effect by using interaction models.

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TABLE 1
Descriptive statistics and correlation analysis

	CPS	LLY	INF	RER	DEB	DEF	INT	Y	GOV	TOP
Mean	15.431	25.642	11.857	1144.3	114.28	-3.013	6.727	566.72	14.806	68.979
Maximum	65.277	83.026	178.700	88103.8	789.8	40.340	56.248	3766.11	54.515	321.631
Minimum	0.802	0.416	-35.525	0.004	7.450	-13.98	-51.62	64.810	3.541	6.320
Std. Dev.	10.774	12.758	19.030	5281.9	119.9	5.339	14.27	527.874	5.962	34.172
LLY	0723									
INF	-0.273	-0.308								
RER	-0.217	-0.187	0.073							
DEB	-0.139	-0.289	0.192	-0.104						
DEF	-0.186	-0.239	-0.006	-0.011	0.063					
INT	0.043	0.134	-0.494	-0.042	-0.023	0.008				
Y	0.711	0.725	-0.235	-0.108	-0.364	-0.094	-0.039			
GOV	0.481	0.263	-0.279	-0.168	0.034	-0.098	0.082	0.158		
TOP	0.170	0.169	-0.075	-0.185	0.340	0.026	-0.063	0.015	0.265	

Notes: CPS=credit to private sector relative to GDP, LLY = liquid liabilities relative to GDP, INF=inflation rate, RER=real exchange rate, DEB=government debt relative to GDP, DEF=fiscal deficit relative to GDP, INT=real interest rate, Y= income level, GOV= government consumption expenditure relative to GDP and TOP= trade openness relative to GDP.

TABLE 2
Panel unit root tests

Variables	ADF-Fisher	LLC	IPS	Pesaran
CPS	27.357	-1.109	-0.059	-0.541
LLY	33.193	0.317	0.215	-2.662***
INF	122.431***	-7.999***	-7.612***	-6.787***
RER	48.882**	-4.376***	-2.224**	-1.566**
DEB	16.405	-0.448	1.434	-0.427
DEF	101.654***	-5.489***	-6.398***	-4.519***
INT	53.970***	-4.557***	-2.128***	-1.337*
Y	12.068	2.203	3.183	-1.457
GOV	78.280***	-4.974***	-4.797***	-3.235***
TOP	54.206***	-1.511*	-2.265**	-1.496*
ΔCPS	180.387***	-10.724***	-10.873***	-9.482***
ΔLLY	184.236***	-11.242***	-11.267***	-10.573***
ΔINF	350.181***	-16.868***	-19.922***	-16.733***
ΔRER	169.106***	-8.619***	-10.494***	-7.581***
ΔDEB	113.550***	-6.029***	-7.324***	-6.031***
ΔDEF	201.995***	-8.908***	-12.702***	-12.732***
ΔINT	204.713***	-11.703***	-10.928***	-11.595***
ΔY	179.439***	-9.498***	-11.005***	-11.030***
ΔGOV	228.511***	-12.234***	-13.619***	-11.012***
ΔTOP	213.345***	-10.752***	-12.801***	-10.175***

*Notes: ***, ** and * indicates statistically significant at 1%, 5% and 10%, respectively, and a rejection of null hypothesis of unit root. Δ= first differenced notation, LLC=Levin et al. (2002), IPS= Im et al. (2003), CPS=credit to private sector relative to GDP, LLY = liquid liabilities relative to GDP, INF=inflation rate, RER=real exchange rate, DEB=government debt relative to GDP, DEF=fiscal deficit relative to GDP, INT=real interest rate, Y= income level, GOV= government consumption expenditure relative to GDP and TOP= trade openness relative to GDP.*

TABLE 3
Results of PMG estimation

Variables	(1)	(2)	(3)	(4)	(5)
Long-run coefficients					
INF	-0.049***				
	(0.011)				
RER		-0.021			
		(0.034)			
DEB			0.154***		
			(0.038)		
DEF				-0.009***	
				(0.001)	
INT					0.009**
					(0.004)
Y	0.725***	0.512***	0.098**	0.197***	0.190**
	(0.151)	(0.112)	(0.058)	(0.045)	(0.108)
GOV	0.612**	0.004	0.573***	-0.038	0.138
	(0.260)	(0.127)	(0.076)	(0.077)	(0.089)
TOP	2.010***	0.495***	0.319***	0.014	-0.192
	(0.303)	(0.132)	(0.110)	(0.061)	(0.109)
Convergence coefficient	-0.104***	-0.214***	-0.362***	-0.354***	-0.136***
	(0.021)	(0.053)	(0.074)	(0.073)	(0.045)
Constant	-0.666**	-1.054***	-3.747***	-1.764**	-0.232
	(0.294)	(0.394)	(0.974)	(0.855)	(0.318)
Short-run coefficients					
ΔINF	-0.002				
	(0.002)				
ΔRER		-0.159**			
		(0.086)			
ΔDEB			-0.007		
			(0.062)		
ΔDEF				-0.002	
				(0.004)	
ΔINT					-0.001
					(0.001)
ΔCPS_{t-1}	-0.009	0.057	0.134**	0.105	0.049
	(0.050)	(0.052)	(0.076)	(0.066)	(0.072)
ΔY	-0.101	-0.277***	-0.095	-0.037	-0.088
	(0.087)	(0.100)	(0.106)	(0.081)	(0.074)
ΔGOV	0.103**	0.133**	0.099**	0.192***	0.141**
	(0.061)	(0.057)	(0.072)	(0.065)	(0.057)
ΔTOP	-0.088	-0.105**	-0.137	-0.102	-0.094
	(0.069)	(0.051)	(0.089)	(0.091)	(0.107)
Time Trend	0.001	0.002**	0.017***	0.018***	0.003
	(0.069)	(0.001)	(0.004)	(0.003)	(0.001)
Countries	16	16	16	16	13
Observations	560	560	400	400	455
Hausman Test	11.76	2.89	3.30	3.97	0.88
Log likelihood	306.989	303.648	271.603	265.389	254.058

*Notes: ***, ** and * indicates statistically significant at the 1%, 5% and 10% levels, respectively. Standard errors in parenthesis. Dependent variable=credit to private sector relative to GDP, INF=inflation rate, RER=real exchange rate, DEB=government debt relative to GDP, DEF=fiscal deficit relative to GDP, INT=real interest*

rate, Y= income level, GOV= government consumption expenditure relative to GDP, TOP= trade openness relative to GDP, CPS_{t-1} *= one-period lagged credit to private sector relative to GDP.*

TABLE 4
Results of PMG estimation (financial development is proxy by liquid liabilities/GDP)

Variables	(1)	(2)	(3)	(4)	(5)
Long-run coefficients					
INF	-0.004***				
	(0.002)				
RER		-0.009			
		(0.031)			
DEB			0.106***		
			(0.030)		
DEF				-0.001	
				(0.002)	
INT					0.003***
					(0.001)
Y	0.152***	0.106**	0.266***	0.159***	0.106***
	(0.037)	(0.043)	(0.055)	(0.052)	(0.033)
GOV	-0.059	-0.145***	0.166***	-0.059	-0.511***
	(0.052)	(0.050)	(0.062)	(0.067)	(0.064)
TOP	0.188***	0.283***	0.255***	0.321***	0.193***
	(0.048)	(0.041)	(0.036)	(0.047)	(0.038)
Convergence coefficient	-0.437***	-0.432***	-0.474***	-0.471***	-0.421***
	(0.072)	(0.083)	(0.085)	(0.078)	(0.131)
Constant	-0.443	0.323	-2.036***	-1.041**	-0.011
	(0.559)	(0.891)	(0.579)	(0.639)	(0.999)
Short-run coefficients					
ΔINF	0.002				
	(0.001)				
ΔRER		0.001			
		(0.054)			
ΔDEB			0.049		
			(0.061)		
ΔDEF				0.002	
				(0.004)	
ΔINT					0.001
					(0.001)
ΔLLY_{t-1}	0,213***	0.201***	0.159***	0.192***	0.184**
	(0.037)	(0.049)	(0.058)	(0.066)	(0.088)
ΔY	-0.274**	-0.294***	-0.208**	-0.261**	-0.181**
	(0.108)	(0.059)	(0.109)	(0.122)	(0.076)
ΔGOV	0.079**	0.084**	0.148***	0.249***	0.089*
	(0.036)	(0.036)	(0.054)	(0.060)	(0.051)
ΔTOP	-0.106**	-0.098*	-0.144**	-0.128**	-0.088
	(0.053)	(0.054)	(0.065)	(0.060)	(0.067)
Time Trend	0.004***	0.003	0.008***	0.007**	0.007**
	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Countries	16	16	16	16	13
Observations	560	560	400	400	455
Hausman Test	5.25	2.93	1.11	0.55	4.85
Log likelihood	535.068	557.861	400.646	404.304	410.208

*Notes: ***, ** and * indicates statistically significant at the 1%, 5% and 10% levels, respectively. Standard errors in parenthesis. The regression also included dummies variables to account for structural breaks. Dependent variable=credit to private sector relative to GDP, INF=inflation rate, RER=real exchange rate, DEB=government debt relative to GDP, DEF=fiscal deficit relative to GDP, INT=real interest rate, Y= income level, GOV= government consumption expenditure relative to GDP, TOP= trade openness relative to GDP,* ΔLLY_{t-1} *= one-period lagged liquid liabilities relative to GDP.*

TABLE 5
Robustness checks of the estimation results using GMM Estimation

Variables	(1)	(2)	(3)	(4)	(5)
INF	-0.002***				
	(0.001)				
RER		-0.066**			
		(0.032)			
DEB			0.135***		
			(0.030)		
DEF				-0.004**	
				(0.002)	
INT					0.003**
					(0.001)
Y	0.151**	0.191**	0.434***	0.207**	0.013
	(0.071)	(0.091)	(0.109)	(0.109)	(0.109)
GOV	0.712***	0.941***	0.283	0.216	0.774**
	(0.271)	(0.342)	(0.282)	(0.299)	(0.341)
TOP	-0.099	-0.409	-0.146	-0.108	-0.105
	(0.182)	(0.261)	(0.127)	(0.165)	(0.284)
CPS_{t-1}	0.253***	0.119***	0.159**	0.239**	0.349**
	(0.045)	(0.058)	(0.196)	(0.174)	(0.149)
Constant	-0.538	0.550	-2.556*	0.473	0.252
	(1.031)	(1.113)	(1.369)	(1.189)	(1.167)
Observations	560	560	400	400	455
Sargan Test (p-value)	13.40	9.203	12.529	12.956	4.818
	(0.999)	(1.000)	(0.961)	(0.953)	(1.000)
First order serial correlation test	-1.949	-1.690	0.169	-0.295	-1.8.836
(p-value)	(0.051)	(0.091)	(0.861)	(0.768)	(0.066)
Second order serial correlation test	-0.022	0.311	-0.239	-0.309	0.273
(p-value)	(0.982)	(0.756)	(0.811)	(0.758)	(0.785)

*Notes: ***, ** and * indicates statistically significant at 1%, 5% and 10%, respectively. The estimation method is two-step GMM. Heteroscedasticity –corrected standard errors in parenthesis. Dependent variable=credit to private sector relative to GDP, INF=inflation rate, RER=real exchange rate, DEB=government debt relative to GDP, DEF=fiscal deficit relative to GDP, INT=real interest rate, Y= income level, GOV= government consumption expenditure relative to GDP, TOP= trade openness relative to GDP,* CPS_{t-1} *= one-period lagged credit to private sector relative to GDP.*

Figure 1. Trends of financial development indicators, inflation rate and real interest rate in the West African region

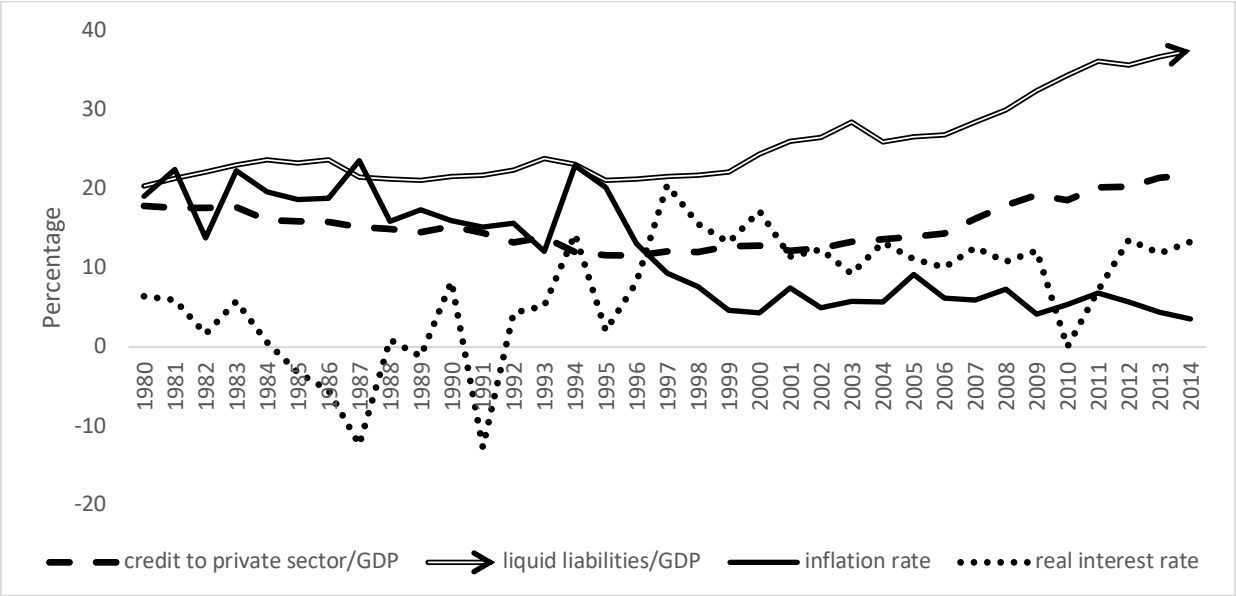
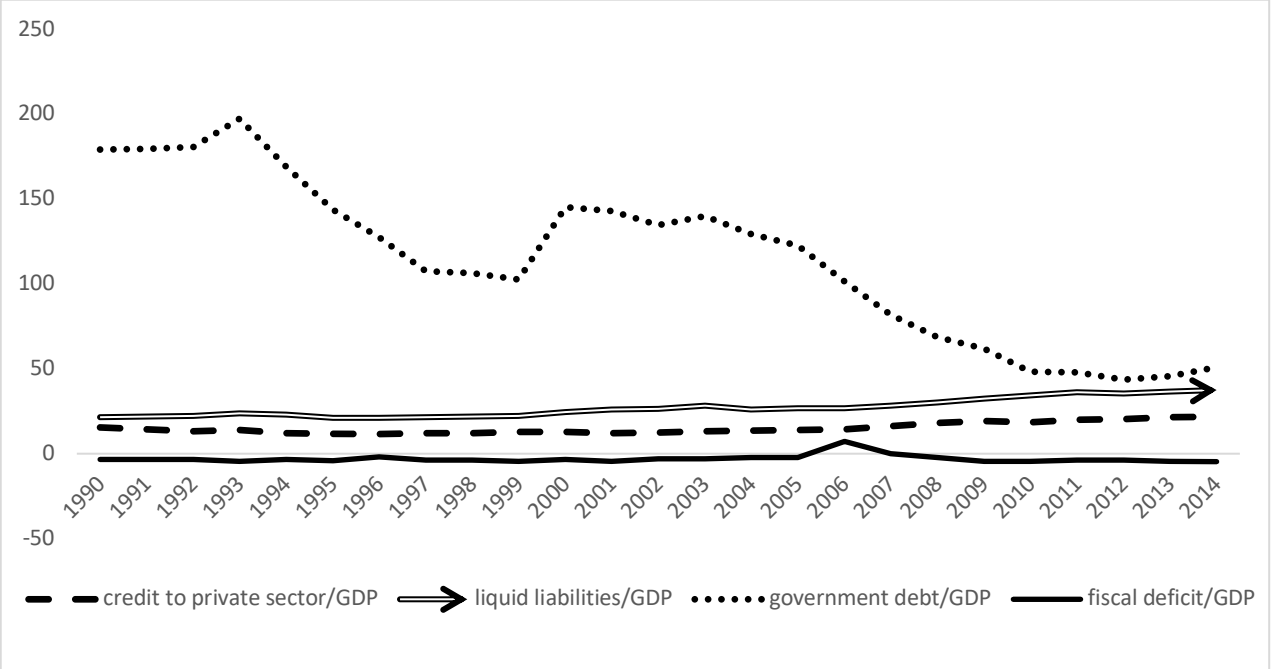


Figure 2. Trends of financial development indicators, government debt and fiscal deficit in the West African region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credit to private sector/GDP
liquid liabilities/GDP
government debt/GDP
fiscal deficit/GDP