Full length Article

Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa

Michael Batuo[a], Kupukile Mlambo[b], Simplice Asongu[c,d,e,*]

[a] *University of Westminster, 309 Regent Street, London W1B 2HW, United Kingdom*
[b] *Reserve Bank of Zimbabwe*
[c] *Africa Governance and Development Institute, P.O. Box, 8413, Yaoundé, Cameroon*
[d] *Department of Economics, University of South Africa, P. O. Box 392, UNISA 0003, Pretoria, South Africa*
[e] *Department of Economics & Development Studies, Covenant University, Ota, Ogun State, Nigeria*

ARTICLE INFO

ABSTRACT

In the aftermath of the 2008 global financial crisis, the implications of financial liberalisation for stability and economic growth have come under increased scrutiny. One strand of literature posits a positive relationship between financial liberalisation and economic growth and development. However, others emphasise the link between financial liberalisation is intrinsically associated with financial instability which may be harmful to economic growth and development. This study assesses linkages between financial instability, financial liberalisation, financial development and economic growth in 41 African countries for the period 1985–2010. The results suggest that financial development and financial liberalisation have positive effects on financial instability. The findings also reveal that economic growth reduces financial instability and the magnitude of reduction is higher in the pre-liberalisation period compared to post-liberalisation period.

1. Introduction

The financial crisis of 2008 cannot be viewed as a shock that was subsequently followed by struggles from actors that were rational (Asongu, 2015a). On the contrary, it demonstrates the imperative of social norms and conventions like models of management adopted to meet-up the challenges of uncertainty. In essence, the failure of political scientists and economists to forecast the crisis is at the same time embarrassing and very dismal.

Accordingly, the crisis has gone a long way to reminding scholars that we are living in a world full of risks and uncertainties, which conventional models of market and human behaviour are unable to effectively predict. Nevertheless, rational economic agents are still assumed to follow instrumental, consistent and rational norms, and this is viewed as rationally logical. However, where the parameters are for the most part not able to predict future events, as is the case in the real world, this conjecture becomes untenable. This situation has allowed market players and policy makers to become dependent on a plethora of social conventions that stabilise uncertain environments (Nelson and Katzenstein, 2011).

In the light of the recent financial crisis, the great ambitions of liberalisation policies and their relevance to economic prosperity have increasingly come under scrutiny, particularly in developing countries. According to some experts, the financial meltdown has exposed the shortcomings of liberalisation economic strategies (Kose et al., 2006; Goldberg and Veitch, 2010; Agbloyor et al., 2013; Asongu, 2014; Kose et al., 2011). In essence, emerging economies that experienced considerable inflows of capital during the past

* Corresponding author.
E-mail addresses: enowbim@wmin.ac.uk (M. Batuo), kmlambo@rbz.co.zw (K. Mlambo), asongusimplice@yahoo.com, asongus@afridev.org (S. Asongu).

decades have been confronted with the challenging task of managing any consequential external shocks, which may be exacerbated by financial liberalisation, when those financial flows contract. Accordingly, the economic downturn has encouraged renewed interest in the theoretical underpinnings of financial liberalisation, especially in terms of how financial liberalisation has affected developing countries.[1]

Rodrik and Subramanian (2009) take the view that the theoretical underpinnings of financial globalisation are less convincing today. They consider that the global financial meltdown and its consequences, has resulted in the benefits of financial engineering becoming questionable. According to Rodrik and Subramanian (2009), financial liberalisation has substantially failed to address the needs of investment and growth in less developed countries. Thus, nations that have experienced remarkable rates of economic growth have been those that have also been less reliant on international capital flows. They sustain that globalisation has failed to smooth consumption and mitigate volatility. Clearly, in a situation where financial flows in an economy are not able to be quickly moved from one financial centre to another, due to an absence of financial liberalisation, economic volatility could be reduced in the economy. Alternatively, if financial flows are able to move rapidly across international borders, those economies losing the flows may have their banking systems and industrial bases undermined.

When the current wave of liberalisation began in the 1980s, developing and developed nations experienced considerable improvements in cross border financial flows. However, these flows were accompanied by currency crises. These negative outcomes have resulted in a renewed interest and focus in policy and academic making circles on the rewards of liberalisation. Some protagonists take the view that, relative to more advanced countries, undeveloped countries which responded by substantially opening-up their capital accounts have been more vulnerable to external shocks (Kose et al., 2011; Henry, 2007; Asongu, 2014; Ansart and Monvoisin, 2017). Despite a general consensus regarding the benefits of trade openness (Kose et al., 2006), there is an increasingly polarized debate on the effects of financial liberalisation (Asongu and De Moor, 2017).

In Africa, by the late 1980s and early 1990s, against a background of rapidly deteriorating economic and financial conditions, many African countries undertook far reaching economic reforms (see Aryeetey, 1994; Collier, 1993; Ekpenyong, 1994; Kesekende and Atingi Ego, 1999; Khan and Reinhart, 1990). These programs that were supported by the World Bank and the IMF focussed on structurally adjusting economies in order to achieve private sector led growth, via a market based system. Financial liberalisation was a significant component of these reforms, facilitating the deregulation of the foreign sector capital account and domestic financial sector, enabling the domestic stock market sector to be decoupled from the domestic financial sector (Kaminsky and Schmukler, 2002). Although the reform succeeded in liberalising the financial markets, the positive impact on growth and investment has been patchy, while the African financial system remains shallow and relatively underdeveloped (Reinhart and Tokatlidis, 2003). Indeed, financial liberalisation appeared to engender greater instability and crises, particularly in the financial sector (Demirguc-Kunt and Detragiache, 2001; Al-Suwailem, 2014).

Financial instability can manifest itself in a number of ways, such as in banking failures, asset price volatility or a collapse in market liquidity. The potential outcome of such damaging events could be severe disruption to a country's payment and settlement system and thus destabilisation of the economy in general. Financial instability affects the real (or productive) sector due to its links with the financial sector. It therefore has the potential to cause significant macroeconomic costs, as it negatively impacts on production, consumption and investment and consequently inhibits broader economic objectives such as growth and development. Kaminsky and Reinhart (1999) confirmed this negative outcome, finding financial instability was positively associated with financial development. This implies that safeguarding financial stability and identifying vulnerabilities within a financial system is essential for financial development. Some of these vulnerabilities have macroeconomic dimensions, such as changes in the conditions of household and corporate sector balance sheets and developments in credit and asset markets, all of which have the potential to affect the level and distribution of financial risk within the economy. Arguably, the need to safeguaurd financial stability is paramount, as this would make it easier to identify any vulnerabilities within a financial system and reduce such vulnerabilities occuring in the first place.

Many leading African economists believed the 2008 financial crisis could not affect Africa because its banking and capital markets were not fully integrated in global markets. Consequently, they considered the impact of the crisis on Africa would be minimal. However, the crisis had a substantial adverse effect on the financial sector of Africa's economies, particularly the larger economies (see Murinde, 2010).

This paper, examines the effects of financial liberalisation, financial development and economic growth on financial instablity in Africa. In particular, it investigates whether financial instability has an impact on economic growth in African countries and whether the financial development and liberalisation that has occured in Africa is linked to financial instability. Further, whether the relationship between financial development and financial instability is more pronounced in the pre-liberalisation or post-liberalisation period. These questions are significant and contemporaneous, as instability is an inherent feature of financial systems. There is also clear evidence in the economic literature that financial liberalisation raises economic costs, in terms of inflated financial fragility due to the inefficient and underdeveloped banking sector in developing countries.

These issues are clearly relevant given that financial stability preservation has become an important item on the agenda of international financial institutions. These issues are important for African countries as their financial development is rapid and there is an urgency for them to integrate their economies into the international financial structure and international financial markets

---

[1] The theoretical underpinnings of globalization sustain that liberalization should foster efficient capital allocation at the international level as well as the sharing of risks. According to the narrative, less developed nations should benefit more because they are considerably scarce in capital and rich in labour. Moreover, undeveloped nations are relatively more volatile with respect to output, compared to more industrialized or advanced economies (Asongu, 2013a,b, 2015b; Kose et al., 2011).

(Alagidede et al., 2011). The urgency arises due to the need to fund their domestic expansion and growth programmes with international capital, as their domestic capital sources are relatively limited and slow to generate. This is why it is important to examine and evaluate the factors that may result in financial instability, as any instability could inhibit economic growth in these developing economies.

This paper adopts a dynamic panel method to illustrate the effect of the relationship between financial development, liberalisation and economic growth on the financial instability of a sample of 41 African countries from 1985 to 2010. The results indicate that financial development and liberalisation have a statistically significant effect on financial instability. However, financial instability is shown to have a harmful effect on economic growth, this being more pronounced in the pre-financial liberalisation period compared to the post-financial liberalisation period.

There are a limited number of studies directly linking financial instability, financial development and economic growth (Reinhart and Kamnsky, 1998; Demirguc-Kunt and Detragiache, 2001; Guillaumont and Kpodar, 2004; Loayza and Ranciere, 2002). In this paper the focus is restricted solely to African countries which have been liberalising and developing their financial sectors in order to become efficient. However, both financial development and financial liberalisation are also included in the analysis. The links and outocmes are verified in both the pre- and post-financial liberalisation periods and a continuous financial instability index is constructed by applying a principal component analysis on a number of financial instability indicators.

The paper proceeds as follows: Section 2 is an outline of the theoretical background and literature review, Section 3 describes the methodology and data used. Section 4 presents the results and Section 5 summarises the main conclusions.

2. Literature review

The role of the financial system is an essential one for any economy, essentially because funds are channeled to those economic agents having productive investment prospects Schumpeter (1912).[2] Earlier scholars such as Goldsmith (1969), Mckinnon (1973) and Shaw (1973) found a positive relationship between financial development and economic growth. Recently, similar results were achieved by Levine (2001) and Rajan and Zingale (2003). However, even if this relationship exists, an economic system must perform at the optimum level, if not an economy cannot operate efficiently, consequently hindering economic growth. The principal obstacle to an efficient functioning financial system is asymmetric information (Stiglitz and Weiss, 1981; Tchamyou and Asongu, 2017), which leads to two problems in the financial system: adverse selection and moral hazard. However, attempts can be made to mitigate these problems. With adverse selection, Akerlof (1970) proposes the lemons problem analysis, requiring governments to screen out good credit risks from bad credit risks. With the moral hazard problem, governments must impose restrictions on borrowers in order that borrowers do not engage in behaviours which reduce their probability of loan repayment. However, any government intervention in the operation of a market economy may distort the signalling mechanisms required for effecient resource allocation, even though the intervention may be needed to rectify the consequences of asymmetric information. This internvention may in turn result in govenremt failure. Further, the intervention by governments in the banking system, such as finiancial support for the banks, could exacerbate moral hazard, as the banks may percieve the intervention will result in them not having to bear the full burden of their risk-taking activity. Thus risk taking activity might be encouraged by the intervention.

Over the two last decades, the institutional structure of the financial system has been evolving in order to alleviate the problem of asymmetric information and to avoid financial instability difficulties. Financial instability occurs when shocks to the financial system interfere with information flows, the financial system can then no longer perform its function of mobilising savings, facilitating the exchange of goods and services, reducing risks and allocating resources to productive sectors. Deprived of these savings, the productive sector may reduce its spending, causing economic activity to contract, which can be severe, as highlighted by Keynes (1973) when discussing the impact on aggregate demand and employment. The resulting fluctuations in economic activity may have additional negative consequences. Schumpeter (1912) notes these flucatuations may affect the introduction of new products, processes and management methods. If the financial crisis is harsh enough, it could therefore lead to a complete breakdown in the functioning of financial markets, which in turn exacerbates financial instability.

Minsky (1992) examined the potential links between financial system fragility and speculative investment finance. The author posited that "the internal dynamics of capitalist economies leads, over a period dominated by the full successful operation of a capitalist economy, to the emergence of financial structures which are conducive to debt deflation, the collapse of asset values and deep depressions" (Minsky, 1992). According to Minsky (1982, 215), instability underlies the appearance of stability in the financial markets. The inherent de-stabilising characteristics in the capitalist system implied by Minsky (1992), suggest that whatever approach is used by governments to rectify the consequences maybe unlikely to overcome them. During periods of stability, when stock prices are rising and higher than the interest rate, investors are therefore lured into taking more risks, which leads them to borrow more and to over pay for assets. This motive is underpinned and reinforced by the nature of the capitalist system, whereby rent-seeking and profit is the ultimate goal.

There may be two reasons for financial instability in the financial sector. Firstly, severe financial instability occurs when there is a dramatic growth in the volume of financial intermediation. Secondly, industrial and financial globalisation, which facilitates the integration of financial institutions and consequently increases the systemic risk. The complexity of financial instruments is a further reason for financial instability. Due to the complexity of such instruments such as collateralized debt obligations: a popular financial

---

[2] According to Schumpeter, financial services are necessary for the development of entrepreneurship, the improvement of technology, productivity, and the acceleration of growth.

instrument, which was at the heart of the 2008 crisis (Mackenzia, 2001).

Eichengreen and Leblang (2003) discussed four causes of financial instability and crisis, these being unsustainable macro-economic policies,[3] government and countries experiencing crises due to the use of inconsistent and unsustainable policies. The third cause was the fragility of the financial system. Financial weakness[4] and the prevalence of currency mismatches in the financial system may be the key factor promoting financial fragility. Flaws in the structure of international financial markets were found by Keynes (1973) who noted the destructive effects of destabilising international speculation in the great depression. The final cause was weakness in the institutional framework and in domestic governance and corporate structures. Although these may be considered individual and separate causes, they clearly interact with one another, one cause thus leading to another, or rather leading to a consequence. For example, an unsustainable policy may lead to a fragile financial system and currency instability, followed by financial instability.

Eichengreen (2001) studied the output losses due to crises with a sample of 21 middle and high income countries over a 120 year period. The study also covered a large sample of emerging markets for a shorter period starting in 1973. They found a loss from the average crisis of almost 9% of GDP. This was 1% per year less than the estimate of Dobson and Huffbauer (2001) for emerging markets and developing countries in the 1980s and 1990s. Goldstein et al. (2000) estimated the currency crisis cost 3% of output per year of their duration in low inflation countries and 6% of output per year of their duration in high inflation countries.

The general consensus is that policies that limit financial instability by restrictive financial transactions are likely to have costs as well as benefits (see, Henry, 2000). This may be due to the negative impact on essential market signalling mechanisms mentioned above, resulting from government intervention. However, financial liberalisation has a positive impact, in facilitating financial development and a significant effect on economic growth. The latter may be apparent when the effect of financial liberalisation is decomposed into two parts: a direct effect on growth (which has a positive effect) and an indirect effect through the crises model (which has a negative effect) with the positive growth effect outweighing the negative effect of the crisis. Nevertheless, liberalised financial markets can exhibit extreme volatility, resulting in financial crises which can have a dramatic impact on economic prosperity (Demirguc-Kunt and Detragiache, 2001; Caprio and Klingebiel, 1996; Kaminsky and Schmukler, 2002; Dimitras et al., 2015). The potential negative outcomes of liberalisation are also noted by Martin and Rey (2002) in that, stock market liberalisation and financial frictions in asset markets interact to generate either investment booms or financial crashes.

In contrast to the above, some studies examined financial instability by analysing the relationship between financial development and economic growth, such as Guillaumont and Kpodar (2004), Loayza and Ranciere (2002) and Eggoh (2008). Eggoh (2008) revealed that financial instability has a negative impact on economic growth only in the short term. However, financial development affects economic growth postively in the short and long terms.

Bonfiglioli and Mendicino (2004) concluded that financial instability is detrimental for economic performance, with the effect of a financial crisis being more dangerous in less developed and closed economies due to the poor quality of institutions, compared to the liberalised and open economies of advanced countries. This links with one of Eichengreen and Leblang's, (2003) four causes of financial instability and crisis, namely: weakness in the institutional framework. This is relevant in the context of less devleeped economies, as a weak, undeveloped and immature instutitional framework could act as a catlayst for an economic shock, whether internal or external, such as a currency crisis. Meanwhile Loayza and Ranciere (2002) found a positive relationship in the long run between financial development and growth against a negative nexus in the short run. However, they note the variation of the financial development effect on economic growth between the long and short run is strongly related to financial fragility, which they measured via banking crises.

3. Data

The sample to be used consists of annual observations of 41 African countries selected on the basis of data availability during the period 1985–2010. The source of the data is primarily from the Africa Development Indicators of the World Bank (World Bank, 2010) and Chinn and Ito (2002). We would describe various indexes used in the empirical analysis as the financial instability and financial development indexes, both built using factoring analysis.

3.1. Index of financial instability

Recent studies, such as Herrero and Del Rio (2003) have used the banking crises as a proxy for financial instability. However, there are problems using this as an indicator because it is difficult to accurately identify the precise timing of the crises as noted by Caprio and Klingebiel, (1996). Crises are taken into consideration only when they are severe enough to trigger market events, although when they are successfully constrained by prompt corrective policies they are ignored. By only taking banking crises into account, instability in other parts of the financial system is therefore neglected.

To overcome these problems, Guillaumont and Kpodar (2004) and Loayza and Ranciere (2002) constructed an indicator of financial instability by measuring financial development which is the standard deviation residual for each seven year period issued from the estimate of the financial development indicator trend over the study period. This means the index of financial instability is calculated from the standard deviation of the residual of the financial development variable regressed on its delayed value and trend.

---

[3] The recent experiences of Argentina is a good example.

[4] A classic example is the case of South Korea, the banks dependence on short term debt rendered them vulnerable to investor panics.

Table 1
Principal component analysis of financial instability indicator.

Variable	Comp loading (1)	Variance explained (2)	Correlations (3)
Change in domestic credit by banks	0.52	0.43	0.90
Change in credit to the private sector	0.50	0.27	0.83
Change in Liquid Liabilities	0.49	0.13	0.77
Change money and quasi money (M2) as% GDP	0.46	0.06	0.67
Change real interest rate	0.17	0.05	0.27
Change in interest rate spread	0.15	0.04	0.30

Column (1) shows the component loading weight individual, column (2) shows the variance explained by the component model of the individual indicators, column (3) shows the correlation between the individual indicator and the component model.

Loayza and Ranciere (2002) calculated the standard deviation from financial development growth, whereas Eggoh (2008), measured financial instability through a cyclical component of the financial development index.

This paper follows the method proposed by Klomp and Haan, (2009), which constructed a continous financial instability indicator, by applying factoring analysis on a number of financial stability indicators. The principal reason for building a composite index is to avoid the problem of multicollinearity[5] that occurs when introducing simultaneously several financial instability variables that are highly correlated amongst each other. The principal component analysis method involves a mathematical procedure that transforms a number of correlated variables into a small number of uncorrelated variables called principal components (Tchamyou, 2016). The first principal component accounts for as much of the variability in the data as possible, with each succeeding component accounting for as much of the remaining variability as possible. The method thus generates those linear combinations of object measure (called eigenvectors), which express the greatest statistical variances over the entire object under consideration. This is particularly useful when they are hiding between different object measures.

The data consists of commonly used financial stability indicators that are composites of variables taken from the banking system's balance sheet, such as domestic credit provided by banks, credit provided to the private sector and liabilities liquidity. It is important to include this liquidity measure, as large variations in bank liquidity may indicate a crisis. In the same way, credit growth is often included in models which explain banking crisis (Beck et al., 2003).

Risk and return indicators such as the real interest rate and interest rate spread are included to show if financial risk rises or decreases, thus possibly distressing the stability of the financial sector. Monetary authority indicators take into account variables such as money and quasi money (M2) as a percentage of GDP, as huge money supply changes may indicate the existence of financial and or economic problems in general (see Table 1).

The first principal component of the three variables accounts for 83% of their overall variance and, as expected, is highly correlated with each individual measure included. Specifically, the correlation between the first principal component and a change in the domestic credit provided by the banks is 0.90, the correlation between the change in credit to the private sector is 0.83 and the change in liquid liabilities is 0.77, and its correlation with M2 is 0.67 (see Table 1). Fig. 1 shows the scree plot of the eigenvalues, indicating the numbers of components that have to represent financial instability. According to the Kaiser criterion, the component with the eigenvalues above one should be selected. In this study the test suggested the selection of three components. Further, the first principal component was then used to derive a weight (scores) for the financial instability index.

Index of financial instability = (Change in domestic credit by banks × 0.52) + (Change in credit to private - sector × 0.50) + (Change in Liquid Liabilities × 0.49) + (Change in money and quasi money (M2) as% GDP × 0.46) + (0.17 × Change in real interest rate) + (Change in interest rate spread × 0.10).

where the financial instability index is the value of the aggregate financial instability measure and the score coefficient has been regarded as weights, the source of the various variables is the World Development indicators. For ease of analysis, in Table 2, the countries in the sample were classified into three categories, depending on whether they had a high instability: high being an index great than 0 and moderate instability being an index less than 0. Countries with the index less than or equal to −0.25 are classified as low financial instability index. More specifically, the classification depends on the range of periods from 1985 to 1990, 1991 to 2000, and 2001 to 2010. The first relevant point from this table is that for most countries in the sample, the instability pattern has changed significantly over time. For example, over the period 1985–1990, Nigeria had a low financial instability index, and from 1991 to 2000 it moved to a moderate instability. However, over the period 2001–2010 it had a low financial instability index. The second point is that most African countries are classified as highly or moderately unstable, meaning their financial sectors are very volatile (Figs. 2–4).

3.2. Index of financial liberalisation

For the financial liberalisation index, the index for capital account openness was used. This is an index developed by Chinn and Ito

---

[5] Multi-collinearity refers to a situation in which two or more explanatory variables in a multiple regression model are highly correlated
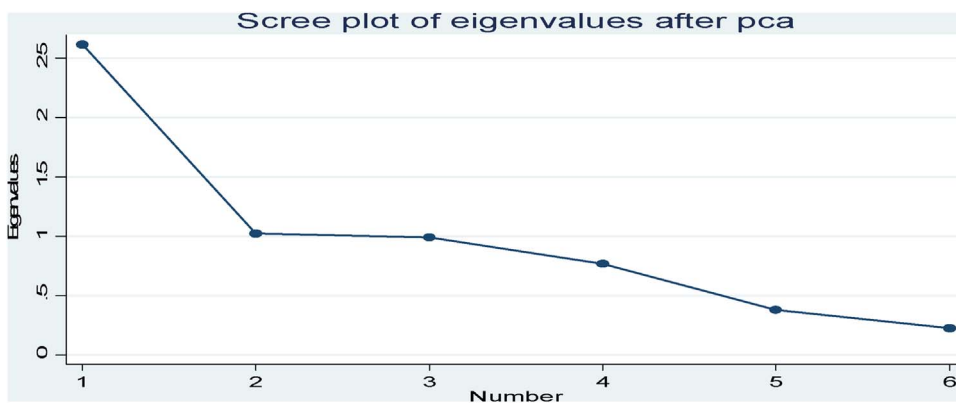
Fig. 1. Note: the graph shows the Variance explained by the various factors.

Table 2
Summary statistics.

Variables	OBS	Mean	SD	MIN	MAX
Index Fin. Instability	667	−2.58	0.99	−7.03	11.72
Index Fin. Development	1010	5.25	1.11	1.56	8.23
Growth of GDP	1150	0.01	0.06	−0.69	0.65
Log. GDP per Capita.	1197	6.21	1.07	4.05	9.06
Change in Terms of trade	1150	−0.55	9.99	−107.3	42.9
Inflation rate	1078	4.7	0.35	4.4	10.1
Government Size	1131	2.6	0.4	0.7	3.8
Output Gap	1197	−0.67	9.2	−139.5	33.8
Capital Account Openness	1110	−0.67	1.08	−1.8	2.4
Domestic credit to the private sector.	1167	19.9	21.4	0	161.9
Liquid Liabilities	1057	3.3	0.65	−0.18	6.6
Credit to the Private Sector	1131	2.6	0.89	−0.38	5.08
Money and quasi Money	1150	3.2	0.63	0.77	4.7
Real interest rate	873	9.22	31.98	−96.8	605.43
Interest rate spread	860	20.3	43.6	0.53	261.23
Change in domestic credit given by banks	1116	−0.07	15.25	−123.9	319.53
Change in credit to the private sector	1117	0.25	6.9	−80.9	102.5
Change in Liquid Liabilities	1009	0.24	19.15	−300.5	248.19
Change in money and quasi money (M2) as% GDP	1113	0.58	4.8	−68.9	64.9
Change in real interest rate	824	1.09	18.15	−126.7	298.6
Change in interest rate spread	778	0.66	11.9	−104.3	164.3
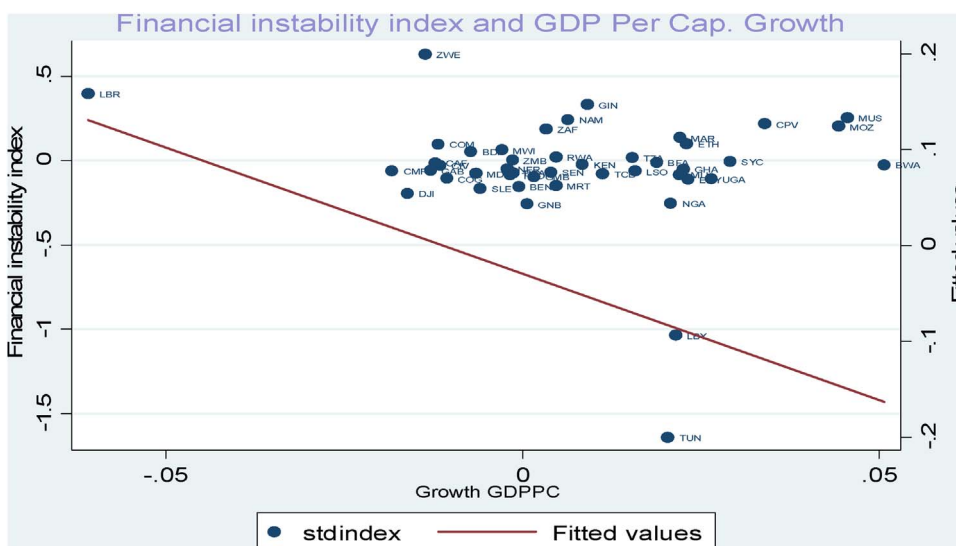
Fig. 2. Financial Instability Index and GDP per Capita Growth.

Fig. 3. Financial Instability Index and Financial Liberalisation.

Fig. 4. Financial Instability Index and Financial Development Index.

(2002) and updated in 2010 by the same authors. They used the data reported in the Annual Report on Exchange Arrangements and Exchange Restrictions published by the International Monetary Fund on the existence of multiple exchange rates, restrictions on current and capital accounts (where the latter is measured as the proportion of the previous five years without control) and the requirement to surrender export proceeds in order to capture the intensity of control on capital account transactions. Their index of openness is the first standardised principal component of these variables, and in practice it ranges from −2.0 in the case of the most control to 2.5 in the case of most liberalisation. This data is available for 108 countries from 1970 to 2010.

3.3. Index of financial development

The aggregate financial development index was constructed using the principal component analysis from the main financial

Table 3
Financial instability.

Country Classification	1985–1990	1991–2000	2001–2010
High instability	Cameroon, Burkina Faso, Ethiopia, Liberia, Malawi, Mauritius, Rwanda, South Africa, Kenya, Morocco, Burkina Faso, Burundi, Comoros, Mauritius, Malawi, Tanzania, Liberia, and Cape Verde	Uganda, Ethiopia, Zambia, Cape Verde, Namibia, South Africa, Mozambique, Gambia Mauritius, Seychelles, Sierra Leone, Rwanda, Guinean, Egypt, Comoros, Malawi, Senegal, and Zimbabwe	Mozambique, Tanzania, South Africa, Botswana, Cape Verde, Gambia, Guinea, Mauritius, Zimbabwe, Kenya, Egypt, Comoros, Ethiopia, Central Africa, Botswana, Namibia,Tanzania, Gambia, Liberia, and Cape Verde
Moderate instability	Senegal, Mauritania, Ghana, Mali, Niger, Gabon, Kenya, Cote d'ivoire, Congo, Rep. Burundi. Egypt, Benin, Morocco, Botswana, Togo, Chad, Sierra Leone and Guinea Bissau, Lesotho, Seychelles, Central Africa	Rwanda, Central African Republic, Kenya, Togo, Benin, Chad, Niger, Algeria, Malawi, Lesotho, Burkina Faso, Mali, Botswana, Tunisia, Gabon, Nigeria, Tanzania, Kenya	Malawi, Comoros, Ethiopia, Central Africa Republic, Mauritius, Lesotho, Gabon, Cameroon, Nigeria, Algeria, Madagascar, Sierra Leone, Congo Rep., Djibouti, Gabon, Chad, Madagascar, Rwanda, and Malawi
Low instability	Tunisia, Gambia, Nigeria, Uganda, Zimbabwe	Cameroon, Togo, Congo Rep, Algeria, Liberia, Guinea Bissau, and Mauritania	Libya, Seychelles, Zambia, Chad, Nigeria, Congo Rep.

*A country is classified as high instability if it has an index great than 0. It is classified as moderate instability if it has an index less than 0. Countries with the index less than or equal to -0.25 are classified as low instability.

development indicators, which in Africa is from the banking system: namely, liquid liabilities as a percentage of Gross Domestic Product (GDP), Money supply (M2) as a percentage of GDP and domestic private credit to the banking sector as a percentage of GDP (Batuo and Kupukile, 2010). It would be expected that these financial development variables would be positive and significantly correlated with the index of financial development, while at the same time being positively correlated with the index of financial instability.

Following Demirguc-Kunt and Detragiache (2001), macroeconomic control variables are included such as inflation, a change in the term of trade and government expenditure. These could account for adverse and external shocks that affect the economy and which can increase the financial system instability. For example, by affecting the solvency of borrowers, by increasing uncertainty, or by unexpected and excessive exposure to foreign risk (Goldstein et al., 2000). GDP per capita is also included and the growth of GDP is to control whether the detrimental effect of financial instability is channelled through the instability of economic prosperity. Table 3 presents descriptive statistics of the variables.

4. Methodology

4.1. Empirical specification

This section discusses the empirical model used to estimate the relationship between financial instability, financial development and economic growth. In particular, it is important to identify the impact of economic growth on financial instability, taking into account financial development and financial liberalisation. To examine this relationship further, a dynamic panel model is estimated, based on a balanced panel of data between 1985 to 2010. To test this hypothesis, the econometric specification is expressed as follows:

$$finst_{it} = \alpha + \beta_0 finst_{i,t-1} + \beta_1 flib_{i,t} + \beta_2 fdev_{i,t} + \beta_3 Gr_{i,t} + \sum_k \gamma_k X_{i,ik} + \mu_i + \varepsilon_{i,t}$$

(1)

where i and t denote country and time period respectively. *FInst* is the index of financial instability, *Flib* is the capital account openness index, *Gr* represents growth of GDP, while *Fdev* is the aggregate index of financial development. As explained above, a composite index of financial development is used, incorporating M2, private sector credit and liquid liabilities, all as ratios to GDP. The key reason for building composite indexes is to avoid the problem of multi-collinearity that occurs when simultaneously introducing several financial variables which are highly correlated amongst each other. The principal component and factor analysis which are methods for data reduction are ways that can be considered when dealing with multicollinearity, even though econometric theory suggests many other procedures could solve the problem. This study uses the principal components method as it offers many advantages. Apart from helping to reduce multicollinearity, enhancing parsimony and improving the measurement of indirectly observed concepts, it makes economic sense by aiding the re-conceptualisation of the meaning of the predictor in the regression model.

X is a vector of control variables that include: the inflation rate, changes in the terms of trade, output gaps, and government expenditure. The terms μ_i and $\varepsilon_{i,t}$ respectively denote a country effect capturing unobserved country characteristics and an error term. Eq. (1) poses a dynamic error component model. There are substantial complications in estimating this model using Ordinary Least Squares (OLS). In both the fixed and random settings, the lagged dependent variable is correlated with the error term, even if the disturbances are not autocorrelated. Arellano and Bond (1991) developed a Generalised Method of Moments (GMM) estimator that solves the problems using the first difference of the equation.

$$\Delta finst_{it} = \alpha + \beta_0 \Delta finst_{i,t-1} + \beta_1 \Delta flib_{i,t} + \beta_2 \Delta fdev_{i,t} + \beta_3 Gr_{i,t} + \sum_k \gamma_k \Delta X_{i,ik} + \mu_i + \varepsilon_{i,t}$$

(2)

The problems of possible endogeneity bias due to interaction between the financial instability and financial liberalisation and development, autocorrelation, individual specific heteroscedasticity, and omitted variable bias are overcome by employing the system GMM-estimator developed by Blundell and Bond (1998), which relies on using instrumental variables. The system GMM estimator combines equations in first difference with equation in levels, using lagged internal instruments in difference equations. The consistency of the GMM estimators depends on whether lagged values of the explanatory variables are valid instruments in the financial instability regression. This issue is addressed by considering two specification tests suggested by Arellano and Bond (1991) and Arellano and Bover (1995). The first is a Sargan test of over-identifying restrictions, which tests the overall validity of the instruments by analysing the sample analogy of the moment conditions used in the estimation process. Failure to reject the null hypothesis gives support to the model. The second test examines the null hypothesis that the error term $\varepsilon i, t$ is not serially correlated. As in the case of the Sargan test, the model specification is supported when the null hypothesis is not rejected. In the system specification a test is made to ascertain whether the differenced error term (that is, the residual of the regression in differences) is second-order serially correlated. First-order serial correlation of the differenced error term is expected even if the original error term (in levels) is uncorrelated, unless the latter follows a random walk. Second-order serial correlation of the differenced residual indicates that the original error term is serially correlated and follows a moving average process at least of order one. This would reject the appropriateness of the proposed instruments (and would call for higher-order lags to be used as instruments). The GMM model has been used in recent openness and financial development literature (Asongu, 2013b; Batuo and Asongu, 2015).

5. Findings

Table 4 reports the estimation results of the effect of financial instability on economic growth, financial developement and liberalisation. Column 1 provides an estimate of the impact of financial instability on economic growth, taking into account the effect of financial liberalisation. The findings suggest that financial instability has a postive affect on financial liberalisation meaning the liberalisation process tends to increase financial instablility. However, it has an inverse effect on economic growth, confirming some positions in the literature.

Column 2 takes into account financial development, the results showing that its association with financial instability is positive and significant, while the effect on economic growth is negative and significant. It is interesting to see that the marginal effect of financial development on financial instability is more pronounced (a positive sign) than that of financial liberalisation.

When the two variables (financial development and liberalisation) are both included in the estimation, (see column 3), the results concerning the effects of economic growth on financial liberalsiation and development on financial instability do not change dramatically. Financial development and liberalisation have a favourable impact on financial instability with the effects of financial liberalisation being greater than the effect of financial development, while economic growth has an opposite effect. These results suggest how instability is intrinsically linked to the financial sector. It is noted that the positive link between financial instability and financial liberalisation and development tends to affect the nexus between finance and growth by damaging economic growth. The development and efficiency of the financial sector is riddled with continous financial instability, leading to a lack of confidence from investors.

With regard to the other explanatory variables, the output gap has the correct sign, is positive and significant in all the columns. The real income per capita, government size and inflation have mixed results and the terms of trade shock has the opposite sign, but is not statistically significant.

Table 4

The effect of financial liberalisation, financial development and the economic growth on financial instability in African countries (1985–2010).

Annual estimation	1.1	1.2	1.3
Lag. Fin. instability	−0.12(0.43)***	−0.27(0.065)***	−0.11(0.07)
Growth GDP	−2.32(0.59)***	−2.7(1.2)*	−2.64(0.69)**
Log.GDP per cap	0.02(0.04)	0.58(0.33)*	−0.077(0.05)
Inflation	0.20(0.29)	−1.01(0.78)	−0.15(0.09)*
Change in term trade	−0.04(0.002)	−0.001(0.003)	0.004(0.002)
Output gap	0.02(.014)**	0.052(0.22)**	0.03(0.016)*
Log. Gov.Size	−0.05(0.16)	1.1(0.81)	−0.02(0.22)
Financial Lib.	0.39(0.15)**		0.32(0.13)**
Financial dev.		1.8(0.73)	0.25(0.10)**
Constant	−1.07(1.1)	2.8(3.8)	2.7 (1.7)
Serial correlation	0.242	0.233	0.184
Sagan test	0.971	0.973	0.967
Number of instruments	46	54	57
Numbers of Obs	480	489	480

Estimation: Dynamic Panel regression, System GMM estimation: Dependent variable: Index of financial instability.

Notes: the dependent variable is the index of financial instability. The robust standard deviations are given in parentheses. *,**,*** indicate statistically significant at the 10%, 5% and 1% level respectively. The statistics are *p*-value for serial correlation test. The null hypothesis is that the errors in the first difference regression exhibit non second order serial correlation. The reported statistics are *p*-value of Sagan/Hansen test.

Table 5
The Effect financial development and Economics Growth on Financial instability in African countries from 1985 to 2010, considering the financial liberalisation period and the non-financial liberalisation period.

Variables	Fin. Liberalisation	Non-fin.Lib.years
Lag.fin.instability	0.09(0.18)	0.24(0.49)
Growth GDPPC	−2.6(0.64)***	−3.7(1.7)**
Real GDPPC	−0.02(0.04)	0.16(0.22)
Inflation	−0.04(0.36)*	0.28(0.48)
Change in term trade	−0.003(0.002)	0.001(0.015)
Output gap	0.032(0.007)**	0.01(0.023)
Log. government size	0.032(0.10)	−0.08(0.08)
Financial development	0.096(0.045)**	0.26(0.14)
Constant	2.7(1.7)	−1.7(2.4)
Serial correlation	0.5771	0.325
Sargan test	0.1986	0.620
Number of instruments	27	11
Number of Obs.	242	133

Country	Fin. Instability index	Growth GDP per Capita	Fin. Dev. index	Fin. liberalisation.
BDI	0.054	−1.0%	5.011	−1.287
BEN	−0.167	0.6%	5.311	−0.686
BFA	0.004	2.1%	4.898	−0.766
BWA	0.044	3.9%	5.144	0.591
CAF	−0.013	−1.0%	4.224	−0.938
CIV	−0.024	−0.9%	5.471	−0.938
CMR	−0.084	−1.1%	4.654	−0.938
COG	−0.110	−0.3%	4.400	−1.106
COM	0.037	−1.0%	4.879	−1.148
CPV	0.266	3.6%	6.484	−1.148
DJI	−0.108	−1.4%	6.850	
DZA	−0.071	0.4%	6.090	−1.232
EGY	−0.010	2.6%	7.144	0.370
ETH	0.103	2.5%	5.468	−1.204
GAB	−0.070	−0.8%	4.649	−0.686
GHA	−0.051	2.3%	4.532	−1.342
GIN	0.002	0.7%	3.519	−1.315
GMB	−0.010	0.4%	5.271	1.506
GNB	−0.202	−0.2%	4.627	−1.206
KEN	−0.025	0.5%	6.049	0.026
LBR	0.409	−5.2%	4.475	1.189
LBY	−1.111	2.1%	6.272	−1.204
LSO	−0.130	2.0%	5.670	−0.992
MAR	0.077	2.2%	6.873	−1.050
MDG	−0.057	−0.7%	4.885	−0.602
MLI	−0.077	1.9%	5.232	−0.686
MOZ	0.087	4.0%	5.100	−1.306
MRT	−0.224	0.4%	5.634	−1.162
MUS	0.293	4.1%	7.098	0.692
MWI	0.016	0.8%	4.527	−1.217
NAM	0.186	1.2%	6.290	−1.192
NER	−0.046	−0.4%	4.220	−0.633
NGA	−0.156	2.2%	4.880	−1.151
RWA	0.005	1.1%	4.382	−0.963
SDN		3.1%	4.044	−1.010
SEN	−0.067	0.5%	5.449	−0.686
SLE	−0.090	−0.1%	3.814	−0.999
SYC	0.293	2.6%	6.367	1.456
TCD	−0.079	1.3%	3.836	−1.022
TGO	−0.091	−0.2%	5.622	−1.148
TUN	−1.640	2.7%	6.917	−0.980
TZA	−0.009	2.0%	4.576	−1.110
UGA	−0.027	3.1%	4.045	0.651
ZAF	0.239	0.6%	7.180	
ZAR		−3.5%	2.568	−1.106
ZMB	0.007	0.2%	4.599	0.581
ZWE	0.243	−1.8%	6.252	−1.566

Notes: the dependent variable is the index of financial instability. The robust standard deviations are given in parentheses. *,**,*** indicate statistically significant at the 10%, 5% and 1% level respectively. The statistics are *p*-value for serial correlation test. The null hypothesis is that the errors in the first difference regression exhibit non second order serial correlation. The reported statistics are *p*-value of Sagan/Hansen test.

\Table 6
Pairwise correlation.

Variables	Fin. Instability	Growth GDPPC	Fin. Dev	Shock trade	Inflation	Gov. size	GDPPC	Fin.Lib.	Output gap.
Fin instab.	1.00								
GDPPC GR	−0.105***	1.000							
Fin.Dev	0.17***	0.04	1.000						
Shock trade	−0.013	0.05*	0.016	1.000					
Inflation	−0.005	−0.21***	−0.21	−0.22	1.000				
Gov.size	0.024	0.007	0.046	0.047	−0.21	1.000			
GDPPC	0.03	0.12	0.58	0.024	0.16	0.39	1.000		
Fin.Lib	0.078	0.05	0.12	−0.0128	0.11	0.13	0.22***	1.000	
Output gap	−0.019	0.1	−0.039	0.048	0.013	−0.01	0.02	−0.037	1.000

In Table 5, the sample is divided into two, with account taken of the years in which the countries were financially liberalised and the years in which they were not. In the year of liberalisations, the impact of economic growth and financial development on financial instability is less than is the case in the year in which the financial sector was not liberalised. Hence, results also reveal that economic growth reduces financial instability and the magnitude of reduction is higher in the pre-liberalisation period compared to post-liberalisation period.

For each regression, the specification of the equation was tested with the Sagan test for instrument validity, then tested with the serial correlation test for second order serial correlation. The test results suggest that the instruments used in this study are valid and there exists no evidence of second serial correlation in the estimates made (Table 6).

6. Policy implications

This study demonstrates how financial liberalisation and development are fundamental to financial stability. There is a danger therefore, that in trying to aviod financial instability, the intervention by African countries' policymakers can create rigidity or financial repression policies rather than facilitating a more stable financial system which could be achieved by a range of other policy options. For example, financial rules and regulations being designed to widen the space for the growth and stability of oriented marcoeconomic policies. At the same time it should be remembered that regulations can be problematic, in that they can themselves be the source of instability and thus have adverse effects on financial intermediation and development. These aspects of regulation should be taken into account when designing prudential and capital account regimes. The particularlity of each country must be considered and no one-size-fits all solution should be adopted. Institutions may also need to be strengthened or created before new policies and regulatory measures are introduced.

There should also be coordination and cooperation amongst the various public authorities responsible for monetary policy, regulation and supervision of the financial system. Some of these responsibilities may come under the same authority, this is particularly true for monetary policy. Financial regulation and supervision must come under the authority of the Central Bank, which must be independant of political decison making and influence, given its task of attaining stability in the financial system.

Efforts by African governments should be focussed on creating an economic environment which facilitates and establishes a stable marcoeconomic environment with sound monetary polices, fiscal discipline and a peaceful political environment. They should also provide adequate institutions that respect property rights, and law and order. This could generate adequate human capital, thus creating a relationship between marco stability and growth that reduces uncertainty, strengthens credibility and improves the overall macroeconomic environment. The beneficial consequences of this would encourage direct foreign investment, domestic investment and accelerate the process of economic growth, thereby reducing poverty.

7. Conclusion and future research directions

This paper has investigated linkages between financial instability, financial liberalisation, financial development and economic growth in African countries during the period 1985–2010, using a dynamic panel method. Two main findings are established. First, financial development and financial liberalisation have positive effects on financial instability. Second, economic growth reduces financial instability and the magnitude of reduction is higher in the pre-liberalisation period compared to post- liberalisation period.

Future studies can improve extant literature by engaging cross-specific studies for more targeted policy implications. Moreover, assessing if the established linkages within empirical scrutiny in other regions is also worwhile.

Acknowledgements

References

Agbloyor, E.K., Abor, J., Adjasi, C.K.D., Yawson, A., 2013. Exploring the causality links between financial markets and foreign direct investment in Africa. Res. Int. Bus. Finance 28 (May), 118–134.

Akerlof, G., 1970. The market for lemon: quality uncertainty and the market mechanism. Q. J. Econ. 84 (1970), 488–500.

Al-Suwailem, S., 2014. Complexity and endogenous instability. Res. Int. Bus. Finance 30 (Janaury), 393–410.

Alagidede, P., Panagiotidis, T., Zhang, X., 2011. Why a diversified portfolio should include African assets. Appl. Econ. Lett. 18 (14), 1333–1340.

Ansart, S., Monvoisin, V., 2017. The new monetary and financial initiatives: finance regaining its position as servant of the economy. Res. Int. Bus. Finance (January), 750–760.

Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev. Econ. Stud. 58 (2), 277–297.

Arellano, M., Bover, O., 1995. Another look at the instrumental variable estimation of error-components models. J. Econ. 68 (1), 29–52.

Aryeetey, E., 1994. The Global Financial Crisis and Domestic Resources Mobilisation in Africa Working Paper No. 101. African Development Bank, Tunis.

Asongu, S.A., De Moor, L., 2017. Financial globalisation dynamic thresholds for financial development: evidence from Africa. Eur. J. Dev. Res. 29 (1), 192–212.

Asongu, S.A., 2013a. How do financial reforms affect inequality through financial sector competition? Evidence from Africa. Econ. Bull. 33 (1), 401–414.

Asongu, S.A., 2013b. How has politico-economic liberalization affected financial allocation efficiency? Fresh African evidence. Econ. Bull. 33 (1), 663–676.

Asongu, S.A., 2014. Financial development dynamic thresholds of financial globalization: evidence from Africa. J. Econ. Stud. 41 (2), 166–195.

Asongu, S.A., 2015a. Fresh patterns of liberalization, bank return and return uncertainty in Africa. In: Renata Karkowska (Ed.), Challenges to Financial Stability—Perspective, Models and Policies (Volume 1: A Framework for Modeling Systemic Risk Drivers of Different Markets), pp. 121–143 (Chapter 6).

Asongu, S.A., 2015b. Liberalisation and financial sector competition: a critical contribution to the empirics with an African assessment. South Afr. J. Econ. 83 (3), 425–451.

Batuo, M.E., Asongu, S.A., 2015. The impact of liberalisation policies on income inequality in African countries. J. Econ. Stud. 42 (1), 68–100.

Batuo, M., Kupukile, M., 2010. How can economic and political liberalisation improve financial development in African countries? J. Financ. Econ. Policy 2 (1), 35–59.

Beck, T., Demirguc-Kunt, A., Levine, R., 2003. Law endowment and finance. J. Financ. Econ. 70 (2), 137–181.

Blundell, R., Bond, S., 1998. Initial condition and moment restriction in dynamic panel data models. J. Econ. 87 (1), 115–143.

Bonfiglioli, A., Mendicino, C., 2004. Financial Liberalisation, Banking Crises and Growth: Assessing the links, SSE/EFI Working Paper No 567, Stockholm.

Caprio Jr., G., Klingebiel, D., 1996. Banking insolvency; bad luck, bad policy or bad banking. Presented at the Annual World Bank Conference on Development Economics.

Chinn, M.D., Ito, H., 2002. Capital Account Liberalization, Institutions, and Financial Development: Cross Country Evidence, NBER Working Paper, No. 8967. National Bureau of Economic Research, Cambridge, MA.

Demirguc-Kunt, A., Detragiache, E., 2001. Financial liberalisation and financial fragility'. In: Caprio, Honahan, P., Stigilitz, J.E. (Eds.), Financial Liberalisation: How Far, How Fast? Cambridge University Press.

Dimitras, A., Kyriakou, M. , Latridis, G., 2015. Financial crisis, GDP variation and earning managment in Europe. Res. Int. Bus. Finance 34, 338–354.

Dobson, W., Huffbauer, C.G., 2001. World Capital Markets: Challenge to the G10. Institute for International Economics, Washington.

Eggoh, C., 2008. Financial Development, Financial Instability and Growth: A Reappraisal Law, Economics and Management Faculty. University of Orleans.

Eichengreen, B., Leblang, David, 2003. Capital account liberalisation and growth; was Mr. Mahathir right? Int. J. Finance Econ. 8 (3), 205–214.

Eichengreen, B., 2001. Capital Account Liberalisation: What Do the Cross Country Studies Tell Us? University of California, Berkeley Mimeo.

Ekpenyong, D.E., 1994. Financial Distress Banks: Nature and Implication. The Nigerian Banker, The Chartered Institute of Banker of Nigeria, Lagos April–June.

Goldberg, C.A., Veitch, J.M., 2010. Country risk and financial integration—a case study of South Africa. Res. Int. Bus. Finance 24 (2), 138–145.

Goldsmith, R., 1969. Financial Structure and Development. Yale University Press, New Haven, CT.

Goldstein, M., Carmen, R., Kaminsky, G., 2000. Assessing Financial Vulnerability: An Early Warming System for Emerging Markets. Institute for international Economics, Washington.

Guillaumont, S., Kpodar, R., 2004. Financial Development, Financial Instability and Poverty Working Paper No. 2004-13. CERDI, Clermont Ferrand.

Henry, P.B., 2000. Stock market liberalisation: economic reform and emerging market equity prices. J. Finance 55 (2), 529–564.

Henry, P.B., 2007. Capital account liberalization: theory, evidence and speculation. J. Econ. Lit. 45 (4), 887–935.

Herrero, G., Del Rio, P., 2003. Financial stability and the design of monetary policy. Banco de Espana Working Paper No. 0315, Madrid.

Kaminsky, G., Reinhart, C.M., 1999. The twin crises: causes of banking and balance-of-payment problems. Am. Econ. Rev. 89 (3), 473–500.

Kaminsky, G., Schmukler, S., 2002. Short-Run Pain, Long Run Gain: The Effect of Financial Liberalisation. Mimeo.

Keynes, J.M., 1973. The Ex Ante Theory of the Rate of Interest The Economic Journal. December, and The General Theory and After, Part II Defence and Development. Macmillan for the Royal Societypp. 215–223.

Klomp, J., Haan, J., 2009. Central bank independence and financial instability. J. Financ. Stab. 5 (4), 321–338.

Kose, M.A., Prasad, E.S., Rogoff, K., Wei, S.J., 2006. Financial globalization: a reappraisal. IMF Staff Pap. 56 (1), 8–62.

Kose, M.A., Prasad, E.S., Taylor, A.D., 2011. Threshold in the process of international financial integration. J. Int. Money Finance 30 (1), 147–179.

Levine, R., 2001. International financial liberalisation and economic growth. Rev. Int. Econ. 9 (4), 688–702.

Loayza, R., Ranciere, R., 2002. Financial Development, Financial Instability and Growth CESifo Working Paper No. 684, Munich.

Mackenzia, Donald, 2001. The credit crisis as a problem in the sociology of knowledge. Am. J. Sociol. 116 (6), 1778–1841.

Martin, P., Rey, H., 2002. Financial Globalisation and Emerging Markets: With or Without Cash? NBER Working Papers 9288, Cambridge.

Mckinnon, R.I., 1973. Money and Capital in Economic Development. Brooking institution, Washington, DC.

Minsky, H., 1982. The Financial Instability Hypothesis: capitalist processes and the behaviour of the economy, In: Kindleberger, Ch., Jean-Pierre Laffargue (Eds.).

Minsky, H., 1992. The Financial Instability Hypothesis, The Jerome Levy Economics Institute of College, Working Paper, No.74, New York.

Murinde, V., 2010. Bank regulation in Africa: from Basel I to Basel II and now at a cross roads. In: AERC, Seminar. April 2010, Nairobi.

Nelson, S.C., Katzenstein, P.J., 2011. Uncertainty, Risk and Financial Crisis in. Department of Political Sciences, Northwestern University. https://www.princeton.edu/politics/about/file-repository/public/Nelson-and-Katzenstein-Uncertainty-Risk-and-Crisis-IO-FINAL_07-16-13.pdf (Accessed 26 January 2014).

Rajan, R., Zingale, L., 2003. The great reversals: the politics of financial development in the 20th century. J. Financ. Econ. 69 (1), 5–50.

Reinhart, C.M., Tokatlidis, I., 2003. Financial liberalisation: the African experience. J. Afr. Econ. 12 (AERC supplement 2), 53–88.

Rodrik, D., Subramanian, A., 2009. Why did financial globalization disappoint? IMF Staff Pap. 56 (1), 112–138.

Schumpeter, J.A., 1912/1934). The theory of Economic development, Harvard University Press, Cambridge MA.

Shaw, E.S., 1973. Financial Deepening in Economic Development. Oxford University Press, New York, NY.

Stiglitz, J., Weiss, A., 1981. Credit rationing in market with imperfect information. Am. Econ. Rev. 71 (3), 393–410.

Tchamyou, S.V., Asongu, S.A., 2017. Information sharing and financial sector development in Africa. J. Afr. Bus. 18 (1), 24–49.

Tchamyou, S.V., 2016. The role of knowledge economy in African business. J. Knowl. Econ. http://dx.doi.org/10.1007/s13132-016-0417-1.

World Bank, 2010. World Development Indicators. World Bank Washington, DC.