External debt stock, foreign direct investment and financial development

Evidence from African economies

Daniel Agyapong
Department of Marketing and Supply Chain Management,
University of Cape Coast, Cape Coast, Ghana, and
Kojo Asare Bedjabeng
Bank of Ghana, Accra, Ghana

Abstract

Purpose – The purpose of this paper is to examine the role external debt and foreign direct investment play in influencing financial development in Africa.

Design/methodology/approach – Annual data on external debt, foreign direct investment and financial development were extracted from the World Bank World Development Indicators from 2002 to 2015. The data employed were analysed within causal research design and the dynamic panel using generalized method of moment estimation approach.

Findings – The findings revealed that external debt and foreign direct investment have a significant positive relationship with financial development in African economies. Governments of the sampled economies should enact policies that would help attract high level of foreign direct investment as it contributes positively to financial development. Finally, governments of the sampled African economies should ensure foreign direct investment and external funds borrowed are channelled to productive sectors.

Originality/value – The paper analysed the relationship between external debt, FDI inflows and financial sector development. The paper is the first in terms of such analysis within the framework of the dual-gap framework, which is the first time in these kinds of studies. Previous studies have concentrated on the effect of financial sector on FDI and not the other way around.

Keywords Financial development, Foreign direct investment, External debt, Domestic access to credit

Paper type Research paper

1. Introduction

Most economies of south of the Sahara are characterized by huge budget deficit and inadequate domestic resource accumulation resulting in savings-investment gap (Adepoju *et al.*, 2007). Omoruyi (2005) argued that numerous economies would experience economic downturn in their quest to bridge this gap except to rely on external sources of finance (Chenery, 1996). The attraction of foreign capital inflows into an economy characterised by savings-investment gap will fulfil the effort of raising the levels of saving and eventually investment in the country which will spur economic growth (Hunt, 2007).

The dual-gap framework demonstrates that an economy's development is a function of the total investment. Consequently, this investment is so inadequate to propel economic development (Oloyede, 2002). In order to inspire growth and development, economies resort to external sources of financing its budget deficit and to bridge the savings-investment gap. Normally, external

borrowing, foreign direct investment, grant and aids from developed economies (Jilenga, Xu and Gondje-Dacka, 2016) are the options in such instances. This situation reflects the features displayed by SSA economies. Among other things, these economies are characterised by rising external debt but relatively falling foreign direct investment. It is only prudent for one to expect the inflow of foreign capital in the form of foreign direct investment and external debt to African economies to enhance growth and development of the financial system.

The financial system performs an essential role in the economic development process of African economies, especially through the allocation of finance from the surplus spending unit to productive activities (Kwakye, 2012). Empirical literature proposes that well-functioning financial systems enhance long-run economic growth (Beck *et al.*, 2000). Policy interventions such as trade liberalization and financial liberalization have been found as determinants of financial development (Rajan and Zingales, 2003; Takyi and Obeng, 2013).

Liberation of financial sector leads to efficient assets allocation (Takyi and Obeng, 2013). In this vein, the financial sector and trade liberalization process reduces inefficiency, brings transparency in transactions, promotes a competitive environment and ultimately economic development (Seetanah *et al.*, 2010). Considering all the benefits that accrue an economy when it is characterised by a developed financial system, one would anticipate that foreign direct investment and external debt stock would result in financial development.

A number of empirical studies concentrate on how foreign direct investment influences economic growth in African economies (Koojaroenprasit, 2012; Antwi *et al.*, 2013; Rahaman and Chakraborty, 2015; Hussain and Haque, 2016). Others also focus on the intermediary role of financial development in enhancing the effect of foreign direct investment on economic growth (Hermes and Lensink, 2000).

Furthermore, external borrowings over the years have proven to be a fundamental source of financing budget deficit (Chenery, 1996). However, an empirical question that remains unanswered is the role external debt play in influencing financial development. Plethora of studies documents significant information on the relationship between external debt and economic growth. The results from previous studies on link between foreign direct investment and financial development yielded mixed results. Whereas some studies (Sulaiman and Azeez, 2012; Osinubi and Amaghionyeodiwe, 2010; Zaman and Arslan, 2014; Melnyk *et al.*, 2014) have found a positive relationship between external debt stock and economic growth; others studies (Frimpong and Oteng-Abayie, 2006; Azeez *et al.*, 2015; Akram, 2015; Arshad *et al.*, 2015) found that growing debt stock could contribute negatively to economic growth and development of the borrowing economy. However, what remains unaddressed is the direct effect of external debt and foreign direct investment on financial development in African economies. This omitted gap might account for the inability of African economies to take full advantage of the benefits that accrue from foreign capital inflows to develop it financial system. The paper, therefore, examines the effect of external debt stock and foreign direct investment on financial development in African economies by deploying the efficient dynamic panel data generalized method of moment (GMM) estimation techniques.

The rest of the paper is divided into four. Part two looks at the review of theoretical and empirical literature. The research methods are contained in Part three and Part four presents the results and discussion. Part five presents conclusions and policy recommendations.

2. Literature review

Macdougall (1958) developed the capital inflows theory, expounded by Kemp (1964), hence, MacDougall-Kemp hypothesis. The theory holds that in a two-country model, where one economy represents an investing economy and the other representing the host economy, the price of capital being equal to its marginal productivity, which facilitates the movement of capital freely from a capital abundant country to a capital scarce country. This could lead to efficiency in the use of capital across the two economies and the ultimate increase in welfare

of the people. It is important to state that the capital being flown from rich economies to capital scarce economies could take the form of debt instrument as well as foreign direct investment. Meanwhile, the first point of entry of capital into the receiving economy is the financial systems. By implication, the effect of capital or FDI inflow into an economy should be on the financial systems and markets.

However, the investment outflow from the capital-rich could lead to a decline in productivity. GDP will not fall as far as the investing economy receives returns on the investment made abroad. As long as the revenue receipt from the foreign investment is higher than the loss in output, it is prudent for the investing economy to continue to invest abroad as it would enjoy greater national income than earlier as a result of foreign investment in the long run. The host economy, *ceteris paribus*, would witness rise in GDP due to the FDI inflow. It is expected that the increased national income in the host economy would boost all sectors of the economy, especially the financial sector; impacting on its development.

Furthermore, the dual-gap theory offers a framework that demonstrates that a country's development, among other things, is a function of foreign aids and foreign investment inflows. This is because developing countries in particular, suffer from a gap between savings and investment; where domestic savings are inadequate to support growth. Similarly, there is a gap between export and import revenues or that their import purchasing power is inadequate to support level of growth, the need for FDI and donor inflows. This implies foreign investments are necessary in spurring growth in all sectors of these economies. The empirical question that emerges is whether movement of capital (external debt and foreign direct investment) from the resource rich economies to resource scares economies spurs financial development of the resource scarce economies. This study seeks to empirically examine the relationship between external debt, foreign direct investment and financial development in African economies.

2.1 Measures of financial development
Financial development reflects the. Financial development has been measured using various indicators in finance literature. These indicators are private sector credit by deposit money banks to GDP (PSC), financial system deposit to GDP (FDG), broad money supply (MS) to GDP (BM), deposit money bank assets to GDP (DMG), etc. This study adopted the domestic credit to private sector as percentage of GDP. This measure was chosen because, it reflects, to a greater extent, the efficacy of financial institutions in giving loans to the private sector. A rise in private sector credit is seen as a positive development due to its efficient investment decisions (Coutinho and Gallo, 1991; Khan, 2008). It also measures the importance of the financial sector in allocating credit to the private sector and has been used in King and Levine (1993), Moshi and Kilindo (1999), Levine *et al.* (2000), Frimpong and Adam (2010) and Eshun *et al.* (2014). From these measures and considering the financial system of Africa economies, the domestic credit to private sector was deemed appropriate.

2.2 Empirical review
2.2.1 Foreign direct investment and financial development. The relationship between foreign direct investment inflow and financial development has long been explored. Empirical finding on the link between foreign direct investment and financial development has yielded varying conclusions in existing literature. Studies either confirm a positive or negative relationship between foreign direct investment and financial development.

Many developing economies are characterised by low savings which practically translate into low investment as well as annual budget deficit. Omoruyi (2005) contended that many economies would witness economic recession in their quest to bridge the gap existing between the savings and the level of investments and so will rely on external source

of finance to bridge the savings-investment gap as opined by Chenery (1996). In the attempt to raise the levels of savings which eventually result in a rise in investment a country will consistently raise the level of gross domestic product as suggested by Hunt (2007). The upward trend of foreign direct investment and external debt stock add a drive to the debate on the impact such trend have on financial development. Ullah *et al.* (2014) concluded that FDI supplements domestic investment. However, Acar *et al.* (2012) found that FDI crowds out domestic investment within the MENA region. This result corroborates that of Fry (1993) that FDI causes domestic investment to fall. The study concludes the role of FDI on domestic investment vary considerably by location.

Omoruyi (2005) and Hunt (2007) argue that many economies will encounter a decline in their quest to bridge the gap between the level of savings and investment and so will rely on external capital to supplement it domestic activities so as to achieve the desired growth rate. One of the foremost questions that still need further probe is the role FDI plays in influencing financial development among African economies.

Gupta (1970) argue that FDI is fundamental for the growth of less developed economies. He affirms that there is a relationship between FDI inflow and financial development as it adds up to domestic financial and non-financial resources and complements domestic savings mobilization. Similarly, FDI support helps in bridging foreign exchange gap, improves access to credit by the private sector and countenance easier access to foreign market. Some empirical studies find sufficient evidence of the existence of a link between FDI and financial development (Aggarwal *et al.*, 2011; Gupta *et al.*, 2009).

FDI is believed to be a crucial determinant of credit growth and a cause of credit booms (Lane and Mcquade, 2014; Calderon and Kubota, 2012; Mendoza and Terrones, 2012; Elekdag and Wu, 2011; Sa, 2006; Hernández and Landerretche, 2002). Foreign direct investment to African economies improves the availability of domestic capital which serves as the launch of transition process of the financial system of these economies (Lane and Mcquade, 2014). The development of the banking sector as a result of capital availability through takeovers and greenfield investment is good evidence to the effect that access to credit is improved (Elekdag and Wu, 2011).

Fry (1993) examines the effect of FDI on domestic financial development for 5 Pacific Basin economies and 11 other developing economies. The findings of the study show that FDI causes domestic financial development to fall for the total sample. Nonetheless, regarding the five Pacific Basin economies, FDI increases domestic financial development. Fry (1993), however, concludes that the influence of FDI on domestic financial development differs considerably by location.

Bosworth and Collins (1999) examine the effect of FDI on financial development using data on developing countries from 1978 to 1995. They found that there is a direct relationship between FDI and financial development.

A study by Agosin and Mayer (2000) demonstrates varying effect of FDI on financial development for three emerging regions that is Asia, Latin America and Africa. The results suggest FDI tends to substitute financial development in Latin America, while it complements financial development in Asia. The results for African economies were inconclusive.

Also, Agosin and Machado (2005) employed the GMM estimation technique to test the effect of FDI on financial development for 36 developing economies in Africa, Latin America and Asia from 1971 to 2000. Their results confirm crowding-out effect of FDI on financial development in Latin America and a neutral effect of FDI on financial development in Africa and Asia.

Al-Sadig (2013) studied the effect of FDI on financial development for 91 developing economies from 1970 to 2000. The results show that there exists a significant positive effect of FDI and financial development. An attempt to segregate the total sampled economies into high, middle and low income earning economies, their study finds that for middle and

high-income countries, foreign direct investment positively affects financial development. However, for lower income countries, the positive effect of FDI on financial development depends only on the availability of human capital.

Wang (2010) conducted a panel data study to assess the effect of FDI on financial development in developed and less developed economies. Employing data on a total sample of 50 economies from 1970 to 2004, the findings show that in the short-term period, FDI crowds out financial development in developed economies, but has a neutral consequence for less developed economies. However, in the long term, the effect of FDI on financial development for developed economies is neutral, while FDI crowds out financial development in less developed counties. Likewise, Kamaly (2014) examines the effect of FDI on financial development by using a data set for 16 emerging countries from 1978 to 2010. By using Three-Stage Least Squares estimation technique to estimate a system of equations for individual economies, the results reveal economic-specific effects of FDI on financial development.

It is essential to state that, FDI brings with it technological expertise. Multinationals are deemed to have a superior technology relative to domestic firms (Markusen, 2002), hence, FDI inflow by acquisition, joint venture or other capital transfer methods may result in the setting up of foreign technology in the domestic firm. These developments could manifest themselves in increasing innovative activity that would result in an improved access to credit by businesses. Consequently, increase in FDI inflows could change the access to credit opportunities for domestic firms (Harrison and McMillan, 2003). Girma et al. (2008) found FDI inflow to various sectors level to be positively related with domestic innovative activity and improve access to domestic finance.

Takyi and Obeng (2013) conduct a study aimed at determining the determinants of financial development in Ghana by adopting ARDL methodology. Employing quarterly data from 1988 to 2010, their result show there is a co-integrating relationship among FDI and financial development. Similarly, Adam and Tweneboah (2009) found from their study that there is a long-run relationship between FDI and financial development.

Aurangzeb and Haq (2012) examined the influence of FDI inflow in bringing about growth of the Pakistanis economy using annualized data for the period of 1981–2010. Unit root test confirms the stationary of all variables at first difference. As a result of adopting the multiple regression estimation technique, their results show that FDI inflow has a positive and significant association with growth of the Pakistani economy. They resolved that FDI inflow is actually essential for the growth of any economy.

Adeniyi et al. (2015) studied the causal relationship between FDI and financial development in Ghana, Gambia, Nigeria Cote' d'Ivoire and Sierra Leone for the period of 1970–2005 by applying Granger causality tests. Measuring financial development by three variables – liquid liabilities/GDP, banking sector credit/GDP and credit to the private sector/GDP, the findings support the view that FDI matters for financial development in the economies considered except for Nigeria.

The extent to which an economy is open to foreign investors has the tendency to affect the levels of financial development. Evidence shows that as the financial market of an economy is opened to foreign investors, volatility would increase in the short term which would subside afterwards but financial development would be sustained (Levine, 1997). Levine and Zervos (1998) affirm that financial liberalization makes financial markets become large, volatile, liquid and more developed.

David et al. (2014) in their studies using data from Sub Saharan African economies concluded that, there is no relationship between FDI and financial development. They, however, contend that trade openness (TO) is vital for financial development for economies characterised by quality institutional. Huang (2010) contend that efficiency in contract enforcement, property rights and eminence of accounting tradition are critical for

financial development. FDI inflows to African economies are expected to supplement domestic savings mobilization to achieve the desired level of growth. However, FDI has been argued to play a complementary role by providing financial resources vital for boosting access to credit by the private (Mbulawa, 2015). The study therefore hypothesised that:

H1. There is a significant positive relationship between FDI and financial development in African economies.

2.2.2 External debt and financial development. The dual-gap economic theory proposes that a certain level of borrowing by a developing economy is expected to achieve its economic growth target. Economies at the early stage of growth are characterised by inadequate stocks of capital as a result of low domestic savings accumulation making them investment destination with interest rates above those in advanced countries. So far as the borrowed funds are used for productive investment activities and the economy does not suffer from instability, economic growth should enhance and allow for prompt repayments of debt.

Economies characterised by less developed domestic debt markets frequently depend on external source of borrowing to meet their demanding financing obligations. This is because the domestic debt market of these economies is shallow and could not meet governments financing needs. Consequently, their debt portfolio is dominated by external debt. Even though most economies in Africa over the years deepened their domestic debt markets, a large percentage of their external borrowings are denominated in foreign currency.

Most empirical studies focussed on external debt and growth. However, previous studies that attempted to establish a relationship between external debt and economic growth found mixed results. Some studies found direct relation, some other studies found negative and positive relationships and some no significant association between external debt and growth for diverse economic. Malik *et al.* (2010) contend that there is an inverse association between external debt and growth. Empirically, many cross-country works offer empirical results which support the positive relationship between external debt and growth (Beck and Levine, 2004; Caporale *et al.*, 2005). Contrary, some studies found a negative influence of external debt on growth citing the occurrence of the financial crisis (Stiglitz, 2000).

Takyi and Obeng (2013) carried out a study aimed at investigating the determinants of financial development in the Ghanaian economy. By adopting the ARDL methodology and using quarterly data for the period of 1988–2010, their result indicted a unique co-integrating relationship among government borrowing and financial development in the short run. Nonetheless, government borrowing was insignificantly related to financial development in the long-run and short-run time period. Kutivadze (2011) examined the link between external debt stock and financial development and found a significant positive relationship existing between external debt stock and financial development.

Hassan *et al.* (2013) consented that external debt is positively associated with economic growth of the Nigerian economy but concluded that external borrowings ought to be directed to the real sectors of the economy for the real effect to be felt. This result means that external debt is profitable but could result in negative complementarities if not directed to real sectors of the economy. This finding is in line with the results of Oke and Sulaiman (2012) where in assessing the impact of external debt on economic growth and the volume of investment in Nigeria for the period of 1980–2008 found a positive association between external debt and growth. The results disclose that the current external debt to GDP ratio stimulates growth in the short term. This indicates that debt is very relevant to achieve the desire level of growth.

Zaman and Arslan (2014) in their work found external debt stock to be positively associated with economic growth in Pakistan. The phenomenon as tested in the Ghanaian context by Frimpong and Oteng-Abayie (2006) even though found external debt stock to

influence economic growth, debt servicing was found to negatively influence economic growth signalling the presence of crowding-out effect for the period of 1970–1999. However, the debt stock cum growth nexus is not conclusive as Adegbite *et al.* (2008) observed that debt stock is negatively associated with growth of the Nigeria economy. Debt inflow could be growth stimulating to developing economies as empirically evident by Sulaiman and Azeez (2012), Osinubi and Amaghionyeodiwe (2010) and Melnyk *et al.* (2014). This notwithstanding, growing debt stock of an economy could contribute negatively to economic growth and development of the borrowing economy (Azeez *et al.*, 2015; Akram, 2015; Arshad *et al.*, 2015).

Hauner (2009) in his work on the proposition called a "lazy banks" indicated that high level of public debt might support low scale development of banking sector and financial markets, since the financial institutions that mainly lend to government institutions will have weak intensive to become more compatible and further develop itself.

Kumhof and Tanner (2005) in their study indicated that in several developing countries, existence of a government debt market, with low macroeconomic volatility and sufficient volume of debt, supports a private bond market as it brings a basic financial infrastructure including laws, institutions, products, services, repo and derivatives market and plays a role as an informational benchmark.

The foregoing debate means that there may perhaps be a virtuous circle between external debt and growth. External debt creates and supplements investment potentials of an economy due to debt-related spillover effects. This, in turn, enhances credit boom leading to a general improvement in financial intermediation to the point where economies are able to establish efficient institutional environment necessary for financial development. It is necessary to state that exposure to long term external debt may have multiplier effects in the financial sector. It is therefore hypothesized that:

H2. There is a significant relationship between external debt and financial development in African economies.

3. Research methods
The study employed a quantitative research approach, analysing the data within the causal research design framework. The study tests the relationship between external debt stock, FDI inflows and financial development. The method is appropriate in the testing of hypothesis (Babbie, 1990; Sukamolson, 2005).

3.1 Model specification
The deduction from both the MacDougall-Kemp hypothesis and the dual-gap theory is that the level and amount of foreign investments available spurs growth in all sectors of the economy including the financial sector. Also, external debt stock has a potential impact financial development. So, there is a probable spillover effect of foreign inflows on the financial systems and development. Based on these theories, the following theoretical model was proposed for the study:

$$\text{Financial development} = f(\text{External debt}, \text{foreign direct investment}). \quad (1)$$

The study adapting the standard model of Takyi and Obeng (2013), Chin and Ito (2005), Seetanah *et al.* (2010) and owing to the hypotheses developed and the structure of African economies as well as the various literatures reviewed, the following model is employed to ascertain the effect of FDI inflows and particular model relates FDI inflows and external debt to financial development among African economies.

The study adopts the under stated model to aggregately test the FDI inflows and external debt play in influencing financial development within African economies. The study also controlled for a number of macroeconomic variables and institutional variables that have been proven to affect financial development over the years. The model captures a number of control variables; inflation, GDP/capita, TO, MS, government effectiveness (GE), regulatory quality (RQ) and rule of law (RL) that have over the years proven to affect the level of financial development:

$$
\begin{aligned}
\text{Fin. devel.}_{it} = {}& \alpha_i + \varphi(\text{Fin. devel.}_{t-1})_{it} + \beta_1(\text{Foreign dir. invt})_{it} + \beta_2(\text{Ext. debt})_{it} \\
& + \beta_3(\text{Money suppl.})_{it} + \beta_4(\text{GDP per capita})_{it} + \beta_5(\text{Trade Open})_{it} \\
& + \beta_6(\text{Govt Effective})_{it} + \beta_7(\text{Reg. Quality})_{it} + \beta_8(\text{Rul. of Law})_{it} + \varepsilon_{it}, \quad (2)
\end{aligned}
$$

where i represents specified economies, t denotes time, and the rest of the variables are defined as: Fin. devel. represents financial development, Foreign dir. invt denotes Foreign direct investments, Ext. debts means External debt stock, Fin. devel.$_{t-1}$ denotes lag of Financial development, GDP per capita represents gross domestic product per capita, Trade Open means trade openness, Govt Effective means government effectiveness, Rul. of Law denotes rule of law, ε_{it} represents residual term (this term refers to other terms that affect financial development but are not captured in this model, it is assumed to be normally distributed), α is the unobserved country-specific effect, φ represents the coefficient of financial development lag one and β_1–β_9 represents vector of coefficient.

3.2 Measurement of variables
The study aimed at examining the role FDI and external debt stock play in influencing financial development in African economies from 2002 to 2015. The study measured financial development (dependent variable) by domestic access to credit by the private sector as a percentage of gross domestic products while FDI inflows as a percentage of gross domestic products and external debt stock as a percentage of gross national products are the employed independent variables. Furthermore, the study adopted a number of macroeconomic indicators (gross domestic product per capita (GDPPC), MS and TO) and institutional variables (GE, RL and RQ) (Table I).

3.3 Data source
The study is purely quantitative and all the data employed for the studies were extracted from secondary sources. Data on the dependent variable; financial development proxied by domestic access to credit by the private sector were extracted from the World Bank World Development Indicators (WDI) from 2002 to 2015. The study controlled for inflation, GDP/capita, TO as well as some institutional variables, GE, RL and RQ. Data on external debt, FDI, inflation, GDPPC, TO were extracted from the World Bank WDI, while data on institutional variables; RL, GE and RQ for 37 African economies spanning from 2002 to 2015 using the criterion-based sampling technique. A panel covering a period of 14 years spanning from 2002 to 2015 was built.

3.4 Data analysis technique
The study employed the dynamic panel data GMM estimation technique. This estimation technique was developed by Holtz-Eakin *et al.* (1990) and Arellano and Bond (1991) and subsequently advanced by Arellano and Bover (1995) and Blundell and Bond (1998). The study used the dynamic panel data estimator to deal with simultaneity bias and economy-specific effects. By the application of the dynamic panel data GMM estimation. By the application of the dynamic panel data Generalized Method of Moment estimation approach, the study inclined to change the model into first difference. This was to help deal with simultaneity bias as well as country-specific consequence (Arellano and Bond, 1991).

Variable	Explanation	Data source
Domestic credit to the private sector/GDP	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities and trade credits and other accounts receivable, that establish a claim for repayment	World Development Indicators 2002–2015
FDI inflows	FDI inflows to African economies as a percentage of GDP	World Development Indicators 2002–2015
External debt	Total external debt stocks to gross national income. Total external debt is debt owed to non-residents repayable in currency, goods or services. It is expressed as a percentage of gross domestic products	World Development Indicators 2002–2015
Money supply	Money and quasi money (M2) comprise the sum of currency outside banks, demand deposits other than those of the central government and the time, savings and foreign currency deposits of resident sectors other than the central government	World Development Indicators 2002–2015
Trade openness	Trade is the sum of total exports and imports of goods and services measured as a share of gross domestic product	World Development Indicators 2002–2015
GDP per capita	Gross Domestic Product per the total population	World Development Indicators 2002–2015
Government effectiveness	Capturing perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association and a free media	The World Bank Governance Indicators (2002–2014)
Regulatory quality	Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development	World Governance Indicators 2002–2015
Rule of law	Capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence	World Governance Indicators, 2002–2015

Source: World Bank World Development Indicators (2002–2015)

Table I.
Description of
variables and
source of data

To ensure robustness of the estimations, the study applied the Arellano and Bond test of second-order auto-correlation with the disturbance term (Arellona and Bond, 1991). In furtherance, the effectiveness of the instruments in deciding whether the model is correctly specified or not would depend on the studies failure to reject the null of the Arellano and Bond test. Disturbance term, by nature, will possibly be serially interconnected in the first order. Nonetheless, second-level serial association is a signal of misspecification.

4. Results and discussion

Table II presents the descriptive statistics for 37 sampled economies. This includes the mean values, medians, minimum and maximum values, the standard deviation as well as the total number of observations for financial development, FDI, external debt as well as the control variables.

From Table II, the mean values, medians, the standard deviation and the number of observations for data on financial development, external debt, FDI and the control variables for the 37 sampled economies in Africa have been highlighted. Specifically, 412 observations of data points have been made for the study.

Variables	Mean	Median	Maximum	Minimum	SD	Observations
FD	24.735	15.942	160.125	2.024	26.509	412
EXD	57.929	30.895	1,380.765	2.536	125.558	412
FDI	4.712	2.919	89.476	−5.497	8.434	412
GDPPC	1,438.225	629.666	7,469.58	78.399	1,806.613	412
MS	39.177	29.203	117.961	7.218	25.173	412
TO	79.162	69.983	321.632	21.674	40.368	412
RQ	−0.449	−0.457	1.879	−1.123	0.499	412
RL	−0.5018	−0.497	1.855	−1.057	0.584	412
GE	−0.554	−0.579	1.609	−1.036	0.565	412

Notes: The table presents the descriptive statistics for the 37 sampled African economies from 2002 to 2015. FD denotes financial development; EXD represents external debt; MS represents money supply; GE represents government effectiveness; RL means rule of law; RQ represents regulatory quality; FDI means foreign direct investment; GDPPC represents gross domestic product per capita; TO denote trade openness
Source: Authors' computation (2017)

Table II.
Descriptive statistics

From Table II, the average level of financial development for the sampled 37 African economies is 24.735 units with a standard deviation of 26.509 units. This mean is characterized by a median, maximum and a minimum value of 15.942, 160.125 and 2.024 units, respectively. It is obvious that outliers do not affect the mean of data on domestic access to credit.

The mean of external debt was about 57.929 units (SD = 125.558). This mean is characterised by a minimum of 2.536 units and a maximum value of 1,380.765 units. The average FDI of the sampled economies was 4.712 units (SD = 8.434). FDI records a median, maximum and minimum rate of 2.919, 89.476 and −5.498 units, respectively. GDPPC and TO recorded mean values of 1,438.225 units and 79.162 units, respectively, as well as a median score of 629.665 and 69.983 units, respectively. These mean and median values attest that the performance of the sampled African economies as far as these macroeconomic variables are concerned for the period under consideration is arguably satisfactory.

Regarding country-level governance variables, GE of the mean economy is −0.554 units with a standard deviation of 0.565 units. This mean is characterised by a median and range of −0.579 and −1.609 to 1.036 units, respectively. RL, on the other hand, records mean and median value of −0.502 and −0.497 units and standard deviations of 0.584 units, respectively. This therefore foretold that data on RL are not characterised by extreme values. RQ of the sampled African economies records a mean and median values of −0.449 units (SD = 0.499) and −0.457 units, respectively. This mean is characterized by a range of −1.855 to 1.057 units, respectively.

4.1 Multicollinearity test

The study employs the correlation matrix technique to test multicollinearity. Table III presents the results of the correlation among financial development, FDI inflows, external debt, MS, GDP/capita, TO, RQ, RL and GE.

From Table III, it could be seen that most of the independent variables show weak negative and positive correlation with the dependent variable. Thus, most variables recorded correlation coefficients below 0.60 with the dependent variable; financial development. Precisely, it could be observed that FDI and external debt have a negative correlation with financial development while the controlled variables, specifically the RL, RQ, GE, GDPPC and MS display a weak positive correlation with financial development. TO was had a weak negative correlation with financial development.

Variables	FD	EXD	FDI	GDPPC	MS	TO	RQ	RL	GE
FD	1.000								
EXD	−0.119	1.000							
FDI	−0.090	0.383	1.000						
GDPPC	0.452	−0.151	−0.136	1.000					
MS	0.673	−0.145	−0.054	0.244	1.000				
TO	−0.003	0.394	0.321	0.067	0.114	1.000			
RQ	0.584	−0.341	−0.147	0.340	0.505	−0.075	1.000		
RL	0.488	−0.244	−0.082	0.300	0.591	0.085	0.858	1.000	
GE	0.618	−0.244	−0.128	0.391	0.614	0.024	0.888	0.895	1.000

Notes: The table presents the correlation matrix. FD denotes financial development; GE represents governments effectiveness; RL means rule of law; RQ represents regulatory quality; FDI means FDI; GDPPC represents gross domestic product per capita; TO denote trade openness
Source: Authors computation (2017)

Table III.
Correlation matrix
results

However, the correlation between RQ and RL, the correlation between GE and RQ as well as the correlation between RL and GE were above 7.00 but lower than 9.00. Bryman and Cramer (2002) argued that there is multicollinearity if the correlation among two exogenous variables is more than 0.80 whereas Anderson *et al.* (1990) suggested 0.70. Also, Kennedy (2008) contended that correlation between two independent variables is high when it is above 0.80 or 0.90. Based on the threshold set by Kennedy (2008) of 0.90, it can be concluded there is no multicollinearity among the variables.

4.2 FDI, external debt and financial development baseline results
This section presents the regression results of the model specified (see Equation (2)). Table IV presents the results of the model establishing a relationship between FDI, external debt and financial development using the efficient dynamic panel data GMM estimator and

Variables	Model 1	Model 2
FD(−1)	0.335 (0.000)***	0.295 (0.000)***
EXD	0.021 (0.044)**	
FDI		0.093 (0.046)**
GDPPC	0.002 (0.439)	0.002 (0.1238)
MS	0.191 (0.002)***	0.162 (0.000)***
TO	0.019 (0.635)	0.034 (0.077)*
GE	−5.626 (0.218)	−5.693 (0.033)**
RQ	−3.733 (0.2034)	−2.741 (0.026)**
RL	6.789 (0.019)**	4.270 (0.023)**
J-statistics	13.132	17.046
Prob(*J*-statistics)	0.592	0.519
AR(1)	0.245	0.0205
AR(2)	0.455	0.271
df	345	377

Notes: Table IV presents the results of the relationship between external debt and FDI for the sampled 37 African economies from 2002 to 2015. FD denotes financial development; GE represents governments effectiveness; RL means rule of law; RQ represents regulatory quality; FDI means FDI; GDPPC represents gross domestic product per capita; TO denote trade openness. *,**,***Significance at the 10, 5 and 1 per cent of levels, respectively
Source: Authors computation (2017)

Table IV.
Foreign direct
investment, external
debt and
financial development
baseline results

applying the lags of the independent variables as instrumental variables. The first column presents the names of the variables as explained in the table. The second column (Model 1) presents the results of the relationship between external debt and financial development. Column three (Model 2) displays the findings of the relationship between FDI and financial development.

These results were estimated while controlling for GDPPC, MS, TO, RL, RQ and GE. Added to the above, statistical significance of the variables is tested at 1, 5 and 10 per cent level of confidence with three stars representing significance at 1 per cent, two stars denote statistical significance at 5 per cent and one star representing statistical significance at 10 per cent.

An insignificant probability (J-statistics) value of 0.592 and 0.520 for the estimation of the relationship between external debt and financial development and FDI and financial development, respectively, means there is no overriding identity and that the instruments used are efficient and do not correlate with the error term.

Likewise, an insignificant AR(2) figure of 0.4552 and 0.2710 for the estimation of the relationship between external debt and financial development and FDI and financial development, respectively, implies that there is no serial or autocorrelation:

> *H3.* There is a significant positive relationship between external debt and financial development within the sampled African economies.

The results as displayed by Model 1 of Table IV show that external debt has a statistically significant positive relationship with financial development in African economies. Specifically, a unit increase in external debt leads to 0.021 units increase in financial development in the sampled African economies from 2002 to 2015. The study therefore fails to reject the hypothesis stated above that external debt has a significant positive relationship with financial development in African economies. This implies that empirically, economies that contract more level of external debt are at the advantage of developing their financial sector.

Higher level of government borrowing from the international market has a positive effect on private credit or crowds in domestic credit to the private business person. It is argued that government external borrowing has the potency to essentially induce domestic banks to undertake financial innovation, development of new products and engage in comparatively riskier lending to the private sector. This is because governments of most African economies are arguably the biggest clients of banks, hence, any attempt to borrow externally would leave banks in a distressed state. Giving the survival objectives of banks, most banks would engage in financial innovative, develop new financial products hence financial development. This result is in line with the findings of Sulaiman and Azeez (2012), Hassan *et al.* (2013) and Melnyk *et al.* (2014) that external debt stimulates development of an economy. Also, Kutivadze (2011) observed a positive relationship between external debt stock and financial development:

> *H1.* There is a significant positive relationship between foreign direct investment and financial development within the sampled African economies.

The results as displayed in Column 3 Model 2 of Table IV show that FDI has a statistically significant positive relationship with financial development. Specifically, a unit increase in external debt leads to 0.093 units increase in financial development in the sampled economies from 2002 to 2015. The study, therefore, fails to reject the hypothesis stated above that FDI has a significant positive relationship with financial development in African economies. This implies that empirically, economies that attract high level of FDI are at the advantage of developing their financial sector. Higher level of FDI has a positive effect on private credit growth.

This means the level of capital flight which has been argued to be detrimental to the growth of host economies is quite minimal in the sampled African economies. Also, the liberalization of African economies opening it to foreign participation and privatization of state enterprises translates into financial development. FDI supports in bridging the savings-investment gap by improving access to credit by the private sector and countenance easier access to foreign market. The development of the banking sector as a result of capital availability through takeovers and greenfield investment is good evidence to the effect that access to credit is improved (Elekdag and Wu, 2011; Calderon and Kubota, 2012; Lane and Mcquade, 2014). The finding of this study is in line with the results of Adam and Tweneboah (2009) where they found FDI on the stock market development in Ghana. Results from their study showed that there is a long-run relationship among FDI, nominal exchange rate and stock market development in Ghana.

5. Conclusions and policy recommendations

The study documents a significant positive relationship between FDI and financial development in the selected African economies. Hence, we fail to reject *H1* that FDI inflows positively influence financial development. Also, external debt stock positively influences financial development in the sampled African countries. Furthermore, the study reported a significant positive relationship between MS and RL and financial development. Furthermore, the study documented a significant relationship between MS, TO, GE, RQ and RL and financial development.

Practically, the study found that improvement in external debt and FDI is good for the sampled economies as it enhances the level of financial development.

In order to achieve sustainable economic growth and development, there is the need to enhance access to credit and through effective savings mobilization strategy. Here, some of the savings mobilization strategies that may be embarked on are voluntary, involuntary and forced savings by individuals and companies in the developing countries. Also, governments of developing countries in collaboration with financial institutions can raise nominal interest rates on deposits where appropriate steps must also be taken to reduce the inflation risk, which affects the real return on financial assets but not the utility of durable consumer goods. In addition, deregulation that facilitates market access for both domestic and foreign banks may increase competition for deposits and force the existing system to raise real deposit rates can initiated. Furthermore, a strategy to improve upon the movement of capital across economies could result in an efficient allocation of capital across nations. Most economies are characterized by inadequate domestic resource accumulation resulting in savings-investment gap. Hence, there is a need to rely on external sources of finance to bridge this gap as suggested by the dual-gap theory.

Many developing economies are characterized by savings-investment gap. Proponents of the dual-gap theory suggested the need for external source of finance (i.e. borrowing or donation). From the study, external debt has been found to improve domestic credit to the private sector. Therefore, governments should endeavour to borrow from external source as it was found that external debt positively influences financial development. However, this must be done with caution.

Government of the sampled African economies should work hard to ensure a business environment that attracts high level of FDI as it positively influences financial development. This could be in the form of reducing cost of doing business and ensuring political stability and effective regulatory and legal framework. Furthermore, the sampled countries and similar one should deepen their liberalization agenda, opening it up more to foreign participation as this attracts higher level of FDI that translates into financial development.

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Corresponding author
Daniel Agyapong can be contacted at: dagyapong@ucc.edu.gh