

Financial Inclusion in Ghana; does Institutional Context Matter?

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ABSTRACT

This research investigates the linkage between financial inclusion and a country's institutional environment. This study made use of macro-national-level indices capturing significantly both political and economic freedom as prevail in Ghana, a lower income country (LIC), in determining their impact on financial inclusion and accessibility as proxy by credit advanced to the private sector by financial intermediaries. Using the *conditional quantile regression model*, the study established that such national/macro level indices do significantly affect the financial inclusion level. To this end, any agenda of reducing the extent of financial exclusion within developing countries generally and in particular Sub-Saharan African economies, might not achieve the intended outcome unless pursued within the wider context of economic, political, as well as technological environment prevalent in a given economy, conscious that they do all interact to impact on the level of inclusion. Policy-makers and donors pursuing the agenda of financial inclusion need to pay attention not only to the economic indicators but also to political as well as institutional factors existing in developing countries, as they do interact *pari-pasu* in creating a harmonized developmental trajectory.

Keywords: *Financial inclusion, financial deepening, LIC, quintile regression*

INTRODUCTION

This research investigates carefully how financial inclusion is impacted by institutional, economic and other country-level strategic indices in Ghana. Financial inclusion refers to the availability and accessibility of credit at reasonable cost to the poor and the marginalised in society including small businesses. Though much broader than just credit accessibility, the concept of financial inclusion in specific sense of credit access may be thought to stimulate economic activity. However, there may be reverse causality in which case country-level institutional context may define the extent of inclusion, and this we investigate in this study in a way that brings to fore such linkages which most existing literature have failed to holistically deal with.

The multi-dimensional nature of the concept makes any single definition less likely to be adequate. At the supply side it includes provision of appropriate, affordable and widely accessible quality financial services to the marginalized group in society (Triki & Faye, 2013). From the demand side perspective, financial inclusion may be thought of as the ability for every economic agent to access financial services which include opportunity to save, make payments, transfer and insurance (Hannig & Jansen, 2010). Demirgüç-Kunt, Klapper, and van Oudheusden (2015) simply defined it as individuals' and firms' ability to access and use formal financial services. To Sarma and Pais (2011) it is a process which ensures that all active economic agents have access to and usage of widely available formal financial

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system with less obstacles and cost. Against these varied definitions, we defined the concept of financial inclusion as *ability of the previously 'unbanked' economic units (both poor households and financially marginalised small firms) to access and fully participate in the formal financial system via the use of appropriate financial and technological platform and services.*

Financial exclusion tends to inhibit the growth potential and opportunities of not only existing but also potential entrepreneurs as well as small enterprises resulting in their marginalisation. Financial exclusion according to Carbo, Gardener, and Molyneux (2007) can take various dimensions among which are: *access exclusion*, condition exclusion, price, marketing and self-exclusion. Our paper emphasize specifically the access exclusion and by logical extension focusing on *access inclusion* examining the credit advanced to the private sector by financial intermediaries (FIs) over time as percentage of GDP.

A broadened financial access is said to be deepened when the outcome is an accelerated economic growth, in which case potential entrants realise their entrepreneurship goals as the existing firms become more productive (Mohan, 2006). The concept of financial deepening becomes even more profoundly crucial when considered from the perspective of low income countries (LICs), especially so where the prevailing economic, technological infrastructural bottlenecks coupled with prevailing political and institutional ambience tend often themselves to be inhibiting factors other than enablers. It is not uncommon to find scholarly papers establishing linkages between financial developments or deepening on one hand and economic growth and development on the other (Arestis & Demetriades, 1997; Arestis, Demetriades, & Luintel, 2001; Beck & Cull, 2014; Beck, Lu, & Yang, 2013; Jung, 1986; Levine, 1997, 2005). As it is also customary to see more attention directed at assessing the impact that a deepened financial system has on the growth and development prospect of a nation in both economic and finance literature (Calderón & Liu, 2003), little effort has been made in the converse scenario where institutional development could impact on financial system to enhance inclusion, a gap our study fills. Most prior studies on financial inclusion have focused on cross-country comparison using aggregate indicators (Allen, Demirgüç-Kunt, Klapper, & Martinez Peria, 2012; Demirgüç-Kunt & Klapper, 2013; Demirgüç-Kunt & Klapper, 2012; Hannig & Jansen, 2010) which often do not allow detailed exploration of unique country-specific characteristics (Hallward-Driemeier & Aterido, 2007), hence our focus on Ghana.

This research is significant for number of reasons. *Firstly*, it promises to be different significantly from most existing studies of similitude as emphasis is placed on the use of macro-national-level indices capturing significantly both political and economic freedom as experienced by a lower income country (LIC-Ghana) in determining their impact on financial inclusion and accessibility which we proxy by domestic credit advanced to the real sector by the FIs. Though prior research have used either one or two of the independent variables in similar studies on financial inclusion, widening the scope of variables that do influence inclusion (in LICs) distinguishes the present study from earlier works as several factors (indices) are studied concurrently.

Secondly, another major contributory outcome of this study is the realisation that much as political as well as institutional indicators like democracy, economic freedom, among others may be desirable, they do not constitute an end in themselves. It is only when they serve as means to achieving positive ends such as a deepened financial system where financial exclusion gives way to inclusion that their positive externality were realised; and this has been the focal point in our study.

Additionally, the econometric analysis employed in this study gives robust outcome compared with prior studies (Cameron & Trivedi, 2005; Wellalage & Locke, 2014), in that quantile regression appears methodologically appealing than OLS as it allows one to investigate the entire distribution of the financial inclusion variable (dependent variable) rather than the conditional mean (Cameron & Trivedi, 2005). Importantly, the method of analysis, using quantile regression provides more clear evidence of what is important and what is not significant in relation to financial inclusion.

Besides, prior studies have used cross-country data (*see for example*; Allen, Demirgüç-Kunt, Klapper, and Martinez Peria (2012)), which often tend to omit an individual country's unique characteristics. The current study fills this gap in our knowledge concerning financial inclusion, contributing significantly to understanding key relationships in a developing West Africa country (Ghana) and the additional robustness of results from using superior micro-econometric modelling.

Finally, the study outcome promises an insightful policy implications, especially for developing economies where general political and economic milieu tend to perpetuate financial exclusion. To this end, it is recommended that for a sustained financial inclusion to be a reality, developing countries must pay the needed attention not only to the economic indicators but also to political as well as institutional factors such as corruption perception, good governance and general economic freedom, as they do interact well in a direct fashion in creating a harmonized developmental path.

Financial Development, Sector Reform and Governance in Ghana

The development of the financial sector of Ghana to a large extent appears to have been shaped by the wider institutional and political context prevalent at any given time in the country’s economic history. In following the developmental trajectory of the sector, we present the trend of the financial deepening and or shallowing overtime on *figure (1)* below. The figure depicts trend of banks’ credit to the private sector (as percentage of GDP) and the overall credit to private sector also as percentage of GDP. The vertical distance between the two curves represents the credit advanced to the private sector by the non-bank intermediaries. The dominance of the banking financial instructions in the Ghanaian financial landscape explains the narrowed gap and the point where the two converge only seems to suggest that credit was supplied wholly by the banking FIs at that particular point in time.

The opaque nature of the sector prior to the restoration of the multi-party system of governance in 1992, led to a compromised and highly repressed financial sector in which contract enforceability was virtually non-existence. According to Brownbridge and Gockel (1996) the distress experienced in the financial system generally, and the baking sub-sector in particular, could partly be attributed to the pervasive corruption that permeated certain governance era that existed in particular in the 1970s during which borrowers were granted credit facilities on the basis of their connection with the political class other than viability of their investible projects. The essence of financial sector liberalization was not only to remove credit control and allocation but also to ensure market forces and competition do the allocation of credit using the price mechanism.

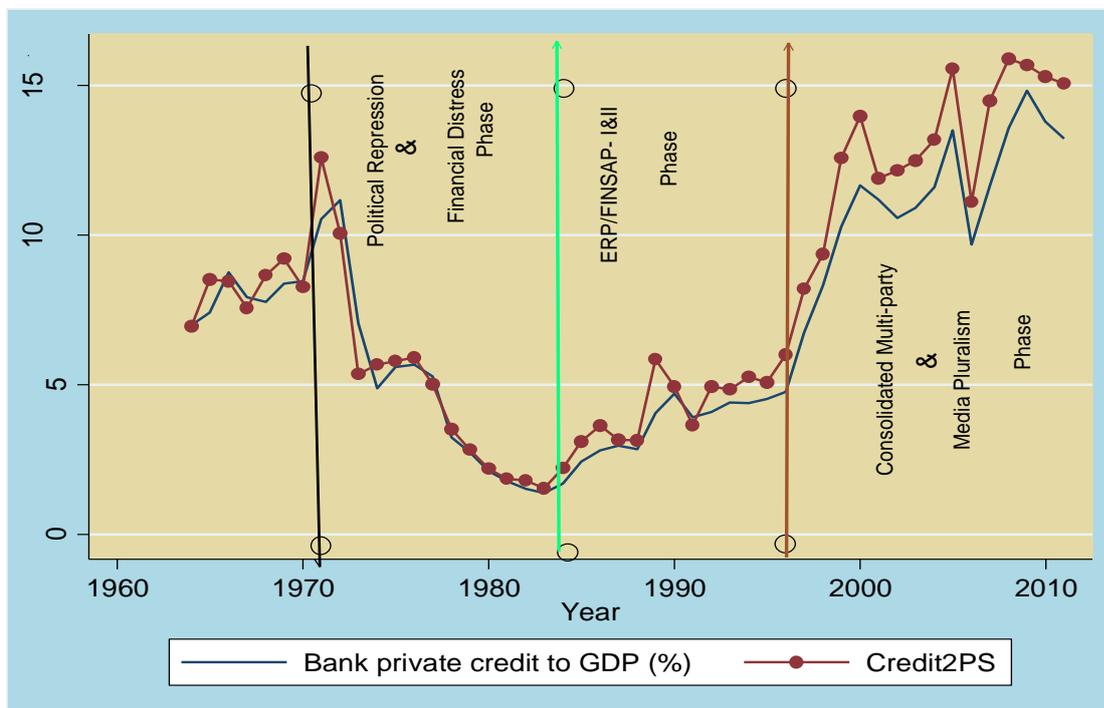


Figure 1: TREND OF FINANCIAL DEEPENING AND SHALLOWING IN GHANA.

The decline in the credit supplied to the private sector between 1970s stretching to the early 1980s could therefore not be coincidental. The period witnessed series of political instability (due mainly to multiples of military interventions) which significantly impacted on the financial and monetary sector indicators. For instance, inflation rate reached its highest in the nation’s politico-economic history of

approx. 123%, with non-performing assets portfolio of the banks soaring (Brownbridge & Gockel, 1996), partly due to directed lending, absence of contract enforcement coupled with price control which witnessed interest rate ceiling (Acharya, Shrestha, & Seibel, 1990; Gockel & Akoena, 2002). That was a period of political repression and financial distress and the outcome was huge non-performing assets (NPA) that stood in the books of most banks (Sowa, 2003).

In response to financial sector reforms, which became known as the Financial Sector Adjustment Program (FINSAP I, II & III), vigorous restructuring of the financial environment was undertaken as part of the economic recovery program (ERP)⁴. According to Sowa (2003) the reform entailed three major things namely; enhancement of legal and regulatory framework for banks' operations, interest rates liberalization and restructuring of the existing financial institutions that were distressed. Under the FINSAP, legal and regulatory environment for financial sector was reviewed leading to amendment in the existing banking Acts and laws (Sowa, 2003). The objective was to make FIs operate efficiently such that they would be able to enforce contracts to reduce the NPAs and also to see to the creation of new financial institutions.

The upturn of the credits advanced as did most of the other economic indicators, could partly be attributed to the structural adjustment program (SAP) of the Bretton Woods institutions in 1983. The SAP among other conditions strictly ensured deregulation of the financial sector which led to the restructuring of the financial system's distressed portfolios in a way that allowed market forces to progressively determine credit allocation and interest rates (Aryeetey, Baah-Nuakoh, Duggleby, Hettige, & Steel, 1996; Brownbridge & Gockel, 1996; Gockel & Akoena, 2002).

The consolidation of the democratic (good) governance which began in the early 1990s, coupled with liberalization that had been embarked upon in the late 1980s and early 1990s appeared to have translated into a more robust financial sector. The investor confidence that attended these consolidation of good governance in the country, positively reflected in the dramatic upturn in most of the macroeconomic indicators, notable in our instance is the growth rate of credit supplied to the private sector as well as the banks' credit to the private sector as a percentage of GDP. This observed trend undoubtedly partly motivated our *empirical investigation* into the extent to which improvement in governance and the wider national-level institutional context impact on financial sector generally and in particular financial accessibility and inclusion.

The rest of the paper is organised as follows. The next section is devoted to establishing the study in its literature context, followed by the description of scientific methodology applied in arriving at the findings of the study. This is followed by discussion of the research findings, then summary, conclusion and policy implications of the study.

LITERATURE REVIEW

Concept of Financial Inclusion

The concept of financial inclusion has received both scholarly and policy attention in recent times. Sarma and Pais (2008) reports of certain countries like the US, France and the UK which have formulated legislative instruments to foster inclusiveness. In UK for instance a Financial Commission⁵ was set up with the mandates to ensure wider connectivity to the banking services among the adult populace, promote financial accessibility to affordable credit from responsible lenders, promulgation of environment conducive enough to promote savings habit, access to right kind of insurance cover, financial literacy and education that empowers the citizenry to understand financial advice on credit, debt, saving and pension. In that light, accessibility that ensures there are absence of both price and non-price obstacles, especially among the poor and the marginalised group becomes key (Demirgüç-Kunt & Klapper, 2012); and the example cited above underscores the wider scope the concept can assume.

⁴ Under the auspice of the IMF and the World Bank's Structural Adjustment Program (SAP). As part of the measure to restructure distressed banks, Non-Performing Assets were transferred into Non-Performing Assets Recovery Trust (NPART) in 1991 (Sowa, 2003 Brownbridge & Gockel, 1996, (Aryeetey, Baah-Nuakoh, Duggleby, Hettige, & Steel, 1996)

⁵ http://www.financialinclusioncommission.org.uk/pdfs/fic_report_2015.pdf culled on 25/05/2105

However, the concept of financial inclusion appears wider than just accessibility. For Sarma and Pais (2008), financial system (or process) is said to be inclusive when it ensures availability, ease of access and usage of existing financial superstructure by all manner of people within society, regardless of their socio-economic status. That way the financial system is able to efficiently allocate financial resources to their product use and at an acceptable cost. Citing mobile phone penetration as one means through which ICT fosters financial inclusion, Kpodar and Andrianaivo (2011) submitted that ICT allows efficient financial resource allocation as it improves access to credit and deposit facilities, as well as its facilitation of financial transfers. Correlation between financial inclusion and economic development have also received scholarly attention in prior research though Hannig and Jansen (2010) argued the relationship is imperfect. They further advocated for a research that takes into account whole gamut of environmental factors that are conducive to engendering financial access as necessary means to reducing financial exclusion. Our study offers appropriate response to this clarion call to fill literature gap as we focus on myriad of factors that impact financial inclusion in developing economy like Ghana. Other authors have also highlighted the opposite of the inclusion concept in a way to bring out the practical meaning and contrast to the concept. Financial exclusion which has been variously defined refers to as any hindrance that deliberately or otherwise prevent certain social groups and individuals from gaining access to low-cost, fair and safe financial products from the formal mainstream financial system (Carbó, Gardener, & Molyneux, 2005; Conroy, 2005; Leyshon & Thrift, 1995; Mohan, 2006; Sarma & Pais, 2008). In our study therefore, we have considered factors that ought to be present in order to foster inclusive financial system where exclusion is minimized.

Theory of Financial Structure and Development

Our paper fits in well with a large literature on theory of financial development. But the broad nature of the concept of financial development which encompasses financial structure, inclusion and deepening, makes it imperative for our study to be confined within the purview of financial inclusion. However to the extent that these concepts are intertwined leaves one with limited choice than to review the whole concept of financial development theoretically. Many theories have been formulated on financial structure, though we focus here on four that ties in well with our study.

Political Institution View: This view holds that financial structure of a nation is shaped by the nature of information asymmetries and transaction costs, as the latter tends to be influenced by the nature and the quality of the political institutions and governance (Bhattacharyya, 2013). It is argued that non-democratic countries tend to be information opaque, a development that allows politically connected individuals access credit with no recourse to the viability of their investible projects and mostly at the expense of the ordinary entrepreneur without any form of political connection (Bhattacharyya, 2013; Gockel & Akoena, 2002), which ultimately leads to misallocation of resources.

Undemocratic system breeds rent-seeking grounds for the existing politically connected banks thereby limiting entry and competition, and the latter in return share part of the rent with the ruling class. It is in the light of this that Haber, (2008) and Wallis, (2008) both have found that political competition tends to drive away such abuse of financial system, thereby ensuring optimal allocation of financial resources to their best alternative use. This theory therefore predicts that better political system and institutions create a market-based financial system which could ensure better financial deepening and promote inclusion. Our current study identifies with this theory.

Economic Development theory: This theory argues that an economic system that shows sign of growth and expansion would create additional demand for external finance for the firm which must be met by the financial institutions (Bhattacharyya, 2013; Boyd & Smith, 1998; Levine, 2002, 2005). From the supply side, financial institutions are able to save cost in monitoring as the emergence of market based system is often associated with less need for monitoring. Chakraborty and Ray (2007) in their model argued that as economic development create a worthy society, the financial institutions have less need to incur high cost of monitoring. To this end, we included GDP per capita as a proxy for economic development and income distribution in our model to ascertain how that influence financial inclusion.

Social Capital theory of financial development: The view that existence of certain socio-cultural institutions serve as social capital tends to be associated with low moral hazard, hence promotion of financial deepening as financial intermediaries save monitoring cost (Bhattacharyya, 2013; Guiso, Sapienza, & Zingales, 2000). Though this view is not tested in our present paper, studies on the relationship-based lending approach existing in informal financial sector of most developing countries seems to lend credence this view.

Legal Origin View: This theory argues that financial structure and system that prevails in a given economy to a greater extent is shaped by the past colonial regime and legacy. Pioneered by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) the theory argued that protection of private property appears to be a legacy of British justice system, as against the French justice system in which most legal procedure is codified by the state due to historical antecedent of their judiciary system which evolved in response to reducing the discretionary power of the corrupt judiciary. This Bhattacharyya (2013) argues leave more power in the hand of state in French formal colonies than the British. To the extent that private property right is an important element in financial development, we would expect former British colonies to be financially developed as they hold the legacy of protection of private property than their counterpart from former French colonies (Beck, Demirgüç-Kunt, & Levine, 2003; Beck & Levine, 2008; La Porta et al., 1998). Our present study however does not test this view as data relates only to Ghana which is a former British colony.

National Governance structure and financial deepening: Empirical evidence tend to converge at a point that countries with feeble governance system experience slow economic development, as converse holds for the countries with strong governance system. To underscore this crucial fact, Kaufmann, Kraay, and Zoido-Lobaton (2000) established a positive (though non-linear) relationship between an indicator of governance (*rule of law*) and that of economic performance (*per capita incomes*) for 166 countries for the periods covering 1997–98. And for the same period they observed same relationship between governance indicator (voice and accountability) and infant mortality rate for 173 countries. This seems to suggest that the dividends on good governance and transparent political process do have far-reaching implications for many national variables prominent among which is the financial development and deepening of a given developing economy. Other authors have also established link between democracy and financial development (Huang, 2010; Roe & Siegel, 2011; Yang, 2011).

There has been emerging theoretical and empirical literature directed at establishing linkage between financial development and political development. It is established that a deepened financial system will emerge from a political system that adheres to tenets of democracy, thus, respect of rule of law, contract enforcement, and protection of property rights, amongst others (Acemoglu, Johnson, & Robinson, 2012; Haber, North, & Weingast, 2008; King & Levine, 1993; La Porta et al., 1998; Levine & Zervos, 1998; Rajan & Zingales, 2003; Yang, 2011). This therefore implies that financial inclusivity is more realizable under better political dispensation that upholds the ideals of good governance. The competitive nature of democratic process can have a trickling down effect on other key subsector of national level of which financial sector is no exception (*see* Haber et al. (2008)). It therefore stands to reason that political repression that limit competition is more likely to repress the financial system. As argued by Haber et al. (2008), the expectation that democracy limit the state power to repress the financial sector, the latter is expected to efficiently allocate resources, as rent-seeking and opportunistic behaviour get discouraged. Bhattacharyya (2013) argued that there is a high likelihood that a market-based financial structure would emerge out of what he termed as democratic capital.

We argue in line with Roe and Siegel (2011) that the primary channel through which positive externality arising out of good governance could impact on economic growth must be through finance, hence the hypothesis below:

H₁: Good governance is positively associated with the promotion of financial inclusion.

Credit and Corruption: Using 107 developing countries, Altunbaş and Thornton (2012) established that financial deepening (thus, bank credit to the private sector) reduces corruption, as the financial intermediaries are in a position to monitor borrowers in a way that compels the latter to reduce discretion

thereby ensuring efficient allocation of resources. What has not been given prominence in the literature is the hypothesis of whether corruption do influence the financial development process of a given economy.

Empirical study at both country-level and bank-level estimation revealed that banks' lending reduces with corruption (Weill, 2011), and in addition, corruption was found to be negatively associated with private credit (Detragiache, Gupta, & Tressel, 2005). We then test the hypothesis below in view of our new dataset relating to Ghana:

H_{1a}: Improvement in the fight against corruption is positively associated with financial inclusion.

Economic Freedom and Financial Inclusion: Acemoglu, Johnson, and Robinson (2005) opined that the kind of economic institutions prevailing in a particular country do affect the distribution of resources which undoubtedly includes finance. Examining the various 'models' for tackling financial exclusion in Europe, Carbo et al. (2007) highlighted the institutional structure, political styles as well as the financial eco-system existing in those countries playing a critical role in ensuring inclusiveness. Economic institutions such as the structure of property rights as well as the presence and perfect functioning of markets mechanism (Acemoglu et al., 2005) that seek to guarantee economic freedom then becomes very pivotal in shaping the resultant economic outcome like financial inclusion. It is within such context that Beck and Levine (2008) highlighted that the law and finance theory's emphasis on private contractual arrangements, protection and enforcement of legal and property rights, especially among investors, as means of getting economic agents (individual savers and intermediaries) incentivized to finance firms. When debt and equity are viewed as legal claim on the firm's cash flow (Modigliani and Miller, 1958) then it may not pose difficulties in understanding the role of economic freedom in fostering inclusion. In particular, Jensen and Meckling (1976) emphasized the role of statutory laws and the extent to which courts are able to enforce laws, acting together in resolving agency problem that arise out of contracts.

We on the basis of the above put forth hypothesis below which we empirically tested:

H_{1b}: Prevalence of favourable economic freedom environment is positively associated with financial inclusion.

Financial inclusion, Credit delivery and Technology: There is also evidence supporting the hypothesis that financial liberalization reallocates talent from the innovative sector to the financial system, thus retarding technological deepening. Information and communication technology (ICT) is seen as bridging the financial infrastructural gap for service providers to robe in those previously excluded from financial substructure (Diniz, Birochi, & Pozzebon, 2012). This way, ICT is seen as enhancing access to credit and deposit facilities which essentially allows financial credit allocation and transfer thereby boosting financial inclusion (Kpodar & Andrianaivo, 2011). Kpodar and Andrianaivo (2011) presented a stylized fact about the high exclusion level in many part of Africa, especially from the formal financial system dominated by banks which according to Rasmussen (2010) mobile technology appears bridging the gap in such African countries as Kenya (*e.g. Safaricom's M-PESA see also* (Donovan, 2012; Jack & Suri, 2011; Kpodar & Andrianaivo, 2011)) and South Africa (*e.g. MTN mobile money*⁶).

The hypothesis that financial deepening tends to retard technological deepening as the latter reallocates talents away from innovation has been advanced (Ang, 2011). But in our study, we tested the reverse to determine whether technological deepening in itself further deepens the financial process and ultimately ensures inclusiveness.

⁶ Donovan (2012) intimated mobile money facility is considered an effective means of ensuring financial access to millions of people globally.

Thus we put forth the hypothesis below:

H₂: *Technological deepening (ICT advancement) is positively associated with financial inclusion.*

Macroeconomic Indicators and Financial Inclusion

Many scholarly works have established linkage between financial deepening and economic growth and development (Arestis & Demetriades, 1997; Arestis et al., 2001; Beck & Cull, 2014; Beck et al., 2013; Jung, 1986; Levine, 1997, 2005). The World Bank/GCAP (2010)⁷ report on financial inclusion suggests that growth and stability at the macroeconomic level have critical impact on credit services. In particular, Kendall, Mylenko, and Ponce (2010), also indicated that GDP per capita was positively associated with financial inclusion (loan penetration), hence we test the hypothesis below:

H₃: *Economic growth is positively associated financial inclusion*

DATA

Sources and Sample

Secondary data have been collected from several domain sources. Four major international/multinational databases namely:

- (i) Index of Economic Freedom database (The Heritage Foundation/Wall Street)⁸
- (ii) Corruption Perception Index Database (The Transparency International)⁹
- (iii) Economic and Financial Growth/Development dataset [(World Bank Development Indicators-WDI- and /International Monetary Fund's (IMF) International Financial Statistics (IFS)] and;
- (iv) The global governance index dataset obtained from the Worldwide Governance Indicators (WGI) database¹⁰.

The mobile subscriber and internet users are two sets of variables whose dataset are often regarded as part of the World Bank's WDI. However, the ultimate source of those two variables was the International Telecommunication Union (ICT statistics homepage).

Data collected covered the periods 1996–2013. Although some data sources cover a larger period, few such as the corruption perception index, the governance and the economic freedom indices on Ghana do not however extend back beyond 1996, hence the data collection cut-off period.

Model Specification

FI=f(MEI, IEF, WGI, ICT, CI).....(1)

Variables

Dependent Variable (DV): Where **FI**; denotes financial inclusion which is the dependent variable. Following Beck, Levine, and Loayza (2000) and Levine, Loayza, and Beck (2000) we proxied financial development (also a measure of financial inclusion) by the share of domestic credit provided by financial sector (as a percentage of GDP).

Regressors: MEI denotes national income-related or macroeconomic indicators (*using as proxies; per capita GDP growth rate, Monetary growth rate- money and quasi money annual (%) growth; gross savings rate and private remittances flow*), IEF; Index Economic Freedom variables (*government*

⁷ CGAP (Consultative Group to Assist the Poor). 2009. Financial Access 2009: Measuring Access to Financial Services around the World. Washington, DC: CGAP.

CGAP (Consultative Group to Assist the Poor), 2010. Financial Access 2010: The State of Financial Inclusion through the Crisis. Washington, DC: CGAP.

⁸ <http://www.heritage.org/index/explore>; also Miller, T. (2015). *Index of economic freedom*: Wall Street Journal.

⁹ <http://www.transparency.org/research/cpi/>

¹⁰ Kaufmann (Brookings Institution), Kraay (World Bank Development Research Group) and Mastruzzi World Bank Institute) (2010) (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130)

spending freedom, investment freedom, business freedom, monetary freedom and trade freedom), WGI (worldwide governance index) captures governance variables (political stability, rule of law, regulatory quality and; voice & accountability); ICT: information technology variables (mobile phone and internet usage per population), and finally, the CI: represents Corruption Index (we used Corruption Perception Index-CPI by Transparency International which was accessed from its official homepage).

Specific econometric estimated model

$$C2PS_{FIS,t} = \alpha + \beta_0CPI_{TI,t} + \beta_1GI_{Polistab,t} + \beta_2GI_{RegQuality,t} + \beta_3GI_{RoLaw,t} + \beta_4GI_{Voice \& Account,t} + \beta_5MONI_{growth,t} + \beta_6GDP_{pcGrwth Rate,t} + \beta_7GrossSavings + \beta_8Remittance_{PC,t} + \beta_9Gov'TSpendFreedom_{,t} + \beta_{10}BUZ_{freedom,t} + \beta_{12}MONI_{taryfr,t} + \beta_{13}Trade_{freedom,t} + \beta_{14}Investment_{Freedom,t} + \beta_{15}LOG_{mobileSub,t} + \beta_{16}Internet_{Usage,t} + u_t \dots \dots \dots (2)$$

Table 1 reports descriptive statistics for the sample data. The mean value of the domestic credit provided by financial sector (% of GDP) - dependent variable- was approx. 29% of GDP, with the minimum value of 18.3% of GDP. Detailed diagnostic check using *ladder-of-power histogram and ladder-of-power quantile normal plots* on the dependent variable was carried out (see figure 1A, at the appendix)

The mean score of CPI of 3.68 with minimum mean value of 3.3 (on the maximum scale of 10) places Ghana above most of the countries on the entire continent of Africa as far as fight against corruption as captured by the CPI is concerned. Recent data on African continent revealed that Ghana is placed 1st in West African and 3rd in the entire continent, trailing only marginally behind Botswana and Namibia, according to 2014 Transparency International report¹¹ with reference to corruption perception. The mean value of gross domestic savings rate of 9.44 per cent of GDP generally underscore the low income and savings rate within most LICs. The average score of 53.14 on the governance index regarding voice and accountability significantly explains the current democratic dispensation that had brought with it media proliferation which are all playing up well in shaping the financial landscape of Ghana. As expected, the low internet penetration on most part of Ghana with the mean value of 3.82, which implies that approximately 4 out of 100 people in Ghana have access to internet facility, explains partly why internet was not found to positively associated with financial inclusion in Ghana. Apart from businesses, internet usage at private residence is generally perceived as luxury other than a necessity.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Label
DV: Domestic Credit by FIS	28.99051	5.3639	18.3644	39.2976	Domestic credit provided by financial sector (% of GDP)
TI: CPI	3.680598	.4120	3.3	4.6	TI-Corruption Perception Index(CPI)
GI: Pol. stability	42.11384	6.8951	31.25	52.8846	GI: Political Stability and Absence of Violence/Terrorism
GI: Regulatory Qual.	47.37258	7.5238	35.2941	55.9809	GI: Regulatory Quality
GI: Voice & Account.	53.1387	8.7487	37.9808	62.5592	GI: Voice and Accountability
Monetary Growth Rate	33.15626	11.4312	17.4893	56.5342	Money and quasi money growth (annual %)
Internet Usage	3.827137	4.7118	.0057	14.11	ICT: Internet users (per 100 people)
GDP per capita growth rate	3.656137	2.7164	1.2722	12.4242	GDP per capita growth (annual %)
LOG of mobile Sub.	6.547345	.71234	5.1141	7.4476	Log of mobile subscription
Investment Freedom	53.61111	7.0305	50	70	IEF: investment freedom

¹¹ <http://www.transparency.org/cpi2014/results>

Trade freedom	60.79444	8.3752	31.2	67.8	IEF: trade freedom
Remittance per capita	3.696413	1.6783	1.4799	6.1079	Per capita Personal remittances, received (US\$)
Gross Savings	9.4465	7.2513	1.997	27.9957	Gross domestic savings (% of GDP)
Rule of Law	50.133	6.0161	35.885	56.872	GI: Rule of Law
Business freedom	58.58889	6.1933	50	70	IEF: business freedom
Monetary Freedom	63.13889	6.0071	51.2	71	IEF: monetary freedom
Gov't Spending Freedom	69.35	11.3684	46.1	84.1	IEF: government spending freedom

METHOD

Quantile regression is principally employed in estimating the above equation, though OLS results are also produced for robustness comparison (*see first column on table 1*). Developed originally by Koenker and Bassett (1978), QR improves upon OLS estimates by observing the impact of an incremental change in IVs on the DV at a specific quantile of the latter, rather than the conditional mean as in the case of OLS. By way of distinction, we noticed that the OLS deals with relationship between y_i and x_i such that the conditional mean function is specified as: $E(y_i/x_i) = x_i'\beta$ (a); and the resultant estimator ($\hat{\beta}$), which must satisfy the basic assumption underlying the classical regression model is given below:

$$\hat{\beta} = \min_{\beta \in R} \sum_{i=1}^n (E(y_i/x_i) - x_i'\beta)^2 \dots\dots (b)$$

The quantile regression (QR) approach which is an extremum estimator like the OLS (Cameron & Trivedi, 2005), measures the relationship between y_i and x_i at different point on the conditional distribution of y_i , and gives a complete picture regarding the distribution of the dependent variable (y_i); thus specified as: $Q_{\tau\rho}(y_i/x_i) = x_i'\beta_{\tau}$... (c); with $\hat{\beta}_{\tau}$ being the estimator, also given as:

$$\hat{\beta}_{\tau} = \min_{\beta \in R} \sum_{i=1}^n (\rho_{\tau}(Y_i) - X\beta) \dots\dots (d)$$

Noticed that τ falls within an interval of 0-1 and, according to Wellalage and Locke (2014), the term (ρ_{τ}) which serves as check function transiting from OLS to the quantile techniques follows:

$$\rho_{\tau} = \begin{cases} \tau * x & \text{if } x \geq 0 \\ (\tau - 1) * x & \text{if } x < 0 \end{cases}$$

The $\hat{\beta}_{\tau}$ is the least absolute-deviation estimator that minimizes the above equation (d), whereas $\hat{\beta}$ is the estimator under OLS that minimizes the conditional mean function (b), this sum of the error squared (Cameron & Trivedi, 2005).

The usage of least-absolute-value models (LAV) with a varied percentiles ranges from 12th percentile (0.12 quantile) to 98th percentile (0.98 quantile) ensures more robust results as the behaviour of the conditional quantile regression results relating to the inclusion indicator across different spectrum of the quantiles are observed. The option for using quantile regression (QR) as a further robustness check for the OLS results stems from the fact that quantile also assumes a conditional distribution of a linear function of the regressors (Cameron & Trivedi, 2005).

Also the model chosen avoids making assumptions about the parametric distribution of the errors (semi-parametric), as quantile regression tends to be suitable in situations where heteroskedasticity is inherent in the data, and tends to be insensitive to outliers (Cameron & Trivedi, 2005; Wellalage & Locke, 2014). Besides, QR is appealing in that it allows one to study the marginal impact of IV (x_i) on both location and scale parameters of the model, in which case we derive much deeper understanding of the data as compared with OLS.

Robustness Check: This notwithstanding, the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity does not reject the null-hypothesis that the error term is Homoskedastic.

The presence of multicollinearity among some of the variables as the VIF diagnostic test revealed necessitated the exclusion of certain indicators in both the world governance index (WGI) and Index of Economic Freedom (IEF).

Besides, we carried out further check on the dependent variable in order to check distributional robustness using *ladder-of-power histogram* and *ladder-of-power quantile normal* plots, following

Tukey (1977)¹² (see figure 1A, at the appendix), assuring us of the normality (Gould, 1992) of the distribution, as no significant divergence of the plots from the expected (solid line).

Treatment of missing data

The trend of the governance data allowed for the three years that data was missing to be filled out. A simple average of the years preceding and following the missing year was used following this formulation ($t_m = (y_{t-1} + y_{t+1}) / 2$). In an event that the variable missing had no earlier data, the succeeding year's data was used (as in the specific case of corruption perception index of Transparency International).

ANALYSIS AND DISCUSSION OF RESULTS

i. Financial Inclusion and Good Governance

The understanding that financial inclusion does not occur in a vacuum is key to the full appreciation of the impact of general governance and regulatory structures within which such inclusion must take place. For instance indicators of good governance such as political stability, regulatory quality and voice and accountability were found to be positively related with financial inclusion proxied by credit supplied by FIs to the private sector, and were all significant across spectrum of quantiles (ranging from 0.12th - 0.98th of the financial inclusion indicator). At the upper quantile ranges (0.61th and 0.98th quantile) of the dependent variable, each year's percentile improvement in the political stability index in the country has increasing impact of approximately 0.581 of the credit to private sector by FIs, improving further at lower and mid quantile spectra (refer to table 2).

As the *regulatory quality variable* captures perceptions of the ability of the governing authorities to formulate and implement policies (and regulations) aimed at promoting private sector development, the significance of the findings in ensuring financial inclusion is crucially highlighted. Credit provision to the private sector is enhanced by the quality of the regulatory framework pertaining to a particular country. As an instance, the implementation of financial sector structural adjustment programs (FINSAP I, II&III), which witnessed overhaul of the existing banking laws (Sowa, 2003) and subsequent enactment of banking law (2002), may all be seen as gamut of impetus motivating the financial intermediaries' willingness to increase of domestic credit to private and public sectors.

Voice and Accountability capturing the perceptions of the extent to which the people in the country are able to exercise the freedom of expression, association as well as their participation in selecting their government is found to be statistically significant in promulgating financial inclusion. We found positive relationship between *voice & accountability* on one hand and financial inclusion on the other. The results revealed that all else being the same, a point increase in the voice and accountability indicator translates into approx.0.75 increase in domestic credit supplied to the privates sector by the FIs.

The indicator also captures the freedom of press and media in the country. The proliferation of the frequency modulation (FM) stations owned by private individuals in the country is undoubtedly giving platform for the citizenry to add their voices to the governance programs. Such openness brings with it freshness into the credit allocation process as credit officers often take advantage of the media houses to educate and inform people of their existing financial products. The follow-up feedback through phone-in programs all play up well to shaping the financial landscape and the advancement of credit to the private sector. Empirical prior studies have established that countries with wider platform for information sharing and dissemination tend to experience significant level of financial inclusion as higher bank credits result (Djankov, McLiesh, & Shleifer, 2007; Jappelli & Pagano, 2002).

Rule of Law: Credit advancement is mostly enhanced by the ability to enforce contract, protection of property rights and generally, in situations where the legal and law enforcement system appear efficient. These as captured in the 'Rule of Law' indicator, measuring perceptions of the extent to which private agents have confidence in the quality of contract enforcement, property rights, the police, as well as the judicial system. The indicator also captured the extent to which individuals abide by the rules of society,

¹² and also in *StataCorp, L. STATA GRAPHICS REFERENCE MANUAL*.

and our findings indicated that the variable has positive significant influence in ensuring inclusive financial system (figure 1A). The presence of information asymmetry which often prevails in an opaque economic environment have the tendency to create sizeable non-performing assets for the financial intermediaries due to moral hazards and adverse selection problems. This underscores the crucial role contract enforcement plays in such a regulatory environment where rule of law prevails.

This we found consistent with prior empirical studies affirming firm's ability to raise external finance in economies where there exist protection of properties right in which courts are able to pursue legal enforcement (Asli & Vojislav, 1998; Beck, Demirgüç-Kunt, & Maksimovic, 2005; Demirgüç-Kunt, Levine, & Detragiache, 2008; Demirgüç-Kunt & Levine, 2005; Levine, 1999). To Djankov et al. (2007) credit to private sector firms is directly proportional to legal protection that creditors enjoy in a given country. To the extent that rule of law guarantees such contract enforcement and protection of property rights is significant in ensuring more inclusive financial system. Private firms' ability to access credit is enhanced by such an environment where conflict resolution is possible under the courts and legal systems (Demirgüç-Kunt et al., 2008; Djankov et al., 2007; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997).

The variable '*Political Stability and Absence of Violence/Terrorism*' of the worldwide governance index (WGI), essentially captured perceptions of the likelihood that a government will be destabilized or overthrown by unconstitutional means. It also captured the perception there is no threat of a politically-motivated violence and terrorism against the government of the day. The result indicates that politically stable environment has positive significance in promoting inclusive financial system. The threat of political instability in itself fuels financial disintermediation as savers would operate outside the financial system, while financial institutions would be sceptical in widening their scope of operations. It stands to reason therefore that a politically stabilized environment motives the smooth operations of financial intermediaries, while productive private sector enjoys more leverage.

Indeed the presence of civil unrest and general political turmoil mostly tend to destroy both capital and other infrastructure needed to engender inclusion (Demirgüç-Kunt et al., 2008). The general business environment is often poisoned with both crime and corruption in a way that pose high risk for financial intermediaries to advance credits. These as Detragiache et al. (2005) indicated are inhibitory factors to financial development and hence inclusion mostly in LICs.

Economic Freedom and Financial Inclusion

Repressive economic and political environment may not only affect the way firms operate but more significantly tend to determine the ease with which they able to assess credit from the FIs. Characteristic of such business environment with less economic freedom is the issue of risk due to information asymmetry. In response, FIs are less likely motivated to advance credit to the private agents operating under such opaque economic ambience. The expectation therefore is that improvement in the variables constituting the index of economic freedom would be a motivating factor in inducing more financial inclusion as FIs willingly advance credits to the private sector.

The index of economic freedom essentially measured general economic environment using ten (10) quantitative and qualitative factors summarized into four main thematic areas, namely: rule of law (property rights, freedom from corruption), regulatory efficiency (business freedom, labour freedom, monetary freedom) open market (trade freedom, investment freedom, financial freedom) and limited government (covering government spending and fiscal freedom variables). In order to reduce the extent of the multiple collinearity problem, we excluded rule of law category outright as that has been indirectly captured by the WGI. In the three (3) remaining thematic categories, we included economic freedom factors that did not posed collinearity constraint in our model. Consequently, we excluded labour freedom, fiscal freedom and financial freedom.

Limited Government and Financial Inclusion

Government Spending: Excessive fiscal expenditure gives rise to unsustainable budget deficit whose financing has often resulted in private sector agent being crowded out (Allen et al., 2012) on the financial market. Fiscal discipline which translated into government's effectiveness therefore is

expected to improve the general economic freedom enjoyed by the private sector. The ‘government spending freedom’ indicator, implies the latent freedom that the government guarantees the private sector when the former controls its spending and the resultant deficit level.

We discovered that there is a positive and significant relationship between the government spending freedom and financial inclusion. Though both OLS and the Median quantile regressions failed to yield a statistically significant results, the upper and lower quantiles did. Intuitively, a much higher fiscal budget deficit which crowds out private sector investment in itself constitutes financial exclusion when government outcompetes the private sector for the limited productive financial resources. For instance, at the 29th percentile of the DV, we observed that a unit improvement in the government spending freedom guaranteed to the private sector, results in approx. 0.21 point increment in credit made available by the domestic financial intermediaries to the private sector. To this end, we could stretch the argument further to imply that the positive coefficient measures the extent of crowding in when government spending freedom is guaranteed, which according to Allen et al. (2012), frees the financial system to allocate resources in an efficient manner, and in particular to the private sector.

Regulatory Efficiency and Financial Inclusion

Business Freedom: Business freedom captures ease with which private entities are able to conduct their business activities with limited or no governmental interference and over burden regulations. At the heart of it are the issues of time, cost and procedures it takes to get a new business registered. The ease with which business operating licenses and certificates are obtained with less or no cumbersome bureaucratic processes is embedded in business freedom indicator.

We discovered that the degree of business freedom as enjoyed by the private enterprises is positively related to the credit advanced to the private sector by the FIs for both OLS and quantile models. We notice however that with the exception of the OLS results, the outcome was statistically significant at each of the quantiles used though with varied significance levels. In tandem with the trend of our results thus far, we also found that the lower and upper quantile regression results were more robust compared to the central tendency as captured by the median regression. In essence, FIs are encouraged by such improved business environment, with the conviction that any credit advanced will be put into its best alternative use.

Monetary Freedom: Price stability constitutes one key factor that affect the operations of the firms, especially in low income countries (LICs) where inflation tends to be a daily constraint. The monetary freedom variable captures the extent to which the combined effect of price control and instability within a given economy pose a constraint for the firm. We discovered that the marginal effect of monetary freedom prevailing within the country is significantly positive on financial inclusion. Both the OLS and quantile regression results were found to be statistically significant at varied levels of significance. For instance the OLS results suggest that a unit improvement in the monetary freedom has a positive marginal impact of 0.7144 on the credits advanced to the private sector by the FIs (*see table 2*). By extension, we found that financial inclusion is enhanced by a liberalized financial and monetary sector where repressive policies are abolished. The impact of financial sector adjustment program (FINSAP) undertaken in Ghana resulted in a monetary system where interest rates and other prices were allowed to respond to the underlying market dynamism without any form of state intervention (Aryeetey et al., 1996; Brownbridge & Gockel, 1996; Gockel & Akoena, 2002; Sowa, 2003).

Open Markets and Financial Inclusion

Investment Freedom: Flow of investment capital in economically freer country is expected to be unimpeded as resources are allowed to freely move across sectors, activities and national borders with no hindrances. This is what the investment freedom of the Index of Economic Freedom (IEF) captures in essence. Our findings point to the effect that other things remaining unchanged, more investment freedom pays off translating into more credit advanced to the private sector by the FIs. Apart from the OLS and the Median quantile regression results, all the other quantiles used happened to be statistically significant (*see table 2*). However, we noticed a reduction in the quantile coefficients as we move to a higher quantile, suggesting a weaker marginal effect at higher level (quantile) of the dependent variable

(DV). Intuitively, this may be due to a much tighter monitoring and regulation from the FIs as more credit is advanced to the private sector, thereby limiting to some degree the investment freedom. The significance of this findings is that when investment restrictions such as access to foreign exchange, payments and transfer system as well as capital transactions rigidities, foreign investment constraints, among other things are removed, both potential and existing investors get motivated to access domestic credit for investment, while at the same time FIs get encouraged to advance more credit to the former. This in the end results in much deeper financial system with higher degree of financial inclusivity.

Trade Freedom: The absence of trade restrictions such as tariffs and non-tariff barriers (NTBs) essentially define the trade freedom indicator. Trade freedom implies that goods and services could be exchanged across national borders without restrictions. The results indicate that the improvement in the trade freedom has positive marginal effect on financial inclusion translating into more credit to the private sector by FIs. This was found to be statistically significant at the various quantiles used in addition to the OLS results. The institutionalization of Ghana Free-zone enclave and Ghana Investment Promotion Council charged with the responsibility to promote trade and investment yield positive externality in the form of financial inclusion as they pursue their core mandate. Logically therefore, we expect FIs readiness to offer credit to firms to be boosted in an environment where trade is freely facilitated than under trade regimes with restricted freedom.

Our findings on economic freedom indicators generally seems to corroborate that of prior research (Modigliani and Miller, 1958; Jensen and Meckling, 1976; Acemoglu, Johnson, and Robinson, 2005 Beck and Levine, 2008) in suggesting that economic institutions do play key role in both influencing economic incentive structure as well as ensuring efficient resource allocation which undoubtedly includes credits.

ii. Financial Inclusion and ICT Advancement

The impact of information and communication technologies (ICT) on the financial sector operation is less debatable. Physical amenities and infrastructure such as phone penetration (per head), provision of credit information and protection of creditor's right were found to be positively related to financial inclusion (WB/GCAP, 2010 *also in* Kendall et al. (2010)). For instance, given Ghana's fast growing mobile phone penetration rate of more than one hundred percent (100.4%), mobile banking is regarded as one potential mechanism to fostering financial inclusion in Ghana (*Cignifi /WSBI nd*)¹³. Focusing on mobile cellular subscriptions (per 100 people) and internet users (per 100 people) which are two most widely applied technology in the banking sector, we studied the effect of ICT in fostering financial inclusion.

Using Log of Mobile Subscription, we found a positive but varied significance relationship between log of mobile subscription and financial inclusion. The mixed significance is seen from the fact that while both the OLS and the median Quantile regression outcome did not yield any significant outcome, the lower and upper quantile regression results were found to be significant. For instance, we discovered that at the point 0.12th & 0.29th quantile of the dependent variable (credit to private sectors), a percentage (100%) increase in the mobile usage per 100 people results in 5.99 point increase in domestic credit advanced to the private sector by FIs. The widespread adoption and usage of mobile network services have had tremendous impact on many sectors key among them is the financial subsector. The unique platform mobile technology offers have ensured that even the unbanked who were previously excluded financially have the opportunity to perform financial transaction via mobile phones. Utility bills, internal and external fund transfers and other payments are all carried out using the technology (Donovan, 2012; Jack & Suri, 2011; Kpodar & Andrianaivo, 2011). A classic case of reference are the M-PESA in Kenya (Kpodar and Andrianaivo, 2011 Donovan, 2012; Rasmussen, 2010) and Mobile money/cash in Ghana by the three leading mobile telecommunication service providers. This is consistent with study by Kpodar and Andrianaivo (2011) who found a positive correlation between

¹³Cignifi / WSBI (nd) Mobile phone Penetration in Ghana "Mobile Phone Data as the Key to Promoting Financial Inclusion" retrieved from www.savings-anks.com/SiteCollectionDocuments/Cignifi.pdf (retrieved on 5th July, 2015)

financial inclusion and mobile penetration and further indicated that mobile phone penetration enhances credit allocation process which eventually leads to more inclusive financial system. ICT and mobile network services ensures better flow of information thereby reducing both information asymmetry and transaction costs of running physical bank branches by the FIs (Donovan, 2012; Kpodar & Andrianaivo, 2011). Information flow helps reduce price volatility, in which Jensen (2007) hinted of the existence of positive economic effects of mobile telephony. ICT (*e.g. mobile penetration*) bridges the infrastructural gap in delivering financial services as it offers branchless banking to the marginalised, hence inclusion (Diniz et al., 2012). It can be herein argued further that information accessible made possible by ICT tends to dissipates any shadows in the credit delivery process, making it easy for creditworthiness of potential borrowers to be ascertained.

In particular, technology helps reduce information asymmetry between lenders and creditors (Demirgüç-Kunt et al., 2008) as it ensures timely availability of information. Prior research have empirically established that countries with wider platform for information sharing tend to experience significant level of financial inclusion as higher bank credits result (Djankov et al., 2007; Jappelli & Pagano, 2002), implying lesser financial accessibility constraints among firms (Love & Mylenko, 2003) in such systems. In LICs in particular, better information accessibility and transparent contract enforcement have been found to deepen the financial system (Demirgüç-Kunt et al., 2008; Detragiache et al., 2005; Djankov et al., 2007).

Internet usage here in the study refers to the number of people with access to the Worldwide Web (network). The spate of widespread usage of mobile phone is nothing comparable to internet. In developing countries which Ghana forms part, internet is used only by organizations. The few household with internet facilities are considered the affluent in society. Besides, in spite of the attempt by most FIs in Ghana to introduce internet banking facility, few individuals and entities find it attractive partly due to internet fraud¹⁴ associated with it. Given this background, it therefore stands to reason that our results indicated a negative relationship between internet usage and financial inclusion. A cursory look at the figure 2A (*appendix*) gives graphical depiction of the relationship between mobile usage and domestic credit to private sector by FIs (DV) on one hand and internet usage and domestic credit to private sector (DV) on the other. Whiles the mobile graph gives a positive slope, the internet graph negative (beginning), zero (middle) and backward bending (negative) at the tail end. This appears to be in consonant with previous studies which acknowledged that even though there is general lack of financial infrastructure in LICs compared with developed economies, the mobile cellular penetration rate runs shoulder to shoulder with high income countries, providing a unique solution to financial exclusion issues among the unbanked in the developing countries (*see for instance* Kpodar & Andrianaivo, 2011). GSM Association tracker has revealed that Africa tops the impact of ICT in fostering inclusion globally via the use of mobile banking and money (Klein & Mayer, 2011).

Table 2: Regression Results for the Main Indicators of Inclusion

VARIABLE	(1) OLS	(2) QR 12	(3) QR 29	(4) QR 43	(5) QR 50	(6) 61 QR	(7) QR 73	(8) QR 98
TI-CPI	8.758* (1.9634)	9.01 [†] (.2200)	9.01** (.6790)	8.93* (1.0184)	8.93* (1.5968)	7.307** (.4324)	7.307** (.2994)	7.307 [†] (.0146)
¹⁵ GI-Political Stability	0.6905* (.1212)	0.6641 [†] (.0084)	0.6641** (.0258)	0.6017* (.0699)	0.6017* (.1055)	0.5813** (.0323)	0.5813** (.0224)	0.5813 [†] (.0011)
GI-Regulatory	0.1333 (.0808)	0.1439 [†] (.0029)	0.1439** (.0100)	0.1593 (.0377)	0.1593 (.0542)	0.1853** (.0193)	0.1853** (.0134)	0.1853 [†] (.0007)
GI-Voice and Accountability	0.7494 (.2685)	0.7403 [†] (.0065)	0.7403 [†] (.0200)	0.6492 (.1553)	0.6492 (.2233)	0.4951** (.0760)	0.4951* (.0526)	0.4951 [†] (.0026)
Monetary growth (M2)	0.1826 (.0791)	0.1866 [†] (.0048)	0.1866** (.0148)	0.1667 (.0459)	0.1667 (.0673)	0.1070* (.0224)	0.107* (.0155)	0.107 [†] (.0008)
Internet usage	-1.926	-2.335 [†]	-2.335**	-2.08*	-2.08	-1.4078	-1.408**	-1.408 [†]

¹⁴ (*known in Ghana as computer 'Sakawa'*)

¹⁵ 'GI' means governance Indicator

GDP per capita growth rate	(.6364) 1.846* (.3789)	(.0368) 2.042 [†] (.0319)	(.1135) 2.042** (.0985)	(.3160) 1.936* (.2127)	(.5223) 1.936* (.3477)	(.1794) 1.5311 [†] (.0961)	(.1242) 1.531** (.0665)	(.0061) 1.531 [†] (.0033)
LOG Mobile Subscription	6.190 (2.6944)	5.999 [†] (.1672)	5.999** (.5161)	5.426 (1.5752)	5.426 (2.2811)	3.7070* (.7553)	3.707* (.5229)	3.707 [†] (.0255)
Investment freedom	0.1769 (.1433)	0.3134** (.0099)	0.3134** (.0307)	0.2494* (.0972)	0.2494 (.0096)	0.1694 (.0066)	.1694** (.0066)	0.1694 [†] (.0003)
Trades freedom	.5748** (.0270)	0.5833 [†] (.0009)	0.5833 [†] (.0026)	0.5723 [†] (.0086)	0.5723 [†] (.0127)	0.5549 (.0077)	0.5549 [†] (.0053)	0.5549 [†] (.0003)
Remittance per capita	-10.66* (1.4712)	-10.36 [†] (.0215)	-10.36 [†] (.0664)	-9.784** (.9262)	-9.784* (1.340)	-9.224 (.4437)	-9.224** (.3072)	-9.224 [†] (.0150)
Gross National Savings	0.2338 (.1769)	0.285 [†] (.0075)	0.285** (.0232)	0.2162 (.1011)	0.2162 (.1509)	0.0543 (.0545)	0.0543 (.0377)	0.0543** (.0018)
Business Freedom	0.2176 (.0789)	0.2243 [†] (.0052)	0.2243** (0161)	0.231** (.0152)	0.231* (.0268)	0.2092 [†] (.0065)	0.2092 [†] (.0045)	0.2092 [†] (.0002)
Monetary Freedom	0.7144* (.0881)	0.6999 [†] (.0067)	0.6999 [†] (.0206)	0.7125** (.0411)	0.7125** (.0632)	0.7694 (.0179)	0.7694 [†] (.0124)	0.7694 [†] (.0006)
Gov't Spending Freedom	0.2075 (.1310)	0.2053** (.0106)	0.2053* (.0325)	0.1871 (.0716)	0.1871 (.1055)	0.1145 (.0360)	0.1145* (.0249)	0.1145 [†] (.0012)
_cons	-203.9* (42.620)	-210.7 [†] (2.5206)	-210.7** (7.779)	-197* (26.478)	-197* (39.118)	-163.3 (12.3345)	-163.3** (8.539)	-163.3 [†] (.4171)

No. of ob. 18
(years Sampled)
Pseudo R² = 0.9978 0.9812 0.9731 0.9653 0.9650 0.9694 0.9752 0.9847
Test of Heteroskedasticity Breusch-Pagan / Cook-Weisberg Test (Heteroscedasticity) $\chi^2(15) = 14.80$ and Prob > $\chi^2 = 0.4660$

*Dependent Variable (DV) is Credit supplied by Domestic Financial Institutions (proxy for Financial Inclusion). Standard errors appear below coefficients in parentheses. An asterisk (**) indicates statistical significance at the 10 percent level; (*), 5 percent level; and (†), indicating 1% level of statistical significance. The reported standard errors are Heteroscedastic-consistent following Cameron and Trivedi (2005); And using Breusch-Pagan/ Cook-Weisberg test for heteroskedasticity, we do not reject the null hypothesis of homoscedastic error term ($\chi^2(15) = 14.80$, and Prob > $\chi^2 = 0.4660$). Models (2-8) represent quantile regression (QR) results of various quantiles.*

iii. Financial Inclusion and Country-level Macroeconomic indicators

All the macroeconomic growth indicators with exception of private remittances were found to be positively associated with financial inclusion as captured by the credit to the private agents by the financial institutions. Their levels of significance differed sharply as we journey through different quantile. For instance, whereas GDP per capita growth rate was found significant using the OLS and at the various quantile (0.12-0.98), others like gross savings rate was found to be significant only at three quantile selections (0.12, 0.29 & 0.98). Both OLS results and median quantile regression results for money growth rate (M2) were not found to be statistically significant, though the lower and upper quantiles yielded significant outcome (see table 2, *in particular 0.12, 0.29 for the lower bound and 0.61-0.99 for the upper bound*). This underscores the methodological justification for the use of quantile regression which does not limit the outcome to the mean of the dependent variable but rather captures the effects at each percentile level of the dependent variable.

Per capita Personal remittances: The observed inverse significant relationship between private remittance per capita and credit supplied by financial institutions to the private sector (inclusion indicator) may have intuitive explanation with perhaps a limited theoretical basis. Logically private remittances most likely would induce private consumption (household inclusion) other than being channelled through to the FIs to be given to the private sector firms. The composition of personal remittances is 'all current transfers either in cash or in kind which is made or received by resident households to or from non-resident households', may suggests that it often tend to bypass the monetary

intermediation process, as it moves from one household abroad to another within, which ultimately may tend to directly boost personal household consumption. In a structurally constrained economy like Ghana, FIs have no control of such liquidity. If such remittances could flow to the domestic private sector outside the financial intermediation process, it could be equally argued that higher level of such direct liquidity flow to the private sector has the tendency to reduce the demand for financial resources from the FIs. We logically expect a positive marginal effect if such inflows were challenged through the domestic financial intermediaries for onward lending to the private sector.

GDP per capita growth (annual %): Most studies focused more on how inclusive and a deepened financial sector could increase national output growth (Levine, 1997, 1999, 2002, 2005; Levine et al., 2000; Levine & Zervos, 1998). We in this study extended the argument in a reverse manner, exploring the impact of economic growth indicators in fostering financial inclusiveness. We discovered that on average (referring the OLS results, column 1 of table 2), a unit increase in the growth rate of real national income per head (per capita GDP at constant 2005 prices), would increase credit advanced to the private sector by the financial intermediaries by 1.846, which happened to be statistically significant. This findings is consistent with past studies that have established strong connection between economic growth and credits advanced to the private sector (Beck et al., 2003; Beck et al., 2000; Levine et al., 2000). For instance, the WB/GCAP (2010) report on financial inclusion suggests that growth and stability at the macroeconomic level have critical impact on credit services. Consistent with our study and prior researches (*see e.g.* Kendall et al. (2010)), the report also indicated that GDP per capita was positively associated with financial inclusion (loan penetration).

The implication is that growth rate in the national average income has significant impact in engendering financial inclusiveness as worth is created and channelled through the intermediaries for onward lending to the productive agents in society, as predicted by standard circular flow of income (Polak, 1957). More importantly, the results suggest that an improvement in the national productivity will translate into more liquidity that allows the financial intermediaries offer credit to the real private sector, thereby fostering inclusion in the financial system.

Gross savings (% of GDP): Gross savings which is determined as the difference between gross national income and total consumption adjusted for net transfers, is also found to be positively related to the financial inclusion as captured by the credit supplied by FIs to the real sector. The statistical significance is limited to the lower and upper quantiles of the dependent variable (*see table 2*), as both the OLS and the Median quantile regression outcomes were found not to be statistically significant. At quantile regressions levels 0.12^{th} and 0.29^{th} , the results suggest that a unit increase in the national savings (as a percentage of GDP) will result in 0.285 increase in the credit offered to domestic real sector by the FIs. As we move towards the upper quantile range, (0.98^{th}), we noticed that a unit marginal effect of savings on the financial inclusion reduces (0.0543). For consumption-dependent economy like Ghana, national savings may not be a significant determinant of credit supply. This is particularly so when for a given level of income, consumption rises faster than the former, the results of which constitutes a weak savings. The expectation is that for advanced economies where income and national productivity grows faster than consumption, the national savings is likely to be a positive significant determinant of credit advanced to the private sector by the financial intermediaries. Schemes and policies that promote savings were found to promote financial inclusion as suggested by prior research (Allen et al., 2012).

Money Growth (M2): Average annual growth rate in money and quasi money was found to be positively significantly related to the financial inclusion proxied by credit financial intermediaries advanced to the real sectors. Given that an increase in M2 constitutes expansionary monetary policy that guarantees liquidity easing, FIs are better placed to offer more credit to the real productive sectors than under a tight monetary policy regime. Following traditional paradigm of transmission mechanism through which monetary policy do affect the real sector, it could be noticed that an increase in the money growth tends to reduce cost of borrowing (interest rate) which eventually motivates gross private investments (Cecchetti, 1995; Fry, 1978; Mishkin, 1995). Monetary expansion was found to be statistically significant in positively influencing inclusion but mostly at the upper quantile range (0.61, 0.73, 0.84 & 0.98) and the lower range (0.12 & 0.29). For instance at the 0.29 quantile, a 100% increase

in the monetary growth rate (M2) will induce credit to the real productive sector by 18.66%, with the marginal effect reducing to 10.7% at the 0.98 quantile.

iv. Financial Inclusion and Corruption

Corruption perceptions index (CPI)¹⁶ which measures the perceived corruption levels mainly in the public sector is based on the informed views of analysts, entrepreneurs and experts in countries concerned. Higher index for a country is desirable suggesting reduced likelihood of corruption incidence at least among the public office holders. In a repressive and opaque business environment where corruption and rent-seeking tend to be pervasive, resources get misallocated. Such as system may restrain financial resources from flowing freely to their productive ends, thereby limiting financial inclusion. There is evidence showing that corruption increases in the volatility level in the financial market (Zhang, 2012).

We found in this study that improvement in the general perception on corruption level has a positive marginal impact in promoting financial inclusion. Specifically, we found significant results using both the OLS and the various quantiles employed in the study. We noticed in reference to the OLS results (column 1 on table 2) that a unit improvement in the corruption perception index in Ghana translated into approx. 8.8 point increase in the domestic credit made available by the financial institution. The implication is seen in the light that financial exclusion is entrenched in a corruption endemic society, especially when judged from the point of view of misallocation of resource including finance. By logical extension, a fight against corruption implies a fight against financial exclusion and marginalization. The higher coefficient in the lower quantiles suggests that the responsive rate of FIs to the corruption improvement was higher but tread cautiously at higher quantile range reflecting in reduced coefficient at that level. Our results appears consistent with Detragiache et al. (2005) whose empirical evidence indicated negative relationship between corruption private credit.

To the extent that corruption misallocate scarce financial resources away from their productive use is aggravated when that leads to bank losses which may arise as borrowers are adversely selected. Such have often resulted in distressed banks with huge non-performing assets (NPA) which undoubtedly limited their ability to grant credit to deserving clients (Brownbridge & Gockel, 1996). To this end therefore corruption limits financial inclusion, which our results indicate reduction of it or improvement in the perception index narrows financial exclusion in Ghana.

The detrimental effect of corruption on financial development in LICs (Detragiache et al., 2005) has been emphasized by prior research. Demirgüç-Kunt et al. (2008) argued that corruption imposed huge cost of doing business and often tends to compromise the system's ability to enforce contract as well as protect property rights. Hallward-Driemeier and Aterido (2007) report that SMEs in Africa tend to suffer the consequences of corruption both in terms of high cost and less financial accessibility, arguing further that the detrimental effect of corruption generally is less significant in Africa relative to other developing economies, though such a conclusion is highly debatable.

Summary, Policy Implication and Conclusion

Summary

Financial exclusion tends to inhibit the growth potential and opportunities of not only existing but also potential entrepreneurs as well as small enterprises resulting in their marginalization. A broadened financial access is said to be deepened when the outcome is an accelerated economic growth, in which case potential entrants realise their entrepreneurship goals as the existing firms become more productive (Mohan, 2006). The significance of governance, institutional and regulatory framework in stimulating inclusive financial system for the private agents is critically emphasized as the main theme and major outcome of our study.

¹⁶ CPI is index derived by Transparency International

We found that almost all the national/macro level indices do significantly positively affect the financial inclusion level with data relating to Ghana. This is especially so across various percentiles as used in the quantile regression. We discovered that certain institutional development such as democracy and good governance, advancement of information and communication technology, and the general improvement in the economic freedom environment may be good but are not an end in themselves. The graphical analysis depicting the trend of banks credit to the private sector (as percentage of GDP) for the periods 1960-2011 also corroborates the regression findings. This pictorial display shows upward trends in periods where political stability has been restored in Ghana under the rule of law. Much steeper upward slope appearing when there was consolidation beyond year 2000 when government changed for the first time in nearly two decades. We conclude therefore that it is only when the externalities of such processes do translate positively through to the financial system to further advance the financial inclusiveness that their full benefits were realised.

Policy implication

Several policy implications are supported by the study for donor agencies like the World Bank, the IMF and the IFS, as well as national-level government institutions entrusted with the responsibility to advance the financial inclusion agenda.

- i) For sustained financial inclusion to be realised, developing countries must pay attention not only to the economic indicators but also to political, technological, institutional factors, and amenities as they do interact significantly in creating a harmonized developmental path.
- ii) For donor agencies, the paper provides a cogent case for the urgent need to direct effort at strengthening capacity, socio-economic environment as well as the general governance process in a bid to pursue the financial inclusion agenda within the recipient countries.
- iii) The coefficients estimates from the model point to those areas where money invested are likely to have the greatest impact on expanding financial inclusiveness.

Conclusion

We conclude that any agenda of reducing the extent of financial exclusion within a particular developing countries in general and Sub-Saharan African countries in particular, may not achieve the intended outcome unless pursued within the wider context of economic, political, as well as technological environment prevalent in a given economy, given that they do all interact to impact on the level of inclusion. We therefore submit that much as certain institutional developments such as democracy and good governance may be good, they do not constitute an end in themselves. It is only when the positive externality such as their impact on the general wellbeing and in particular on the financial system were realised that one could appreciate the full dividend arising out of such process. This way, policy and donors pursuing the agenda of financial inclusion need to pay attention not only to the economic indicators but also to political as well as institutional factors existing in developing countries like Ghana, as they do interact pari-pasu in creating a harmonized developmental trajectory.

References

- Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of economic growth*, 1, 385-472.
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2012). The colonial origins of comparative development: an empirical investigation: reply. *The American Economic Review*, 102(6), 3077-3110.
- Acharya, M., Shrestha, B. P., & Seibel, H. D. (1990). Promotion of Linkages Between Banks and Self-Help Groups in Nepal. *Unpublished Paper, Asian and Pacific Regional Agricultural Credit Association (APRACA), Bangkok*
- Allen, F., Demirgüç-Kunt, A., Klapper, L. F., & Martinez Peria, M. S. (2012). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *World Bank Policy Research Working Paper*(6290)
- Ang, J. B. (2011). Financial development, liberalization and technological deepening. *European Economic Review*, 55(5), 688-701. doi:<http://dx.doi.org/10.1016/j.eurocorev.2010.09.004>
- Arestis, P., & Demetriades, P. (1997). Financial development and economic growth: assessing the evidence*. *The Economic Journal*, 107(442), 783-799.
- Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: the role of stock markets. *Journal of money, credit and banking*, 16-41.
- Aryeetey, E., Baah-Nuakoh, A., Duggleby, T., Hettige, H., & Steel, W. (1996). *The formal financial sector in Ghana after the reforms*: Overseas Development Institute.
- Asli, D.-K., & Vojislav, M. (1998). Law, finance, and firm growth. *Journal of Finance*, 53(6), 2107-2137.
- Beck, T., & Cull, R. (2014). SME Finance in Africa. *Journal of African Economies*, 23(5), 583-613. doi:10.1093/jae/eju016
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law, endowments, and finance. *Journal of Financial Economics*, 70(2), 137-181. doi:[http://dx.doi.org/10.1016/S0304-405X\(03\)00144-2](http://dx.doi.org/10.1016/S0304-405X(03)00144-2)
- Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to growth: does firm size matter? *The Journal of Finance*, 60(1), 137-177.
- Beck, T., & Levine, R. (2008). *Legal institutions and financial development*: Springer.
- Beck, T., Levine, R., & Loayza, N. (2000). Finance and the Sources of Growth. *Journal of financial economics*, 58(1), 261-300.
- Beck, T. H. L., Lu, L., & Yang, R. (2013). *Finance and Growth for Microenterprises: Evidence from Rural China*. Tilburg University, Center for Economic Research, Discussion Paper: 2013-053. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ecn&AN=1409338&site=ehost-live>
- <http://arno.uvt.nl/show.cgi?fid=131401>
- Bhattacharyya, S. (2013). Political origins of financial structure. *Journal of Comparative Economics*, 41(4), 979-994. doi:<http://dx.doi.org/10.1016/j.jce.2013.05.009>
- Boyd, J. H., & Smith, B. D. (1998). The evolution of debt and equity markets in economic development. *Economic Theory*, 12(3), 519-560. doi:10.1007/s001990050234
- Brownbridge, M., & Gockel, A. F. (1996). *The impact of financial sector policies on banking in Ghana*: Institute of Development Studies.
- Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, 72(1), 321-334.
- Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*: Cambridge university press.
- Carbo, S., Gardener, E. P., & Molyneux, P. (2007). Financial exclusion in Europe. *Public Money and Management*, 27(1), 21-27.
- Carbó, S., Gardener, E. P., & Molyneux, P. (2005). *Financial exclusion*: Palgrave MacMillan Basingstoke.
- Cecchetti, S. G. (1995). Distinguishing theories of the monetary transmission mechanism. *Federal Reserve Bank of St. Louis Review*, 77(May/June 1995)

- Chakraborty, S., & Ray, T. (2007). The development and structure of financial systems. *Journal of Economic Dynamics and Control*, 31(9), 2920-2956.
doi:<http://dx.doi.org/10.1016/j.jedc.2006.01.010>
- Conroy, J. (2005). APEC and financial exclusion: missed opportunities for collective action? *Asia Pacific Development Journal*, 12(1), 53-80.
- Demirgüç-Kunt, Asli, & Klapper, L. (2013). Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and within Countries. *Brookings Papers on Economic Activity*, 279-321. doi:10.2307/23594869
- Demirgüç-Kunt, A., Klapper, L., & van Oudheusden, P. (2015). Financial Inclusion in Africa. *The Oxford Handbook of Africa and Economics: Volume 2: Policies and Practices*, 388.
- Demirgüç-Kunt, A., & Klapper, L. F. (2012). Measuring financial inclusion: The global index database. *World Bank Policy Research Working Paper*(6025)
- Demirgüç-Kunt, A., Levine, R., & Detragiache, E. (2008). Finance and economic development: The role of government. *Policy Working Paper*, 3955
- Demirgüç-Kunt, T. B. A., & Levine, R. (2005). Law and firms' access to finance. *American Law and Economics Review*, 7(1), 211-252.
- Detragiache, E., Gupta, P., & Tressel, T. (2005). Finance in lower-income countries: An empirical exploration.
- Diniz, E., Birochi, R., & Pozzebon, M. (2012). Triggers and barriers to financial inclusion: The use of ICT-based branchless banking in an Amazon county. *Electronic Commerce Research and Applications*, 11(5), 484-494.
- Djankov, S., McLiesh, C., & Shleifer, A. (2007). Private credit in 129 countries. *Journal of financial Economics*, 84(2), 299-329.
- Donovan, K. (2012). Mobile money for financial inclusion. *Information and communication for development*, 61-73.
- Fry, M. J. (1978). Money and Capital or Financial Deepening in Economic Development? *Journal of Money, Credit and Banking*, 10(4), 464-475. doi:10.2307/1991576
- Gockel, A. F., & Akoena, S. K. (2002). *Financial Intermediation for the Poor: Credit Demand by Micro Small and Medium Scale Enterprises in Ghana: a Further Assignment for Financial Sector Policy?* : ILO.
- Gould, W. (1992). Ladder-of-Powers Variable Transformation. *Stata Technical Bulletin*, 1(2)
- Guiso, L., Sapienza, P., & Zingales, L. (2000). *The role of social capital in financial development*. National bureau of economic research
- Haber, S. H., North, D. C., & Weingast, B. R. (2008). *Political institutions and financial development*: Stanford University Press.
- Hallward-Driemeier, M., & Aterido, R. (2007). Impact of access to finance, corruption and infrastructure on employment growth: Putting Africa in a global context *Committee of Donor Agencies for Small Enterprise Development Conference on Business Environment Reform in Africa, Accra* (
- Hannig, A., & Jansen, S. (2010). Financial inclusion and financial stability: current policy issues.
- Huang, Y. (2010). Political Institutions and Financial Development: An Empirical Study. *World Development*, 38(12), 1667-1677. doi:<http://dx.doi.org/10.1016/j.worlddev.2010.04.001>
- Jack, W., & Suri, T. (2011). *Mobile money: the economics of M-PESA*. National Bureau of Economic Research
- Jappelli, T., & Pagano, M. (2002). Information sharing, lending and defaults: Cross-country evidence. *Journal of Banking & Finance*, 26(10), 2017-2045.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- Jensen, R. (2007). The digital divide: Information (technology), market performance, and welfare in the South Indian fisheries sector. *The quarterly journal of economics*, 879-924.
- Jung, W. S. (1986). Financial Development and Economic Growth: International Evidence. *Economic Development and Cultural Change*, 34(2), 333-346. doi:10.2307/1153854
- Kaufmann, D., Kraay, A., & Zoido-Lobaton, P. (2000). Governance matters. *Finance Dev*, 37(2), 10.
- Kendall, J., Mylenko, N., & Ponce, A. (2010). Measuring financial access around the world. *World Bank Policy Research Working Paper Series, Vol*

- King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics*, 717-737.
- Klein, M. U., & Mayer, C. (2011). Mobile banking and financial inclusion: The regulatory lessons. *World Bank Policy Research Working Paper Series, Vol*
- Kpodar, K., & Andrianaivo, M. (2011). *ICT, financial inclusion, and growth evidence from African countries*: International Monetary Fund.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *Journal of finance*, 1131-1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113-1155. doi:10.1086/250042
- Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688-726. doi:10.2307/2729790
- Levine, R. (1999). Law, finance, and economic growth. *Journal of financial Intermediation*, 8(1), 8-35.
- Levine, R. (2002). Bank-based or market-based financial systems: which is better? *Journal of financial intermediation*, 11(4), 398-428.
- Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, 1, 865-934.
- Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of monetary Economics*, 46(1), 31-77.
- Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American economic review*, 537-558.
- Leyshon, A., & Thrift, N. (1995). Geographies of Financial Exclusion: Financial Abandonment in Britain and the United States. *Transactions of the Institute of British Geographers*, 20(3), 312-341. doi:10.2307/622654
- Love, I., & Mylenko, N. (2003). Credit reporting and financing constraints. *World Bank Policy Research Working Paper*(3142)
- Miller, T. (2015). *Index of economic freedom*: Wall Street Journal.
- Mishkin, F. S. (1995). "Symposium on the Monetary Transmission Mechanism. *The Journal of Economic Perspectives*, 9(4), 3-10. doi:10.2307/2138387
- Modigliani, F., Miller, M., 1958. The cost of capital, corporation finance, and the theory of investment. *American Economic Review* 48, 261-297.
- Mohan, R. (2006). *Economic growth, financial deepening, and financial inclusion*: Atlantic Publishers & Distributors New Delhi.
- Polak, J. J. (1957). Monetary Analysis of Income Formation and Payments Problems. *Staff Papers (International Monetary Fund)*, 6(1), 1-50. doi:10.2307/3866128
- Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of financial economics*, 69(1), 5-50.
- Rasmussen, S. (2010). Mobile Banking in 2020. *CGAP Advancing financial access for the world's poor*. <http://www.cgap.org/p/site/c/home>
- Roe, M. J., & Siegel, J. I. (2011). Political instability: Effects on financial development, roots in the severity of economic inequality. *Journal of Comparative Economics*, 39(3), 279-309. doi:<http://dx.doi.org/10.1016/j.jce.2011.02.001>
- Sarma, M., & Pais, J. (2008). Financial inclusion and development: A cross country analysis. *Indian Council for Research on International Economic Relations*, 1-28.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of international development*, 23(5), 613-628.
- Sowa, N. K. (2003). *Financial sector reform policies and poverty reduction*: Centre for Policy Analysis.
- StataCorp, L. *STATA GRAPHICS REFERENCE MANUAL*.
- Triki, T., & Faye, I. (2013). Financial Inclusion in Africa. *Tunisia: African Development Bank*
- Tukey, J. W. (1977). Exploratory data analysis.
- Weill, L. (2011). Does corruption hamper bank lending? Macro and micro evidence. *Empirical Economics*, 41(1), 25-42.

Wellalage, N. H., & Locke, S. (2014). The Capital Structure of Sri Lankan Companies: A Quantile Regression Analysis. *Journal of Asia-Pacific Business*, 15(3), 211-230.
doi:10.1080/10599231.2014.934627

Yang, B. (2011). Does democracy foster financial development? An empirical analysis. *Economics Letters*, 112(3), 262-265. doi:<http://dx.doi.org/10.1016/j.econlet.2011.05.012>

Zhang, A. (2012). An examination of the effects of corruption on financial market volatility. *Journal of Emerging Market Finance*, 11(3), 301-322.

APPENDIX

Figure 1A: Robustness Check on Dependent Variable (Credit to Private sector by Financial Intermediaries)

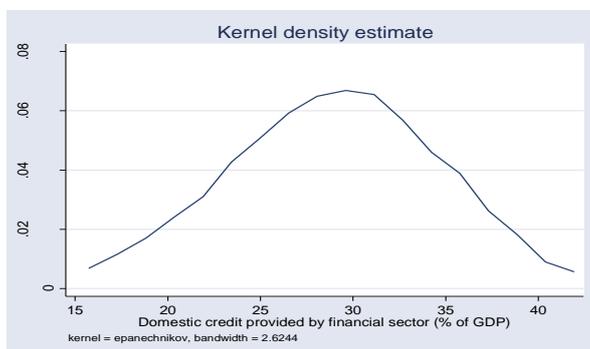
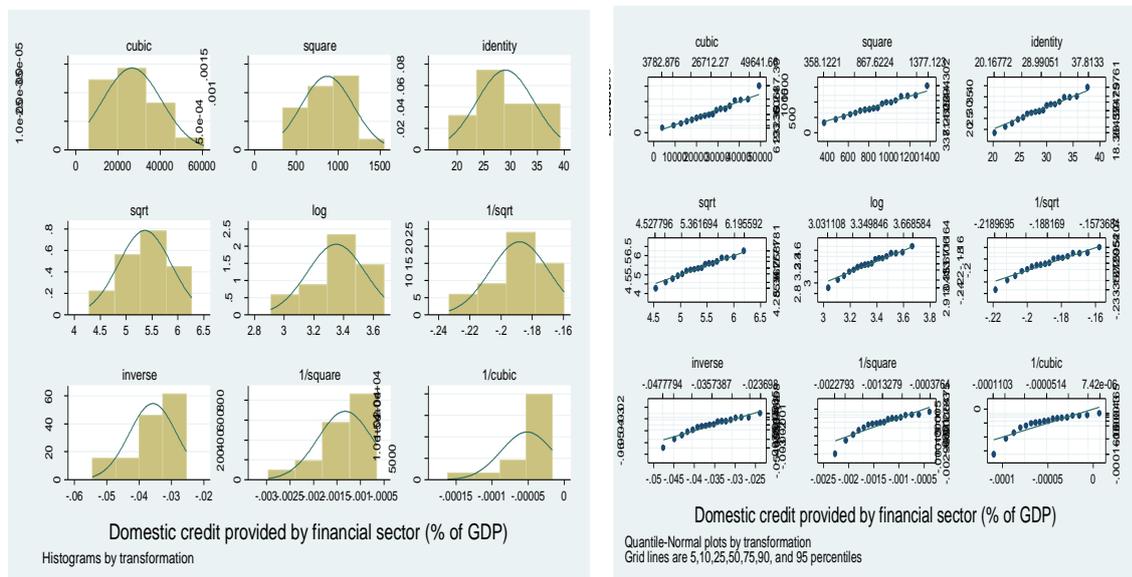


Figure 2A: Diagnostic outcome of the Inclusion and ICT indicators (Mobile and Internet Subscription).

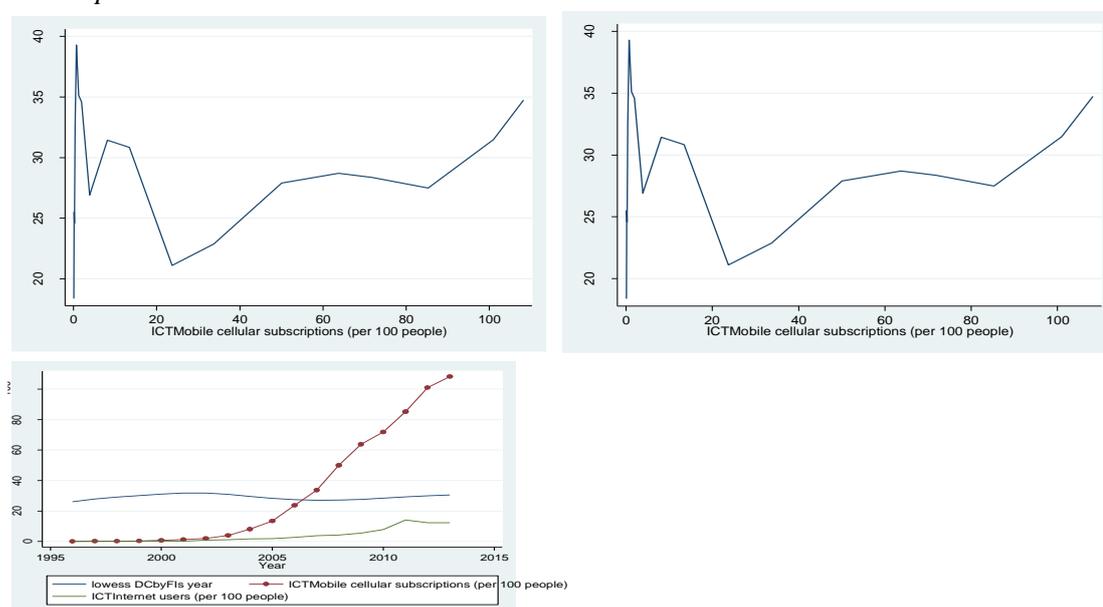


Table 1A: Regression Model with modified indicators: Rule of Law replacing Savings level.

Variable	OLS	QR_11	QR_20	QR_40	QR_50	QR_60	QR_70	QR_87
TI: CPI	7.903*	7.839**	7.839**	7.924**	7.924 γ	7.924**	7.924**	7.924 γ
GI: Pol. stability	.8965*	.8928**	.8928**	.8791**	.8791 γ	.8791*	.8791**	.8791**
GI: Regulatory Qual.	.4394*	.4377**	.4377**	.4162*	.4162 γ	.4162*	.4162*	.4162**
GI: Rule of Law	.1621	.1847	.1847	.1477*	.1477 γ	.1477	.1477*	.1477*
GI: Voice & Account.	.05527	.03286	.03286	.09698	.09698 γ	.09698	.09698	.09698
Monetary Growth Rate	.1065*	.1061**	.1061**	.1085**	.1085 γ	.1085*	.1085**	.1085**
Internet Usage	-1.86*	-1.779*	-1.779*	-1.792*	-1.792 γ	-1.792*	-1.792*	-1.792**
GDP per capita growth rate	1.708*	1.681**	1.681**	1.692**	1.692 γ	1.692**	1.692**	1.692**
LOG of mobile Sub.	3.449*	3.477**	3.477**	3.593*	3.593 γ	3.593*	3.593*	3.593**
Trade freedom	.5337**	.5329 γ	.5329 γ	.5331 γ	.5331 γ	.5331 γ	.5331 γ	.5331 γ
Remittance per capita	-9.107*	-9.104 γ	-9.104 γ	-9.211**	-9.211 γ	-9.211**	-9.211**	-9.211**
Business freedom	.3051*	.3084**	.3084**	.3021**	.3021 γ	.3021**	.3021**	.3021**
Monetary Freedom	.7778*	.773**	.773**	.7733**	.7733 γ	.7733**	.7733**	.7733 γ
Financial Freedom	.2187	.2094*	.2094*	.2054*	.2054 γ	.2054*	.2054*	.2054**
Investment Freedom	.1497	.114	.114	.1559*	.1559 γ	.1559*	.1559*	.1559**
Gov't Spending Freedom	.1153	.1123*	.1123*	.1296*	.1296 γ	.1296	.1296*	.1296*
_cons	-188.1*	-185.2**	-185.2**	-188.8**	-188.8 γ	-188.8**	-188.8**	-188.8 γ
N	18	18	18	18	18	18	18	18

Dependent Variable (DV) is Credit supplied by Domestic Financial Institutions (proxy for Financial Inclusion). An asterisk (**) indicates statistical significance at the 10 percent level; (*), 5 percent level; and (γ), indicating 1% level of statistical significance.