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Institutions, regulations, performance and stability of African banks

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To my Parents, Brothers and Sisters.

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Jönköping, 26 February 2019
Samuel Mutarindwa

Abstract

This thesis focuses on the determinants of bank performance and stability. Specifically, it investigates the effects of countries' legal traditions, institutions, central banks' regulations and ownership on bank performance and stability using samples of banks operating in African countries. This thesis is a compilation of four papers that stand on their own and can be read independently. This introduction provides the empirical methodology along with the historical, theoretical and analytical framework that ties the four papers together. The first two papers focus on determinants of bank stability, while the other two focus on the determinants of bank performance.

Drawing on bank samples that operate in Africa, the first paper uses one of Basel III liquidity requirements namely, the Net Stable Funding Ratio (NSFR) and the Total Capital Ratio (TCR) to assess whether compliance influences lending and stability. Results show that African banks complying with the liquidity threshold (*NSFR*) lend more than banks from the less liquid control group. However, complying with Total Capital Ratio threshold (TCR) improves *Z-score*-stability only for those banks with a stability level above the median. The strengths of regulatory institutions, supervision and legal systems positively influence the likelihood that banks will comply with Basel III financial requirements.

The second paper investigates how African countries' legal systems and institutions influence central banks' provision of supervisory guidance on corporate governance, and via this channel, affect governance and stability of local banks. Results show that if a central bank has published supervisory guidance, local banks show better internal governance and higher stability conditional on the country's legal traditions, political stability, contract enforcement and strength of investor protection.

The third paper examines why legal traditions matter for law development, institutions for creditors and investors, as well as the development of banking systems in Africa. Results provide strong support for the law and finance theory (LFT) that legal traditions strongly matter for legal systems development especially in common law countries. Results also reveal that creditor rights and contract enforcement improve banking systems development in both common law and civil law legal traditions.

The fourth paper considers the impact of ownership type and block-holding on performance (efficiency). A noval approach is applied that addresses the incidental parameter problems associated with Stochastic Frontier Analysis (SFA) true effects models. Results show that foreign banks are relatively more cost efficient than their domestic peers, but not more profit efficient. Second, ownership concentration reduces the cost efficiency of both domestic and foreign banks. These findings

result not only from bank-internal efficiencies, but also from differences in bank size, age, listing, and macro-economic environments.

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Introduction and Summary of the Thesis

1.1 Introduction

Banks perform vital functions in the economic systems of countries through their intermediation activities which in turn contribute to countries' growth and development. The literature on finance and growth has established a link between financial development and economic growth. Levine (2005) theoretically suggests the channels through which finance affects economic growth. He asserts that transaction and information costs distort efficient allocation of investment opportunities giving rise to financial intermediaries, contracts, and markets to overcome these costs. Financial intermediaries solve this problem by investing in information seeking, monitoring the corporate governance of firms, risk management, savings, and investments, as well as in the exchange of goods and services. This in turn affects savings and investments, ultimately leading to economic growth (Levine, 2005, p.5). This could potentially help the economies of developing countries of Africa to grow, especially since banking sectors dominate their financial systems.

In the 1980s, based on Breton Wood's recommendations, many developing countries, including those of Africa implemented structural and financial reforms including liberalization of interest rates and privatization of former inefficient state-owned banks. The goal was to create strong, efficient, and sound banking sectors that could help implementing countries improve their economic growth via financial intermediation and growth of savings. Although specifically in African countries these reforms have over time improved bank scale (more private and foreign banks' entry), financial intermediation and outreach, they have not adequately addressed problems of financial underdevelopment and stability. In fact, evidence shows that the implementation of these reforms has been followed by systematic instabilities, bank failures and a low degree of financial deepening (Upadhyaya, 2011).

Financial sectors (particularly banking sectors) in African countries lag behind in terms of their economic importance when compared to peers in other developing non-African countries as well as developed economies. Although Allen, Otchere

and Senbet (2011) show in their review that African financial systems are dominated by banks as sources of finance to both government and the private sector, extensive reviews of the state of banking and financial systems in Africa (Beck and Cull, 2014; Beck, Maimbo, Faye and Triki, 2011; Honohan and Beck, 2007) show that, by international comparisons, African banking systems are characterized by low levels of financial inter-mediation and, low credit supply to the private sector despite their higher liquidity and capitalization capacities. At the same time, they are characterized by higher inter-mediation costs (higher interest rate margins and spreads), higher credit defaults and individual banks' fragility. The World-Bank (2001) suggests that earlier liberalization reforms lacked accompanying institutions such as legal, regulatory, and corporate governance frameworks that had served to successfully promote such reforms in developed countries. Based on this assessment, the World Bank suggests that financial sectors only prosper in well-developed legal and regulatory environments. Therefore, taking into account the low levels of bank performance, higher bank instabilities, coupled with deficiencies in institutional infrastructures characterizing most African countries, this thesis aims at providing explanations and a deeper understanding of the main reasons for the lower levels of performance and stability of banks operating in African countries. It assesses a set of channels through which bank performance and stability could be improved. Specifically, it deepens the understanding on the vital roles of legal systems, corporate governance, supervision and compliance, and organizational forms in improving bank performance and stability in African countries.

1.1.1 Contributions

The thesis contributes to two main strands of banking literature, namely explaining the determinants of bank stability and performance from theoretical and methodological perspectives.

First, the thesis challenges the existing evidence on the roles of banks' financial requirements for bank stability and lending. Previous studies using bank samples from US and Europe have shown that deficiencies in bank regulatory capital and liquidity led to bank instabilities and insolvencies during the global financial crisis (Berger and Bouwman, 2013; Chiaramonte and Casu, 2017; Lallour, Mio et al., 2016; Vazquez and Federico, 2015). Findings from this dissertation reveal that the financial requirements neither improve stability nor lending for African banks despite the evidence that these banks are adequately capitalized (Nyantakyi, Sy and Kayizzi-mugerwa, 2015) and liquid (Nana and Samson, 2014). My findings are closely related to those obtained by Oduor, Ngoka and Odongo (2017) that highly capitalized banks are less stable, and also to Andrianova, Baltagi, Demetriades and Fielding (2015) who suggests that highly capitalized banks lend less. My thesis

shows that the disparity in conclusions drawn by studies using bank samples of developed countries is a result of the insufficient attention scholars paid to factors that explain compliance with Basel III requirements, and how these factors might affect the impact of these requirements on bank stability and lending. Results for my thesis provide strong support for the effects of the quality of regulations and supervision on banks' compliance with capital and liquidity requirements. From a methodological perspective, this thesis provides an innovative way of assessing the impacts of financial reforms on lending and stability by implementing a difference-in-difference approach (Angrist and Pischke, 2009) and through a recursive equation conditional mixed processes model (CMP) developed by Roodman (2011).

Second, this thesis goes beyond financial requirements to further investigate the effects of supervisory guidance on corporate governance on banking stability in African countries. Previous studies have paid more attention to how countries domestic regulations and supervisory strengths influence bank stability (Anginer, Demirguc-Kunt and Zhu, 2014; Barth, Caprio and Ross, 2004; Demirgüç-Kunt and Detragiache, 2002; Laeven and Levine, 2009). Rarely investigated, however, is how supervisory guidance of specific central banks affects bank governance, and consequently bank stability. This thesis provides channels through which bank-internal governance and stability improve after the publication of supervisory guidance on corporate governance by central banks. This thesis complements a few studies that were conducted using banking samples from the US Akhigbe and Martin (2008) and Akhigbe and Martin (2006). It adds to this literature by examining how differences in institutions and legal systems across countries condition affect the likelihood that central banks will publish supervisory guidance. Again, through a novel methodological framework rarely used in this stream of empirical literature, this thesis empirically assesses this relationship through a recursive system of equations using the CMP framework and a difference-in-difference (Diff-in-diff) approach. Only Fang, Hasan and Marton (2014) and Houston, Lin, Lin and Ma (2010) have empirically assessed these equations using a Diff-in-diff approach. In contrast to these studies that provide evidence on banking stability using the first-order effects of institutions, this thesis claims that the only way through which institutions improve bank governance and stability is via their effect on the central banks' supervisory guidance.

Third, this thesis contributes to law and finance literature by providing the mechanisms through which legal traditions explain legal systems development in Africa. Little empirical consideration has been offered by law and finance scholars to assess the reasons why legal traditions matter, particularly in Africa. Although the studies of Beck, Demirgüç-Kunt and Levine (2003), La Porta, Lopez-de Silanes, Pop-Eleches and Shleifer (2004), and Djankov, Glaeser, La Porta, Lopez-de Silanes and Shleifer (2003) offer very important insights in these issues, they all

use samples that are not exclusive to former African colonies, but rather combine samples from both originating countries and colonies. In addition, they suggest that case law is a monopoly of the common law tradition. This thesis provides evidence and insights on the use and effects of case law for legal systems development in both legal traditions in African countries.

Finally, this thesis contributes to the measurement of bank performance, specifically bank efficiency. Previous studies use a mixture of different estimation techniques (both parametric and non-parametric) that yield mixed results (Berger, 2007; Berger and Humphrey, 1997). In addition, studies using Stochastic Frontier Approaches (SFA) do not take into consideration the estimation problems that may result from unobserved heterogeneity of individual bank characteristics, thereby producing biased estimates. Greene (2005) suggests implementing a true effects (random or fixed) SFA model that takes into account time variation of the inefficiency error term. The model disentangles the inefficiency error term from the bank specific effect. This has however rarely been used in studies of banking efficiency. This thesis adapts a modified measurement approach of true fixed effects SFA models that solves post estimation incidental parameter problem associated with the true effects models Belotti and Ilardi (2018). To the best of my knowledge, this is the first application of Belotti and Ilardi 's (2018) approach to the African banking industry. Only recently Damoah (2017) used this approach to measure the efficiency of manufacturing firms in a single country study (Ghana).

The introductory chapter proceeds as follows: Section 1.1.2 discusses the evolution and level of performance and stability of banks operating in African countries relative to the rest of the world. Section 1.2 discusses the theoretical framework that the current borrows from and contributes to. Section 1.3 discusses the sources of data and methods used in the four papers. The last section (Section 1.4) summarizes the papers, discusses the research settings, and highlights their contributions.

1.1.2 Bank performance and stability in Africa

As Allen et al. (2011) note, the absence in African countries of alternative sources of financing such as well functioning and liquid stock markets forces firms and households to depend on banks as their sources of financing. Banks, therefore, dominate African financial systems. Before delving into the discussion of the state of performance and stability of African banks, a brief summary of the history of banking in African countries is in order. It was during the colonial era that African countries' banking systems first experienced the entry of foreign-owned banks. The vast majority of these banks were of European origin (Beck, Fuchs, Singer and Witte, 2014; Cull, Peria and Verrier, 2018). When African countries gained their

independence at the close of the colonial period, most parts of Africa underwent an Africanization of banks by nationalizing foreign-owned banks. This resulted in the emergence of a number of state-owned banks. However, structural reforms in the 1980s and 1990s impacted this trend. Specifically, the implementation of Structural Adjustment Programs (SAPs) led to a massive privatization of former state-owned banks. In some recent years, there has been resurgence of the entry of foreign-owned banks. Enoch, Mathieu, Mecagni and Kriljenko (2015) argue that countries' stability, the end of apartheid in South Africa, regional integration and capital regulation policies such as those found in Nigeria have been major catalysts in the re-entry of foreign banks (primarily of a Pan African nature) into the banking systems of African countries. All these reforms have, on average, changed the ownership patterns of banks in Africa. Foreign bank presence in Africa grew from 34% in 1995 to 66% in 2008 and to 73% in 2010 (Cull et al., 2018). Claessens and Horen (2014) report that in Sub-Saharan Africa, foreign owned banks controlled 31% of banking activities in 1995, with an increase to 51% by 2009. By 2010, the share of state-owned banks to total banks was the lowest in developing countries with an average of 8%. This implies that the majority of the banks operating in African countries are now privately-owned. On the other hand, however, the persistently level of stock market development in some countries and the absence of other financial infrastructures suggests that the majority of the banks are closely-held, and that institutional investors and families are the controlling owner of most of privately-owned banks. In addition, the majority of foreign-owned banks enter host African countries using their subsidiaries and branches,also implying that most of these banks are closely-held. The rise of these bank ownership structures and the importance of the roles they play under heterogeneous institutional settings of African economies implies that the investigation of their stability and performance is crucial.

This section summarizes the levels and trends in the performance and stability of banks operating in African countries by comparing these indicators with those of other non-African developing, transitional and developed countries. Because Africa is a vast and heterogeneous continent with 54 countries, describing financial outcomes is challenging. Nevertheless, there are common indicators that have been used in the literature for country-level and cross-country comparisons of banking and financial systems. Using country-level panel data from Demirguc-Kunt, Klapper, Singer, Ansar and Hess (2018) for the years 2000 to 2016, this section provides the most recent evidence on the indicators of banking and financial performance in Africa, complementing earlier extensive reviews on African banking and financial systems such as Honohan and Beck (2007), Beck et al. (2011), Beck and Cull (2014), and Allen et al. (2011). Table 1.1 in the appendices summarizes the indicators.

Table 1.1 summarizes the levels of bank performance and stability indicators for African countries for the year 2016, and, based on the United Nations classifications, compares these indicators with transitional, developed and developing countries from the Middle East, Asia, Latin and, Central America, and the Caribbean. The measures of banking performance include those related to lending (private credit by banks to GDP, domestic credit to private sector, credit to government and state-owned enterprises); those related to breadth (bank deposits to GDP); those related to inter-mediation (credit to deposits ratio, net interest margins and lending-deposit spread). Stability indicators include Z-scores, non-performing loans ratio, regulatory capital, and liquidity to total assets. Private credit by banks to GDP ratio measures the contribution of bank credit (loans) given to the private sector to the overall (GDP) in a particular country. In 2016, on average banks in African countries lend 27% of GDP to private firms. This does not compare well to banks from the developing countries of the Middle East (76%), Asia (78%), Latin America and the Caribbean (42%). Although the average lending ratio of African countries is closer strictly to transitional countries (36%), the gap is quite dramatic when compared to developed countries (84%). This figure of the loan ratio of African countries shows a slight improvement vìs-à-vìs the 18% obtained in Beck and Cull (2014), using the same data set for the 2011 period, and the 21% obtained by Mlachila, Cui, Jidoud, Newiak, Radzewicz-Bak, Takebe, Ye and Zhang (2016) for the 2014 period. There is, of course, significant cross-country variation among African countries with respect to this ratio, as shown in Tables 1.3 and 1.4 Some countries such as South Africa, Mauritius and Morocco have higher private credit to GDP ratios (above 50%), while others such as the Democratic Republic of Congo, Equatorial Guinea, Guinea,Guinea Bissau, and South Sudan have ratios below 5%.

In 2016, the share of liquid liabilities (which measures banks' capacity to mobilize financial resources) to GDP was 47% for African countries. This figure is close to that of the countries from Latin, and Central America and the Caribbean, as well as transitional countries (48%). It is, however, well below that of other developing countries of Asia, the Middle East, and developed countries (80%-105%). This figure for African countries based on data from 2016 shows that an increase of 15% for 2011 data provided in Beck and Cull (2014). Mauritius, Egypt, and Morocco are responsible for more than 70% of the increase in this ratio, while Democratic Republic of Congo and Equatorial Guinea show less than a 10% increase (see Table 1.2). A related indicator is bank deposits to GDP. Banks from African countries mobilized less of the deposits (38%) compared to other developing countries from Asia and Middle East. Equally, banks operating in African countries were less efficient in transforming deposits into loans.

While Table 1.1 illustrates the poor performance of African banks in terms of

lending and deposit mobilization it also shows that African banks are as profitable as banks operating in other parts of the world, and no significant variation exists even between African countries. In addition, banks operating in African countries are characterized by higher capitalization and excessive liquidity. In terms of regulatory capital to risk-weighed assets, (a requirement by the Basel Committee on Banking Supervision (BCBS) to have the ratio equal or above 8%), African countries surpass this ratio with an average of 19%, higher than other developing countries and almost the same as developed countries. In terms of liquidity as measured by liquid assets to total assets, African banks are excessively liquid (139%). This is especially apparent vìs-à-vìs banks from other developing and developed countries that show an average liquidity ratio below 33%. This evidence shows that banks operating in African countries fail to exploit their lending capacity which lowers their intermediation function. Nana and Samson (2014) argue that this failure is critical, since non-financial firms in African countries cite lack of financing from banks as a major constraint to growth. The high costs of intermediation as measured by net interest margins and lending spread are related to the evidence on lending. Banks operating in African countries have on average higher net interest margins (6.1%) than those in the developing countries of Asia (2.8), the Middle East (2.5%), Latin and, Central America and the Caribbean (5.1%), and developed countries (1.98%). African banks also have higher lending spreads (9.7%) than the values for banks from other developing and developed countries. African banks' net interest margins have increased since Beck and Cull (2014)' study that showed 5.9%. Similarly, average lending spreads averages have slightly increased (10.3%). In terms of bank stability, Table 1.1 shows data for Z-scores and non-performing loan ratios as indicators of bank stability for the 2016 period. Results reveal that, on average, the banks were resilient with Z-scores in the same range of other developing and developed countries. Evidence from the African Development Bank (Nyantakyi et al., 2015) also shows that most African countries were less affected by the financial crisis, and no systematic crisis was registered for African countries between 2000 and 2008 as banks are highly capitalized and excessively liquid. Only Nigeria experienced a systemic crisis in 2009. In addition, only a few countries that had higher proportions of foreign banks such as Mozambique, Swaziland and Madagascar were affected by contagion effects (Allen and Giovannetti, 2011; Kasekende, Ndikumana and Rajhi, 2009). This overall stability in the face of a global crisis, however, masks a serious financial problem that African banks experience when compared to banks from other countries. In 2016, default rates (non-performing loans ratio) were on average as high as 10.7% for African countries compared to 2.96% for the Middle East, 3.8% in other Asian developing countries,and 2.6% for Latin and Central America and the Caribbean. Beck et al. (2011) show that African economies are characterized by a large in-

formal sector. Information about individuals and firms is scarce and difficult to obtain. The near absence of credit bureaus and credit registries create severe information asymmetries between borrowers and lenders. Andrianova et al. (2015) express a concern that higher default rates for African banks lead to reduction in credit supply to the private sector and banks end up lending to and investing in the government because such assets appear to be more secure. In addition, lower levels of contract enforcement and governance problems related to information disclosures could also explain higher default rates among borrowers. Further, higher informality and opaqueness with little creditor protections has also led banks operating in African countries to consistently increase interest rates and requiring higher interest spreads on loans.

Fuchs, Losse-Müller and Witte (2012) argue that although banks in African countries are highly capitalized and excessively liquid and African countries escaped the financial crisis, lending to firms could in the future increase credit risks. They note that deficiencies in regulation and supervision could reduce bank resilience in Africa. Supervisory capacity in terms of qualified staff, independence and legal frameworks are inefficient in most African countries. With liberalization and privatization, cross-border banking, such as those of a Pan African nature has increased in most African countries and could also increase the transmission of credit and system wide risks, posing a challenge to cross-border supervision and regulation. Beck and Cull (2014) suggest that for banks to play important roles in the growth of African economies, measures to improve macro-economic environment, supervision and internal governance must be addressed. Arguing from the perspective of the effects of the financial crisis, they state *"....it seems that the growth benefits of financial deepening can only be reaped in a stable macroeconomic environment and with the appropriate safeguards framework, both in terms of external regulation and supervision and internal bank governance"* (Beck and Cull, 2014, p.3). A regional study (Mlachila et al., 2016) analyzing financial development in Sub-Saharan Africa suggests that, institutions promoting investor protection, better corporate governance, better provision of information (especially in terms of efficient financial reporting), and strengthening both domestic and cross-border banking supervision could help the the still underdeveloped banking industries to thrive on the African continent.

1.2 Theoretical framework: Institutions of law

Over time, the importance of financial systems in countries' economic development has led economic scholars to acknowledge the importance of institutions of law to financial and economic development of countries in addition to purely eco-

nomic variables. North (1990) notes that developed and less developed countries differ in the way they develop institutions that protect private property rights and the enforcement of contracts. If countries differ in their institutional development, it stands to reason that their development outcomes will also differ. The New Institutional Economics school provides a foundation for linking institutions to economic outcomes. With regards to social contracts, Coase (1960) pioneered this school. Coase (1960) argued that what is traded on the market is not, as often assumed by economists, physical entities, but the rights to perform certain actions. He goes on to claim that the rights individuals possess are established by the legal system at macro-level (Coase, 1960, p.1). Subsequent studies in the NIE, however, have shifted the focus to a more empirical analysis of micro-level effects of legal rules, rather than relating to macroeconomic outcomes (Williamson, 1991) and little attention has been paid to the financial systems of countries and how legal institutions matter for their development. It is was not until the 1990s and early 2000s that more attention has been paid to the impact of legal rules and traditions on financial development and in some cases going further to explore the effects on economic development. One school emerged, namely: the law and finance school (from which this thesis draws entirely from) that explain the relationships among legal traditions and systems and financial outcomes. A discussion of the theoretical basis, empirical claims and a brief critique of the theory are presented in the following paragraphs.

1.2.1 The Law and Finance Theory

The thesis relies on the theoretical framework developed by law and finance stream of literature, or the legal origins school as it is commonly known. The legal origins school is mainly associated with the pioneering research and writings of four scholars, namely: La Porta Raphael, Lopez de Silanes, Andrei Shleifer and Robert Vishny (shortened to LLSV). These scholars attempt to relate the institutions of legal systems to the financial development of countries. The legal systems have their origins in the legal traditions (common law and civil law) of European countries specifically Britain, France and Germany and Scandinavian countries (La Porta, Lopez-de Silanes, Shleifer and Vishny, 1997; Porta, Lopez-de Silanes, Shleifer and Vishny, 1998). La Porta, Lopez-de Silanes and Shleifer (2008) summarize the legal family of origin as: *"..countries belonging to each legal tradition received "specific laws and codes and the more general styles or ideologies of the legal system" in the transplantation process from the origin countries (mainly England and France) and, despite further legal evolution at the national level, the basic transplanted elements have remained and persisted"* (La Porta et al., 2008, p.288). Using Roman law that was later modified by Justinian and Napoleon, civil law

places emphasis on the use of codes or statutes for legislation. In contrast, common law relates to the legal system that originated and evolved in Britain, which uses case law or jurisprudence in judicial processes and provides higher discretion to the courts to develop laws using jurisprudence. It also places much more emphasis on guaranteeing judicial independence as a basis for legal system development (Beck et al., 2003). Judicial independence implies that courts and judges are empowered to interpret and review legislative acts in an effort to ensure the protection of private property against state interference. The basic conjecture offered by the law and finance school is that the variations found in legal systems that have evolved over time and across countries can be traced back to either common law or civil law legal traditions. Likewise, these variations produce distinctive institutions that either support or impede investors, creditors, financial markets and other economic outcomes. This theory concludes that when compared to French and other civil law countries, British common law is associated with efficient financial systems because they have institutions that protect investors, thereby reducing expropriation and improving firm financing (La Porta et al., 2008).

1.2.1.1 Investor protection institutions and the legal origins school

The primary way that law can enhance financial development is through the protection of investors from expropriation by corporate insiders and management. Countries with legal systems that draw from the common law tradition offer more in terms of investor protection laws than civil law countries (La Porta et al., 1997; Porta et al., 1998). La Porta et al. (1997) constructed the Anti-Director Rights Index(ADRI) based on data from 49 countries, and used this index to measure the extent to which investor are protected from expropriation and how this explains financial development, and whether legal traditions mattered for this causality. Their findings reveal that the differences in the levels of financial development of countries are a direct result of the levels of investor and creditor protection. Common law countries were associated with more developed stock markets than civil law countries, as they are associated with more investor protection laws. In a cross-country study, Djankov, La Porta, Lopez-de Silanes and Shleifer (2008) construct a different index based on shareholder protection (Anti-Self Dealing Index) to measure the extent to which legal rules explain stock market development. Their index shows significant explanatory power with regards to the development of stock markets in the 72 countries studied. La Porta, Lopez-de Silanes and Shleifer (2006) relate stock market laws (securities laws) to securities market development in 49 countries and find that disclosure and private enforcement of laws is very important for stock markets growth. Legal traditions again matter in their study. A related component of investor protection discussed in the law and finance litera-

ture is corporate governance. Shleifer, Vishny, Porta and Lopez-de Silanes (2000) argue that investors will only be willing to finance firms when they acquire rights to be protected from expropriation. These rights come in the form of accounting and disclosure laws providing them information that empower them to control directors and inside controlling shareholders. According to the law and finance scholars, they act as corporate governance tools that limit and reduce agency costs arising from insider expropriation Shleifer and Vishny (1997). Whereas the legal and finance literature focuses on investor protection and corporate governance using measures obtained from corporate codes, it is silent on the specific codes or guidance of corporate governance for bank performance and stability. The primary focus of these studies is on on financial development indicators, rather than the stability of banks. Yet, corporate governance guidance could improve the position of small shareholders by empowering boards to closely monitor the activities of both groups.

The current thesis uses the law and finance lens to make a case for using corporate governance guidance specific to banks as a means of improving investor protection, as well as bank performance and stability. The argument in one of the papers of this dissertation is that banks are more likely to improve their own corporate governance if the central bank has provided supervisory guidance on corporate governance. In addition, we hypothesize that compliance with the central bank's supervisory guidelines increases bank stability. There have even been calls from international regulators as well to enhance corporate governance in banks. The Bank for International Settlement (BIS) published a best practices code emphasizing the need to have more independent board members who can exercise sound judgment without management influence. The BCBS requires enlisting more financial experts as board members and a better understanding of the bank's risky activities (BCBS, 2006). In the period after the Lehman insolvency the Committee emphasized again the importance of independent boards for protecting the interest of shareholders, depositors and other relevant stakeholders. The BCBS recommends establishing a majority of independent and competent directors, and to upgrade the role of the Chief Risk Officer (BCBS, 2010). These reports suggest that bank governance should not only focus on shareholders' wealth-maximizing activities but explicitly address risk-taking. It should however be noted that these reforms do not unfold in a vacuum, rather, they are a reflection of the country's legal system and its historical institutional development. This study relates the development of supervisory guidance for corporate governance to legal systems and institutional qualities. The outcomes for this relationship is bank-stability and performance.

Another important component of the corporate governance of banks vital for bank stability is regulation. Banks belong to a sector that is heavily regulated, especially by sovereign central banks. The purpose of the most regulations is to

promote stability and performance. The BCBS introduced measures to improve banking stability (especially after the financial crisis) by instructing banks to increase their regulatory capital and improve their liquidity positions. Some studies have also found that better capitalized banks are associated with less risk-taking and superior coping with the financial crisis effects (e.g. Berger and Bouwman, 2013; Vazquez and Federico, 2015). Others find low liquid banks were prone to risk-taking during the financial crisis and had a higher likelihood of failure (e.g., Chiaramonte and Casu, 2017; Vazquez and Federico, 2015).

Fuchs et al. (2012) however argue that although banks in African countries are highly capitalized and excessively liquid and African countries escaped the financial crisis, lending could in the future increase credit risks. They note that deficiencies in regulation and supervision could reduce bank resilience in Africa. Supervisory capacity in terms of qualified staff, independence and legal frameworks are inefficient in most African countries. This thesis argues that institutions are extremely instrumental in amplifying the effects of regulations on bank stability, and relates these effects to legal regimes following the law and finance school. The legal origins school notes that legal traditions differ in how private property is protected vis-a-vis the state (Beck et al., 2003). Barth et al. (2004) follow the legal origins school and argue that, unlike common law countries, civil law countries are associated with stronger governments that do not protect private property, and suggest that these traditions influence approaches to bank regulations and supervision. While analyzing the determinants of bank regulation, Li (2007) argues that countries relying on the common law legal tradition have superior bank regulation when compared to civil law countries. He goes on to suggest that English common law provides bank supervisory agencies with higher levels of independence and flexibility. He attributes the increased protection of private property to these characteristics of the common law tradition. The lower intensity of bank regulation and combined with supervisory agencies that are empowered by the government is in sharp contrast to civil law countries where governments play a stronger role and private property is less protected (Li, 2007, p.67). Accordingly, following these studies, this dissertation proposes that the inherited legal system explains the heterogeneity in bank regulation and supervision.

1.2.1.2 Creditor protection institutions and the legal origins school

The law and finance school also addresses the protection of creditors when debt contracts are not honoured by borrowers. Levine (1998) argues that banks' capacity to enforce loan repayments differ across legal systems of countries in which banks operate. He further maintains that, the legal systems differ in how they provide protection to creditors when borrowers do not honor their obligations and in cases

of corporate bankruptcy. Levine, Loayza and Beck (2000) empirically assessed the effects of creditor rights, contract enforcement and accounting standards on financial intermediation development. They find that financial intermediaries only develop in countries whose legal systems protect creditors during the bankruptcy process, and where agencies are able to enforce contracts and require accurate and effective financial reporting. They find that these environments are more likely to be found in common law countries than in their civil law counter parts. Djankov, McLiesh and Shleifer (2007) use an international sample of 129 countries to study how financial development (measured by private credit to GDP) responds to differences in creditor laws. Their findings reveal that financial development tends to increase in those countries where laws protecting creditors are strong, enforcement is guaranteed, and where credit information is adequate. Deakin, Mollica and Sarkar (2017) relate credit growth to credit protection laws in civil and common law OECD countries. They find that, civil law countries are better at the management of debts whereas common law countries have better creditors rights over contracts related to borrowers' assets. More credit growth is pronounced in common-law countries with more creditor rights protection laws. Micro-level studies concur with these prior findings. Creditor protection laws improve lending (Haselmann, Pistor and Vig, 2009; Safavian and Sharma, 2007). Creditor protection laws improve lendin (Haselmann et al., 2009; Safavian and Sharma, 2007). Creditor-friendly laws reduce interest rates and lengthen loan maturities (Qian and Strahan, 2007). The current thesis proposes that the performance and resilience of banks increases in countries with stronger creditor rights and information sharing systems that are conditioned by their legal traditions. Banking systems will respond positively to better creditor rights institutions only in those traditions that have institutions providing protection of private rights.

1.2.1.3 Ownership and the legal origins school

Two main postulations emerge from the law and finance school explaining bank ownership. The first one is the extent of block-holding and bank value and the second is the extent of government ownership of banks. Earlier studies (Fama and Jensen, 1983) suggested that firms with dispersed shareholders are associated with agency problems given the difficulty of monitoring the activities of managers. Block-holding would help mitigate this problem by actively controlling and monitoring managerial behavior which would benefit minority investors as well (Shleifer and Vishny, 1986). The legal origins school suggests that, in countries with stronger investor protection laws (such as in common law countries), most firms are widely held. In contrast, civil law countries have weaker investor protection laws and shareholders compensate for this by holding majority stakes in

companies (Porta et al., 1998).

In the banking industry, Caprio, Laeven and Levine (2007) study the impact of ownership and shareholder protection laws on bank valuations in an international bank sample from 44 countries. They find, among other things, that most banks have a controlling shareholder, and also establish that bank value increases if controlling shareholders own larger cash-flow rights, especially in countries with weak shareholder protection laws. Busta, Sinani and Thomsen (2014) assess the effects of shareholder concentration on the market valuation of West European banks using Tobin's Q, and report mixed effects on valuation resulting from institutional differences. Specifically, they report adverse effects on banks from German legal families and positive effects for banks from Scandinavian legal origins. The legal origins school also looks at government ownership of banks. La Porta, Lopez-de Silanes and Shleifer (2002) suggest that while state-owned banks support development in countries where private banks provide insufficient financial services, they may also be used as vehicles to achieve political goals. The authors argue that, political interference is more common in countries with poor property rights, a characteristic of most less developed and developing countries. They empirically provide evidence of the adverse effects of state-owned banks for financial development and economic growth in less developed countries. They also find that state-owned banks are less efficient than privately-owned ones. Legal origins is also instrumental in explaining variation in regulations and entry of firms. Barth et al. (2004) argue that, unlike common law countries, civil law countries are associated with stronger governments that do not protect private property, and suggest that these traditions influence approaches to bank regulations and supervision. Galindo, Micco and Serra (2003) test whether legal and institutional differences deter banks from cross-border expansion in 176 countries. They find that legal set up differences between host and home countries stemming from legal origins explain cross-border bank entry by 11% in their sample.

1.2.2 Alternative institutional schools

Although this thesis relies heavily on assumptions and arguments drawn by the law and finance school, we are aware of countervailing theories explaining financial outcomes. In fact, this thesis uses a unique combination of variables taken from a number of prevailing perspectives regarding financial outcomes. This section provides a brief discussion of the critiques directed at the law and finance school as well as responses to those criticisms. A more detailed critique of the law and the finance school can be found in Beck, Demirgüç-Kunt and Levine (2001), Xu (2011) and Oto-Peralías and Romero-Ávila (2017). The most extensive responses from the law and finance school to these critiques are elaborated in La Porta et al.

(2008).

One of the main critiques against the law and finance school comes from the endowment school Acemoglu, Johnson and Robinson (2001). The law and finance school suggests that legal traditions transplanted to the colonies are responsible for legal systems development for investors and creditors and subsequent financial and economic outcomes. The endowment school, however, suggests that there is an omitted variable in this trajectory. Acemoglu et al. (2001) argue that existing conditions in the colonies (such as diseases and population density) influenced the colonizers from Europe. Europeans tended to settle in those colonies that had lower mortality rates, and avoided settling in colonies with higher rates of mortalities. This pattern of settlement influenced significantly the development of property rights and contracting institutions (Acemoglu and Johnson, 2005). Colonies that were settled by their European colonizers became more similar to home countries, and this subsequently led to variations in economic outcomes (economic growth, financial development and investment). The main conjecture from this school is that colonial endowments are exogenous to current institutional developments and economic outcomes in many former colonies. Some studies have used the endowment variables together with the legal origins school and found significant effects on financial development. Oto-Peralías and Romero-Ávila (2014) argue that the way European states transplanted their legal systems to their colonies depended on the initial endowments from those colonies, and these variations explain much of the differences in economic outcomes. Taking into account these criticisms and the fact that this has not been extensively answered in La Porta et al. (2008), the current thesis combines some of the variables used in Acemoglu et al. (2001) and Beck et al. (2003) with the legal origins variables to explain evolution of institutions for investors and creditors and banking systems development in Africa (see paper three of this thesis).

Other omitted variables that are neglected in the law and finance school come from the political and historical schools. One of the earlier critiques that refutes the influence of legal traditions comes from Rajan and Zingales (2003) shortened as R&J in their great reversal hypothesis. Using the stock market capitalization ratio as a proxy for financial development, they find that in 1913, this ratio was 66% for civil law countries compared to 53% for common law countries in the sample studied. Their findings reveal reversals in market capitalization where by in 1999, common law countries had surpassed civil law countries (130% in common law compared to 74% in French civil law counterparts). Based on these figures, they refute the arguments regarding the influence of legal rules provided offered by the law and finance school, and instead argue that the reversal can be explained by political factors. Their political argument is that the presence of elite groups (industrial and financial) in civil law countries discouraged competition from startup

firms, which ultimately reduced financial systems efficiency in those countries compared to common law countries with liberalized financial sectors (Oto-Peralías and Romero-Ávila, 2017; Xu, 2011). La Porta et al. (2008) however, refute the R&J reversal claim on two grounds. First, they argue that the stock market capitalization numbers used in the R&J hypothesis were dominated by government bonds that were difficult to obtain. When bond figures were excluded from the model, there was an observable reduction in the ratio for civil law countries. Second, La Porta et al. (2008) argued that the R&J samples included companies that were listed in other countries and this caused an over-estimation of the market capitalization ratio found in civil law countries. They also show that, when compared to France, England had higher stock market figures for the years before, during and after 1913, and use this evidence to support the legal origins argument. In support of the legal origins school, Beck et al. (2001) controls for political structures and find no significant evidence suggesting political causes.

The historical and political schools also argue that 20th century politics were more responsible for reversals in financial development found in civil law countries than was the case for common law countries. Roe (2006) argues it was civil law countries that suffered the most during the world war II. The stock markets of civil law countries were in shambles after the war, and were slow to recover. This led to a shift in power structures and a modification of rules. Civil law countries saw a rise in the power of labour with a subsequent decrease in the power of financial markets, leading to improved workforce protection laws and weaker laws protecting the stock markets. Roe (2006) finds that poorly performing economies (as proxied by GDP growth) were associated with more closely-held firms during the period of study 1913 to 1945 and the reverse. La Porta et al. (2008) refute and re-test this claim in three ways. First, they add more samples including those of developing countries and find that Roe (2006) higher relationships disappear. Second, they use alternative measures of financial development for the original sample in Roe (2006) and they observe insignificant results. Lastly, they add common law countries to the sample to test results for the effect of the second world war on labor laws to which they observe insignificant results. Another critique from the political and historical schools is the exaggerated importance of shareholder protection laws by legal origins school in explaining stock market development especially in common law countries. Evidence presented in Cheffins (2001) show that developed financial markets and the nature of corporate ownership (widely-held firms) prevalent in UK should not be explained by shareholder protection and statutory laws, rather, other privately-based factors such as trust and reputed financial intermediaries. The author also presents this evidence for US. This claim is again refuted by La Porta et al. (2008). They insist that from the beginning, Britain had strong securities and shareholder laws as well as strong commercial courts and thus these have explained

growth over time.

Critics advancing cultural variables have argued that legal origins school not been able to explain how culture influence financial development. One of the critique came from Stulz and Williamson (2003). Using religion and language as cultural variables, they find that religion significant effects on financial development outcomes (debt markets and banks) as well as creditor rights quality. The legal school test this critique in Djankov et al. (2007) but fail to get consistent results on the influence of religion on creditor rights.

1.3 Empirical approaches and databases

1.3.1 Empirical approaches

A more detailed explanation of our empirical approach is provided in the individual papers that comprise this thesis, and therefore only a brief summary is provided in this section. Three of the papers of this thesis use simultaneous equations approaches, while the fourth paper uses a rather different approach, Stochastic Frontier True Fixed Effects approach model.

1.3.1.1 The Seemingly Unrelated Regression (SUR) approach

The first three papers adapt different versions (types) of Zellner 's (1962) Seemingly Unrelated Regression (SUR). Zellner (1962) pioneered the SUR as an estimation of structural equations that are related and linked to each other by correlations found in their disturbance or error terms. In other words, regressions may be unrelated, but the error terms are corrected between the equations Smith and Kohn (2000). Zellner (1962) proposed that such an estimation technique will always yield more efficient results than those that are obtained in the single equation Ordinary Least Square (OLS) approach.

When a set of equations are estimated together, it is possible to combine the resulting characteristic or parameters of one equation with the other equations in the set. This combining of the informational aspects of a statistical model enhances efficiency. Specifically, this technique is more appropriate in situations where error terms are increasingly correlated, and in instances where there are higher correlations among the explanatory variables. In other words, this technique considers heteroskedasticity and caters to error terms in the equations occurring at the same time. Lee, Liang, Lin and Yang (2016) argue that using OLS estimates for systems equation modeling will always produce inconsistent results given that OLS omit serial correlations among regressors and error terms. This could also potentially lead to endogeneity problems. SUR provides a methodology to estimate systems

of equation with endogenous variables. Two variants of the SUR estimation approaches used in the current thesis that cater for the OLS inconsistencies and solve endogeneity problems are the Conditional Mixed Processes (CMP) developed and implemented by Roodman (2011), and the Three Stages Least Squares (3SLS) pioneered by Zellner (1962). In the following sub-section, the theoretical frameworks for these approaches are discussed in detail.

1.3.1.2 Conditional Mixed Processes (CMP)

Conditional Mixed Processes (CMP) is used as the estimation method for two papers of this thesis. Roodman (2011) developed CMP to be a more comprehensive version of the conditional mixed process as comprehensive version of Zellner 's (1962) SUR method of estimating multiple equations. According to Roodman, this approach facilitates the joint estimation of two equations or a system of equation whose error terms are correlated even if the dependent variables might be unrelated to each other. Various conditions make the CMP framework more suitable for use in equations' estimations compared to traditional Least Squares models. The CMP framework is used in situations where estimations involve multiple equations (just as does SUR), instrumental variables and simultaneous equations. It can also be applied in situations where dependent variables are of different formats (e.g. binary, censored, ordered or continuous). CMP also suits recursive equations or equations that are broken down into stages and estimated together. In addition, the CMP framework also allows models to change with observations implying that estimations can be fully modeled where data is fully available (Full information maximum likelihood), and can be partly modeled in conditions where there is limited information (Limited information maximum likelihood), or reduced form of equations. A CMP framework is adapted for the first paper of this thesis to assess the effects that banks' compliance with Basel III liquidity and capital requirements have on credit growth and bank stability. Three sets of equations are estimated. The first equation is a baseline Fixed (FE) model that assesses the effects of compliance on bank lending and stability when banks comply with liquidity and capital requirements. The second and third equations are probit endogenous models that explain the factors that driver banks' levels of compliance with capital and liquidity requirements. The efficiency gains with the CMP estimation technique is that it is computationally possible to estimate the three equations jointly. The second paper also adopts the CMP framework to assess the effects of the publication of central banks supervisory guidance on bank governance and stability. The use of the CMP framework for this paper is based on the condition that the publication of supervisory guidance is not an exogenous phenomenon, rather, it could be explained by a number of country-specific variables rendering it endogenous.Two

recursive equations are estimated. In the first equation, the publication of central banks' supervisory guidance on governance explains bank governance and stability and is estimated using a fixed effects model. In the second equation, countries' institutions and legal systems condition the likelihood for central banks to publish supervisory guidance and is estimated using a probit model. Errors are allowed to be correlated in the two recursive equations. The two equations are estimated together as well using this framework.

1.3.1.3 Three Stages Least Squares (3SLS)

The CMP framework was an efficient technique in the first two papers because we used a large sample of banks. In the third paper, only country-level data was usedm which affected the size of observation data. Thus, although the paper uses a system of Instrumental Variables (IV) endogenous equations, the models estimated using CMP framework could not converge. We opted for a Three Stages Least Squares (3SLS) model (Zellner and Theil, 1962), a type of the Instrumental variable-SUR technique, an extension of the Two Stages Least Squares (2SLS). This approach is adapted for this study to estimate the effects on the development of banking systems. Previous studies in the Law and finance literature have used instruments to solve endogeneity issues associated with the institutional variables that explain financial outcomes. Some of these studies use 2SLS in their IV estimations (Caprio et al., 2007; Djankov et al., 2008; La Porta et al., 2006; Levine, 1998). Our approach extends these studies by using the 3SLS framework. The 3SLS (Zellner and Theil, 1962) uses the estimations of the 2SLS to further determine the coefficients of all the equations, which are estimated simultaneously. The authors maintain that there are more efficiency gains as more equations are identified. Belsley (1988) argues that, whereas the 2SLS is cheaper to compute, it is less efficient when compared to the 3SLS IV estimations. He thus suggests that, one choose 3SLS when considering efficiency over computational cost and when the efficiency gains are sufficiently higher.

1.3.1.4 Stochastic Frontier True fixed effects

The fourth paper of this thesis investigates the effects of ownership structures on banking efficiency and use a Stochastic Frontier Analysis (SFA) with a modified approach of a True Fixed Effects (TFE) Belotti and Ilardi (2018) and Chen, Schmidt and Wang (2014) developed by Greene (2005). Two main issues result in the use of this recent technique. The first issue is the separation of the efficiency term from firm specific heterogeneity, and the second issue is to solve what is called the incidental parameter problem. Earlier studies using SFA estimated efficiency

by combining both inefficiency and firm fixed effects together. The inefficient error term was made time invariant Aigner, Lovell and Schmidt (1977) and Meeusen and van Den Broeck (1977).

$$\ln q_{it} = x_{it}\beta + \epsilon_{it} \tag{1.1}$$

where q_{it} is output in log form; β is the parameter vector of inputs used by banks $i = 1 \ldots, N$, time t = 1…,T; and ϵ_{it} denotes the error term which is decomposed as:

$$\epsilon_{it} = v_{it}(+-)u_i. \tag{1.2}$$

u_{it} is a time invariant inefficient term combining firm inefficiency with the firm specific effects. Subsequent studies such as Battese and Coelli (1992,9) adjusted the time invariant inefficiency error into a time variant one, but firm specific unobserved heterogeneities in these models are considered to be part of the inefficiency term (u_i) and is uncorrelated with other regressors. This according to Greene (2005) produces inconsistent and biased estimates particularly when the inefficiency error and specific firm effects are combined. Greene uses FTE model and makes a distinction between the inefficiency term (which varies over time) and the bank specific unobserved heterogeneity (that does not vary over time).

There is however another problem associated with the TFE models called the *incidental parameter problem* in the SFA, which is not adequately addressed in the Greene (2005) model. Green proposed that firm-specific effects or heterogeneities should be separated from the inefficiency term using dummy variables that can be estimated using what is called the *Maximum Likelihood Dummy Variables Estimator* (MLDVE), and is considered a consistent estimator implying that the coefficients for the frontier functions are not biased and the only inconsistent estimates concern the inefficiency term (u_{it}). Chen et al. (2014) and Belotti and Ilardi (2018), however, criticize this approach by arguing that the estimations become inconsistent when the number of parameters tends to infinity and when time is fixed, which gives birth to the incidental parameter problem mentioned above. Belotti and Ilardi (2018) propose two estimation techniques that produce maximum likelihood consistent estimates that address this problem in the TFE model, namely the Pairwise Difference Estimator(PDE) and the Marginal Maximum Simulated Likelihood Estimator (MMSLE). Paper four of this thesis combines a pooled SFA and a TFE model estimated using a PDE to estimate the cost and profit efficiencies of banks in the sample.

1.3.2 Databases and samples

Of the four papers that comprise this thesis, papers one,two and four use combined bank-level and country-level data, the analysis presented in paper three focuses on country-level data only. The data used in paper one pertain to Basel III regulation and stability indicators, drawing from a sample of 606 banks operating in 53 African countries between 2005 and 2015. The choice of this time period is related to data availability in the Bankscope database. Data is collected from the van Dyk Bankscope database, banks' annual reports as well as from Claessens and Van Horen (2015). Country-level data are sourced from the World Bank and Barth, Caprio Jr and Levine (2013). We focus exclusively on commercial banks, assuming that these institutions are subject to the most stringent supervision, and, thus, are in particular exposed to pressure to comply with the Basel Accords' of international financial regulations. Paper also relies on bank-level data collected from banks' annual reports and from van Dyk Bankscope database. Country-level data for this paper are also sourced from the World Bank and countries' central banks. The second paper two uses a sample of 216 commercial banks operating in 44 African countries from 2005-2015. Only those banks whose internal governance indicators are observed over this period make up our sample. Paper three only uses country-level aggregated data for 50 African countries during the period 2000 through 2016. There are two main criteria for inclusion of countries in our sample: countries must be located on the African continent, and countries must be former colonies of a European state. Data for the third paper are collected from different sources including the World Bank, Guerriero (2016), Melton and Ginsburg (2014) and Demirguc-Kunt et al. (2018). The fourth paper also uses combined bank-level and country-level data on 607 commercial banks operating in African countries in the same period as that in paper and two. Only banks with full observations (no missing information) are included in our sample.

1.4 Summary of essays, empirical settings, and relevance

1.4.1 The Impact of Liquidity and Capital Requirements on Lending and Stability of African Banks

Bank resilience and lending suffered during and after the global financial crisis of 2008. In 2010, the Basel Committee on Banking Supervision (BCBS), a committee of the Bank for International Settlements (BIS) responded to the crisis effects and replaced the Basel II capital framework with new capital and liquidity financial

requirements (henceforth called Basel III) for globally systematic important banks. Specifically, the Net Stable Funding Ratio (*NSFR*) is designed to stabilize a bank's structural liquidity position over a time horizon of one year. The minimum total capital ratio (*TCR*) remained at 8% of risk-weighted assets, but Basel III requires a higher loss-absorbing capacity from *TCR* components. It is expected that full implementation of the Basel III framework is to be achieved by 2019 by all sovereign countries. The Basel III Accord was designed to address the effects of the global financial crisis, which adversely affected US and European banks. Exploiting the ongoing implementation of the Basel III financial regulations on capital and liquidity, this paper assesses how new Basel III financial requirements affect credit supply and bank resilience using samples of banks operating in African countries. With no systematic crisis registered on the African continent Basel III reforms were not specifically tailored to the problems of African banking sectors. Therefore, the paper asks whether these requirements were able to stimulate credit supply and improve resilience in African countries. Findings from this study show that banks that meet the NSFR liquidity requirement extend lending more but are less resilient compared to non-compliant banks. In addition, banks that are highly capitalized have higher non-performing loan ratios than those that are less capitalized. This finding is explained by higher levels of non-disclosure of bad loans coupled with deficiencies in supervision. The splitting of a sub-sample above and below medium stability show that both groups respond positively to liquidity requirements. However, it is only the high stability group of banks that respond positively to capital requirements.

This paper is relevant to both academic literature and to banking policy making. It provides new and challenging evidence on the impacts of Basel III requirements in developing countries, specifically on African countries. We challenge previous studies that maintain capital and liquidity positively contribute to bank stability. Our study provides contrasting evidence on these reforms. Specifically, we show that fulfilling these requirements does not necessarily improve lending and stability. Although countries' supervisory and regulatory quality improves compliance with Basel III standards, we show that fulfilling these requirements does not necessarily improve lending and stability. In addition, by splitting our bank samples, we are able to provide deeper insights into how banks with different stability levels respond to these financial requirements. We infer from our findings that African supervisors should pay special attention to banks that are stability under-performers when evaluating the impact of risk-weighted capital requirements on African banks supervisors.

1.4.2 The Impact of Institutions and Supervisory Guidance on Bank Governance and Stability: Evidence from African Countries

The second paper investigates the effect on banks' internal governance and stability if the central bank publishes corporate governance guidelines. The main argument in this paper is that although most of the banks operating in Africa are highly capitalized and adequately liquid, it is questionable whether the banks' risk management is sufficiently prudential. Corporate governance plays an important role in ensuring that banks remain stable. Studies have examined how differences in countries' domestic regulations and supervisory strengths influence bank stability (Anginer et al., 2014; Barth et al., 2004; Demirgüç-Kunt and Detragiache, 2002; Laeven and Levine, 2009). However, these studies focus primarily on hard regulations, specifically the Basel compliance principles. Evidence dealing with how the supervisory guidance of specific central banks affects bank governance, and consequently bank stability, is scarce in general, and completely absent for African banks. This paper exploits this cross-country and time variation (between 2005 and 2015) in the publication of the central banks' supervisory guidance on corporate governance to construct a difference-in-difference model recursive CMP framework to examine this research question. We build a two-equation CMP recursive framework with the first equation estimating the likelihood that the publication of central banks' supervisory guidance on corporate governance will improve internal bank governance and stability. The second equation of this framework models institutional quality and legal systems as explanatory variables for the central bank's publication of supervisory guidelines on corporate governance. Using a bank samples of 216 commercial banks from 44 African countries, show that the publication of supervisory guidance on corporate governance by central banks supports banks in implementing own governance improvements. That is, banks, on average, comply with the corporate governance regulation by specifically reducing the chairperson's dual roles, increasing the number of female directors and expanding the proportion of non-executive independent directors, disclosure of directors' compensations and significantly increasing the use of the services of the Big4 auditors in response to supervisory guidance publication. In addition, the publication of supervisory guidance on corporate governance significantly increases bank stability. Results also show that the provision of central banks' guidance on corporate governance is contingent on the quality of the countries' institutions. Specifically, common law origin (in contrast to the civil law origin), political stability, contract enforcement and strength of investor protection significantly drive publication of supervisory guidance by countries' central banks, which ultimately improve bank internal governance and and create an environment conducive to higher bank sta-

bility.

Banks are the major source of credit in African economies. Their governance and stability determine the prospects for economic growth and development. Thus, findings from this paper are both academic and policy relevant. The paper adds to the rare but much needed research on the institution/finance nexus in African countries. It explores whether supervisory guidance improves governance and stability of banks and whether the provision of supervisory guidance is conditioned by countries' institutions and legal systems. Findings from this study also provide hints to policy makers about the role of national institutions and central banks in improving the stability of banking systems.

1.4.3 Legal History, Institutions and the Development of Banking Systems in Africa

The third paper focuses on the history of the African continent to explain how differences in legal institutions across countries and over time have affected the development of banking systems in Africa. African countries are heavily dependent on banks for firm, governments and household financing, as alternative sources of financing such as capital markets are small and, in most countries nearly absent. Banking systems in Africa are, however, less developed in terms of access and intermediation compared to other developing and developed countries. At the same time, evidence shows that African countries are characterized by weaknesses in creditor rights, poor contract enforcement (Beck et al., 2011) and financial repression (Andrianaivo and Yartey, 2010). Yet, banks' role as financial intermediaries heavily depends on the rule of law and institutions that enforce creditor and investor rights. The institutional gaps vìs-à-vìs developed and developing economies in other parts of the world leads to poorly developed banking systems in Africa. The bottleneck is mainly related to legal traditions (common and civil law) arising from African countries' colonial legal (civil law and common law)

Legal traditions adopted by countries have over time influenced differently their legal systems and institutions that favor creditors and minority investors. African countries acquired/inherited these legal traditions via colonization by European countries and a majority, if not all of the traditions, have persisted even after independence. A growing stream of empirical literature in the law and finance area (Beck and Levine, 2005; La Porta et al., 2008, 1997; Porta et al., 1998) reveal an entwined nexus between legal history, institutions' development and financial development, that influence economic development in many countries. Better financial and economic performance prevail in those countries whose legal systems provide effective protection of creditors and investors. From the literature we know that this is more pronounced in the common law countries than in civil law coun-

tries. Drawing explicitly from the law and finance literature, this paper assess why and how legal systems adopted by African countries during colonization matters for the development of institutions for banking systems in Africa.

The paper uses country-level aggregated data for 50 African countries for the period 2000 through 2016 and estimates the results using both probit and three stages least squares. A probit model explores the links between legal traditions and legal systems development, and the 3SLS model is a four equation recursive system assessing the endogenous effects of institutions on the development of banking systems. Results from these estimations show that common law African countries more often use case law as their legal systems basis compared to civil law African countries which influence the development of institutions that provide both creditor and minority investor protection. Results also reveal that legal traditions condition the relationship between strong creditor rights and banking development in both common and civil law countries. In addition, banks flourish more often in common law African countries with better investor protection laws than in civil law countries. An efficient contract enforcement mechanism and lower levels of corruption significantly reduce the cost of banking in African countries belonging to both legal traditions. The study contributes to the literature on legal institutions and bank systems development. Specifically, it provides challenging evidence on the importance of legal institutions for creditors in African countries. Findings from this paper have important policy implications. Although legal traditions are persistent and do not change over time as the law and finance literature concludes (La Porta et al., 2008), creditor protection institutions and contract enforcement positively and significantly affect the development of banking systems in both civil and common law countries. Therefore, it is possible that there is some forms of convergence of legal institutions. Policy makers should pay more attention to these institutional indicators for the development of their banking systems.

1.4.4 Ownership and Bank Efficiency in Africa: True Fixed Effects Stochastic Frontier Analysis

The fourth paper investigates the role of ownership type and block-holding on cost and profit efficiencies of banks operating in Africa. African banking systems have over the years witnessed the expanding entry of privately-owned domestic banks, along with an increase in the number of foreign banks, replacing the traditionally dominant state-owned domestic banks. This has contributed to financial intermediation and economic development in those bank-based economies. The importance of the role played by banks in African economies implies that their efficiency and performance is crucial.

Previous studies have addressed this issue with bank samples from developed,

transition and other developing countries, Conclusions emerging from these studies suggest that foreign-owned banks are often associated with greater efficiency due to technology, scale economies, corporate governance and financial powers, especially if they are supported by the parent headquarters. However, foreign banks could also be hampered by distance and institutional differences between host and home countries rendering them inefficient. Previous studies also suggest that state-owned banks are the least efficient. The reason given is that political and connected lending increases non-performing loans. Despite numerous studies, only a few researchers have focused on African banks and the majority of the studies focus on a single country. This study adds to this debate by investigating whether the profit and cost efficiencies of banks operating in Africa have been improved by the transition in bank ownership from domestic state-owned to more domestic private-owned and foreign-owned banks. A novel stochastic frontier estimation approach is used that disentangles bank specific effects from inefficiency errors and also solves the incidental parameter problem that is associated with true fixed effect approaches in stochastic frontier models.

Using a sample of 607 commercial banks operating in 53 African countries during the period 2005 through 2015, pooled and pairwise difference estimator Belotti and Ilardi (2018) models are used to estimate the effects of bank ownership on cost and profit efficiencies of banks. Findings from this study reveal that, foreign banks are relatively more cost efficient than their domestic peers, but not more profit efficient. Second, ownership concentration reduces the cost efficiency of both domestic and foreign banks. These findings result not only from bank-internal technical and allocative efficiencies, but also from differences in institutional and economic development. Specifically, going public, country-level reforms of ownership and the level of economic development amplify the efficiency of foreign owned banks compared to domestic ones and also reverse the adverse effects of block-holding on banks' cost efficiency but not on profit efficiency.

This study adds to the empirical literature on the relationship between ownership and bank efficiency. The findings are relevant for policy makers. Relinquishing government ownership and entry of foreign banks prove to be very important for improving both profit and cost deficiencies. Equally, African banks' higher levels of controlling shareholders generates negative effects on both cost and profit efficiency. Going public could help banks overcome these deficiencies, since findings show that listing significantly improves the efficiency of banks.

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1.5 Appendices

1.5.1 Tables

Table 1.1: Level of bank performance and stability: International comparisons

	2016					
Indicator:	*Africa*	*Middle East*	*Asia*	*LACC*	*Transition*	*Developed*
Private credit to GDP (%)	26.69	75.62	78.85	41.85	35.88	84.10
	(19.79)	(29.89)	(56.98)	(18.43)	(11.79)	(37.13)
Liquid liabilities to GDP (%)	47.23	88.97	105.48	48.07	40.86	95.10
	(45.32)	(27.38)	(86.78)	(16.92)	(16.09)	(43.20)
Dom. credit to private sector	28.86	85.77	84.93	46.66	38.43	96.26
(% of GDP)	(25.85)	(21.47)	(58.78)	(23.11)	(13.75)	(48.46)
Credit to Gov't and SOEs to	10.81	31.06	19.11	8.56	9.44	14.89
GDP (%)	(11.86)	(25.57)	(10.07)	(9.85)	(8.94)	(10.20)
Bank deposits to GDP (%)	38.96	93.33	86.68	41.72	37.73	88.67
	(33.29)	(60.25)	(83.23)	(14.90)	(15.62)	(67.46)
Credit to bank deposits (%)	73.55	89.71	120.52	104.95	102.97	108.45
	(25.47)	(33.51)	(162.54)	(44.78)	(30.86)	(51.32)
NIM (%)	6.10	2.52	2.75	6.15	5.03	1.98
	(3.44)	(0.51)	(1.32)	(2.22)	(1.69)	(1.06)
Lending-deposit spread (%)	9.73	2.68	3.97	9.86	7.40	3.35
	(6.33)	(1.21)	(1.19)	(7.50)	(5.34)	(1.68)
ROA	1.63	1.51	1.03	1.67	0.47	0.76
	(1.02)	(1.18)	(0.46)	(0.75)	(2.78)	(0.59)
ROE	16.14	10.94	11.65	14.70	5.86	7.91
	(11.45)	(5.63)	(4.16)	(7.18)	(12.39)	(5.28)
Z-score	12.42	23.53	12.45	16.80	8.63	14.39
	(8.02)	(11.16)	(6.11)	(10.78)	(5.52)	(8.78)
NPL ratio (%)	10.71	2.96	3.79	2.64	10.56	7.43
	(6.49)	(1.95)	(3.26)	(0.87)	(8.93)	(10.19)
Regulatory capital/RWA (%)	18.94	17.25	16.35	16.36	18.54	19.02
	(5.52)	(1.97)	(3.77)	(2.01)	(5.27)	(4.27)
Capital to total assets	11.97	11.01	9.53	10.50	12.97	8.46
	(2.59)	(3.79)	(2.43)	(2.26)	(2.64)	(2.48)
Liquid assets to deposits	138.65	34.12	19.32	32.91	35.64	32.45
	(726.61)	(26.02)	(12.37)	(14.71)	(16.45)	(16.92)
Number of listed firms (per 1	18.49	21.75	35.49	12.34	4.42	28.61
Million People)	(31.00)	(14.54)	(73.38)	(20.21)	(1.58)	(26.85)
Market capitalization	70.33	68.46	67.42	35.16	22.76	64.27
	(100.14)	(27.88)	(52.81)	(21.68)	-	(48.51)
Observations	53	13	17	24	15	37

Source: Author's computations from Demirguc-Kunt et al. (2018) Database. LACC: Latin America, Central America and the Caribbean. Means=upper figures, standard deviations in brackets

Table 1.2: Trends in bank performance and stability for developing countries

	2000				2010				2016			
	Africa	Middle East	Asia	LAC	Africa	Middle East	Asia	LAC	Africa	Middle East	Asia	LAC
Private credit to GDP	16.86	47.55	50.99	32.13	37.93	53.23	60.48	31.04	26.69	75.62	78.85	41.85
(%)	(20.46)	(33.33)	(43.55)	(17.68)	(125.36)	(30.58)	(43.54)	(15.61)	(19.79)	(29.89)	(56.98)	(18.43)
Liquid liab. to GDP (%)	36.11	72.22	67.72	36.99	36.67	81.80	81.79	39.13	47.23	88.97	105.48	48.07
	(61.82)	(45.63)	(51.63)	(14.50)	(24.88)	(52.95)	(71.32)	(15.37)	(45.32)	(27.38)	(86.78)	(16.92)
Dom. credit to private	18.18	48.86	70.80	35.51	23.61	54.52	69.92	36.49	28.86	85.77	84.93	46.66
sector (% of GDP)	(21.94)	(37.21)	(77.34)	(19.77)	(25.13)	(30.72)	(52.00)	(21.20)	(25.85)	(21.47)	(58.78)	(23.11)
Credit to gov't and	6.72	14.57	9.88	6.84	9.35	16.09	16.66	7.97	10.81	31.06	19.11	8.56
SOEs to GDP (%)	(11.90)	(10.20)	(8.32)	(8.31)	(13.33)	(9.29)	(15.05)	(8.27)	(11.86)	(25.57)	(10.07)	(9.85)
Bank deposits to GDP	23.97	61.13	55.17	31.95	29.23	70.93	63.83	35.23	38.96	93.33	86.68	41.72
(%)	(33.88)	(47.22)	(51.88)	(14.24)	(21.11)	(52.88)	(71.06)	(14.26)	(33.29)	(60.25)	(83.23)	(14.90)
Credit to deposits(%)	72.37	82.51	102.14	102.40	68.67	80.59	120.82	91.81	73.55	89.71	120.52	104.95
	(33.09)	(39.70)	(90.33)	(33.37)	(24.65)	(39.99)	(182.60)	(38.44)	(25.47)	(33.51)	(162.54)	(44.78)
NIM (%)	7.45	2.73	2.49	6.75	6.00	3.49	5.95	6.10	6.10	2.52	2.75	6.15
	(4.18)	(1.00)	(1.02)	(2.57)	(3.01)	(1.70)	(6.55)	(2.11)	(3.44)	(0.51)	(1.32)	(2.22)
Lending-deposit spread	12.25	4.55	4.51	11.56	9.58	4.02	5.44	10.09	9.73	2.68	3.97	9.86
	(7.29)	(1.34)	(1.87)	(8.15)	(8.39)	(1.42)	(6.24)	(7.32)	(6.33)	(1.21)	(1.19)	(7.50)
ROA	2.35	1.22	0.46	0.99	1.85	1.53	1.24	1.70	1.63	1.51	1.03	1.67
	(2.09)	(0.66)	(0.71)	(1.53)	(1.05)	(0.69)	(0.99)	(0.59)	(1.02)	(1.18)	(0.46)	(0.75)
ROE	24.91	30.20	7.76	8.32	18.06	12.33	15.08	16.35	16.14	10.94	11.65	14.70
	(24.95)	(63.90)	(9.97)	(16.11)	(9.11)	(3.51)	(10.95)	(6.26)	(11.45)	(5.63)	(4.16)	(7.18)
Z-score	13.37	16.95	11.12	14.32	12.98	22.45	13.69	15.96	12.42	23.53	12.45	16.80
	(10.46)	(9.22)	(8.04)	(9.14)	(9.80)	(12.25)	(12.21)	(9.90)	(8.02)	(11.16)	(6.11)	(10.78)
Regulatory	16.74	17.24	14.02	14.01	17.63	17.56	17.40	16.13	18.94	17.25	16.35	16.36
capital/RWA (%)	(5.17)	(4.76)	(4.95)	(3.48)	(6.43)	(2.44)	(6.79)	(2.77)	(5.52)	(1.97)	(3.77)	(2.01)
Capital to total assets	10.20	9.03	7.20	10.29	10.34	11.55	9.13	10.43	11.97	11.01	9.53	10.50
	(3.31)	(2.44)	(3.19)	(1.77)	(3.54)	(3.36)	(1.77)	(2.35)	(2.59)	(3.79)	(2.43)	(2.26)
Liquid assets to deposits	102.09	44.66	37.40	30.56	87.16	37.09	33.35	32.86	138.65	34.12	19.32	32.91

Table 1.2 (continued)

	2000				2010				2016			
	Africa	Middle East	Asia	LAC	Africa	Middle East	Asia	LAC	Africa	Middle East	Asia	LAC
	(357.67)	(23.21)	(28.99)	(15.51)	(309.00)	(21.65)	(31.49)	(15.69)	(726.61)	(26.02)	(12.37)	(14.71)
NPL ratio (%)	17.00	12.97	18.53	8.93	10.28	5.78	6.08	2.89	10.71	2.96	3.79	2.64
	(10.24)	(4.91)	(10.79)	(7.64)	(8.64)	(4.53)	(9.38)	(1.04)	(6.49)	(1.95)	(3.26)	(0.87)
Number of listed firms	6.44	41.72	20.88	14.28	5.84	33.96	26.83	11.32	18.49	21.75	35.49	12.34
(per 1 Million People)	(7.38)	(33.97)	(36.10)	(21.72)	(11.98)	(25.39)	(54.98)	(17.45)	(31.00)	(14.54)	(73.38)	(20.21)
Market capitalization	24.30	55.14	61.57	24.85	43.66	78.50	61.87	35.69	70.33	68.46	67.42	35.16
	(40.45)	(38.72)	(99.35)	(20.99)	(62.57)	(34.34)	(61.27)	(34.86)	(100.14)	(27.88)	(52.81)	(21.68)
Observations	53	13	17	24	53	13	17	24	53	13	17	24

Source: Author's computations from Demirguc-Kunt et al. (2018) Database. LACC: Latin America, Central America and the Caribbean, Means=upper figures, standard deviations in brackets

Table 1.3: Bank performance and stability indicators for African countries

Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Algeria	12.83	56.58	13.94	26.81	40.79	30.73	3.16	5.30	0.87
	(4.37)	(9.9)	(4.4)	(6.0)	(6.32)	(6.77)	(0.59)	(1.47)	(0.54)
Angola	12.34	24.07	13.93	8.26	21.73	49.70	5.91	24.30	2.38
	(8.84)	(11.65)	(8.69)	(6.87)	(11.53)	(18.18)	(1.20)	(21.65)	(0.91)
Benin	16.88	30.85	16.25	5.23	20.96	80.43	3.84	4.02	0.94
	(4.89)	(7.09)	(5.43)	(2.91)	(5.99)	(7.62)	(1.29)	(2.64)	(0.57)
Botswana	23.22	37.48	24.91	1.90	35.82	65.34	6.17	6.34	3.19
	(5.84)	(8.48)	(5.93)	(0.81)	(8.53)	(10.22)	(0.91)	(0.89)	(0.88)
Burkina Faso	17.61	24.72	16.81	4.13	19.19	93.07	4.75	3.58	1.27
	(5.28)	(5.29)	(5.84)	(1.99)	(6.31)	(10.37)	(1.37)	(1.05)	(1.00)
Burundi	16.05	22.30	17.05	3.20	16.97	97.27	8.51	-	2.27
	(2.04)	(3.02)	(2.03)	(2.17)	(2.81)	(20.95)	(2.49)	-	(0.97)
Cabo Verde	48.87	74.89	50.70	20.01	68.23	71.36	4.02	7.50	0.64
	(11.94)	(12.73)	(12.64)	(4.4)	(13.81)	(8.04)	(0.93)	(1.22)	(0.26)
Cameroon	10.85	18.76	10.83	3.20	14.77	73.07	4.97	13.27	1.32
	(2.77)	(2.49)	(2.65)	(0.76)	(2.31)	(11.10)	(0.79)	(2.13)	(0.52)
Central African	8.46	18.55	9.14	2.61	7.33	120.31	9.31	12.74	1.18
	(3.33)	(4.68)	(3.22)	(0.80)	(3.1)	(23.79)	(2.45)	(1.62)	(1.15)
Chad	3.88	10.61	4.77	2.06	4.50	84.64	8.06	13.27	1.79
	(1.73)	(2.38)	(2.28)	(1.30)	(1.55)	(11.64)	(2.35)	(2.13)	(1.27)
Comoros	13.42	28.95	15.40	0.94	20.12	69.35	-	8.50	0.73
	(6.88)	(8.44)	(6.83)	(0.71)	(7.93)	(31.33)	-	(0.44)	-
Congo, Dem. Rep.	2.69	6.97	3.36	0.51	4.89	48.97	8.35	26.89	0.96
	(2.0)	(3.41)	(2.3)	(0.30)	(3.11)	(11.53)	(2.71)	(12.36)	(0.94)
Congo, Rep.	5.99	20.99	7.67	1.15	13.26	45.50	3.34	13.27	1.52
	(4.86)	(9.89)	(7.0)	(1.29)	(8.33)	(17.81)	(1.09)	(2.13)	(1.58)
Cote d'Ivoire	15.65	28.47	15.15	5.20	18.18	88.41	4.49	2.35	1.19
	(2.57)	(5.75)	(3.85)	(1.77)	(4.62)	(12.19)	(1.01)	(1.04)	(0.67)
Djibouti	25.95	74.63	27.43	2.95	65.05	41.16	4.03	9.48	1.29
	(4.10)	(11.6)	(5.01)	(1.21)	(11.5)	(10.79)	(1.34)	(1.37)	(0.66)
Egypt, Arab Rep.	37.83	77.41	41.07	35.41	65.74	57.20	2.40	5.14	0.91
	(10.13)	(7.15)	(11.51)	(11.47)	(7.10)	(13.16)	(1.04)	(0.81)	(0.43)
Equatorial Guine	5.50	9.84	5.99	0.30	7.99	64.72	3.03	13.27	1.64
	(4.67)	(5.56)	(4.19)	(0.30)	(4.84)	(18.03)	(0.98)	(2.13)	(1.75)
Eritrea	19.70	120.24	23.15	54.72	-	19.71	1.43	-	1.33
	(5.64)	(11.7)	(6.20)	(10.11)	-	(3.71)	(0.17)	-	(1.03)
Ethiopia	17.28	39.34	20.81	11.16	30.38	57.41	4.13	3.95	2.62
	(0.75)	(3.62)	(2.08)	(2.97)	(2.88)	(6.85)	(1.11)	(0.7)	(1.01)
Gabon	10.08	18.47	11.06	3.44	14.69	69.18	6.41	13.27	1.64
	(2.58)	(3.84)	(2.34)	(1.86)	(3.32)	(11.51)	(3.53)	(2.13)	(0.82)
Gambia, The	11.83	38.80	12.25	17.82	30.84	39.94	9.13	13.78	3.58
	(2.91)	(11.51)	(3.03)	(7.69)	(10.51)	(5.99)	(1.97)	(2.63)	(1.53)
Ghana	11.67	22.89	15.28	9.42	17.20	67.83	11.68	-	3.78
	(3.99)	(5.98)	(2.83)	(1.4)	(5.62)	(6.45)	(2.23)	-	(1.48)
Guinea	4.32	16.43	5.44	2.92	10.15	43.34	8.48	11.88	2.82
	(2.54)	(6.25)	(2.45)	(1.42)	(4.61)	(13.63)	(3.8)	-	(1.75)

Table 1.3 (continued)

Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Guinea-Bissau	5.47	27.24	5.29	3.50	10.11	47.42	4.79	6.08	0.01
	(4.16)	(10.10)	(3.99)	(3.50)	(5.43)	(15.76)	(1.81)	(1.32)	(2.72)
Kenya	25.24	35.43	27.77	11.03	31.36	80.29	8.13	9.63	2.69
	(3.73)	(3.16)	(3.68)	(2.19)	(3.33)	(5.38)	(1.15)	(2.18)	(0.95)
Lesotho	11.19	28.10	12.21	5.18	24.78	44.51	7.72	8.76	2.87
	(4.00)	(2.72)	(4.41)	(3.34)	(3.09)	(12.98)	(2.94)	(1.85)	(0.81)
Liberia	9.4	24.4	11.07	15.49	-	53.48	9.16	11.63	0.71
	(4.5)	(9.1)	(6.08)	(29.59)	-	(5.64)	(4.37)	(2.09)	(1.66)
Libya	14.4	62.7	15.65	10.4	45.1	37.18	1.7	3.72	0.56
	(15.06)	(89.56)	(8.71)	(7.61)	(59.86)	(15.75)	(0.84)	(0.25)	(0.26)
Madagascar	10.01	22.29	10.64	3.32	15.55	64.21	7.34	27.73	2.68
	(1.56)	(1.67)	(1.6)	(0.96)	(1.35)	(6.62)	(1.42)	(16.38)	(0.91)
Malawi	7.17	15.62	8.46	3.42	12.89	51.77	12.81	23.83	5.01
	(4.01)	(5.51)	(4.24)	(0.91)	(5.1	(12.10)	(1.61)	(4.35)	(1.08)
Mali	16.29	24.02	15.77	3.85	16.44	99.89	5.28	3.94	1.18
	(2.6)	(2.93)	(4.16)	(1.78)	(3.03)	(7.72)	(1.27)	(1.30)	(0.64)
Mauritania	20.89	24.14	22.97	4.59	16.73	125.30	5.57	13.02	1.37
	(2.05)	(2.11)	(2.3)	(1.66)	(1.91)	(8.36)	(1.99)	(2.41)	(0.70)
Mauritius	77.88	92.27	80.90	21.80	85.97	89.72	3.24	6.55	2.03
	(17.19)	(9.56)	(15.92)	(4.1)	(8.85)	(12.42)	(0.48)	(5.48)	(0.89)
Morocco	58.37	92.18	56.33	19.54	73.90	79.01	3.51	8.23	0.99
	(10.7)	(15.58)	(11.8)	(2.45)	(12.59)	(5.43)	(0.75)	(0.25)	(0.29)
Mozambique	17.33	31.02	19.17	9.22	27.06	61.95	7.15	8.73	2.95
	(8.29)	(10.82)	(9.40)	(4.56)	(10.06)	(10.06)	(1.82)	(3.05)	(2.52)
Namibia	45.33	44.84	48.59	5.90	43.75	107.51	7.01	5.21	3.52
	(3.82)	(9.61)	(6.74)	(1.61)	(9.78)	(20.23)	(2.93)	(1.12)	(1.7)
Niger	9.46	16.76	9.19	2.00	9.59	95.90	5.87	4.98	1.35
	(3.69)	(5.77)	(3.98)	(1.36)	(2.8)	(12.78)	(1.40)	(1.49)	(0.74)
Nigeria	11.73	16.57	17.02	5.02	13.89	85.01	8.15	7.67	2.17
	(3.88)	(4.05)	(7.84)	(1.75)	(4.23)	(11.32)	(1.83)	(2.15)	(0.75)
Rwanda	13.04	16.79	14.42	2.33	14.02	91.38	10.21	8.25	2.46
	(3.96)	(1.55)	(4.06)	(1.14)	(1.88)	(16.07)	(1.58)	(1.42)	(1.41)
Senegal	23.93	34.73	23.87	5.02	26.73	89.65	5.56	1.98	1.53
	(5.46)	(7.1)	(6.57)	(2.75)	(5.96)	(4.64)	(1.18)	(1.02)	(0.61)
Seychelles	21.81	75.02	23.16	29.43	67.08	34.55	4.49	7.76	3.06
	(2.67)	(19.87)	(3.16)	(15.53)	(16.57)	(9.38)	(1.56)	(1.54)	(1.20)
Sierra Leone	4.06	16.41	4.68	5.63	11.47	34.21	11.15	12.74	3.21
	(1.84)	(3.72)	(2.06)	(1.98)	(3.86)	(8.59)	(3.72)	(1.97)	(2.83)
South Africa	65.91	41.81	140.68	8.98	55.00	120.22	3.74	3.95	1.08
	(4.83)	(3.33)	(13.32)	(2.71)	(4.9)	(7.46)	(2.15)	(0.76)	(0.41)
South Sudan	1.23	18.36	-	2.53	11.71	10.77	4.74	11.75	2.79
	(0.55)	(7.58)	-	(0.7)	(6.26)	(2.14)	(1.7)	(1.91)	(1.97)
Sudan	8.27	17.88	8.90	2.93	11.89	66.07	5.62	-	0.88
	(3.39)	(4.05)	(3.46)	(1.71)	(3.13)	(15.46)	(4.32)	-	(0.82)
Swaziland	16.67	20.80	17.77	2.53	19.43	85.21	6.42	6.57	2.36
	(4.41)	(3.96)	(4.44)	(1.27)	(3.93)	(13.77)	(0.93)	(0.46)	(0.83)
São Tomé and Pri	21.37	31.18	24.55	1.19	26.74	74.47	8.29	17.77	0.62

Table 1.3 (continued)

Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	(10.86)	(6.26)	(11.75)	(0.570)	(6.55)	(29.47)	(5.51)	(2.81)	(2.77)
Tanzania	9.09	19.31	10.65	5.38	16.00	54.62	7.76	8.86	2.56
	(3.57)	(3.45)	(3.2)	(0.94)	(2.92)	(14.5)	(1.27)	(3.07)	(0.95)
Togo	21.88	36.38	22.21	7.44	27.64	79.80	4.22	3.87	1.74
	(7.33)	(9.11)	(10.31)	(3.64)	(8.67)	(10.35)	(2.04)	(1.30)	(2.61)
Tunisia	59.66	59.05	66.86	5.63	47.10	126.50	3.01	-	0.72
	(8.95)	(7.59)	(8.97)	(1.35)	(6.21)	(5.42)	(0.29)	-	(0.36)
Uganda	9.47	15.95	11.48	5.69	13.87	66.95	10.89	10.99	3.43
	(2.81)	(1.36)	(3.33)	(0.80)	(1.84)	(12.04)	(1.599)	(1.69)	(0.99)
Zambia	9.10	17.92	10.97	6.21	16.58	55.57	8.87	12.22	1.43
	(2.80)	(2.07)	(4.49)	(1.05)	(1.83)	(12.77)	(1.7)	(6.42)	(1.02)
Zimbabwe	24.17	53.27	42.94	-	43.56	71.96	11.30	-	1.91
	(32.11)	(116)	(30.45)	-	(87.17)	(19.05)	(6.71)	-	(3.73)

Variables: (1) Private credit to GDP, (2) Liquid liabilities to GDP, (3) Domestic credit to private sector, (4) Credit to Government and state-owned enterprises,(5) Deposits to GDP, (6) Credit to deposits, (7) Net interest margins, (8) Lending-deposit spread,(9) Return on assets. Means=Upper figures, standard deviations in brackets

Table 1.4: Bank performance and stability indicators for African countries

Country	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Algeria	11.00	13.92	21.54	7.93	45.78	13.32	-	-
	(5.46)	(5.0)	(3.41)	(1.15)	(14.95)	(4.30)	-	-
Angola	23.33	10.92	-	10.60	48.53		-	-
	(9.86)	(1.24)	-	-	(21.21)	-	-	-
Benin	12.23	16.09	-	-	28.72			
	(6.77)	(2.31)	-	-	(7.63)	-	-	-
Botswana	43.84	7.93	20.88	8.64	25.73	3.35	10.12	29.48
	(15.59)	(1.27)	(3.14)	(1.06)	(5.75)	(1.07)	(0.89)	(7.85)
Burkina Faso	15.24	7.41	-	-	20.50	-	-	-
	(12.38)	(1.074)	-	-	(5.18)	-	-	-
Burundi	19.18	16.37	19.66	13.39	37.80	11.79	-	-
	(9.24)	(2.09)	(1.61)	(0.92)	(10.77)	(4.70)	-	-
Cameroon	18.77	9.38	8.33	7.59	36.95	10.44	-	-
	(6.6)	(0.81)	(1.91)	(0.78)	(8.52)	(0.84)	-	-
Cape Verde	9.56	23.94	-	-	- 30.78	-	-	-
	(4.66)	(1.82)	-	-	(6.87)	-	-	-
Central African	10.62	6.30	30.96	21.07	26.18	20.98	-	-
	(9.96)	(1.15)	(9.67)	(2.22)	(11.5)	(9.13)	-	-
Chad	17.23	10.74	16.28	12.57	29.64	12.05	-	-
	(13.01)	(2.32)	(3.75)	(1.98)	(10.77)	(5.06)	-	-
Comoros	6.60	-	-	-	57.24		-	-

Table 1.4 (continued)

Country	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	-	-	-	-	(2.42)	-	-	-
Congo, Dem. Rep.	8.93	4.51	-	-	67.93	-	-	-
	(10.08)	(1.19)	-	-	(12.54)	-	-	-
Congo, Rep.	21.82	5.15	14.63	10.08	52.45	2.24	-	-
	(23.97)	(1.72)	(3.69)	(3.02)	(7.36)	(1.48)	-	-
Cote d'Ivoire	14.82	17.45	-	-	22.72	-	2.02	22.20
	(7.14)	(2.34)	-	-	(4.27)	-	(0.23)	(11.04)
Djibouti	20.53	14.64	11.02	-	76.86	13.28	-	-
	(13.21)	(3.14)	(1.21)	-	(7.69)	(5.17)	-	-
Egypt, Arab Rep.	13.23	16.58	13.41	5.77	33.82	15.63	7.08	39.59
	(4.58)	(2.94)	(2.05)	(0.81)	(10.21)	(5.94)	(5.19)	(24.01)
Equatorial Guine	21.65	8.82	23.11	12.30	96.89	13.74	-	-
	(9.09)	(12.50)	(3.12)	(1.65)	(45.75)	(8.53)	-	-
Eritrea	25.55	6.47	-	-	65.33	-	-	-
	(19.6)	(1.40)	-	-	(25.18)	-	-	-
Ethiopia	31.98	9.28	-	-	49.84	-	-	-
	(12.82)	(1.35)	-	-	(23.86)	-	-	-
Gabon	14.60	13.43	15.95	11.14	35.28	7.84	-	-
	(6.99)	(2.59)	(5.30)	(2.32)	(11.53)	(4.35)	-	-
Gambia, The	36.89	9.34	-	-	68.42	-	-	-
	(21.70)	(0.81)	-	-	(16.62)	-	-	-
Ghana	35.15	7.04	15.86	12.44	33.07	14.16	1.22	6.97
	(16.96)	(1.13)	(2.75)	(2.2)	(8.97)	(4.44)	(0.08)	(1.83)
Guinea	30.10	6.38	17.09	10.71	66.76	6.95	-	-
	(14.21)	(2.04)	(1.24)	(0.42)	(16.18)	(1.67)	-	-
Guinea-Bissau	-1.99	5.28	-	-	38.71	-	-	-
	(25.26)	(1.59)	-	-	(16.41)	-	-	-
Kenya	19.24	16.42	18.67	13.03	26.92	12.96	1.43	24.96
	(5.51)	(2.67)	(2.41)	(1.14)	(10.05)	(10.98)	(0.14)	(10.43)
Lesotho	30.29	8.47	16.20	10.96	76.77	2.90	-	-
	(9.90)	(1.09)	(3.18)	(3.12)	(16.83)	(0.88)	-	-
Liberia	7.01	6.41	-	-	58.86	-	-	
	(17.71)	(4.53)	-	-	(26.6)	-	- -	-
Libya	6.50	36.82	-	-	79.62	-	-	
	(3.76)	(12.66)	-	-	(22.93)	-	-	-
Madagascar	27.34	5.80	14.78	10.04	53.25	9.89	-	-
	(8.24)	(0.77)	(1.03)	(1.40)	(6.95)	(1.20)	-	-
Malawi	31.90	14.51	-	-	54.42		0.85	14.10
	(6.92)	(1.58)	-	-	(14.9)	-	(0.15)	(10.08)
Mali	11.80	9.30			27.55			
	(6.16)	(1.35)	-	-	(6.36)	-	-	-

Table 1.4 (continued)

Country	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Mauritania	7.19	29.46	31.46	16.64	42.55	30.35	-	-
	(3.22)	(4.94)	(5.05)	(1.86)	(8.25)	(9.71)	-	-
Mauritius	12.53	17.36	16.32	8.33	37.78	4.00	42.45	52.61
	(5.38)	(3.64)	(1.48)	(1.50)	(8.01)	(1.9)	(13.78)	(19.67)
Morocco	11.47	38.96	11.89	8.05	26.79	10.87	2.09	50.94
	(3.74)	(3.48)	(1.11)	(0.81)	(5.83)	(5.9)	(0.23)	(19.86)
Mozambique	34.06	4.12	15.00	8.41	49.45	7.12	-	-
	(39.12)	(1.24)	(2.53)	(1.23)	(20.68)	(7.61)	-	-
Namibia	17.20	17.54	14.81	8.60	16.31	2.33	4.14	2.91
	(6.48)	(15.83)	(0.58)	(1.15)	(11.62)	(0.85)	(1.29)	(3.45)
Niger	13.33	14.87	-	-	28.83	-	-	-
	(6.91)	(2.09)	-	-	(6.96)	-	-	
Nigeria	16.22	15.29	15.90	10.63	49.31	13.87	1.33	15.04
	(7.31)	(2.75)	(5.74)	(4.18)	(23.76)	(9.79)	(0.22)	(8.68)
Rwanda	26.89	7.22	18.29	11.16	39.44	20.87	-	-
	(26.48)	(1.88)	(6.07)	(3.63)	(7.58)	(20.27)	-	-
Senegal	16.71	14.10	15.25	9.02	21.34	17.33	-	-
	(6.86)	(1.59)	(2.50)	(0.88)	(3.58)	(2.61)	-	-
Seychelles	37.88	9.81	21.85	9.15	48.48	6.06	37.41	-
	(20.35)	(2.25)	(4.72)	(1.59)	(13.44)	(2.61)	(32.54)	-
Sierra Leone	23.35	5.58	32.24	15.93	49.35	20.91	-	-
	(20.52)	(1.60)	(4.84)	(3.75)	(7.43)	(9.15)	-	-
South Africa	15.79	16.12	13.86	7.78	17.53	3.23	7.54	
	(8.15)	(7.06)	(1.40)	(0.87)	(5.86)	(1.41)	(1.99)	(44.66)
South Sudan	27.74	4.81	14.97	-	102.03	9.97	-	-
	(16.76)	(2.56)	(3.91)	-	(35.77)	(3.38)	- -	
Sudan	7.42	16.75	-	-	61.65		-	-
	(7.20)	(4.76)	-	-	(35.6)	-	-	-
Swaziland	19.10	10.09	22.53	13.81	30.60	7.11	4.98	6.86
	(6.36)	(2.62)	(5.1)	(1.96)	(7.97)	(2.18)	(0.64)	(1.49)
São Tomé and Pri	-13.41	3.10	-	-	63.25	-	-	-
	(46.16)	(2.24)	-	-	(29.74)	-	- -	
Tanzania	27.29	10.98	17.96	10.71	59.05	7.08	0.22	4.10
	(14.15)	(1.48)	(0.84)	(0.88)	(42.47)	(1.66)	(0.1)	(1.12)
Togo	26.38	4.64	-	-	36.14	-	-	-
	(30.45)	(1.66)	-	-	(15.68)	-	-	-
Tunisia	8.99	34.97	11.09	7.56	22.34	17.37	5.28	14.67
	(3.81)	(3.09)	(1.5)	(1.02)	(3.34)	(4.73)	(0.92)	(5.03)
Uganda	30.07	11.14	20.42	11.90	40.89	4.57	0.19	9.91
	(14.54)	(2.11)	(1.66)	(1.90)	(15.41)	(2.62)	(0.06)	(11.17)
Zambia	12.21	8.21	23.36	11.34	45.60	9.04	1.29	14.03

Table 1.4 (continued)

Country	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	(8.70)	(1.35)	(3.19)	(1.94)	(10.48)	(2.96)	(0.50)	(6.67)
Zimbabwe	39.17	3.53	-	-	-	-	165.24	-
	(60.21)	(1.0)	-	-	-	-	(98.58)	-

(10) Return on equity, (11) Z-scores, (12) Regulatory capital/RWA, (13) Capital to total assets, (14) Liquid assets to deposits, (15) Non-performing loans ratio, (16) Listed firms per 1 million people, (17) Stock market capitalization. Means=Upper figures, standard deviations in brackets