Doctoral Dissertation

Doctoral School in Social Sciences

Local Development and Global Dynamics

University of Trento

Essays on the demand and supply of small business finance in Kenya

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(April 2015)

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ACKNOWLEDGEMENTS

Writing this dissertation gave me the chance to see new places and meet extraordinary people in different parts of the world. I've incurred many debts along the way. I want to express gratitude towards everyone who helped me finalizing the thesis and achieving this doctoral degree.

I want to thank my supervisor Giuseppe Folloni for the patient guidance, support and advice he has provided throughout this doctorate. He has always encouraged me to pursue my own interests and to keep the end goal in sight. I am grateful to my co-supervisor Dr Mary Njeri Kinyanjui who gave an invaluable help in contextualizing the research and understanding more of the local economy in Kenya. I want to thank also Prof. Emanuele Taufer for the feedback provided at different stages of the research, and Prof. Mario Biggeri for the valuable comments. I received crucial support from the Institute of Development Studies at the University of Nairobi, and I thank in particular prof. Dorothy McCormick, prof. Winnie Mitullah and Dr. Radha Uphadyaya for giving me feedback at different stages of the dissertation.

I want to thank every single entrepreneur in Kariobangi and Korogocho who participated in the research and welcomed me in their community. Spending over a year in Kariobangi was a life-changing experience, where I learned a lot about the potential of the local economy, the resilience of the entrepreneurs and great challenges that people face on a daily basis. It won't be easy to give back as much as I received during my time there, but I will certainly try my best. The fieldwork research benefitted greatly from the assistance of Andrew Muinde and the late Ignatius Mayero, as well as the great support from Ann, Maurice, Bosco, Peninah, Frederick, Margaret, Tobias, Meshack, Peter, Albert, Charles, Evelyne and many others. This work could have not been done without your support.

I benefitted immensely from my interaction with Financial Sector Deepening Kenya (FSD-K). I want to thank Amrik Heyer who mentored my work since I came to Nairobi; James Kashangaki who helped me understand more about SMEs in Kenya and David Ferrand for his continued support.

I want to thank also my family for being close to me in the good and the bad times; especially Elia who keeps my mind curious at all times. I thank all the friends I met in Nairobi, Verona, Trento, Berlin and Amsterdam at different stages of this journey. Thanks for being patient and supportive all the way through.

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This doctoral thesis is dedicated to the memory of Ravindra Ramrattan, who was one of the 67 victims of the terrorist attack at the Westgate Mall in Nairobi on the 21st of September 2013. Ravi was a close friend and a colleague, as well as a talented young economist with a bright future ahead. He helped me throughout this dissertation, from identifying relevant research questions to formalizing econometric models and interpreting the findings. Ravi had an impressive speed of thought and was fun to work with. I want to express my gratitude to the Ramrattan's family: Bisnath, Parbattee, Rishma and Rajiv for making me feel home during my visit in Trinidad and Tobago. This dissertation is dedicated to you as well.

SUMMARY

This PhD dissertation is a collection of four essays focusing on the demand and supply of small business finance in Kenya. The studies are the result of primary research conducted over three years with both demand-side players, more specifically micro and small-scale entrepreneurs operating in a low-income area in Nairobi. And the main suppliers of small businesses finance in Kenya - commercial banks - which provided data on the size, characteristics and evolution of their SME finance portfolio between 2009 and 2013. Since commercial banks are not the only players in the provision of finance to small firms, the dissertation studies the entire financial landscape of both formal and informal financial providers, including institutions such as microfinance institutions, savings groups and moneylenders among others.

The dissertation is divided in two parts: the first half of the dissertation analyses the determinants, effects and challenges of access to formal and informal finance by small enterprises in Nairobi (Essays 1 and 2). These two essays use primary data collected through a survey questionnaire with 344 micro and small enterprises in a low income neighbourhood in Nairobi. The analysis describes the financial landscapes in which businesses operate and the effects of access to credit on firm performance (e.g. investments, profitability and employment growth.). The second half of the dissertation analyses the supply-side, more specifically the relation between formal financial sector development and economic growth (Essay 3) and the characteristics and development of bank financing to SMEs (small and medium enterprises) in Kenya (Essay 4). Essay 3 relies on secondary time-series data taken from the World Bank databases, whereas Essay 4 uses original survey data administered to commercial banks in Kenya in two survey rounds in 2012 and 2014.

Each essay in this dissertation is a standalone study with its own literature survey, research questions, data and methodological approach. The main findings of the demand-side chapters is that informality has significant effects on access (or exclusion) to bank finance, but is less relevant when we investigate informal financial instruments such as self-help groups and family/friend loans. Essay 2 of the dissertation shows that different types of loans have different effects on the performance of businesses, and that loans from commercial banks seem to incentivize investments and employment creation more than other types of loans. The supply-side chapters on the other hand show that there is a long-term association between financial sector development in Kenya and economic growth, and that there is a reciprocal relation of causality over the long-run. Finally, Essay 4 shows that bank financing to SMEs has grown steadily over the last few years and that banks are increasingly exposed to small businesses in their lending portfolio. However, the financial products to SMEs tend to be unsophisticated and concentrated in few sectors.

TABLE OF CONTENTS

List of Tables

List of Figures

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Introduction

This PhD dissertation is a collection of four essays focusing on the demand and supply of small business finance in Kenya. The studies are the product of primary research conducted over three years with both demand-side players, more specifically small-scale entrepreneurs operating in a low-income area in Nairobi; and the main suppliers of small businesses finance in Kenya, namely commercial banks. Since banks are not the only players in the provision of finance to small firms, the dissertation studies the entire financial landscape of both formal and informal financial providers, discussing the role that they play in the development of small firms. In line with this approach, the dissertation is divided in two main parts: the first half analyses the determinants, effects and challenges of access to formal and informal finance by small enterprises in Nairobi (essays 1 and 2). The second half analyses the supply-side, more specifically the relation between formal financial sector development and economic growth (essay 3) and the characteristics and development of bank financing to SMEs (small and medium enterprises) in Kenya (essay 4).

In this introductory chapter, the objective is threefold. First, to outline the broader questions that this study tries to address, analysing the main strands of literature which represent the pillars of this dissertation. Second, the chapter provides an overview of the Kenyan economy in order to understand some key facts and figures about the local economy and providing the context in which each of the four essays are based. Finally, it provides an overview of what to expect in the rest of the dissertation and a summary of core research issues addressed in the four essays.

1 BACKGROUND: PLACING THIS DISSERTATION IN THE BROADER CONTEXT OF ECONOMICS, FINANCE AND DEVELOPMENT

Each essay in this dissertation is a standalone piece containing separate literature surveys on the specific issues addressed in the papers. This introduction however wants to place the dissertation in a broader theoretical and conceptual context to see where it fits in the fields of economics, finance and development. Like any dissertation, this study starts by addressing the “big” questions and unsolved issues in the literature, but then drills down to very specific issues which partially answer these questions, inevitably leaving some gaps and recommendations for further research.

This dissertation stands on three large but related strands of academic literature: first, the microeconomics of finance and development, more specifically microfinance and financial inclusion in the context of small enterprises. Second, the macroeconomics literature on finance and economic growth, especially with a focus on low-income countries. Finally, this thesis has strong links with the private sector development literature, in particular the issues of enterprise informality and enterprise development. Next sections will review the key issues that have emerged in the literature in recent years, and it will set the theoretical background for the rest of the dissertation.

1.1 THE RISE AND CRISIS OF MICROFINANCE, AND ITS TRANSFORMATION INTO "FINANCIAL INCLUSION"

The story of Grameen Bank and its founder, the Bangladeshi economics professor Muhammad Yunus, is well-known in development circles. In his book "Banker to the Poor", Yunus (1998) tells the story of his visit to the poor village of Jobra (Bangladesh) in 1976, when he met low-income women making bamboo furniture for their livelihoods. These women had no opportunity to obtain credit from formal financial institutions, and therefore had to rely on local moneylenders to buy raw material at exorbitant interest rates. During one of his visits to Jobra, Yunus lent the equivalent of 27 US dollars to 42 women, de facto starting the first informal microfinance activity in the country[1]. Since these women lacked physical collateral, Yunus relied on group-based lending techniques, where the loan was disbursed to a group of women and each member was considered a co-guarantor of the loan. Despite some initial scepticism, Yunus was able to secure a first loan from a Government bank in late 1976 and eventually other banks accepted to finance Yunus' micro-lending project, which by 1982 expanded to almost 30,000 members. In 1983, Grameen Bank was formally registered and started a period of fast expansion reaching world-wide notoriety and replication of its business model in other countries. In the last published figures in December 2013, Grameen Bank accounted 8.74 million members and 6.54 million active borrowers, 94 percent of them women[2].

The "microfinance revolution" expanded well beyond the Bangladeshi borders. According to the Microcredit Summit Campaign (2012), as of December 2010, 3,652 microfinance institutions reported reaching over 205 million clients worldwide, 137.5 of whom were among the poorest households, and

[1] While some early forms of microcredit started already in the 19th century in Europe with the Raiffeisen credit cooperatives (Viganò 2004; Roodman 2012), the field of microfinance become a core part of the international development agenda after the success of Grameen Bank in Bangladesh.
[2] Data taken from http://www.grameen-info.org/ (last accessed in October 2014).

82.3 percent of these poorest borrowers are women. Microcredit has generated considerable enthusiasm in policy-making and donor circles, leading to the Nobel Peace Prize awarded to Yunus and the Grameen Bank in 2006 for contributing to poverty alleviation worldwide. In parallel with its expansion, the last decade registered also an important "schism" in the field of microfinance, with many academics and policymakers supporting the transformation of microfinance institutions into fully independent profit-making institutions (Morduch 2000). In its early stages, providers of microcredit were not financially sustainable and relied on subsidies and grants from donor agencies or NGOs. This has changed over the last decade: as the field of microfinance became more mature, for-profit companies have entered the space and some non-profit institutions have transformed into for-profit traded companies, the most notorious examples being *Compartamos Banco* in Mexico and *SKS Microfinance* in India.

Starting from 2010, and especially after the rise of microcredit-linked suicides in the Indian state of Andhra Pradesh[3], the field of microfinance started attracting growing criticism and entered a period of crisis. The state of Andhra Pradesh saw a fast expansion of microfinance institutions in the 1990s and early 2000s, to the point that the Consultative Group to Assist the Poor (CGAP), a microfinance-focused organization housed at the World Bank, named Andhra Pradesh the Indian "Capital of Microfinance" (CGAP 2010:2). The microfinance industry in Andhra Pradesh faced a profound crisis when almost all microfinance borrowers decided to stop repaying their loans incited by politicians who accused the industry of making exorbitant profits at the expense of the poor. In an influential article published on the New York Times in November 2010, Polgreen and Bajaj (2010) drew some similarities with the subprime mortgage crisis in the US, when the seemingly noble idea to finance home ownership to low-income individuals threatened to collapse the banking system. After the crisis in India, microfinance institutions faced periods of crisis in other parts of the world including Latin America, with the emergence of the "No Pago" movement, and Bangladesh, with a prolonged stalemate between Grameen founder Muhammad Yunus and the Bangladeshi government over the leadership of the Grameen Bank (Banerjee et al. 2013).

Criticisms of microfinance emerged also in academic circles. A strongly critical literature led by Milford Bateman argued that the microfinance model is strongly faulted. Bateman and Chang (2012) outline a number of arguments on why microfinance harms the efforts of economic development and poverty alleviation in low-income countries: here we will list three that are most relevant to this dissertation. First, they argue that *the microfinance model ignores the crucial role of scale economies.* The

[3] For a background on the so-called "suicide epidemics" in Andhra Pradesh see http://www.bbc.com/news/world-south-asia-11997571 (last accessed in November 2014).

main criticism is that microfinance by definition promotes the establishment of microenterprises, which are inefficient and operate only for subsistence. According to Bateman and Chang (2012) the most pressing need in many developing countries is to target the so-called 'missing middle' of firms between large-scale internationally-renowned corporations and the hundreds of millions 'survivalist' informal microenterprises. But microfinance institutions are ill-equipped to address those needs. Bateman and Chang (2012) also state the very strong argument that *microfinance helps to de-industrialise and infantilise the local economy.* The argument is that while institutional economics have shown that creative, young enterprises can trigger the Schumpeterian process of creative destruction, microfinance actually harms these efforts because the high interest rates and short maturities typical of micro-loans are tailored for the most simple and unsophisticated microenterprises, typically micro trading, retail or service activities, with little to no growth potential. Finally, Bateman and Chang (2012) argue that *the microfinance model ignores the crucial importance of solidarity and local community ownership and control.* The argument here is that existing practices of mutual help and support are destabilised by the strongly competitive nature of microfinance institutions and the peer-pressure that borrowers place to each other when they obtain a loan as a group.

While the arguments in Bateman and Chang (2012) have raised some relevant concerns about the potential risks of microfinance, their criticism stands mostly on ideological grounds rather than empirical research (van Rooyen, Stewart, and de Wet 2012). For example the argument that microfinance deindustrialises and infantilises the economy tends to oversimplify the complex and multifaceted reality of businesses in the informal economy and the diverse nature of market development in low-income countries. A large body of literature since the 1990s has shown that contrarily from popular belief, the informal economy is not a "reserve army of labour" operating for survival and with no growth potential. While low-productivity subsistence enterprises certainly exist, numerous firms in the informal economy have growth potential and can be considered the equivalent of the small business sector operating in industrialized countries (Maloney, 2004). Compared to the early literature on the informal economy (see Chen 2005), the key difference in recent literature is that the informal economy is no longer seen as a homogeneous part of the market but a diverse and evolving environment, composed of different potentials and constraints to growth. The impact of microfinance is therefore different depending on the segment of the informal economy one is focusing on.

In recent years in fact a number of studies have shown contradicting results on the impact of microfinance on low income households and microenterprises. Some of the most positive results were reached in Latin America by Becchetti and Conzo (2011, 2013), who studied the non-monetary effects of

microfinance on capabilities and life satisfaction. Becchetti and Conzo (2011) argue that microfinance enhances the *horizontal positive externality* among borrowers: since loan concession occurs after severe screening procedures, it becomes a proof of trustworthiness which increases private and social outcomes of the borrower. By creating a positive externality on the trustworthiness of the borrower, microfinance improves the capacity of interpersonal relationships and expands individual capabilities (Becchetti and Conzo, 2011: 265). In the more recent publication, Becchetti and Conzo (2013) show that access to microfinance loans has significant direct effects on life satisfaction of the borrowers independent of the changes in incomes. Using a set of qualitative and quantitative indicators to measure life satisfaction, they argue that this effect is due to increased self-esteem, trust, social recognition and expectations on future incomes.

A special edition of the American Economic Journal (Applied Economics) published in January 2015 focused entirely on the impact of microfinance, showing the results of six randomized control trials conducted in different parts of the world (Crépon et al. 2015; Attanasio et al. 2015; Angelucci, Karlan, and Zinman 2015; Augsburg et al. 2015; Banerjee, Karlan, and Zinman 2015; Banerjee et al. 2015; Tarozzi, Desai, and Johnson 2015). The six randomized evaluations use a variety of sampling design strategies, data collection techniques and econometric models to measure the causal effects of microcredit on borrowers and their communities. This introductory chapter will not describe in depth each of the studies, but it is important to summarize the key findings of the papers (see table below). According to Banerjee et al (2015:6) the overall pattern identified in the RCTs is that microcredit has partially positive but not transformative effects on the poor.

Table 1: Impact of microcredit from the 6 RCTs (Source: adapted from CGD, 2015[4])

Location	**Bosnia**	**Ethiopia**	**India**	**Mexico**	**Mongolia**	**Morocco**
Sample composition	Men and women	Men and women	Women only	Women only	Women only	Men and women
Type of lending	Individual loans	Group Liability	Group Liability	Group Liability	Individual loans and group liability	Group Liability
Credit access	+	+	+	+	+	+
Business activity	+	+	+	+	x	+
Income	x	x	X	x	x	x
Consumption	-	-	x	x	+	x
Social effects	x	x	X	+	x	x
Note: "+" indicates a significantly positive result (p<0.05), "x" indicates insignificant results and "-" indicates significantly negative results						

[4] Available at http://www.cgdev.org/blog/final-word-microcredit (last accessed in March 2015)

Roodman (2012) conducted another in-depth analysis of the impact of microfinance arguing that microfinance has little or null long term impact on poverty eradication in low-income countries. In line with 6 RCTs mentioned above, he argues that although microfinance stimulates the creation of microbusinesses, over the long term households that borrow micro-loans are not lifted out of poverty. Microfinance, in other words, help households survive poverty rather than escape it.

The crisis of microfinance described above has contributed to the transformation of the field of microfinance into the broader field of "financial inclusion". The objective of financial inclusion academics and practitioners is to go beyond microfinance institutions themselves and include different types of informal and formal providers (e.g. ROSCAs, credit cooperatives, telecommunication providers, etc.). The objective is also to go beyond credit and include other financial services such as payments, insurance and savings that can lower transaction costs for the low income population. Johnson (2004) for example studied access to finance among low income households in Kenya and developed the concept of "financial landscapes". The idea is that while microfinance is one type of financial provider, poor household rely on numerous other institutions, both formal and informal, to manage their finances. In her study, she shows that key players are the informal rotating savings and credit associations (ROSCA) and the accumulating savings and credit associations (ASCA)[5], in addition to mobile money providers, credit cooperatives, commercial banks and moneylenders among others. The richness of the financial landscapes, and the different roles that each institution plays in the functioning of small businesses represents a key goal of this dissertation, in particular in essay 1 and 2 which look at the determinants and effects of formal and informal credit on enterprise performance.

Another characteristic of financial inclusion is that it looks at financial services beyond credit itself. In a recent article, Harvard Economist Dean Karlan (2014) argues that finance should be seen as a glue that can support the lives of the poor in different dimensions: "[Finance] enables money to be in the right place at the right time for the right situation. To borrow and save is to move money from the future to the present, or from the present to the future. To insure is to move money from a "good" situation to a "bad" one. Ideally, we would never have to think about finance. It would be seamless, operating in the background. It would allow us to invest and consume exactly as we deem." While the role of financial services such as payments and insurance has become very important in both academic and policy-making circles, it is only partially addressed in this dissertation, which has maintained stronger focus on the

[5] ROSCAs and ASCAs are two types of informal savings group with slightly different functioning mechanisms. They will be analysed more in-depth in essays 1 and 2 of this dissertation.

provision and usage of credit instruments by small firms. Addressing Bateman and Chang's criticism (2012), however, this dissertation does not focus only on survivalist microenterprises but also looks at firms that are small but more growth oriented. This will be explained in more detail in essay 1 and 2 of the dissertation.

1.2 FROM MICRO TO MACRO: FINANCIAL DEEPENING, ECONOMIC GROWTH AND DEVELOPMENT

Almost simultaneously with the emergence of microfinance literature in the 1990s –but in very different academic circles– the question of financial sector development become central also in macroeconomics: a core topic of research in the 1990s was whether the expansion of the financial sector is conducive to growth and economic development or whether, on the contrary, there is no impact or it is economic growth that fuels financial sector development over the long-term (King and Levine 1993; Rajan and Zingales 1998; Beck, Levine, and Loayza 2000; Levine, Loayza, and Beck 2000). An extensive review of literature in this field is conducted in essay 3 of this dissertation, but this introduction provides a background and explains why this is relevant for the analysis of small business finance conducted in the dissertation.

An interesting review of how finance became part of the growth economics literature was conducted by Honohan (2004). He argues that until the early nineties most academics and policymakers studied the banking sector and monetary policy in terms of how to preserve stability, not as potential drivers of economic growth. Although the 1970s saw the rise of the "money and growth" literature, this mostly focused on how interest rates could affect investments and savings rates in the short-term: "money and finance were seen as something that could go wrong, plunging the economy into a disequilibrium of involuntary unemployment as had occurred in the 1930s, and seemed to be re-emerging in the 1970s with the collapse of the Bretton Woods system and the oil crises. Avoiding crises seemed to be the main task of financial policy" (Honohan 2004:3). The issue of stability of course returned central to finance and economics after the 2008 financial crisis and, as mentioned earlier in this section, the crisis in Andhra Pradesh raised many questions about the effect of over-indebtedness on low-income borrowers and the sustainability of the microfinance model. Reading Honohan's quote with the 2008 financial crisis in hindsight is a strong reminder that financial sector development has to go hand by hand with stability: without the proper checks and balances, the unregulated expansion of the financial sector can expose the countries to huge risks and plunge the economy into recession. Although financial sector stability does not represent a core topic of this dissertation, this should be considered a limitation of the thesis rather than an implicit argument that financial sector development carries no risks.

In addition to studying the contribution of finance to economic growth, several studies in the late 2000s have analysed the distributional effects of financial sector development and its aggregate impact on lower income households and small businesses (Jalilian and Kirkpatrick 2005; Honohan 2008; Beck, Demirgüç-Kunt, and Levine 2007; Beck et al. 2008). Beck, Demirgüç-Kunt, and Levine (2007) for example conducted a cross-country empirical investigation showing that financial development boost incomes of the poorest quintile of the population and reduces income inequality. They find that 60 percent of the impact of financial development on the poorest quintile works through GDP growth and approximately 40 percent operates through the reduction in income inequality. They also attempted to measure the impact of financial development on the fraction of the population living in extreme poverty under one dollar a day and find a significant effects. Though, Beck, Demirgüç-Kunt, and Levine (2007) warn the latter finding requires further research because of limitations with the data. Moreover, since the econometric analysis does not analyse the country-specific characteristics and policies, their research provides limited contribution on which particular financial policies are more effective at fostering poverty-reduction.

In a related study, Beck et al. (2008) analyse the distributional effects of financial development on the private sector, in particular they investigate whether financial development tends to benefit small enterprises or larger-scale firms with easier access to financial services. Beck et al (2008) follow a similar methodology to the one used by Rajan and Zingales (1998)[6]. Using a cross-industry, cross-country econometric approach, they examine whether industries that have a larger share of small firms grow faster in economies with well-developed financial systems. Using a difference-in-difference approach, they find that industries with larger shares of small firms grow disproportionally faster in economies with developed financial systems, proving therefore that the development of the financial sector at the aggregate level is very relevant for small business finance. The characteristics of bank financing to small businesses is analysed in-depth in essay 4 of the dissertation.

1.3 ENTERPRISE INFORMALITY AND PRIVATE SECTOR DEVELOPMENT

Another strand of literature that plays a relevant role in this dissertation focuses on enterprise informality, the informal economy and private sector development. The issues of informality plays an important role in the first two essays of the dissertation, which focus on the demand-side of small business finance. The literature on economic clusters is very important as well, in particular in the choice of the

[6] This study will be reviewed more in-depth in essay 3.

research locations analysed in the empirical research. Theories on economic clusters help understanding the development of local economies and the relevance of firm networks in increasing the productivity of local economic systems (Humphrey and Schmitz 2002; Mead and Liedholm 1998; Mehrotra and Biggeri 2007). This will be addressed more in-depth in the first chapter of the dissertation.

Since in the early 1970s when the concept of informal sector was developed (Hart 1973), numerous studies have approached the issue of economic informality from different angles and provided diverse views on its causes and consequences. Three prevailing theories have emerged in the past forty years: Dualist, Structuralist and Legalist schools. A fourth strands of literature, which is not yet a "school of thought" but is important for this dissertation, concerns the role of social networks in informal economies.

The Dualist theory emerged after the ILO mission in Kenya in 1972 and Keith Hart in Ghana (1973), and builds a clear-cut formal-informal dichotomy between traditional and modern sectors, as envisaged the Lewis model (1954). In general terms, dualists shed a positive light on the informal economies for their role in poverty alleviation. However, informal operators are considered a 'reserve army' of labour completely detached from the formal sector and institutions (Gerxhani 2004). Most studies focus on survivalist activities, especially the self-employed and own-account operators, with the assumption that the size of the informal sector is anti-cyclical compared to the broader macroeconomic environment and that the modernization of the economic system will eventually eradicate the traditional (i.e. informal) jobs still present in developing economies (Chen 2005).

The radical split between formal and informal economy was strongly criticized in most of the following studies, in particular in the Structuralist literature emerged in Latin American in the late 1970s and 1980s (Portes, Castells, and Benton 1989; Moser 1978). Structuralist scholars argued that informal micro-enterprises serve to reduce input costs and increase the competitiveness of large capitalist firms. According to this school, it is the nature of capitalism, rather than slow economic growth and unemployment, that causes the expansion of informal economies in developing countries (Chen 2005). Portes, Castells and Benton (1989), for example, showed that many informal firms are exploited through sub-contracting methods. They show case studies of garment and construction sectors in Latin America, where most large enterprises increased profit margins by outsourcing labour with unregulated contracts in the informal sector. Moreover, they describe the situation of street traders in Colombia, where wholesalers used their stronger bargaining power to maintain informal street vendors dependent on them for the survival of their businesses. Moser (1978), on the other hand, confirms the central role of

'subordination' in informal economic relationships, but she divides in 'benign' and 'exploitative' relationships. Subcontracting is not exploitative by definition; however, large firms tend to relate with marginal enterprises because they can escape labour laws and have the power to underpay sub-contractors.

During the nineties, after the studies made in Peru by De Soto (1989, 2003) the so-called 'legalist school' argued that informality is provoked by obsolete legal systems and dysfunctional states' institutions. According to this school, the majority of entrepreneurs in developing countries rationally decide to operate informally because the costs for complying with legal requirements are unaffordable for most micro-scale enterprises[7]: "Having to waste 289 days on red tape before being able to operate an industry, or having to wait almost seven years before being able to build a house, are the obstacles which the mercantilist system erects against entry to the market" (De Soto 1989:210). The legalist school is important for this dissertation because it outlines how enterprise informality (i.e. lack of compliance with regulatory requirements) can affect access to formal finance. The effects of enterprise informality on credit access and usage represents a core research objective in essay 1 of the dissertation.

Over the last two decades numerous influential studies have emerged, trying to go beyond the three schools of thought described above and to look at the complex nature of informal economies in developing countries (Loayza, Oviedo, and Servén 2005; Djankov et al. 2002; Meagher 2005; Maloney, 2004, Chen, 2005). World Bank economist William Maloney for example added a new perspective to the debate which concerns the 'voluntary' nature of informality (Maloney 2004; Levenson and Maloney 2003). Most literature argue that informal entrepreneurs would prefer to have a formal job and interpret informality as a marginalized part of the market. On the contrary, Maloney argues that only a fraction of the informal sector is composed of 'necessity' entrepreneurs while the rest decide voluntarily to operate informally. The informal sector is therefore considered as the "*unregulated, developing country analogue of the voluntary entrepreneurial small firm sector found in advanced countries, rather than a residual comprised of disadvantaged, workers rationed out of good jobs*" (Maloney, 2004:1159). After Maloney's work, many scholars interpret the formal-informal duality as the result of a cost-benefit analysis of entrepreneurs, making a rational decision between the benefits of informality such as flexibility, and the lower fixed costs; and the benefits of the formal sector, in particular those related to the participation and access to societal institutions (safety nets, credit system, courts, etc). Many studies have used this

[7] The "voluntary nature" of informal economies was explored also by World Bank economist William Maloney. For more details see Maloney (2004) and Levenson and Maloney (1998)

approach, especially Djankov (2001) and Djankov et al (2002) who developed a useful conceptual framework on the different types of businesses along the formal-informal spectrum (see Table 2).

Table 2: Different types of businesses in the informal-formal economy (Source: adapted from Djankov, 2002)

	Informal sector			**Formal Sector**
	Subsistence enterprises	**Unofficial enterprises**	**Unofficial enterprises**	**Official enterprises**
Degree of informality	100%	High. Proportion of sales undeclared and workers not registered	Some proportion of sales undeclared and workers unregistered	
Type of activity	Single street traders, microenterprises, subsistence farmers	Small manufacturers, service providers, distributors contractors	Small and medium manufacturers, service providers, IT services	
Labour/Capital	Labour intensive	Mostly labour intensive	Knowledge and capital intensive	
Skills	Poor, low education, low skills	Poor and non-poor, well educated, high skills	Non-poor, highly educated, sophisticated skills	
Markets	Low barriers to entry, highly competitive, high product homogeneity	Low barriers to entry, highly competitive, some product differentiation	Significant barriers to entry, established market/product niche	
Finance needs	Working capital	Working capital, some investment capital, supplier credit	Working capital, investment capital, letters of credit, supplier credit	
Other needs	Personal insurance, social protection	Personal and basic business insurance	Personal and business insurance, business development services	
	Least dynamic Completely informal		**Highly dynamic Partially formal**	

Finally, another strand of literature which is relevant to this dissertation concerns the role of social networks in informal economies. According to Meagher (2005:217) "Many leading commentators on the informal economy have abandoned the informality paradigm in favour of a focus on the organizational role of social networks … Rather than representing economic informality in terms of an absence of regulation, social networks portray the informal economy as alternative forms of regulation operating outside the framework of the state." The basic assumption is that while formal enterprises can engage with the formal institutional context for sustaining their activity (for example, engaging with banks for credit, local government for entering the market, with legal courts for contract enforcement, and with public or private insurance in case of injury or sickness), most informal operators have to cope with partial or complete exclusion from these formal institutions. However, instead of being passive subjects of this

exclusion, informal operators rely on a wide variety of institutions and organizational forms based on social ties such as kinship, friendship, ethnicity, or even location and sector, which replace or supplement formal regulatory and institutional structures.

2 CONTEXTUALIZING THE RESEARCH: A BRIEF INTRODUCTION TO THE KENYAN ECONOMY

Making a comprehensive description of the Kenyan economy since independence is not the goal of this dissertation. However, it is important to introduce the key characteristics of the economy and understand the economic background on which the entire dissertation is based.

As a starting point, it is worth looking at the structure of the economy. As shown in Table 3 Kenya's economy is predominantly based on agriculture, which represented over a quarter of GDP in 2013. The main agricultural exports are tea and coffee, but there is important production also of corn, wheat, sugarcane, and fruits such as mangoes and pineapples. Among the weaker performers in the economy there is manufacturing, which contributed only to 8.9 percent of GDP in 2013, down from 9.8 percent in 2010. A very important sector is also wholesale and trade, which represents over 10 percent of GDP and transport and communication, which is just below 10 percent.

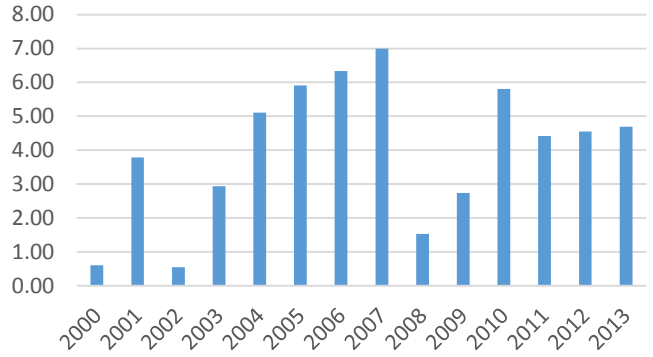
Table 3: Contribution to GDP by sector (2010-2013). Source: adapted from the Kenya Bureau of Statistics (KNBS)

Industry	**2010**	**2011**	**2012**	**2013**
Agriculture	21.2	23.8	24.6	25.3
Fishing	0.6	0.5	0.5	0.5
Mining and quarrying	0.7	0.7	0.7	0.6
Manufacturing	9.8	9.6	9.5	8.9
Electricity and water supply	2	1	1.4	1.4
Construction	4.2	4.1	4.2	4.4
Wholesale and retail trade	10.1	10.5	10.5	10.2
Hotels and restaurants	1.7	1.7	1.7	1.5
Transport and communication	10	10	9.6	9.1
Financial intermediation	5.6	6.3	5.2	4.8
Real estate	4.8	4.4	4.3	4.1
Public administration	5.5	5	5.5	6.7
Education	6.2	5.8	6.1	6.7
Health and social work	2.5	2.4	2.4	1.9
Other	3.7	3.6	3.6	3.9

The most important recent news on the Kenyan economy is that since October 2014 Kenya is no-longer classified as a low-income country. The Kenyan Ministry of Planning rebased the GDP calculations and revised it upward by 25 percent, using improved data for key sectors such as manufacturing, telecommunications and agriculture, and changing the base year for the calculations from 2001 to 2009. Overnight Kenya jumped in all economic rankings and became the 9th largest economy in Africa with a gross national income (GNI) per capita of 1,160 US dollars: having surpassed the World Bank threshold of 1,036 US dollars, now Kenya is officially classified as a middle-income economy. According to media commentators, this change in GDP is likely to facilitate accessing commercial loans by the Government since a larger GDP means lowering the overall Kenya debt ratios.

The sudden GDP expansion however is unlikely to solve the problems that the economy has been facing over the last few years, in particular the issues of (relatively) slow growth and current account deficit. The economy has grown below potential since 2007, in particular compared to neighbouring countries such as Ethiopia, Uganda and Tanzania which have been able to sustain faster growth rates. Figure 1 shows that growth of the economy dropped dramatically in 2008 and 2009 as a consequence of the violence that hit the country in the aftermath of the disputed presidential elections in December 2007[8]. Growth restarted relatively fast in 2010 (5.8 percent) but then dropped again between 2011 and 2013 as a consequence of macroeconomic instability that hit the country during this period, including high depreciation of the currency and spiralling inflation[9] .

Figure 1: GDP growth in Kenya (2000-2013). Source: World Bank Development Indicators

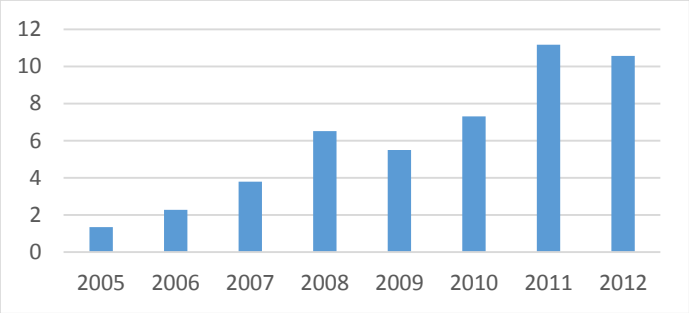


[8] Between December 2007 and February 2008 Kenya entered a period of political and humanitarian crisis after the incumbent President Mwai Kibaki was declared the winner of the presidential election against opponent Raila Odinga despite international observers confirmed manipulations of the results. The country returned to peace after former UN Secretary Kofi Annan mediated a power-sharing agreement between the two opponents. For more details see Dercon and Gutiérrez-Romero (2012).

[9] The causes and characteristics of this macroeconomic instability that affected Kenya in 2011 and 2012 will be described more in depth in essay 3 and 4 of this dissertation.

According to the former chief economist of the World Bank in Kenya, Wofgang Fengler, the period of macroeconomic instability suffered in 2011 and 2012 was caused by a fundamental structural problem of the Kenyan economy: Kenya imports too much and exports too little. The strong current account deficit experienced in recent years makes Kenya vulnerable to instability over the medium and long term[10]. As shown in Figure 2, the current account deficit is beyond 10 percent of GDP, among the highest in the world, and it is unlikely to decrease in the next years unless Kenya is able to boost its key exports such as tea and coffee. Another important source of foreign currency has traditionally been tourism, but this has been heavily affected in the last year as a consequence of growing insecurity and terrorism, especially in the coastal region.

Figure 2: Current account deficit in Kenya as a percentage of GDP (2005-2012). Source: World Bank Development Indicators



Finally, it is important to look at how Kenya has been performing in the World Bank Doing Business Reports. As shown in Table 2 Kenya continues to perform poorly in terms of ease of doing business. Although the country has gained one position in the 2015 Doing Business Report compared to the previous year, Kenya is still at the 136th place out of 189 economies. The biggest falls concerns the issue of construction permits, which became more expensive in 2014 and therefore Kenya lost 60 positions in the rankings[11]. Kenya however improved its ranking in the ease of getting credit. According to the report, this is due to the establishment of an efficient system of credit information sharing via credit reference bureaus (World Bank 2014). Banks already started sharing negative information in 2012, but in 2013 the

[10] For more details see http://blogs.worldbank.org/africacan/how-to-kick-start-kenya-s-second-growth-engine (last accessed in November 2014).

[11] In reading the rankings, it is important to notice that an improvement in the ranking does not necessarily mean that regulation has improved during the period. It could also be that other countries have performed poorly during the period and therefore Kenya has improved not in absolute terms but only in relation to other economies.

government passed a new legislation that allows for the sharing of positive information as well. This is believed to improve the problem of information asymmetries and make banks more efficient at evaluating credit risks.

Table 4: Kenya rankings in the World Bank Doing Business Reports 2015 and 2014. Source: World Bank (2014)

TOPICS	2015 Rank	2014 Rank	Change in Rank
Starting a Business	143	134	-9
Dealing with Construction Permits	95	35	-60
Getting Electricity	151	151	-
Registering Property	136	131	-5
Getting Credit	116	111	-5
Protecting Minority Investors	122	118	-4
Paying taxes	102	146	44
Trading Across Borders	153	152	-1
Enforcing Contracts	137	137	-
Resolving Insolvency	134	138	4

3 OBJECTIVES, STRUCTURE AND LIMITATIONS OF THE DISSERTATION

As mentioned earlier in this introduction, each essay in the dissertation answers separate research questions and uses separate methodologies, datasets and literature surveys. The overarching objective is to shed light on the evolving nature of financial landscapes in Kenya, and to understand the role that formal and informal financial providers are playing in the development of small businesses and of the country more in general. The four essays are based on three separate datasets. The two demand-side essays (essay 1 and 2) are based on a survey conducted with small enterprises in Nairobi between September 2011 and June 2012. Essay 3 relies on secondary time-series data available from different World Bank databases (World Bank Development Indicators and the Global Financial Development Database). Essay 4 instead uses data from two survey rounds conducted in 2012 and 2014 by the author in collaboration with Financial Sector Deepening Kenya (FSD-K), the Central Bank of Kenya (CBK) and the

World Bank. This survey aimed at understanding the trends, characteristics and development of bank financing to small and medium enterprises in the country.

Essay 1 explores the determinants of access to finance among micro and small enterprises in a low-income neighbourhood in Nairobi. Differently from previous studies, the study does not limit itself to the analysis of microfinance institutions or banks, but rather it takes a "financial landscape" approach, analysing the role that different types of formal and informal financial providers play in support of small businesses. The study analyses in particular the role of enterprise informality, social networks and the firm's life cycle as determinants of access to finance. It shows that the financial landscape is extremely rich and diversified, and that entrepreneurs tend to borrow simultaneously from different sources, both formal and informal. Far from suffering from a complete lack of financing options, small businesses analysed in the research often use a variety of financial instruments. As argued by Meagher (2005), the focus on exclusion from formal finance per se is not useful for our understanding of small enterprises because it overlooks the role of informal practices and institutions[12].

Essay 2 uses the same dataset but focuses on the impact of formal and informal loans on the performance of small businesses. The key hypothesis is that different types of loans have different effects on firm performance because the social ties embedded in the lending transaction are very different. Loans from relatives or friends can be tangled in a web of social ties, whereas loans from commercial banks or other formal institutions are much more impersonal. The study in fact finds that loans from commercial banks tend to affect positively investments as well as employment creation, whereas loans from microfinance institutions seem to have negative effects on investments based on the findings of a propensity score matching model. However, it is important to note that the research is based on a relatively small sample size and it focuses on one specific area in Nairobi. Therefore the external validity of the findings is a key limitation of the study.

Starting with *essay 3* the focus shifts from the demand side to the supply-side. In particular, this essay looks at the macro level on the relationship between financial sector development and economic growth. Using time series data from the early 1970s to 2010s, the core hypothesis is that the relation

[12] To understand the core role of informal institutions in Kenya, it is sufficient to note that the Kenyan flag contains the motto "Harambee" which literally means "let's all pull together" in Swahili. Harambee refers the notion of self-help that is strongly embedded in most Kenyan communities. Every ethnic group in Kenya have a different term for *harambee.* The Luo ethnic group call it *Konyir Kende*, the Luhya call it *Obwasio*, the Kikuyu call it *Ngwatio*, the Kamba call it *Mwethia*, and the Masai call it *Ematonyok.* For more details on the evolution of the *harambee* culture in Kenya see Ngau (1987).

between the deepening of the financial sector and GDP growth is not direct, but occurs through specific intermediary variables, in particular gross investments and gross savings. This study innovates the existing research on many fronts, in particular by creating a composite index variable for financial development, which combines several proxy variables that are traditionally used in the literature. The study finds causality linkages going in all three directions (three-directional causality) between the key variables in the model, namely financial development, economic growth and savings. These findings partially contradict previous studies conducted in Kenya on the same topic.

Finally, *essay 4* uses data collected in two survey rounds with commercial banks, and represents the first attempt to measure the size and characteristics the market for SME finance in Kenya. The study shows that bank lending to SMEs has increased dramatically between 2009 and 2013 and that banks are increasingly exposed to the segment. Among the main concerns raised by the paper, there is the low sophistication of financial instruments provided to SMEs (which are mostly overdrafts) and a growth in non-performing loans among large banks in 2013.

As a concluding note, it is important to mention once again the limitations of the dissertation. We mentioned already the issues of sample size for the demand-side essays, and the lack of focus on financial sector stability in the supply-side essays. In general, however, the reality is that this dissertation can only depict a partial picture of the overall development of the financial sector in Kenya. One of the key developments which is not analysed in this dissertation concerns mobile banking, and the role played by frontier money transfer technologies, such as *MPesa,* and credit technologies such as *MShwari*; these are unique innovations in the field of finance that were invented in Kenya and now are spreading in Africa and beyond. These disruptive innovations have changed the financial landscape in Kenya, but they have affected mostly the retail customers (individuals) rather than businesses. They represent nevertheless extremely important topics for future research on financial inclusion.

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Essay 1

The determinants of access to finance among micro and small enterprises in Nairobi

An analysis of the role of informality, social networks and the firm's life-cycle

1. Introduction

The nature of financial landscapes in contexts of informality and marginalization is often assumed to be simple and of little interest for economists and social scientists. The tendency is to stress the issue as "exclusion" from formal banks and welfare institutions rather than as alternative mechanisms used by entrepreneurs and their determinants. Recent literature however has shown that financial instruments used in contexts of marginalization are extremely rich and diversified. In particular, Collins et al. (2009) show that, contrary to popular belief, households living in extreme poverty in Bangladesh, India and South Africa do not live "hand to mouth"; rather, they tend to use a complex combination of financial instruments, relying on social networks and non-formal institutions to manage their resources. Similarly, Johnson (2004) has shown that households in Kenya tend to combine formal and informal financial instruments to meet their daily financing needs.

This study examines the financial landscapes and determinants of access to finance among small businesses operating in Nairobi. We first discuss the formal and informal financial instruments available to small businesses, in particular informal groups such as rotating savings and credit associations (ROSCAs) and accumulating savings and credit associations (ASCAs), which are very common in informal and semi-

formal economy. Second, we analyse the determinants of access to finance. In particular, we look at three factors that are rarely combined in a single model: (i) the role of informality, (ii) the role of social networks and (iii) the role of the firm life-cycle. Informality and social networks are notoriously difficult to quantify. Therefore this study disaggregates the definition into multiple dimensions. Informality is defined both in terms of enterprise informality (degree of compliance to government regulation) and the informality of the entrepreneur's background (length of work experience in formal/informal sector firms). Social networks are divided in three types as well: (i) investment networks, (ii) savings and credit networks and (iii) solidarity networks. The research shows that informality has a significant effect on access (or exclusion) to bank finance, but is less relevant when we investigate informal financial instruments such as self-help groups and family/friend loans. Participation in social networks seems to affects usage of MFI loans and bank loans. The life-cycle of the firm instead does not seem to affect the firms' financing strategies.

Next sections are organized as follows. Section 2 reviews the literature on financial landscapes in developing countries, Africa in particular, and then it looks at the role of informality, social networks and the firm life-cycle as determinants of access to finance. Section 3 describes the data collection in Nairobi and shows the results of the empirical analysis. Section 4 concludes.

2. REVIEW OF LITERATURE

2.1 FINANCIAL LANDSCAPES: A SURVEY

The notion of "financial landscape" has played a central role in the transformation of the field of microfinance into the broader field of financial inclusion[13]. The term emerged in the development economics literature as early as the mid-1990s (Bouman and Hospes 1994; Bouman 1994), and then gained traction over the last ten years (Johnson 2004; Malkamäki, Johnson, and Nino-Zarazua 2009; Collins et al. 2009; Johnson and Nino-Zarazua 2011). The objective was to provide a more comprehensive analysis of how low-income households manage their finances, what formal and informal financial instruments are used for investments, emergencies and daily expenses, and the role played by social networks as complements or substitutes for formal financial services. A relevant notion that has emerged

[13] A brief overview of this transformation is described in the introduction chapter of this dissertation.

in parallel with "financial landscapes" is the one of "financial portfolios" (Collins et al. 2009): the idea is that instead of focusing on the issue of financial "exclusion", many lower-income households use a complex combination of formal and informal financial instruments in order to cope with volatile incomes and difficult periods.

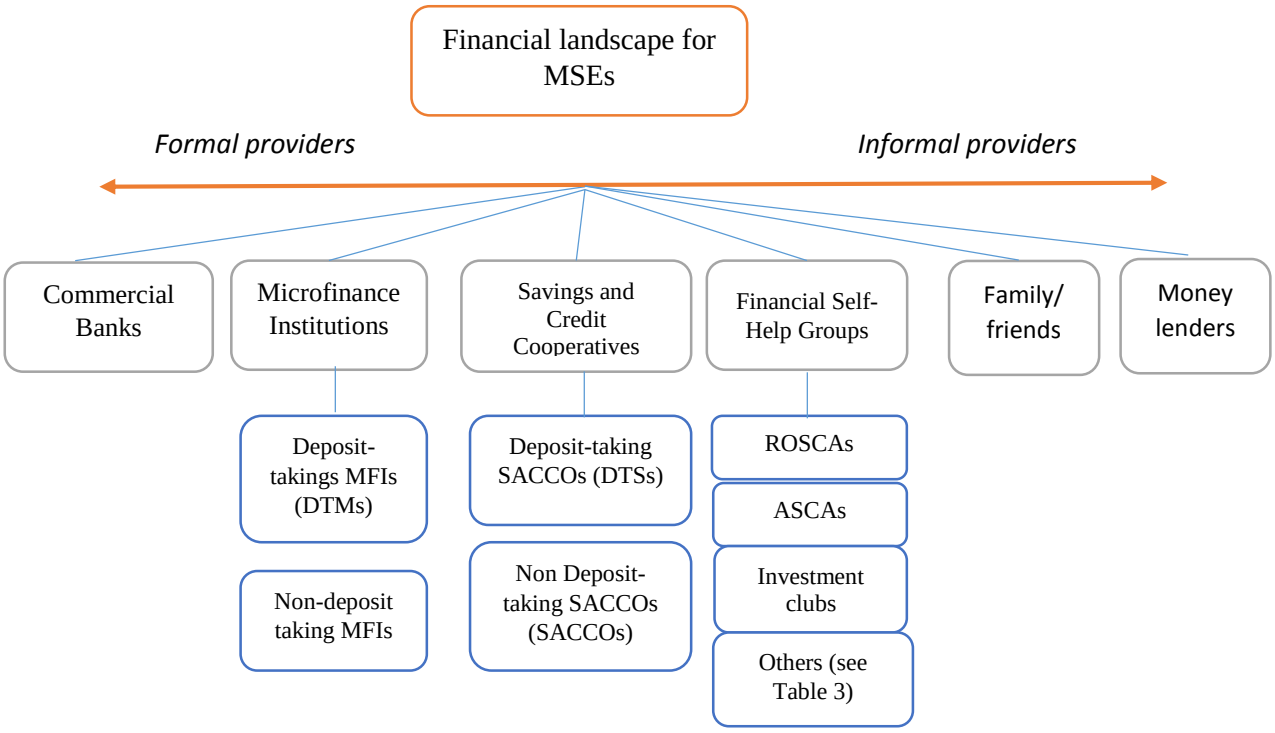
This study uses financial landscapes as the core methodological approach to understand the determinants of access to finance. The main difference is that most existing literature focuses on the household level, not the enterprise level[14]. Although research such as Collins et al. (2009) and Johnson (2004) shows interesting examples of the role of self-employment and small businesses in the economics of the household, the focus is not on the firm itself, and therefore lack comprehensive analysis of non-formal institutions in enterprise financing, investment and start-up capital, among other issues. Moreover, Collins et al's study (2009) is confined to the "extremely poor", living on less than two dollars a day. Although poverty is widespread in low-income areas and markets, numerous owners of micro and small enterprises (MSEs) are not necessarily trapped in extreme poverty, and therefore they are likely to use financial instruments offered by a combination of formal and informal providers.

The financial landscape is certainly diversified in a market like Kenya, where strong traditional institutions and social structures coexist with one of the most developed financial sectors in sub-Saharan Africa as well as booming mobile banking technologies.[15] The reality revealed in recent literature is that, instead of lacking access to financial services, small businesses and households rely on numerous (mostly unconventional) instruments, both formal and informal, market and non-market, according to their needs and opportunities. The term "unbanked" is often used in semi-formal and informal contexts, but it is no longer appropriate for a dynamic economic environment like urban Kenya where the banking sector is developing fast and co-exists with informal institutions.

[14] Some exceptions include Fafchamps et al. (1994); Fafchamps (2004); Vandenberg (2003); Akoten, Sawada, and Otsuka (2006)

[15] Over the past few years, a new mobile banking technology called M-PESA has begun to flourish throughout Kenya. For more information on the use of mobile banking in the Kenyan low-income markets, see Jack and Suri (2011).

Figure 3: Financial landscape for MSEs in Kenya (adapted from Johnson, 2004; Malkamaki, Johnson and Nino-Zarazua 2009)



The structure of financial landscapes used in this study follows previous research done in Kenya by Johnson (2004), Malkamäki, Johnson, and Nino-Zarazua (2009) and Atieno (2001) and divides financial instruments in six main types. Figure 3 shows that formal financial providers include (i) commercial banks, (ii) microfinance institutions (MFIs) and (iii) savings and credit cooperatives (SACCOs). In Kenya, microfinance institutions and SACCOs are divided in "deposit-taking" and "non-deposit taking". The difference is that the deposit-taking microfinance institutions are prudentially regulated by the Central Bank of Kenya (CBK) and the deposit-taking SACCOs are regulated by the SACCO Society Regulatory Authority (SASRA), whereas non-deposit taking institutions are not regulated by any specific government authority.

The informal side of the financial landscape includes (i) family and friends, (ii) moneylenders and (iii) savings and credit associations. The latter category is sometimes divided further into (a) rotating savings and credit association (ROSCA), (b) accumulating savings and credit associations (ASCAs). ROSCAs and ASCAs are similar types of organizations where members meet regularly (usually weekly or monthly)

and put their savings in a common "pot". The main difference is that ROSCAs give out the contents of the pot immediately to one of the members on a rotating basis, whereas ASCAs do not give the funds immediately, but lend them to members and charge interest. The interest paid on loans accumulates in the group fund and the dividends are distributed periodically to the members, usually at the end of the year (Malkamäki, Johnson, and Nino-Zarazua 2009). There are also other groups such as i) welfare associations, which usually operate only when one of the members faces an emergency like sickness or funeral expenses; ii) Savings clubs, where members simply encourage each other to save regularly in a shared bank account; investment clubs, which meet for the specific purpose of investing in profit-making activities. The different types of informal networks are summarized in Table 5.

Table 5: Classification of financial self-help groups (adapted from Johnson, 2004 and Malkamäki, Johnson, and Nino-Zarazua 2009)

	Purpose	**Membership**	**Operations**
ROSCA	Encourage savings and the rotation of "useful lumpsums" among members	Usually people who share common characteristics or goals (same market, neighbourhood, friends, etc.)	Meet regularly (daily, weekly or monthly). Members contribute an equal amount and the total sum ("pot") is given to one of the members on a rotating basis without interest.
ASCA	Savings and credit. Distribution of dividends	Similar to ROSCAs. Members often participated in MFIs in the past and replicated the functioning	Meet regularly. Members provide an equal contribution which is disbursed as a loan (with an interest) to members who request it. Interests is kept in the group fund and shared at the end of the year
Mixed financial networks	Usually combine two between ROSCA, ASCA, and welfare groups	Usually people who share common characteristics or goals (same market, neighbourhood, friends, etc.)	Combine one or more activities of ROSCA, ASCA and welfare groups. The regular contribution is divided in the different goals (emergency funds/rotating funds, etc) depending on the group structure.

Savings clubs	Promoting savings	Sharing common needs to save money generated from the informal businesses	Regular contribution is directly saved in a common bank account or kept by a trusted representative. Money is given back at the end of a cycle
Welfare groups	Mutual support in case of emergencies	Usually based on family or ethnicity. Operates only in cases of emergencies	Intervenes irregularly when emergencies arise
Investment clubs	Investments, new businesses. Networking	Members are usually entrepreneurs (not necessarily in the same line of business). Participation usually happens through personal connections, not applications.	Meetings are not regular, they are usually called by the members. Meetings are also an opportunity to socialize

2.2 THE DETERMINANTS OF ACCESS TO FINANCE

After the brief description of the financial landscape for small enterprises provided in section 2.1, this section explores more in-depth the determinants of access to finance. How do firms choose their financing strategies? Why do some entrepreneurs favor loans from MFIs instead of loans from banks, or vice versa? Why other rely solely on informal financial instruments? This section answers these questions by reviewing the literature on three specific factors: the role of informality, the role of social networks and the role of the firm life-cycle.

2.2.1 The role of formality/informality

The causes and effects of enterprise informality have been studied widely over the last three decades (De Soto 1989; De Soto 2003; Meagher 2006; Meagher 2010). The most prominent theoretical argument linking formality, access to finance and firm's performance comes from Peruvian economist Hernando De Soto (1989, 2003). He argues that without formalization and protection of property rights, informal entrepreneurs are denied the key services that have made capitalism work in western economies. Formality, in fact, could guarantee access to services such as formal credit, business development associations and judicial courts where the enterprise can request the enforcement of contracts. Being 'legal', can also allow enterprises to operate more visibly in the market and promote the activity without augmenting the risk of police harassment (Winterberg 2005). However, the costs of compliance with Government regulation are unaffordable in many developing countries and therefore De Soto accuses many Governments to operate as "Mercantilist states" and to deliberately raise the costs of

entry to the formal sector: “Having to waste 289 days on red tape before being able to operate an industry, or having to wait almost seven years before being able to build a house, are the obstacles which the mercantilist system erects against entry to the market” (De Soto 1989:210). The role of informality was analysed at the household level as well by King (2014). Using the data from the Finscope survey in Nigeria, he finds that lack of formal documentation is a strong obstacle to access to finance and that formalization can therefore decrease financial exclusion.

In this research we expand the concept of informality and distinguish between two levels: *firm-level informality*, defined as the firm’s degree of compliance with government regulation; and *entrepreneur’s level informality*, defined as the length of previous job experiences with formal sector firms or institutions. The latter is a rather unconventional variable and it has rarely been analysed in the literature. However, we hypothesize that having worked for formal sector firms increases the entrepreneurs’ exposure to formal finance and her/his entrepreneurial skills. This argument is in line with the definition of “managerial capital” proposed by Bruhn, Karlan, and Schoar (2010), who argue that managerial capital could affect firm performance in two ways: it could improve the marginal productivity of the firm’s inputs (labour, physical capital, etc.) with better management and motivation of the labour force and maintenance of the firm’s machinery. Managerial capital may also manifest itself with a better understanding of the “quantity” of physical and labour that optimize the firms’ processes at different stages of enterprise development: “The decision to access inputs like capital or labor in itself requires managerial inputs to forecast the capital needs of the firm, plan the process by which to approach lenders, invest the obtained resources, etc.” (Bruhn, Karlan, and Schoar 2010:630) The authors therefore argue that managerial capital can be acquired through specialized training or through job experiences in well-run firms. Nichter and Goldmark (2009) also stress the importance of previous job experience in determining firm performance. They argue that it may contribute in two ways: “directly, by expanding the capabilities of MSE owners and employees through the acquisition of skills and knowledge; and indirectly, by expanding entrepreneurs’ social networks” (2009:1455). These factors will be a core topic of research in the empirical analysis.

2.2.2 The role of Networks

The role of social networks in access to finance attracted increasing interest over the last few years, but found limited application due to the difficulty to quantify the concept and make it suitable for econometric analyses (Fafchamps, 2000). The lack of clarity of the term however has not discouraged

many academics from asking the deeper underlying question: whether there are social network effects on the financing preferences of MSEs, and whether these occur through the flow of information, the transference of financial capabilities, attitudes towards investment, re-investments and risk propensity. The literature in this field is limited. However some studies can provide guidelines into the conceptualization of the problem.

Fafchamps (2000) for example studies the role of ethnicity and social networks on access to finance among medium sized firms. Using data from two surveys of manufacturing businesses conducted in Kenya and Zimbabwe between 1993 and 1994, he studies whether the membership in groups and social networks affects access to bank credit and supplier credit (i.e. credit from suppliers in the firms' value chain). Fafchamps (2000) finds that both countries have considerable level of ethnic and gender concentration: the owners of manufacturing firms tend to be male and from ethnic minorities, particularly Asians in Kenya and whites in Zimbabwe. He finds that female-headed firms and those with an owner from the African ethnic majority are constrained in accessing supplier credit, but not when they apply for bank loans and overdrafts. Fafchamps (2000) finds that socialization and information sharing — what he calls network effects — play an important role in explaining the ethnic bias[16]: "People talk with their friends and professional acquaintances about jobs, bad payers, and arbitrage opportunities, and they refer job and credit applicants to each other. In such environment, individuals with better networks collect more accurate information, which enables them to seek out market opportunities more aggressively and to better screen prospective employees and credit recipients" (Fafchamps, 2000: 208)

The role of social networks has been studied also beyond the role of ethnicity. Outside the African context, Le and Nguyen (2009) study the Vietnamese market and divide networks in three main types: (1) *official networks*, which capture the ties between entrepreneurs and government officials. (2) *Managerial networks,* which capture ties with suppliers and clients; and (3) *social networks,* which focus on ties with relatives, friends, and members of social organizations and clubs. In order to estimate the model, Le and Nguyen (2009) run two regressions with two separate dependent variables: one is a binary variable indicating whether the firm has a bank loan or not, which is regressed against the role of the different types of networks indicated above and control variables. A second model uses a continuous dependent variable estimating the effect of networks on the ratio of bank loans to total capital. The findings of the empirical analysis show that networks have different effects on access to finance. *Official networks*

[16] In order to measure the network effects, respondents were asked to describe their relationship with suppliers. The author then constructed two dummy variables to identify whether firms deal with suppliers in an "anonymous fashion" or whether they socialize outside the business (e.g., sporting events, community gatherings, and religious celebrations). For more detail see Fafchamps (2000:222).

increase the probability of having a bank loan but not the size of the loan. *Managerial networks* on the contrary do not increase the probability of accessing credit, but they have an effect on the size of the loans obtained by the banks. Le and Nguyen reach the surprising finding that *social networks* decrease the probability of having access to credit. The argument is that while managerial and official networks can facilitate access to loans because they help firms have access to business information and knowledge; social networks often represent a potential substitute to formal finance that can reduce the need or willingness to apply for bank loans.

Uzzi (1999) on the other hand investigates whether firms in the US market are more likely to obtain bank loans and receive better interest rates when they are socially connected to their lenders through what he calls "embedded ties". The concept of embeddedness is operationalized through two variables: the duration of the relationship with the lender and the "multiplexity" of the relationship, defined as the number of business and personal services an entrepreneur uses from the financial institution. The empirical analysis confirms the hypothesis that the duration and multiplexity of the relationship significantly reduce the cost of capital, but Uzzi finds no evidence that these variables affect the probability of accessing credit: "These null effects indicate that while the quality of a relationship can influence the competitiveness of a rate, it is unrelated to whether or not a firm 'passes the bar' for credit eligibility" (1999:498).

A different type of analysis was conducted by Barr (2002), who uses data on manufacturing firms in Ghana to understand how networks affect firm performance. In her analysis, Barr (2002) makes an important distinction between two types of networks: innovation and solidarity networks. While innovation networks tend to affect positively the performance of firms, solidarity networks might reduce uncertainties but have little effects on performance. The two types of networks differ in terms of structure and composition (see Table 6). While innovation networks tend to be larger and less cohesive (relying therefore on weak ties[17]) and to involve larger firms, solidarity networks tend to be small and more cohesive (strong ties) and to be common among small-scale entrepreneurs. This categorization of networks is important because it was adapted with modifications to the empirical research conducted in this study.

[17] The notion of "weak ties" and "strong ties" and their effects on the role of networks was studied by Granovetter in sociology. For more details see Granovetter (1973 1983; 1985)

Table 6: Network function, structure, and effect on enterprise performance. (Source: adapted from Barr, 2002)

	Innovation network	**Solidarity network**
Network function	To enhance enterprise performance	To reduce uncertainty
Type of information flowing through the network	About the world, technologies and markets	About member's conduct, circumstances and intentions
Characteristics of the sets of contacts maintained by network members	Large, diverse, relatively infrequent interactions	Small, homogenous, high levels of interaction with each contact
Overall effect of current enterprise performance	Relatively large	Relatively small
Spillover effects of networking	A low proportion of the overall effect	A high proportion of the overall effect
Typical member enterprises	Enterprises with access to formal institutions, who employ more advanced technologies and serve more diverse markets	Enterprises with no access to formal institutions, who employ traditional technologies and serve less diverse markets

2.2.3 The life-cycle theory of capital structure

The link between the firm life-cycle and access to finance has mostly been studied in a separate field of economics, namely in capital structure theory. Capital structure theory is a field of finance and economics focusing on how firms finance their investments through a combination of debt finance, equity finance and other hybrid instruments (Chittenden, Hall, and Hutchinson 1996). It has rarely been used in the context of financial inclusion mostly because of its focus on large scale corporations and the assumption of well-functioning debt and equity markets. However, some insights that have emerged in recent years can be extremely valuable for the analysis done in this paper.

Understanding the determinants of financing decisions has been a core goal in finance and economics since the '60s (Modigliani and Miller 1958; Modigliani and Miller 1963; Kraus and Litzenberger 1973; Myers 1984). Capital structure theory has largely focused on the corporate level, usually large-scale publicly listed firms, whose financing options are very different compared to small businesses (Ang 1991).

According to Zingales (2000:1628), this has hampered our knowledge of capital structure both theoretically and empirically: "Theoretically, the emphasis on large companies (…) has underemphasized the role that different financing instruments can play to provide investors better risk diversification. (…) Empirically, the emphasis on large companies has led us to ignore (or study less than necessary) the rest of the universe: the young and small firms, who do not have access to public markets."

The interest in small firms however has grown considerably over the last decade, especially in developed economies, raising numerous new questions on the determinants of financial decisions at SME level (Chittenden, Hall, and Hutchinson 1996). One of the major theories in this field –known as "life-cycle theory"– hypothesizes that financing decisions are closely dependent on the age of the firms and their growth potential. The argument is that since young and small firms usually lack access to capital markets, they tend to rely entirely on the owners' personal resources during the initial phases. If the firms survive the initial period of undercapitalization, they gain easier access to debt markets, in particular supplier finance and short-term finance from commercial banks. The lack of access to long-term finance however can put the enterprise in a "financing gap" where it has to "choose between reducing its growth to keep pace with its internally generated funds, acquire a costly stock market quotation, or seek that most elusive form of finance - venture capital" (Chittenden, Hall, and Hutchinson 1996:61). Michaelas, Chittenden, and Poutziouris (1998) make a qualitative analysis of capital structure in small firms and argue that financial decisions are influenced by many behavioral and non-financial factors as well, including risk propensity as well as personal perceptions and beliefs (see Table 7).

Table 7: Factors influencing capital structure in small businesses. (Source: Michaelas, Chittenden, and Poutziouris, 1998)

Owner's characteristics	**Firm Characteristics**	**Other external characteristics**
Need for control	Age	State of the economy
Knowledge	Size	Conditions of the market
Experience	Growth	Availability of funds
Goals	Profitability	Industry characteristics
Risk propensity	Cash-flow	Government policy
Perceptions and beliefs on external finance	Asset composition	
	Trade debtors	
	Trade creditors	
	Stock	
	Nature of operations	
	Ownership (family business dynamics)	

On an empirical level, a growing number of large scale studies have been conducted at the SME level over the last few years. Berger and Udell (1998) for example analyze the US market and find that

firms use equity and debt finance at almost equal levels. Even more importantly, they show that firms use a wide variety of financial instruments: they identify four types of equity finance instruments and nine types of debt finance. The most important type of equity is the principal owner's funds followed by "other equity"', which includes the financing from other shareholders during start-up phase as well as unconventional sources such as family and friends. For debt finance, bank credit is the most important source of finance followed by trade credit. Berger and Udell however confirm that analyzing capital structure at the SME level is complicated by the problem of "informational opacity". They argue that the lack of detailed micro data on SMEs is "a major reason why until very recently small business finance has been one of the most underresearched areas in finance" (1998:617). This emphasizes the importance of the research objectives pursued in the study, and also indicates the difficulty of obtaining reliable data on businesses that are informationally opaque. This is particularly the case in a context like Kenya, which is characterized by relatively high levels of informality and generally poor record keeping.

2.2.4 Adapting capital structure theory for businesses in developing countries:

The previous section has shown that shifting focus from the corporate to the level of small businesses requires a substantial redesign of the research approach. Shifting the geographical focus on developing countries may add further complications, because of the weak institutional environment and an even more problematic scarcity of micro-level data. Notable exceptions in the literature are Booth et al. (2001) comparison of large firms in ten developing markets. At the SME level, important studies have been conducted by Abor (2007) who compares Ghanaian and South African firms (2007) and Abor and Biekpe (2009), who apply the life cycle theory of capital structure to study manufacturing SMEs in Ghana. The latter study shows that there is a positive relation between long-term debt and the age of the firm, but they do not support the hypothesized negative relationship between short-term debt ratio and age of the firm[18], proving that Ghanaian firms do not decrease their reliance on short-term debt as they grow. From a methodological point of view, Abor and Biekpe (2009) tackle the problem of informational opacity by focusing on formal (i.e. registered) businesses which are members of the Ghana Association of Manufacturers and were able to produce credible financial statements. If we want to penetrate our

[18] Long term debt ratio is calculated as "long-term debt/(total equity + total debt)". The short term debt ratio is calculated as "Short-term debt/(total equity + total debt).

analysis further down market and include micro and small enterprises –which is the core objective of this study – the research design requires further modifications.

As mentioned in the introduction, this research will make a number of adaptations to the research approach in order to contextualize it to the environment of informal and semi-formal enterprises. First, we take into account that the constraints to access to finance are much more daunting for small firms in Africa compared to EU and US markets. This raises the problem of whether the capital structure is the product of the financing decisions and preferences of small businesses or whether, on the contrary, these structures are entirely determined by external constraints. This issue has methodological implications: whereas "conventional" capital structure literature focuses on debt-to-equity ratios and the degree of leverage of firms, "access to finance" literature is concerned with the actual capacity of small businesses of accessing (formal) external finance. Debt-to-capital ratio usually comes as a continuous variable, whereas access to finance is often treated as a binary variable, or "dummy", standing for 'access', or 'not access', to one or more financial instruments. Although this may sound like a technicality, it actually reflects the fact that the core concern for many African small firms is not their degree of leverage or their debt to equity ratio, but their actual capacity of accessing external funding.

The second adaptation follows Zingales (2000) and Berger and Udell's (1998) suggestion that studying smaller firms means analyzing a wider array of financial instrument. Since we want to focus on the "margins" of the market and include informal businesses, the more heterodox financial instruments described in the previous sections (e.g. rotating savings and credit associations, accumulating savings and credit associations, family and friends as well as cooperative societies) must be included (Johnson 2004; Malkamäki, Johnson, and Nino-Zarazua 2009; Akoten and Otsuka 2007; Akoten, Sawada, and Otsuka 2006; Atieno 2001) . Excluding these instruments from our models would mean neglecting a big part of the firms' financing structures.

3. EMPIRICAL ANALYSIS

3.1 QUESTIONS AND OBJECTIVES

In line with the review of literature conducted in the previous sections, the objective of this study is to explore the financial landscapes of micro and small enterprises operating in the selected research locations and to analyse the determinants of access to finance among different segments of the local

economy. This will shed light of the formal and informal financial instruments that diverse types of businesses use to manage their daily cash-flows and access credit when needed. The focus will be on commercial banks, formal microfinance institutions and credit cooperatives, which represent the more formal segment of the financial sector as outlined in Figure 3. On the informal side of the spectrum, the focus is on the role of informal financing mechanisms such as savings groups, ROSCAs, moneylenders and family/friends. Section 3.3 provides an in-depth analysis of the mix of formal and informal financial services used in the three research locations and the rationale behind it. The core objective is to explore the determinants of access and usage of formal and informal financial instruments among small enterprises: the focus is on the role played by (i) enterprise informality, (ii) social networks and (iii) firm life cycle as emerged in the literature survey.

The empirical analysis takes a dual approach: following studies such as Craig and Hardee (2007) Magri (2002) and Uzzi (1999), the objective is to understand on the one hand how informality, social networks and the firms' life-cycle affect the *probability* of using different types of credit (bank, microfinance, ROSCAs, etc.). On the other, how these explanatory variables affect the actual size of the loans obtained. This portrays a more comprehensive picture of what factors help entrepreneurs become eligible (or not) for credit, and which factors actually affect the size of the credit facilities that they are able to obtain. Informality is operationalized in two ways: first, we analyse firm-level informality, which is calculated as the degree of compliance with government regulation. Second, we study the entrepreneur-level informality, quantified as the length of job experiences in formal VS informal sector firm. Participation in social networks on the other hand is categorized in three ways: (i) participation in investment networks, (ii) participation in savings and credit groups, (iii) participation in solidarity networks[19]. Firm life-cycle is operationalized simply in terms of the age (years of operation) of the enterprise. In addition to these variables, we also control for a variety of firm-level and entrepreneur-level characteristics, including gender, education and age of the entrepreneurs and size of the businesses. The list of variables is discusses in greater detail in Table 11.

3.2 DATA

The empirical analysis described in the next sections is based on 344 questionnaires and a series of qualitative interviews conducted with entrepreneurs and key informants in Kariobangi – a low-income neighbourhood about 10 kilometres north-east of Nairobi – between September 2011 and June 2012. The

[19] A more detailed description of the difference between the three types of networks is provided in section 3.3.3.

questionnaire is composed of four main sections which focused on i) the background and characteristics of the entrepreneurs (age, education, job experience, etc.), ii) the enterprise (years of operation, sector, size, capital, profitability, investments, etc.); iii) access to finance (usage of bank accounts and MFIs, outstanding formal and informal loans, etc.). And iv) participation in social networks (purpose, frequency of meetings, number of members, etc.)[20].

The research location was selected after consultations with key informants with an expertise on private sector development, informal economy and access to finance in the Kenyan context. This included academics from the Institute of Development Studies at the University of Nairobi, Financial Sector Deepening Kenya –an organization focusing on pro-poor financial sector development in Kenya, and other researchers with an expertise on economic informality and local economic clusters in Kenya. A first decision point was to focus on the capital Nairobi instead of secondary towns or rural areas. Nairobi is the central economic hub in Kenya, concentrating the majority of formal large and medium-sized firms in the country as well as the micro and small enterprises, mostly in the informal sector. Most importantly, Nairobi has a unique diversity of operators in both the demand-side of small business finance (formal, semi-formal and informal enterprises) and the supply-side (formal and informal financial sector providers), which allows us to map the different landscapes and dynamics affecting the development of the private sector.

After consultations and visits to different parts of the city, we decided to choose Kariobangi as the core research area for the empirical investigation. Kariobangi and its surroundings are characterized by a thriving semi-formal and informal economy and a uniquely diversified population of micro and small enterprises concentrated in a relatively small area. In order to represent the variety of businesses operating in the neighbourhood, the sample was divided across three specific research areas: one is known as *Kariobangi Light Industries*, which is a manufacturing cluster with an estimated population of 300 enterprises in 2005-2006 (Sonobe, Akoten, and Otsuka 2011) but currently has expanded to approximately 450-500 businesses. This cluster specializes in a variety of manufacturing activities, including woodwork, metalwork, car-repair, hardware retail, and paint manufacturing among others. The second research location is a tailoring cluster known as *Kariobangi Market*, which is made of about 600 micro-enterprises involved in tailoring, dress-making, embroidering and retail of tailoring products and

[20] See full questionnaire in Appendix 1,

equipment[21]. Finally, the *Korogocho Market* is a street market specializing in the sale of vegetables and second hand clothes. The sample is almost equally divided across the research locations (see Table 8).

The striking feature of Kariobangi is that although the three productive areas are located in close proximity one another, enterprises are heterogeneous and can be categorized in different "degrees of informality" depending on their degree of compliance with government regulation and the location where they operate the business. The classification used in this study is based on whether entrepreneurs have (i) registered the business name at the Attorney General, (ii) obtained the Single Business Permit from the City Council, (iii) registered with the Kenya Revenue Authority for tax purposes, (iv) provided written contracts to the workers, (v) operated from an authorized location or in public space (e.g. on the side of the road). By taking this approach, we notice that virtually all enterprises in Korogocho are completely informal: businesses do not comply with the licensing, registration and tax requirements and operate in shacks on the side of the road. Businesses in the Kariobangi Market instead comply with the license requirement and operate in spaces authorized by the City Council. All entrepreneurs in this location were required to obtain a special type of permit designed by the government for informal enterprises which allows firms not to register their name at the Attorney General's office[22]. Finally, manufacturing firms in the Kariobangi Light Industries are characterized on average by the highest degree of formality in the sample, as the majority of them comply with both the license and registration requirements, but only a few pay taxes or comply with labor laws[23]. The descriptive characteristics of the sample are shown in Table 8.

The choice of the research location stemmed also from the interest of this dissertation on informal economic clusters, and their capacity to incentivize firm specialization, inter-firm networks and increase the productivity of local economic systems (McCormick 1999; McCormick, Kinyanjui, and Ongile 1997; Mead and Liedholm 1998; van Dijk and Rabellotti 2005; Mehrotra and Biggeri 2007). Responding to the critical literature described in the introductory chapter (see Bateman and Chang, 2012), this dissertation tries to emphasize diverse types of businesses operating in the informal economy, ranging from the micro

[21] The area has also a considerable number of hairdressers and beauty-shops serving mostly, but not only, the women working the market. Some of these businesses were included in the sample.

[22] In order to obtain a business permit firms are normally required to register their business name. For more information see Devas and Kelly (2001) and Abuodha and Bowles (2000).

[23] Compared to Korogocho and Kariobangi Market where the large majority of businesses is very similar in terms of regulatory compliance, in the Kariobangi Light Industries there is higher variability. Some businesses are close to being "completely formal" while others comply only with the license requirement. Though, on average the degree of compliance tends to be higher than in the other two locations.

informal enterprises (e.g. Korogocho street traders) to the semi-formal small businesses in the manufacturing and tailoring clusters (Kariobangi Light Industries and Kariobangi Tailoring market). While these clusters are mostly composed of informal activities, it is known that agglomeration and economic clustering can help raise enterprise productivity and specialisation, reducing transaction costs and capturing positive external economies and synergies (Mehrotra and Biggeri 2007:366).

After choosing the research locations, we designed the sampling strategy and proceeded with the piloting and implementation of the survey[24]. There are no lists of enterprises operating in the areas and therefore there is no sampling frame from which selecting the enterprises to interview. In order to select the sample, we therefore conducted a mapping of the research areas, outlining all the main roads, paths and precise delimitations where businesses were located. In the second step we used a systematic sampling approach to to ensure that the sample of enterprises was distributed across the research areas and did not miss out certain zones. However some areas in the Kariobangi Light Industry were left out of the research mostly because of security and unwillingness of entrepreneurs to participate in the research. The Kariobangi Light Industries are known in Nairobi for the production of counterfeited goods, such as beverages and clothes. While this was not confirmed during the research, some parts of the cluster were particularly difficult to access and the businesses tended to be extremely reluctant to talk to strangers. We therefore had to leave them out from the survey[25].

The data was collected with an in-depth questionnaire conducted face-to-face with the owners of the businesses in the premise where they operate (see full questionnaire in Annex 1). Finalizing each questionnaire took relatively long time, from a minimum of about 35 minutes to a maximum of 1 hour and 20 minutes, depending on the characteristics of the business and how busy was the respondent at the moment of the interview. In some occasions, more than one meeting was necessary in order to complete the questionnaire. The research team was composed of the principal researcher (myself) and two research assistants who worked on the project on a full-time basis. Each questionnaire was validated after the interviews and in case of inconsistencies or missing data then a follow-up meeting was organized

[24] The piloting of the research lasted approximately 4 weeks and was used to train the research assistants and revise the questionnaire based on the feedback from the field.

[25] This dissertation focuses on the issue of economic informality, but is important to make the distinction between illegal processes or arrangements and illegal goods and services (Chen, 2012). While production or employment arrangements in the informal economy are often semi-legal or illegal, most informal workers and enterprises produce and distribute legal goods and services. On the other side, the criminal economy operates entirely illegally. This dissertation does not focus on the latter category.

with the entrepreneurs. After the questionnaires were finalized, the data entry was conducted by a local IT company with familiarity with Stata and data cleaning processes. All these procedures were supervised by the principal researcher.

It is important also to discuss the difficulties and limitations that this research necessarily had to encounter. This survey had the very ambitious objective of building a rich and complex dataset of micro and small enterprises in areas characterized by informality and relatively low incomes. After the piloting of the questionnaire, it became clear that without proper planning, the survey could have produced a high number of missing values or inaccurate data –this would have made the data impossible to use. The main problem is that informal and semi-formal entrepreneurs rarely keep accounting books or have any documentation about the net worth of the business, yearly turnover, business profits or many other variables listed above. This research however surveyed all the key methodological literature on the subject to ensure the maximum possible accuracy in the estimations (e.g. Daniels 2001a; 2001b; de Mel, McKenzie, and Woodruff 2009). The research team also built strong relationships with the local community of entrepreneurs and was able to gain the trust of the respondents.

3.3 DESCRIPTIVE STATISTICS: ANALYSIS OF FINANCIAL LANDSCAPES

3.3.1 Basic characteristics of the sample

Table 8 provides an overview of the histories of entrepreneurs before they started the enterprise in Kariobangi and the current characteristics of their businesses. During the survey, entrepreneurs were asked to provide a list of previous job experiences and the length of their employment. They were also asked whether the firm they worked for was formal or informal. The boundary between the two is notoriously blurry, so respondents were asked to provide additional details about the firm such as size, ownership, age as well as whether (to their knowledge) the firm was registered with the Kenya Revenue Authority. Although in a few cases it was not possible to determine the formality status of the firm, most of the times it was quite straightforward.

Table 8 – Overview of entrepreneurs' and firms' characteristics in the three research locations (Source: own elaboration)

	Degree of formality	**Age of the entrepreneur (years)**	**Age of the business (years)**	**Total previous job experience (months)**	**Experience in formal enterprises (months)**	**Capital value** (machinery + buildings + raw material and finished products, in KSh)	**Sample size**
Kariobangi Light Industries	High/ medium	40.8	8.4	119.1	44.7	693,646	118
Kariobangi market	Medium	38.9	11.0	56.4	16.2	314,664	117
Korogocho	Low	39.3	9.7	53.9	7.3	26,576	108

Table 8 shows that entrepreneurs in the Kariobangi Light Industries had the highest average age (40.8 years) but had the youngest firms (8.44 years of average). During the interviews we found two main explanations for this apparently contradicting data. First, in the Kariobangi Light Industry the life cycle of firms was shorter. Every month there were new firms moving in and out of the cluster, either because the firm did not survive or because it moved to other parts of Nairobi. Kariobangi in fact was in the peculiar situation of being simultaneously very expensive and badly served by infrastructure. It is expensive because it is a well-known area where customers go to purchase different types of goods/services and skilled labour is easily available. That has driven up demand for premises in the area and pushed rental prices to relatively high levels. Small 20 m^2 premises could easily cost up to 15,000 KSh per month (135 euro). At the same time Kariobangi is poorly served by infrastructure. The road is not paved and it becomes unusable during the rainy season, power cuts are a daily occurrence and waste management is poorly organized. Moreover, although the cluster was initially assigned to light industries by the local government, it eventually became a mixed industrial/residential area. Housing investors took advantage of the growing demand for housing in the area and built buildings with workshop spaces on the ground floor and residential apartments above. This poses limits to the expansion of premises, the type of work that can be done and the hours in which the firms are allowed to operate.

A second reason for the mismatch between entrepreneur's age and firm's age is related to longer job experiences of entrepreneurs in the light industries. Many of them worked for several years in formal manufacturing plants in Nairobi's industrial area, where they learnt the skills, saved the money for start-up capital and eventually started their own business. Their experience in formal firms is reflected in the table as well: entrepreneurs in the light industries have the highest formal sector experience at almost 44 months, compared to 16 in Kariobangi market and 7 in Korogocho. However not all entrepreneurs in the

light industries had extensive experience in the formal sector. Some entrepreneurs built their entire job career in the Kariobangi light industries or comparable informal/semi-formal manufacturing clusters in other areas in Nairobi: they often started as apprentices or employees for some local firms, when they learnt the skills, many of them became "fundis" (technicians) working for different firms within the cluster that required specialized skills. Eventually, after saving some money and creating networks of suppliers and customers they started their own businesses.

Entrepreneurs in the Kariobangi market instead learnt their skills mostly within the tailoring sector and in technical colleges. They often entered the market as employees and apprentices in businesses owned by family members or friends and eventually started their own. There was also a number of older entrepreneurs who worked as public employees for several years until the structural adjustment programs imposed to cut public spending in the nineties. Many of them used the savings from these jobs and retirement money to start their businesses as tailors in Kariobangi market. Entrepreneurs in Korogocho instead rarely worked for formal firms or the public sector. Most of them had several casual jobs or had periods of unemployment and underemployment before they were able to save enough money to start businesses in the Korogocho market. Since casual jobs could change on a weekly, or even daily basis, the length of their previous experience was the most difficult to track.

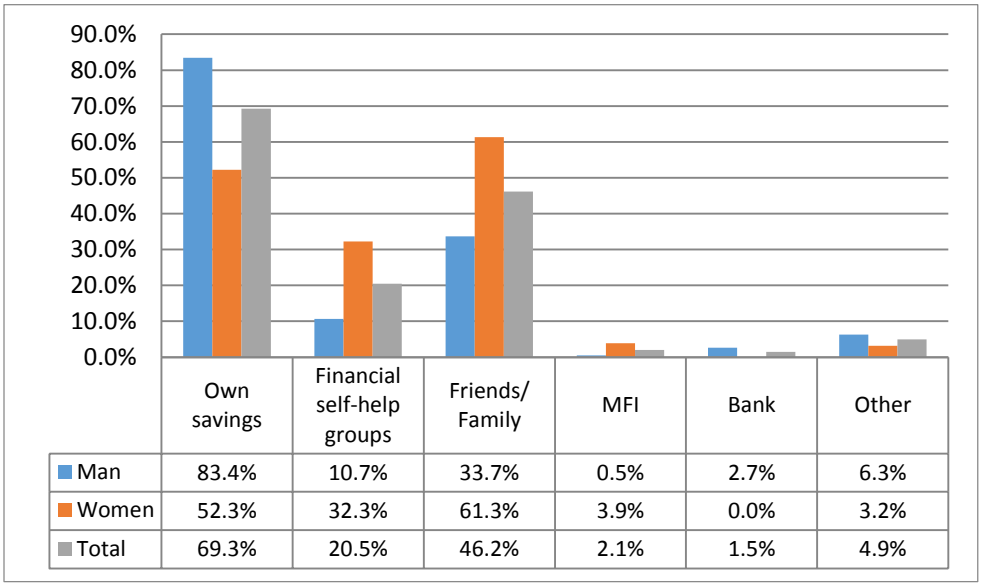
3.3.2 Start-up financing and the role of informal finance

Starting the business was a very different experience for entrepreneurs in the three locations. We asked them to recall the initial phase of their enterprise and indicate the main sources of funding between formal and informal sources[26]. Figure 4 shows that own savings and family and friends play a crucial role as start-up finance instruments, 69 and 46 percent of all firms respectively used them when they had to finance initial operations. However, there is a considerable difference between men and women: whereas man relied on own savings as primary finance instruments (83 percent), women used loans (usually without interest) or grants from family and friends (61 percent). In qualitative interviews we tried to understand whether these "grant" or "donations" should be considered as equity investments (i.e. the donor became a partner of the business) or whether they were simply a form of help. We found that in the majority of cases they were a rather hybrid instrument. Although the "donors" did not acquire a stake in the business, nor they required a share of the profits, they often required the women to become economically independent in financing the household expenses. In many Kenyan families, the wealthier

[26] Multiple answers were allowed.

members have a duty to take care of the poorer ones in case of emergencies. We found that these donations were used as a way to make women economically independent and minimize their potential requests for further funding in the future.

Figure 4 – Sources of start-up capital by gender (percentages).



	Own savings	Financial self-help groups	Friends/ Family	MFI	Bank	Other
Man	83.4%	10.7%	33.7%	0.5%	2.7%	6.3%
Women	52.3%	32.3%	61.3%	3.9%	0.0%	3.2%
Total	69.3%	20.5%	46.2%	2.1%	1.5%	4.9%

Note[1]: the figure reports the percentage of positive responses in each category among male and female respondents and across the sample. Respondents were allowed to provide multiple answers in case their start-up capital came from multiple sources.

Note[2]: The category "Financial self-help groups" include all types of groups identified in Table 5.

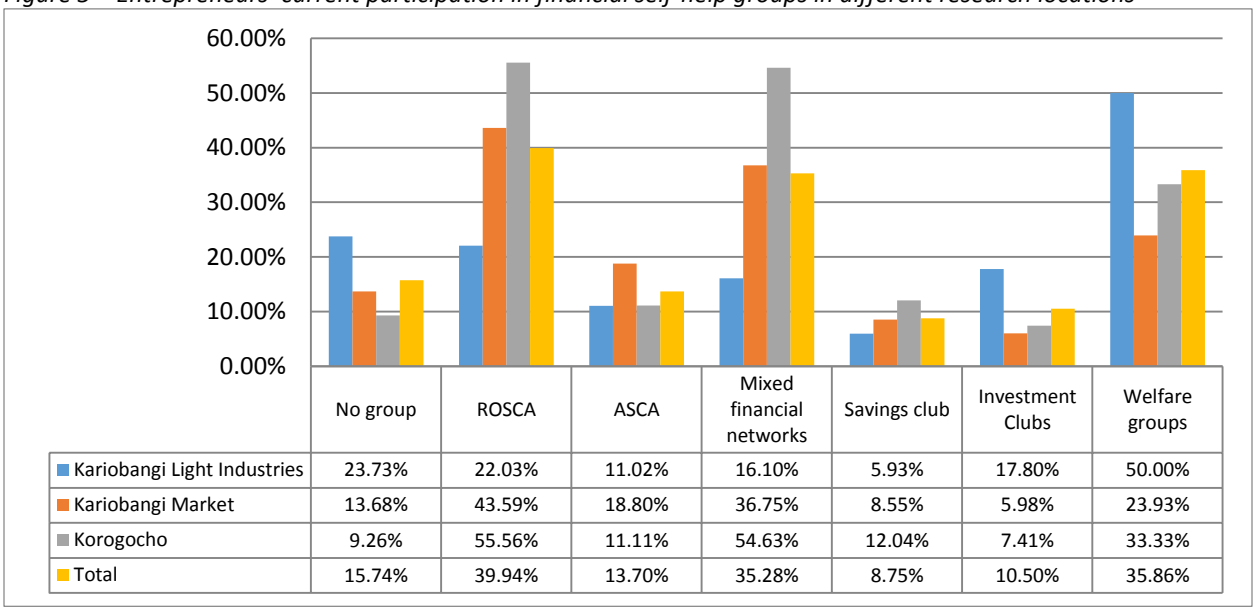
Note[3]: The category "other" includes responses such as inheritance and sale of assets among others.

Figure 4 shows that financial self-help groups like ROSCA, ASCA and savings groups are relatively less relevant compared to own savings and friends. The reason is arguably that many entrepreneurs are able to become members only once they become entrepreneurs and are able to have relatively stable incomes. On the other hand, it is clear that the more formal sources of finance, such as commercial banks and MFIs are almost irrelevant for the start-up of the business. This shows that formal financial institutions are unable to assess business plans in the start-up phase and that they prefer to finance enterprises that have already been in business for some time and have real collateral to provide to the banks.

Figure 5 focuses on the current usage of financial self-help groups in the three locations surveyed in the research. The dynamics are somewhat more complex. It shows that only about 16 per cent of the sample in our research study did not belong to any financial group, whereas over 80 per cent belonged to

one or more groups,[27] which confirms the important role played by informal financial instruments in the local economy. However, the differences within the sample are noteworthy. Enterprises in Kariobangi Light Industries, which are characterized by higher degrees of formality, appeared to make the least use of informal financial institutions: over 24 per cent in our survey did not participate in any such institutions; whereas in Korogocho, where businesses are highly informal, the proportion was only 9 per cent. Respondents who did not participate in networks can be grouped into two types. First were the "network sceptics" who tended to distrust groups because of the risk of fraudulent behaviour. Some also rejected groups because they considered them as being for women, stressing the gender connotation traditionally attributed to groups. Second, there were entrepreneurs who were simply constrained by a lack of resources, either because they were new in the market and still had low earnings, or because they were experiencing difficulties and were unable to pay the regular contributions to the groups.

Figure 5 – Entrepreneurs' current participation in financial self-help groups in different research locations



	No group	ROSCA	ASCA	Mixed financial networks	Savings club	Investment Clubs	Welfare groups
Kariobangi Light Industries	23.73%	22.03%	11.02%	16.10%	5.93%	17.80%	50.00%
Kariobangi Market	13.68%	43.59%	18.80%	36.75%	8.55%	5.98%	23.93%
Korogocho	9.26%	55.56%	11.11%	54.63%	12.04%	7.41%	33.33%
Total	15.74%	39.94%	13.70%	35.28%	8.75%	10.50%	35.86%

Participation in ROSCAs, savings clubs, and mixed financial networks follows a similar pattern: the higher the degree of informality, the higher the participation in these informal networks. In particular, the survey revealed a very high use of mixed financial networks and ROSCAs in Korogocho (55 percent and 56 percent respectively) and in Kariobangi Market (37 percent and 44 percent respectively) – which is

[27] This result is only moderately different from that of Johnson, Brown, and Fouillet (2012). In that study, 27 per cent of the sample was observed as not belonging to any financial group.

considerably higher than the percentage found in the Kariobangi Light Industries. The pattern of participation in ASCAs was slightly different, as the Kariobangi market registered the highest levels of participation, followed by Korogocho and the Kariobangi Light Industries.

In the analysis of Figure 5 it is important to take two factors into account. First, the results are affected not only by the degree of formality, but also by the gender composition of the sample in the three locations. The Kariobangi Light Industries were largely populated by male entrepreneurs whereas Kariobangi Market and Korogocho had a larger number of women. As mentioned in the literature survey, women tend participate in informal groups more often than men (Johnson 2004; Collins et al. 2009). Second, when we look at the different levels of participation between ROSCA, ASCA, and mixed financial networks we have to keep in mind that businesses in Korogocho often combined ROSCA and ASCA activities with welfare-oriented activities, such as helping each another in case of emergencies. Thus, many groups are categorized under the "mixed financial networks" type, but in fact they operated in very similar ways as ROSCA and ASCAs. The fact that incomes in Korogocho were lower and more volatile, as well as more vulnerable to financial shocks made entrepreneurs include welfare activities to their networks in addition to conducting normal revolving funds like ROSCAs or ASCA.

Figure 5 shows also that entrepreneurs in the Light Industries appeared to have a high level of participation in welfare groups (50 percent); these can be categorized into two main types. The first resemble formal insurance products: contributions are made on a regular basis (usually monthly) to a trusted group representative, and the amount is kept in a shared bank account or by the group's treasurer. Members of the group can ask for money only in specific circumstances as specified in the group's constitution, usually for hospitalization or funerals, but smaller groups tend to be more flexible and will consider other emergencies as well. The second type of insurance group is both simpler and more common – a family network or a clan-based insurance group[28] which work on an irregular basis. When emergencies occur, entrepreneurs can rely on these networks (often with the mediation of network elders), but the amounts received are uncertain and depend on the capacity of members to help during the specific period. The findings on welfare networks and their high frequency in the Kariobangi Light Industries seem to contradict the previous results.

Without a proper explanation this finding is indeed misleading. First of all, many groups under the category of "mixed financial networks" have a welfare component as well, thus the finding is not that Korogocho firms do not participate in welfare groups, but rather that the welfare activity is often

[28] This terminology is borrowed from Johnson (2004).

combined with ROSCA and ASCA activities among the most informal enterprises. Second, participation in welfare groups is reciprocal, and therefore participation in welfare groups could mean actively providing help to other people in the network more often than receiving it, especially when entrepreneurs could count on relatively higher incomes. Many entrepreneurs in the Light Industries therefore reported participating to these family networks or clan-based groups, but this does not necessarily mean that they heavily relied on them in case of emergency. In many cases, entrepreneurs actually considered themselves as net contributors to these networks rather than net recipients of help.

In addition to welfare groups, entrepreneurs in the Light Industries reported having a relatively greater preference for investment clubs (18 per cent) compared with those in the other two locations. Investment clubs normally invest in land or other productive activities, while some are active also in the stock market.[29]

3.3.3 The role of social networks: a descriptive analysis

After spending time in the fieldwork and interviewing entrepreneurs and financial self-help groups, we realized that studying social networks is a very complex task. Not only networks are intangible and therefore difficult to quantify: they also tend to be dynamic and to evolve over time in terms of membership and key objectives. We therefore decided to divide social networks in three broad categories, depending on the main utility they have for entrepreneurs. We asked respondent to identify the main purpose of the networks they participated in, and asked them to choose between 3 broad categories: (i) investment/business networks, (ii) saving and credit networks and (iii) solidarity networks. Barr (2002) identifies only two groups –innovation and solidarity networks – depending on the type of activities they undertake (see more detail in section 2.2.2). However during the research we realized that networks tended to be characterized by a large heterogeneity and that it was important to separate at least three groups. The difference from Barr's research is arguably in the nature of the sample: whereas she focused only on the manufacturing sector and included medium-sized firms (over 30 employees), virtually none of the firms in Kariobangi reached that size. The nature of networks and their purpose is arguably different among micro and small enterprises in contexts of informality. The network characteristics and their main purpose are outlined in Table 9.

[29] In the period between 2006 and 2010 there were several highly oversubscribed initial public offerings (IPOs) at the Nairobi Stock Exchange (NSE), which also attracted sections of Kenya's low-income population. For a socio-economic analysis of this, see Yenkey (2010).

Table 9: structure of networks in Kariobangi. (Source: own elaboration)

	Average Number of meetings per year	Average number of members	Main activities
Investment/business networks	37.2	41.3	Information sharing Investment opportunities Learning
Savings and credit networks	91.3	31.0	Financial management Common goals Mutual help
Solidarity networks	35.6	73.5	Socialization Reciprocal support Emergencies Recreational Religious

Investment/business networks were very important among growth-oriented enterprises. They were usually formed by businessmen in both related and unrelated sectors with the purpose of making common investments, promoting organizational and technological innovation and sharing of information about new opportunities in the market. Savings and credit associations on the other hand were by far the most common and their purpose was purely financial –promoting savings and credit among members. As we discussed in the previous section, they included groups like ROSCA, ASCAs and savings club, which helped entrepreneurs to manage their finances and working capital for the business' daily operations. Finally, the last type of group, "solidarity networks", usually had the purpose of helping members in case of necessity (funerals, hospitalization, illness, etc.), and to strengthen the ties with different types of communities. Solidarity networks were in fact very different one another; they can be based on ethnicity, family, religion or neighbourhood.

The core question in this categorization of groups is whether they are characterized by weak or strong ties, and whether their purpose is business or non-business. Table 7 shows that the three groups differed in terms of frequency of meetings and size of the networks, and therefore in terms of "cohesiveness" of the network. Solidarity networks tended to be larger and meet less frequently compared to the savings and credit networks, which instead were smaller and tended to meet rather frequently. Entrepreneurial/business networks are somewhere between the two. Savings and credit networks were usually membership based and required a high degree of trust and interaction among members. Their ties therefore tended to be strongest. Solidarity networks on the other hand often represented different types of communities and the nature of the ties was either based on family and ethnicity, but also on neighbourhood (i.e. neighbourhood associations) or religion (religious groups). The

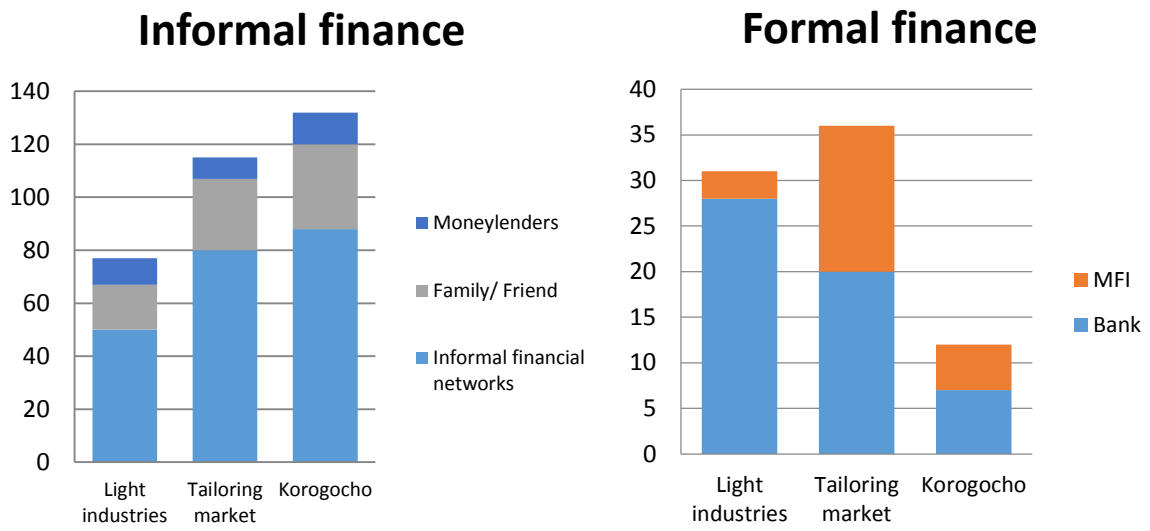
decision to participate in these groups can be considered to some extent exogenous: family and ethnic networks often existed since childhood and religious/neighbourhood associations were based on where the household was located. This is different compared to entrepreneurial/business networks, which aggregated people sharing a business-oriented focus. These ties tended to be more purpose-oriented and to change membership over time depending on the opportunities in the market. Thus, differently from previous studies we argue that it is not only the number of interactions and number of members to determine the strength of network ties. This also depends very strongly on the nature of the network and the main rationale for their establishment.

3.3.4 Access to finance in the three research locations

This section introduces the core topic of this research –the mix of formal and informal financial instruments used in Kariobangi and their determinants. Differently from the previous section, the set of financial instruments is simplified in five main typologies, three informal and two formal. Among the informal instruments we included moneylenders, friends and family while groups such as ROSCAs, ASCAs, and mixed financial networks were clustered under one category. Formal finance includes credit from commercial banks and MFIs.

Figure 6 shows the number of outstanding loans that firms were repaying at the moment of the interview, divided by formal and informal type and location of the firm. The figures show that informal business in Korogocho tend to rely on informal financial instruments more than firms in the other two locations. Firms in the Kariobangi Light Industries instead had higher access to bank finance and the tailoring market used microfinance institutions more than other firms. This arguably indicates that the degree of formality is relevant for access to finance: higher degrees of formality simplify the access to bank loans whereas semi-formality facilitates the usage of microfinance institutions. Completely informal firms on the other hand have to rely almost entirely on savings and credit clubs for all their financial needs.

Figure 6: Usage of formal and informal financial instruments in the three research locations (source: author fieldwork)



Although the five financial instruments are grouped into "formal" and "informal", this is admittedly an arbitrary simplification of a reality that is both complex and fast-evolving. For example, the boundaries between microfinance and commercial banking are somehow blurred in the Kenyan market. Many financial institutions that focus on the micro segment obtained a commercial banking license and therefore they are considered banks even though they operate similarly to MFIs[30]. In the MFI segment there is one further distinction to make between the regulated and the non-regulated MFIs. The Central Bank of Kenya has currently licensed eight deposit-taking microfinance institutions. The biggest one – Kenya Women Finance Trust, has over 90 percent of the market. However there is a high number of MFIs that operate outside the supervisory umbrella of the CBK and their services were used by MSEs in Kariobangi. Thus, MFI loans should be considered at the border between formal and semi-formal finance.

The sphere of informal is even more complex. First, the type of networks involved is very different. Loans from family and friends rely on personal one-to-one networks outside of the market mechanism. In the large majority of cases loans do not bear interest and are provided for a flexible period of time, until the borrower is able to pay back. Often the loans are not returned at all –they are given as some sort of donation[31]. In some occasions the donation is given from the husband to the wife and it is not expected back. In some cases, loans turn into donations because the borrower is unable to pay back or because the

[30] See for example, K-REP, Jamii Bora and Equity Bank.
[31] However, the research considers only loans, not donations or grants, from family and friends.

lender, who usually is a wealthy friend or relative, does not put any pressure on the borrower to pay back. Moreover these lenders/donors do not expect a share of the profits –thus they do not own a share of the firm. But they are anyway in the position to ask for favors when necessary and to increase their sphere of influence over the borrowers in their respective family or friends' networks. The case of donations was frequent but it usually involved relatively small sums. However, we found several examples in the Kariobangi Light Industries where the involvement of family/friends was rather different. We encountered the situation where a family member with a formal job reinvested its money into a business in Kariobangi for a share of the profits, becoming a de facto shareholder of the firm. In some cases, being able to provide a job to the brother or cousin was the real objective of the investment, rather than the profits themselves.

Figure 6 (above) provides an overview of how many businesses used formal and informal financial instruments in the three research locations; however, it provided no details about the size of lending and the difference between men and women in accessing finance. Table 10 shows that banks provide the largest loans on average (almost 500,000 KSh), followed at a distance by moneylenders (85,000 KSh), which however were used by a smaller number of entrepreneurs in the sample. The only clear statistically significant difference between men and women concerns the size of bank loans. However, note that the table focuses on the average loans size among loan recipients (excluding the zeros from non-recipients). It does not indicate the number of entrepreneurs using these financial instruments. If we take that aspect into consideration, then instruments such as MFIs and informal financial networks are substantially more common among women than men.

Table 10: Average size of outstanding (formal and informal) loans among men and women (in KSh).

	Bank	**MFI**	**Friend/family**	**Financial self-help groups**	**Moneylenders**
Male	771,548	56,000	21,558	28,677	115,100
Female	122,330	68,944	25,080	24,860	35,867
F-statistic	5.50**	0.33	0.1	0.83	1.48
Average	495,030	66,130	25,584	26,488	85,071

3.4 DETERMINANTS OF ACCESS TO FINANCE

The next sections go more in-depth into the analysis of the determinants of access to finance and describe several models related to financial preferences and firm performance. Traditional research on SME access bank credit usually uses logit or probit models, and therefore they use dichotomous

dependent variables which take the value of 1 if the firm has access to a loan, 0 otherwise. In this research we try to expand the research approach by comparing the probability of receiving loans to the actual size of loans obtained by entrepreneurs. The probability of obtaining a loan is calculated with the multivariate probit model, whereas the size of loans obtained is analyzed through a multivariate OLS regression model[32]. As it will be described in the following sections, the key advantage of using multivariate models instead of individual probit and OLS regression is that they allow us to analyse several dependent variables jointly and to assess the correlation between the residuals of the different regression equations. The two set of models (multivariate probit and multivariate regression) will illustrate the different determinants of accessing finance per se and the actual magnitude (size) of the financing instruments.

3.4.1 Access to finance as a dichotomous variable (multivariate probit)

Following Akoten, Sawada, and Otsuka (2006) we will estimate access to finance through a multivariate probit model which takes into consideration that since entrepreneurs use different financial instruments simultaneously their determinants should be analyzed jointly in a system of equations. These equations use a set of binary dependent variables that assume the value 1 if the entrepreneur is using the financial instrument at the moment of the interview and 0 otherwise. In a standard probit model with a single independent variable *X*, the cumulative distribution function is calculated as follows:

$$P(Y = 1|X = x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\beta 0+\beta 1x} e^{-z^2} dz \qquad 1$$

where *z* is a standardized normal variable and *e* is the natural base of the log. However this paper studies the joint probabilities of several dependent variables, under the assumption that the probability of accessing different types of loans are not independent from each other. The multivariate probit model is therefore used to estimate several correlated binary outcomes (access or not to different types of loans) jointly (Greene, 2011).

In the case of 5 dependent variables studied in this paper, there are 32 joint probabilities to be estimated, which correspond to 32 possible combinations of Y_i=1 and Y_i=0 for the five dependent

[32] A similar research approach (comparing probability and the size of loans) was used by Craig and Hardee (2007) in the US and Magri (2005) in Italy. However, their context is profoundly different because Craig and Hardee (2007) look at the effect of bank consolidation on small businesses. Magri (2002) instead focuses on the household level and does not include the array of financial instruments that are analysed in this study.

variables. In the case of Y_1=1 for all five dependent variables, Cappellari and Jenkins (2003) formalize it as follows[33]:

$$P(y_1 = 1, y_2 = 1, y_3 = 1, y_4=1, y_5=1)$$

$$= P(\varepsilon_1 \leq \beta_1' X_1, \varepsilon_2 \leq \beta_2' X_2, \varepsilon_3 \leq \beta_3' X_3, \varepsilon_4 \leq \beta_4' X_4, \varepsilon_5 \leq \beta_5' X_5)$$

$$= P(\varepsilon_5 \leq \beta_5' X_5 \mid \varepsilon_4 \leq \beta_4' X_4, \varepsilon_3 \leq \beta_3' X_3, \varepsilon_2 \leq \beta_2' X_2, \varepsilon_1 \leq \beta_1' X_1) \times P(\varepsilon_4 \leq \beta_4' X_4 \mid \varepsilon_3 \leq \beta_3' X_3, \varepsilon_2 \leq \beta_2' X_2, \varepsilon_1 \leq \beta_1' X_1) \times P(\varepsilon_3 \leq \beta_3' X_3 \mid \varepsilon_2 \leq \beta_2' X_2, \varepsilon_1 \leq \beta_1' X_1) \times P(\varepsilon_2 \leq \beta_2' X_2, \mid \varepsilon_1 \leq \beta_1' X_1) \times P(\varepsilon_1 \leq \beta_1 X_1) \quad (2)$$

The same approach will be then applied to the remaining combinations of ones and zeros, which correspond to the different combinations of loan sources that entrepreneurs might be using simultaneously.

The independent variables include a variety of characteristics related to the firm, the entrepreneur and the social networks he/she participates in. The equations (estimated simultaneously) include the presence of outstanding loans from i) Banks, ii) Family and friends, iii) microfinance institutions, iv) financial self-help groups such as ASCAs, ROSCAs and mixed financial networks, and v) moneylenders. The models are formalized as follows:

$$\left\{\begin{array}{c} bankdummy_i = f(informality_i\beta_1 + social\_networks_{i_i}\beta_2 + life_{cycle}{}_i\beta_3 + Controls_i\beta_4 + \varepsilon_{1i}) \\ frienddummy_i = f\,(informality_i\beta_5 + social\_networks_i\beta_6 + life\_cycle_i\beta_7 + Controls_i\beta_8 + \varepsilon_{2i}) \\ SHGdummy_i = f\,(informality_i\beta_9 + social\_networks_i\beta_{10} + life\_cycle_i\beta_{11} + Controls_i\beta_{12} + \varepsilon_{3i}) \\ MFIdummy_i = f\,(informality_i\beta_{13} + social\_networks_i\beta_{14} + life\_cycle_i\beta_{15} + Controls_i\beta_{16} + \varepsilon_{4i}) \\ moneylenderdummy_i = f\,(informality_i\beta_{17} + social\_networks_i\beta_{18} + life\_cycle_i\beta_{19} + Controls_i\beta_{20} + \varepsilon_{5i}) \end{array}\right\}$$

$\boldsymbol{bankdummy_i}$ = 1 if the entrepreneur has an outstanding loan from a bank, 0 otherwise
$\boldsymbol{frienddummy_i}$= 1 the entrepreneur has an outstanding loan from a friend, 0 otherwise
$\boldsymbol{SHGdummy_i}$= 1 if the entrepreneur has an outstanding loan from a financial self-help group, 0 otherwise
$\boldsymbol{MFIdummy_i}$= 1 if the entrepreneur has an outstanding loan from a MFI, 0 otherwise
$\boldsymbol{moneylenderdummy_i}$= 1 the entrepreneur has an outstanding loan from a moneylender, 0 otherwise

The variables measuring informality, networks, life-cycle and control variables are defined in Table 11. ε is an error term for which we impose the condition that Var (ε_{1i}) = Var (ε_{2i}) = Var (ε_{3i}) = Var (ε_{4i}) = Var (ε_{5i}) assuming that the ε_{mi} follow a joint normal distribution.

[33] The subscript $_i$ is dropped for convenience. The model then estimates 31 other combinations of possible outcomes.

The multivariate probit model uses a simulated maximum likelihood (SML) estimator that compares all those using one of the financial instruments defined in Table 11. While similar to the traditional probit specification, the multivariate probit model allows estimating several correlated binary outcomes jointly (Cappellari and Jenkins 2003). The regressions are conducted using a maximum likelihood estimator with a Geweke-Hajivassiliou-Keane (GHK) smooth recursive conditioning simulator. This has several advantages, such as the fact that simulated probabilities are unbiased, bounded within the (0,1) interval and more efficient in terms of the variance of the estimators of probabilities than other simulators (Börsch-Supan and Hajivassiliou 1993). The multivariate probit also returns a coefficient "rho" which is the correlation coefficient between the residuals of each of the five probit regressions. If rho is significantly different from zero, then the residuals of two probit regressions are found to be correlated. This is relevant in this research as we'll be able to understand the correlation between the usage of different financial instruments.

3.4.2 Access to finance as a continuous variable (multivariate regression)

As mentioned in the previous section, in addition to assessing the probability of accessing finance (through the multivariate probit model), this research also investigates the determinants for the magnitude (size) of the financing secured from different sources. This is pursued with a multivariate regression model.

Multivariate regressions differ from the more traditional multiple regressions because they allow several dependent variables to be regressed jointly on the same independent variables. The regression coefficients and standard errors are similar to those estimated through separate regression equations. However the key difference is that the multivariate regression estimates also the between-equation covariance. This is important considering that the decisions about the financial instruments (and the quantity borrowed) are hypothesized to be taken jointly by the entrepreneurs. In order to test the correlation between residuals a Breusch–Pagan test is used (Breusch and Pagan 1980).

The identification strategy is therefore similar to the one proposed for the multivariate probit, with the main difference that the dependent variable is the size of loans that entrepreneurs borrowed from the different sources:

$$\left\{\begin{array}{c} banksize_i = f(informality_i\beta_1 + social\_networks_{i\,i}\beta_2 + life_{cycle}{}_i\beta_3 + Controls_i\beta_4 + \varepsilon_{1i}) \\ friendsize_i = f\,(informality_i\beta_5 + social\_networks_i\beta_6 + life\_cycle_i\beta_7 + Controls_i\beta_8 + \varepsilon_{2i}) \\ SHGsize_i = f\,(informality_i\beta_9 + social\_networks_i\beta_{10} + life\_cycle_i\beta_{11} + Controls_i\beta_{12} + \varepsilon_{3i}) \\ MFIsize_i = f\,(informality_i\beta_{13} + social\_networks_i\beta_{14} + life\_cycle_i\beta_{15} + Controls_i\beta_{16} + \varepsilon_{4i}) \\ moneylendersize_i = f\,(informality_i\beta_{17} + social\_networks_i\beta_{18} + life\_cycle_i\beta_{19} + Controls_i\beta_{20} + \varepsilon_{5i}) \end{array}\right\}$$

Table 11: definition of explanatory variables

Variable grouping	**Variable name**	**Variable description**
Firm-level Formality	Highformality	Dummy=1 for businesses complying with 3 or more government requirements (tax, registration, license, labor contracts, authorized location)
	Mediumformality	Dummy=1 for businesses complying with 1 or 2 government requirements
	Lowformality *(reference dummy - omitted from regression results)*	Dummy=1 for businesses not complying with any government requirement. This variable is used as reference variable and therefore does not appear in the regression results in Table 12.
Entrepreneur-level formality	Formalexp	Number of months of employment in formal sector firms before starting this enterprise
	Informalexp	Number of months of employment in informal sector firms before starting this enterprise
Social networks	Invnetdummy	Dummy=1 for entrepreneurs participating in networks whose main purpose is to promote investments and business opportunities.
	Savnetdummy	Dummy=1 for entrepreneurs participating in networks whose main purpose is to promote savings and credit among members
	Solnetdummy	Dummy=1 for entrepreneurs participating in networks whose main purpose is to tackle emergencies when they arise
Life-cycle	Ageofbusiness	Number of years a business has been in operation
Controls	Genderdummy	Dummy=1 for women
	Education	Number of years of formal schooling
	Networth	Value of capital for machinery, buildings, furniture and vehicles owned by the business

A number of clarifications are necessary for the two modes estimated in Table 12. First, we are including the original loan size for the credits that were still being repaid at the moment of the interview. We did not consider the current "balance" of the loan (amount still to be repaid), otherwise we would have lost information about the size of loans that entrepreneurs are able to obtain. So if an entrepreneur still had to pay the equivalent of $50 out of a loan of $5,000, we considered the original loan size of $5,000. Second, for the category "family/friends" we considered only the sums that were supposed to be paid back to the lender, even if they had a zero percent interest rate. So we decided not to include the donations or grants given for charitable purposes, because we decided to focus on the debt instruments itself and not on other instruments in these empirical models[34].

When it comes to finance from financial self-help groups the question is whether certain sums should be considered loans or simple savings mechanisms. The issue is particularly evident in ROSCAs, as the money is given to members on a rotating basis, not as a loan. The line between credit and savings is however very thin, as it depends on whether the entrepreneur receives the "pot" at the beginning of the cycle or at the end. If the pot is received at the beginning, it can be considered as a type of loan with no interest, as the member will be required to participate at every single meeting and progressively pay back the amount that was advanced to him/her by the group. If the entrepreneur is at the end of the cycle, then the system resembles a form of saving mechanism. The line between the two is therefore a very thin one, but we decided to include it as a debt instrument because the lump-sum received was often very important for the financing of the firms. The size of the lump-sum that we included in this model was the amount disbursed by the ROSCA in any one cycle. For example, if a ROSCA was composed of ten members who contributed 1,000 Ksh monthly, then the lump-sum distributed on a rotating-basis was calculated to be 10,000 KSh during the last cycle under consideration. Finally, when it comes to moneylenders, the main difficulty was that respondents sometimes did not like sharing the information or they masked it as "loans from a friend". The wrong information was easy to capture however because we asked about the interest rates on the loans. If it was very high, we asked again if the lender was a friend or a "shylock" as it is commonly called in Nairobi, so in most cases we could categorize the loan accurately. In some cases, we might have missed the data point completely. The difficulty to get information on moneylenders is arguably one of the reasons why almost all studies on the firm's finance show a very low reliance of

[34] Although this issue is not discussed explicitly in most literature, other studies make similar assumptions and focus on loans from relative or friends rather than charitable donations. For more information on the difference between the two see Collins et al (2009) and Armendàriz and Murdoch (2010).

entrepreneurs on this source of finance (see for example, Fafchamps et al. 1994, and Akoten, Sawada, and Otsuka 2006, among others).

As mentioned before, this study tries to compare the influence of explanatory variables on both the usage of different financial instruments (binary variable) as well as the size of loans from the different sources (continuous variable). Table 12 shows side-by-side the results of the multivariate probit model (column A) and the multivariate regression model (column B).

Table 12: The determinants of the probability of accessing formal and informal finance. Multivariate probit analysis (column a), and multivariate regression (column b).

	(1) Bank		(2) MFI		(3) Self-Help groups		(4) Friends/Family		(5) Moneylenders	
	(a)	**(b)**	**(a)**	**(b)**	**(a)**	**(b)**	**(a)**	**(b)**	**(a)**	**(b)**
	Loan usage (binary)	**Loan size**	**Loan usage (binary)**	**Loan size**	**Loan usage (binary)**	**Loan size**	**Loan usage (binary)**	**Loan size**	**Loan usage (binary)**	**Loan size**
formalexp	0.00555***	883.0**	0.000391	11.55	-0.00369*	-36.02	-0.00487*	-23.14	-0.00126	-228.6
	(3.00)	(2.11)	(0.15)	(0.47)	(-1.80)	(-1.14)	(-1.93)	(-1.28)	(-0.56)	(-1.62)
informalexp	0.000202	344.3	0.000353	15.61	-0.00345**	-31.97	-0.000565	11.84	-0.00296	-52.97
	(0.19)	(1.27)	(0.20)	(0.98)	(-2.41)	(-1.56)	(-0.45)	(1.01)	(-1.61)	(-0.58)
highformality	0.681**	-18077.8	0.657*	2851.8	-0.298	2958.1	-0.439	-460.2	0.159	45068.9**
	(2.20)	(-0.29)	(1.74)	(0.77)	(-0.92)	(0.62)	(-1.41)	(-0.17)	(0.50)	(2.11)
genderummy	0.488**	-6430.8	0.781***	7016.5***	0.528**	1850.8	-0.193	-1018.2	0.0866	-11513.8
	(2.23)	(-0.16)	(2.92)	(2.89)	(2.38)	(0.59)	(-1.13)	(-0.57)	(0.39)	(-0.82)
mediumformality	0.195	-65390.9	0.159	4412.0*	-0.0463	2465.7	0.0700	5325.3***	-0.241	2692.8
	(0.83)	(-1.48)	(0.55)	(1.70)	(-0.19)	(0.74)	(0.37)	(2.79)	(-0.96)	(0.18)
Networth[35]	0.000569**	0.324***	-0.000200	0.00123	0.000126	0.0103***	-0.000398	-0.000344	0.000075	0.0186**
	(2.53)	(12.53)	(-0.77)	(0.81)	(1.05)	(5.24)	(-1.36)	(-0.31)	(0.67)	(2.12)

[35] Measurement unit for this variable is in thousands ('000) Kenyan Shillings

ageofbusiness	0.0128	3920.4	0.00599	67.62	0.00205	-304.9	0.00876	-40.43	0.00839	124.1
	(0.86)	(1.33)	(0.33)	(0.39)	(0.13)	(-1.37)	(0.68)	(-0.32)	(0.53)	(0.12)
educ	-0.00328	-3998.4	0.0846*	672.6	-0.0125	-662.3	0.0374	378.5	0.00467	-737.2
	(-0.10)	(-0.56)	(1.82)	(1.60)	(-0.31)	(-1.22)	(1.15)	(1.22)	(0.11)	(-0.30)
Invnetdummy	0.266	192484.6***	0.0369	-2819.8	1.359***	17344.6***	-0.0930	-1096.7	0.476	-5276.7
	(0.91)	(3.04)	(0.10)	(-0.76)	(4.08)	(3.62)	(-0.31)	(-0.40)	(1.61)	(-0.25)
Savnetdummy	-0.195	-16635.9	0.463*	2394.9	2.483***	16538.3***	0.0573	482.4	0.127	15160.1
	(-0.92)	(-0.39)	(1.65)	(0.95)	(11.21)	(5.12)	(0.32)	(0.26)	(0.55)	(1.05)
Solnetdummy	0.174	28648.2	0.417*	4764.4**	0.356*	1987.5	-0.0979	-1281.2	0.0661	9251.4
	(0.91)	(0.75)	(1.79)	(2.11)	(1.70)	(0.69)	(-0.59)	(-0.77)	(0.33)	(0.71)
_cons	-1.919***	-57865.6	-3.561***	-13571.1**	-1.138**	10530.8	-0.884**	900.3	-1.504***	1599.9
	(-4.04)	(-0.62)	(-5.28)	(-2.46)	(-2.22)	(1.49)	(-2.11)	(0.22)	(-2.83)	(0.05)

Multivariate Probit: Wald chi2(55) = 235.83. Prob > Chi2 = 0.000
Multivariate regression: F(11, 313) = 1.50. Prob > F = 0.1288

3.5 ESTIMATION RESULTS

Comparing the multivariate probit model and multivariate OLS regressions show interesting patterns of access to finance in Kariobangi for the five financial instruments analysed in this study.

The first main finding is that differently from what was hypothesized in the life cycle theory of capital structure, the age of the firm does not seem to be related to the type of financial instruments used by entrepreneurs. Although the previous section has shown that formal finance (from banks and MFIs) is indeed very rare in the start-up phase of the business (see Figure 4), and therefore it seems to indicate that the life-cycle theory is relevant in the early stages of the business, there seem to be no empirical evidence on the relation between age of the firm and the reliance on external finance. The relation between bank finance and age of the firm is positive, both in terms of probability of having a loan and size of the loans obtained, however the relation is not statistically significant. More research is however needed in this field.

On the other hand, formality and informality at the entrepreneur and enterprise level seem to play a very important role, especially when we analyse access to bank finance. In particular, an important determinant for access to bank finance is the experience of entrepreneurs in formal sector firms. Banks seem to value formal sector experience because they see it as a proxy for higher skills, knowledge of the sector, reliability and ability to repay. In fact longer experience in the formal sector was associated with both a higher probability of accessing bank loans as well as larger average loan sizes. At the same time, experience in the formal sector is negatively associated with probability and size of loans from family and friends as well as financial self-help groups, which arguably become a second best option once the entrepreneur gain access to bank finance. The length of experience in informal sector firms is also negatively associated with the usage of financial self-help groups. This finding is interesting, because it shows that reliance on self-help groups tends to be more common among entrepreneurs who recently entered the market, especially those with little job experience in both formal and informal sector.

Firm-level formality seem to play an important role as well in the Kenyan market of small enterprise finance. The regression shows that having a high degree of formality (higher compliance with government regulation) increases the probability of having access to bank finance as well as MFI finance. However it does not affect the size of the loan that entrepreneurs are able to secure from these institutions. The size of the firms' capital (*networth* in Table 12) is evidently a much stronger determinant of both access to

credit and size of the loans. This suggests that most of the financing available for MSEs is still collateral-based lending, although micro-enterprises are by definition lacking this sort of capital.

At the same time, high formality seems to be associated with larger loans from moneylenders. This may appear as an unexpected finding. However during fieldwork we noticed two very different ways of using "shylocks" in the market: one, which we found more often among the Korogocho street traders, is the "emergency-lending" – entrepreneurs did not have sufficient capital to purchase new material (or stock) and they indebted themselves with local moneylenders. In several occasions they had difficulties repaying the loans or even had to discontinue their business. Other businesses used moneylenders in a more dynamic way, almost regularly during the year. Although moneylenders are generally expensive, they tend to be flexible and much faster than formal banks and informal self-help groups. Some growth-oriented businesses, especially those in the Kariobangi light industries, used moneylenders to finance cash-flows or other sudden expenses that were necessary to expand their activities. Other businesses also used moneylenders as an additional source of money to retained earnings to finance capital investments, mostly because banks were reluctant to provide credit with maturity above 12 months. This will be analysed more in-depth in the essay 2.

What was more surprising, however, is that the regression shows that other things being equal, women had a higher probability of using loans from banks. This is a rather unique finding, which is arguably affected by the structure of the sample and the characteristics of the research location. In particular, we found a relatively high number of women in Kariobangi market having the possibility of accessing group loans from formal institutions. Many businesses in Kariobangi market in fact operated for a relatively long period of time and although they were small in size and turnover, they were well established and could count on relatively stable flows of income. The specific characteristics of Kariobangi Market therefore plays a key role in explaining the findings of the research, but this finding is unlikely to be confirmed if we do research on a wider population of small businesses in Nairobi.

Finally, the regression model looks at how medium-formality affects access to finance. Table 12 shows that this variable is associated with larger average loans from microfinance institutions and from friends and relatives, while it is not significantly associated with loans from commercial banks. The reason is that sometimes semi-formal firms do not qualify for individual loans from banks and they have to rely on the group lending model used by MFIs. Also, it is important to remind that many semi-formal firms in the sample were owned by women, especially those in the Kariobangi market, who have been an important target market for microfinance institutions. The regression results also show that semi-formal

firms do not increase the probability of using loans from family and friends, but the sums received are larger compared to other firms. This shows that medium-formality tends to increase the size of lending transactions within the personal network of family and friends.

The role of social networks in access to finance brings mixed evidence. Quite predictably, participation in social networks is strongly correlated with usage of loans from financial self-help groups, especially investment networks and savings and credit associations, whereas solidarity networks are less important for enterprise finance. The more interesting finding however is that participation in investment networks seems associated with larger loans from commercial banks. Many entrepreneurs, in fact, decided to participate in investment networks because they tended to be on the lookout for growth opportunities. These networks often stimulates investments either through the sharing of information about business opportunities or through the creation of joint ventures among members. This role of investment networks was confirmed during the qualitative interviews.

Participation in solidarity networks on the other hand seems to be associated only with the reliance on MFI financing. The reason is quite predictable: since MFI largely rely on group lending in the relationship with their clients, then these solidarity networks represent a stepping stone for engaging with microfinance institutions. Participation in MFIs is strongly correlated also with gender, in fact women continue to represent the largest share of MFI clients. The data also shows that businesses characterized by medium formality tend to have access to larger loans.

Finally, it is important to analyze the results of the variance-covariance matrix of the error terms ("rho") of the multivariate probit model described above. The positive or negative covariance of the error terms between two credit sources indicates that unobserved factors affect the chances that an entrepreneur uses simultaneously two different credit sources. A positive coefficient between two credit sources indicate that usage of one credit source increases the chances that the entrepreneur uses the other. A negative coefficient on the other hand indicates that two credit sources are unlikely to be used simultaneously.

Table 13: variance-covariance matrix of the residual terms

		Coeff	Std Error	Z	P>|z|	95% confidence interval	
rho21	Banks-MFIs	-.2722141	.2102666	-1.29	0.195	-.6195969	.1643394
rho31	Banks – Financial self-help groups	.1729258	.1399469	1.24	0.217	-.1076462	.4279849
rho41	Banks-Friends/family	.2130297	.1052799	2.02	0.043	.0001887	.4074061
rho51	Banks-Moneylenders	-.0268121	.1317464	-0.20	0.839	-.2777317	.2275323
rho32	MFI- Financial self-help groups	-.1044424	.1764913	-0.59	0.554	-.4256369	.2401251
rho42	MFI-Friends/family	-.1302455	.1365979	-0.95	0.340	-.3828004	.1404234
rho52	MFIs – Moneylenders	.3423807	.1508187	2.27	0.023	.0219312	.5990339
rho43	Financial self-help groups – Friends/Family	-.0103702	.1133815	-0.09	0.927	-.2285113	.2087624
rho53	Moneylenders - Financial SHG	-.0027379	.1480093	-0.02	0.985	-.2847402	.2797006
rho54	Moneylenders –Friend/family	.0708552	.1299441	0.55	0.586	-.1829148	.315773

Likelihood ratio test of rho21 = rho31 = rho41 = rho51= rho32 = rho42 = rho52 = rho43 = rho53 = rho54 = 0: chi2(10) = 12.3947
Prob> chi2 = 0.2595

Table 13 shows that the error term between banks and family/friends is positively and significantly correlated. We encountered in fact numerous businesses that combined the two types of credit sources to finance their working capital and investments: on the one hand, banks provided the larger sums used to finance the bigger expenses like capital investments and large purchases of raw material or stock of products. On the other hand, businesses had to face the day-to-day expenses, such as paying rent for the premise and paying the casual labour, which required higher disbursement flexibility and usually much smaller amounts. An unexpected finding was that some entrepreneurs combined usage of MFIs and moneylenders. There is in fact a large body of literature describing cases of microfinance clients who are unable to repay the loans and therefore indebt themselves with ruthless moneylenders (see Roodman, 2012). Even though many entrepreneurs complained about the high cost of borrowing from MFIs during our fieldwork, only a few entrepreneurs referred to the need to borrow extra money from moneylenders

to repay these loans. Nevertheless, the statistically significant result brings further evidence that microfinance and moneylenders often serve and compete for the same market segment.

4. SUMMARY AND CONCLUSIONS

This research has shown that the financial landscape for MSEs in Nairobi is very rich and diversified, and that entrepreneurs tend to borrow simultaneously from different sources, formal and informal, market and non-market, depending on the characteristics of the businesses and the personal preferences of entrepreneurs. Thus, an important finding of this research is that far from operating in an "institutional vacuum" or suffering from a complete lack of financing options, MSEs in Nairobi are likely to use a mix of financial instruments and, surprisingly, are actively connected with both financial self-help groups (ROSCAs, ASCAs, etc.) and formal financial institutions (banks, MFIs). The focus of most literature on the limited access (or exclusion) of MSEs to formal finance is not useful because it overlooks the complex dynamics within the context of informality and the potential for unconventional financial instruments to promote the survival and growth of MSEs.

The descriptive section has quantified the vital importance of financial self-help groups in the daily operations of MSEs. Figure 6 as shown that financial self-help groups are by far the most common financing instrument used by entrepreneurs, followed by loans from family and friends and commercial banks as third. However, the credit sources vary widely between the three research locations (Kariobangi Light Industries, Kariobangi Market, Korogocho second-hand market) arguably because the businesses differ in terms of size, main activity and degree of formality. Figure 5 in fact shows that only 16 percent of the sample in our research study did not belong to any financial group, but there are large within-sample differences: almost one quarter of MSEs in the Kariobangi Light Industries (which tend to have a higher degree of formality) did not participate in any such institutions; whereas for MSEs in Korogocho, which tend to be highly informal, the proportion was only 9 per cent. The finding therefore seems to confirm our hypothesis that the reliance on formal or informal credit sources is related to the degree of formality of the business.

The descriptive section also brought evidence that financial self-help groups tend to play a less important role in the start-up phase of a business. Figure 4 shows that the majority used their own savings from previous jobs and loans (or grants) from family or friends. The contribution of financial self-help

groups was significant but limited, especially for men. This finding seems to indicate that personal ties such as friends or family are more important than informal financial groups for new entrepreneurs, whereas more complex organizational forms such as ASCAs and ROSCAs become important when the business is established and functioning. However, further analysis is needed to test the hypotheses emerging from the field research.

Sections 3.5 and 3.6 of the paper used multivariate regression models (probit and OLS) to study the determinants of access to finance. In particular, they looked at the role of (i) informality (ii) social networks and (iii) the firm life-cycle in addition to control variables on the size of businesses, gender, age and education. Informality was separated in two components: firm-level informality, which indicates the degree of compliance of the business with government regulations (taxes, business registration, licenses, labour contracts, etc.); and entrepreneur-level informality, which looks at how long entrepreneurs had worked in formal/informal firms before starting the business. The latter variable was analysed in a rather exploratory fashion, since there is very little literature available on this topic. The only indication found in the literature is related to the notion of "managerial capital" proposed by Bruhn et al (2010), which stresses the importance of previous job experience in enterprise performance. Nevertheless, it proved to have a strong explanatory power: Table 12 shows that longer periods of employment in formal businesses are associated with a higher chance of using bank finance and overall larger loan amounts from banks. At the same time, they are associated with lower probability of relying on financial self-help groups and family and friends. Firm-level formality proved to be important as well: it is associated with a higher probability of borrowing from commercial banks. However, being "highly formal" is not significantly associated with the ability to borrow larger sums from banks. The size of capital owned by the business (machinery, buildings, vehicles, inventory, etc.) was by far the strongest determinant for the size of loans that entrepreneurs were able to obtain from commercial banks. This arguably proves the fact that most lending from banks is dependent on the collateral owned by firms.

The life-cycle hypothesis explained in section 2.1.3 was not supported by the data. The main variable used to test this hypothesis was the age of the firms (years of operation). However we found no evidence that the formality of financing instruments used by entrepreneurs changed over time as the business becomes more mature. We found partial evidence for this hypothesis in the descriptive statistics: comparing Figure 4 and Figure 6 shows that whereas bank finance was almost inexistent during the start-up phase, it became more important over time. However, the research shows that it is not the age of the firm *per se* that increases the chances of accessing formal credit, but rather other variables such as the formality of the firm, social networks and the job experience of the entrepreneurs. It is important to

consider that MSEs in the sample were rather heterogeneous, involving some growth-oriented small firms as well as survival micro-enterprises, which hardly changed in size and operations over the course of the years. Our impression is that further research is necessary in this field: although our study does not support the life-cycle hypothesis, we believe that it should not be discarded entirely, as it may be relevant for firms operating in specific industry segments and that show stronger growth potential.

The role of social networks in access to finance has shown mixed evidence as well. This study has tried to develop an exploratory approach, where entrepreneurs were divided according to their participation in (i) investment/entrepreneurial networks, (ii) saving and credit networks and (iii) solidarity networks. The objective was to understand whether participation in these networks had an effect on the probability of using external (formal or informal) finance, and the size of loans that entrepreneurs were able to borrow. A noteworthy finding is that participation in investment networks is associated with larger loan sizes from commercial banks. The reason is arguably the fact that investment networks tended to stimulate investments either through the sharing of information about business opportunities or through the creation of joint ventures among members. However, a more comprehensive analysis of the network effects on access to finance should be conducted on a larger scale, either through the analysis of larger samples or through the analysis of more specific industry segments. In fact, although the empirical data-collection focused on MSEs in a specific area of Nairobi (Kariobangi), the types of businesses were considerably diverse.

The fact that businesses were characterized by different degrees of formality allowed us to isolate the role of informality on access to finance, knowing that other important factors could be left constant, such as the geographical distance from financial providers and average incomes among others. This has shed light on how compliance with Government regulation and experience in the formal sector affect access and usage of financial service. At the same time, having a sample of firms with different degrees of informality made the analysis more difficult on other dimensions. For example, certain variables such as age and education might have had a significant effect in a subpopulation of firms, but not in others. The small sample size however made it difficult to conduct analyses within the subpopulations. The paper has nevertheless addressed some important gaps in the literature on access to finance by small businesses, applying a financial landscape approach and showing that there are numerous factors affecting access and usage of credit. It contributed with an improved understanding of the role of social networks in access to finance and the role played by enterprise and entrepreneur's informality.

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Essay 2

Access to finance and firm performance

Analysing the effects of different loan sources on the performance of micro and small enterprises in Nairobi (Kenya)

1 INTRODUCTION

Recent years have witnessed a growing interest in promoting financial inclusion among micro and small enterprises (MSEs) as a means to alleviate poverty, generate employment and fuel economic growth. Core strategies to promote MSE growth have been the improvement of access to credit, under the assumption that many entrepreneurs lack resources to finance capital investments, and are hampered by cash-flow and working capital problems. The theoretical argument embraced by the field of microfinance is that if small entrepreneurs are granted access to external finance, they will trigger a virtuous cycle of business expansion and will be able to generate employment and growth.

Recent studies have investigated whether this is actually the case, and have employed randomized control trial (RCT) techniques to investigate whether access to external credit or grants leads to increased investments, profits and return to capital among microenterprises (De Mel, McKenzie, and Woodruff 2008; Zinman and Karlan 2009; McKenzie and Woodruff 2008). Many studies found heterogeneity in the results, often noticing a marked gender difference in performance and limited, even negative impact on investments. These studies however focus on either grants or on one type of credit - formal microfinance loans - while we know that financial landscapes in low-income areas are extremely diverse and entrepreneurs often borrow from a variety of sources, such as friends and family, commercial banks, moneylenders and rotating credit and savings associations (Akoten, Sawada, and Otsuka 2006; Johnson 2004; Collins et al. 2009). While money is fungible, and therefore a money injection should have the same effects on enterprise performance irrespective of its source, very little research has been conducted to confirm this hypothesis.

The hypothesis in this study is that the effects of credit on firm performance are related to the source of the loan: since social ties involved in lending transactions are very different, so is the risk-aversion of the entrepreneurs as well as the attitudes and preferences towards investing the money received. On the one hand, these effects are related to the different terms and conditions attached to the loans, such as interest rates, maturity, repayment schedule and size of the loan. A loan from a relative is likely to be both smaller and more flexible than a loan from a commercial bank. In addition

to the different terms and conditions, the source of the loan might affect firm performance also because the social capital involved in these lending transactions is very different. Loans from relatives or friends can be tangled in a web of social ties, whereas loans from commercial banks are more impersonal and rely on the presence of physical collateral. The different social ties linking creditor and borrower might affect how the loan is used in multiple ways, for example by changing the attitude towards risk or by affecting the investment preferences and behaviors. For example, loans within the family might increase the expectations of reciprocity on the borrower, who could be expected to provide jobs or favors to the lender at the expense of profitability. On the other hand, bank loans could incentivize risk-taking behaviors and investments because they are more impersonal. However little literature has focused on these questions.

Testing this hypothesis requires a carefully designed methodology. This study is based on observational data, which is normally considered less effective than randomized control trials in the analysis of impact. However, our argument is that the approach of RCTs would be very difficult to implement for the type of questions addressed in this study. If the effect of loans is affected by the relationship with the borrower, this means that RCT-type experiments (i.e. randomized loans or grants) would produce different results than loans received from other sources. Many RCTs simply provide "increased access" to loans from specific microfinance institutions. Others, such as Fafchamps et al. (2014) and De Mel, McKenzie, and Woodruff (2008) directly provide randomized grants to microentrepreneurs without relying on any formal or informal institutions. While these studies have the advantage of reducing the self-selection bias and producing reliable estimates for borrowers and non-borrowers, they also create situation where capital injections are detached and decontextualized from the reality where entrepreneurs operate. If an entrepreneur receives 1,000 USD from her sister, from a self-help group of entrepreneurs or from a research institute providing randomized grants, we have reasons to believe that the money will be used differently, in part because these amounts come with different terms and conditions, in part because the different social ties attached to them lead to different risk propensity, preferences and attitudes towards investments. The effects on firm performance therefore might differ as well.

In this research we look at the impact on enterprise performance of formal and informal credit in a real (i.e. non-experimental) setting. Taking into account the methodological drawbacks of RCTs, this paper analyses micro and small enterprises which are comparable in size, location, type of business[36] and background of the entrepreneurs but differ in the type of loan they have used.

[36] As described in Essay 1, the sample of businesses studied in the survey could be categorized in three groups: small manufacturing firms, tailoring activities and retail traders. While the three groups differed in size and core activity, the homogeneity *within* these groups was relatively high. This represent an appropriate scenario

Propensity score matching is used to estimate whether access to formal and informal credit has different impacts on firm performance. Statistical matching is a methodology where "treated" individuals (e.g. entrepreneurs who had access to a bank loan) are compared to a control group of individuals whose observable characteristics (age, sector, size of business, etc.) are similar but differ because they did not participate in the treatment (i.e. in this case, they did not borrow). Since we focus on a local neighbourhood in Nairobi where businesses have comparable characteristics, it is easier to control for external conditions such as distance to the service providers and income levels. The research looks at five financial instruments: loan from commercial banks, loan from MFIs, loan from moneylenders, loans from family/friends and loans from financial self-help groups such as ROSCAs and ASCAs. The effect on firm performance is calculated by analysing the business investments, profitability and employment growth.

The findings of the empirical investigation show that loans from commercial banks tend to lead to both higher investments and employment growth, but they do not seem to have a significant impact on firms' profitability. Informal loans from family and friends or money-lenders seem to affect positively investments, though the results are not very robust. On the other hand, there is no indication that informal loans have an impact on employment growth or profitability. One of the interesting results of the study is that loans from microfinance institutions seem to have a negative and significant effect of firm investments. The reasons identified for this finding are qualitative in nature, and they involve the drivers that encourage entrepreneurs to apply for a loan at a microfinance institution instead of a bank, and the fact that although many MFI loans are obtained for business purposes, they are actually invested at the household level. This confirms the findings of other studies such as Zinman and Karlan (2009) and De Mel, McKenzie, and Woodruff (2008).

Next sections are organized as follows: section 2 reviews the literature on access to finance and firm performance as well as literature on behavioral finance and mental accounting. The latter literature is used to explain why the source of the loan might affect how the money is used and ultimately the impact on firm performance. Section 3 describes the study objectives and limitations and section 4 describe the econometric strategy used in the empirical analysis. Section 5 discusses the results and section 6 concludes.

for the study design used in this paper which matches observations with similar characteristics. This will be described in more detail in the methodological section.

2. REVIEW OF LITERATURE

The next sections review strands of literature related to finance and micro-enterprise performance as well as mental accounting and behavioral aspects of financial management. Section 2.1 reviews literature that deals with the impact of credit and other financial services on firm performance and section 2.2 looks at the impact of in-kind and cash grants on the performance of micro-enterprise. These studies often use the term "exogenous shocks" because their key objective is to understand the effects of additional capital injections on enterprise performance rather than the effects of specific financial services *per se*. Section 2.3 reviews a rather different literature on mental accounting and the role of behavioral finance in order to understand how different loan sources might affect the performance of firms.

2.1 ACCESS TO FINANCE AND FIRM PERFORMANCE

Does increased access to finance promote business growth? This question has been tested in experimental settings by various scholars over the last few years, and the results have varied depending on the characteristics of the sample, the location of the research or the design of the experiment.

In one of the most notorious studies in this field, Zinman and Karlan (2009) use an RCT to test whether increased access to microfinance lending leads to microenterprise growth in the Philippines. In order to do so, they drew a sample of 1600 businesses from a pool of microenterprises which had applied for a loan at a local bank and were considered marginally creditworthy by the institution. The creditworthiness of the applicants was computed with a credit scoring algorithm that had been recently introduced by the bank, and takes account of business skills, financial resources and demographic characteristics among other variables. The scores ranged from 0 to 100: applicants below 31 were rejected, and those above 59 were approved automatically. Those in between 31 and 59 were considered partially creditworthy. After identifying the sample[37], the authors randomized the provision of loans to some of the businesses considered partially creditworthy and studied the effects on business performance.

The findings are very surprising. First, they find some evidence that profits increased for treated male entrepreneurs, but the profitability of female-owned businesses remained unaffected. Zinman and Karlan (2009) specify that since they have a small sample, they cannot analyze whether these

[37] The majority of these businesses were run by women (85 percent) with relatively high levels of education (93 percent had high-school degrees) and relatively wealthy compared to the national average

differences are driven by social status, household bargaining or occupational choice, which are likely to play an important role. The authors also find that the treatment group in addition to having access to the loan reported also increased usage of informal credit arrangements, mostly used to absorb shocks. Thus, differently from popular belief, access to formal credit does not seem to crowd-out informal borrowing. Finally, they find that the size of treated businesses shrank after receiving credit: "In all, we find that increased access to microcredit leads to less investment in the targeted business, to substitution away from labor and into education, and to substitution away from insurance (both explicit/formal, and implicit/informal) even as overall access to risk-sharing mechanisms increases" (Zinman and Karlan 2009:5) The authors therefore argue that microcredit does have important effects in the livelihood of borrowers, but these effects are different from those advertised by the microfinance movement: the main benefits are related to improved risk management and increased investments at the household level; though the effects on microenterprise development are very limited.

Another important study was conducted by Banerjee and Duflo (2014) in India, who study whether medium and large firms are credit constrained and would borrow more given the opportunity. The firms studied in this research were formally registered and had a relatively large capital compared to Indian firms, therefore the target group here is rather different from the microenterprises studied by Zinman and Karlan (2009). However the study is particularly important from a methodological point of view, and it allows to understand the effect of finance beyond the informal, micro-enterprise level. Banerjee and Duflo (2014) take advantage of a rather unique combination of policies that affected an identifiable subset of enterprises in India which initially gained and then lost eligibility for directed credit. The Indian Government in fact made two changes in the definition of their "priority sector" which was entitled to obtain bank loans at favorable conditions. Before 1998, the program targeted smaller businesses with an asset size below 6.5 million rupees. A policy change in 1998 expanded the eligibility to the program to larger firms, increasing the maximum capital size up to 30 million Rupees. The second policy change occurred two years later in 2000, when the eligibility was decreased again to firms with capital below 10 million Rupees. These two policy changes allowed Banerjee and Duflo (2014) to identify whether firms are credit constrained. The idea is that while both unconstrained and constrained businesses would prefer directed credit to other sources of credit because of its more favourable conditions; constrained firms would use it to invest and expand production, unconstrained firms would primarily use it as a substitute for other borrowing. Banerjee and Duflo (2014) use a triple difference approach: they observe the rate of change in variables such as borrowing, profits and investments before and after firms became eligible to the program in 1998, and compare these results to firms which were already eligible. After the

second policy change in 2000, they exploit the fact that a large portion of these firms lost their eligibility and look at their borrowing behavior and effects on performance.

The study shows that firms are in fact credit constrained and willing to borrow more once given the opportunity: when larger firms qualified for directed credit in 1998, they expanded their borrowing relatively faster than those that were already eligible as well as those that were never included. When the eligibility was discontinued, these larger firms reduced borrowing much more than other firms. The analysis of sales and probability for the two groups of businesses[38] show that when directed credit was extended to larger firms, it was not used to substitute other sources of credit, but rather it was used to finance investments and expand production: sales and profits in fact grew for larger firms in 1998, and declined correspondingly in 2000 after the second policy change. There was no change instead for the small firms.

In another study in rural Mongolia, Attanasio et al. (2014) conduct a randomized experiment to understand the effect of microfinance services on business creation and expansion. Differently from most other RCTs reviewed in this section, they randomize at the village level instead of the individual level and they have a particular focus on low-income women borrowers. Their experiment started in 2008 when loan officers from a local bank and representatives of the Mongolian Women's Federation organized information sessions in 40 rural villages. In these sessions they explained that there was a two-thirds probability that a microfinance service would start in their village and that lending could be either individual or group loans. In order to keep the focus on poor women, eligible participants had to own less than approximately 900 US dollars in assets and less than 174 US Dollars in monthly profits. The study finds that group loans had a positive impact on food consumption, entrepreneurship and profits, which increased 10 percent faster in the treatment villages and even 30 percent among the less educated women. Their findings on individual lending are weaker. Women in the sample did acquire more assets such as VCRs, radios or other household appliances, however they do not find significant increases in income or consumption.

Finally, another study worth mentioning was conducted in Western Kenya by Dupas and Robinson (2013). This RCT is different compared to the other studies because instead of providing increased access to credit, the researchers facilitated access to a basic bank savings account. The sample frame was randomly divided into treatment and control groups, stratified by gender and occupation. There were two main occupations studied in the research: market vendors, most of whom were women, and bicycle drivers, usually called boda boda in Swahili, all of whom were men. The

[38] The two groups are (i) small firms which were always eligible to directed credit; (ii) larger firms who first gained and then lost eligibility to directed credit.

treatment group was offered the option to open an account at a local bank at no cost[39], but they still had to pay for the withdrawal fees. The control group did not receive any such assistance.

The study shows three very interesting findings. First, market vendors in the treatment group (who were largely women) made more frequent use of the bank account and increased their savings substantially more compared to the treatment group in the bicycle taxi sector (all of whom were men). The authors argue that since the bank account had relatively high withdrawal fees and de facto negative interest rates, this finding demonstrates that female vendors have enjoyed additional benefits from saving formally, such as the lack of social pressure to share resources or increased self-control over the personal finances. The second finding is that market women in the treatment group registered a substantial increase in business investments compared to the control group. They estimate that the treatment group increased daily investments between 38 and 56 percent over a period of 4 to 6 months. The authors argue that this estimate is very large but the standard errors are also very large. Thus, they suggest focusing on the fact that there is a positive impact rather than its exact magnitude. Finally, the study finds that the group of market women with access to a bank account had significantly higher expenditures (37 percent increase) compared to the control group.

The findings are interesting because they contradict the studies mentioned above by Zinman and Karlan (2009) and De Mel, McKenzie, and Woodruff (2008), which will be discussed in section 2.2. First, these RCTs focused on access to credit, whereas Dupas and Robinson (2013) studied increased access to a savings account, which registered a substantially higher uptake from the sample. Randomized expansion of microcredit have observed relatively low uptake: only 27 percent in India (Banerjee and Duflo 2014) and 16 percent in Morocco (Crépon et al. 2014) took out a loan when barriers to access were lowered. In Dupas and Robinson's RCT in rural Kenya (2013) 87 percent of people took up the savings account offered to them. Second, differently from the aforementioned studies Dupas and Robinson (2013) find evidence that access to a savings account helped businesses increase investment. As mentioned earlier, most studies found no effect or even negative effect on investment (Zinman and Karlan 2009).

2.2 EXOGENOUS CAPITAL SHOCKS AND FIRM PERFORMANCE

Compared to the studies reviewed above, which focus on access to financial services and firm performance, De Mel, McKenzie, and Woodruff (2008) use a different approach in their RCT in Sri Lanka. They argue that studies like Zinman and Karlan (2009) do not represent the universe of

[39] The research team however paid the account opening fee and provided the minimum balance of Ksh 100 (US$1.13), which they were not allowed to withdraw.

microenterprises because they reach only MFI clients who applied for credit: these studies however lack information about firms that do not borrow and do not apply for loans at formal institutions. They therefore decide to set up an experimental setting where micro-entrepreneurs were randomly assigned to grants of either 100 or 200 USD independently of whether they received loans from formal institutions. They measure the effects on capital stock, profits, and hours worked by the owner, and find that the returns to capital are well above market rate, ranging from 4.6% to 5.3% per month, on the order of 60% per year. The heterogeneity of the treatment effects is noteworthy however. The authors show that the returns to capital were higher for entrepreneurs with stronger capital constraints, for those with higher ability and entrepreneurs who have fewer wage-earners in their households[40]. One of the main findings of this research is in line with Zinman and Karlan (2009): De Mel, McKenzie, and Woodruff (2008) confirm the gender difference in returns to capital, with men having higher average returns to capital compared to women. The authors therefore suggest that the traditional focus of microfinance on the poorest women might not be optimal, since the highest returns are made from male entrepreneurs, especially those who have relatively higher incomes.

The approach of randomizing the provision of cash and in-kind grants to micro-entrepreneurs was applied also in different settings, by McKenzie and Woodruff (2008) in Mexico and Fafchamps et al (2014) in Ghana. McKenzie and Woodruff (2008) provided cash and in-kind grants to small firms in the retail sector (capital below 1000 US Dollars), in order to provide an exogenous shock to capital and evaluate its impact. Like in De Mel, McKenzie, and Woodruff (2008) the researchers decided to provide grants instead of loans in order to assess the marginal return to capital for the average small enterprise, not the subset of enterprises that decide to apply for a loan. The study found that the exogenous shock generated large increases in profits and returns to capital of about 20 to 33 percent every month, highly above market rate. Fafchamps et al (2014) use a similar approach in Ghana and test whether cash or in-kind grants have a different impact on the returns to capital. The firms selected for the experiment were randomly allocated to one of three groups: a control group of 396 enterprises, and two groups of around 200 firms that received the equivalent of 120 US Dollars in cash or in-kind. The in-kind grants was selected by the respondents and purchased by the researchers without any sort of advice. According to the authors, in most cases entrepreneurs decided to buy inventory products for their firm or raw material and in only 24 percent of the sample they purchased physical capital, these were 33 percent men and 19 percent women. Their findings are in line with previous studies. Women running subsistence firms saw no increase in profits no matter what type of grants they received. On the other hand, women with relatively larger enterprises increased their

[40] According to the authors, households with more wage earners are likely to be less credit-constrained, since they have easier access to liquidity from (salaried) family members

profits when they received in-kind grants, but there was no effect in case of cash grants. Male entrepreneurs also saw higher returns when they received in-kind grants, but the difference is less robust. According to Fafchamps et al (2014), the stronger impact of in-kind grants is attributable to the fungibility of cash (e.g. money was used for household expenses instead of the business) and, to a lower extent, exposure to external pressures.

2.3 Beyond Money Fungibility: Mental Accounting and Behavioural Research in Financial Inclusion

Fungibility –the notion that money has no labels and that any unit of money is perfectly substitutable for another one– has been a central assumption in economics. In theory, no matter what the source of the money is, it should be perfectly substitutable with any other source of money of equal amount. Recent advances in behavioral economics however have questioned this notion, and have proposed new views about how people separate their money with a mechanism known as "mental accounting" (Abeler and Marklein 2008; Thaler 1990). The idea is that instead of being perfectly substitutable, money is managed by individuals, businesses and households through a set of cognitive operations that organize, track and evaluate financial activities (Thaler 1985): "Rather than pooling all assets into a single comprehensive account, in which a dollar is a dollar and perfect fungibility holds, people compartmentalize their resources, even money, into discrete qualitative categories, accounts, or budgets linked to different needs" (McGraw, Tetlock, and Kristel 2003:219).

The notion of mental accounting has been investigated in numerous studies in the context of savings and spending, but much less on the specific case of borrowing. In the context of savings among lower-income individuals, the idea of mental accounting has been applied to the fact that individuals discipline themselves and seek better self-control by attaching specific objectives to specific financial instruments, instead of using a single saving account as a place to accumulate funds for all purposes (Morduch 2010). In the context of spending, a typical example of mental accounting is the distinction between the money that individuals intend to spend immediately (e.g. a current income account) and those that are kept aside for specific future events. Money does not transfer easily between mental accounts, and this lack of transferability can lead people to over-consume or under-consume depending on how the mental budgets are organized (McGraw, Tetlock, and Kristel 2003).

Another relevant concept for this study is the one of source-dependence. The concept was initially proposed in behavioral economics by Tversky and Kahneman (1992) and then developed by Loewenstein and Issacharoff (1994) in a different context. Their key question was whether individuals

assign different monetary value to objects depending on the modalities in which they received it. They run an experiments in which they distributed mugs to students who received top grades in a classroom exercise. Half of the students were told that the mugs were randomly assigned and half students were told that they won it due to their performance in the exercise[41]. When the authors asked students to give an estimation of the monetary value of the mugs, the two groups gave significantly different answers: those who believed to have won it by chance consistently assigned lower values compared to the other group. In another study, McGraw, Tetlock, and Kristel (2003) examined whether the valuation of objects changes significantly depending on the social relationships with the people who provided the objects. The authors use the so-called "Fiske's Taxonomy of Relational Schemata" to distinguish between types of social relations[42]. The study finds that the evaluation is highly affected by the relational history with the object. Objects received in communal-sharing relationships (e.g. from close family member or friend) were valued very high compared to their real market price and people were reluctant to sell them or give them away. On the other hand, objects that were received via market-pricing relationships (customer-seller type of relationship) were valued considerably less compared to the same object acquired through other relationships with the giver (McGraw, Tetlock, and Kristel 2003).

In the context of borrowing, much less research has been conducted to understand how the source of the loan affects its usage and, ultimately, the effect on welfare or firm performance. However, as the previous sections have shown, there are studies that have indirectly addressed this issue. The studies by Fafchamps et al. (2014) and De Mel, McKenzie, and Woodruff (2008) discussed in section 2.2 showed that entrepreneurs used money in different ways depending on whether they received the grant in cash or in-kind, and in turn this provoked substantially different effects on firm performance. Fafchamps et al (2014:7) argue that there is a form of "source-dependence" and that cash and in-kind grants might be used differently because of mental accounting: "individuals who receive a cash grant may think of it as part of their income account, which they earmark for consumption and are free to spend; individuals who receive an in-kind grant think of it as part of their asset account which is earmarked as investment."

From an anthropological perspective, this question was investigated by Guérin et al (2012) in Southern India. The authors take a qualitative and descriptive statistical approach to investigate on

[41] The prizes were distributed only to students with top grades in order to minimize what they call a "mood effect", which could have created bias in the monetary evaluation of the mugs. For more detail see Loewenstein and Issacharoff (1994).

[42] The four types of relationships include communal sharing, market pricing, equality matching and authority ranking. For more information see Fiske (1992).

the one hand how low-income households and individuals handle a wide range of borrowing sources; on the other hand, whether each of these sources serves different purposes in their financial lives. Through the analysis of a sample of 212 households, they show that households borrowed from an average of 2.72 sources, including moneylenders, shopkeepers, pawnbrokers, relatives and friends, self-help groups, banks and microfinance institutions. When they look at how these loans are used, they show that the source of the loan plays a crucial role. The authors do not discuss whether this can be considered as a form of mental accounting applied to the informal credit market. However, as hypothesized in this research, they argue that both the terms and conditions attached to the different types of loans, and the social relations that link the lender to the borrower, play a relevant role in how people use the borrowed capital: "there is a highly diversified financial landscape where households use various borrowing sources, and each serves a very specific purpose. Mobile lenders are well suited to emergency requirements. Pawnbrokers play a fundamental role in topping up and smoothing income. SHGs are in fact used in a similar way and also to a certain extent for economic investments. Well-known individuals are mainly approached for long-term and large loans, especially for financing ceremonies. Bank loans remain the primary source of funding for economic investments" (Guérin et al. 2012:133).

Understanding how the relational ties between lender and borrower affects the lending transaction has been a topic of research in several previous studies. However, the main focus has always been on how social ties affect the suppliers of credit, rather than how they affect the borrowers' use of the loans. Uzzi (1999) for example studies how the relationship between borrower and lender affects the terms and conditions attached to the loans. He finds that when there are stronger ties between counterparts then the interest rates charged are significantly lower. However, these relationships do not seem to affect the probability of accessing credit: if the loan applicant does not meet the requirements for obtaining credit, then social ties are of no help. Similar findings were found by Mizruchi and Stearns (2001) in the context of corporate lending.

3. STUDY OBJECTIVES AND LIMITATIONS

The objective of this study is to understand the effect of access to credit on firm performance. Since in Kenya financial landscapes are very complex and entrepreneurs often borrow from a variety of sources which are both formal (e.g. banks and microfinance institutions) and informal (money-lenders, savings groups, friends and family, etc.), this study hypothesizes that different types of loans have different effects on performance. These different effects can be caused by the fact that different

loans have different terms and conditions (e.g. interest rates, maturity, etc.). Furthermore, the social ties between borrowers and lenders are very different and this can lead to different risk propensities in the usage of the loans, different attitudes and preferences towards investments and therefore different effects on firm performance.

The main limitations of the study are related to the small sample size, which can affect the significance of some results and its external validity. As mentioned earlier, the study is based on the analysis of one research site (a low income neighborhood in eastern Nairobi) which cannot be considered representative of the entire country or the population of micro and small entrepreneurs in Kenya. The other limitation is related to the conclusions that can be drawn from the study. While we are able to determine whether for example loans from a bank lead to more or less investments than loans from a family member, we cannot assess the qualitative reasons that lead to these different outcomes (e.g. different risk propensity and attitudes towards investing, the type of relation with the borrowers, the social pressures to repay or reciprocate with favors, etc.). These questions can represent relevant topics of research in future studies.

4. ECONOMETRIC APPROACH

As mentioned in the introduction, this research tries to go beyond the RCT approach and to analyze the impact of formal and informal credit with propensity score matching. The hypothesis is that different types of loans (from friends, from moneylenders, banks, MFIs etc.) would have a different impact on enterprise performance because of the different terms and conditions and, even more importantly, because the social ties attached to these loans are very different. These social ties in turn affect the risk propensity of entrepreneurs, their attitudes and preferences towards investments; the impact on firm performance therefore could be different.

4.1 PROPENSITY SCORE MATCHING

In their seminal study, Rosenbaum and Rubin (1983) showed that in the context of observational studies, it is possible to calculate treatment-effect models by calculating a “propensity score” that estimates the probability being treated conditional on a number of selected covariates. Propensity score matching (PSM) is a type of statistical matching technique which establishes a counterfactual (i.e. control group) which is similar to the treatment group along observable characteristics. The caveat is that the similarity between treatment and control group has to be measured on characteristics that are not affected by the treatment variable. Each treated

entrepreneur is matched with a non-treated one who shares similar characteristics, and the average difference in the dependent variable measures the treatment effect.

The procedure for this econometric analysis is based on two steps. The first one is to calculate the propensity score, which is the probability that a subject with characteristics X_1, X_2, X_3,.., X_n chooses treatment. In order to calculate the propensity score it is necessary to run a probit or logit model regressing the observable characteristics of the business to the binary [0,1] treatment variable I_i^{treat}, so that:

$$I_i^{treat} = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + ..+ \beta n X_{in} + \varepsilon_i \quad (1)$$

The decision point then concerns the actual specification of the model (i.e. which variables to include in the calculation of the propensity score). Caliendo and Kopeinig (2008) review several studies on this issue and provide important suggestions on the model specification (see Heckman, Ichimura, and Todd 1998; Smith and Todd 2001; Sianesi 2004). One of the crucial choices concerns the number of variables to include in the model –more specifically, the question is whether it is better to include too many rather than too few variables (Caliendo and Kopeinig, 2008:38). They report studies arguing that over-parameterized studies can increase variance in the model and reduce the significance of the propensity score estimation[43]. Other studies, such as Rubin and Thomas (1996) argue in favour of including rather than excluding variables especially when there is theoretical evidence confirming their relevance.

The model specification in this research is facilitated by two main factors. First, it can count on the findings of the previous chapter, which focused entirely on the determinants of access to finance. The study found that in addition to the common firm-level and entrepreneur-level characteristics (age, gender, education, size of the business, etc.), other often-neglected variables can be very important. In particular, the length of experience of entrepreneurs in the formal sector was proven to be an important determinant of access to formal finance, representing to some extent a measure of managerial ability and growth-orientation[44]. Second, this research benefits from the close proximity of the research locations. While this might reduce the external validity of the research (the findings are significant only for the specific location), it also means that groups of businesses have a relatively high level of comparability, because they tend to be similar in size, sector of operation and background

[43] See more details in Augurzky and Schmidt (2001).

[44] As it will be shown in equation 2, one of the main variables not included in the model is enterprise informality. The reason for not including this variable is that because of the small sample size, adding extra variables to the model were affecting the balancing properties, and the propensity score matching was not applicable. The model however includes the formality/informality of the job experience of the entrepreneur and the asset size of the firm, which often reflect the formality status as well.

of entrepreneurs. One of the important determinants of access to finance in low-income countries like Kenya is the physical distance to banks (or other financial providers). However this is controlled for because it is the same for all businesses in the sample. Thus, the identification strategy for the probit model is organized as follows:

$$I_i^{treat} = \beta_0 + \beta_1 networth_i + \beta_2 formalexp_i + \beta_3 genderdummy_i + \beta_4 educ_i + \beta_5 age_i + \beta_6 ageofbusiness_i + \beta_7 othercredit_i + \varepsilon_i \quad (2)$$

The propensity score is calculated for 5 separate types of treatment, and therefore the I_i^{treat} is equal to 1 in case of a (i) loan from a commercial bank, (ii) loan from a MFI, (iii) loan from a moneylender, (iv) loan from a friend\relative and (v) loan from a financial self-help group such as a ROSCA or an ASCA in the timeframe between six to twelve months before the interview. The variable *othercredit* is a dummy variable equal to 1 if the entrepreneur received other loans (in addition to the "treatment" loan) during the same period. It is important to include this variable because it can inform us whether the entrepreneur relied on any sort of external finance or not during the period under consideration. Ideally the variable *othercredit* could be disaggregated in five separate dummies (loan from banks, from MFI, moneylenders, etc.), however adding too many variables in the probit model excessively increased the error. Because of the relatively small sample size, over-parameterizing the probit model led to estimations of the propensity score which did not satisfy the required balancing properties[45]. The other variables in the model $networh_i$, $formalexp_i$, $genderdummy_i$, $educ_i$, age_i, $ageofbusiness_i$ (see description in Table 11) are used to match similar enterprises and entrepreneurs who differ in their access (or lack thereof) to credit from different sources. It is crucial to to include these variables in the calculation of the propensity score in order to match businesses that are very similar along observable characteristics, such as size, years of operation and exposure to the formal sector, but differ in terms of access to credit[46]. The results of the probit regression and the balancing tests in the estimation of the propensity score are shown in annex 1 at the end of the paper.

After estimating the propensity score, it is possible to proceed with the matching exercise. Formally, let *i* index the population of 344 entrepreneurs under consideration. Y_{i1} indicates the variable of interest, namely investments (*investm)*, profitability (*averageproft)*, employment growth (*empgrowth)*, when unit *i* is subject to treatment (1), and Y_{i0} is the value of the same variable when the unit is exposed to the control (0). Following Dehejia and Wahba (2002), let's define the average

[45] More details on the assumptions and conditions in PSM are explained later in this section.
[46] For more detailed analysis on how to specify the probit model in the context of propensity score matching see Caliendo and Kopeinig (2008) and Heinrich, Maffioli, and Vazquez (2010).

treatment effect ATE as $\tau_i = E(Y_{i1} - Y_{i0})$and the average treatment effect on the treated (ATT), which measures the impact of a program (or, in this case, a business loan) on those individuals who obtained it:

$$\tau|_{T=1} = E(\tau_i|T_i = 1) \quad (3)$$

$$= E(Y_{i1}|T_i = 1) - E(Y_{i0}|T_i = 1) \quad (4)$$

where T_i=1 if the unit i was treated and T_i=0 otherwise. The average treatment effect on the untreated (ATU) on the other hand measures the impact that a specific treatment (such as program participation, or a loan) would have had on those who did not participate. However this is what Holland (1986) famously called "*the fundamental problem of causal inference*": all impact research must cope with the impossibility to observe what would have happened to "treated" individuals had they decided not to be treated. In formal terms, it is possible to estimate $E(Y_{i1}|T_i=1)$, but not $E(Y_{i0}|T_i=1)$). In randomized studies that problem is not faced because $E(Y_{i0}|T=1)$ could be estimated by $E(Y_{i0}|T=0)$, therefore treated and non-treated observations would not differ on average, so that $E(Y_{i0}|T=1)=E(Y_{i0}|T=0)$. However, randomization cannot be applied in this research. As mentioned in the previous sections, social ties attached to a lending/borrowing transaction cannot be randomized especially when the source of the loan is informal.

Letting $p(X_i)$ be the probability of a unit i having been assigned to treatment, so that :

$$p(Xi) = Pr(Ti = 1|Xi) = E(Ti|Xi) \quad (5)$$

then:

$$(Y_{i1}, Y_{i0}) \perp\!\!\!\perp T_i \mid X_i \quad (6)$$

$$= (Y_{i1}, Y_{i0}) \perp\!\!\!\perp T_i \mid p(X_i) \quad (7)$$

The goal of the PSM approach is to reduce the dimensionality of the exercise by pairing firms that were treated (had access to a loan) and non-treated (did not access a loan) though they are very similar in the values of P(X). The average treatment effect on the treated can be written as follows:

$$ATT = E_{P(X)|T=1}\{E[Y_i|T = 1, P(X)] - E[Y_0 \mid T = 0, P(X)]\} \quad (8)$$

Equation (6) formalizes the *conditional independence assumption* (CIA) or *unconfoundedness assumption*, which states that there is a set of X observable covariates; after controlling for these covariates, the potential outcomes are independent of the treatment status. This is crucial in the application of propensity score matching and Caliendo and Kopeinig (2008) warn that matching is by no means a "magic bullet" that will solve all evaluation problems. They argue that this methodological approach can be applied only if "the underlying identifying assumption can be credibly invoked based on the informational richness of the data and a detailed understanding of the institutional set-up by which selection into treatment takes place" (ibid: 32). As mentioned earlier in this essay, the strength of this dataset is that it focuses on a specific area where physical access to financial services and the types of firms analyzed are easier to compare than in large-scale and more heterogeneous surveys. Moreover, the analysis done in Essay 1 has identified some important determinants of access to finance and these are therefore included in the calculation of the propensity score.

The second assumption is known as the *common support condition*, which states that the probability of being treated or non-treated lies between 0 and 1:

$$0 < P\,(T = 1\,|X) < 1 \qquad (9)$$

This assumption relies on another condition, known as the *overlap condition* which states that treated and untreated units must have common (i.e. overlapping) characteristics in order for the model to make appropriate matching between units. This means that for any given propensity score, exposure to treatment is random and treated and control units should therefore be observationally identical on average (Heinrich, Maffioli, and Vazquez 2010).

These properties are checked automatically in the statistical software Stata which was used in this paper. The *pscore* function designed by Becker and Ichino (2002) follows a 4-step procedure: first, it fits a probit model using the observable characteristics for the calculation of the propensity score. The specification of the probit model was outlined in equation (2). Second, it splits the sample into propensity score quintiles and it checks that the average propensity score does not differ between treated and control groups within each interval. If the test fails in one or more intervals, it splits the interval into two and repeats the test. Finally, in order to satisfy the balancing hypothesis, the *pscore* command tests that the mean of each characteristic does not differ between treatment and control groups. If the balancing property is not satisfied, it requires the user to change the specification of the probit model.

4.2 MATCHING ALGORITHMS

Once the propensity score is calculated, there are several algorithms that can be used to match treated and non-treated observations on the basis of the propensity score. The most common ones are kernel matching, nearest-neighbor (NN) matching, caliper matching and radius matching among others. This study will focus on the first two.

Nearest-neighbor matching is one of the most frequently used matching techniques in treatment-effect studies (Khandker, Koolwal, and Samad 2010). This approach matches each treated observation of the treatment group to the comparison unit with the closest propensity score (i.e. most similar observed characteristics). Formally, we denote *T* and *C* as the set of treated and untreated units respectively, and Y_{Ti} and Y_{Cj} as their observed outcomes. We then define C(i) as the set of untreated observations matched to the treated unit i with a propensity score of p_i. Nearest-neighbor matching can be described as:

$$C(i) = \min_j || p_i - p_j || \tag{10}$$

Depending on the type of research, the researcher can predetermine a number *n* of nearest neighbors used in the matching exercise, usually *n* = 5, in order to limit the matching of treated and non-treated observations. There are several variants of the nearest neighbor matching algorithm, for example one can specify if matching occurs with or without replacement. In the former case, an untreated individual can be used multiple times as a match, whereas in the second case (without replacement) it is considered only once[47].

Another important algorithm is the Kernel matching method. Differently from the nearest neighbor algorithm (as well as most other PSM algorithms) where only a few non-treated observations are used to construct the counterfactual, Kernel matching is a non-parametric estimator using the weighted averages of all individuals in the control group to construct the counterfactual outcome. The kernel matching is formalized as follows:

$$\tau^K = \frac{1}{N^T} \sum_{i \in T} \left\{ Y_i^T - \frac{\sum_{j \in C} Y_j^C \; G\left(\frac{p_j - p_i}{h_n}\right)}{\sum_{k \in C} G\left(\frac{p_k - p_t}{h_n}\right)} \right\} \tag{11}$$

Where *G* is the kernel function and h_n is the parameter chosen as bandwith (Becker and Ichino, 2002). According to Caliendo and Kopeinig (2008), the main advantage of Kernel matching is the lower

[47] For more details, see Caliendo and Kopeinig (2008).

variance of the model, while the main weakness is that matches might have a relative low degree of similarity in the observational characteristics. In order to check for the robustness of the results, both matching types (nearest neighbor and kernel) are shown in the empirical section.

4.3 VARIABLES AND DATA

The data were collected with a survey questionnaire with 344 micro and small enterprises in Nairobi. The survey was conducted in Kariobangi, a neighbourhood in the east side of Nairobi with a thriving informal and semi-formal economy[48]. Three main types of businesses were studied in the survey: (i) micro/small-scale manufacturing businesses, (ii) micro/small-scale tailoring firms, (iii) micro/small-scale retail activities.

This section looks at how the usage of different financial instruments influence performance indicators including i) firm investments, ii) average profits and iii) employment growth. Investments are calculated as the sum of money invested in assets such as equipment, machinery, premises (buildings), premise improvements, furniture and furnishings, and vehicles over the 12 months before the interview. We decided to focus on this time-period because it is sufficiently indicative of the firms' recent investments behaviours and the time span is not too long for the entrepreneur to have difficulties recollecting the sums invested: if we asked about investments over a 3 to 5 years period, the data would arguably have suffered from a larger error and recollection bias.

The second dependent variable is the average monthly profits made by firms over the last 12 months. Economists have always struggled to obtain reliable data on firms' profits in informal contexts. The main problem is that revenues fluctuate strongly every month, depending on the season, luck and other unobservable variables. Furthermore, entrepreneurs are rarely able to account for the various costs of the business, and they often tend to mix up household expenditures with business and vice versa. The exact figures for these variables are extremely difficult to obtain in survey questionnaires.

Recent studies in fact have compared several empirical methods to obtain data on firms' profits and have shown the most effective strategies. In particular, (Daniels 2001a 2001b) compares five ways of finding out the microenterprise profits in survey questionnaires, which differ in the wording and complexity of the questions. She concludes that the simplest methods (i.e. asking directly about profit figures) tend to be the most accurate. Another important study was conducted by de Mel, McKenzie, and Woodruff (2009); using two relatively large samples of microenterprises from Sri Lanka and Mexico, they conduct a test for estimating the accuracy of self-reported enterprise profits. They

[48] More details on the survey are described in the previous chapter.

conclude that simple questions are more effective and more accurate than complex measures, *"asking firm owners directly for their profits including using business revenues used to pay household expenses provides a measure which appears at least as reasonable as asking for all the ingredients in terms of detailed revenue and expenses"* (2009:20) Although detailed questions on sales and costs can provide interesting details of the firm's production function, *"Our results just show that directly eliciting profits can provide useful information when this is the prime object of interest"* (Ibid). These studies prompted us to use direct questions to estimate the firms' profits, including questions on the fluctuation of profits over the year and the estimation of household expenses. These were used to triangulate the data and confirm the reliability of the figures that were provided by the entrepreneurs.

There are five main loan types analyzed in this study as treatment variables: (i) loans from commercial banks, (ii) loans from microfinance institutions, (iii) loans from family and friends, (iv) loans from moneylenders and (v) loans from financial self-help groups such as ROSCAs and ASCAs. The five binary treatment variables are equal to 1 if the business obtained a loan from these sources from six months to one year before the interview, 0 otherwise. The objective for using this time period is to capture adequately the loans that could affect firm performance and exclude the loans that are too recent to have an effect on the various outcome variables measuring firm performance. The full list of variables used in the model is outlined in Table 14.

Table 14: list of variables

Variable name	**Variable description**
Formalexp	Number of months of employment in formal sector firms before starting this enterprise
Ageofbusiness	N° of years since the business started
Age	Age of the entrepreneur
Genderdummy	Dummy=1 for women
Educ	Number of years of formal schooling
Networth	Value of capital for machinery, buildings, furniture and vehicles owned by the business
Bankdummy	Dummy = 1 if a business obtained a loan from a commercial bank from 6 to 12 months before the interview
MFIdummy	Dummy = 1 if a business obtained a loan from a microfinance institution from 6 to 12 months before the interview
Moneylenderdummy	Dummy = 1 if a business obtained a loan from a moneylender from 6 to 12 months before the interview

Chamadummy	Dummy = 1 if a business obtained a loan from a financial self-help group from 6 to 12 months before the interview
Frienddummy	Dummy = 1 if a business obtained a loan from a friend or a relative from 6 to 12 months before the interview
Empgrowth	Change (positive or negative) in number of employees in the last 12 months
Investment	Investment in machinery, equipment, vehicles, premises and premise maintenance, furniture and furnishings over the 12 months
Averageprofits	Average monthly profits over the last 12 months

5. RESULTS & DISCUSSION

Table 15, Table 16, and Table 17 show the results of the propensity score matching using 5 different treatment variables on three main outcome variables: investments, profitability and employment growth. The matching algorithms used in the model are among the most common in PSM exercises, namely the Kernel and nearest neighbour matching.

The most significant results are related to the effect of different financial instruments on business investments. Table 15 shows that using the Kernel matching method, all types of loans seem to have a positive effect on investments, except for loans from financial self-help groups which are not significant and loans from microfinance institutions, which show a strongly significant negative relation with investments. When we use the nearest neighbour matching method, the signs of the coefficients are confirmed for all treatments except self-help groups; however, only bank loans are statistically significant while the others do not reach the 10 percent significance level. The overall finding of the research therefore seem to be that lending to micro and small enterprises increases investments, however loans from MFIs have a negative effect when we use the Kernel matching method: what can explain these results? Why does lending from all formal and informal sources seem to incentivize investments, whereas loans from microfinance institutions seem to have an opposite effect?

The results of this study partly confirm the finding of Zinman and Karlan (2009), who show that access to microfinance loans tend to decrease business investments. They argue that treated enterprises tended to favour investment in education and other household investments at the expense of business-level investments. This research can only confirm part of the argument, namely

that business investments decrease, but it cannot state that investment at the household level increased because this data point was not collected in the questionnaire. However the question remains of why entrepreneurs would increase investments in the business if they received the loan from banks, moneylenders and family/friends while they decrease investments if the loan comes from a microfinance institution.

Some of the reasons for these findings emerged during the qualitative interviews. The first one is related to the motivation that often encourages entrepreneurs to apply for a loan at a MFI instead of using other borrowing options. What we noticed during the interviews and focus groups is that the reason that triggers many entrepreneurs to apply for membership at a MFI is often a response to a period of crisis rather than an investment opportunity that arises. When entrepreneurs are in a crisis and borrowing from friends, family or self-help groups is not possible or not sufficient, then the group lending mechanism offered in microfinance institutions may be one of the only options left. This might explain the finding that MSE borrowers invest significantly less on their business compared to other entrepreneurs.

Second, we noticed during several interviews that entrepreneurs applied for business loans at microfinance institutions, but in fact the loan was used in part or even mostly for other household level expenses. It is important to note that the questionnaire specifically asked for loans that were received in part or completely for business purposes –if a loan was received entirely for household expenses (i.e. paying tuition fees for the children), then the loan was not recorded in the questionnaire. However very often the loans were asked for business purposes and then part of them was used for other purposes. It is also important to notice that MFI clients are largely women, and they may have stronger pressures to pay for household expenses instead of business investments. The gender difference in enterprise performance was proven empirically by Zinman and Karlan (2009) and De Mel, McKenzie, and Woodruff (2008); this study seems to confirm these findings.

Finally, another reason for this finding is related to the terms and conditions of MFI loans, which tend to be very expensive and rather strict in the repayment schedule compared to informal loans. A number of entrepreneurs felt in a constant pressure to repay the loan and overall were not satisfied with the services provided by the MFI. This pressure to repay the debt might have made entrepreneurs more risk averse instead of risk-takers and their overall propensity to invest might have gone down – exactly the opposite of what theorized in microfinance literature. Nevertheless, more evidence is necessary to prove these arguments.

Table 15: Investments: average treatment effects

	Kernel Matching			**Nearest neighbour**		
	ATT	SE	t-Value	ATT	SE	t-Value
Commercial bank loan	601339.3**	262000	2.29	522223.9*	281000	1.86
MFI loan	-55847.5***	18271.3	-3.06	-26411.8	28497	-0.93
Moneylender	430822.0*	249000	1.73	438478.8	269000	1.63
Friend	208316.4*	109000	1.92	144407.7	133000	1.08
Financial self-help groups	-20441	6870	-0.30	1110.2	1220	0.09

Table 16: Average profits

	Kernel Matching			**Nearest neighbor**		
	ATT	SE	t-Value	ATT	SE	t-Value
Commercial bank loan	11699.0	9540	1.23	9315.8	13783	0.68
MFI loan	6142.2	4907	1.25	8864.0	7728	1.15
Moneylender	3662.7	7236	0.51	-6326.3	10576	-0.60
Friend	-4529.8	4925	-0.92	-7212.3	7743	-0.93
Financial self-help groups	-2427.1	4665	-0.52	-5687.4	7200	-0.79

Table 17: Employment growth

	Kernel Matching			**Nearest neighbor**		
	ATT	SE	t-Value	ATT	SE	t-Value
Commercial bank loan	1.275**	0.560	2.27	1.268**	0.641	1.98
MFI loan	-0.227	0.393	-0.58	0.110	0.423	0.26
Moneylender	0.600	0.531	1.13	0.135	0.729	0,19
Friend	-0.0907	0.390	-0.23	-0.392	0.4101	-0.98
Financial self-help group	-0.104	0.347	-0.30	0.198	0.449	0.44

The effect on access to finance on firm profitability and growth in number of employees is less robust, with few significant results. Loans from commercial banks and MFIs seem to have a positive relation with profitability, whereas loans from family and friends have a negative relation with the outcome variable. However these results are not significant, probably because of the small size of the sample, and therefore require further evidence. The question remains however about why loans from banks seem to increase investments and number of employees without having an effect of profitability. Arguably there are two answers to this question: high cost of credit and spiraling inflation, which were caused by the period of macro-economic instability that Kenya suffered between the end of 2011 and 2012. Even though this will be discussed more in-depth in Essay 4, it is important to mention that between the end of 2011 and 2012 the Kenyan currency lost 25 percent of its value and inflation increased fast from about 5 percent to 20 percent in late 2011. In order to tackle this instability, the Central Bank of Kenya increased its core interest rate from 6.25 to 18 percent in three months. Thus, over a relatively short period of time, bank loans became more expensive and prices for business inputs (raw material, stock, etc.) increased very fast, eroding the profits that business were able to make. In 2013 inflation and the central bank interest rate have returned to lower levels. However, the cost of credit remained relatively high, making it difficult for firms to grow their profitability.

The positive relation between loans from commercial banks and employment growth is however an important finding: both the Kernel and nearest neighbour matching methods show a positive and statistically significant correlation with growth in the number of employees, while other types of credit do not seem to have the same effect. This arguably confirms that entrepreneurs rely on commercial banks when they identify opportunities for business growth (as seen in the investment variable). This confirms the argument proposed by Fafchamps and Schündeln (2013) that firms seek access to formal external finance in the presence of growth opportunities. Keeping the business unchanged only requires replacement investment, which is usually financed with the entrepreneurs' own earnings or other forms of informal finance. When the capital is needed for expanding the business, bank finance seems to be the preferred channel. The effect of loans from moneylenders, loans from family and friends and MFIs on employment creation seems inconclusive or close to zero.

6. CONCLUDING REMARKS

Improving access to finance for micro and small enterprises has become a core tool for employment creation and poverty alleviation in many developing countries. The assumption is that

small scale entrepreneurs are credit-constrained and lack resources to finance the growth of their business. The theoretical argument embraced by the field of finance and development is that if small entrepreneurs are granted access to external finance, they will trigger a virtuous cycle of business expansion and will be able to generate employment and growth.

Recent studies have investigated the link between enterprise finance and growth of the firms and have used RCT approaches to quantify this impact. These studies however focus on either grants or on one type of credit - formal microfinance loans - while we know that financial landscapes in low-income areas are extremely diverse and entrepreneurs often borrow from a variety of sources. While a capital injection should have the same effects on enterprise performance irrespective of its source, very little research has been conducted to actually confirm this hypothesis. The question that we address is whether the source of the loan affects how the credit is used and, as a consequence, firm performance. We hypothesize that these different effects are related to the different terms and conditions of the loans as well as the type of social ties linking lender and borrower in the lending transactions. These different social ties could affect the risk propensity of entrepreneurs, their investment preferences as well as the likelihood that a loan requested for business purposes will be used for household expenses or vice versa.

The research has tried to fill this gap by investigating the effect of different types of formal and informal loans on enterprise performance indicators, namely (i) investments, (ii) profitability (iii) employment growth. Differently from previous studies which used RCTs to study the effect of microfinance loans or randomized grants, this research modifies the research approach in two ways. First, instead of analyzing MFI loans alone, the research looks at a 5 separate types of loans which are common in informal and semi-formal markets: (i) loans from commercial banks (ii) loans from MFIs, (iii) loans from relatives or friends, (iv) loans from moneylenders, (v) loans from financial self-help groups such as ROSCAs and ASCAs. Second, the study uses a propensity score matching approach to account for an aspect that is usually neglected in RCT-type of studies: the social ties that link lenders and borrowers. Statistical matching is a methodology where “treated” individuals (e.g. entrepreneurs who had access to a bank loan) are compared to a control group of individuals whose observable characteristics (age, sector, size of business, etc.) are similar but differ because they did not participate in the treatment (i.e. in this case, they did not borrow). In line with the findings of McGraw, Tetlock, and Kristel (2003) our argument is that “objects” (in this case loans or grants) are given a different value depending on the social relation with the person or institution that is providing them. Thus, different loans sources should have different effects on firm performance.

The strongest finding of the paper is that loans from commercial banks seem to have the most positive effects on firm performance: firms that obtained a loan from a commercial bank have invested

more, have created more employment and seem to be more profitable (though the evidence on profitability is not significant) than the control group of firms that did not borrow from banks. Loans from MFIs on the other hand seem to have a negative effect on business investments: firms that borrowed from MFIs have invested significantly less than comparable firms that did not use microfinance loans. The paper identified a number of explanations for these results. The most important ones are that MFI are often used to face difficult periods rather than capturing investment opportunities. Moreover, MFI clients are largely women, and this might have an effect on the results, since women might face more pressure to use MFI loans for household expenses instead making business investments. Informal loans from moneylenders, family/friends and financial self-help groups seem to have a positive, though not very strong effect on investments, while their effect on profitability and employment growth are insignificant.

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8. ANNEX 1 – PROBIT REGRESSION AND CALCULATION OF PROPENSITY SCORE

8.1 BANK

Probit regression		Number of obs	326
		LR chi2(7)	59.63
		Prob > chi2	0
Log likelihood = -135.78256		Pseudo R2	0.18

bank_loan	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Educ	0.001100	0.031235	0.35	0.724	-0.05019	0.072244
Age	0.002855	0.010898	0.26	0.793	-0.01851	0.024215
Ageofbusiness	0.015063	0.015365	0.98	0.327	-0.01505	0.045178
Formalexp	0.005706	0.001861	3.07	0.002	0.002059	0.009353
Networth	7.85E-07	2.01E-07	3.91	0	3.91E-07	1.18E-06
womendummy	-0.00676	0.181577	-0.04	0.97	-0.36264	0.349124
nonbankdebt	0.010399	0.180383	0.06	0.954	-0.34314	0.363943
_cons	-1.64288	0.532755	-3.08	0.002	-2.68706	-0.5987

Description of the estimated propensity score in the region of common support

	Percentiles	**Smallest**		
1%	0.086404	0.08621		
5%	0.091886	0.086346		
10%	0.095328	0.086404	Obs	292
25%	0.111929	0.087732	Sum of Wgt.	292
50%	0.137132		Mean	0.218327
		Largest	Std. Dev.	0.193859
75%	0.233988	0.99984		
90%	0.490238	0.999977	Variance	0.037581
95%	0.705622	1	Skewness	2.369282
99%	0.999977	1	Kurtosis	8.267721

8.2 MFI

Probit regression	Number of obs	326
	LR chi2(7)	13.33
	Prob > chi2	0.0646
Log likelihood = =-174.992	Pseudo R2	0.0367

MFI_loan	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Educ	0.058505	0.028334	2.06	0.039	0.002972	0.114037
Age	0.009509	0.00979	0.97	0.331	-0.00968	0.028697
Ageofbusiness	0.00486	0.014186	0.34	0.732	-0.02294	0.032664
Formalexp	-0.00379	0.002117	-1.79	0.073	-0.00794	0.000356
Networth	-1.88E-07	1.68E-07	-1.12	0.264	-5.18E-07	1.42E-07
Womendummy	0.26511	0.158459	1.67	0.094	-0.04547	0.575684
nonMFIdebt	0.153488	0.231094	0.66	0.507	-0.29945	0.606423
_cons	-1.85741	0.535473	-3.47	0.001	-2.90692	-0.80791

Description of the estimated propensity score in the region of common support

	Percentiles	Smallest		
1%	0.08107	0.07334		
5%	0.122596	0.07508		
10%	0.147817	0.078937	Obs	317
25%	0.194878	0.08107	Sum of Wgt.	317
50%	0.247767		Mean	0.248879
		Largest	Std. Dev.	0.076398
75%	0.300024	0.407718		
90%	0.354865	0.417875	Variance	0.005837
95%	0.374641	0.421729	Skewness	0.038907
99%	0.407718	0.441579	Kurtosis	2.446656

8.3 MONEYLENDER

Probit regression	Number of obs	326
	LR chi2(7)	18.4
	Prob > chi2	0.0103
Log likelihood = -157.74014	Pseudo R2	0.0551

moneylender_loan	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Educ	-0.0183	0.029567	-0.62	0.536	-0.07625	0.039654
Age	0.017591	0.010141	1.73	0.083	-0.00228	0.037466
ageofbusin~s	-0.03493	0.014935	-2.34	0.019	-0.0642	-0.00565
Formalexp	1.28E-03	1.78E-03	0.72	0.471	-2.20E-03	4.76E-03
Networth	2.05E-07	1.07E-07	1.92	0.055	-4.44E-09	4.15E-07
Womendummy	-0.12947	0.170769	-0.76	0.448	-0.46417	0.205229
nonmoneyle~t	0.537266	0.281502	1.91	0.056	-0.01447	1.089001
_cons	-1.52631	0.575086	-2.65	0.008	-2.65346	-0.39916

Description of the estimated propensity score in the region of common support

	Percentiles	Smallest		
1%	0.075748	0.071028		
5%	0.0969	0.071189		
10%	0.129921	0.075658	Obs	317
25%	0.154994	0.075748	Sum of Wgt.	317
50%	0.189442		Mean	0.212968
		Largest	Std. Dev.	0.10065
75%	0.23983	0.694101		
90%	0.310501	0.760465	Variance	0.01013
95%	0.365771	0.79025	Skewness	2.743009
99%	0.694101	0.832517	Kurtosis	14.71872

8.4 FRIEND

Probit regression		Number of obs	326
		LR chi2(7)	15.15
		Prob > chi2	0.0341
Log likelihood = -213.55768		Pseudo R2	0.0343

friend_loan	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Educ	0.021962	0.026013	0.84	0.399	-0.02902	0.072946
Age	-0.01325	0.009155	-1.45	0.148	-0.0312	0.00469
ageofbusin~s	0.021484	0.013052	1.65	0.1	-0.0041	0.047065
formalexp	-0.00436	0.001949	-2.24	0.025	-0.00818	-0.00054
networth	1.78E-07	1.03E-07	1.73	0.084	-2.38E-08	3.80E-07
womendummy	-0.0983	0.147344	-0.67	0.505	-0.38708	0.190492
nonfriendd~t	0.141039	0.191888	0.74	0.462	-0.23506	0.517133
_cons	-0.17567	0.468125	-0.38	0.707	-1.09317	0.741843

Description of the estimated propensity score in the region of common support

	Percentiles	Smallest		
1%	0.263931	0.251086		
5%	0.291333	0.253836		
10%	0.32617	0.262508	Obs	305
25%	0.376763	0.263931	Sum of Wgt.	305
50%	0.429048		Mean	0.430673
		Largest	Std. Dev.	0.083781
75%	0.473328	0.678265		
90%	0.526094	0.717362	Variance	0.007019
95%	0.574374	0.743851	Skewness	0.691731
99%	0.678265	0.829542	Kurtosis	5.142277

8.5 FINANCIAL SELF-HELP GROUPS

Probit regression		Number of obs	326
		LR chi2(7)	47.26
		Prob > chi2	0
Log likelihood = -190.31223		Pseudo R2	0.1104

chama_loan	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Educ	-0.06204	0.027262	-2.28	0.023	-0.11547	-0.0086
Age	-0.01837	0.009492	-1.94	0.053	-0.03698	0.000229
ageofbusin~s	0.029535	0.013918	2.12	0.034	0.002256	0.056814
formalexp	-0.00073	0.001731	-0.42	0.675	-0.00412	0.002668
networth	6.94E-11	9.27E-08	0	0.999	-1.82E-07	1.82E-07
womendummy	0.762179	0.156275	4.88	0	0.455885	1.068473
nonchamadebt	0.066629	0.164351	0.41	0.685	-0.25549	0.388751
_cons	1.094644	0.458483	2.39	0.017	0.196033	1.993254

Description of the estimated propensity score in the region of common support

	Percentiles	Smallest		
1%	0.33351	0.326686		
5%	0.369832	0.32821		
10%	0.420132	0.329061	Obs	313
25%	0.511052	0.33351	Sum of Wgt.	313
50%	0.649198		Mean	0.649611
		Largest	Std. Dev.	0.165989
75%	0.800284	0.930078		
90%	0.850757	0.937983	Variance	0.027552
95%	0.87379	0.938967	Skewness	-0.20387
99%	0.930078	0.976372	Kurtosis	1.836319

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Essay 3

Financial development and economic growth in Kenya

Results of a time-series vector error correction model (1970 – 2010)

1. INTRODUCTION

Ever since Schumpeter (1911), and more recently Patrick (1966) McKinnon (1973) and Shaw (1973), the relationship between financial development and economic growth has become a core topic of research in finance and economics. A wide number of studies have looked at whether financial development is a consequence of economic growth or whether it can fuel economic growth over the long term by promoting savings and an efficient allocation of credit, reducing transaction costs or improving productivity growth (Beck, Levine, and Loayza 2000; Levine, Loayza, and Beck 2000; King and Levine 1993b; King and Levine 1993a). This question is of extreme importance for development policy. In recent years governments in low-income countries and donors alike have increased their investments in the financial sector in order to fuel wealth creation, employment and alleviate poverty. This paper tries to contribute to this discussion by understanding the relation between financial development and economic growth, and assessing the channels in which financial intermediation might contribute to pro-poor economic development over the long-term in Kenya.

Following previous studies such as Gries, Kraft, and Meierrieks (2009); Ang and McKibbin (2007) and Odhiambo (2008), the core hypothesis of this research is that the relation between the deepening of the financial sector and GDP growth is not direct, but occurs through specific intermediary variables that affect both financial development and GDP growth. This paper looks in particular at gross investments and gross savings, under the hypothesis that they can play a key role in linking financial sector development to economic growth. Previous studies have taken a similar approach, but they differ in either the conditioning variables used in the model, the definition of financial development or the timeframe of the research. In particular, this paper uses a composite index variable for financial

development, which combines several proxy variables such as private credit to GDP, liquid liabilities as a percentage of GDP and the relevance of the commercial banking sector relative to the central bank, arguing that these variables taken alone do not reflect appropriately financial sector development as a whole. This is an improvement from most previous studies that often rely on single proxies.

The rest of the chapter is organized as follows: section 2 reviews the literature on financial development and economic growth and shows the diversity of approaches and results obtained in previous empirical studies. Section 3 explores the different approaches used to define financial sector development and section 4 looks at the characteristics of financial development in Kenya, from the bank failures of the nineties to the raise of Equity bank and mobile banking in recent years. Section 5 describes the data used in the empirical research and shows the results of the Augmented Dickey Fuller test, Johansen Co-integration Model and Vector Error Correction Model (VECM). Section 6 summarizes the findings and concludes.

2. FINANCE AND GROWTH - A REVIEW OF LITERATURE

The relation between financial development and economic growth started being discussed as soon as the beginning of the last century (Schumpeter, 1911; McKinnon, 1973; Shaw, 1973), and gained primary importance over the past two decades (King and Levine, 1993a, 1993b; Rajan and Zingales 1998; Beck, Levine, and Loayza 2000; Levine, Loayza, and Beck 2000). Economists have proposed widely contrasting views on the subject (Levine 2005), arguing, on the one hand, that finance is an "overstressed" determinant of economic growth (Lucas 1998); that financial development occurs as a consequence, not a cause, of economic growth (Robinson 1953); and that the development of the financial sector can improve stability, but only up to a limit as it may denote higher leverage of firms and higher risks for the overall economy (Easterly, Islam, and Stiglitz 2001; Cecchetti et al. 2012).

However, in recent years a growing consensus has emerged on the fact that financial development and economic growth are closely interrelated, and the debate has shifted towards understanding the direction of causality –whether financial development fuels economic growth or, on the contrary, it is economic growth to drive financial development. An influential paper by King and Levine (1993a) showed that over a 30-years period, between 1960 and 1989, the average per capita GDP growth in 77 countries was robustly correlated to several measures of financial development, including the size of financial intermediaries, private sector credit as a percentage of GDP, the ratio between commercial bank credit and the total credit (commercial banks plus central bank credit); and finally the ratio of liquid liabilities to GDP. They showed that even after controlling for education levels,

quality of the legal systems and openness to trade, financial development had a robust and significant impact on GDP growth as well as other measures of economic development such as physical capital accumulation, productivity and the efficiency of capital allocation (see Table 18).

Table 18: Regression results for the model on financial sector development and economic growth (Source: adapted from King and Levine, 1993a)

Dependent Variable	**LLY**	**BANK**	**PRIVATE**	**PRIVY**
GYP	0.024***	0.032***	0.034***	0.032***
	[0.007]	[0.005]	[0.002]	[0.002]
GK	0.022***	0.022**	0.020**	0.025***
	[0.001]	[0.012]	[0.011]	[0.001]
INV	0.097***	0.133***	0.115***	0.102***
	[0.001]	[0.001]	[0.002]	[0.004]

*Note: p-value in parenthesis. *significant at the 0.10 level, ** significant at the 0.05 level, *** significant at the 0.01 level.*
GYP = Real per capita GDP growth rate, GK = Average growth rate of the real per capita capital stock, 1960-1989, INV = Ratio of average annual investment to GDP, 1960-1989. LLY = Ratio of liquid liabilities to GDP, BANK = Deposit bank domestic credit divided by deposit money bank plus central bank domestic credit, PRIVATE = Ratio of claims on nonfinancial private sector to domestic credit, PRIVY = Ratio of claims on the nonfinancial private sector to GDP.

King and Levine's paper –titled "Schumpeter might be right" – brought the finance and growth literature at the center of economics, showing that the financial sector is not simply a by-product of economic development but an engine of growth (Cecchetti et al 2012). It was followed by a number of studies that confirmed the causal relationship with different datasets and methodological approaches. Levine (2006) conducts a survey of literature and identifies three main econometric approaches: cross-country studies, some of them using an instrumental variable approach; panel-time series and industry and firm-level analysis of finance and growth. Two studies that greatly contributed to the validation of the finance and growth literature were by Levine, Loayza and Beck (2000) and subsequently Beck, Levine and Loayza (2000) which dealt successfully with the issue of endogeneity, or reverse causality, and provided further clarity about the "channels" in which financial intermediaries contribute to economic growth. In particular, they look at the effects of financial intermediary development on (i) private savings rates, (ii) capital accumulation, (iii) total factor productivity growth, and (iv) overall real per capita GDP growth, and find a large and significant impact

of financial intermediary development on per capita GDP growth and total factor productivity growth. They find a weak relation with physical capital growth and private savings rates. These studies tackle the problem of simultaneity bias by using two econometric techniques: a cross-sectional instrumental variable technique[49] and a dynamic panel model.

An alternative approach was developed by Rajan and Zingales (1998), who study the finance-growth nexus at the industry level across countries. They argue that existing studies suffer from two main weaknesses: first, both financial development and growth could be influenced simultaneously by common omitted variables such as the households' propensity to save, which are difficult to account for in standard cross-country comparisons. Second, they critique the main variables used to measure financial development, such as private credit to GDP or the size of the stock market, because these variables may simply anticipate future growth rather than causing it: the stock market often functions to capitalize on the present value of future growth opportunities, while the banking system provide more credit to sectors they expect to grow in the near term (Rajan and Zingales, 1998). In order to overcome these shortcomings, they estimate the need for external finance at the industry-level by computing the difference between investments and cash generated from operations[50]. Under the assumption that capital markets are relatively frictionless, they investigate whether industries that are more dependent on external finance (such as Drugs and Pharmaceuticals) grow relatively faster than other sectors (such as Tobacco) which relies less on external financing, in countries that a priori are more financially developed. Their study shows that in countries with well-developed financial systems, industries that make heavy use of external finance grow faster than other industries. They argue that financial development reduces the costs to access to finance for firms, therefore accelerating the formation of new businesses and the expansion of existing ones.

The direction of causality outlined above from financial development to economic growth is usually labelled as "supply-leading" hypothesis whereas the opposite hypothesis, that economic growth cause financial development, is known as "demand-following" (Patrick, 1966). Some economists, however, take a third position and argue that the relation is actually bi-directional. For example, Calderón and Liu (2003) study a sample of 109 developed and developing countries and find evidence of bidirectional causality developing countries, with the supply-leading relationship being the main source of linear dependence. They also find birectional causality in developed countries. However, the demand-following relationship plays a stronger role to the causal relationship. Similarly, Luintel and Khan (1999) analyze a sample of 10 countries and examine the long-run causality between financial development and economic growth in low-income countries. Using a multivariate time-series

[49] The study uses the legal origin of countries as instruments

[50] The calculations are based on the US firms data from the United States Census Bureau.

framework, their study does not dismiss the finance-growth argument, but they find a bi-directional causality nexus between finance and growth. Similar conclusions were reached in different settings by Demetriades and Hussein (1996) and Odhiambo (2004). More empirical findings from other studies are listed in Table 19.

Table 19: Summary of findings from empirical studies

Authors	Regions/countries	Results
King and Levine (1993)	77 countries	Unidirectional (finance→ growth)
Rajan and Zingales (1998)	65 developed and developing countries	Unidirectional (finance→ growth)
Beck, Levine, and Loayza (2000)	70 developed and developing countrues	Unidirectional (finance→ growth)
Hassan, Sanchez, and Yu (2011)	119 countries in all regions	Bi-directional in all but 2 regions Unidirectional in Sub Saharan Africa and East Asia and Pacific (growth→finance)
Gries, Kraft, and Meierrieks (2009)	16 Sub Saharan African countries	Unidirectional long-run causality (finance → growth) for Nigeria, Rwanda, Sierra Leone. Unidirectional long-run causality (growth → finance) for Ghana and Nigeria Bi-directional for Senegal Inconclusive evidence for other countries
Christopoulos and Tsionas (2004)	10 developing countries	Unidirectional (finance→ growth)
Demetriades and Hussein (1996)	16 developing counties	Bi-directional
De Gregorio and Guidotti (1995)	100+ developed and developing countries	Mixed results, Unidirectional (finance→growth) for most countries. Negative relationship (financial development harms growth) for Latin American countries
Cecchetti et al (2012)	16 developed countries	Mixed results: financial development contributes to (productivity) growth only to a certain extent. Beyond a certain limit financial development can be detrimental
Gaffeo and Garalova (2014)	13 transition economies	Unidirectional in the long-run (finance→ growth) however possibly detrimental in the short-run
Hondroyiannis, Lolos, and Papapetrou (2005)	Greece	Bi-directional
Johannes, Njong, and Cletus (2011)	Cameroon	Unidirectional (finance→growth)

Odhiambo (2004)	South Africa	Unidirectional (Growth→ finance)
Odhiambo (2008)	Kenya	Unidirectional (Growth→ finance)
Kar and Pentecost (2000)	Turkey	Mixed results: causality changed depending on the proxy used for financial development
Luintel and Khan (1999)	10 developing countries	Bi-directional

The main studies conducted in the Kenyan context include Gries, Kraft, and Meierrieks (2009) and Odhiambo (2008). The two studies differ in the econometric approach in two main ways: first, while Gries, Kraft, and Meierrieks (2009) look at trade openness as the main conditioning variable, arguing that financial development might benefit economic growth by encouraging countries to open up their trade. Odhiambo (2008) on the other hand uses the savings ratio as the third conditional variable. The second difference concerns how financial development is defined: whereas Gries, Kraft, and Meierrieks (2009) create a composite indicator that keeps into account several measures of financial sector development, Odhiambo (2008) relies on a simple proxy of money supply (M2 as a percentage of GDP). Their findings are also very different: Gries, Kraft, and Meierrieks (2009) find no evidence of long run causality between the three variables (financial development, trade openness and economic growth), whereas Odhiambo (2008) finds long run relationship in his model, however the causality test suggests that it is growth to fuel financial development and savings, not the other way around.

3. MEASURING FINANCIAL DEVELOPMENT

The conceptualization and measurement of financial sector development has improved considerably over the last few years, and the availability of benchmarking indicators has increased the ability to track changes over time across industry, academia and policy-makers. The majority of studies use single proxies to study financial development, usually measurements of money supply such as M3 as percentage of GDP, or private credit as a percentage of GDP (see King and Levine, 1993a, 1993b; Beck, Levine, and Loayza 2000; Levine, Loayza, and Beck 2000) . Others use econometric techniques to create composite indicators based on principal component analysis (Ang and McKibbin, 2007; Gries, Kraft, and Meierrieks (2009). The objective is to create a more comprehensive variable that accounts for several dimensions of financial development. This paper uses the latter method in the empirical analysis.

However in recent years it has become clear that financial development is complex and multidimensional and in order to address its evolution over time it is necessary to have a more

comprehensive conceptual framework. The 2013 World Bank *Global Financial Development Report* (GFDR) developed a 4 by 2 matrix that keep track of four pillars of financial sector development: depth, stability, efficiency and access (see Table 20). It also divides the financial landscape in financial markets and financial institutions. The idea is that all these dimensions are crucial and cannot develop in isolation from the others.

Table 20: 4x2 framework of financial development. Source: World Bank, 2013

Pillars	**Financial Institutions**	**Financial Markets**
Depth	**Private sector credit to GDP** Financial institutions' assets to GDP Money (M2 aggregate) to GDP Deposits to GDP Value-added of the financial sector to GDP	**Stock market capitalization plus outstanding domestic private debt securities to GDP** Private debt securities to GDP Public debt securities to GDP International debt securities to GDP Stock market capitalization to GDP Stocks traded to GDP
Access	**Accounts per thousand adults** (commercial banks) Branches per 100,000 adults (commercial banks) Percent of people with a bank account (from user survey) Percent of firms with line of credit (all firms) Percent of firms with line of credit (small firms)	**Percent of market capitalization outside of top** **10 largest companies** Percent of value traded outside of top 10 traded companies Government bond yields (3 month and 10 year) Ratio of domestic to total debt securities Ratio of private to total debt securities (domestic) Ratio of new corporate bond issues to GDP
Efficiency	**Net interest margin** Lending-deposits spread Noninterest income to total income Overhead costs (percent of total assets) Profitability (return on assets, return on equity) Boone indicator (Herfindahl, or H-statistic)	**Turnover ratio** (turnover/capitalization) for stock market Price synchronicity (co-movement) Price impact Liquidity/transaction costs Quoted bid-ask spread for government bonds Turnover of bonds (private, public) on securities exchange Settlement efficiency
Stability	**z-score** (or distance to default) Capital adequacy ratios Asset quality ratios Liquidity ratios Other (net foreign exchange position to capital, etc.)	**Volatility** (standard deviation/average) of stock price index, sovereign bond index Skewness of the index (stock price, sovereign bond) Price/earnings (P/E) ratio Duration Ratio of short-term to total bonds (domestic, international) Correlation with major bond returns (German, United States)

The World Bank started keeping track of these different indicators across countries and created a database called the Financial Sector Development database which has data for all countries across the years.

4. FINANCIAL DEVELOPMENT IN KENYA

Kenya in recent years has become the most cited example of pro-poor financial sector development and has attracted the interest of donors, academics and policy-makers alike. The banking sector has grown dramatically in terms of value and volume of transactions and financial inclusion has increased substantially in the last decade, reaching relevant sections of the low-income population. However the recent expansion occurred after turbulent decades where the banking system evolved and went through different critical periods. This section briefly goes through the evolution of the banking sector in Kenya since the 1950s. Understanding the evolution of the financial sector is crucial to understand its current success and its relation to economic development in the country.

4.1 BANKING SECTOR IN KENYA 1950S TO 1970S

The commercial banking system became relatively well established in Kenya before reaching independence in 1963, with the presence of numerous British institutions supporting the colonial economy and the white settlers. Until the early 1960s, almost all of the banking business in Kenya was handled by three international banks which had headquarters in London (Engberg 1965), which were focusing on trade and commerce between the British colonies. Although there was a rapid increase in the number of bank branches between the late 1940s and 1950s, (see Table 21), commercial banks had no interest in targeting the indigenous population and encouraging savings amongst African or financing local businesses (Upadhyaya 2011).

Table 21: Number of bank offices in Kenya before independence (Source: Engberg, 1965)

Year	Number of bank offices
1946	19
1950	27
1955	61
1960	141
1961	160
1962	163
1963	161

After reaching independence from the UK in 1963, the Kenyan government led by President Jomo Kenyatta embarked in a process of "Africanization" of the economy, and for the first time banks began to target the local population and business community. Government intervention in the financial system in Kenya had two major goals: to control the money supply and guarantee for macroeconomic stability and to influence the development of the financial system in order to benefit the indigenous African community (Brownbridge 1996). This led to the establishment of several government-owned banks.

The most important banks that had Government ownership were Co-operative Bank, which was incorporated in 1965, National Bank of Kenya (NBK) incorporated in 1968. This was followed in 1970 by the nationalization of Grindlays's Bank, one of the most important banks during the colonial period, which was renamed the Kenya Commercial Bank (KCB). KCB is still nowadays the largest bank in Kenya by assets and still has partial Government ownership (see Annex 1). However, during the first half of the 1970s Kenya was strongly affected by the first oil price shocks (1973), which worsened the balance of payments and caused inflation to rise sharply. This was accompanied by currency devaluations and changes in the exchange rate peg from the Sterling pound to the U.S. dollar, and then the Special Drawing Rights (SDR)[51]. In response to the crisis, the Kenyan Government decided to impose instruments of control rather than liberalize the economy, such as the selective control of bank lending, import quota restrictions, price controls, caps on interest rates and licensing of foreign exchange transactions (Durevall and Ndung'u 2001).

The economic crisis was eased in the late 1970s, with a commodity boom in major export crops especially coffee and tea. The export boom was paralleled with the expansion of indigenous financial institutions, with the establishment of one private commercial bank and nine local non-bank financial institutions. These institutions were mainly owned by Africans from the Kikuyu ethnic group who largely benefitted from the coffee and tea exports (Upadhyaya, 2011). However, according to Durevall and Ndung'u (2001), the management of this boom was partly responsible for the difficulties experienced during the 1980s, when the currency appreciated and there was a tremendous expansion in the supply of domestic credit, especially by indigenous financial institutions.

[51] Special drawing rights (SDR) are a supplementary exchange reserve assets controlled by the International Monetary Fund (IMF). The value is defined by a weighted average of a currency basket composed of four major currencies: the euro, US dollar, British pound, and Japanese yen.

4.2 THE RISE OF INDIGENOUS BANKS AND BANK FAILURES IN THE 1980S AND 1990S

After the death of Jomo Kenyatta in 1978, Daniel Arap Moi took the Presidency of Kenya and kept power for the following twenty-four years until 2002. Early after taking office, Moi encouraged the establishment of new indigenous banks in order to fuel growth in the local economy. The 1980s saw the establishment of numerous non-bank financial institutions (NBFIs): by 1994 there were around 17 indigenous commercial banks and 35 NBFIs in operation, which accounted for almost 25% of bank deposits and over 50% of NBFI deposits (Upadhyaya, 2012). Brownbridge (1996) divides local banks in three main types depending on the ownership: (i) political banks, which had close relations with the political parties and prominent politicians among their shareholders; (ii) independent Asian-owned financial institutions and (iii) independent African-owned financial institutions[52]. He identifies numerous reasons that triggered the rise of indigenous banks during this period. First, during the '70s there was a widespread perception that large banks, including the government owned banks, weren't servicing the local business community with affordable credit. Local banks entered the market by targeting specifically small businesses that were underserved by the existing financial institutions. There was also a growth of demand for services from local entrepreneurs, especially those who benefitted from the commodity boom and from the Asian community, who had accumulated capital during the previous years through several commercial activities including money-lending. Second, many of the institutions established during this period were founded by politicians or by businessmen with close links to the political parties. These connections facilitated the flow of public sector deposits and simplified the process of mobilizing funds. Finally, the growth of local financial institutions was aided by the fact that the government kept very low entry barriers. Minimum capital requirements during the '80s were set to the equivalent of 200,000 US dollars.

The growth of indigenous banks brought both benefits and costs for financial markets in Kenya and the wider economy. Many institutions introduced financial services such as hire purchase and trade credit specifically for the small business community, and greatly benefitted to the expansion of the local economy. However a number of institutions, especially those with political affiliations, were used for major fraud and/or mismanaged at the expense of taxpayers and depositors. Since the '80s Kenya experienced a series of bank failures involving mostly political banks and some independent banks. Around thirty percent of the local financial institutions were closed down or been placed under statutory management by the Central Bank of Kenya because of liquidity problems or violations of banking regulations (Brownbridge, 1996). Non-performing loans reached an extremely high level and many banks became insolvent. Upadhyaya (2011) shows that the collapse of bank and non-bank financial institutions happened in three main phases, the first between 1984 and 1989, the second

[52] The term "independent" refers to the lack of influence of politicians

between 1993 and 1995, right during the liberalization period; the third phase happened in 1998 with the collapse of six institutions in one year (see Table 22).

Table 22: List of bank failures between 1984 and 1998. Source: Upadhyaya (2011)

Years	Institutions
1984 – 1989	Rural Urban Credit Finance
	Continental Bank, Continental Finance
	Union Bank
	Jimba Credit Corporation
	Estate Finance
	Estate Building Society
	Business Finance
	Nationwide Finance
	Kenya Savings and Mortgages
	Home Savings and Mortgages
	Citizens Building Society
1993 – 1995	International Finance Company
	Trade Bank
	Trade Finance
	Diners Finance
	Pan African Bank
	Pan African Credit Finance
	Exchange Bank
	Post Bank Credit
	Thabiti Finance
	Export Bank
	Allied Credit
	United Trustee Finance
	Inter-African Credit Finance
	Middle Africa Finance
	Nairobi Finance Corporation
	Central Finance Kenya
	United Bank
	Heritage Bank
	Meridien BIAO Kenya
1998	Bullion Bank
	Fortune Finance
	Trust Bank
	City Finance Bank
	Reliance Bank
	Prudential Bank

4.3 FINANCIAL LIBERALIZATION AND REFORMS

Kenya embarked in the World Bank Structural Adjustment Programs in the 1980s, which were initially focused on budget and debt reform, and then started a process of full scale financial sector reforms and liberalization in 1990s. The key policies involved the deregulation of interest rates in 1991 and the authorization to deal in foreign exchange in 1992. In 1993, the Government established a market-determined exchange rate for the Kenya Shilling. Financial liberalization took place in a period characterized by extremely important changes in the Kenyan political system. The country had its first multi-party elections in 1992 and President Moi was strengthened by a much fractured opposition (Upadhyaya, 2011). Funding for the elections was extremely high and government borrowing increased substantially during the period, with direct effects on inflation and indebtedness.

The macroeconomic environment was affected also by an aid embargo imposed on the country, which led the Government to expand the money supply with extensive printing of money (Durevall and Ndung'u, 2001). When the Government decided to mop up the excess liquidity, the Treasury Bills Discount rates shot up attracting massive inflows of foreign capital and foreign currency, with a consequent appreciation of the currency. The discount rates eventually decreased and the exchange rate stabilized. According to Durevall and Ndung'u (2001:96) "The beginning of the 1990s was characterised by a shift in attention away from the real economy to one in which trade in financial assets dominates, with rates on secure government paper earning an excess premium, and lending for investment or importing inputs was seen as unattractive".

Brownbridge (1996) argues that financial liberalization eventually stimulated higher competition in the banking sector, especially thanks to the removal of interest rate controls, and led to stronger attention to the needs of the local market. Although liberalization had little impact in the credit market in its early stages, because local banks were suffering from higher capital constraints and higher cost of funds, banks were increasingly focused on attracting local deposits. Many Asian owned banks were successful in this and engaged with the Asian business community thanks to the stronger networks and knowledge of their financing needs.

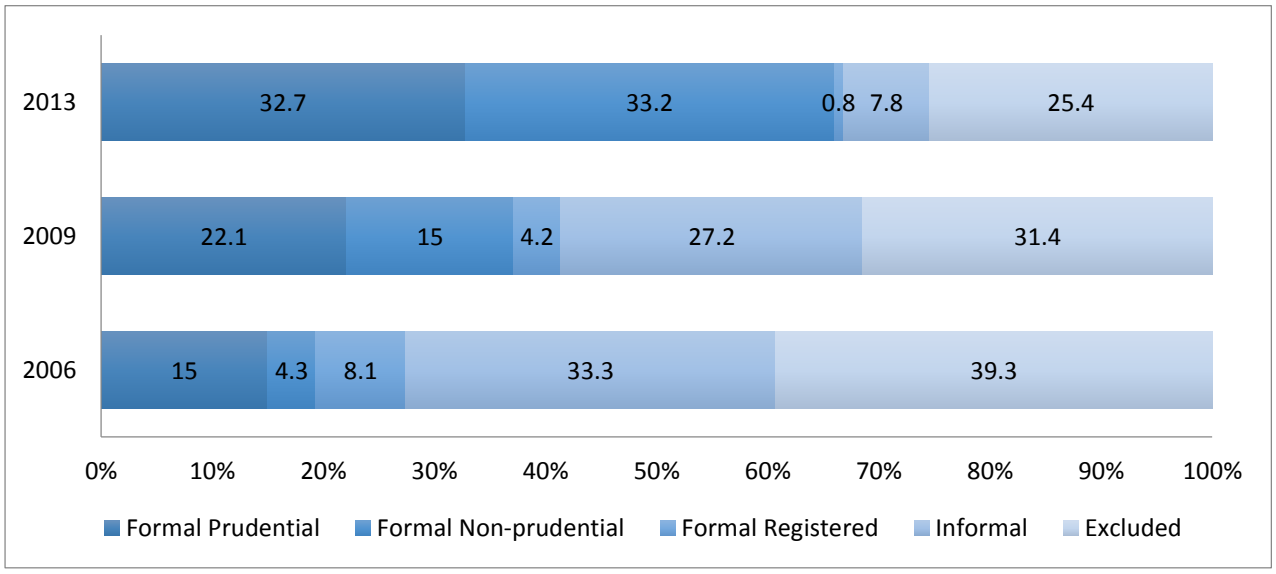
4.4 EXPANSION OF THE FINANCIAL SECTOR (2005-2014)

The relation between the financial sector and real economy became substantially stronger over the last ten years. The financial sector currently consists of a large banking sector, a relatively well-developed securities market, a large number of insurance and retirement benefits schemes, deposit taking microfinance institutions (DTMs) and deposit taking SACCOs (DTSs). There are 44 banking institutions (43 commercial banks and 1 mortgage finance company) of which 31 are locally owned

banks (six have partial or full Government ownership) and 13 are foreign owned. There are also nine Deposit-Taking Microfinance institutions (DTMs), all of which are regulated by the Central Bank, and 215 deposit-taking savings and credit cooperatives (SACCOs), regulated by the SACCO regulatory authority (SASRA).

Research conducted by FSD Kenya in 2006, 2009 and 2013 shows that the usage of financial services has increased dramatically over the last decade and exclusion from formal banking has dropped. FSD-K (2013)[53] divides access to finance in five main "access strands" depending on the type of financial institution used by households. These are divided in formal prudential, formal non-prudential, formal registered, informal and excluded (see description of access strands in Table 23). This rather complex stratification of financial access is necessary because of the evolving features of Kenyan financial landscape: microfinance banks, for example, are divided in deposit-taking or non-deposit taking – whereas the first are regulated by the Central Bank of Kenya, the second operate outside of the prudential regulatory framework. Similarly, Savings and Credit Cooperatives (SACCO) can be deposit taking or not, which defines their regulatory status and degree of formality. The other unique feature of the Kenyan financial system is the importance of mobile finance, a system known in Kenya as *MPesa*[54], which is operated by a mobile operator without a banking license.

Figure 7: Evolution of financial inclusion between 2006 and 2013 in Kenya (Source: adapted from FSD-K, 2013)



[53] The 2013 FinAccess report is available online at http://www.fsdkenya.org/finaccess/ (last accessed September 2014)

[54] The term M-Pesa is a combination of words: "M" is the short for "mobile" whereas *pesa* is the Swahili word for "money"

Table 23: Access strand definition (Source: adapted from FSD-K, 2013)

Access strand	Definition
Formal Prudential	Individuals whose highest level of reported usage of financial services is through service providers which are prudentially regulated and supervised by independent statutory regulatory agencies
Formal Non-prudential	Individuals whose highest level of reported usage of financial services is through service providers which are subject to non-prudential oversight by regulatory agencies or government departments/ ministries with focused legislations
Formal Registered	Individuals whose highest level of reported usage of financial services is through providers that are registered under a law and government direct interventions
Informal	Individuals whose highest level of reported usage of financial services is through unregulated forms of structured provision
Excluded	Individuals not using either formal or informal services

Figure 7 shows that usage of formal financial services (formal prudential, formal non-prudential and formal registered) increased from 27.4 percent in 2006 to 66.7 percent in 2013. At the same time, exclusion dropped from 39 percent to roughly 25 percent in 2013. The extent and speed of growth in financial inclusion is unprecedented and raised many questions on how Kenya succeeded in such a short period of time. While the answer is complex and involves many factors, it can be summarized in two success stories of the Kenyan financial system: mobile money (particularly MPesa) and the rise of Equity Bank.

Mpesa is a financial service launched in 2007 by Safaricom, the leading mobile operator in Kenya, which established a SMS-based money transfer system that allows users to deposit, send, and withdraw money using their cell phone. In only seven years after its launch, MPesa has become the most widespread financial tool in Kenya, with over 26 million registered users in 2013[55]. The success of MPesa is also due to the establishment of a wide network of over 100,000 MPesa agents throughout the territory that allows users to deposit and withdraw money from their MPesa account without travelling large distances.[56] Before the establishment of MPesa, the most common method to send remittances from urban to rural areas was via bus or by physically taking the money to destination. Of course this happened at huge transaction costs and risk of losing money along the way.

The other success story from the Kenyan financial system is the expansion of Equity Bank, which over the last decade has become the second largest bank in terms of assets and the first by far in terms of deposit accounts. Equity Bank's success reflects many of the critical stages that the Kenyan financial sector has gone through in the last two decades. It was founded in 1984 as a building society

[55] Data taken from the Communication Authority of Kenya in the quarterly report for quarter one 2014. Data is available at http://www.ca.go.ke/images/downloads/STATISTICS/Sector%20Statistics%20Report%20Q3%202013-2014.pdf (last accessed in June 2014)

[56] For more details on the impact of MPesa on low-income users, see (Jack and Suri 2011; 2014).

providing mortgages to lower income Kenyans. In the '90s and early '2000s it went through a period of profound crisis when non-performing loans (NPLs) reached over half of its lending portfolio and the liquidity ratio stood well below the limit imposed by the Central Bank of Kenya. The crises of the financial sector prompted Equity Bank to change its management system and transform the institution from a building society into a fully-fledged commercial bank in 2005. Since the beginning of this new phase, Equity identified a gap in financial services amongst the lower income groups and decided to focus on the "bottom of the pyramid". The bank's core income-generating products became micro-finance services for individuals lacking physical collateral. The Data from the Central Bank of Kenya show that over the following eight years Equity Bank expanded fast: in 2013 it had over 7 million deposit accounts, representing over 44 percent of all bank accounts in Kenya. During the same year, Equity Bank provided over 800 thousand loans, representing over 37 percent of total loan accounts in Kenya (see Annex 1).

It is important to point out that even though the Kenyan financial sector has improved substantially in recent years, it still has a number of problems that are hampering its growth. Interest rates and spreads have remained extremely high, and the cost of credit remains unaffordable for many micro and small scale enterprises. The banking sector is still relatively highly concentrated, with the six largest banks having over 50 percent of the market share. There is also evidence that some key sectors of the economy such as agriculture still obtains very little credit despite being the backbone of the Kenyan economy. This will be analysed more in depth in essay 4.

5. FINANCE AND GROWTH IN KENYA - EMPIRICAL ANALYSIS

Next sections will take a deeper look at the data on financial sector development in Kenya and will try to assess whether financial development in Kenya was a significant cause of economic growth or whether it occurred as a consequence of growth. Following Gries, Kraft, and Meierrieks (2009), Ang and McKibbin (2007) and Odhiambo (2008), the paper hypothesizes that the relation between the deepening of the financial sector and GDP growth is not direct, but occurs through specific "conditioning" variables: this paper looks in particular at the role of gross investments[57] and gross savings as intermediary steps between financial sector development and economic growth. Previous studies have taken a similar approach but have looked at different conditioning variables. In order to conduct the econometric analysis the paper uses the variables indicated in Table 24.

[57] In the world bank databases, the time series variable on gross investments has been renamed "capital formation as a % of GDP".

Table 24: List of variables and sources of the data

Variable name	Variable content	Source
LM3	log (liquid liabilities or M3 as a % of GDP):	Financial development and structure database[58]
LBankAssets	log [commercial bank assets / (commercial bank assets + central bank assets)]	Financial development and structure database
LCredit	log (domestic credit to private sector as % of GDP))	Financial development and structure database
Lgdp	log (real GDP per capita)	World Bank Development indicators
LSav	log (gross domestic savings as a % of GDP)	World Bank Development indicators
LInv[59]	log (Gross capital formation as a % of GDP)	World Bank Development indicators

The variables *LM3, LBankAssets* and *LCredit* have been used widely in the literature as proxies for financial sector development (see for example, King and Levine, 1993a; 1993b; Beck, Levine, and Loayza 2000). While they are not the only proxies for financial development, they have the advantage of having been collected for several decades in Kenya, therefore allowing us to look at trends over the long-run. As explained in section 5.2, this paper combines the three variables into a single composite indicator through principal component analysis, in order to comprehensively measure the different facets of financial development. *Lgdp* represents real GDP per capita and it is used as the main measure for economic growth. *LSav and LInv* are used as the main conditioning variables for the regressions. Whereas the first three variables are taken from the Financial Development and Structure Database, the rest are taken from the World Bank databases. The data are converted into natural logarithms so that they can be interpreted in growth terms after taking the first difference. This is a widely spread technique used in the literature on finance and growth. In fact, if the first lag of a time series Y_t is Y_{t-1} and its j^{th} lag is Y_{t-j} then the first difference of the logarithm of Y_t is $\Delta\ln(Y_t) = \ln(Y_t) - \ln(Y_{t-1})$, and the percentage change of a time series Y_t is approximately $100*\Delta\ln(Y_t)$.

In order to determine the causality linkages between finance and growth, the paper takes the following econometric approach.

1. We create a composite indicator of financial depth by using a principal component analysis (PCA) between the financial variables *LM3, LBankAssets* and *LCredit.*

[58] The Financial Development and Structure Database is compiled annually by Beck and Demigurc-kunt. The data used in this paper is from the September 2012 version.

2. In the second step we conduct an Augmented Dickey Fuller unit root test (ADF) in order to check if the variables are stationary at log-level and/or first difference.
3. Since all the variables are found to be non-stationary at log-level and stationary at first-difference, then we check for cointegration using the Johansen cointegration test.
4. After confirming the presence of cointegration in the models, then we conducts a Vector Error Correction Model (VECM) and look for long term and short term Granger-causality in the data.

5.1 DATA DESCRIPTIVES

Figure 8 shows different trends in the financial development variables used in the research. Whereas *LM3,* and *LCredit* show an upward trend throughout the period, the variable *LBankAssets* shows a more irregular pattern, decreasing before the mid-1990s and then increasing sharply after 1995 arguably as a result of financial liberalization and reforms.

Figure 8: Trend in financial development indicators 1960 – 2011 (logarithmic scale)

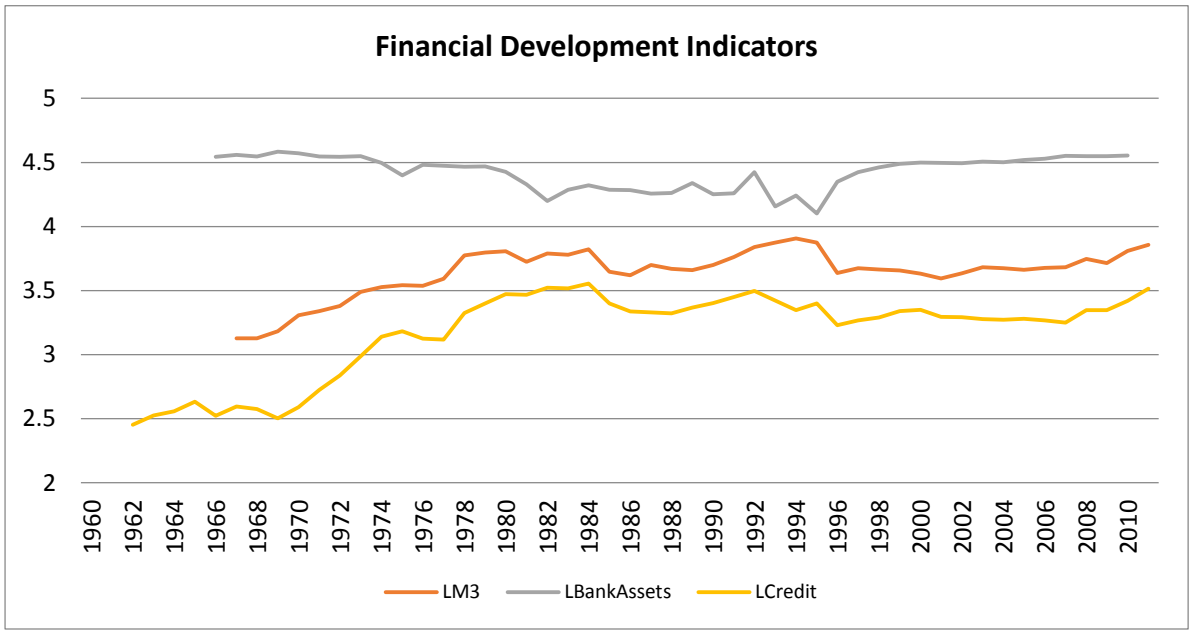


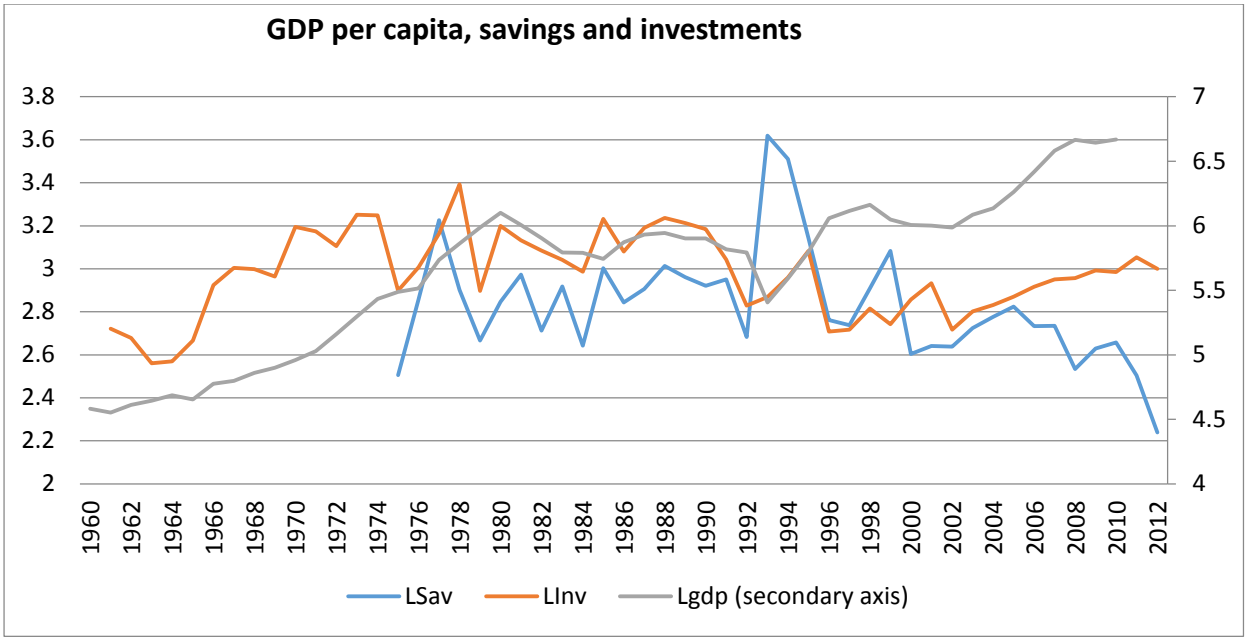
Figure 9 on the other hand shows the dynamics of the variables *Lgdp, LSav* and *LInv* over the period between 1960 and 2010. The *Lgdp* process has a clear upward trend during the period and therefore its interpretation is straightforward. On the other hand, gross domestic savings and gross investment as a % of GDP follow different patterns. Although they seem related in the period before

the mid-nineties, they split after 2000 where *LInv* has a slight upward trend whereas *LSav* has a clear downward trend.

The low level of savings and its downward trend in recent years is a well-known problem in Kenya which was flagged by World Bank and the IMF as a key constraint to sustained economic growth. The 2013 World Bank "Kenya Economic Update (KEU)"[60] in fact shows that the trend in the savings rate in Kenya is lower compared to the positive trends registered in neighboring countries such as Tanzania and Uganda. In recent years Kenya registered savings rates around 13-14 percent of GDP on average whereas Uganda and Tanzania recorded savings rates above 20 percent. Low income countries around the world have performed even better in recent years with savings rate at over 26 percent of GDP on average. The World Bank argues that the reason why investments have slightly increased in the last decade despite the fall of domestic savings (see Figure 9) was dependent on increased flows of foreign savings. The dependency of capital formation on foreign savings is considered a key constraint towards economic development and certainly will not allow Kenya to reach the ambitious goal of 10% growth rate envisaged by the Government in its key document "Vision 2030". In order to follow the growth pattern of fast growing economies in Asia, the World Bank argues that it is necessary to dramatically increase domestic savings rates: "The common feature of these 'success stories' is that they had relatively high saving rates at the beginning and during their 'high growth episode'. High savings rates are particularly common in East Asia -the fastest growing region of the world. The average savings rate in East Asia during the 2000s was 30 percent of GDP, compared to the global average of about 19 percent".

[60] Available at http://www.worldbank.org/content/dam/Worldbank/document/Africa/Kenya/kenya-economic-update-june-2013.pdf (last accessed, September 2014)

Figure 9: Trends in GDP per capita, savings and investments, 1960-2012 (logarithmic scale)



An additional descriptive analysis of the time series processes can be done by analyzing the correlation coefficients among the key variables. Table 25 shows that the sign and significance of the correlation coefficients substantially confirm the description done above. The dependent variable of interest *Lgdp* shows relatively strong and significant correlation with *LM3,* which represent the logarithm of money supply as a percentage of GDP. It also shows strong correlation with *LCredit*, which represent private sector credit as a percentage of GDP. The correlation with *LInv* (0.18) is not significant whereas it is negative and significant for the savings variable *LSav* (-0.51)[61]. Understanding these patterns is extremely important in the analysis of the rest of the paper, because savings and investments are used as key conditioning variables in the interpretation of the finance-growth nexus. Moreover, the relatively high correlation coefficients between *LM3, LCredit* and *LBankAssets* confirm the necessity to construct a single index of financial development via principle component analysis, which is conducted in the next section.

[61] The correlation coefficients in Table 25 were calculated without considering the lagged values for the different variables. A variety of tests were conducted in order to determine whether lags of up to five years changed significantly the correlation coefficients, but there were only minor differences. For example, we notice that the correlation coefficient between *LInv* and *Lgdp* is maximized when we consider the lag 1 for the variable *LInv* (0.2011), and the correlation coefficient between *Lgdp* and *LSav* remains negative also when we consider lagged variables, but the coefficient decreases slightly.

Table 25: pairwise correlation among variables

	LM3	LBankAssets	LCredit	LSav	LInv	Lgdp
LM3	1					
LBankAssets	-0.5691***	1				
LCredit	0.9444***	-0.5794***	1			
LSav	0.2686	-0.5774***	-0.0143	1		
LInv	-0.1053	-0.1807	0.2661*	0.2104	1	
Lgdp	0.7009***	-0.0862	0.8378***	-0.5095**	0.1826	1

5.2 PRINCIPAL COMPONENTS ANALYSIS

One of the core decisions made in this paper is to create a composite index of financial inclusion instead of relying on single proxies. This is one of the major differences from previous studies such as Odhiambo (2008) which uses money supply (M2 as a % of GDP) as the only proxy for financial development. The hypothesis is that while single proxies may indicate some trends of financial development over time, we need to combine different variables in order to have a more comprehensive picture (Gries, Kraft, and Meierrieks 2009). The construction of the composite indicator is done through principle component analysis, which combines the variables *LCredit, LBankAssets*, and *LM3*, and creates a single index variable which we'll call *depth*. According to Ang and McKibbin (2007), although some variables such as *LBankAssets, LCredit* and *LM3* are very common in the financial development literature, there is no consensus over the superiority of any of these indicators. Therefore it is advisable to construct a composite indicator that is as broad as possible and retains as much information as possible about the original datasets. Since the financial development variables used in this paper are significantly correlated, the development of a single index variable using principal component analysis can be effective in dealing with the issues of multicollinearity and over-parameterization.

Principal Components Analysis (PCA) is a common statistical tool used to identify patterns and reduce the dimensionality of the data. By combining the variables into principal components it is possible to construct a composite indicator and observe the overall patterns in the time series. As seen in the Table below, the eigenvalues of the first component (renamed *depth)* explain over 80 percent of the standardized variance, while the second and third explain 18 percent and 2 percent of the standardized variance respectively. We therefore decided to use the first component as our measure of financial development. In the calculation of the first component, we see that each variable has a different contribution: *LBankAsset* is negative, whereas *LM3* and *LCredit* are positive. These

trends are in fact reflected in Figure 8, which shows that *LM3* and *LCredit* have an increasing trend throughout the period, whereas *LBankAsset* has a decreasing trend until the mid-1990s, and then grows in the late 1990s up to 2010. The reason for this trend was explained in Section 4, which described the bank failures occurred between the 1980s and 1990s. During this period about 30 percent of the local institutions were closed down or been placed under statutory management by the Central Bank of Kenya, therefore decreasing the weight of commercial bank relative to the central bank in the financial system. This gradually changed after the mid-1990s with the liberalization of the market, the reforms of the banking system and the entry of new institutions[62]. All these fluctuations in the banking system are captured by the principal component, which reflects the different variations in the three variables over the period under consideration. The resulting index variable *depth* is shown in Figure 10.

Table 26: Principal component analysis

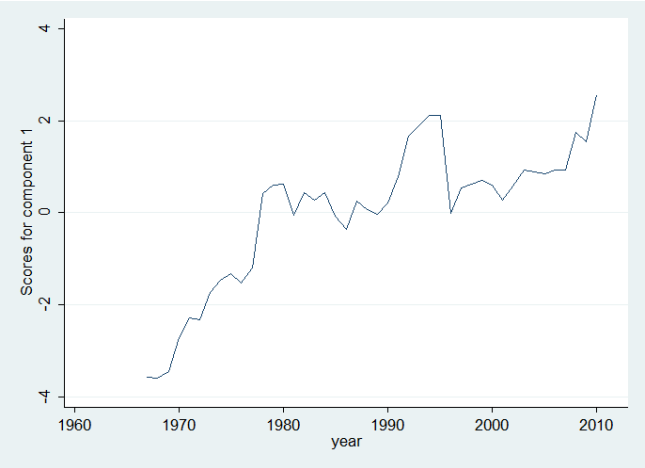
Component	**Eigenvalue**	**Difference**	**Proportion**	**Cumulative**
Comp1	2.40686	1.87062	0.8023	0.8023
Comp2	0.536236	0.479328	0.1787	0.981
Comp3	0.056908	.	0.019	1
Variable	**Comp1**	**Comp2**	**Comp3**	**Unexplained**
LM3	0.6128	0.3559	-0.7056	0
LBankAssets	-0.4979	0.8672	0.005	0
LCredit	0.6137	0.3483	0.7086	0

Figure 10 shows that the index variable *depth* follows a clear upward trend dynamic during the period analyzed in this research. The key question is whether the evolution of the financial sector which emerges from the index variable *depth* in Figure 10 reflects the descriptive analysis on the evolution of the financial sector discussed in section 4. As most studies reviewed in the literature are

[62] While the variable *depth* reduces the dimensionality of the data and allows to construct a broad composite indicator for financial sector development, the analysis would benefit by a sectoral disaggregation of the data. This would allow to conduct a more fined-grained analysis of the drivers of growth. However this Essay uses historical data that is not available on a sectoral basis. A basic analysis on the distribution of lending among SMEs is conducted in Essay 4 of this dissertation. The data collected is available for the years 2009, 2011 and 2013, and therefore not viable for the time-series analysis done in this paper.

based on cross-country comparisons, they rarely conduct a qualitative inspection to link specific historical or political/economic events at the local level to trends in the financial development data. Since this study focuses only on one country making these linkages and including them in the interpretation of the data is of uttermost importance.

Figure 10: Financial sector deepening in Kenya from 1968 to 2010

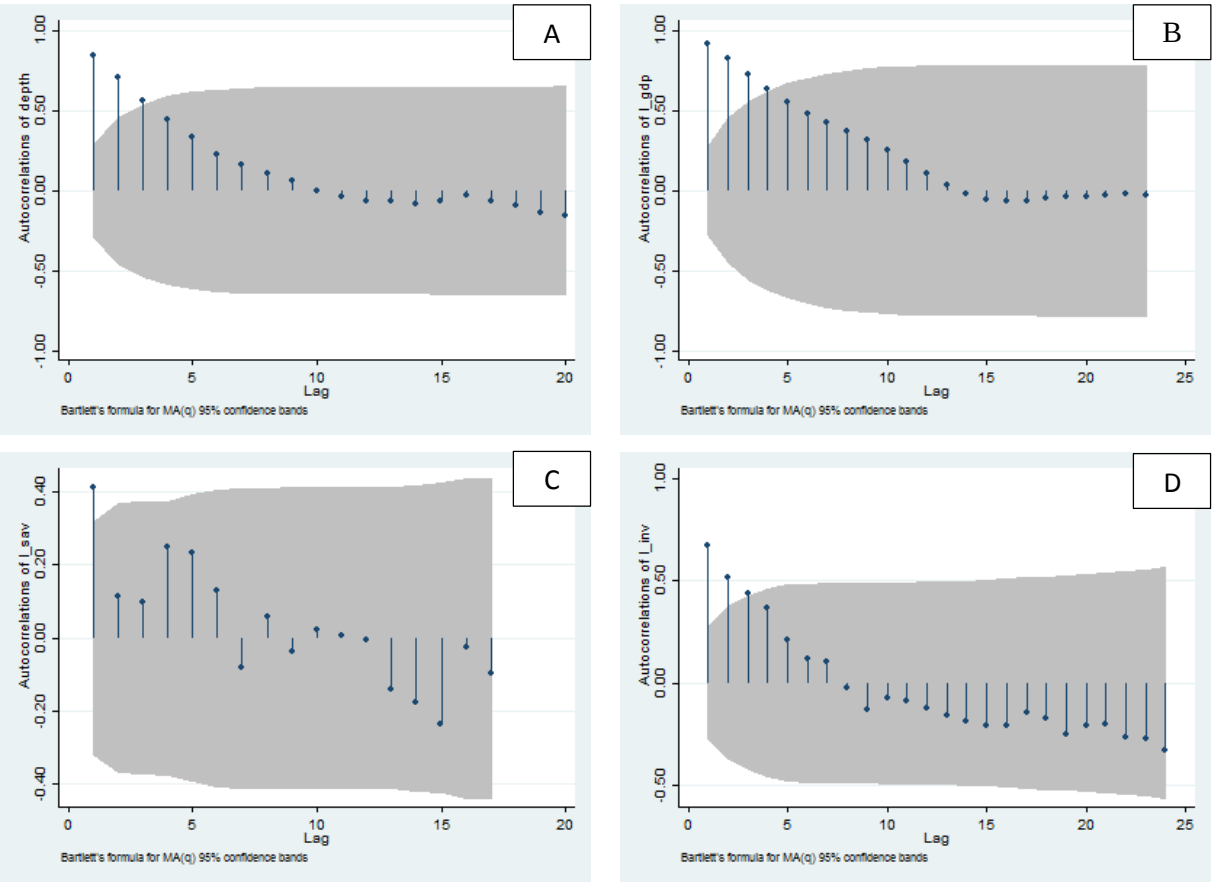


The overall assessment of Figure 10 is that the trends in the data match appropriately the historical events discussed in the previous sections regarding economic development and the evolution of the financial sector. While the decades between the 1970s and 1990s have been extremely turbulent with strong fluctuations between growth and downturns, the upward trends in the *depth* variable seem to closely reflect the expansion of the financial sector. In fact, while the financial system was primarily used by the colonial economy and the white settlers until independence, the chart shows a clear upward dynamic between 1970 and 1980, which reflects the establishment of Government owned banks and the increased focus on servicing the local population, especially thanks to the commodity boom in the late 1970s. In the 1980s financial development seem to have stalled and Figure 10 does not show any clear upward or downward trend. As explained in section 4.2, this was the period characterized by the establishment of indigenous institutions, which had some positive effects on the development of the financial system, though it also led to the politicization of some institutions and spreading mismanagement practices. The strong upward trend of the *depth* variable in the early 1990s arguably shows what Durevall and Ndung'u (2001) called a shift of attention "away from the real economy" and into the "trade of financial assets". This therefore might not reflect an improvement in financial inclusion but simply an expansion of the financial sector. The downward trend in the mid-1990s shows the numerous bank failures during the period (see Table 22) and the economic crisis that followed the first years of liberalization of the economy. The rise after 2005 reflects the recent expansion of the financial sector described in Section 4.4.

5.3 AUTO-CORRELATIONS AND CROSS-CORRELOGRAMS

In order to analyze the characteristics of the *depth* variable and its relation to the other variables used in the econometric analysis, it is important to inspect the variables in a visual format. This will help understanding the key relations between the time-series data and guide some of the decisions in the econometric approach and in the interpretation of the data. Next figures show the autocorrelation plots and cross-correlograms between the variables used in the study, which will inform the approach used in the stationarity analysis in section 5.4 as well as the interpretation of the VECM model results.

Figure 11: Autocorrelation plots

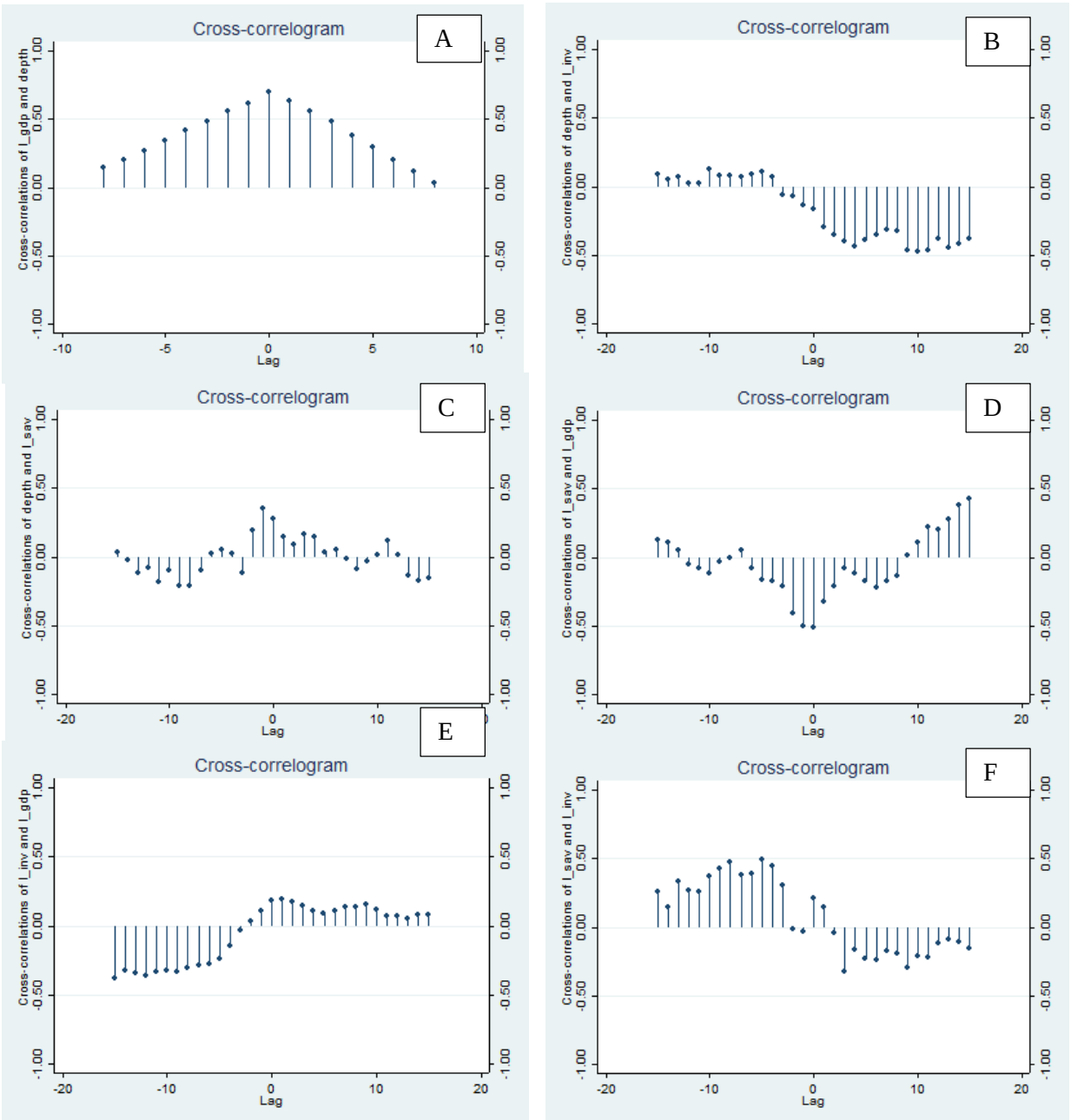


Note: Each chart in the figure represents the autocorrelation plot for different variables (Chart A: *Depth.* Chart B: *Lgdp*. Chart C: *LSav*. Chart D: *LInv*)

Figure 11 shows the autocorrelation plots for the main variables of interest, namely *Lgdp*, *LInv*, *LSav* and *depth*. The gray area displays the 95% confidence level, showing therefore that the autocorrelation for the variables *depth* and *LInv* is significant at 3 lags, whereas the economic growth variable *Lgdp* is at 4 lags and *LSav* at only 1 lag. The autocorrelation plots confirm what was observed

above about the volatile nature of savings in Kenya. Whereas all the other graphs tend to show a more homogeneous distribution of autocorrelation coefficients for the different lag values, *LSav* shows lower levels of autocorrelation as well as more variability. All charts however show an approximately similar dynamic where autocorrelation coefficients tend to approach a zero or negative value at about 10 lags. The *Lgdp* however tend to have stronger autocorrelation coefficients which approach zero at roughly 15 lags.

Figure 12: Cross-correlograms among bivariate models



Note: each chart in the figure represents the cross-correlograms among different bivariate models. (Chart A: *Lgdp* and *Depth*, Chart B: *Depth* and *LInv*, Chart C: *Depth* and *LSav,* Chart D*: LSav* and *Lgdp*, Chart E: *LInv* and *Lgdp*, Chart F: *LSav* and *LInv*.

The graphs in Figure 12 show the cross correlograms between pair of variables which can be useful as an initial description of the dataset and to make early assessments regarding the potential presence of Granger causality among pair of variables. As it will be discussed in depth later in this essay, Granger causality refers to the case where past values of a variable X are efficient at predicting future values of another variable Y. Granger causality therefore refers to the predictive capacity of time series processes rather than causality in the more common sense of the word. Cross-correlograms can be handy at making this type of early predictions since they look at cross-correlations between one variable at time *t* and another variable at time *t+k* and *t-k.* For example the correlogram A on the top-left of Figure 12 looks at the cross-correlations between the variable *Lgdp* at time *t* and variable *depth* at time *t-1* and *t+1.* The graph shows that the two variables are positively correlated throughout the period, with a peak value at t=0 and decreasing values as the number of lags increases. This suggests that the capacity of one variable to predict the future value of the other decreases as *k* increases. The other pairs of variables in Figure 12 follow very different irregular patterns and therefore are more difficult to assess in term of Granger causality. We see some similarities between charts B and F which study the cross-correlations between *depth* and *LInv* and between *LSav* and *LInv* respectively. They show a similar pattern where the cross correlation coefficient tends to be positive for *t<0* and negative for *t>0.* A somewhat opposite dynamic is observed in charts D and E which analyze cross-correlation between *LSav* and *LInv* at time *t* and *Lgdp* at time *t+k* and *t-k*, which tend to go from negative to positive as *t* increases. However, the two cross-correlograms are largely different in terms of the time *t* when the cross-correlation coefficient switches from negative to positive as well as the heterogeneity of the coefficients. Chart E is in fact shows a smooth distribution of cross-correlation coefficients compared to chart D which is substantially more volatile. The same can be said for chart C which alternates positive and negative coefficients at different lag values.

5.4 Augmented Dickey Fuller Test and Choice of the Optimal Lags Values

Numerous diagnostic tests are necessary before estimating a time series model. The conventional regression approach requires the time series to be covariance stationary, meaning that the variable's mean and auto-covariance are finite and do not change over time. In case of non-stationary processes, when the joint probability distribution of the variables is not constant over time, then a conventional regression approach can lead to spurious results (Granger and Newbold 1974)

where the outcome of a model makes no economic sense despite the high linear correlation coefficients and t-ratios would suggest otherwise[63].

Following conventional time-series approaches, the first step is to test the order of integration of the individual variables before proceeding with the cointegration analysis and Error-Correction Model (ECM). In this study, we rely on the Augmented Dickey Fuller (ADF) test to determine whether the variables have a unit root and therefore are non-stationary at level. Since the Dickey Fuller test is sensitive to the lag number chosen, a number of tests have been conducted to choose the optimal values for each variable. In Stata this is normally done using the varsoc function, which allows to test the optimal lag number for both individual variables and a combination of them[64]. The Stata output reports the results of the final prediction error (FPE), Akaike's information criterion (AIC), the Schwarz's Bayesian information criterion (SBIC), and the Hannan and Quinn information criterion (HQIC)[65]. The output of each individual test is included in Annex 2, whereas the summary of the lag number chosen is shown in Table 25. Note that since some tests do not reach a unanimous conclusion regarding the optimal lag value, the models are tested for different maximum lag values in order to assure for the consistency of the results[66].

Table 27: Choice of the optimal lag value for individual and multiple time-series variables.

Variables	Optimal lags (*p*)	Models
Lgdp	2, 4	ADF
Depth	1	ADF
LSav	1	ADF
LInv	1	ADF
Lgdp, Depth, LSav	1, 4	Johansen test, VECM
Lgdp, Depth, LInv	2, 4	Johansen test, VECM

[63] More specifically Granger and Newbold (1974) show that the confidence in the parameters is overestimated when the coefficient of determination r^2 is greater than the Durbin-Watson d-value.

[64] The ADF test is based on the stationarity tests of individual time-series variables. Table 25 shows also the number of lags chosen for the trivariate models because they are used later in the essay for the VECM models estimation.

[65] For more details on these tests, see Lütkepohl and Krätzig (2004) and Nielsen (2001)

[66] Annex 2 shows that different tests provide different optimal lag values for the variable logg and the two trivariate models. The ADF tests Johansen tests for cointegration and therefore will include the outputs that use both lag values. Analysing the significance of results with multiple lag values is a conventional procedure in several time-series studies.

Having chosen the lag values for all variables, the Augmented Dickey Fuller test (ADF) analyzes whether there are unit roots in the data, testing the following hypotheses:

H_0= There is a unit root in the data (non-stationary)

H_a= There is not unit root in the data (stationary)

The ADF testing is applied to the following model:

$$\Delta y_t = \alpha + \beta_t + \theta y_{t-1} + \sum_{j=1}^{p-1} \delta_j^* \Delta y_{t-j} + \mu_t \quad (12)$$

Where α is a constant and β is a coefficient for the time trend; *p* is the lag order chosen for the model. The ADF test is based on the t-statistic of the coefficient θ from an OLS estimation of equation 13 (Dickey and Fuller 1979 in Lutkepohl and Kratzig, 2004). The next table shows the results of the ADF test for intercept only (Table 28) with the number of lags identified above. If the absolute value of the test statistic is larger than the absolute value of the 5% critical value, then the null hypothesis is rejected and there is not unit root in the data. The test statistic needs to be negative for the model to be valid.

Table 28: ADF test, only intercept

		Log-Level			**First difference**		
Var	**p**	**Test-statistic**	**5% critical value**	**Outcome null hypothesis**	**Test-statistic**	**5% critical value**	**Outcome null hypothesis**
LSav	1	-2.709	-2.969	Not Rejected	-6.291	-2.972	Rejected
LInv	1	-2.676	-2.930	Not Rejected	-7.164	-2.933	Rejected
Lgdp	2	-1.242	-2.936	Not Rejected	-4.455	-2.938	Rejected
	4	1.100	-2.941	Not rejected	-3.571	-2.944	Rejected
Depth	1	-2.044	-2.952	Not Rejected	-4.559	-2.955	Rejected

The table above shows that the null hypothesis is not rejected for all variables and lag values, indicating that all variables are I(1), being non-stationary at level and stationary at first difference. This allows to test for co-integration presented in the next section.

5.5 JOHANSEN CO-INTEGRATION MODEL

Cointegration is a statistical feature of time-series variables that are non-stationary at levels but stationary at first difference (normally defined as *I(1)* variables) and have at least one linear

combination which is covariance stationary (I(0)) and share a common stochastic trend. The basic idea is that in the context of two processes Y_t and X_t that are non-stationary at level but stationary at first difference, if the two processes have a relationship that is constant over time, then there will be a particular value δ so that $Y_t - \delta X_t$ is a stationary process. The key feature of co-integrated variables is that they are associated over the long-run and any deviations from the equilibrium is temporary and eventually returns to equilibrium. Since the ADF tests have shown that all the variables are I(1), cointegration analysis provides the appropriate framework for assessment and interpretation of the data.

In order to check for co-integration among the variables, we conduct a Johansen test for cointegration which indicates "r" the number of co-integrating equations in the VECM based on the maximum likelihood estimation[67]. The Johansen test is based on two statistics: trace-statistics (λ_{trace}) and maximum eigenvalue (λ_{max}). The λ_{trace} statistic tests the null hypothesis that *r* is equal to *z* against the alternative hypothesis is that *r > z* with z = (0, 1, 2,..k) showing cointegration among the time-series, so that

$$J_{trace} = -T \sum_{i=r+1}^{k} \ln(1 - \lambda_t) \tag{13}$$

where λ are the estimated eigenvalues and T are the number of observations. The maximum eigenvalue statistic λ_{max} on the other hand tests the null hypothesis that the number of co-integrating vectors is equal to *r* against the alternative hypothesis of *r+1* co-integrating vectors

$$J_{max} = -T(1 - \lambda_{r+1}) \tag{14}$$

Table 29 reports the results of the Johansen co-integration tests for the two trivariate models of interest with the lag values identified in Table 25 as well as the simple bivariate model that exclude the conditioning variables *LSav* and *LInv*. The general guideline to read the tables is that if the trace statistic is larger than the critical value, then the null hypothesis is rejected. Confirming the hypothesis outlined in the beginning of the paper, Table 29 shows that the trivariate models that include conditioning variables savings or investments have one co-integrating vector and therefore are characterized by long-run association[68]. For instance, our test statistic for *Model 1* of 30.74 exceeds the 95% critical value of 29.68 which leads to the rejection of the hypothesis of no cointegrating relationship. The maximum eigenvalue statistic of 24.89 also exceeds its corresponding critical value of 20.97 which is consistent with the result using the trace statistic. If we move on to the second

[67] For more details on the calculations of the cointegrating in the presence of a linear trend see Johansen (1992).

[68] The test however shows that the model 3 which uses logi as conditioning variable and 2 lag values shows no evidence of cointegrating vectors.

alternative hypothesis that *r* is higher or equal to 2, the test does not reject the null hypothesis for both the trace and maximum eigenvalue statistics. Similar results of one cointegrating vector are obtained in two other trivariate models (model 2 and model 4 in Table 29) while the Johansen test does not reject the null hypothesis of no cointegration for the bivariate models. The fact that long-term co-integration is confirmed for the two trivariate models makes them eligible to be analyzed with the Vector Error Correction Model analyzed in the next section.

Table 29: Johansen test result for two trivariate models

λ_{trace} test				**Λ_{max} test**			
H_0	**H_a**	**Statistic**	**95% critical value**	H_0	**H_a**	**Statistic**	**95% critical value**
Trivariate Models							
Model A: Lgdp depth and LSav (p=1)							
r=0	r≥1	30.74**	29.68	r=0	r=1	24.89**	20.97
r≤1	r≥2	5.84	15.41	r≤1	r=2	5.31	14.07
r≤2	R=3	.52	3.76	r≤2	r=3	.52	3.76
Model B: Lgdp depth and LSav (p=4)							
r=0	r≥1	26.48**	29.68	r=0	r=1	23.51**	20.97
r≤1	r≥2	2.97	15.41	r≤1	r=2	2.71	14.07
r≤2	R=3	.26	3.76	r≤2	r=3	.26	3.76
Model C: Lgdp depth and LInv (p=2)							
r=0	r≥1	25.37	29.68	r=0	r=1	12.95	20.97
r≤1	r≥2	12.4	15.41	r≤1	r=2	9.77	14.07
r≤2	R=3	2.65	3.76	r≤2	r=3	2.65	3.76
Model D: Lgdp depth and LInv (p=4)							
r=0	r≥1	30.90**	29.68	r=0	r=1	21.51**	20.97
r≤1	r≥2	11.39	15.41	r≤1	r=2	8.79	14.07
r≤2	R=3	2.60	3.76	r≤2	r=3	2.60	3.76
Bivariate Model							
Model E: Lgdp and depth (p=1)							
r=0	r≥1	14.22	15.41	r=0	r=1	12.77	14.07
r≤1	R=2	1.45	3.76	r≤1	r=2	1.45	3.76
Model F: Lgdp and depth (p=2)							
r=0	r≥1	14.55	15.41	r=0	r=1	11.64	14.07
r≤1	R=2	2.90	9.24	r≤1	r=2	2.90	9.24

5.6 VECTOR ERROR CORRECTION MODEL WITH TWO TRIVARIATE MODELS

The previous section has shown that the two trivariate models of interest have a cointegration relationship and therefore financial development, growth, and the conditioning variable (savings or investments) share a common stochastic trend and long-run equilibrium. This confirms one of the key hypothesis outlined in the paper and indicates that a relationship of causality in either way cannot be ruled out. Due to the cointegration relationship, the common procedure is to include an error correction model and proceed with the analysis in a VECM framework. In their seminal paper, Engle and Granger (1987) show that co-integrated variables must include an error correction term in the model in order to take into account the information lost while calculating the first difference. The error correction models are effective in the analysis of non-stationary time series variables because they allow long run components to follow the equilibrium constraints while short-run components to have a dynamic specification. In a model with two variables Y_t and X_t the error correction term estimates the speed of adjustment in which a dependent variable Y_t returns to equilibrium after a change in an independent variable X_t. In its basic form, the VECM takes the following form:

$$\Delta Y_t = \mu + \alpha_0 \Delta X_t - \beta_1 (Y_{t-1} - \beta_2 X_{t-1}) + \varepsilon_1 \quad (15)$$

where the part inside the parenthesis ($Y_{t-1} - \beta_2 X_{t-1}$) represents the error correction term and it is equal to zero when X_t and Y_t are in their equilibrium state. α_0 estimates the short term effects of a change of X_t on Y_t while β_1 estimates the speed of adjustment after a deviation from equilibrium (Lütkepohl and Krätzig 2004). Since this paper attempts to analyze two trivariate models that were confirmed to have one co-integrating vector in the Johansen tests, the variables can be modeled as in the equations 17, 18 and 19 when they include savings (*LSav*) as the main conditioning variable. They can be modelled as equations 21, 22 and 23 when they include investments (*LInv*) as the main conditioning variable.

$$\Delta Lgdp_t = \mu_1 + \beta_{11} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{1j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{1j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{1j} \Delta LSav + \varepsilon_{1t} \quad (16)$$

$$\Delta depth_t = \mu_1 + \beta_{21} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{2j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{2j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{2j} \Delta LSav + \varepsilon_{2t} \quad (17)$$

$$\Delta LSav_t = \mu_1 + \beta_{31} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{3j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{3j} \Delta LSav + \varepsilon_{3t} \quad (18)$$

where *Lgdp, LSav* and *depth* are the main variables of interest described in the beginning of the section; Δ refers to the first difference of the variables and ε is the error term. ECM is the error used to calculate the long term association between variables and is calculated through the following equation[69]:

$$ECT_{t-1} = Lgdp_{t-1} + \left(\frac{\beta_{21}}{\beta_{11}}\right) depth_{t-1} + \left(\frac{\beta_{31}}{\beta_{11}}\right) LSav_{t-1} \quad (19)$$

The second set of models that showed one co-integrating vector included the investments variable *LInv* as the main conditioning variable. Table 29 shows that the test for cointegration is valid only for model D which has lag-order *p* equal to 4, but there is no evidence of cointegration for model 3 which a lag-order 2. Model 3 is nevertheless estimated in the VECM framework to confirm the robustness of the previous section's results. The second set of models is formalized as follows:

$$\Delta Lgdp_t = \mu_1 + \beta_{11} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{1j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{1j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{1j} \Delta LInv + \varepsilon_{1t} \quad (20)$$

$$\Delta depth_t = \mu_1 + \beta_{21} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{2j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{2j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{2j} \Delta LInv + \varepsilon_{2t} \quad (21)$$

$$\Delta LSav_t = \mu_1 + \beta_{31} ECT_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta depth_{t-j} + \sum_{j=1}^{p-1} \gamma_{3j} \Delta Lgdp_{t-j} + \sum_{j=1}^{p-1} \emptyset_{3j} \Delta LInv + \varepsilon_{3t} \quad (22)$$

[69] The equation refers to the error correction term in equation (17). The ECT for equations 18, 19, 21 and 22 are derived in the same way by rearranging dependent and independent variables.

5.7 EMPIRICAL FINDINGS

The core focus of this paper is on the long-run relationships between the variables of interest and therefore particular attention will be paid to the parameters of the cointegrating equations identified in the VECM model as well as the error correction terms. Table 30 presents the results of the VECM estimations for all the six models formalized in the equations in the previous section with the cointegrating vectors normalized to the dependent variables. The β values in the last column of the table indicate the speed of adjustments of the model towards equilibrium; for the model to be stable, the β coefficients must have a value between 0 and |1| where the value 1 means that the model takes exactly one period *t* to return to equilibrium[70]. In order to check for serial correlations among the residuals, a Lagrange Multiplier Test is conducted for all models and the results are presented in the third column of the table.

Table 30: VECM estimations for the trivariate models (long run causality)

Model[1]	**Lags (p)**	**LM test statistic[2]**	**Cointegrated equation**	**βj_1,**
Model 1: Lgdp, depth, LSav	1	14.68	$Lgdp_{t-1} = 0.44\ depth_{t-1} - 2.32\ LSav_{t-1} + 12.34$ *(7.59***) (8.23***)*	0.10 (2.38**)
	4	7.95	$Lgdp_{t-1} = 0.54\ depth_{t-1} - 2.23\ LSav_{t-1} + 6.33$ (3.53***) (-4.94)	0.06 (0.50)
Model 2: depth, Lgdp, LSav	1	14.68	$depth_{t-1} = 2.28\ Lgdp_{t-1} + 5.30\ LSav_{t-1} - 28.17$ *(4.06***) (7.84***)*	-0.20 (2.37**)
	4	7.95	$depth_{t-1} = 1.83\ Lgdp_{t-1} + 4.08\ LSav_{t-1} - 21.99$ *(3.06**) (4.73***)*	-0.31 (-1.16)
Model 3: LSav, depth, Lgdp	1	14.68	$LSav_{t-1} = 0.19\ depth_{t-1} - 1.83\ Lgdp_{t-1} + 5.31$ *(4.77***) (-4.66***)*	-0.83 (-4.45***)
	4	7.95	$LSav_{t-1} = 0.25\ depth_{t-1} - 0.44\ Lgdp_{t-1} + 5.39$ *(4.61***) (-4.19***)*	-1.262 (-2.64**)
Model 4: Lgdp, depth, LInv	2	23.45**	$Lgdp_{t-1} = 0.39\ depth_{t-1} - 2.79\ LInv_{t-1} + 13.90$ *(3.24**) (2.87**)*	-0.42 (-1.19)
	4	10.46	$Lgdp_{t-1} = 0.41\ depth_{t-1} - 1.31\ LInv_{t-1} + 9.61$ (5.91***) (-2.73**)	- 0.105 (-1.43)
Model 5: depth, Lgdp, LInv	2	23.45**	$depth_{t-1} = 2.55\ Lgdp_{t-1} + 7.12\ LInv_{t-1} - 35.52$ *(2.91**) (2.75**)*	-0.17 (2.84**)

[70] If the β value is above the absolute value of 1, then the model is considered unstable. For more details see Lütkepohl and Krätzig (2004)

	4	10.46	$depth_{t-1} = 2.46\ Lgdp_{t-1} + 3.22\ LInv_{t-1} - 23.65$ (5.28**) (4.73***)	-0.35 (-3.32***)
Model 6: LInv, depth, Lgdp	2	23.45**	$LInv_{t-1} = 0.14depth_{t-1} - 0.35Lgdp_{t-1} + 4.99$ (2.38**) (-2.22**)	-0.13 (-0.96)
	4	10.46	$LInv_{t-1} = 0.31depth_{t-1} - 0.76\ Lgdp_{t-1} + 7.34$ (3.90***) (-3.77***)	-0.78 (-0.69)
[1] *, **, *** indicate 10%, 5% and 1% levels of significance. [2] The Lagrange-Multiplier Test (LM) is used to test for serial correlation among the residuals. The Null hypothesis tested H_0 is that there is no serial correlation at the lag order specified in the model.				

The first step in analyzing the results of Table 30 is to look at the Lagrange Multiplier Tests to detect the models affected by serial correlation. The table shows that the null hypothesis of no serial correlation is rejected in the models 4, 5 and 6 with lag-order 2 which use *LInv* as the main conditioning variable[71]. This model specification is therefore discarded in the rest of the analysis. All the other models however do not show evidence of serial correlation and therefore the analysis focuses on the interpretation of the signs and significance of cointegrating equations and the adjustment parameters.

The next step is to look at the relation of causality between the variables in the model, with a particular focus on the relation between financial development and economic growth. The notion of Granger causality is based on the idea that if there are two time series processes X_t and Y_t, X is said to Granger-cause Y if the past value of one variable are able to predict the future values of the other (Granger 1969). Important features of Granger causality is that it can be bi-directional (going both from X_t to Y_t and vice versa) and, in the context of cointegrated variables, it can be both short-run and long-run. Long-run Granger causality is analyzed through the interpretation of the error correction terms, whereas short-term Granger causality is studied following the procedure suggested in Toda and Yamamoto (1995).

Starting with long-run causality, the general interpretation of the results is that the model shows tri-directional VECM-based long-run causality when the savings variable *LSav* is used as the main conditioning variable, whereas it shows unidirectional long-run causality from growth (*Lgdp)* to financial development (*depth*) when the investments variable *LInv* is used as conditioning variable in the model. The long-run causality test is performed by setting a null hypothesis that β_{j1} is equal to zero, which is significantly rejected in most model specifications. The coefficients of the error correction terms β_{j1} are in fact stable and significant for model 1, 2 and 3 when they are specified at lag-order 1, whereas the significance of the adjustment parameters are less consistent for the same

[71] This result is not unexpected as the Johansen cointegration tests in the previous sections already rejected the hypothesis of cointegration for this model (see Table 29).

models at lag-order 4. In the latter case, the β coefficient is not significant in model 1 and it has a value larger than |1| in model 3, indicating that the model specification is not stable in the long run. The overall assessment is therefore that lag-order 1 in models 1, 2 and 3 provides much stronger evidence regarding the tridirectional long-term causality of the VECM models. The models using *LInv* as conditioning variable, the adjustment parameter is significant only in model 5 when the financial development variable *depth* is specified as dependent variable, indicating therefore a unidirectional long-term causality from *Lgdp* and *LSav* to *depth*. The analysis of the signs of the coefficient shows that *depth* as an explanatory variable is positively associated with GDP growth, savings and investments; in the models 2 and 5 where *depth* is specified as dependent variable confirms the results, showing that *LInv* and *LSav* are positively associated with financial development and vice versa. This is arguably one of the most important findings of the paper: since the previous sections have shown that weak domestic savings is considered a key constraint for future growth of the country, this paper provides evidence that promoting financial deepening can be a key driver of growth of domestic savings. The negative trends in gross savings and gross investments as a % of GDP are reflected in the signs of cointegrating equations, which show that *Lgdp* has a negative sign when *LSav* and *LInv* are specified as a dependent variables and vice versa.

Table 31: Short run Granger causality test based on Y-M procedure

Causality (individual coefficients)	***Model: 1,2,3 (p=1)[1]***	**Causality** (individual coefficients)	***Model 5 (p=2)[1]***	**Joint Causality** (combined coefficients)	***Model 1,2,3,5 (p=1, 2)***
$Depth_{t-1}$ → Lgdp	0.09	$Depth_{t-1}$ → Lgdp	0.42	Depth, LSav → Lgdp	8.26**
$LSav_{t-1}$ → Lgdp	7.59**	$LInv_{t-1}$ → Lgdp	0.42	Lgdp, LSav → depth	3.23
$Lgdp_{t-1}$ → depth	0.51	$Lgdp_{t-1}$ → depth	2.58	Lgdp, depth → LSav	4.51
$LSav_{t-1}$ → depth	1.97	$LInv_{t-1}$ → depth	1.63	Depth, LInv → Lgdp	1.89
$Depth_{t-1}$ → LSav	2.24	$Depth_{t-1}$ → LInv	0.58	Lgdp, LInv, → depth	3.92
$Lgdp_{t-1}$ → LSav	0.45	$Lgdp_{t-1}$ → LInv	5.13**	Lgdp, depth → LInv	5.13*
[1] *H_0: no Granger causality.* The column shows the Wald test χ^2 statistic					

Short-run Granger causality is tested using the T-Y procedure outlined by Toda and Yamamoto (1995) and applied empirically in several studies such as Abu-Bader and Abu-Qarn (2008), Shan, Morris, and Sun (2001) and Rousseau and Vuthipadadorn (2005) among others. The Y-M procedure uses a modified Wald test which ensures that the test statistic has an asymptotic chi-square

distribution when the lag-order selected is ($p + d$), where d is the order of integration among variables[72]. A Wald test is then performed for the zero restriction on the lag coefficients given by p[73]. This test is appropriate for a VECM framework because it can be applied independently of the order of cointegration of the model (Rousseau and Vuthipadadorn 2005).

Table 31 shows the results of the short-run causality test for both model specifications (using *LSav* and *LInv* as conditioning variables) and it looks at both the Granger causality between individual variables as well as joint causality between pair of variables and the predicted variable over the short run. The overall assessment made from Table 31 is that there is weak evidence of short term causality between the time series analyzed in the model. In fact the only significant Wald test performed shows a causal link going from $LSav_{t-1}$ to *Lgdp* in the equation that has savings as conditioning variable. There is evidence of short-term causality going from economic growth (*Lgdp*) to investments (*LInv*) when investments are used as conditioning variables. Table 31 also analyzes the joint short term causality between different combinations of variables, showing that financial development and savings jointly have a significant effect on economic growth. In the model including investments as conditioning variable, financial development and economic growth have short term causality with investments.

6. CONCLUDING REMARKS

The paper looked at the development of the financial sector in Kenya and the relation of causality with economic growth in the country. The first part of the paper reviewed the key literature on the role of finance in economic growth and explored the history of the financial sector in Kenya, from the rise of government-owned and indigenous banks after independence, to the bank failures in the '80s and '90s, financial liberalization and finally the rise of mobile banking and financial inclusion in recent years. It has shown that after the collapse of many politically-affiliated banks, Kenya has successfully reformed the financial sector and now has become at the fore-front of financial inclusion. In the last ten years the percentage of individuals with a formal bank account has increased extremely fast, from approximately 27 percent in 2006 to 67 percent in 2013.

The second part of the paper analyzed time series data and explored the relationship between financial development and growth in the country. Rather than looking at the direct relation between the two variables, this paper looked at the intermediary role of gross savings and gross investments as a percentage of GDP. The hypothesis is that rather than having a direct relation to GDP growth,

[72] All variables in this study are integrated of order 1, as shown in Table 28.
[73] Considering the estimations shown in Table 30, the maximum lag order considered is p=1 in the model with savings as conditioning variable. Instead p=2 in the model using investments as conditioning variable.

financial deepening promotes savings and investments which, in turn, contribute to economic growth. Another key innovation of this paper is that it created an index of financial development based on several variables such as liquid liabilities as a percentage of GDP, credit to the private sector as a percentage of GDP and the ratio between commercial bank assets and central bank plus commercial bank assets. These variables are widely used in the literature; however this study uses principal component analysis to create a single index variable that merges the different indicators and handles more effectively the issues of multicollinearity and over-parameterization of the models.

The empirical analysis shows a number of relevant findings. First, it has shown that gross domestic savings and gross investments as a percentage of GDP have performed rather poorly in Kenya over the last few years compared to neighboring countries such as Uganda and Tanzania, and that encouraging higher savings rates from domestic households, firms and the government is of crucial importance for the future development of the country. On the other hand, the financial development index variable *depth* shows a clear upward trend in the period between 1968 and 2012, confirming the qualitative description of the evolution of the financial sector conducted in the first part of the paper. The following sections of the paper have gone more in-depth into analyzing the relation among the variables using common time series techniques such as cointegration analysis and the estimation of the vector error correction model. The analysis of cointegration has confirmed the initial hypothesis that there is no direct long-run association between financial deepening and economic growth when the two variables are studied in isolation (without the presence of conditioning variables); the findings are however very different when we construct trivariate models which, in addition to financial deepening and economic growth, include gross savings or gross investments as a percentage of GDP. The findings reported in Table 29 show that both trivariate models are characterized by co-integration in the long-run, meaning that they have a relationship of co-variance throughout the period and deviations tend to return back to the mean over the long run. The issue of causality is then tackled separately through a vector error correction model and short-run Granger causality tests. The analysis conducted in section 5.6 shows that the trivariate model including financial development, economic growth and savings shows significant tri-directional causality between the variables. This means that each combination of variables in the trivariate model has a causal effect on the other: financial development and savings taken jointly have a causal effect of economic growth, growth and savings have a significant effect on financial development and growth and financial development have a causal effect on savings. The models also show that despite the poor performance of gross domestic savings over the last few years, financial development tends to positively affect the savings rate over the long term. These results are rather different from previous studies conducted in Kenya: as discussed in section 3, Greis et al (2009) find no evidence of causality

whereas Odhiambo (2008) finds evidence of causality going from economic growth to financial development and savings rather than the other way around. Why did this study find different results?

Arguably the main reasons is related to the econometric approach undertaken. This study differs from Greis et al (2008) in the selection of the conditioning variable: whereas their study uses trade openness as the main intermediate variable between finance and growth, this study looks at gross savings, which arguably have a stronger effect on both variables. Odhiambo (2008) on the other hand uses the saving rate in his model, however has a different way of measuring financial development: whereas this study combines several variables into a composite indicator, Odhiambo (2008) relies on a single proxy (M2 as a percentage of GDP), which is arguably a reductive way to measure financial development. Moreover, the dataset used in this paper looks at a longer period of time (1970 to 2010), whereas Odhiambo looks at the period between 1991 and 2005. As discussed in section 4.4, the Kenyan financial sector has gone through several fluctuations in the 1960s, 1970s and 1980s and a tremendous expansion after 2005, which appears clearly in Figure 10. This has certainly contributed to the significance of the results.

As a final commentary to the findings of the paper, it is important to mention the policy recommendations emerging as a result of this study. A key constraint identified in the literature concerns the low levels of gross domestic savings and the reliance of foreign savings to finance investments and capital formation. One of the key findings in this study is that financial development is positively associated and Granger causes savings over the long-run. This is likely to accelerate over the next years if the substantial growth of financial development registered in recent years (and described in section 4.4) continues at the same speed. The Government and donors alike will benefit dramatically the development of the country if they contribute to build an inclusive and efficient financial system which allocates credit to the most productive parts of the economy and help households and firms to smooth consumption and finance investments. This can be done through a number of policy measures which promote stronger competition in the banking sector and expand access to finance to the parts of the economy and society that are still completely or partially excluded.

7. LIST OF REFERENCES

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ANNEX 1: LIST OF BANKS IN KENYA

Source: CBK, 2013

		Market size index	Assets	% of market	Total deposit	% of market	Total Capital	% of market	Deposit accounts (Mil)	% of market	Loan accounts (Millions)	% of market
	Large Peer Group>5%											
1	Kenya Commercial Bank Ltd	13.54%	304,112	13.10%	223,493	13.10%	52,926	14.60%	1.283	8.09%	0.221	10.60%
2	Equity Bank Ltd	10.06%	215,829	9.30%	140,286	8.20%	42,672	11.80%	7.025	44.29%	0.782	37.30%
3	Cooperative Bank Ltd	8.74%	199,663	8.60%	162,267	9.50%	28,967	8.00%	2.326	14.67%	0.259	12.40%
4	Standard Chartered Bank (K) Ltd	8.29%	195,493	8.40%	140,525	8.20%	30,603	8.40%	0.171	1.08%	0.038	1.80%
5	Barclays Bank of Kenya Ltd	8.08%	185,102	7.90%	137,915	8.10%	29,583	8.20%	1.134	7.15%	0.273	13.00%
6	CFC Stanbic Bank Ltd	5.01%	133,378	5.70%	75,633	4.40%	18,101	5.00%	0.088	0.55%	0.031	1.50%
	Sub-Total	53.72%	1,233,577	52.94%	880,119	51.50%	202,853	56.00%	12.028	75.83%	1.604	76.50%
	Medium Peer Group> 1% &											
	< 5%											
7	NIC Bank Ltd	4.32%	101,772	4.40%	77,466	4.50%	15,065	4.20%	0.052	0.33%	0.026	1.20%
8	Diamond Trust Bank Ltd	4.10%	94,512	4.10%	72,505	4.20%	14,878	4.10%	0.092	0.58%	0.013	0.60%
9	Commercial Bank of Africa Ltd	4.08%	100,456	4.30%	79,996	4.70%	11,641	3.20%	1.064	6.71%	0.089	4.20%
10	I&M Bank Ltd	4.08%	91,520	3.90%	65,640	3.80%	16,591	4.60%	0.058	0.37%	0.007	0.30%
11	Citibank N.A.	3.42%	69,580	3.00%	44,012	2.60%	17,346	4.80%	0.002	0.01%	0.001	0.00%
12	National Bank of Kenya Ltd	3.00%	67,155	2.90%	55,191	3.20%	10,450	2.90%	0.475	2.99%	0.063	3.00%
13	Baroda Bank Ltd	1.92%	46,138	2.00%	38,382	2.20%	5,758	1.60%	0.039	0.24%	0.002	0.10%
14	Chase Bank Ltd	1.87%	49,105	2.10%	36,506	2.10%	5,101	1.40%	0.055	0.35%	0.011	0.50%
15	Bank of Africa Ltd	1.83%	48,958	2.10%	35,100	2.10%	5,010	1.40%	0.037	0.23%	0.013	0.60%
16	Prime Bank Ltd	1.71%	43,463	1.90%	36,715	2.10%	4,175	1.20%	0.023	0.15%	0.003	0.10%
17	Housing Fin. Co. of Kenya Ltd	1.49%	40,686	1.70%	22,968	1.30%	5,146	1.40%	0.054	0.34%	0.005	0.20%
18	Imperial Bank Ltd	1.44%	34,590	1.50%	27,581	1.60%	4,554	1.30%	0.041	0.26%	0.009	0.50%
19	Family Bank Ltd	1.42%	30,985	1.30%	24,630	1.40%	4,860	1.30%	1.15	7.25%	0.109	5.20%
20	Bank of India	1.08%	24,877	1.10%	18,282	1.10%	4,063	1.10%	0.014	0.09%	0.001	0.00%
21	Ecobank Kenya Ltd	1.06%	31,771	1.40%	21,475	1.30%	1,999	0.60%	0.074	0.47%	0.036	1.70%
	Sub-Total	36.82%	875,566	37.60%	656,451	38.40%	126,639	35.00%	3.229	20.36%	0.389	18.60%
	Small Peer Group<1%											
22	African Banking Corporation Ltd	0.76%	19,071	0.80%	15,255	0.90%	2,112	0.60%	0.018	0.12%	0.002	0.10%

23	Fina Bank Ltd	0.74 %	17,150	0.70%	13,747	0.80%	2,504	0.70%	0.017	0.11%	0.002	0.10%
24	Consolidated Bank of Kenya Ltd	0.66 %	18,001	0.80%	13,325	0.80%	1,574	0.40%	0.045	0.28%	0.013	0.60%
25	Gulf African Bank Ltd	0.56 %	13,562	0.60%	11,684	0.70%	1,561	0.40%	0.041	0.26%	0.005	0.30%
26	Giro Commercial Bank Ltd	0.54 %	12,280	0.50%	10,420	0.60%	1,775	0.50%	0.009	0.06%	0.002	0.10%
27	Equatorial Commercial Bank Ltd	0.52 %	14,109	0.60%	12,963	0.80%	722	0.20%	0.01	0.06%	0.005	0.20%
28	Fidelity Bank Ltd	0.48 %	11,772	0.50%	10,527	0.60%	1,185	0.30%	0.008	0.05%	0.001	0.10%
29	Guardian Bank Ltd	0.48 %	11,745	0.50%	10,374	0.60%	1,219	0.30%	0.008	0.05%	0.001	0.00%
30	Victoria Commercial Bank Ltd	0.48 %	10,323	0.40%	7,561	0.40%	2,036	0.60%	0.003	0.02%	0	0.00%
31	Development Bank of Kenya Ltd	0.47 %	13,417	0.60%	6,953	0.40%	1,634	0.50%	0.002	0.01%	0.001	0.00%
32	Habib A.G. Zurich	0.43 %	9,702	0.40%	7,748	0.50%	1,530	0.40%	0.007	0.04%	0	0.00%
33	K-Rep Bank Ltd	0.42 %	9,546	0.40%	6,650	0.40%	1,527	0.40%	0.211	1.33%	0.047	2.30%
34	Trans-National Bank Ltd	0.42 %	8,801	0.40%	6,535	0.40%	1,834	0.50%	0.037	0.23%	0.004	0.20%
35	First Community Bank Ltd	0.41 %	9,959	0.40%	8,833	0.50%	1,078	0.30%	0.047	0.30%	0.002	0.10%
36	Paramount Universal Bank Ltd	0.32 %	7,255	0.30%	6,084	0.40%	1,136	0.30%	0.01	0.06%	0.001	0.10%
37	Habib Bank Ltd	0.32 %	7,014	0.30%	5,195	0.30%	1,348	0.40%	0.004	0.03%	0	0.00%
38	Oriental Commercial Bank Ltd	0.31 %	6,220	0.30%	4,806	0.30%	1,385	0.40%	0.006	0.04%	0	0.00%
39	Credit Bank Ltd	0.29 %	6,407	0.30%	4,781	0.30%	1,179	0.30%	0.009	0.05%	0.002	0.10%
40	Jamii Bora Bank Ltd	0.27 %	3,480	0.10%	1,213	0.10%	2,093	0.60%	0.098	0.62%	0.013	0.60%
41	Middle East Bank (K) Ltd	0.26 %	5,870	0.30%	3,907	0.20%	1,124	0.30%	0.002	0.01%	0	0.00%
42	UBA Bank Kenya Ltd	0.18 %	2,924	0.10%	1,343	0.10%	1,219	0.30%	0.003	0.02%	0	0.00%
43	Dubai Bank Ltd	0.15 %	2,584	0.10%	1,361	0.10%	917	0.30%	0.006	0.04%	0	0.00%
44	Charterhouse Bank Ltd	0.00 %	0	0.00%	-	0.00%	-	0.00%	0.005	0.03%	0	0.00%
	Sub-Total	9.46 %	221,192	9.50%	171,264	10.00 %	32,691	9.00%	0.605	3.81%	0.102	4.90%
	Grand-Total	100%	2,330,335	100%	1,707,834	100%	362,182	100%	15.861	100%	2.096	100%
	Market share index is the composite of net assets, deposits, capita			l , number of loan accounts and number of deposit accounts								
	Source: Banks Published Financial Statements											

ANNEX 2: LAG SELECTION FOR ADF AND VECM MODELS

LSav (1)

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-2.248	0.070878	0.191059	0.206368	0.235952			
1	2.38895	9.2739*	1	0.002	.057233*	-.022879*	.00774*	.066907*
2	2.39091	0.00391	1	0.95	0.060714	0.035829	0.081758	0.170508
3	2.49358	0.20534	1	0.65	0.064045	0.088613	0.149852	0.268185
4	4.1982	3.4092	1	0.065	0.061509	0.047165	0.123714	0.27163

Lgdp (2 and 4)

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-36.5058	0.288841	1.59599	1.61081	1.63536			
1	37.8569	148.73	1	0	0.012732	-1.52582	-1.4962	-1.44709
2	40.2775	4.8413	1	0.028	0.011986	-1.58628	-1.54184	-1.46818*
3	40.5231	0.49107	1	0.483	0.01238	-1.55417	-1.49492	-1.39671
4	42.9756	4.9052*	1	0.027	.011643*	-1.61598*	-1.54192*	-1.41916

LInv (1)

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	17.6249	0.029288	-0.6927	-0.67797	-0.65372			
1	28.4055	21.561*	1	0	.019486*	-1.10023*	-1.07077*	-1.02226*
2	28.9459	1.0808	1	0.299	0.019865	-1.08108	-1.03689	-0.96413
3	29.5454	1.1988	1	0.274	0.020204	-1.06439	-1.00546	-0.90846
4	29.8068	0.52293	1	0.47	0.020843	-1.03362	-0.95996	-0.8387

Depth (1)

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-62.2647	1.38454	3.16324	3.1785	3.20546			
1	-31.6315	61.266*	1	0	.314674*	1.68158*	1.71211*	1.76602*
2	-31.5677	0.12763	1	0.721	0.32982	1.72839	1.77418	1.85505
3	-31.5584	0.01869	1	0.891	0.346703	1.77792	1.83898	1.94681
4	-31.1016	0.9136	1	0.339	0.356477	1.80508	1.88141	2.01619

Lgdp depth and LSav (1 and 4)

lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-28.0097	0.001394	1.9381	1.98365	2.07552			
1	17.0808	90.181	9	0	.000147*	-.317553*	-.135359*	.232098*
2	25.2691	16.376	9	0.059	0.000157	-0.26682	0.052023	0.695073
3	28.3272	6.1163	9	0.728	0.000238	0.10455	0.560034	1.47868
4	40.6923	24.73*	9	0.003	0.00021	-0.10577	0.486362	1.6806

Lgdp depth and LInv (2 and 4)								
lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-50.6287	0.002932	2.68143	2.72723	2.8081			
1	25.8281	152.91	9	0	0.000101	-0.69141	-.508214*	-.184743*
2	32.4146	13.173	9	0.155	0.000115	-0.57073	-0.25014	0.315934
3	44.3079	23.787	9	0.005	0.000101	-0.71539	-0.25741	0.551266
4	57.1873	25.759*	9	0.002	.000087*	-.909367*	-0.31399	0.73729

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Essay 4

Bank Financing of SMEs in Kenya

1 INTRODUCTION

The development of small and medium enterprise (SME) finance in low-income countries has become a core goal for both policymakers and donors over the two decades. Since SMEs are known to play a central role in employment creation and economic development, a growing number of donors and development financial institutions have provided credit guarantee schemes and credit lines to help local banks develop their SME finance portfolios and incentivize small business lending. For instance, in the last five years a large number of Kenyan banks have engaged with institutions such as the International Finance Corporation (IFC), the Africa Development Bank (AfDB), the German development bank (KfW) and many others, to better manage their risk in the segment of small businesses and grow their service provision. A considerable volume of academic literature has developed as well. The key objective of many studies is to understand which types of banks are more likely to engage successfully with small firms, the lending technologies that maximize the efficiency of credit transactions and how different financial market structures can affect, both positively and negatively, the development of SME finance in low income countries (Beck, Demirguc-Kunt, and Pería 2011; Shen et al. 2009; Ayyagari, Beck, and Demirguc-Kunt 2007; de la Torre, Martínez Pería, and Schmukler 2010; Canales and Nanda 2012; Beck and Cull 2014).

Two research paradigms have emerged in the SME finance literature. The “conventional” paradigm emphasizes the tendency of large financial institutions, especially the foreign ones, to engage with large corporate clients that are transparent and can be assessed with sophisticated quantitative credit risk technologies. On the other hand, small and domestic banks are believed to be better positioned to engage with small firms that are informationally opaque. In this paradigm, large banks are hypothesized to rely more heavily on ‘‘hard” quantitative information such as financial ratios and audited financial statements, collateral values from the registries, and credit scores (Beck, Demirguc-Kunt, and Pería 2011). On the other hand, loan officers at small institutions are believed to have more flexibility and to rely more heavily on ‘‘soft” qualitative information such as personal contacts with the clients and interactions with the community where the firms operate (Elyasiani and

Goldberg 2004). A recent wave of empirical studies however questioned the core arguments of the conventional paradigm. In particular, de la Torre, Martínez Pería, and Schmukler (2010), Beck, Demirguc-Kunt, and Pería (2011) and Canales and Nanda (2012) studied banks' involvement with SMEs in several developed and emerging markets showing that many core pillars of the conventional paradigm are no longer valid. In particular, they show that large banks have a growing appetite for the SME market and that relationship lending is no longer the sole lending technology in this segment. Moreover, as it will be shown in the literature survey, some studies have shown that decentralized banks are not necessarily more inclined to engage with SMEs, in particular if they face little competition at the local level.

This study wants to test these hypotheses in the context of SME finance in Kenya. The empirical analysis is based on data collected in two survey rounds by the author in a research project named *FinAccess Business*, which saw the collaboration of Financial Sector Deepening Kenya (FSD-K), the World Bank (WB) and the Central Bank of Kenya (CBK)[74]. The first survey round was conducted in 2012 and collected data on SME financing as of December 2011 and December 2009. Moreover, a series of qualitative interviews was conducted with key players in the market. In 2014, a second survey round was conducted collecting data for 2013 and addressing various other questions such as the composition of SME finance portfolios, the lending technologies used by the banks and the characteristics of the loans such as interest rates, maturity and sectoral distribution of lending[75]. This research project is the first comprehensive effort to estimate the size of bank financing to SMEs in Kenya and analyze its characteristics. The different survey rounds had different response rates from the banks. The data captures a minimum of 80 percent to a maximum 94 percent of the credit market in the different survey rounds, therefore being highly representative of the Kenyan market.

The findings of the research confirm hypotheses from both the "conventional" and "new" paradigms in SME finance. The empirical section shows that the market for SME finance is growing rapidly in Kenya and all banks seem interested to develop their engagement with SMEs regardless of their size (small, mid-size or large) or ownership (domestic or foreign). In terms of absolute lending to SMEs, the major players in the market are mid-sized banks, while small banks tend to have the highest level of exposure to SMEs. Between 2009 and 2013, SME lending by foreign banks has increased in absolute terms but has decreased relative to domestic banks, confirming a growing role played by local players in the SME market. While the overall SME finance portfolio has increased dramatically

[74] The project team consisted of Gunhild Berg (World Bank), Michael Fuchs (World Bank), Haggar Olel (FSD-Kenya), the late Ravindra Ramrattan (FSD-Kenya) and Smita Wagh (World Bank).
[75] The questionnaires used for the 2012 and 2014 surveys are attached in Appendix 2 and Appendix 3 respectively.

during the period, there are concerns over the sophistication of this portfolio and in particular on the over-reliance of mid-sized banks on overdrafts as their main lending technology. While overdrafts can be useful when businesses need fast access to liquidity, this lending product can be inefficient as well as expensive and it can hinder the banks effort to innovate and develop new financial products tailored to the local needs.

The next sections are organized as follows: Section 2 reviews the literature and explores the key arguments of the "conventional" and "new" paradigms in SME finance. Section 3 explains the data collection process and methodology used in the empirical analysis. Section 4 analyzes the data and shows the key developments and trends of SME finance in Kenya between 2009 and 2013. Section 5 concludes.

2 LITERATURE SURVEY

2.1 LENDING TECHNOLOGIES IN SME FINANCE

In one of the most comprehensive conceptual frameworks on SME finance, Berger and Udell (2002) show that in order to prevent the market failures that lead to credit rationing (Stiglitz and Weiss 1981) and over-lending (De Meza and Webb 1987) banks employ four main lending technologies: (i) financial statement lending, (ii) asset-based lending, (iii) credit scoring, and (iv) relationship lending. While the first three are considered *transaction-based technologies* based on hard information such as audited accounts or standardized credit scores; *relationship lending* relies on ''soft" information collected over time through repeated personal interactions between credit officers and the borrowers. Since "hard information" normally comes in a numeric format while "soft information" is passed through verbal interaction and personal knowledge of the borrowers, transaction-based technologies are easier to transfer and less costly compared to relationship lending. The latter tends to be embedded in social ties and therefore more difficult to transfer between bank employees over time (Shen et al. 2009).

Banks that engage in *financial statement lending* base their loan appraisals on the evaluation of hard information such as the firm's audited accounts, the strength of the balance sheet and other certified income statements (Berger and Udell 2002). Two key requirements are that (i) firms must obtain audited financial accounts from reputable accounting firms and (ii) the financial ratios calculated from the statements must be strong. Both of these requirements tend to be problematic for small businesses, which often are unable to provide financial statements and transparent

accounting records. This technology is therefore more effective in the context of transparent large-scale or mid-scale corporate clients or small firms that have a high degree of formality (Berger and Udell 2006). While financial statement lending relies on audited accounts, *asset-based lending technologies* are based on the availability of collateral, either fixed assets or movable assets such as inventories and accounts receivables (Haselmann, Pistor, and Vig 2010; Berger and Udell 2002). In recent years there have been attempts to develop trade-based financial products such as invoice discounting or factoring, which rely entirely on the accounts receivable of the firms (see Klapper 2006; Summers and Wilson 2000), however as it will be shown later in the paper, these technologies have had limited penetration in African markets like Kenya, especially because of the limited extent of the SME's involvement in supply-chains and the weakness of the legal framework (Berg and Fuchs 2013). Asset-based lending can be both costly and risky for the banks especially in countries that have poor collateral registries and weak enforcement mechanisms.

The third type of transaction-based lending is the *credit scoring technology,* which uses discriminant analysis and other statistical techniques that calculate a score for the expected quality of the future loan based on the borrower history and the characteristics of the firm and/or the entrepreneur (Feldman 1997; Frame, Srinivasan, and Woosley 2001). Credit scoring was initially used only in the context of consumer lending in the US, but in the late 1990s it was extended to small business finance as well. In a recent survey conducted by Berger, Cowan, and Frame (2011) in the US credit market, the authors show that credit scoring for small businesses is surprisingly used more by community banks than large banks [76], and that the scoring is based mostly on the consumer credit scores of the owners of the business, rather than the broader credit score of the business that include the evaluation of both the firms and their owners.

Finally, *relationship lending* uses information on the firm and its owner(s) through repeated personal interactions with the borrower. Loan officers observe the savings trends or the previous lending transactions of the client and provide a qualitative assessment of the expected risk and quality of the loan. In case of community banks, loan officers may also gather additional information through relationships with the local community or firms in supply chain such as clients and suppliers. This technology has proved to be crucial for the development of credit markets in many low and middle income regions such as Sub Saharan Africa (Beck and Cull 2014) and Latin America (Clarke et al. 2005).

Berger and Udell (2006) expanded their conceptual framework in a more recent paper and added new emerging technologies in the SME finance space. In addition to the four technologies described above, they added *factoring*, which is a technology where a lender (factor) purchases the accounts receivables from a firm at a discount. We mentioned this technology earlier under "asset-

[76] Community banks are defined as institutions with assets value below 1 billion USD.

based financing", however Berger and Udell (2006) argue that this lending technology differs in two ways: first, factoring relies on the accounts receivable unlike asset-based lending that often uses inventory as collateral. Second, the underlying assets are de facto sold to the factor (or lender) not just used as collateral. *Factoring* represents a unique lending technology because it merges a variety of services that include a financing component, a credit component and a payment collection component. It can be very useful in the context of SME finance because the quality of the credit depends on the *obligor* (i.e. the firm billed for the services) rather than the firm expecting the payment. This is therefore suitable in the context of SMEs in the supply-chain of large enterprises (Klapper 2006). Other lending technologies added by Berger and Udell (2006) include leasing, a lending instrument where the lender (also known as "lessor") purchases fixed assets and simultaneously enters into a rental agreement with the borrower (lessee). And *trade credit* which is the common credit agreement between players of a supply-chain.

2.2 DETERMINANT OF THE BANKS INVOLVEMENT WITH SMES

Because of the growing interest in SMEs as drivers of growth and employment creation, a growing body of empirical literature analyzed the nature of the banks' involvement in the segment. The literature generally focuses on two levels of analysis: a micro-level interrogation of the lending technologies used by the banks and how they affect the involvement with small firms. These studies often analyze how bank *size* and *ownership* affect the capacity to finance SMEs. At a meso-level, numerous studies look at market structure and how concentration and competition can affect the development of the SME market. In this regard, there has been considerable interest in understanding the role of bank decentralization (e.g. decentralization of loan appraisals, risk management, decision-making, etc.) and local financial development as determinants of SME finance growth. Two main paradigms have emerged in the literature: a "conventional" paradigm in the 1990s and early 2000s and a "new" paradigm emerged in the last ten years (Berger and Udell 2006; de la Torre, Martínez Pería, and Schmukler 2010; Beck, Demirguc-Kunt, and Pería 2011). Next sections will illustrate the main arguments proposed by both strands of literature.

2.2.1 The "Conventional" Paradigm

If we simplify the overall picture emerged in the early literature in the 1990s and early 2000s, we can summarize the "conventional wisdom" in the depiction of two broad bank profiles: the large, foreign institution that uses sophisticated credit scoring technologies and favors large firms and high net worth individuals. At the opposite end there are small community banks that rely on relationships with the local business community and domestic SMEs. Clearly the latter was considered more

important in the SME finance space, whereas large, foreign institution were considered fundamentally uninterested in financing small businesses (see Berger and Udell 1995; Berger et al. 1995; Mian 2006).

A first key argument in the conventional paradigm is the so-called *"small bank advantage*" (Elyasiani and Goldberg 2004; Jayaratne and Wolken 1999; Carter, McNulty, and Verbrugge 2004; Shen et al. 2009). Many empirical studies in the 1990s found that small-scale banks tend to have higher exposure to SMEs because of their stronger ties with the local community and reliance on relationship lending (Berger and Udell 1995). Studies such as Berger et al. (1998) show that the processes of mergers and acquisitions of banks in the US market led to a relative reduction of small business finance, confirming that the increase in size of a the bank has a negative effect of SME lending. De Haas, Ferreira, and Taci (2010:390) argue that there could be an implicit segmentation based on the comparative advantage of financial institutions: "*large banks may have a comparative advantage in lending to large customers as they can exploit scale economies in evaluating the hard information that is available on such customers. Small banks, however, may not be able to lend to large companies because of size limitations. They are, for instance, more constrained by regulatory lending limits. Small banks may also have a comparative advantage in processing soft information on SMEs*". A related strand of literature analyzed the role of bank ownership in SME finance and found that foreign banks are less likely to engage with SMEs than domestic banks. For example, Detragiache, Tressel, and Gupta (2008) looked at the effect of foreign bank involvement on financial sector development in low-income countries from both a theoretical and empirical point of view. They find evidence that low-income countries with a stronger presence of foreign banks have weaker credit and slower growth of credit to GDP. They also find that loan loss provisions and loan loss reserves are higher in domestic banks than in foreign banks (Detragiache, Tressel, and Gupta 2008).

The second core argument in the conventional view is the so-called *"soft information" hypothesis*. Several studies have demonstrated the central role of relationship banking in both high income countries such as Europe (Degryse and Van Cayseele 2000; Elsas and Krahnen 1998) and the United States (Berger et al. 1995) as well as a variety of emerging markets (de la Torre, Martínez Pería, and Schmukler 2010) and Sub Saharan Africa (Beck and Cull 2014). The overall view is that small scale banks are more embedded in the local economies and therefore can exploit a market niche where strong ties between borrowers and lenders are the only solution to the problem of information asymmetry and ''opaqueness" of small firms (Berger and Udell 2002). The notion of "informational opacity" is one of the key concepts in SME finance, referring to the difficulty of financial institutions to determine whether the loan applicants have viable investment plans and whether they are likely to re-pay the loan due to moral hazard. In much of the existing literature ''relationship lending" is considered the only way to deal with informational opaqueness: if firms can't provide transparent and

credible information on their activity, then banks have to rely on repeated, personal interactions with the firms to assess their ability to repay. Udell (2008) conducted a comprehensive analysis of relationship lending and find that its effectiveness depends on numerous factors. The author studies how relationship lending is affected by the banks' overall risk-management strategies, the structure of the market and bank consolidation processes as well as macroeconomic aspects such as monetary policy. The overall conclusion is that the relative importance and success of relationship lending depends on the financial architecture of both the banks internal processes as well as the market. It cannot therefore be considered an absolute "best practice" in SME lending.

Another common factor analyzed in the literature concerns the role of centralized/decentralized decision-making and the effect on the SME finance market: the common view is that centralized banks tend to be less inclined to lend to small firms. For example Berger et al. (2005) investigated whether proximity of firms to large or small banks in the US affects the likelihood of being credit constrained. They find evidence that SMEs operating in regions with a majority of large-scale banks are more likely to be credit-constrained compared to firms located close to decentralized banks (Shen et al. 2009). Mian (2006) conducted another large scale study and reached similar results. Using a panel of over 80,000 loans over seven years, the author shows that banks with larger cultural and geographical distance between the bank's headquarter and the branches are less likely to lend to firms in contexts of informational opacity. These banks also tend to avoid renegotiating loans and are less likely to succeed at recovering non-performing loans.

2.2.2 Towards a new Paradigm

A new strand of empirical studies has questioned the traditional wisdom in SME finance and analyzed how banks' involvement with SMEs is evolving over time. This section will review a number of studies conducted in recent years that either contradict or provide more nuanced views on the arguments proposed in the early literature described above.

One of the most important empirical investigations was conducted by Beck, Demirguc-Kunt, and Pería (2011) who sampled 91 banks in 45 countries. Their study addresses three main issues: (i) they examine whether bank ownership types (foreign banks, domestic banks and government banks) use different lending technologies and organizational structures in lending to SMEs; (ii) they test the hypothesis that foreign banks are more likely than domestic private banks to use transaction based technologies and centralized organizational structures. (iii) Finally, they look at the quality of the regulatory and institutional environment and its relation to the development of SME finance in the banking sector. One of the basic model used in the empirical analysis is formalized as follows:

$$Z_i = \alpha_0 + \alpha_1 Foreign_i + \alpha_2 DomesticPrivate_i + \alpha_3 Dev_i + \varepsilon_i \quad (23)$$

where *i* refers to the financial institution and the dependent variable Z_i captures lending technologies and bank decentralization variables. The model uses different estimation techniques depending on the dependent variable used. It is estimated through a Probit model in four cases when the dependent variable takes a binary format: (i) reliance on relationship lending, (ii) reliance on credit scoring, (iii) decentralization of loan application approvals and (iv) decentralization of risk management. The model is estimated through conventional OLS regression when the variable Z_i measures the ratio between collateralized loans and the banks' overall SME portfolio. The explanatory variables in the model are very simple: they look at whether the bank's ownership is local ($DomesticPrivate_i$) or foreign ($foreign_i$).The variable Dev_i is a dummy equal to 1 if the bank operates in a developing country and 0 otherwise.

While their empirical findings confirm the conventional view that large banks tend to use transaction-based lending technologies and to be more centralized compared to small banks, the authors show that arms' length technologies are no longer restricted to the corporate segment. Beck, Demirguc-Kunt, and Pería (2011) therefore argue in favor of an emerging paradigm in the field of bank financing of SMEs where relationship lending is no longer the driver of SME finance development. Their analysis also do not find a significant correlation between relationship lending and cheaper or expanded lending portfolios to SMEs and indicates that government-owned banks tend to place themselves in-between foreign and domestic banks: while they tend to decentralize key decision-making processes (similarly to domestic banks) they rely a lot more on hard information and collateral in SME finance like foreign banks.

Another study by de la Torre, Martínez Pería, and Schmukler (2010) study a sample of 48 banks and one leasing company in 12 emerging markets with data collected with a survey questionnaire and qualitative interviews with bank managers. The research questions in this paper are similar to the ones in Beck, Demirguc-Kunt, and Pería (2011) and try to understand whether the main arguments of the conventional SME finance paradigm hold true: (i) whether banks in general lack interest in SME finance and (ii) whether small, domestic banks have to rely entirely on relationship lending to deal with SMEs.

The results of their research shows that both hypotheses do not hold true. First, contrarily to the widespread view that banks are not interested in small enterprises, they find that the majority of banks have a growing appetite for SMEs because this segment is very profitable and because there is growing competition in other market segments, particularly in retail and corporate finance. The authors propose an interesting view on why emerging markets have a growing appetite for SMEs, which we'll call the "middle market hypothesis": "*as the public sector and large corporations gain*

access to local and international capital markets and as competition in the retail sector (among banks and retail chains) increases, banks have greater incentives to incur the switching costs needed to pursue new business in the ‘‘middle” market of SMEs. In this context, SMEs emerge as a strategic sector for most banks—including large and foreign banks, not just small and niche banks. As a result, the SME market in the sample countries has become competitive, yet is still far from saturated” (De la Torre, Martínez Pería, and Schmukler 2010:2281). The second finding of the paper confirms Beck, Demirguc-Kunt, and Pería (2011) showing that banks no longer rely only on relationship lending when dealing with SMEs. As shown by Berger and Udell (2006) in the previous chapter, banks are increasingly applying diverse lending technologies that include arms-length lending (e.g. credit scoring, standardized risk-rating tools, asset-based lending, factoring, etc).

Other studies have questioned the relation between bank's decentralization and SME lending. In particular, an important empirical research conducted in China by Shen et al. (2009) have studied how banks' involvement with SMEs is affected by the decentralization of decision-making and risk-management as well as the size of the bank and its incentive structures. The authors collected the data in a retrospective survey for the period between 2001 and 2004 in 12 provinces. These were chosen on the basis of geographical location and economic development. An interesting innovative feature of this research is that it collected branch-level data instead of bank level-data, as it is normally done in most studies. Shen et al. (2009) argue that this choice is necessary in a market like China because its financial system is characterized by very few large banks with Government ownership. However the authors observe relevant heterogeneity between branches within the same banks. This is because local governments and law enforcement mechanisms vary widely in different counties and each branch tends to maintain a strong degree of independence from other branches and the headquarters

Shen et al. (2009) find evidence that the decentralization of decision-making processes and an incentive structure linking the loan managers' wages to loan quality has a strong positive effect on the size of the SME portfolio. The authors confirm the central role of relationship lending as the key technology in SME finance, but with an important caveat concerning the role of decentralization: "*If a local bank has higher self-loan approval rights, if the upper branch provides greater pressure in making profit through increasing the weight of profit in performance evaluation, and if wages are linked with loan quality and cost control measures are undertaken, then the local bank tends to work hard on collecting and using soft information to find high-quality customers*".

Finally, a recent study by Canales and Nanda (2012) in Mexico provides a very nuanced view of how the bank's organizational structure (e.g. centralization and decentralization) and market competition affect the banks' involvement with SMEs. Using a loan-level dataset on SMEs, the authors

find that the conventional argument that decentralized banks are more inclined to lend to SMEs does not always hold true. Canales and Nanda (2012) build on the theoretical arguments proposed by Rajan (1992) and hypothesize that branch managers in decentralized banks are more responsive to the local competitive environment. This can be beneficial when there is high competition at the local level. However, if a bank has market power in a local context, decentralized banks are in the position of extracting more surplus from small firms than centralized banks and charging higher rates. The variable on the bank's organizational structure is measured through extensive interviews with managers at branch and headquarter levels that aim to understand the degree of autonomy of local branches in the decision-making processes.

The findings of the empirical research substantially confirm the theoretical hypotheses. Canales and Nanda (2012) find that small firms which rely on soft information tend to obtain larger loans from decentralized banks. However, in the context of concentrated markets with low degrees of bank competition, decentralized banks are more likely than centralized banks to "cherry pick" their customers and to provide smaller loans at higher interest rates[77]. The authors argue that: "*the relative benefit of decentralized bank structures for small business lending may depend on the institutional and competitive environment in which banks are located*".

3 DATA AND METHODOLOGY

This study uses a combination of data sources and methodologies that aim at understanding the development of SME finance sector in Kenya and the characteristics of bank financing to SMEs. The core source of data was collected between 2012 and 2014 in a project conducted by the author with the World Bank, Financial Sector Deepening Kenya (FSD-K) and the Central Bank of Kenya (CBK) in a research project named *FinAccess Business*, which aims to shed light on the demand and supply of SME finance in Kenya[78].

Thanks to a close partnership with the CBK, a comprehensive survey questionnaire was distributed to all 44 licensed commercial banks in Kenya in 2012 and 2014. The first survey instrument was composed of 65 questions in four main areas of analysis: (i) the extent of the banks' involvement with SMEs; (ii) the profile of SME clients; (iii) drivers and obstacles to SME and micro-enterprise financing, including the role of government policies and donor programs; (iv) the banks' SME business models, including marketing strategies, the array of financial products offered to SMEs and the main

[77] The authors show that this is particularly true for small firms in the service sector which are more unlikely to provide hard information to the banks.
[78] This paper focuses only on the supply-side data from *FinAccess Business.*

risk management models. The project team subsequently conducted in-depth interviews with bank staff directly responsible for the SME business. Overall 34 banks completed the questionnaire and 17 banks were purposively sampled for an interview on the basis of market share and their involvement with SME lending. One of the two licensed Credit Reference Bureaus was interviewed as well. For insights into alternative sources of finance, interviews were held with Acumen Fund, Grassroots Business Fund, CIC Insurance and Faulu Kenya DTM Limited (a deposit-taking microfinance institution). For information on the involvement of government and donors in the SME finance space, representatives from the Ministry of Finance, International Finance Corporation (IFC), USAID and Proparco were interviewed with the rest of the information being collated through a desk review of publicly available information[79].

A second wave of research was conducted between June and August 2014. The objective of the second round was to update the credit data provided in 2012 and understand better the composition of SME finance portfolios with more detailed and recent figures. In order to increase the willingness to share information, it was stressed in the questionnaire and interview process that all data provided by the banks would remain anonymous and be presented only in an aggregated fashion. A total of 25 institution completed the questionnaire in the second survey round, representing approximately 81 percent of the credit market. The methodology used for the report is comparable to a study conducted in South Africa (Fuchs et al. 2011) and similar work has also been undertaken by the World Bank in analyzing SME finance in Nigeria, Rwanda and Tanzania. Part of the 2012 survey data was used for a cross-country comparison of SME finance in five Sub Saharan African countries (Berg and Fuchs 2013). Additional data analyzed in this paper comes from the Central Bank of Kenya and from the audited financial accounts published by the financial institutions at the end of the year and aggregated by Think Business[80].

From a methodological point of view, the data in this paper are analyzed through descriptive statistics and interpretation of time-series trends observed in the data. While previous studies such as Beck, Demirguc-Kunt, and Pería (2011) and de la Torre, Martínez Pería, and Schmukler (2010) used probit or OLS regression analysis to address similar questions, the main difference is that their studies focused on multiple countries and used larger cross-sectional sample sizes, whereas this paper has a smaller sample size but over a period of 4 years (2009-2013). The main analysis is therefore conducted through descriptive time-series analytics and comparisons of banks categorized by size and ownership.

[79] The first survey round collected data on bank financing of SMEs as of December 2011 and December 2009. Note that this essay focuses on key issues identified in the literature survey, not on all issues addressed in the survey.

[80] See http://www.thinkbusinessafrica.com/

4 EMPIRICAL FINDINGS

4.1 OVERVIEW OF THE FINANCIAL SECTOR IN KENYA

While this study focuses prevalently on commercial banks, it is important to provide an overview of the overall financial sector in Kenya and see what other market players are active in the SME finance space. The formal financial sector consists of a large banking sector, a relatively well-developed securities market, a large number of insurance and retirement benefits schemes, deposit taking microfinance banks (MFBs) and deposit taking savings and credit cooperatives (DTSs). As shown in Table 32, the main regulated credit providers are the 44 commercial banks (43 commercial banks and 1 mortgage finance company) which are by far the largest in terms of assets and credit to the private sector; there are also nine MFBs which target mostly the informal microenterprises and lower income consumers. Commercial banks and microfinance banks are prudentially regulated by the Central Bank of under a set of statutes such as the Banking Act, the Central Bank Act, Microfinance Act and the prudential guidelines and regulations. Deposit-taking savings and credit cooperatives on the other hand are regulated by the SACCO regulatory authority (SASRA). The mobile network operators have also become financial sector players through the provision of payments and more recently acting as a channel for loans and savings products.[81] They are regulated by the National Payments System Division within the CBK and the Communications Commission of Kenya (CCK).

Table 32: Prudentially regulated financial institutions in Kenya

Type of institution	**Regulatory Authority**	**Number of institutions**	**Total assets** (KSh billion)	**Loans/ advances** (KSh billion)	**Non-Performing Loans (%)**	**Lending to SMEs** (KSh billion)
Commercial banks	CBK	44	2730	1531	5.2%	345
MFBs	CBK	9	42	27	9.2%	NA
DTSs	SASRA	184	242	185	4.7%	NA

Sources: CBK (2014), SASRA (2014), own data.

4.2 SEGMENTATION WITHIN THE BANKING SECTOR: A MATRIX BY SIZE AND OWNERSHIP

This section shifts the attention from the overall financial market to the specific analysis of commercial banks. Following the analysis conducted in the literature survey, Table 33 creates a 3X3

[81] Mshwari is a product launched by a commercial bank (Commercial Bank of Africa) and Safaricom (a major telecommunications company) in 2012. It provides credit and savings to consumers only through mobile phones.

matrix of the banking sector and categorizes financial institutions based on their size and shareholding structure. The table shows that in terms of number of institutions, the majority of banks in Kenya are small-sized: 16 institutions are indigenous (domestic) banks, 7 are foreign owned and 2 have Government participation. There are 13 middle-sized banks, 5 of which are domestic, 6 foreign, and 2 have Government participation. Finally there are 6 large-scale banks, 2 of which 2 are local, 2 foreign and 2 have Government participation. The size of financial institutions are categorized according to the CBK 'market-size index'[82] which divides the 44 banks in three categories: 6 large banks (55 percent of the market), 15 medium-sized banks (36 percent) and 23 small banks (9 percent).

Table 33: A 3x3 matrix of the Kenyan commercial banking sector in 2014

	Local banks	**Foreign Banks**	**Banks with government participation**
Small	• African Banking Corporation Ltd. • Jamii Bora Bank Ltd. • Credit Bank Ltd. • Charterhouse Bank Ltd. • Dubai Bank Kenya Ltd • Equatorial Commercial Bank Ltd. • Fidelity Commercial Bank Ltd. • Fina Bank Ltd. • Giro Commercial Bank Ltd. • Guardian Bank Ltd. • Middle East Bank (K) Ltd. • Oriental Commercial Bank Ltd. • Paramount Universal Bank Ltd. • Prime Bank Ltd. • Trans-National Bank Ltd. • Victoria Commercial Bank Ltd.	• Habib Bank A.G. Zurich • Habib Bank Ltd. • UBA Kenya Bank Limited • K-Rep Bank Ltd. • Gulf Africa Bank (K) Ltd • First Community Bank	• Consolidated Bank of Kenya Ltd. • Development Bank of Kenya Ltd.
Medium	• Commercial Bank of Africa Ltd. • Chase Bank (K) Ltd. • Family Bank Ltd. • Imperial Bank Ltd. • I&M bank • NIC Bank Ltd.	• Bank of India • Citibank N.A. Kenya • Bank of Baroda (K) Ltd. • Diamond Trust Bank Kenya Ltd. • Ecobank Ltd • Bank of Africa (K) Ltd.	• Housing Finance Ltd. • National Bank of Kenya Ltd.
Large	• Equity Bank • Cooperative Bank of Kenya	• Barclays Bank of Kenya • Standard Chartered Bank (K) Ltd.	• Kenya Commercial Bank Ltd. • CFC Stanbic Bank Ltd.

[82] The market-size index is based on net assets owned by the banks, their total deposits, total capital, number of deposit accounts and total number of loan accounts. For more details see CBK (2014).

It is important to note that out of the six banks with Government participation, only three of them have 100 percent Government ownership (Consolidated, National Bank, and Development Bank of Kenya), while the three other banks only have partial Government participation. The most important presence of the Government is in the Kenya Commercial Bank (KCB), the largest in Kenya by assets, where the Government moved from having full ownership in in 1970, to 35 percent in 2004. Two more rounds of shareholding sales in 2008 and 2010 reduced Governments shareholding to 17.7 percent. CFC Stanbic on the other hand has a minimal participation of the Government (approximately 1 percent) and Housing Finance Ltd has a specific focus on mortgages and therefore it is not analyzed in the SME finance section of this paper. In the analysis of the survey data starting from and subsequently section 4.3, the Government owned banks will be categorized as domestic banks for two main reasons: first, because the largest banks with Government participation are mostly owned by private shareholders (e.g. CfC Stanbic and KCB). Second, because the group is very small and the degree of Government participation is very heterogeneous. It is therefore difficult to track how Government participation affects the overall involvement with SMEs. Moreover, since we assured the confidentiality of the data to all respondents, we decided not to make small groupings of banks where the trends of particular institutions would be easy to identify.

Table 32 looks at key indicators and the overall market structure in a 3x2 matrix[83], focusing on aspects such as the share of assets, share of total number and value deposits as well as the important figures on the credit market such as percentage of the credit market and average loan size. While these data do not focus specifically on small business finance, they are important because it reveal the overall infrastructure of the financial sector in Kenya and can provide a more in-depth picture on market concentration and segmentation.

Table 34: Characteristics of Kenya financial sector by size and ownership of the banks

		Small banks	**Mid-sized banks**	**Large banks**
a. % of total assets	*Domestic*	6.8%	21.6%	30.7%
	Foreign	3.8%	13.9%	23.2%
b. % of total deposits (value)	*Domestic*	7.6%	21.6%	31.0%
	Foreign	4.0%	13.9%	21.9%
c. % of total deposit accounts	*Domestic*	1.8%	8.6%	66.9%
	Foreign	2.5%	11.4%	8.8%
	Domestic	706,331	948,864	94,199

[83] The 3x3 matrix has transformed into a 3x2 matrix because Government banks are analyzed as domestic banks not as an independent category.

d. Average value of deposits per account (KSh)	*Foreign*	834,880	828,256	708,550
e. % of total loan accounts	*Domestic*	1.5%	12.7%	62.6%
	Foreign	3.0%	3.3%	17.0%
f. Average loan size (KSh)	*Domestic*	4,768,925	4,076,940	557,858
	Foreign	2,512,433	9,299,921	2,061,834

Source: Central Bank of Kenya (2014), Think Business (2014)

In terms of assets, Table 32 shows that the 6 large banks own a total of almost 53 percent of the total assets in the financial system, whereas middle-sized banks own a total of almost 36 percent and small banks less than 11 percent. If we segment the market by bank ownership, we see that domestic banks have the largest share, having approximately 59 percent of total assets while foreign banks own about 41 percent. The table shows that the aggregate value of assets owned by domestic mid-sized banks (21.6 percent) is only slightly smaller than those owned by large foreign institutions (23.2 percent), confirming once again the dominant role of domestic banks in the Kenyan financial system.

Table 32 also segments the financial sector based on the deposit market. There are three main components: share of total deposit value, share of total deposit accounts and average value in each deposit account. While the percentage of total deposit value (row b in Table 32) reflects quite closely the share of total assets (row a), we notice a striking heterogeneity when it comes to the number of deposit accounts and average value of deposits per account. While the difference in deposit value between domestic and foreign large banks is relatively small (31 and 22 percent respectively), domestic large banks have almost 67 percent of the total deposit accounts in Kenya while foreign large banks have only around 9 percent. This arguably confirms that domestic large banks have a much stronger focus on attracting deposits from the "bottom of the pyramid" compared to large foreign banks, targeting the low-income customers despite their little savings availability. In fact while large domestic banks have an average of over 94,000 KSh in each account (roughly 830 Euros), large foreign banks have an average of 708,000 KSh (almost 6,200 Euros)[84]. Small and mid-sized have less variability in their average deposit value per account, which oscillates between 700,000 KSh and 950,000 KSh.

Another important level of analysis can be done by looking at the number of loan accounts and the average loan size across different types of institutions. Hermes, Lensink, and Meesters (2011) for example use average loan size as a proxy for the outreach of microfinance institutions in an analysis

[84] It is important to note that the average value of deposit is only indicative as it can be skewed by outliers as well as dormant accounts. What is more important for this analysis is the comparison between different segments of the market rather than the value itself.

of several low-income markets, arguing that lower average loan sizes are likely to be related to a higher degree of penetration to the lower income segments of the population. While this approach could be affected by many factors, such as the composition of the loan portfolio and the focus on specific industry segments of the economy, it still provides an important overview on the characteristics of the banks and their lending to consumers and the private sector. The last two rows of Table 32 confirm what was observed on the analysis of deposit accounts: large domestic banks have the lion share of the credit market with over 60 percent of the total loan accounts provided in the country. The average loan size (row f) is around 560,000 KSh (about 5,000 euros) across the portfolio, far lower than large foreign banks as well as small and mid-sized banks.

4.3 BANK FINANCING OF SMES

Starting from this section the analysis will focus on the primary data collected in the two survey rounds, which will allow to test the hypotheses outlined in the literature survey. The section starts with the discussion of how banks define micro, small and medium enterprises and the size of the market over the three years. From section 4.4 onwards, the analysis focuses entirely on the characteristics of business lending, in particular interest rates, maturity and the composition of the SME portfolio. It also shows the risk management practices used by the banks and the drivers and obstacles for banks' involvement with SMEs.

4.3.1 Bank definitions of micro, small and medium enterprises

One of the main challenges in the analysis of business finance is that the definition of what is considered a micro, small, medium or large enterprise differs considerably across banks. Although the Government of Kenya (GoK) proposed to adopt a unified definition of the micro and small enterprise segment in terms of turnover and number of employees, the banks' definitions differ significantly both in terms of the information that is being collected and the categorization of enterprises. According to the GoK, firms are defined as "micro" when they have 1 to 10 employees and a turnover not exceeding KSh 500,000. They are considered "small" when they have 11 to 50 employees and a turnover not exceeding KSh5 million[85].

[85] The Micro and Small Enterprise Act (2013) defines micro and small activities but does not provide a definition of medium and large enterprises.

Table 35: Maximum thresholds of loan size (KSh), business turnover (KSh) and number of employees in the definition of business size

Loan size	**Median**	**1st quartile**	**3rd quartile**
Micro	1,000,000	1,000,000	2,000,000
Small	6,500,000	5,000,000	10,000,000
Medium	50,000,000	20,000,000	100,000,000
Turnover	**Median**	**1st quartile**	**3rd quartile**
Micro	10,000,000	3,250,000	11,500,000
Small	50,000,000	16,250,000	250,000,000
Medium	150,000,000	100,000,000	1,000,000,000
Employees	**Median**	**1st quartile**	**3rd quartile**
Micro	10	8	10
Small	22	11	44
Medium	50	43	100

The banks' variables of SME classification in order of importance were loan size, turnover and then number of employees. In fact, very few banks were able to provide a classification based on the number of employees. The banks are aware that loan size is not the best proxy for the size of their business clients. However, it is used because of the ease of collection of that information and because it serves as a second order proxy for the overall size of the business. The challenge is that a large business if requesting a small working capital loan could be categorized as a small enterprise if no other information is available. Many banks however manage their clients in different departments (microenterprise department, SME department, corporate department, etc.), and therefore they are unlikely to mis-categorize the data.

The quantitative differences in the definitional boundaries are considerable. Table 35 shows that the median turnover threshold for micro enterprises is twice as large compared to the definition used by the GoK, and the difference in the small enterprise segment is noteworthy as well. This illustrates that commercial banks tend to be reluctant to lend to the informal sector and firms with low turnover. Definitions differ widely also across banks depending on the market segment they are focusing on and their business-model: what is defined as a small enterprise in one bank might fall into the medium category in another. Looking at the difference between 1st and 3rd quartiles in Table 33, the heterogeneity of responses is apparent. The third quartile of the turnover threshold for example is far larger compared to the first quartile for all types of enterprises. The difference in the loan size definition is considerable as well.

In order to improve the classification of businesses among banks, a series of qualitative interviews was conducted with key commercial banks prior to the 2014 survey round. The objective was to understand how banks organize their data and whether we could standardize the definition of SMEs before the implementation of the survey. The outcome of these interviews was that using a standardized definition was not possible at the current stage. Although banks often collect data on their business clients (turnover, employees, asset size), they are often unable to link these data to the core data systems on lending facilities. If for example our questionnaire asked the total lending going to business with annual turnover between KSh 10 and KSh 20 million, most banks would not be able to provide such data, making it impossible to do any significant analysis of trends over time. This is clearly one of the key changes that authorities such as the CBK or industry associations such as the Kenya Bankers Association (KBA) should encourage in the near future.[86]

4.3.2 Quantifying the SME finance market development in 2009, 2011 and 2013

In the next sections we will analyze the development of the SME finance market over the period between December 2009, December 2011 and December 2013. Since the second survey round obtained data at a disaggregate level for micro, small, medium and large enterprises, it will provide an analysis of all business lending, not only SMEs, for a number of questions, such as maturity, interest rates and the composition of business lending.

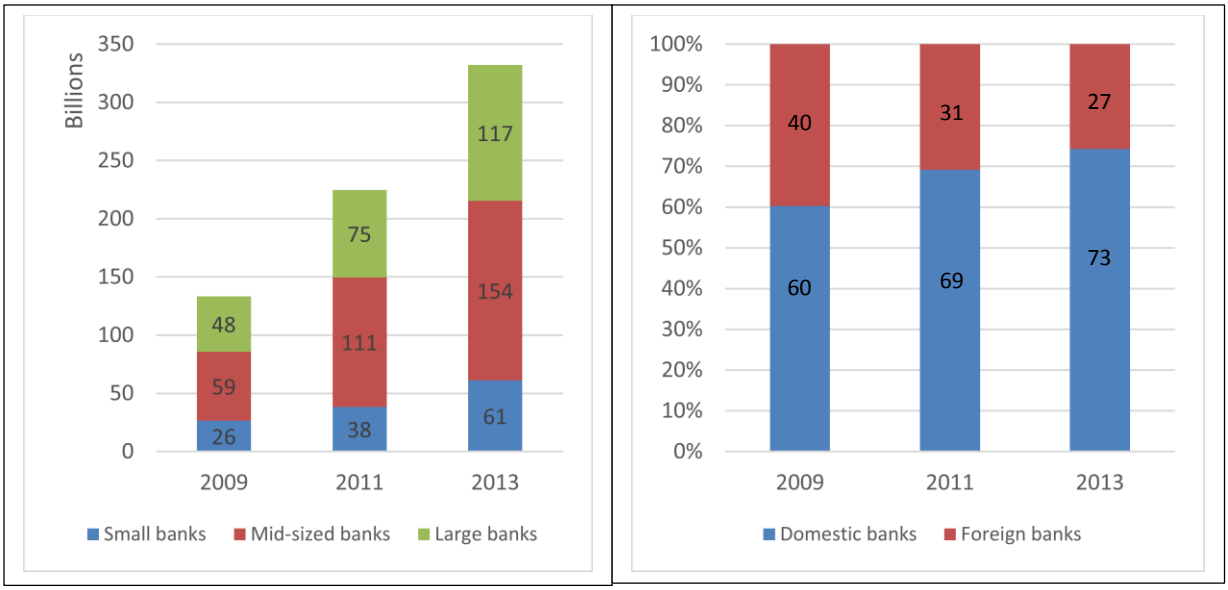
As shown in Figure 13, the involvement of Kenyan banks in the SME segment has grown remarkably in the period analyzed. With the exception of a few institutions specializing in specific markets (e.g. corporate, housing finance, etc.), the large majority of banks are involved with SMEs and about half of respondents have established dedicated SME departments. About a third of the banks also have microenterprises among their clients and six of them established a separate department for this segment. Where there is no separate department, SME clients are dealt with by either the 'corporate' or 'retail/consumer' departments depending on the institutions' organizational structure.

The total SME lending portfolio in December 2013 was estimated at KSh332 billion, representing 23.4% percent of the banks' total loan portfolio (see Figure 13). The SME portfolio grew fast in absolute values but also as percentages of total lending: in 2009 and 2011 the total SME portfolio was estimated to be KSh133 and KSh225 billion respectively, and SME lending represented 19.5% and 20.9% of total lending. These figures show that in the context of general growth of the financial sector, SME financing

[86] In the conclusions of this paper, we make a simple recommendation for the definition of SMEs on the way forward.

is growing at a relatively faster rate, representing a growing share of the commercial banks' portfolios. Figure 13 also show the share of the SME portfolio is increasingly being driven by domestic banks while foreign banks have a decreasing share: while they provided 40 percent of SME loans in 2013, their share has shrunk to only 27 percent in 2013[87].

Figure 13: Size of the total SME finance portfolio by bank size and ownership



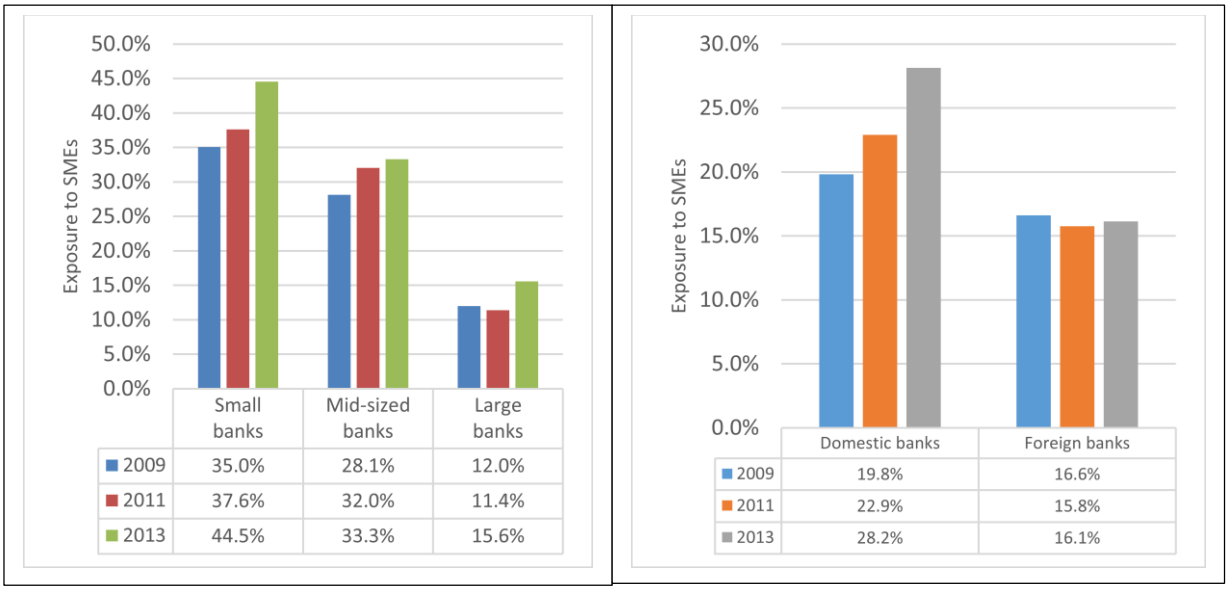
Another way to illustrate the diversity in the Kenyan financial system is to analyze the different levels of exposure and overall lending portfolios based on the size of banks. Figure 13 shows that in absolute values the largest share of the KSh 333 billion SME portfolios comes from medium-sized banks (46 percent), followed by large banks (38 percent) and small banks (18 percent). However, if we look at the ratio between SME lending to total lending instead of the absolute values (Figure 14), small and mid-sized banks tend to have higher exposure to SMEs compared to large banks. There are large differences within the same peer groups, however. For example, as a rather unique feature, large

[87] As mentioned in the methodology section, the sample size differed for the three years surveyed, representing 81 percent of the credit market in 2009, 91 percent in 2011 and 85 percent in 2013. In order to make the portfolio size estimations comparable across the years, we followed the following procedure: first, we calculated the average growth rate in the specific bank segments (among small, medium or large banks, both foreign and domestic). Then, an estimation of portfolio size was made based on the available data and growth rate in the bank segment. For example, if a mid-sized domestic bank provided the 2011 figure but not the 2013 figure, then an estimation was made based on the average growth rate among banks of that specific segment. While this technique might have an error, this should be a minor concern considering that this imputation was done on a small percentage of the market. For those banks that did not participate to either survey round, it wasn't possible to make any estimations of their SME portfolio side.

Kenyan banks have relatively large microfinance segments whereas large international banks have fewer but larger clients especially in the corporate and mid-corporate segments. These differences exist also among medium-sized banks.

It is also important to note that between 2009 and 2013 the share of SME lending to total loan portfolios has increased for all types of bank sizes, but it has actually slightly decreased for foreign banks compared to domestic banks. One of the possible explanations for this finding is that foreign banks might have taken a more careful approach in response to the high interest rates imposed by the central bank at the end of 2011 and 2012, which will be discussed in section 4.4.6 of this paper.

Figure 14: Exposure to SMEs by bank size and ownership



4.4 CHARACTERISTICS OF BUSINESS LENDING IN 2013

The 2014 survey provided a very detailed analysis of the composition of SME lending portfolio and the type of products that are mostly used by small firms. The idea is that while the growth of the overall portfolio certainly signals a growing relevance of small business financing in the banking sector, it tells us very little about the characteristics and sophistication of lending in the segment. This section will focus on key characteristics such as average loan size for different types of enterprises, loan maturity, interest rates, and the sectoral distribution of business lending. It will analyze also the role of different lending technologies in the composition of the SME finance portfolio. The objective is to analyze whether in addition to the size of the business portfolio, the financial sector is growing its level

of sophistication and is able to provide adequate and diverse services to address the heterogeneous needs of the SME sector.

4.4.1 A supply-side estimation of access to credit and average loan sizes

A first level of analysis can be conducted by looking at the simple ratio between the number of loan accounts and deposit accounts for business customers, which can shed light about the percentage of firms with access to a credit facility. This kind of question is normally addressed via demand-side surveys with the question *"Have you received a loan from a bank in the last 'x' years?"* directly posed to the firms interviewed. However looking at the same question from a supply-side point of view can shed light on the validity of results from a different perspective[88]: out of all businesses with a deposit account at a bank, how many are granted access to a loan?

Table 36: Ratio of deposit accounts to loan accounts and average loan size by segment as of December 2013

	Micro	Small	Medium	Large
Ratio of deposit accounts to loan accounts	6.0%	20.2%	23.4%	38.7%
Average loan size (KSh)	588,489	1,876,585	5,432,245	40,942,492

Table 36 shows that the percentage is only 6 percent for microenterprises, 20.2 percent and 23.4 percent for small and medium enterprises respectively and 38.7 percent for large-scale firms. It is crucial to note that this estimation is affected by many factors: first, many microenterprises may be borrowing from a personal account rather than a business account. Second, a business could have multiple deposit accounts at different institutions and receive a loan only from one or none of them. Third, businesses could have only one deposit account with a bank which is providing multiple loans at the same time (e.g. an overdraft and a term-loan simultaneously). The first and second scenarios are likely to be more common in Kenya, which is characterized by a fast mobility of demand and businesses often have more than one deposit account. The estimations from the supply-side survey are therefore likely to be slightly lower compared to demand side-surveys. However, this supply-side perspective arguably offers a valuable chance for triangulation of demand-side survey results and cross-check for the validity of the estimations.

[88] The estimation of access to credit in demand-side surveys suffer from considerable error as well. In a paper titled "Lying about borrowing" Karlan and Zinman (2008) show that about 50 percent of recent borrowers do not report their high-interest consumer loans.

Another interesting estimation from the supply-side survey concerns the average loan size provided to different category of businesses. While the median value is more representative because it is less affected by outliers, the segmentation of the data by firm size should minimize this problem. Table 36 shows that in 2013 the average loan size was approximately KSh 590,000 for micro-enterprises, KSh 1.9 million for small firms, KSh5.4 million for medium enterprises and about 41 million for large firms. The mean loan values confirm once more that commercial banks are not likely to engage with self-employed or informal operators, as loan sizes even at the micro-enterprise level seem relatively high and more adequate for formal microenterprises with relatively large turnovers.

4.4.2 Average loan maturity

Table 37: Average maturity (months) of loans for business clients by bank size and ownership

	Bank size			Bank ownership		Total
	Small banks	**Mid-sized banks**	**Large banks**	**Domestic banks**	**Foreign banks**	
Micro enterprises	19.8	22.9	11.0	19.7	15.0	**18.8**
Small enterprises	33.6	37.9	44.6	37.8	36.0	**37.1**
Medium enterprises	37.3	46.8	50.3	40.1	47.8	**42.5**
Large enterprises	41.2	57.7	60.0	47.9	50.4	**48.7**

Table 37 shows the average maturity of loans provided to different types of business customers depending on bank size and ownership. The finding across the different types of banks is that microenterprise loans have maturity of about 19 months on average, for small and medium enterprise loans the average is about 37 and 43 months respectively and for large firms it's almost 49 months. The results disaggregated by bank size and ownership shows that compared to small and mid-sized banks, large financial institutions provide loans with considerably shorter maturity to microenterprises (11 months on average) and longest maturity to small, medium and large enterprises. The difference between domestic and foreign banks is straightforward: while domestic banks provide longer repayment periods to micro and small enterprises, foreign banks tend to provide longer maturity to medium and large firms. However, it is important to note that the average maturity of loans should not be considered as an indicator of loan quality, as it could be affected by many factors, such as how banks define microenterprises or SMEs, and the composition of the business finance portfolio. Different lending products (e.g. short/long term loans, overdrafts, asset finance, etc.), in fact, are by definition characterized by different levels of maturity. This will be analyzed more in detail in this section 4.4.4.

4.4.3 Interest rates

Table 38: Average interest rates for business clients by bank size and ownership

	Bank size			Bank ownership		Total
	Small banks	Mid-sized banks	Large banks	Domestic bank	Foreign bank	
Micro enterprises	23.5	18.5	20.5	20.2	22.1	**20.6**
Small enterprises	18.5	17.1	20.1	18.6	18.4	**18.5**
Medium enterprises	17.1	16.4	19.5	17.8	16.6	**17.4**
Large enterprises	14.8	16.2	15.6	16.1	13.4	**15.3**

As expected, smaller businesses tend to be charged higher interest rates on loans compared to larger firms. Across all types of financial institutions, our survey finds that the average interest rate is 20.6% for microenterprises, 18.5% for small enterprises, 17.4% for medium enterprises and 15.3% for large enterprises. There are differences however depending on bank size and ownership. Mid-sized banks seem to be providing the lowest interest to micro, small and medium enterprises, whereas small banks seem to provide lower interest rates to large firms. The analysis of domestic/foreign ownership and interest rates shows what was hypothesized by part of the literature: foreign banks seem to provide lower interest rates to medium and large firms, while they charge higher rates to smaller firms, in particular microenterprises. The interest rate levels in this table may also be a function of outreach: as shown in Table 32, mid-sized banks tend to provide the largest loans sizes on average, especially the foreign mid-sized banks, showing that they are probably focusing on upper tier customers for each of the segments, including micro-enterprises.

4.4.4 Composition of SME finance portfolios

One of the key objectives of this study is to shed light on the type of financial products provided to SMEs in the Kenyan market, the difference between types of institutions and the overall level of sophistication of service provision to SMEs. Are banks providing diversified financial products to businesses? Are they using different lending technologies or relying on more conventional lending products? The 2014 survey round was the first attempt to address the loan portfolio composition on a large scale in the Kenyan market: while the time-series component is not available and therefore we

cannot identify trends in the market, we can nevertheless understand what types of market niches different banks are trying to target and set a baseline for future surveys. Lending products were grouped in five main types: term-loans with maturity below 24 months (short-term loans), term loans with maturity above 24 months (long-term loans), trade finance products (e.g. invoice discounting, letter of purchasing order financing, factoring, etc.), asset financing and overdrafts. Banks were also provided the option to specify a category "other" in case the list missed on some products that they are currently offering to SMEs. Banks were asked to provide data on both the number of outstanding loans for each lending product and the percentage that these products represent of the total SME finance portfolio: while the number of loans shows the level and frequency of demand for each type of credit product, the share of total portfolio shows the weight if these products have in the bank books.

Table 39 presents the findings on the composition of SME portfolios by bank size. The table shows that in terms of value, long-term loans (maturity above 24 months) represent the largest share of total portfolios (42.1 percent) followed by overdrafts (27.8 percent) short-term loans (12.9 percent) asset financing (11.7 percent) and trade finance (4.2 percent). In terms of number of loan facilities overdrafts are by far the most common (43.4 percent) followed by short-term loans (24.7 percent) and asset-financing (19.3 percent). The differences between types of banks are noteworthy: mid-sized banks, which are the major players in the SME finance space, heavily rely on overdrafts as their main financial product representing 35 percent of total value and over 62 percent of total number of loans. Large banks on the other hand rely much less on overdrafts (about 15 percent of SME portfolio) while they are considerably more active in the provision of small scale long-term loans, which represents half of the value of their SME portfolio; long-term loans are relatively more important for large scale banks as well.

Table 39: Composition of SME portfolio by lending product and bank size (value and volume)

	Value of portfolio by lending product (% of total)				**Number of loan facilities by lending product (% of total)**			
	Small banks	**Mid-sized banks**	**Large banks**	**Total**	**Small banks**	**Mid-sized banks**	**Large banks**	**Total**
Term loans (maturity below 24 months)	15.5	11.2	9.6	***12.9***	13.4	6.6	13.7	***10.2***
Term loans (maturity above 24 months)	42.9	33.7	50.6	***42.1***	33.1	9.0	40.5	***24.7***
Trade Finance	2.6	3.7	7.9	***4.2***	2.1	1.9	2.8	***2.3***
Overdraft	30.0	34.9	15.3	***27.8***	42.9	62.4	23.1	***43.4***
Asset financing	8.8	16.6	11.8	***11.7***	8.4	20.1	19.6	***19.3***
Other	0.2	0.00	5.2	***1.4***	0.2	0.0	0.2	***0.1***

The analysis of the SME portfolio by bank ownership shows that in terms of frequency of product usage the reliance on overdrafts is mostly driven by domestic banks compared to foreign banks (45.9 percent against 35.6 respectively) but in terms of value foreign banks have a higher exposure to overdrafts (33.7 percent versus 25 percent) indicating that foreign banks are likely to have fewer but larger overdrafts by their clients. The opposite dynamic instead seems to occur for long-term loans, which represent an approximately equal share of portfolios for both domestic and foreign banks (43.2 and 40 percent respectively), however they are more frequent in terms of number of facilities for foreign banks. Table 40 also shows that asset financing is a surprisingly common lending product for both foreign and domestic banks, representing almost 20 percent of total facilities.

The most interesting finding for this section is arguably the central role played by overdrafts in SME lending in Kenya. While overdrafts can be useful in cases of quick liquidity needs in order to avoid firms to turn to informal lenders or shadow banking, the problem arises when firms use overdrafts as a substitute for specific working capital or investments finance products. Overdrafts tend to be very expensive and inefficient to address the specific needs of businesses. Banks on the other hand might not have a pressing incentive to reduce the firms' reliance on overdrafts as they usually guarantee high profit margins. During the interviews, however, some bank managers confirmed that over-reliance on overdrafts can be a major hindrance to SME finance development in Kenya: overdrafts are a financial "black-box" because they do not reveal why firms are borrowing nor how the loans are used. This makes it difficult for banks to understand the needs of their clients and respond to new developments in the market in a timely manner with appropriate financial services.

Table 40: Composition of SME portfolio by lending product and bank ownership (value and volume)

	Value of portfolio by lending product (% of total)		Number of loans per lending product (% of total)	
	Domestic banks	**Foreign banks**	**Domestic banks**	**Foreign Banks**
Term loans (maturity below 24 months)	15.4	7.6	11.5	6.1
Term loans (maturity above 24 months)	43.2	40	20.3	38.2
Trade Finance	3.7	5.2	2.5	1.8
Overdraft	25.0	33.7	45.9	35.6
Asset financing	12.6	9.8	19.8	17.9
Other	0.2	3.9	0.0	0.4

4.4.5 Sectoral distribution of business lending

Table 41 shows the disaggregation of micro, small, medium and large lending portfolios by sector of operation of the borrowing firms. The analysis reveals relevant information about the type of businesses targeted by banks and the overall structure of the private sector[89]. For example, some sectors tend to have an approximately constant share of total lending regardless of the size of the firms. Lending to the construction sector for instance fluctuates only between 6.5 percent and 7.8 percent across all segments, whereas real estate only represents 0.8 percent of lending to microenterprises while it represents almost 20 percent of the large-enterprise finance portfolio. Similarly, manufacturing goes from 6.8 percent for microenterprises to 15.2 percent of large enterprises. At the opposite end, we see that trade firms have by far the largest share of borrowing at micro-enterprise level (61.7 percent), while the share goes down to 21.9 percent at large enterprise level. At the level of small and medium enterprises, trade firms still play a predominant role, having 39.5 and 36.3 percent of the total portfolio respectively. Transport and communication play an important role as well with 21.3 percent and 15.6 percent of the portfolio for small and medium enterprises respectively.

Financing of agricultural firms seem to follow a "U" pattern, with a 4.8 percent at micro-enterprise level, down to 2.7 percent at small enterprise level and then up again to 4.7 for medium enterprises and 7.4 percent for large enterprises. This confirms the idea that banks finance agricultural firms that are either micro-scale or large scale with a "missing middle" of SME financing to the agricultural sector. More generally however it seems that agricultural firms tend to be poorly served by the financial sector considering that agriculture is the backbone of the Kenyan economy representing over 20 percent of GDP. It became clear during the interviews that a number of financial institutions lack the know-how of lending to agricultural enterprises and are therefore not inclined to increase their exposure to the typical risks of the segment, in particular the seasonality of revenues and the vulnerability to unpredictable weather conditions. The lower number of bank branches operating in rural areas also plays a significant role.

[89] The analysis of the sectoral distribution of SME finance is restricted to the year 2013 because of data availability. If the data will be collected systematically over the years, the potential for analysis will increase substantially. For example, it will be possible to analyse whether there is a relationship between SME finance and value added in different industry segments or sectors of the economy. This analysis is however not possible at the present stage.

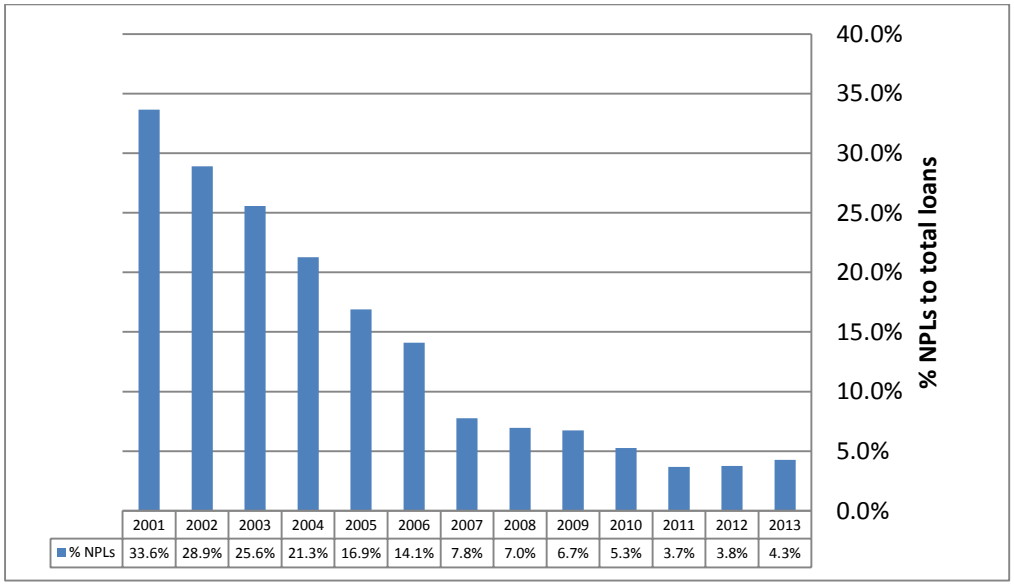
Table 41: Sectoral distribution of lending by size of the firms in 2013

	Micro-enterprise lending	Small enterprise lending	Medium enterprise lending	Large enterprise lending
Agriculture	4.8%	2.7%	4.7%	7.4%
Manufacturing	6.8%	6.6%	12.3%	15.2%
Real estate	0.8%	15.9%	15.9%	19.9%
Construction	6.5%	7.8%	5.7%	6.6%
Trade	61.7%	39.5%	36.3%	21.9%
Transport and communication	12.8%	21.3%	15.6%	7.7%
Restaurant, hotel and tourism	0.9%	2.3%	3.6%	4.1%
Finance and business services	4.9%	2.2%	2.6%	6.3%
Energy and water	0.5%	0.7%	1.5%	10.5%
Mining and quarrying	0.3%	1.0%	1.8%	0.4%
Total	100.0%	100.0%	100.0%	100.0%

4.4.6 Quality of SME finance portfolio

In order to understand the trends in the quality of loan portfolios and the portion of non-performing loans in the SME segment it is important to look at the overall trends over the last few years. Figure 15 shows that the share of non-performing loans to total loans decreased dramatically in the last decade, from representing 33.6 percent in 2001 down to 4.3 percent in 2013.

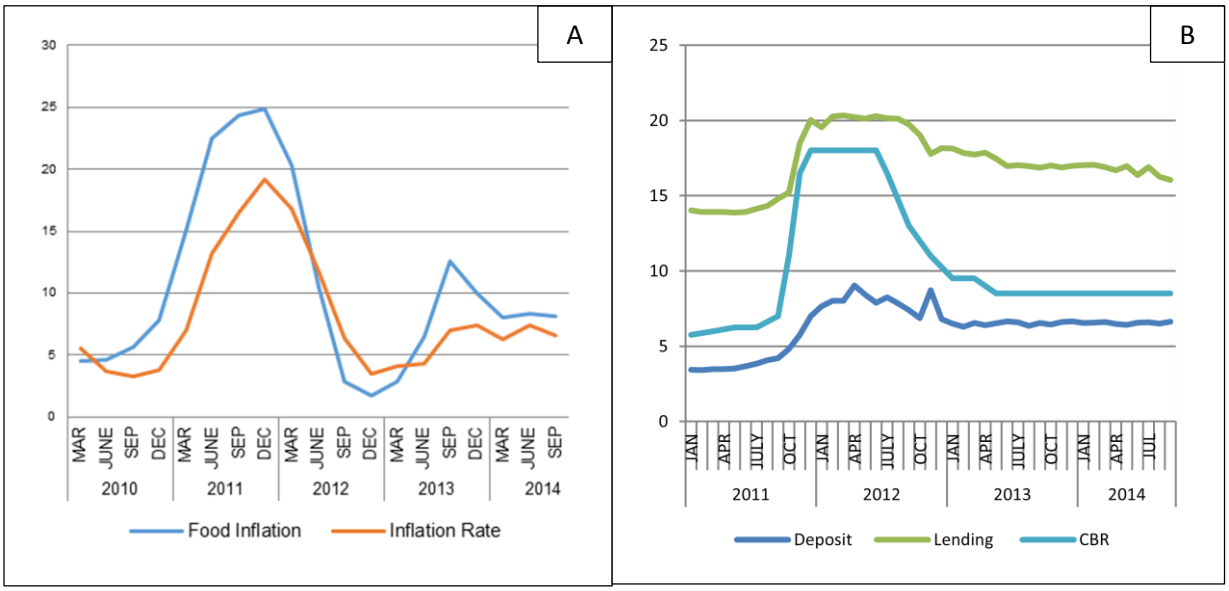
Figure 15: Non-performing loans as a share of total loans between 2001 and 2013



Source: Think Business dataset (2014)

Following the period of liberalization discussed in Essay 3, and in particular after the economic crisis in the mid-1990s, there was a peak in non-performing loans in the banking sector to a high of 33.6 percent in 2001, which was mostly due to the NPL crisis suffered by a few Government-owned and Government-influenced banks (Beck et al. 2010). After 2001 the share of NPLs to total loans has decreased very fast, however. This was not only due to an increase in total credit portfolios (the denominator in the ratio) but also to high levels of provisioning, which was imposed by strict guidelines introduced by the CBK in that period (Upadhyaya 2011). The level of NPLs started increasing again after 2011, mostly because of a spike in interest rates imposed by the CBK as a response to a period of macroeconomic instability. In 2011, the Kenyan currency lost nearly 25 percent of its value and the inflation rate spiked from 6 percent to nearly 20 percent in November 2011. In an attempt to halt the inflation spiral, the CBK raised its main lending rate from 6.25 percent to 18 percent in less than three months (see Figure 16). In the first quarter of 2013 inflation dropped below 5 percent and the Kenyan Shilling regained most of its value. Growth of total loan portfolio fell from 30.2 percent in 2011 to 14.3 percent in 2012 and non-performing loans grew in both 2012 and 2013. Despite the macroeconomic volatility however, most banks made record profits in 2012 and 2013, partly because of the high interest rate spread in the second half of 2012 and 2013.

Figure 16: Inflation rates (Fig. A) and Interest rates (Fig. B) between 2010/11 and 2014

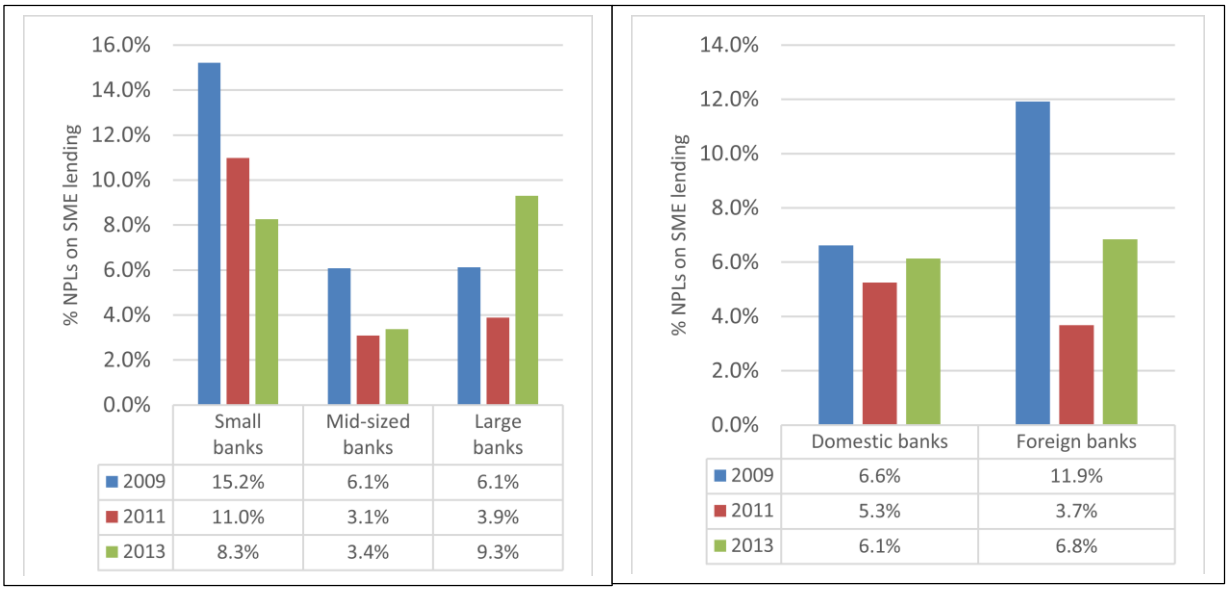


* Note: CBR refers to the Central Bank Rate

Figure 17 look more specifically at the level of NPLs in the SME segment divided by bank size and ownership. The overall assessment is that large banks, and foreign banks seem to have been affected more strongly by the volatility in interest rates between end of 2011 and 2012. NPLs in the

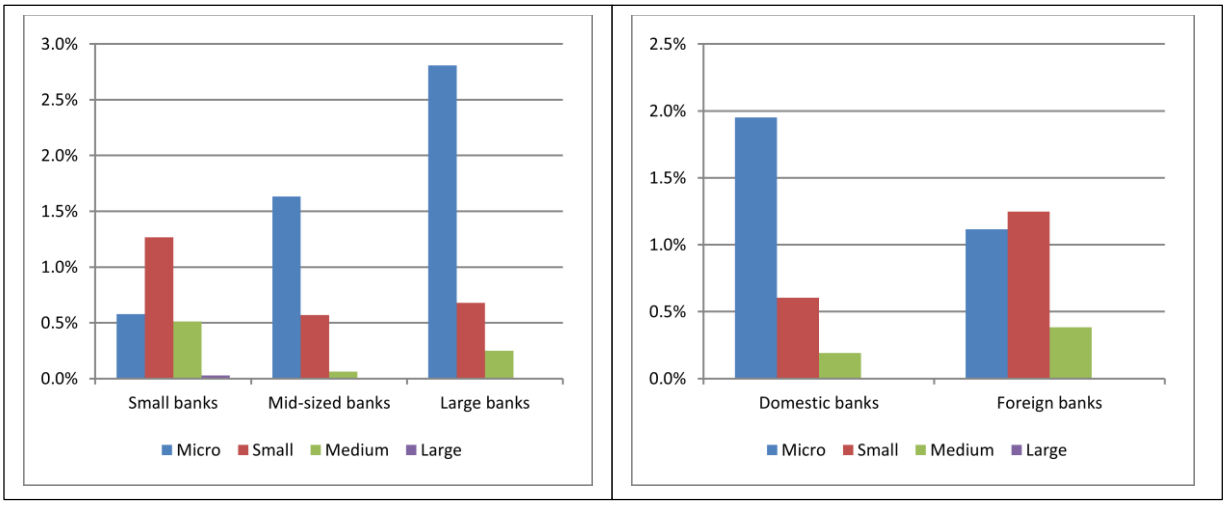
SME segment were estimated at 9.3 percent for large institutions, 8.3 percent for small banks and only 3.4 percent for mid-sized banks. The trends over the period are also interesting: while mid-sized and large banks have followed the pattern of the overall NPL levels shown in Figure 15, small banks have decreased their bad loans throughout the period: while they were high in 2009 at over 15 percent, they decreased to 11 percent in 2011 and 8.3 percent in 2013, which is below the NPL level of large scale banks.

Figure 17: Non-performing loans in SME finance by bank size and ownership



Another important measure to assess the quality of the business loan portfolio concerns the value of write-offs during the year. This question was added in the 2014 survey round because during the previous survey it was noticed that the NPL level data was affected by the value of loan write-offs during the year. Figure 18 shows that the value of write offs was relatively high in the micro-enterprise loan portfolio and in particular in the context of large, domestic banks. Write-offs for small enterprises was relatively higher for small banks and foreign banks.

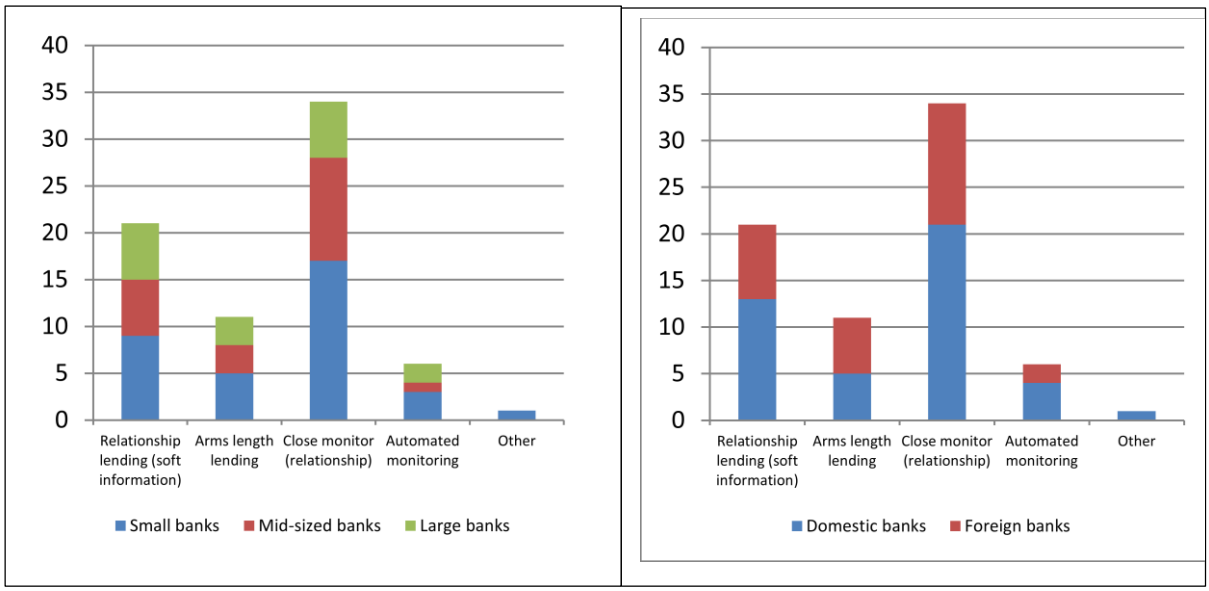
Figure 18: Value of loan write-offs in 2013 as a % of total loan portfolio by bank size and ownership



4.4.7 Risk Management and Lending technologies

One of the key issues addressed in the literature survey concerns the role of lending technologies and how banks try to tackle the information opacity that often characterize the SME finance segment. Banks were provided the option to choose one or more technologies they use in their financing of SMEs, from relationship lending to arm's length lending technologies. Banks were provided with five main options (see Figure 19): "relationship lending", which was explained as the situation where the bank mainly approves loans through relationships with the client. This could involve soft information gathered by the loan officer through continuous, personalized direct contacts with the firms, their owners, managers and the local community in which they operate. The second option "arms' length lending" refers to the context where banks mainly approve loans through transactional technologies such as credit scoring, standardized risk rating tools and processes, factoring, leasing, etc. The option "closer monitor" is an extension of relationship lending, which involve frequent visits at the firms' premises, continuous interaction with clients, frequent reporting requirements, etc. Finally, automated monitoring refers to the context where banks rely on automatically generated preventive indicators based on the firms' transactions with the bank.

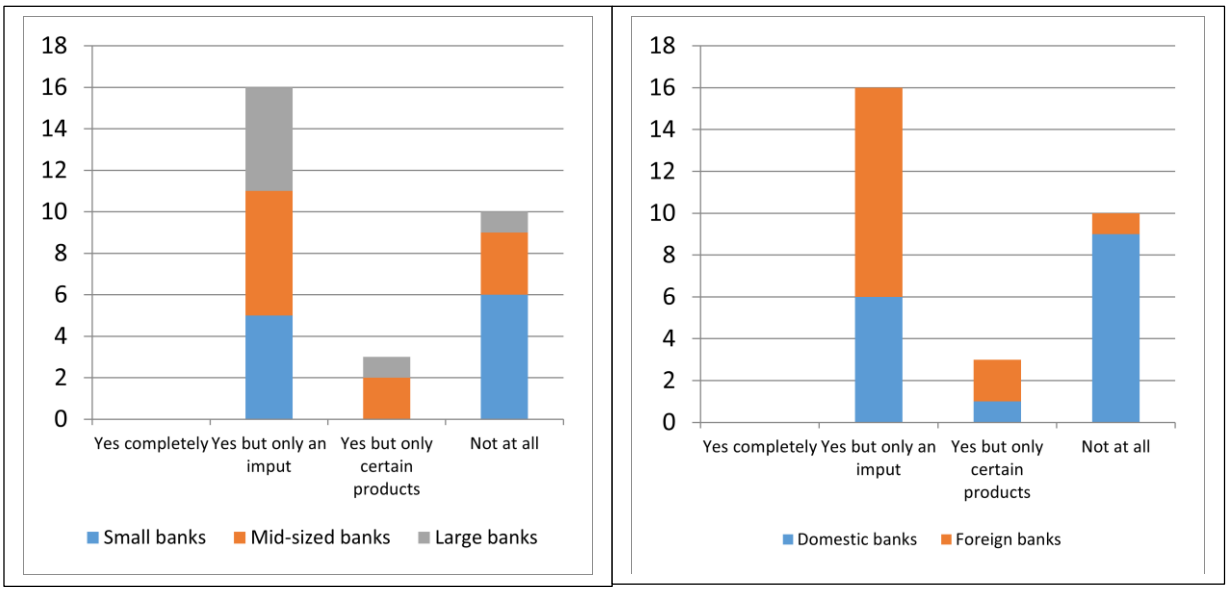
Figure 19: Main lending technologies used by the banks with SMEs, categorized by bank size and ownership



Note: the chart indicate the total number of responses. Respondents could choose more than one option

Figure 19 confirms the argument of the "conventional paradigm" and shows that relationship lending and close monitoring still play a central role in the SME finance space in Kenya. In particular, banks seem to go beyond the simple "relationship lending" and establish a close monitoring of the firms demanding credit with visits to the premises and careful observing of the activities of their clients. Transaction-based technologies however do play a role across all types of institutions. In particular many banks make use of credit scoring in the loan appraisal process (see Figure 20). While none of the banks completely rely on credit scoring in their SME finance portfolio, the large majority of banks use this technology as an input in the assessment of loan applications, or for some specific lending products. This is particularly the case for foreign banks. On the other hand, a relatively high number of banks –especially domestic, do not use credit scoring at all and seem to rely entirely on relationship-based technologies. Does this confirm the arguments of the conventional or new paradigms? The findings seem to partially confirm both views: large banks systematically use credit scoring as an input for assessing SME loans, especially because they have to deal with a high number of applications and loan officers across the country; however, scoring represents only an input in the decision-making, while close monitoring of the firms and relationship with the owners still play a central role. Some small banks use credit scoring as well, but not as systematically as large banks. In fact many small institutions rely entirely on relationship lending technologies.

Figure 20: Reliance on credit scoring in SME finance by bank size and ownership

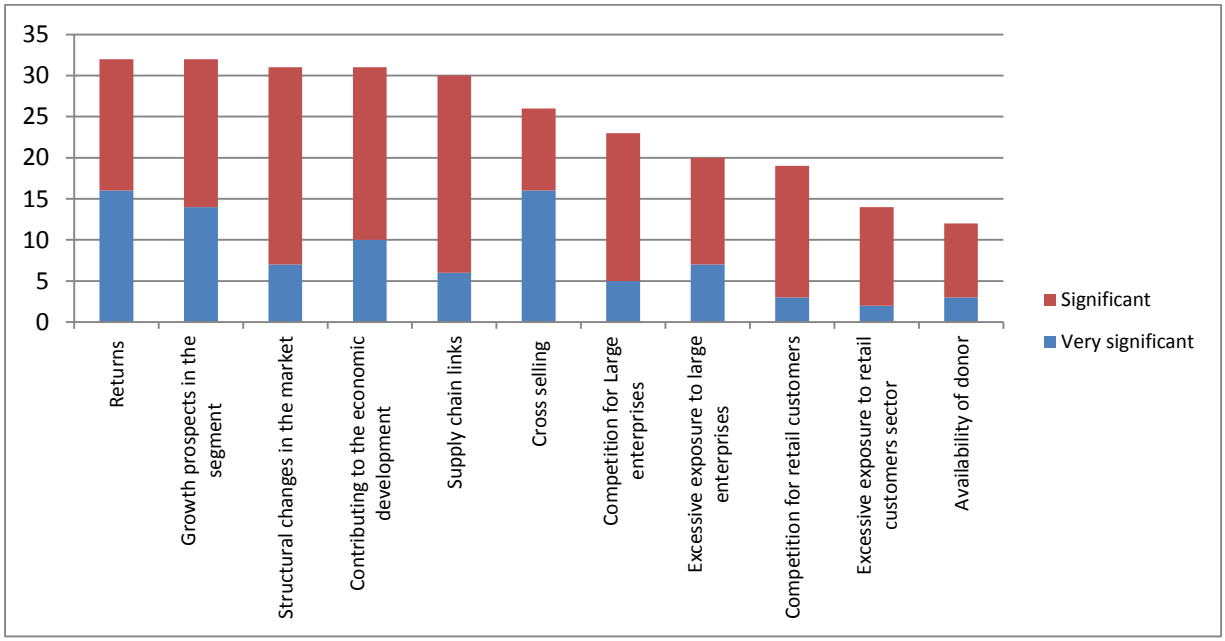


4.4.8 Key drivers and obstacles to bank involvement with SMEs

Financial institutions were asked to identify the major drivers for their decision to get involved in SME finance as well as the main obstacles that they face in their operations. Banks were given a list of potential drivers and obstacles and were asked to rank them as "not significant", "significant" or "very significant", and to explain the motivation for their answers. As illustrated in Figure 21, financial returns are the driving force for banks to target SMEs. The high profitability of the SME segment combined with growing competition in the corporate segment and the consequent reduction in profit margins encouraged banks to grow their SME portfolio. This partly confirms the "middle-market" hypothesis outlined in the literature survey: as numerous banks entered the market with a specific focus towards either the corporate segment or the micro-enterprise segment, the new frontier for expansion for many institutions is the SME market. Clearly the strategy of engagement with SMEs is different depending on the entry point: corporate-oriented banks tend to offer scale-down versions of their financial products and aim at capturing small businesses in the supply-chain of their existing large-scale clients. Banks with a focus on microenterprises tend to scale-up their services in order not to lose their clients as they grow from microenterprises to SMEs. This poses different types of challenges to the banks and it indicates an implicit segmentation of the SME market: while microenterprise-oriented banks have a much stronger focus on the "S" and a minor focus on the "M", corporate-oriented banks have the opposite approach. The two types of banks however agree about the positive growth prospect in the segment. As shown in Figure 21, future returns in the segment

are considered an important factor for engaging with SMEs: banks aim at positioning themselves ahead of competitors in a market that is perceived both as fast-growing and fast-evolving. When we asked banks to compare costs, risks and profitability of the SME segment relative to the corporate segment, the large majority of banks said that SMEs tend to be more costly and more risky than large corporates, but also more profitable. Cross-selling and supply-chain links were indicated as important drivers as well.

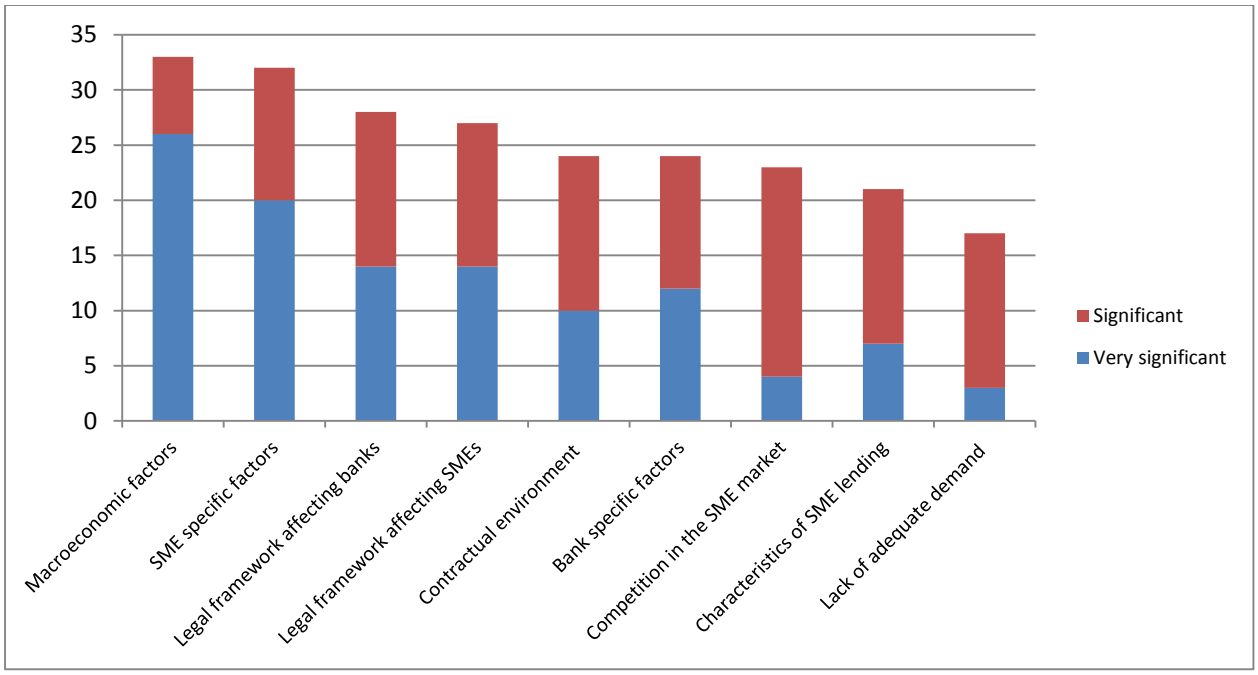
Figure 21: Drivers for bank involvement with SMEs



The analysis of the obstacles to SME financing depicts a clear picture of the specific challenges faced by financial institutions in the SME segment. The most significant obstacles are summarized in Figure 22. Macroeconomic factors such as inflation and foreign exchange risk were indicated as the most significant obstacles[90]. The second most important obstacle to SME finance as mentioned by the banks is related to SME specific factors. In this category, the large majority of banks highlighted three main issues: the poor quality of financial records, the inadequate (or complete lack) of collateral, and informality. Some banks also mentioned that SMEs tend to suffer from poor managerial practices and inability to manage risk. Overall, the SME segment is seen by most banks as particularly risky, both because dealing with SMEs implies high operating costs and because banks often lack proper risk appraisal and management processes for this client segment.

[90] These 'macroeconomic factors' could well play into the banks' decision-making by impacting the interest rate paid on governments securities, and thereby the attractiveness of expanding lending to the SME sector.

Figure 22: Obstacles to bank involvement with SMEs



5 CONCLUDING REMARKS

This research represents one of the first comprehensive attempts to analyze the size of bank financing of SMEs in Kenya and the characteristics of small business lending across the banking sector. Through the analysis of two survey rounds conducted in 2012 and 2014 in collaboration with Financial Sector Deepening Kenya (FSD-K), the World Bank (WB) and the Central Bank of Kenya (CBK), this study portrays an in-depth picture about the lending technologies used in the segment, the composition of SME finance portfolios and the drivers and obstacles of banks' involvement with SMEs. While the different survey rounds had different response rates from the banks, the data captures a minimum of 81 percent to a maximum 94 percent of the total credit market in the different survey rounds, therefore being highly representative of the Kenyan market.

The literature survey conducted in section 2 showed that two research paradigms have emerged in the literature in the last two decades. The "conventional" paradigm emphasizes the tendency of large financial institutions, especially international ones, to finance corporate firms that are transparent and analyzable through sophisticated ''hard" quantitative information such as

financial ratios, audited financial statements, and credit scoring. On the other hand, smaller institutions with stronger ties with the local community have a competitive advantage with small, non-transparent businesses that require a flexible approach based on ‘‘soft” qualitative information. A recent wave of empirical studies however questioned the core arguments of the conventional paradigm, showing that large banks have a growing appetite for the SME market and that relationship lending is no longer the sole lending technology in this segment.

This study partially confirms arguments from both paradigms. In line with the “new” paradigm, the study confirms that the involvement of banks with SMEs has grown dramatically between 2009 and 2013 for all banks regardless of size (small, medium and large) or ownership (domestic or foreign). With the exception of a few institutions specializing in specific markets (e.g. corporate, housing finance, etc.), all banks seem interested to develop their SME finance further over the next years. The overall lending to SMEs in fact increased from 133 KSh billion in 2009, to 225 KSh billion in 2009 and 332 KSh billion in 2013. As a percentage of total lending, SME finance has increased as well, 19.5 percent in 2009, to 20.9 percent in 2011 to 23.4 percent in 2013. In line with the conventional paradigm, however, the study shows that growth in the SME segment has been driven mostly by domestic institutions rather than foreign institutions, which seem to have decreased the expansion of their SME portfolios after macroeconomic instability in 2012 brought new risks to the segment.

The “conventional paradigm” is partially confirmed also in the context of lending technologies. Figure 19 showed that relationship lending and close monitoring of clients still represent the core lending technology used in the SME finance space. However many banks, especially the large ones, have started complementing relationship lending with the use of credit scoring (Figure 20) as an input in the loan appraisal process. A relatively high number of small domestic banks have not yet started using this technology and entirely rely on the relationship between clients and loan officers to assess the quality of loan applications.

The analysis of drivers for banks’ involvement with SMEs seems to confirm the “middle-market hypothesis” described in the literature survey. The high profitability of the SME segment combined with growing competition in both corporate and micro-enterprise segments encouraged banks to grow their “middle” (i.e. SME) portfolio. At the current stage, different banks seem to be targeting SMEs from different angles: banks that traditionally focused on the corporate segment tend to offer scale-down versions of their corporate financial products and capture small businesses in the supply-chain of their existing clients. Banks that had a traditional focus on microenterprises tend to scale-up their services in order not to lose their clients as they grow. This means that the SME finance market

has an additional implicit segmentation: microenterprise-oriented banks have a much stronger focus on the "S" of SMEs while corporate-oriented banks are much more inclined towards the "M".

The main challenge in the analysis of the data concerned the definition of SMEs and the comparability of data across institutions. As shown in Table 35, banks differ widely in their definition of the segment, as a function of their target market and composition of lending portfolio. In 2014, we conducted a round of interviews to propose a new definition of SMEs. The main problem encountered is that banks have different ways of organizing their core-system data and it is often impossible for them to link loan-level data to firm-level data. For example, if we used a standardized definition and asked banks to provide data on lending to firms with annual turnover between, say, KSh 10 million and KSh 50 million, most banks would not be able to provide such data. On the way forward, it is recommended that regulatory institutions such as the CBK or the Kenya Bankers Association encourage banks to apply minor changes to the way they organize their data so they can provide more refined figures on their business lending.

One possibility for a better identification of the characteristics of the business would be for banks to collect information on the Single Business Permit (SBP) obtained by loan applicants. The SBP is a license administered by the Municipal Councils and renewed on an annual basis which allocates a code to businesses depending on their sector, turnover and number of employees. A large proportion of businesses in Kenya have SBPs, including SMEs and microenterprises. Although the SBPs do not indicate the exact size of the businesses or internationally recognized standardized sector codes, they hold relevant information about the size range and specific subsectors where the firms operate.[91] Furthermore, banks could collect the information at negligible costs, since the validity of the data is checked by local authorities and updated on a yearly basis. If banks collected this information consistently, they would create comparable information about their customer base and policymakers would easily be able to identify segments of the economy that are served, or underserved, by the Kenyan financial sector.

[91] The SBP divides businesses in 8 top level categories and 74 sub-categories depending on the size of the business and the specific activities it conducts.

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Appendix 1

Entrepreneurs' Questionnaire – 2011/2012

DATE: …… Start Time: …… End Time: …….. Interviewer's Name: …… Name of Respondent: ……..

Name of the Business (and stall number) ……. Location:

- ❑ Kariobangi Light Industries
- ❑ Kariobangi Market
- ❑ Korogocho

Respondent Code: (Back Office)

Good Morning/afternoon. My name is …… and I am working for a research project conducted by the Institute for Development Studies at the University of Nairobi and the University of Trento. Your enterprise has been selected for a survey and I am here today to ask you some questions about your business. Please note that the information given to us is completely confidential and it will be used only by the researchers coordinating the study. The questionnaire will take approximately 45 minutes.

*****Note for Interviewer: Questions numbers that are underlined (e.g. 1.11) can be answered by an employee or family member. All the other questions must be answered directly by the owner of the business*****

Part 1 – Entrepreneurs Characteristics

1.11 Gender: ❑Male ❑Female	**1.15 Number of persons in households**:
1.12 Age:……	**1.18 Where do you live in Nairobi?** ……
1.14 Ethnic Group:……	

1.21 Education : ❑ none ❑Some Primary ❑ Primary Completed ❑ Some Secondary ❑Secondary completed ❑Some University ❑University Completed ❑Technical training (college)

1.22 Total years of Schooling: …… **1.3 Before becoming the owner of this enterprise, did you work somewhere else? ❑ Yes ❑ No .**

If yes, please provide the details below (Start from latest)

	A) Position (e.g. employee, apprentice, owner, etc)	B) Type of Business	C) Started in year (begin from latest)	D) Length of employment
A		❑ Formal ❑ Informal		
B		❑ Formal ❑ Informal		
C		❑ Formal ❑ Informal		

Part 2 – Firms Characteristic

2.01 When did you start this business? …….	**2.02 Are you the only owner?** ❑Yes ❑No	**2.03 If No, how many partners do you have?**	**2.04 What percentage of the business do you own?**

2.05 What is the main business activity you engage in?

Manufacturing	**Trading/Retail**	**Services**	**Other (Specify)**
❑ Crafts/Carpentry/Upholstery/Joinery ❑ Metalwork ❑ Tailoring ❑ Baking / Food manufacture ❑ Charcoal / Brick making ❑ Other Manufacturing (specify)	❑ Trading in cereals /Agricultural produce ❑ Selling of cereals/vegetables/fruits ❑ Food Vending ❑ Second hand clothes ❑ Other petty trading ❑ Retail or wholesale shop ❑ Milk products ❑ Butchery/Fish ❑ Other animal products	❑ Phone shop/repair/phone transfer ❑ Transport/Usafiri (boda boda, matatu, etc) ❑ Mechanic ❑ Electronics repair/Kurekebisha ❑ Haircutting/Saloon ❑ Agricultural processing ❑ Restaurant/Bar/Lodging/Hotel ❑ Brewing ❑ Accomodation	

2.4 Entry to the Market

2.48 What was your initial Capital for this business? KSh……

2.46 Where did you get your starting capital? (Multiple answers allowed)
❑Own savings ❑Lump-Sum from ROSCA ❑Loan from family/friends ❑Loan from moneylender ❑Loan from chama/ASCA ❑Loan from a SACCO ❑Loan from a MFI ❑Loan from a bank
❑ Other (specify)

→2.47 <u>If the answer was "own savings",</u> where did you gain the money used as initial investments?
❑Previous jobs ❑Other businesses ❑inheritance ❑Retirement money ❑other (specify)

<u>2.07</u> Do you own or rent the building where you operate? ❑Own ❑Rent

- **→ <u>2.07b</u> <u>If you rent the premise</u>, how much do you currently pay for rent? KSh …… ❑Monthly ❑Bimonthly ❑Quarterly ❑Annually ❑Other (specify)**
- **→ <u>2.07c</u> How much did you pay to the landlord when you first entered this premise? (include deposits, fees, goodwill and other expenses)**

2.2 Net Worth

2.22 Please provide details about the firm's assets (start from most valuable items):

	Item	A) Type of Machinery	B) Year of Purchase	C) Original Purchase price	D) Price if sold today (after negotiations)	E) % of ownership	Source of money for the investment
A	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
B	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
C	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
D	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
D2	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
D3	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock
D4	**Machinery/equipment** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from family/friend ❑Loan from MFI ❑Own Savings ❑Loan from Sacco ❑Other (specify) ❑Loan ROSCA/ASCA ❑Loan from shylock

E	**Furniture and furnishings**						❑Loan from Bank ❑Loan from MFI ❑Loan from Sacco ❑Loan ROSCA/ASCA ❑Loan from shylock ❑Loan from family/friend ❑Own Savings ❑Other (specify)
F	**Furniture and furnishings**						❑Loan from Bank ❑Loan from MFI ❑Loan from Sacco ❑Loan ROSCA/ASCA ❑Loan from shylock ❑Loan from family/friend ❑Own Savings ❑Other (specify)
G	**Vehicles** ❑ Purchased New ❑ Purchased Second hand						❑Loan from Bank ❑Loan from MFI ❑Loan from Sacco ❑Loan ROSCA/ASCA ❑Loan from shylock ❑Loan from family/friend ❑Own Savings ❑Other (specify)
H	**Buildings (only if owned)**						❑Loan from Bank ❑Loan from MFI ❑Loan from Sacco ❑Loan ROSCA/ASCA ❑Loan from shylock ❑Loan from family/friend ❑Own Savings ❑Other (specify)
I	**Buildings**						❑Loan from Bank ❑Loan from MFI ❑Loan from Sacco ❑Loan ROSCA/ASCA ❑Loan from shylock ❑Loan from family/friend ❑Own Savings ❑Other (specify)
L	**Other**						

2.23

A	What is the total value of your raw materials/supplies if you sold them today (now)?	
B	What is the total value of all your finished products if you sold them today?	
C	In total, how much do your customers owe you as of today? (Put zero if nothing is owed.)	
D	How much do other traders owe you as of today? (Put zero if nothing is owed.)	
E	Do other family members/friends owe you money that they borrowed from the business? If yes, how much do they still owe you as of today? (Put zero if nothing is owed.)	

F	If you have received credit for this business sources, how much do you still owe today?	

2.29 **2.30** → **If you use trade credit, please provide the following details**

2.29 Do you pay your suppliers upfront (when you receive the products) or do you pay them once you have sold the products? (Trade Credit)		**A- % of supplies you buy on trade credit**	**C- Interest rate required by the supplier**	**D- Repayment Period -days (maximum)**
❑I pay upfront ❑ I receive the goods on credit and pay them back once I sell them ❑Both	**A**			

2.3 Labour

2.31 What was the total number of regular (not occasional) employees:

A) When the business started (indicate year from question 2.01)……	**B) in 2007**	**C) in 2009**	**D) in 2012 (current)**

2.32 Please provide the following details about your current employees:

Type of employment	**A) Number of employees**	**B) Average pay (per day per person)**
A- Full time (paid)		
B- Part Time (paid)		
C- Occasional		
D- Unpaid full time		
E- Unpaid part-time		
F- Apprentices		

2.33 Do any of your employees have a contract? If yes, how many of your employees have a contract? ……

2.34: SUPPLY CHAIN		
A	HOW MANY KEY SUPPLIERS DOES YOUR BUSINESS HAVE	
B	WHERE ARE THE MOST IMPORTANT SUPPLIERS LOCATED (RANK FROM MOST IMPORTANT TO LEAST IMPORTANT)	1 = 3 = 2 = 4=
C	WHAT IS THE SIZE OF THE MOST IMPORTANT SUPPLIERS?	1 = Informal business 3 = Large formal business 2= Small formal business 4= Public Institutions
D	DOES THE BUSINESS HAVE SUPPLIERS LOCATED IN OTHER COUNTRIES	0 = No 1 = Yes
E	DO YOU RELY ON MIDDLEMEN TO PURCHASE YOUR SUPPLIES?	1 = Always 2=Often 3=Rarely 4=Never

2.35: CUSTOMERS		
A	WHERE ARE THE MOST IMPORTANT CUSTOMERS OF THE BUSINESS LOCATED?	1 = 3 = 2 = 4=
B	DOES THE BUSINESS HAVE CUSTOMERS LOCATED IN OTHER COUNTRIES?	0 = No 1 = Yes
C	WHAT IS THE TYPE OF CUSTOMERS DOES THE BUSINESS HAVE?	1 = individuals mostly 3 = Big Enterprises mostly 2 = Small Enterprises mostly 4= Public Institutions
D	DO YOU RELY ON MIDDLEMEN FOR YOUR SALES?	1 = Always 2=Often 3=Rarely 4=Never

********Continuation of Section 2 on Firms Characteristics*************

2.1 Firms Profits

2.11 Is this business your main source of income? ❑**Yes** ❑**No**	**2.12 Do *you* or someone in *your household* have other sources of income? (other jobs, businesses, pensions, remittances etc.)** ❑**Yes** ❑**No**	**2.13 If yes, how much does your household make from other sources of income (not this one)? ****interviewer: indicate the time period (month, week, quarter, year, etc)********	**2.13b Please tick the other sources of income (if any) in your household.** ❑Other jobs (employment) ❑Other business ❑Remittances from family or friends ❑Pensions or other government funds ❑None ❑Other (specify)

2.14 Over the last month (30 days), what profits did you make from this business? (KSh) ……..

2.14b What are your average monthly profits from this business? KSh	**2.15 In a good month, what are your profits?** KSh……	**2.16 And in a bad month?** KSh.....

2.19 Compared to one year ago, your average profits have: ❑ Increased ❑Remained equal ❑Decreased ❑Don't know

2.20 (Proxy 2)	**A- Value** (Put a zero if nothing has been consumed or used by the household.)	**B- Time period**: (1)daily (2)weekly (3)monthly (4)quarterly (5)semi-annually (6)yearly
A- *****only for Korogocho***** Does your household consume or use any of this business' products or services? If yes, what is the value of the products normally consumed or used by your household?		
B- How much money from the business do you *normally* use for yourself or your household?		
C- After making purchases for the business and after using some money for yourself or your household, is there *usually* any money left? If yes, how much money do you *usually* have left after purchases for the business and using some of the money for yourself or your household?		

Part 4 – Focus on Chamas/Self-help Groups

4.01 Many people belong to informal societies or group saving schemes such as, merry go round, savings and lending groups, chamas, investment clubs, clan/welfare groups to **which they contribute on a regular basis.** How many do you **personally belong** to? */ Watu wengi wamejijumuisha na jamii kwa kundi la kuhifadhi pesa kama mashirika ya mzunguko, makundi ya kuweka akiba na kukopa pesa ,makundi ya kuwekeza, kundi za jamii ambazo wanachangia mara kwa mara. Ni vingapi umejiunga navyo?*

4.01 RECORD NUMBER 0 FOR NONE IF NONE (0) GO TO 4.6 (Page 16) ☐

4.02	A- Name of SHG	B- Frequency of Contribution (1=daily, 2=weekly, 3=monthly, 4=annually, 5=irregular 6=other)	C- How much do you contribute? (if the amount is not fixed write the range)	E- How many are in the group?	F- What kind of people does the group mainly consist of? (1=relatives, 2=friends, 3=neighbors, 4=workmates/colleagues, 5=religious groups)	H- How long have you been in this group
1						
2						
3						
4						

4.04 Which of the following does ... (READ GROUP) do for its members? / *Ni nini kati ya hizi kikundi chenu hufanyia wanachama wake?* **MULTIPLE mentions possible per group.**

4.05 If the group has multiple activities, what is the most important activity of the group? (Interviewer, circle the relevant answer)

		A- Group 1	B- Group 2	C- Group 3	D- Group 4
A	Welfare - we help each other out for things like funerals */ Welfare-husaidia kila moja wakati wa msiba..*				
B	We collect money and give to each member a lump sum (pot) in turn / *Kukusanya pesa na kupeana kwa kila mwana chama kwa zamu*				
C	We lend money to each other in the group and repay loans with interest */ Kukopesha pesa kwa wanachama za kulipa na faida.*				
D	We lend money to non-members to be repaid with interests / *Kukopesha pesa kwa watu wasio wanachama za kulipa na faida*				
E	We periodically distribute all monies held by the group to its members / *mara moja moja tuwagawia wanachama pesa zote zilizo na chama*				
F	We buy in-kind household goods (e.g. food, soap, utensils etc).				

G	We make other kinds of investments e.g. property, business */ Tunawekeza katika njia zingine mbali mbali kama biashara na m*ali.				
H	We invest in the stock market */ Tunawekeza katika soko la hisa*				

4.2 In relation to the groups that *provide loans* to members, please provide the following details:

	A- Number of loans received this year	B- Total value of loans	C- Interest rate	D- Repayment period	E- Purpose	F- Did you use any of these loans for this business?	→E- If yes, what did you buy?
A- Group 1						❑ Yes ❑ No	
B- Group 2						❑ Yes ❑ No	
C- Group 3						❑ Yes ❑ No	
D- Group 4						❑ Yes ❑ No	

4.3 In relation to the groups that *provide lump-sums* to members, please provide the following details:

	A- Number of lump-sums received this year	B- Total value of lump-sums	C- Purpose	D- Did you use any of these lump-sums for this	→ E- If yes, what did you buy?
A- Group 1				❑ Yes ❑ No	
B- Group 2				❑ Yes ❑ No	
C- Group 3				❑ Yes ❑ No	
D- Group 4				❑ Yes ❑ No	

4.4 In relation to the groups that operate for *emergencies* (hospitalization, funerals, weddings, fire, theft, other sudden emergencies), provide the following details

	A- Number of contributions received this year for emergencies	B- Value (Ksh) of the contributions received from the group	C- Type of emergency	D- Was the contribution a lump-sum or a loan?	E- If it was a loan, what was the interest rate?	F- What was the Repayment period?
A- Group 1						
B- Group 2						

C- Group 3						
D- Group 4						

4.6 ASK ALL CURRENTLY NOT IN A GROUP. OTHERWISE SKIP THIS QUESTION

Why do you not belong to any groups? */ Ni kwa nini hujajiunga na kundi lolote?* **SPONTANEOUS. Do not prompt. MULTIPLE mentions possible.**

- ❑ You have an account in a bank or other formal institution / *Una akiba na benki au shirika lingine*
- ❑ You don't have any money */ Huna pesa zozote*
- ❑ People steal your money / *Watu huiba pesa zako*
- ❑ You don't know about them */ Hujui kuzihusu*
- ❑ You don't need any service from them */ Uhitaji huduma yoyote kutoka kwao*
- ❑ You don't trust them / *Huwaamini*
- ❑ Groups require too much time in meetings */ Vikundi hutaka muda mwingi sana kwa mikutano*
- ❑ Others (SPECIFY)

Part 3 - Formal and Informal Financial Instruments (Savings and Credits in MFIs, banks, Saccos, Money lenders, etc)

Which services and products are you **CURRENTLY using? MULTIPLE responses possible** Which services and products have you used in the past (since you started your business) but no longer have? **MULTIPLE responses possible.** Which products have you **NEVER** used? **MULTIPLE responses possible**

	Savings and Loans in Commercial Banks	**Currently Have**	**Used to have**	**Never Had**
3.01 Bank	A - Savings account at a *commercial bank*			
	B - Business loan from a bank / *Mkopo wa kibinafsi au kibiashara kutoka kwa benki*.			

3.02 Please provide the following details about the bank accounts that you <u>currently have or used to have</u>:

	A - Name of the Bank	**C- How long have you had this account?**	**D- Number of Loans received since you started the business**	**E- Total Amounts (KSh)**	**F- Year/Month when you received the loans**	**G- Interest Rate**	**H- Repayment Period**	**I- Amount still to be repaid (KSh)**	**Purpose of the loan (how did you use the loan?)**
A									
B									

3.04- Please provide the following details about the *MFI* accounts that you currently have or used to have:

	A - Name of the MFI	B- Purpose	C- How long have you had this account?	D- Number of Loans received since you started the business	E- Total Amounts (KSh)	F- Year/Month when you received the loans	G- Interest Rate	H- Repayment Period	I- Amount still to be repaid (KSh)	Purpose of the loan (how did you use the loan?)
A		❑Business only ❑Personal only ❑Both business and personal								
B		❑Business only ❑Personal only ❑Both business and personal								

	Savings and Loans in **SACCOs**	Currently Have	Used to have	Never Had
3.05 Sacco	Savings account at SACCO (organisation which requires you to be a member e.g. agricultural co-op or workplace co-op) / *Akaunti ya akiba katika SACCO*			
	Business loan from a SACCO */ Mkopo kutoka kwa SACCO*			

➔ **3.06 Please provide the following details about Sacco accounts that you currently have or used to have:**

	A - Name of the Sacco	B- Purpose	C- How long have you had this account?	D- Number of Loans received since you started the business	E- Total Amounts (KSh)	F- Year/Month when you received the loans	G- Interest Rate	H- Repayment Period	I- Amount still to be repaid (KSh)	Purpose of the loan (how did you use the loan?)
A		❑Business only ❑Personal only ❑Both business and personal								
B		❑Business only ❑Personal only ❑Both business and personal								

	Loans from Family/Friends	Currently Have	Used to have	Never Had
3.11 Loans Family/Friend	Business loan from family/friends */ Mkopo kutoka kwa marafiki / jamii.*			

3.12	A- Number of Loans Received since you started the business	B- Years/Month when you received the loans	C- Amounts (Ksh)	D- Interest Rate (% or total amount repaid after interest)	E- Repayment Period	F- Amount still to be repaid as of now	G- Relation with the creditor	H- Purpose (How did you use this loan?)
A- Loan from a friend/Family								

	Loans from **Moneylenders**	Currently Have	Used to have	Never Had
3.13 Loans Money Lender	Business loan from an informal money lender/Shylock */ Mkopo kutoka kwa wakopeshaji wasio rasmi.*			

3.14 Please provide details about the *loans from moneylenders* you had since you started the business

3.12	A- Number of Loans Received since you started the business	B- Year/month when you received the loans	C- Amounts (Ksh)	D- Interest Rate (% or total amount repaid after interest)	E- Repayment Period	F- Amount still to be repaid as of now	G- Relation with the creditor	H- Purpose of the loan (How did you use this loan?)
A- Loan from a money-lender								

3.3 Money transfer services

3.34 How often do you use mobile money services? (i.e. M-Pesa, Orange Money, etc))

❑ Everyday ❑ A few times every week ❑ Once a week ❑ A few times every months ❑ Once every few months

3.35 Which of the following money transfers mechanisms do you normally use to pay and receive payments in your business? (If more than one, please indicate estimated percentages)	A- Cash transfers (percent)	B- Mobile money transfers (percent)	C- Transfer of airtime (percent)	D- Bank Transfers (percent)	E- Other (specify)
A- To pay your employees					
B- To pay your suppliers					
C- To pay bills for this business (electricity, water)					
D- To pay rent for this business					
E- To receive payments from costumers					

3.35 How much money have you put on your mobile account over the last 30 days? …….. ❑Savings ❑Only for transactions ❑Both

3.38	Insurance	Currently Have	Used to have	Never Had
A	Government medical insurance e.g NHIF */ Bima ya matibabu ya serikali kama NHIF*			
B	Private medical insurance e.g AAR, Mediplus */ Bima ya matibabu ya kibinafsi kama AAR,Mediplus*			
C	Life insurance policy / *Bima ya maisha.*			
D	Retirement / pension */ Malipo yanayopeanwa baada ya kustaafu.*			
E	Government social security e.g. NSSF / *Malipo ya uzeeni k.m NSSF*.			
F	Business Insurance : (specify name):			
G	Microinsurance (medical insurance provided by a microfinance institutions)			

2.5 Regulatory Compliance (Degree of formality)

2.51 Do you have an operational License?	*a-Which type of License?*	*How much do you pay for the license?*
❑ Yes ❑ No ❑ I had it in the past, but not anymore **Period of Compliance** From : To	❑Daily Licence ❑Single Business Permit (annual) ❑Other (specify)→	
2.52 Taxes: Are you registered at the KRA?	**Which taxes are you currently paying?**	**When did you register at KRA?**
❑ Yes ❑ No ❑ I had it in the past, but not anymore **Period of Compliance** From : To	***a-Type*** ❑*income tax* ❑ *corporate tax* ❑*VAT* ❑*Other (specify →)*	

2.53 Is your business registered at the Attorney General?	What type of registration did you make?	When did you register?	How much did you pay for the registration?
❑ Yes ❑ No ❑ I had it in the past, but not anymore **Period of Compliance** From : To	*a- Type* ❑*sole proprietorship* ❑ *Incorporated company* ❑*Partnership* ❑*Other (specify →*		

2.54 Are you registered at the Kenya Bureau of Standards?	What did you register for?	When did you register?	How much did you pay for the registration?
❑ Yes ❑ No ❑ I had it in the past, but not anymore **Period of Compliance** From : To			

Part 5 - Contract enforcement and Property Rights

5.01 Have you ever had problems or disputes over your business? For example, Partners who did not respect the contract, clients who did not pay, employee who stole goods, problem with other traders or business neighbors, etc?

❑ Yes
❑ No

5.02 <u>If yes</u>, Can you remember the <u>most important disputes</u> you had over your business since you started it? Please provide the following details

	A- Type of problem	B- Year	C- Who did you have a dispute with?	D- How did you try to solve it?		E- Was it solved successfully?
A	❑Theft During Storage ❑Theft during Transport ❑Late delivery by suppliers ❑Deficient quality of delivery by suppliers ❑Late payments by clients ❑Non-payment by clients ❑Others		❑Employee ❑Clients ❑Suppliers ❑Business Neighbor ❑Unknown person ❑Other (specify)	❑ I solved it on my own ❑ I did not do anything ❑ I went to the police ❑ I went to the gatekeeper ❑ I went to the area chief	❑ I went to the market chief ❑ I went to the community leader ❑ Jua Kali association ❑ Local vigilante group ❑ Others:	

B	❑Theft During Storage ❑Theft during Transport ❑Late delivery by suppliers ❑Deficient quality of delivery by suppliers ❑Late payments by clients ❑Non-payment by clients ❑Others		❑Employee ❑Clients ❑Suppliers ❑Business Neighbor ❑Unknown person ❑Other (specify)	❑ I solved it on my own ❑ I did not do anything ❑ I went to the police ❑ I went to the gatekeeper ❑ I went to the area chief	❑ I went to the market chief ❑ I went to the community leader ❑ Jua Kali association ❑ Local vigilante group ❑ Others:	
C	❑Theft During Storage ❑Theft during Transport ❑Late delivery by suppliers ❑Deficient quality of delivery by suppliers ❑Late payments by clients ❑Non-payment by clients ❑Others		❑Employee ❑Clients ❑Suppliers ❑Business Neighbor ❑Unknown person ❑Other (specify)	❑ I solved it on my own ❑ I did not do anything ❑ I went to the police ❑ I went to the gatekeeper ❑ I went to the area chief	❑ I went to the market chief ❑ I went to the community leader ❑ Jua Kali association ❑ Local vigilante group ❑ Others:	

5.03 <u>If you did not use any formal institution (police, courts, area chief)</u>, why have you not relied on these institutions? (Spontaneous, multiple answers allowed)

❑ My disputes were not that serious	❑ It is too time-consuming	❑ Others (specify)
❑ Other enforcement methods work better	❑ It makes things worse	
❑ Too expensive	❑ I am not entitled to go to courts	
❑ I do not know the procedures	❑ Fear of retaliation	

6.0 My supervisor may need to contact you to confirm you have completed this interview. Would you mind giving me your phone number?

+254……..

The questionnaire is finished, thank you for your time.

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Appendix 2: Supply-side questionnaire (2012)

FinAccess Business

Supply-side Questionnaire

Name of the bank:

Bank's activity: ☐ Commercial, ☐ Investment, ☐ Corporate, ☐ Retail, ☐ Other. [Put an X (by double-clicking on the box) next to the appropriate response and specify if "Other"].

Bank's ownership structure: ☐ Private sector domestic, ☐ Private sector foreign, ☐ Government/State, ☐International Financial Institutions, ☐ Other. [Put an X (by double-clicking on the box) next to the appropriate response(s) and specify if "Other"].

Staff name (Overall coordinator) :

Staff Title/Designation:

Phone number:

E-mail:

INTRODUCTION

The World Bank and Financial Sector Deepening Kenya in partnership with the Central Bank of Kenya are embarking on *FinAccess Business* - a study to analyze demand for and access to financial services for businesses in Kenya from both the demand and supply perspectives. The core idea of the supply side survey is to assess the development of the financing market for businesses in Kenya and identify constraints posed by the credit environment, regulations, and other obstacles. The results from the supply side survey will then be analyzed in relation to the demand side information derived from the World Bank's Enterprise Survey and FinAccess Business demand side Survey to be conducted in 2012. More specifically, the study will: (i) assess the extent of banks' involvement in the financing of businesses in Kenya, and (ii) offer concrete policy recommendations on how to reduce constraints to the supply of financial services to businesses. Similar studies by the World Bank and its partners have recently been concluded in South Africa and Nigeria, and are ongoing in Rwanda and Tanzania, using a similar methodology, in order to derive insights that may be relevant for the Sub-Saharan Africa region as a whole. Additional outputs of the study in Sub-Saharan Africa may include a regional issues paper.

FOCUS

While this quantitative questionnaire is focused predominantly on credit to small and medium enterprises (**SMEs),** the FinAccess Business supply side study has been designed to provide information on the a wide range of financial products (credit, equity, factoring, leasing etc.) for the entire spectrum of businesses: **Micro**, **Small**, **Medium and Large Businesses**. This questionnaire is designed to address five broad areas:

(i) the extent of the financial institutions' involvement with SMEs and micro-enterprises,
(ii) determinants of SME and micro-enterprise financing,
(iii) SME financing business models - including products and credit risk management,

(iv) characteristics of SMEs and micro-enterprises currently being targeted by financial institutions, and

(v) the impact of various obstacles (credit environment, regulations, and other issues) on SME and micro-enterprise financing.

Different parts of the questionnaire could be better answered by different managers of your bank. Section I (Involvement with SMEs and micro-enterprises) could be better answered by the bank's general manager, or the SME and micro-enterprise business managers (if applicable). Section II (Bank's Micro, Small and Medium Enterprises (MSME) Business Model and Procedures) could be better answered by the SME/micro-enterprise business manager and the credit risk manager. The questionnaire is focused on credit to SMEs but, where appropriate, **please distinguish your responses by micro-enterprises (MIs), small enterprises (SEs) and medium enterprises (MEs)**.

The questionnaire includes questions in blue and black. Questions in blue include numerical data requests. If the precise numerical data are not available, please provide an approximation/estimate and indicate so. Questions in black are perception related questions. Any additional information or comments related to the questions in the survey should be included below the relevant question next to "Notes". Since the questionnaire has been prepared for banks, some questions may not be applicable for non-bank financial institutions.

I. Involvement with SME and Micro-enterprise Financing

This section tries to understand the extent of the bank's involvement with micro, small and medium enterprises/businesses and the reasons behind it. The questions in this section should be addressed to the bank's general manager or the SME and micro-enterprise managers.

a) Assessing the bank's involvement with SMEs and micro-enterprises

1.	Does the bank currently have **SMEs** and/or **micro-enterprises** among its clients? [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	Only SMEs
☐	Only micro-enterprises
☐	Both SMEs and micro-enterprises
☐	None of the above

Notes:

Note →If your institution deals only with SMEs or only with micro-enterprises, please skip the sections in the next questions that are not applicable to your institution.

2. Provide your bank's definition criteria for a micro enterprise (MI), small enterprise (SE), medium enterprise (ME), and large enterprise (LE). [Put an X (by double-clicking on the box) next to the appropriate criteria and complete it.]

	MI	SE	ME	LE
Enterprise with total annual revenue/turnover:	☐ From to KSh	☐ From to KSh	☐ From to KSh	☐ From to KSh
Loan size:	☐ From to KSh	☐ From to KSh	☐ From to KSh	☐ From to KSh
Enterprise with total employees:	☐ From to	☐ From to	☐ From to	☐ From to
Other. Please specify:	☐ From to	☐ From to	☐ From to	☐ From to

Notes:

3.	Does the bank have a separate unit or department managing the banking relation with **SMEs and/or micro-enterprises**? [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	We have a SME department (but not a micro-enterprise department)

☐	We have a micro-enterprise department (but not a SME department)
☐	We have both a SME and a micro-enterprise department
☐	We have none of the above
	a) If you have none of the above, please specify which unit oversees the banking relation with micro-enterprises and SMEs.
	MI clients:
	SME clients:
	b) If yes, please indicate the following:
	Location of the **SME and micro-enterprise units** within the bank's structure (i.e. indicate the division they belong to): SME Unit: Micro-enterprise Unit:
	Employees working in the **SME and micro-enterprise units** (as a percentage of the total number of employees in the bank: SME Unit % Micro-enterprise Unit: %
	Average years of experience of employees in the **SME and micro-enterprise market segments**) SME unit: Micro-enterprise Unit:

Notes:

4. Please provide the data specified below. If the data are not available for the specified periods, please provide the closest available and specify the relevant period. If possible, provide data separately for MIs, SEs, MEs and LEs. If not available, provide data for the aggregate (SMEs).

a) Contribution to bank's net income (as a % of total net income).	As of December 2009	As of December 2011	Target in 3 years (if known)
MIs contribution to bank's net income	%	%	%
SEs contribution to bank's net income	%	%	%
MEs contribution to bank's net income	%	%	%
LEs contribution to bank's net income	%	%	%
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
SMEs contribution to bank's net income	%	%	%
b) Amount of loans outstanding. Please express loans in KSH and specify units (thousands, millions, etc).	As of December 2009	As of December 2011	Target in 3 years (if known)
Loans to MIs	KSH	KSH	KSH
Loans to SEs	KSH	KSH	KSH
Loans to MEs	KSH	KSH	KSH
Loans to LEs	KSH	KSH	KSH
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			

Loans to SMEs	KSH	KSH	KSH
Total amount of loans outstanding at the bank	KSH	KSH	KSH
c) Number of loans outstanding	As of December 2009	As of December 2011	Target in 3 years (if known)
Loans to MIs			
Loans to SEs			
Loans to MEs			
Loans to LEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loans to SMEs			
Total amount of loans outstanding at the bank			
d) Number of loan applications received	As of year 2009	As of year 2011	
Total number to MIs			
Total number for SEs			
Total number for MEs			
Total number for LEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Total number for SMEs			
Total number of applications received by the bank			
e) Number of loan applications approved	As of year 2009	As of year 2011	
Total number to MIs			
Total number for SEs			
Total number for MEs			
Total number for LEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Total number for SMEs			
Total number of applications received by the bank			
f) Annual interest rate charged to the best (lower risk) customer for:	As of December 2009	As of December 2011	
Loans to MIs	%	%	

Loans to SEs	%	%	
Loans to MEs	%	%	
Loans to LEs	%	%	
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loans to SMEs	%	%	
g) Annual interest rate charged to the highest risk customer for:	As of December 2009	As of December 2011	
Loans to MIs	%	%	
Loans to SEs	%	%	
Loans to MEs	%	%	
Loans to LEs	%	%	
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loans to SMEs	%	%	
h) Average maturity of loans	As of December 2009	As of December 2011	
Loans to MIs			
Loans to SEs			
Loans to MEs			
Loans to LEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loans to SMEs			
i) Currency of SME loans	As of December 2009	As of December 2011	
% of total SME loans in local currency	%	%	
% of total SME loans in foreign currency	%	%	
j) Currency of MI (micro-enterprise) loans	As of December 2009	As of December 2011	
% of total micro-enterprise loans in local currency	%	%	
% of total micro-enterprise loans in foreign currency	%	%	
k) Purpose of SME loans	As of December 2009	As of December 2011	
Investment (% of total SME loans)		%	
Working Capital (% of total SME loans)		%	

Other (e.g. trade) (% of total SME loans)		%	
l) Purpose of (MI) micro-enterprise loans *(→ answer only if your institution has a specialized micro-enterprise department)*	As of December 2009	As of December 2011	
Investment (% of total MI loans)		%	
Working Capital (% of total MI loans)		%	
Other (e.g. trade) (% of total MI loans)		%	
m) Amount of non-performing loans (NPLs). Please express amount in KSH and state the units (thousands, millions, etc.)	As of December 2009	As of December 2011	
NPLs to MIs	KSH	KSH	
NPLs to SEs	KSH	KSH	
NPLs to MEs	KSH	KSH	
NPLs to LEs	KSH	KSH	
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
NPLs to SMEs	KSH	KSH	
Total amount of NPLs at the bank	KSH	KSH	
n) Value of deposits. Please express deposits in KSH and specify units (thousands, millions, etc).	As of December 2009	As of December 2011	Target in 3 years (if known)
Deposits of MIs	KSH	KSH	KSH
Deposits of SEs	KSH	KSH	KSH
Deposits of MEs	KSH	KSH	KSH
Deposits of LEs	KSH	KSH	KSH
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Deposits of SMEs	KSH	KSH	KSH
Total amount of deposits held in the bank	KSH	KSH	KSH
o) Number of branches	As of December 2009	As of December 2011	Target in 3 years (if known)
Branches serving MIs			
Branches serving SEs			
Branches serving MEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Branches serving SMEs			

Total number of bank branches			
p) Number of loan officers	As of December 2009	As of December 2011	Target in 3 years (if known)
Loan officers serving MIs			
Loan officers serving SEs			
Loan officers serving MEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loan officers serving SMEs			
Total number of loan officers working at the bank			
q) Number of female loan officers	As of December 2009	As of December 2011	Target in 3 years (if known)
Female loan officers serving MIs			
Female loan officers serving SEs			
Female loan officers serving MEs			
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):			
Loan officers serving SMEs			
Total number of loan officers working at the bank			
Total number of female loan officers working at the bank			

Notes:

5. Do you offer the following lending products to **SMEs** and **micro-enterprises**? [Put an X (by double-clicking on the box) next to the appropriate response and specify their number and amount **for the period between December 2010 and December 2011**]

		SMEs	**Micro-enterprises** *(if applicable)*
☐	Loans for working capital.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Loans for investment.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Asset based loans and property loans.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Credit lines.	Number: . Amount: KSH	Number: . Amount: KSH

☐	Unsecured overdrafts.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Business credit cards.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Trade financing.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Leasing.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Factoring.	Number: . Amount: KSH	Number: . Amount: KSH
☐	Other, please specify: .	Number: . Amount: KSH	Number: . Amount: KSH

Notes:

6. Of the revenues that SMEs and micro-enterprises currently generate, please indicate the breakdown (in percent). If the exact breakdown is not available, please include an estimate and indicate this next to "Notes".

		SMEs	**Micro-enterprises** *(if applicable)*
	Credit:	%	%
	Deposit/account management:	%	%
	Other transactions & fee based services:	%	%
	Total revenue:	100%	100 %
	If different for SEs and MEs, provide figures separately.	%	---

Notes:

b) Profile of businesses receiving loans

7. Sectoral distribution of MSME lending. If possible, please provide data on the volumes of lending in each sector separately for MIs, SEs and MEs for the period between **December 2010 and December 2011**. If the distinction between small and medium enterprises is not available, provide data for the aggregate level (SMEs).

	MIs	**SEs**	**MEs**		**SMEs**
Agriculture	KSh	KSh	KSh		KSh
Manufacturing	KSh	KSh	KSh	*If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):*	KSh
Real Estate	KSh	KSh	KSh		KSh
Building and Construction	KSh	KSh	KSh		KSh
Trade	KSh	KSh	KSh		KSh
Transport & Communication	KSh	KSh	KSh		KSh
Restaurant, hotel and tourism	KSh	KSh	KSh		KSh
Finance and business Services	KSh	KSh	KSh		KSh
Energy and Water	KSh	KSh	KSh		Ksh
Mining and Quarrying	KSh	KSh	KSh		KSh
Total:	KSh	KSh	KSh		KSh

Notes:

8. Legal Status of businesses with a loan account at your institutions. If possible, please provide the percentages for MIs, SEs and MEs. If the distinction between small and medium enterprises is not available, provide data for the aggregate level (SMEs).

	MIs	**SEs**	**MEs**		**SMEs**
Private limited companies	%	%	%		%
Public limited companies	%	%	%	*If the disaggregation between small and medium*	%
Branch offices of companies	%	%	%		%

	registered outside Kenya					
	Partnerships	%	%	%	*enterprises is not available, please provide details about the aggregate level (SME):*	%
	Sole proprietorships	%	%	%		%
	Co-operatives	%	%	%		%

Notes:

9. Please indicate the volumes of MSME lending in each Kenyan province (in KSh). If possible, please provide data separately for MIs, SEs and MEs. If the distinction between small and medium enterprises is not available, provide data for the aggregate level (SMEs).

	MIs	**SEs**	**MEs**		**SMEs**
Central	KSh	KSh	KSh		KSh
Coast	KSh	KSh	KSh	*If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):*	KSh
Eastern	KSh	KSh	KSh		KSh
Nairobi	KSh	KSh	KSh		KSh
North Eastern	KSh	KSh	KSh		KSh
Nyanza	KSh	KSh	KSh		KSh
Rift Valley	KSh	KSh	KSh		KSh
Western	KSh	KSh	KSh		KSh
Total	KSh	KSh	KSh		KSh

10. Of the businesses that have a loan account at your institution, what is the average number of years that have elapsed since they acquired a certificate of registration? If possible, please provide data separately for MIs, SEs and MEs. If the distinction between small and medium enterprises is not available, provide data for the aggregate level (SMEs).

	MIs	**SEs**	**MEs**	*If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):*	**SMEs**
Average age of businesses with loan accounts					

11.	Which documents do you require from businesses in the loan application process? Please tick the correct answers for micro, small and medium enterprises. If the documents are not listed in the table, please add them in the left column and tick where appropriate.			
		MIs	SEs	MEs
	Certificate of registration	☐	☐	☐
	Single business permit	☐	☐	☐
	Registration of the business at the KRA:	☐	☐	☐
	Other documents. Please specify			
	Other documents (2). Please specify	☐	☐	☐
	Other documents (3). Please specify	☐	☐	☐

Notes:

12.	If your bank has **both a micro-enterprise and a SME department**, please provide data on the percentage of businesses that have "graduated" from micro-enterprise to SME finance if that information is available.
	%

Notes:

13.	If your bank has **a micro-enterprise department**, please provide data on the percentage of businesses that have "graduated" from group lending to individual lending if that information is available.
	%

Notes:

b) Determinants of the bank's involvement with SMEs and micro-enterprises

14.	To what degree is **SME and micro-enterprise** lending driven by the following in your bank? [Put an X under the appropriate column.]		
		For SMEs	**For Micro-enterprises** *(if applicable)*
	Returns (profitability in the SME/micro-enterprise segments)	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant

Intense competition for large enterprises / SMEs	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Intense competition for retail customers	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Excessive exposure to large enterprises/SMEs	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Excessive exposure to retail customers sector	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Supply chain links (possibility to seek out SMEs/micro-enterprises through existing relations with large clients)	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Cross selling (selling a variety of products to the SME/micro-enterprise customers)	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Structural changes in the market as a result of socio-economic development that have generated new opportunities	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Growth prospects in the segment over the next years	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Contributing to the economic development of the country	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Availability of donor (e.g. World Bank or IFC) credit lines for SME lending	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Others (specify) _____ _____ _____	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant

Notes:

15. Indicate to what degree the following factors are important <u>obstacles</u> to your exposure to **SMEs and micro-enterprises**. Rate [by putting an X in the appropriate column under each heading] and specify up to the 3 most important aspects within these categories. Please provide further explanations if this could be helpful for understanding the issue under the 'Notes' field.

	For SMEs	**For micro-enterprises** *(if applicable)*
Macroeconomic (economy-wide) factors E.g. macroeconomic instability, high interest rates, exchange rate risk, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether macro-economic factors are significant obstacles to SMEs and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 macro-economic factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 macro-economic factors affecting micro-enterprises.* _____ _____ _____
Legal and regulatory framework affecting financial institutions E.g. collateral law, capital requirements, loan classification regulations, regulations regarding documents required from borrowers to qualify for loans, anti-money laundering (AML) regulations, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether the legal and regulatory framework is a significant obstacle to SME and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____
Contractual environment E.g. contract enforcement, judicial efficiency, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether the contractual environment is a significant obstacle to SME and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____

Bank specific factors E.g. lack of interest at the bank, limited geographic coverage, lack of appropriate information technology tools (scoring and rating models), lack of knowledge on how to evaluate MSMEs, difficulty in designing appropriate products, high collateral requirements, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether the bank specific factors are a significant obstacle to SME and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____
SME/Micro-enterprise specific factors E.g. poor quality of financial statements, inability of MSMEs to manage risk, informality, lack of adequate collateral, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether the SME/micro-enterprise specific factors are a significant obstacle to enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____
Characteristics of SME/micro-enterprise lending E.g. high fixed costs per transaction (relative to loan size), difficulty in standardizing products and procedures, difficulty in attaining scale economies, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
Please, specify whether the characteristics of SME/micro-enterprise lending are a significant obstacle to enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____
Competition in the SME/micro-enterprise segment E.g. presence of public banks, presence of niche players, overall narrow margins, etc.	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant

Please, specify whether competition in the SME/micro-enterprise segment is a significant obstacle to SME and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	*Please, list up to 3 factors affecting SMEs.* _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____
Lack of adequate demand E.g. lack of sufficient demand, there is demand but from customers that are not credit worthy, etc. Please, specify whether lack of adequate demand a significant obstacle to SME and micro-enterprise finance and list up to 3 most important factors (from examples above or any other factors that might be relevant). **Notes:**	☐ Not significant ☐ Significant ☐ Very significant	☐ Not significant ☐ Significant ☐ Very significant
	Please, list up to 3 factors affecting SMEs. _____ _____ _____	*Please, list up to 3 factors affecting micro-enterprises.* _____ _____ _____

Notes:

16. Provide your assessment of the risk, profitability and cost of **SME** loans **relative to the LE** loans.

	SME loans are less … than LE loans	SME loans are equally … as compared to LE loans	SME loans are more … than LE loans
Profitable			
Risky			
Costly			

Notes:

17. Provide your assessment of the risk, profitability and cost of **micro-enterprise** loans **relative to the SME loans** (answer only if applicable).

	Micro-enterprise loans are less … than SME loans	Micro-enterprise loans are equally … as compared to SME loans	Micro-enterprise loans are more … than SME loans
Profitable			
Risky			
Costly			

18. If the following categories of government programs are offered in Kenya, please comment on the effect that these have on your decision to lend to **SMEs** *and* **micro-enterprises**. [Put an X next to the appropriate response].		
	SMEs	**Micro-enterprises** *(if applicable)*
Interest subsidies:	☐ Positive ☐ Negative ☐ Inconsequential	☐ Positive ☐ Negative ☐ Inconsequential
Guarantees:	☐ Positive ☐ Negative ☐ Inconsequential	☐ Positive ☐ Negative ☐ Inconsequential
Directed credit programs:	☐ Positive ☐ Negative ☐ Inconsequential	☐ Positive ☐ Negative ☐ Inconsequential
Regulatory subsidies (like lower provisions):	☐ Positive ☐ Negative ☐ Inconsequential	☐ Positive ☐ Negative ☐ Inconsequential
Other Please specify:	☐ Positive ☐ Negative ☐ Inconsequential	☐ Positive ☐ Negative ☐ Inconsequential

Notes:

19. To what extent do you lend to **SMEs** and **micro-enterprise** based on government programs? (e.g. on behalf of the government through the SME fund/Women's fund/Youth Fund or other government programs targeting micro, small and medium enterprises) [Put an X (by double-clicking on the box) next to the appropriate response.]			
	Relevance for SMEs		**Relevance for Micro-enterprises** *(if applicable)*
☐	Extremely significant	☐	Extremely significant
☐	Very significant	☐	Very significant
☐	Significant	☐	Significant
☐	Marginally significant	☐	Marginally significant
☐	Not significant	☐	Not significant
	If at all significant, please indicate the percentage of SME loans that are based on government programs:		If at all significant, please indicate the percentage of SME loans that are based on government programs:

Notes:

20. How do prudential regulations (capital requirements, regulations concerning loan classification, etc.) affect your involvement with SMEs and micro-enterprises? [Put an X (by double-clicking on the box) next to the appropriate response.]

	SMEs		**Micro-enterprises** *(if applicable)*
☐	Positively	☐	Positively
☐	Negatively	☐	Negatively
☐	Inconsequential	☐	Inconsequential
	Please explain:		Please explain:

Notes:

21. Give your impression of the burden posed by regulatory documentation requirements (if any) for lending to MSMEs. [Put an X (by double-clicking on the box) next to the appropriate response.]

	SMEs		**Micro-enterprises** *(if applicable)*
☐	Excessive for almost all products	☐	Excessive for almost all products
☐	Excessive only for some products If so, explain which ones:	☐	Excessive only for some products If so, explain which ones:
☐	Appropriate and beneficial	☐	Appropriate and beneficial
☐	Inconsequential	☐	Inconsequential
☐	Other, please specify:	☐	Other, please specify:

Notes:

22. Are there issues in registering collateral that inhibit secured lending to MSMEs? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐	Yes. Please explain:
☐	No

Notes:

23. Are there issues in enforcing (seizing) collateral for MSME lending? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐	Yes. Please explain:
☐	No

Notes:

24. Do any tax related issues affect your appetite for MSME lending? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐	Yes, positively
☐	Yes, negatively
☐	No
	Please explain:

Notes:

25.	Do you use a credit registry or credit bureau as part of the MSME loan analysis process? [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	Yes
☐	No
☐	Only for SMEs (not for micro-enterprises)
	a) Are credit bureaus effective at facilitating MSME lending in your bank? [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	Yes
☐	No
	If the service provided by the credit bureaus needs to be improved, explain how:

Notes:

26.	Do you think the government could increase the appeal of SME and micro-enterprises lending through actions in the following areas? [Put an X (by double-clicking on the box) next to the appropriate response and explain how.]
☐	Legal
☐	Regulatory
☐	Institutional
☐	Guarantees
☐	Subsidies
☐	Credit bureaus
☐	Judicial
☐	Other, please specify:

Notes:

27. How would you qualify the impact, if any, of development finance institutions on your appetite for micro-enterprises and SME lending? [Put an X (by double-clicking on the box) next to the appropriate response.]			
	SMEs		**Micro-enterprises**
☐	Positive	☐	Positive
☐	Negative	☐	Negative
☐	Inconsequential	☐	Inconsequential
	Please explain:		Please explain:

Notes:

c) MSME market

28. What is your view on the size and prospects for the SME and micro-enterprise markets in general, not just for your bank? [Put an X (by double-clicking on the box) next to the appropriate response.]			
		SME market	**Micro-enterprise market**
	The market is small and prospects are bleak	☐	☐
	The market is small but prospects are good	☐	☐
	The market is big but prospects are bleak	☐	☐
	The market is big and prospects are good	☐	☐
	Other, please specify:	☐	☐

Notes:

29. In your opinion, which segment of the private sector has the most promising growth prospects over the next five years? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	The micro-enterprise segment
☐	The small-enterprise segment
☐	The medium-enterprise segment
☐	The corporate segment (large enterprises)

Notes:

30. What is the market structure of the **SME** and **micro-enterprise** loan market in Kenya? [Put an X (by double-clicking on the box) next to the appropriate response.]			
		SME loan market	**Micro-enterprise loan market**
☐	A small number of financial institutions (e.g. 2 or 3) dominate the market	☐	☐
☐	The market is very segmented (e.g. there is a small number of banks with national reach and a large number of regional (i.e. East African/Sub Saharan African) or sector specific players)	☐	☐
☐	The market is atomized (many players are active and target similar MSMEs)	☐	☐
☐	Other, please specify:	☐	☐

Notes:

31. Have there been significant changes in the market for bank lending to MSMEs in terms of competition, consolidation, and entry during the last five years? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	Yes
☐	No
	If yes, please explain:

Notes:

32. Who are the main players in **SME** and **micro-enterprise** financing? [Put an X (by double-clicking on the box) next to the appropriate response(s).]			
	In the SME market		**In the micro-enterprise market**
☐	Small banks	☐	Small banks
☐	Large banks	☐	Large banks
☐	Niche banks (microfinance banks, region specific, sector specific)	☐	Niche banks (microfinance banks, region specific, sector specific)
☐	Public financial institutions	☐	Public financial institutions
☐	Deposit taking microfinance institutions (DTMs)	☐	Deposit taking microfinance institutions (DTMs)
☐	Credit-only microfinance institutions (MFIs)	☐	Credit-only microfinance institutions (MFIs)
☐	Saving and credit cooperatives (SACCOs)	☐	Saving and credit cooperatives (SACCOs)
☐	Other non-bank financial institutions, please specify:	☐	Other non-bank financial institutions, please specify:
☐	Other, please specify:	☐	Other, please specify:

Notes:

II. Bank's SME/micro-enterprise Business Models and Procedures

This section tries to understand the bank's business model for the SME and micro-enterprise segments and how the bank organizes itself to provide financing to businesses, reduce the costs of financing MSMEs, and mitigate the associated risks.

a) Marketing

The questions in this section need to be addressed to the MI and SME manager(s).

33. Does the bank have a sector-specific focus in dealing with MI and/or SMEs? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	Yes, we have a sector-specific focus for both microenterprises and SMEs
☐	Yes, we have a sector-specific focus for SMEs (but not for micro-enterprises)
☐	Yes, we have a sector-specific focus for micro-enterprises (but not for SMEs)
☐	No, we do not have a sector-specific focus
a) If you have a sector-specific focus, what are the top sectors pursued?	
	For SMEs For Micro-enterprises
b) Are any of the top sectors pursued by your bank supported/promoted by the Government (either through government subsidized programs, direct credit or other government programs)?	

Notes:

34. Does the bank have a specific geographic focus in dealing with MI/SMEs? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	Yes
☐	No
	If yes, please explain

Notes:

35. Which particular criteria does the bank use to determine the MIs, SEs and MEs it will target? [**Rank the top 3** among the following (1= most important, 2= second most important, 3= third most important)]

	MIs	SEs	MEs
Company size			
Geographic area where enterprise operates			
Industry sector to which enterprise belongs			
Product needs			
Expected profitability			

Exposure size			
Credit quality			
Previous/longstanding banking relation			
Other, please specify:			

Notes:

36. How much reaching out to **SMEs** and **micro-enterprises** does the bank have to do? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐	The bank reaches out only to **SMEs** because their demand for our lending products is weak
☐	The bank reaches out only to **micro-enterprises** because their demand for our lending products is weak
☐	The demand for the bank's lending products is strong, but we still do a fair amount of reaching out to both SMEs and micro-enterprises
☐	Demand for the bank's lending products is strong, so we don't actively seek clients by reaching out to them
☐	Other, please specify:

Notes:

37. What types of distribution channels does your bank have which are important for relations with SME and micro-enterprise clients? [Put an X (by double-clicking on the box) next to the appropriate response(s)]

	SMEs	**Micro-enterprises** *(if applicable)*
Own branches	☐	☐
Mobile branches	☐	☐
ATMs	☐	☐
Points of sale	☐	☐
Agents (post office, retail outlets, other non-bank entities)	☐	☐
Internet banking	☐	☐
Self service (automated banking)	☐	☐
Phone banking	☐	☐
Other. Please specify:	☐	☐

Notes:

b) Products

The questions in this section need to be addressed to the MI and SME manager(s).

38. Please provide information on the breakdown of your top three loan products (e.g. overdrafts, lines of credit, leasing, etc.) by enterprise type (enter the % that each loan product represents out of the total portfolio by type of enterprise).

Loan products	MIs	SMEs	LEs
1.	% of total MI lending	% of total SE lending	% of total LE lending
2.	% of total MI lending	% of total SE lending	% of total LE lending
3.	% of total MI lending	% of total SE lending	% of total LE lending

Notes:

39. What type and amount of fees did your bank charge on loans of the following type as of December 2011? If data are not available for December 2011, please provide the closest possible and specify the date. (Please indicate with a Yes or No in each cell; and if the response is yes, enter amount charged on a representative loan expressed in KSH or as a percentage of loan amount).

	Loans to MIs	Loans to SMEs	Loans to LEs
Flat fee	☐ No ☐ Yes. Fee amount: KSH	☐ No ☐ Yes. Fee amount: KSH	☐ No ☐ Yes. Fee amount: KSH
Fee expressed as a % of loan amount	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH
Other fees (specify)	Fee amount: Type of fee. Please describe: Representative loan amount: KSH	Fee amount: Type of fee. Please describe: Representative loan amount: KSH	Fee amount: Type of fee. Please describe: Representative loan amount: KSH

Notes:

40. What type and amount of fees did your bank charge on loans of the following type as of December 2009? If data are not available for December 2009, please provide the closest possible and specify the date. (Please indicate with a Yes or No in each cell; and if the response is yes, enter amount charged on a representative loan expressed in KSH or as a percentage of loan amount).

	Loans to MIs	**Loans to SMEs**	**Loans to LEs**
Flat fee	☐ No ☐ Yes. Fee amount: KSH	☐ No ☐ Yes. Fee amount: KSH	☐ No ☐ Yes. Fee amount: KSH
Fee expressed as a % of loan amount	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH	☐ No ☐ Yes. Fee amount: % of loan Representative loan amount: KSH
Other fees (specify)	Fee amount: Type of fee. Please describe: Representative loan amount: KSH	Fee amount: Type of fee. Please describe: Representative loan amount: KSH	Fee amount: Type of fee. Please describe: Representative loan amount: KSH

Notes:

41. How do you mitigate costs of MSME loans?

Notes:

42. Do you offer the following saving products to SMEs and micro-enterprises? [Put an X (by double-clicking on the box) next to the appropriate response(s).]

	SMEs		**Micro-enterprises**
☐	Cheque accounts	☐	Cheque accounts
☐	Savings accounts	☐	Savings accounts
☐	Time deposit accounts	☐	Time deposit accounts
☐	Other, please specify:	☐	Other, please specify:

Notes:

43. Do you offer the following transaction and fee based services to SMEs and micro-enterprises? [Put an X (by double-clicking on the box) next to the appropriate response(s).]
.

Loan products	**SMEs**	**Micro-enterprises**
Cash management	☐	☐
Payroll and pensions/retirement payments	☐	☐
Other payment services	☐	☐
Foreign Exchange	☐	☐
Business training, technical training, coaching	☐	☐
Outsourced back office facilities (e.g. accounting or book-keeping)	☐	☐
Other, please specify:	☐	☐

Notes:

44. Do you offer any services to your SME and micro-enterprise clients for free? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐	Yes
☐	No

If yes, please specify which services you offer for free

	To SMEs		**To Micro-enterprises** *(if applicable)*
☐	Payment services	☐	Payment services
☐	Business training, technical training, coaching	☐	Business training, technical training, coaching
☐	Outsourced back office facilities (e.g. accounting or book-keeping)	☐	Outsourced back office facilities (e.g. accounting or book-keeping)
☐	Other, please specify:	☐	Other, please specify:

Notes:

45. List the main non-lending products you offer to Micro-enterprises and SMEs ranked from the most profitable to the least profitable.

	SMEs	**Micro-enterprises**
1.		
2.		
3.		
4.		
5.		

Notes:

46.	Has there been a change between 2009 and 2011 in the products you offer to MSMEs? [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	Yes
☐	No
	a) If yes, please specify how [put an X (by double-clicking on the box) next to the appropriate response(s)] and list affected products.
☐	Elimination of products. List products:
☐	Offering of new products. List products:
☐	Relative importance of some products has declined. List products:
☐	Relative importance of some products has increased. List products:

Notes:

47.	Indicate the most relevant statement regarding the standardization of your MSME products. [Put an X (by double-clicking on the box) next to the appropriate response.]
☐	MIs are mostly offered standardized products
☐	MIs are mostly offered tailored products
☐	MIs are offered a similar proportion of standardized and tailored products
☐	SEs are mostly offered standardized products
☐	SEs are mostly offered tailored products
☐	SEs are offered a similar proportion of standardized and tailored products
☐	MEs are mostly offered standardized products
☐	MEs are mostly offered tailored products
☐	MEs are offered a similar proportion of standardized and tailored products
☐	Other, please specify:

Notes:

c) Credit risk management process

The questions in this section need to be addressed to the bank's credit risk manager.

48.	How is the credit risk management function for loan origination organized in your bank? [Put an X (by double-clicking on the box) next to the appropriate response(s).]		
		For SMEs	**For Micro-enterprises** *(if applicable)*
	Risk management is separated from sales (different persons)	☐	☐

	Risk management and sales are performed by the same person/group	☐	☐
	Risk management is largely automated (e.g. through scoring)	☐	☐
	Risk management is mostly done by a credit risk analyst	☐	☐
	Risk management is done primarily from headquarters	☐	☐
	Risk management is done primarily at the branch level	☐	☐
	Other, please specify:	☐	☐

Notes:

49. Does your bank have any of the following credit limits for the approval of SME and micro-enterprise loans? [Put an X (by double-clicking on the box) next to the appropriate response(s).]

		For SMEs	**For Micro-enterprises** *(if applicable)*
	Yes, limits exist for the overall bank portfolio	☐	☐
	Yes, limits exist per sector of activity	☐	☐
	Yes, limits exist per lending product	☐	☐
	Yes, limits exists per individual loan	☐	☐
	No set limits exist	☐	☐
	If no limits exist, please explain how the bank manages its credit risk:	☐	☐

Notes:

50. How would you qualify your bank's involvement with **SMEs** and **micro-enterprises** in terms of loan origination and monitoring? [Put an X (by double-clicking on the box) next to the appropriate response(s).

		For SMEs	**For Micro-enterprises** *(if applicable)*
	The bank mainly approves loans through *relationship lending* (i.e. mostly based on soft information gathered by the loan officer through continuous, personalized direct contacts with the MSMEs, their owners, managers and the local community in which they operate).	☐	☐
	The bank mainly approves loans through *transactional technologies* that facilitate arms-length lending (such as credit	☐	☐

	scoring, standardized risk rating tools and processes, factoring, leasing, etc).		
	The bank keeps a close relationship with clients to monitor loans (e.g. through post approval site visits, continuous interaction with client, frequent reporting requirements, etc).	☐	☐
	The bank relies more on automatically generated preventive indicators/triggers for monitoring purposes than on a continuous personalized direct contacts with the client.	☐	☐
	Other. Please explain:	☐	☐

Notes:

51. Does your bank use scoring models to approve loans to SMEs and micro-enterprises? [Put an X (by double-clicking on the box) next to the appropriate response(s).]

		For SMEs	**For Micro-enterprises**
	Yes, approval is completely done by scoring. Please specify the loan range or size over which scoring is used to approve loans:	from to KSH.	
	Yes, but scoring is only an input in loan decision.	☐	☐
	Yes, but scoring is only used for certain products. Please specify:	☐	☐
	No, scoring plays no role in loan decision.	☐	☐

Notes:

52. If your bank uses scoring models, put an X (by double-clicking on the box) next to the appropriate response(s).

		For SMEs	**For Micro-enterprises**
☐	The model is country specific	☐	☐
☐	The model is sector specific	☐	☐
☐	The variables used are mostly collected from credit bureaus	☐	☐
☐	The variables used are mostly collected from other public sources	☐	☐
☐	The variables used are mostly collected from internal sources	☐	☐
☐	The variables used are submitted by the client	☐	☐
☐	We score just the enterprise	☐	☐
☐	We score just the owner	☐	☐
☐	We score both the owner and their enterprise	☐	☐
☐	Other, please specify:	☐	☐

Notes:

53. Does the credit analysis rely on qualitative assessments? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	Yes
☐	No
☐	Yes, but only for micro-enterprises
☐	Yes, but only for SMEs
	a) If yes, does the bank use the following variables? [Put an X (by double-clicking on the box) next to the appropriate response(s).]
☐	Rating the quality of (M)SME management
☐	Strength, weaknesses, opportunities, and threats (SWOT) analysis of the (M)SME
☐	Viability of the business idea
☐	Realistic assessment of market size and potential
☐	Entrepreneurial character of the owner
☐	Other, please specify:

Notes:

54. Does the credit analysis rely on quantitative assessments? [Put an X (by double-clicking on the box) next to the appropriate response.]	
☐	Yes
☐	No
☐	Yes, but only for micro-enterprises
☐	Yes, but only for SMEs
	a) If yes, does the bank use one of the following? [Put an X (by double-clicking on the box) next to the appropriate response(s).]
☐	Financial analysis of the (M)SME
☐	Projected sector trends/indicators
☐	Financial projections of the (M)SME
☐	Financial analysis of the (M)SME owner(s)
☐	Other, please specify:

Notes:

55. Please indicate how important for your bank the following factors are in making decisions regarding loans to the following types of enterprises. Rank importance from 1 to 6 (**1 being the most important**) for each type of enterprise. If the disaggregation between SEs and MEs is not available, please specify the aggregate level (SME)

	For MIs	For SEs	For MEs	For LEs		For SMEs
1. Collateral					*If the disaggregati*	

2. Financial assessment of the business					*on between **small (SEs)** and **medium (MEs)** enterprises is not available, please provide details about the aggregate level (SME):*	
3. Enterprise's credit history with your bank						
4. Enterprise's credit history from a credit bureau						
5. Enterprise's owner characteristics						
6. Other. Please specify:						

Notes:

56. List and provide the following information for the main lending products offered to SMEs and micro-enterprises, ranked from the most profitable to the least profitable. (If different for SEs and MEs, specify.)

For SMEs	# of days to process a loan application	Type of documentation needed to process a disbursement	Collateral required as % of financing
1.			
2.			
3.			
4.			
5.			
For micro-enterprises *(if applicable)*			
1.			
2.			
3.			
4.			
5.			

Notes:

57. Describe collateral requirements across segments. Fill each cell, separating MIs, SEs, MEs and LEs if possible.

Segments	Do you require collateral?	Percentage of loans requiring collateral (i.e. percentage of the portfolio that is collateralized)	For a representative loan, what is the ratio between collateral and loan value (i.e. the collateral required as % of financing)?	Is movable collateral (excluding guarantees) acceptable?	If the loan is secured by collateral, is the interest rate charged lower?
MI loans					
SE loans					
ME loans					
LE loans					
If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME):					
SME loans					

Notes:

58. If collateral requirements are higher for MSMEs than for LEs, indicate which of the reasons below apply or list up to 3 other factors. [Put an X (by double-clicking on the box) next to the appropriate response(s).]

	SMEs	**Micro-enterprises** *(if applicable)*
They lack adequate financial information	☐	☐
They are more informal	☐	☐
They have worse management	☐	☐
They are harder to evaluate	☐	☐
They are harder to prosecute (e.g. for civil suits for recovery on defaults)	☐	☐
Their collateral more difficult to seize in case of default	☐	☐
Other, please specify:	☐	☐
Other, please specify:	☐	☐
Other, please specify:	☐	☐

Notes:

59. What types of assets are commonly used as collateral for lending to the following type of enterprises? Rank importance from 1 to 7 (with **1 being the most important**) for each type of enterprise.

	For MIs	For SEs	For MEs	For LEs		For SMEs
1. Land					*If the disaggregation between **small (SEs)** and **medium (MEs)** enterprises is not available, please provide details about the aggregate level (SME):*	
2. Equipment						
3. Real estate						
4. Livestock						
5. Bank/personal guarantees						
6. Cash and other liquid assets						
7. Household and business items (Chattels)						
8. Other. Please specify:						

Notes:

60. How do you mitigate risks of SME loans?

Notes:

61. Does the bank manage the credit exposure to MSMEs using a portfolio approach? [Put an X (by double-clicking on the box) next to the appropriate response.]

☐ Yes

☐ No

a) If yes, does your bank seek portfolio diversification effect through any of the following? [Put an X (by double-clicking on the box) next to the appropriate response(s).]

	For SMEs	**For Micro-enterprises** *(if applicable)*
Sectoral location	☐	☐
Geographical location	☐	☐
Scale	☐	☐
Other, please specify:	☐	☐

Notes:

c) Bad Loans Recovery

62. After how many days is a non-serviced loan considered overdue for micro-enterprises and SMEs? If there are differences across products please specify.	
SMEs	**Micro-enterprises** *(if applicable)*
days	days

Notes:

63. After how many days is a non-serviced loan moved to non-accrual for micro-enterprises and SMEs? If there are differences across products please specify.	
SMEs	**Micro-enterprises** *(if applicable)*
days	days

Notes:

64. Do you have a dedicated SME and micro-enterprise loan recovery unit? [Put an X (by double-clicking on the box) next to the appropriate response.]	
For SMEs	**For Micro-enterprises** *(if applicable)*
☐ Yes	☐ Yes
☐ No	☐ No

Notes:

65. Please provide the following data if available. If you do not keep track of these variables please indicate so.

	MIs	**SEs**	**MEs**	*If the disaggregation between small and medium enterprises is not available, please provide details about the aggregate level (SME)::*	**SMEs**
How long does it usually take to recover a non-performing loan?	days	days	days		days
What is the typical share of recovery?	% of loan value	% of loan value	% of loan value		% of loan value
What is the usual cost to recover?	% of loan value	% of loan value	% of loan value		% of loan value

Notes:

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Appendix 3: Supply-side questionnaire (2014)

FAB14 Questionnaire

Introduction

The World Bank and Financial Sector Deepening Kenya (FSD Kenya) in partnership with the Central Bank of Kenya are embarking on a second round of *FinAccess Business* - a study to analyze the supply of financial services to Kenyan businesses. The core idea of the supply side survey is to assess the development of the financial services market for businesses in Kenya and identify constraints posed by the credit environment, regulations, and other obstacles. While the previous wave of the survey collected data on business lending as of December 2009 and December 2011, the current questionnaire focuses on data as of December 2013[92].

A core result of this survey is to identify a standardized definition of microenterprises, SMEs and large businesses in order to facilitate the comparison of data across institutions and track changes in the market over time. Since banks are currently using different methods to classify their data, **this survey requests banks to provide their own definition of microenterprises, SMEs and large enterprises**. The last section of the questionnaire seeks your suggestions on the preferred approaches to define micro, small, medium and large enterprises from which a standardized new definition will be proposed for next year's survey 2015. The new definition will be jointly agreed upon by CBK, FSD-K and the financial institutions.

This questionnaire will take approximately 30 to 40 minutes to be completed. Please note that your institution might be re-contacted in case of missing values or unclear\inconsistent answers. Kindly answer all questions with the maximum degree of accuracy.

[92] The results from last year's survey were published in a World Bank working paper comparing five African markets. The report is available at http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-6563

Name of the bank:
Staff name:
Staff Title:
Phone number:
E-mail:

Definition of micro, small, medium and large enterprises

1. DEFINITION STRATEGIES

Provide your bank's definition criteria for a micro enterprise (MI), small enterprise (SE), medium enterprise (ME), and large enterprise (LE). [Put an X (by clicking on the box) next to the appropriate criteria and complete it.]

	MI	SE	ME	LE
Enterprise with total annual revenue/turnover:	☐ From to KSh	☐ From to KSh	☐ From to KSh	☐ From to KSh
Loan size:	☐ From to KSh	☐ From to KSh	☐ From to KSh	☐ From to KSh
Enterprise with total employees:	☐ From to	☐ From to	☐ From to	☐ From to
Other. Please specify:	☐ From to	☐ From to	☐ From to	☐ From to

2. NUMBER OF LOANS AND SIZE OF BUSINESS PORTFOLIOS IN 2013

2.1. **USING THE DEFINITION OF MICRO, SMALL, MEDIUM AND LARGE ENTERPRISE INDICATED IN QUESTION 1, PLEASE INDICATE THE TOTAL NUMBER OF LOANS PROVIDED TO BUSINESSES AND TOTAL AMOUNT OUTSTANDING AS OF *DECEMBER 2013***

Number of outstanding business loans (as of Dec 2013)		**Total amount outstanding (as of Dec 2013)**	
Number of loans to micro-enterprises (MI):	Number	**Amount outstanding** to *micro-enterprise*:	KES
Number of loans to small- enterprises (SE):	Number	**Amount outstanding** to small-*enterprises*:	KES
Number of loans to medium- enterprises (ME)	Number	**Amount outstanding** to *medium-enterprises*:	KES
Number of loans to large- enterprises (LE)	Number	**Amount outstanding** to *large-enterprises*:	KES

DATA ACCURACY CHECK: ACCORDING TO THE DATA PROVIDED ABOVE, THE AVERAGE LOAN SIZE FOR EACH CATEGORY IS AS FOLLOWS:

Micro	[insert figure]
Small	[insert figure]
Medium	[insert figure]
Large	[insert figure]

Comments (optional):

3. CONTRIBUTION OF MICRO, SMALL, MEDIUM AND LARGE ENTERPRISE LENDING TO THE BANK'S INCOME.

Contribution of business lending to bank's income as of December 2013	**Value of interest income on loans and advances**	**Value of fees and commissions on loans and advances**	**Value of other fees and commissions' income**
Micro-enterprises	KES	KES	KES
Small-enterprises	KES	KES	KES
Medium-enterprises	KES	KES	KES
Large-enterprises contribution	KES	KES	KES

4. AVERAGE LOAN TERM (REPAYMENT PERIOD) OF BUSINESS LOANS (AS OF DECEMBER 2013)

As of December 2013	
Average loan term of micro-enterprise loans	Months
Average loan term of small- enterprise loans	Months
Average loan term of medium- enterprise loans	Months
Average loan term of large- enterprise loans	Months

5. ANNUAL AVERAGE INTEREST RATE CHARGED TO BEST (LOWEST RISK) BUSINESS CUSTOMERS (EXCLUDING BANK STAFF)

As of December 2013	
Average interest rates on micro-enterprise loans	%
Average interest rates on small- enterprise loans	%
Average interest rates on medium-enterprise loans	%
Average interest rates on large- enterprise loans	%

6. LENDING PRODUCTS OFFERED AT YOUR INSTITUTIONS TO SMES AS OF DECEMBER 2013

The total size of your SME portfolio is estimated at [insert value from question 2.1].

In this section, please provide the breakdown of your SME portfolio by primary product types. [Note that this question focuses on small and medium enterprises only (SMEs), not micro or large enterprises]

As of December 2013	**% of total SME portfolio**	**Number of loans**
Term loans (maturity below 24 months)	%	Number
Term loans (maturity of 24 months and above)	%	Number
Trade finance loans (invoice discounting, LPO financing, supplier finance, guarantees, etc.)	%	Number
Overdrafts	%	Number
Asset financing (including leasing)	%	Number
Other 1 (specify)	%	Number
Other 2 (specify)	%	Number
	Note: total should sum up to 100%	

7. DEPOSITS FROM BUSINESS CLIENTS

Number and Value of deposits. Please express deposits in KSH	**Number of Deposits accounts -** As of December 2013	**Value of deposits-** As of December 2013
Deposits of micro-enterprises	Number	KSH
Deposits of small- enterprises	Number	KSH
Deposits of medium-enterprises	Number	KSH
Deposits of large- enterprises	Number	KSH

8. PORTFOLIO PERFORMANCE

8.1 **Please indicate the *total value* of NPLs in each loan size category (*Note:*** *NPLs are defined as per CBK definitions)*

Non-performing loans (NPLs). Please express amount in KSH	**Number of NPLs** As of December 2013	**Value** - As of December 2013

NPLs to micro-enterprise	Number	KSH
NPLs to small- enterprise s	Number	KSH
NPLs to medium-enterprise s	Number	KSH
NPLs to large- enterprise s	Number	KSH

8.2 Annual write-off due to non-performing business loans in 2013

Annual write-offs due to non-performing loans. Please express amount in KSH	**Number of write-offs (in 2013)**	**Value of write-offs (in 2013)**
Write-offs on micro-enterprise loans	Number	KSH
Write-offs on small- enterprise loans	Number	KSH
Write-offs on medium-enterprise loans	Number	KSH
Write-offs on large- enterprise loans	Number	KSH

8.3 Time and costs for recovering non-performing loans

Loan Size	***Recovering NPLs***		
	Average number of days necessary to recover non-performing loans	**Typical share of recovery**	**Typical cost of recovery (% of loan value)**
Micro-enterprise loans	Days	%	%
Small- enterprise loans	Days	%	%
Medium- enterprise loans	Days	%	%
Large- enterprise loans	Days	%	%

9 COLLATERAL REQUIRED AS PERCENTAGE OF LOAN GRANTED (AVERAGE)

Please indicate the average value of collateral required per loan granted	**% of collateral required-** As of December 2013
Average % of collateral required for micro-enterprise loans	%

Average % of collateral required for small-enterprise loans	%
Average % of collateral required for medium-enterprise loans	%
Average % of collateral required for large-enterprise loans	%

10 SECTORAL DISTRIBUTION OF BUSINESS LENDING (AS PER CBK COMPLETION NOTES)

		MIs	SEs	MEs	LEs
	Agriculture	KSh	KSh	KSh	KSh
	Manufacturing	KSh	KSh	KSh	KSh
	Real Estate	KSh	KSh	KSh	KSh
	Building and Construction	KSh	KSh	KSh	KSh
	Trade	KSh	KSh	KSh	KSh
	Transport & Communication	KSh	KSh	KSh	KSh
	Restaurant, hotel and tourism	KSh	KSh	KSh	KSh
	Finance and business Services	KSh	KSh	KSh	KSh
	Energy and Water	KSh	KSh	KSh	Ksh
	Mining and Quarrying	KSh	KSh	KSh	KSh
	Total:	KSh	KSh	KSh	KSh

11 INNOVATIONS IN THE BUSINESS FINANCE SEGMENT

	Has there been a change between 2011 and 2013 in the products you offer to businesses at your institution? [Put an X (by clicking on the box) next to the appropriate response.]
☐	Yes
☐	No
	a) If yes, please specify how [put an X (by double-clicking on the box) next to the appropriate response(s)] and list affected products.
☐	Elimination of products. List products:

☐	Offering of new products. List products:
☐	Relative importance of some products has declined. List products:
☐	Relative importance of some products has increased. List products:

12 DEFINING ENTERPRISES – WAY FORWARD

One of the key objectives of this study is to propose a standardized way to define micro, small, medium and large enterprises across financial institutions. The new definition will be based on the results of this study and the following discussions between banks, the CBK and FSD-Kenya. In your view, which of the following options are the most appropriate\feasible and easy ways to define micro, small, medium and large enterprises in your institution? Please click on the answers that you find most relevant and comment in the box below.

		Micro enterprises	Small enterprises	Medium enterprises	Large enterprises
☐	Number of employees	From To	From To	From To	From To
☐	Annual business turnover	From To	From To	From To	From To
☐	Annual account turnover	From To	From To	From To	From To
☐	Asset size	From To	From To	From To	From To
☐	Loan size	From To	From To	From To	From To
☐	Government definitions such as the Single Business Permit (SBP) code				
☐	Other 1: Specify				