

CREDIT ACCESS, CONSTRAINT AND DEFAULT: EVIDENCE FROM
SMALL SCALE ENTERPRISES IN URBAN LIBERIA

MUSA/ DUKULY

B.Sc (Economics) - Liberia, MA (Economics) - Kenya

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Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Economics of the University of Nairobi

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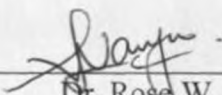
DECLARATION

This thesis is my original work, which has not been presented for a degree in any university


Signature  Date 8/11/2012

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This thesis has been submitted for examination for PhD in Economics with our approval as university supervisors

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DEDICATION

Dedicated to the Almighty God, my mother, family, children, teachers and friends

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My foremost gratitude goes to the Almighty God, through whose blessings, guidance and protection I successfully sailed through various stages of the PhD program. Indeed, I am thankful to my guardians and parents, particularly my mother for prioritizing the option of educating me, thereby cutting down on other sub-optimal actions. I remain highly appreciative to all institutions that nurtured me throughout my academic path. The Department of Economics, in particular Prof. Geegbae A. Geegbae (now Dean of College of Business and Public Administration, University of Liberia) is recognized for supporting my PhD application to the School of Economics of the University of Nairobi (Kenya)/University of Dar Es Salaam (Tanzania). I am highly grateful to the African Economic Research Consortium (AERC) for awarding me sponsorship, both at the masters and PhD levels. This research would not have been possible without the modest assistance of Liberia Macroeconomic Policy Analysis Capacity Building Project (LIMPAC). I appreciate with gratitude the hospitable gesture from the people of Kenya and Tanzania, while a student in both countries.

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ACRONYMS

ACDB	AGRICULTURAL COOPERATIVE DEVELOPMENT BANK
AERC	AFRICAN ECONOMIC RESEARCH CONSORTIUM
CBL	CENTRAL BANK OF LIBERIA
CCA	COMMON COUNTRY ASSESSMENT
CFSNS	COMPREHENSIVE FOOD SECURITY AND NUTRITION SURVEY
EU	EUROPEAN UNION
IFC	INTERNATIONAL FINANCE CORPORATION
IFPRI	INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IMF	INTERNATIONAL MONETARY FUND
GoL	GOVERNMENT OF LIBERIA
GDP	GROSS DOMESTIC PRODUCT
HIPC	HIGHLY INDEBTED AND POOR COUNTRY
LEAP	LOCAL ENTERPRISE ASSISTANCE PROGRAMME
LIMPAC	LIBERIA MACROECONOMIC POLICY ANALYSIS CAPACITY BUILDING PROJECT
LISGIS	LIBERIA INSTITUTE FOR STATISTIC AND GEO-INFORMATION SERVICES
LUBI	LIBERIA UNITED BANK INCORPORATED
MNL/MNP	MULTINOMIAL LOGIT MODEL/MULTINOMIAL PROBIT MODEL
MSEs/SMEs	MICRO AND SMALL SCALE ENTERPRISES/SMALL AND MICRO ENTERPRISES
MFI _s	MICROFINANCE INSTITUTIONS
NGOs	NON GOVERNMENTAL ORGANISATIONS
NHDR	NATIONAL HUMAN DEVELOPMENT REPORT
NHSB	NATIONAL HOUSING AND SAVING BANK
TI	TRANSPARENCY INTERNATIONAL
UN	UNITED NATIONS
UNIDO	UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
UNCDF	UNITED NATIONS CAPITAL DEVELOPMENT FUND
UNDAF	UNITED NATIONS DEVELOPMENT ASSISTANCE FUND
UNDP	UNITED NATIONS DEVELOPMENT PROGRAMM
UNDESA	UNITED NATIONS DEPARTMENT OF ECONMIC AND SOCIAL AFFAIRS
UNIFEM	UNITED NATIONS DEVELOPMENT FUND FOR WOMEN
UNMIL	UNITED NATIONS MISSION IN LIBERIA
UNOPS	UNITED NATIONS OPERATION PROJECT SERVICE
USA	UNITED STATES OF AMERICA

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ABSTRACT

Small enterprises in the post-war Liberia have huge potential of reversing the negative consequences of conflict and spurring economic growth. However, they are trapped in financing difficulties that impede their investment financing and expansion. This study reinforces the discussion that the credit market of Liberia is segmented and underdeveloped, with high level of asymmetric information, which has implications for screening errors in processing of loans, credit market participation and access, and credit default. Therefore, development of credit market is critical to successful credit intervention, because it reflects the strength of regulatory system; appropriateness of prudential guidelines; efficient pricing of credit and ultimate ability of the small firms to participate in the credit market. The thesis focuses on post-war period, looking at credit market participation; credit constraint and credit default in order to facilitate holistic integration of small enterprises in credit programs of Liberia.

The thesis contributes to literature by providing support to existing theories and presenting new evidence on the contextual nature of interaction between small firms and credit market in a post-war economy. Micro-econometric models and firm level data gathered from surveying of small-scale firms using the Liberia National Account of the Establishment Survey were used for analysis. The thesis answers the following specific research questions: What factors influence credit market participation and access to desired credit amount? What characterizes small enterprises credit constraint and determine being credit rationed, rejected and discouraged? And what determines the probability and extent of credit default?

The key findings indicate that credit market participation, access to credit, credit constraint and default are influenced by a diversity of factors such as credit market variables, skill/experience of managers, firm size, firm performance indicators and market environment that defines firm operations. Hence, easing restrictive credit requirements, strengthening prudential guidelines in regulatory systems, sensitizing borrowers, supporting a knowledgeable and growing entrepreneurial culture are critical in developing credit markets, thus relaxing financial constraints and reducing default. That notwithstanding, future research should be directed to analyzing the supply side component of credit demand; exploring the effect of rent-seeking on small firms' productivity and assessing default relative to loan rollover.

CHAPTER I: BACKGROUND

1.1 Introduction

Studies on developing countries have considered financial access vital for economic growth and poverty reduction. Strong financial systems have helped deliver rapid growth overall, as well as direct and indirect benefits, across income distributions (Beck *et al.*, 2007). Financial access reduces inequality by disproportionately boosting the income growth of the poor (Beck and Demirguc-Kunt, 2005). Across Africa, access to finance is rightly seen as a key to unlocking growth for the poor, as much as for expanding trade (Hulme and Mosley, 1996; Green *et al.*, 2008, Honohan and Beck, 2007). However, there is limited work examining the deterministic credit channels through which financial institutions respond to financial needs of micro and small-scale enterprises (MSEs) in post-war countries. There is much less literature on micro and small-scale enterprises (MSEs) in developing countries (Green *et al.*, 2008). Moreover, the precise channels through which finance operates are still unclear (McPherson and Rous, 2010), but one possible channels through which finance affects small firms' performance is via resource based orientation (reputation, competitiveness, performance and market environment).

Few studies have addressed factor influencing credit constraint among small enterprises. Notable evidence (Bigsten *et al.*, 2003, Byiers *et al.*, 2010) on small and micro enterprises financing constraints in Africa is based on panel analysis, which is inadequate to bring out country specific financing components. Other studies (Simtowe and Zeller, 2006; Kochar, 1997; Binswanger and Khandker, 1995; Lawal *et al.*, 2009; Turvey *et al.*, 2008; Atieno, 1994, 2001; Mpuga 2004, 2010) particularly carried out in Asia and Africa, regarding access to credit and credit constraints focused on agricultural based rural sector with few (Kedir *et al.*, 2007; Okurut *et al.*, 2004; Joshi, 2005) focusing on urban sector mainly at the household level. Moreover, existing empirical evidence on the effect of access to credit by small firm is not only limited, but based on macro level (see Easterly and Levine, 2001; Levine and Zervos, 1998) and cross country analysis. There are only a few country specific studies (Green *et al.*, 2008, Atieno, 2001; Aryeetey *et al.*, 1994) that attempt to evaluate the effect of access to credit by small enterprises in Africa. On the aspect of default, Taslim (1995) and Tschach (2003) only provide theoretical view about credit default by firms. Previous studies on loan default failed to assess the probability and extent of default simultaneously.

It is generally conceived that countries with high economic growth rate could alleviate poverty via well functioning credit system. In 2003-2007, a number of sub-Saharan African (SSA) countries, including Liberia experienced an average annual growth of real bank private sector credit of over 20 Percentage points, which led to almost doubling of the ratio of bank private sector credit to GDP (Iossifov and Khamis, 2009). Though high economic growth has been experienced over the last three years in Liberia, partly due to rapid credit growth (Iossifov and Khamis, 2009), the vulnerable employment and poverty rates remain high. In line with the Grameen Bank success story regarding improvement in socioeconomic conditions of micro and small enterprises (Wahid, 1994), the impact of economic growth in alleviating poverty is perhaps more effective provided it is pro-poor, in terms of provision of financing opportunities to small enterprises. This assertion aligned with acknowledgement by Kaliba *et al.* (2010) that it is difficult to initiate, expand and own business in Liberia due to limited access to finance.

Table 1: Constraints to SMEs in selected post-war countries

Country	% of Firms Identifying Tax Rates as Major Constraint	% of registered Firms Competing Against Unregistered or Informal Firms	% of Firms with Line of Credit or Loans from Financial Institutions	% of Firms With a Checking or Savings Account	% of Firms Using Banks to Finance Investments	Loans Requiring Collateral (%)	% of Firms Identifying Access to Finance as a Major Constraint
Liberia	18.97	66.21	14.01	67.80	10.10	86.90	34.99
Guinea	39.36	62.80	5.96	53.88	0.87	55.56	58.30
Sierra Leone	42.52	80.34	17.37	67.80	6.90	83.44	34.57
Rwanda	44.65	47.07	37.58	82.72	15.90	96.66	35.95
Mozambique	30.80	75.45	14.19	75.69	10.54	90.58	50.10
Angola	23.00	77.68	4.14	79.01	2.13	93.45	55.26

Source: World Bank Enterprise Survey, 2009

Despite the huge relevance of MSEs, Table 1 reports how small firms in selected sub-Saharan Countries are faced with variety of constraints. In Liberia, MSEs are faced with multiple constraints aside from financing. Based on World Bank Enterprise Survey (2009) and Kaliba *et al.* (2010) on Liberia, other constraints affecting MSEs are lack of marketing, equipment and technology, external competition, inputs problems, licensing, registration requirements and institutional constraints. However, lack of access to finance is noted in World Bank Enterprise Survey as the dominant constraints to MSEs in Liberia due to collateral requirement. In Africa, Fatoki and Odeyemi (2010), Bartra *et al.* (2003), Ayyagari *et al.* (2008) and Bigsten *et al.* (2003) noted financing as the leading constraint experienced by small firms.

Conceptually, the nature of credit markets, which are segmented and incomplete, is one possible explanation.

In Liberia, firms with line of credit from financial institutions constitute 14.01 percentage points; firms using banks to finance investments represent 10.10 percentage points¹ and firms identifying access to finance and collateral as a major constraints account for 34.99 percentage points and 86.9 percentage points respectively (World Bank Enterprises Survey, 2009). As noted by Atieno (2009), the risky and intertemporal nature of credit trade, information requirements and enforcement problems for lenders are high, thereby resulting in agency costs that affect the outcome of credit programmes targeted towards micro and small scale firms. This view perhaps aligns with the situation in Liberia. As a result, firms may prefer funds from external sources, but fail to apply because of the high costs and rigid bureaucracy involved. Additionally, most formal financial institutions consider small scale firms as not creditworthy due to their lack of growth potential and small share of economic activities.

On this account, policymakers have held the opinion that micro and small scale firms in developing countries lack access to adequate financial opportunity for efficiently inter-temporal transfers of resources and risk coping. The Liberia's Poverty Reduction Strategy (PRS, 2008) unveils several problems facing the financial industry inclusive of poor access to loan, high intermediation costs (especially in rural areas), high volume of non-performing-loans, ineffective judicial procedures for loan recovery and inadequate credit risk management systems. Without well-functioning financial markets, micro and small scale firms may lack much prospect for promoting their development in many significant and sustainable ways. In fact, the recent World Bank Survey (RPED) of SMEs shows that one of the major impediments to accelerating SMEs development is lack of access to finance, which impedes economic growth, minimizes employment and increases poverty. Traditional commercial banks typically have minimum interest in lending to micro and small firms due to their lack of viable collateral and the high transaction costs associated with the small loans. Most developing-country governments, in particular Liberia and donors, have set up credit programs aimed at improving credit market participation and access with less emphasis on small enterprises in urban settlements. This shows that policy regarding credit access has favored rural areas compared to urban areas in developing countries (Rand, 2007). However, the vast majority of the credit programs, for instance the agricultural development bank which provided credit at subsidized

¹ Slightly lower than sub-Saharan Africa, where 14.5% of firms use banks to finance investment

interest rates failed to achieve its objectives both to serve the poor and be sustainable credit institutions in Liberia.

With the foregoing issues, limited information on activities of small enterprises in Liberia is reflective of the adverse potential consequences on the rate of loan repayment default. This suggests that financial institutions in Liberia are saddled with huge non-performing loans, evidenced by 20.8 percentage points of non-performing loan in 2011. So designing a loan contract for small businesses is not an easy task, given the lack of comprehensive evidence about the heterogeneity of economic activities relative to credit markets, skill in business and market environment necessary to generate ability to repay and absorb adverse shocks. Thus, efforts targeted at small enterprises are based on the premises that they are the vital engine of economic development, but market and institutional failures impede their growth, thus justifying credit intervention programs. The failure of supported credit programs to meet the growth aspirations of small enterprises serves as a convincing evidence of the need for a better understanding of how these small firms in Liberia, often operating in highly risky environments, conduct their inter-temporal investments in the absence of well-functioning financial markets. Both in response to these failures and in recognition of the critical role that credit can play in enhancing small enterprises growth in a sustainable ways, innovative credit systems are necessary as a more efficient mechanism of improving access to credit and minimize loan default rate in Liberia.

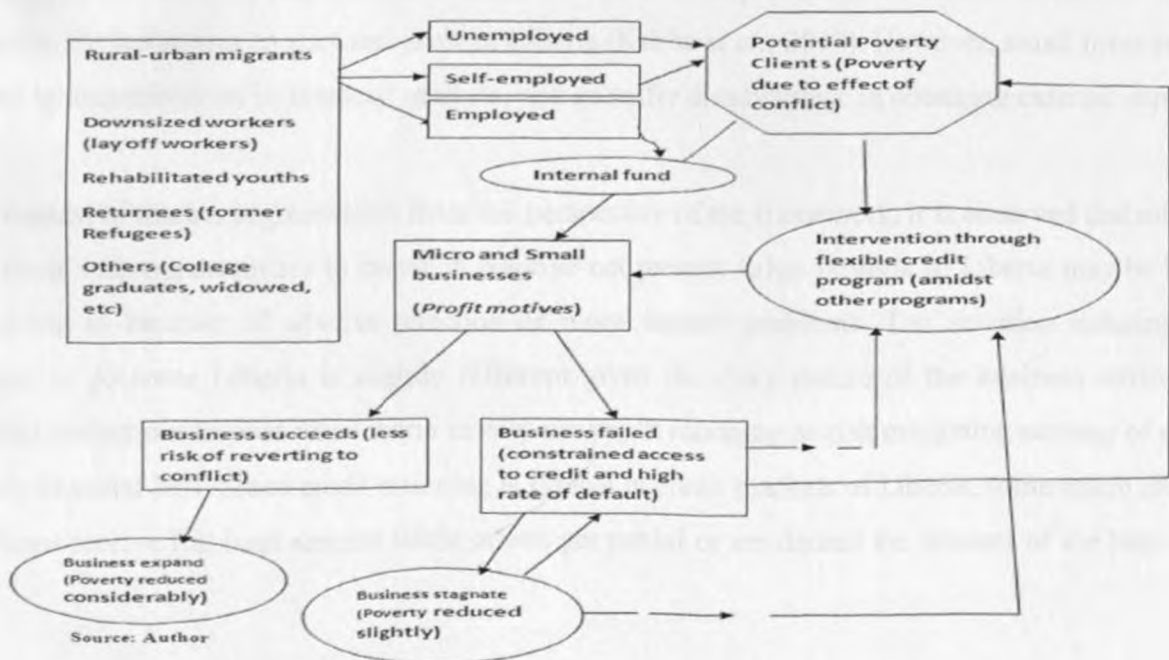
As prominent in developing countries, the precept of the Grameen Bank does not only draw keen attention for rural credit development, but also evokes the need for empirical research to address financing access of small enterprises in urban areas. In Liberia, the estimated large gap between the demand for and supply of credit by small firms serves as vital research concern for investigation (UNCDF, 2005). To meet this large unmet demand, financial institutions are facing increasing pressure to expand their outreach and enhance their impact on small enterprises. According to United Nations Capital Development Fund (UNCDF), lack of comprehensive financing strategy is a hindrance to an efficient credit program in Liberia. This hindrance is partly due to the lack of comprehensive evidence, which this study has ventured to elicit. Understanding the different drivers of credit to small businesses helps illuminate how banks and other financing institutions can rearrange lending mechanisms in order to target vulnerable small firms. Moreover, the lack of empirical evidence on testable hypothesis on credit market participation, and credit default by small enterprise in the urban credit market of post-war Liberia is vital impetus for the study.

Therefore, attempt to formulate credit policy without substantial information on how firms respond to the credit market maybe deficient, if it is not backed by empirical evidence.

1.2 Prevailing post-war socioeconomic issues

Successful operation of micro and small scale firms in their quest for profit maximization is critical for the attainment of pro-poor growth, which minimizes the possibility of Liberia reverting to economic or political conflict. Viable employment opportunities, as well as useful skills and education that could serve as potential instrument to spur Liberia's investments, diminished during the conflict. Thus, majority of those who survived the civil conflict are engaged in diverse business ventures, but faced with financing difficulties. SMEs are perceived as the lynchpin of welfare in Liberia today (GoL, 2011). The extent of unemployment and high rate of poverty in Liberia makes it imperative for financing intervention of small businesses to alleviate some of these problems. Unlike other developing countries where poverty is rural centered, the unemployment and poverty rates in post-conflict Liberia have become predominantly urban phenomenon, thereby increasing the number of small enterprises for livelihood. Financing of small businesses is vital for economic growth to spur solidarity and assist war-torn community like Liberia to rebuild and even reconcile.

Figure 1: Socioeconomic framework of small enterprises in postwar Liberia



In this study, a framework (Figure 1) is developed to depict the post-conflict socioeconomic scenario of Liberia. This framework takes into account the categories of people, means of economic activities, intervention strategy and triggered effect on small firms. Three sets of agents are often considered in the urban credit market of Liberia: households/firms as potential borrowers, formal lenders (such as banks) and informal lenders (such as money lenders, relatives and friends; ROSCAs). As indicated in Figure 1, the post-war economic situation in Liberia is characterized by massive rural-urban migration, lay-off public workers, large number of war affected rehabilitated youths, returnees (refugees) from other countries and large unemployed college graduates.

Based on these issues, the framework considers three economic situations in which urban inhabitants in Liberia fall: unemployed, self-employed and employed. Given the high poverty incidence in postwar Liberia, we assume in the framework that most of the self-employed and unemployed workers are potential poverty clients who are forced to venture into micro and small scale businesses financed through internal funds (owned funds) or intervention credit programs (formal or informal). With the poor economic condition of most self-employed and unemployed in Liberia, it is assumed that micro and small scale businesses are mainly financed through credit sources for business expansion or start-up². From these credit sources, firms borrow from formal lenders, informal lenders or both for profit maximization. However, firms' characteristics, the market environment and credit requirements may contribute to success or failure of accessing external finance. Formulation of policies for increased access to finance is imperative for businesses to start and grow in Liberia (Kaliba *et al.*, 2010). However, small firms are often affected by imperfections in financial markets, and so suffer disadvantage in obtaining external capital.

In the context of market segmentation from the perspective of the framework, it is observed that micro and small firms with opportunities to invest in positive net present value projects in Liberia may be blocked from doing so because of adverse selection or moral hazard problems. The situation inducing credit rationing in post-war Liberia is slightly different given the risky nature of the business environment. Financial institutions in post-war Liberia mostly use credit rationing as risk mitigating strategy of averting possible financial loss. Since credit rationing is typical in credit markets of Liberia, some micro and small scale firms receive full loan amount while others get partial or are denied the amount of the loan applied

² Aryeetey *et al.* (1997) points that start-up financing of micro businesses by most enterprises in Africa are primarily funded by sources of the informal units such as susu groups, friends, relatives and credit societies,

for³. Finally, the framework further indicates that based on firms' credit market participation, there is possibility for firm to default, which may distort continuation of credit intervention. Credit default may be due to high costs of loans, information asymmetry and unfavorable investment climate. High level of credit defaults may result to distortion in economic activities, thereby leading to low growth and minimum reduction in poverty thereby further requiring intervention. Thus, lack of information on these issues could hinder policy formulation.

1.3 Problem Statement

Empirical evidence on the precise channels through which small enterprises access finance in urban setting remains inconclusive. Most small enterprises in Liberia often seek finance through informal credit sources, compared with 10.1 percentage points from formal credit sources (World Bank Enterprise Survey, 2009). Also, the Comprehensive Food Security and Nutrition Survey (CFSNS, 2006)⁴, indicates that 53 percentage points of households do access credit, mostly through borrowing from friends or relatives (where 38 percentage points of all firms reported to have done so). Susu-clubs, an alternative source (informal) used to generate start-up capital (about 42 percentage points), are inadequate means of financing viable investment in Liberia. Though small enterprises are crucial for fostering growth, creating jobs and thus alleviating poverty, both studies on Liberia provide limited information as to why small enterprises still remain underserved by financial sector, and even those that accessed finance are constrained to likely default in repayment.

Credit market participation and access by small enterprises is important, but the specific characteristics of these enterprises that constrain them from acquiring external capital remain unclear in Liberia. The World Bank Enterprise Survey (2009) on Liberia narrowly identified the major causes influencing credit constraints. Besides, the World Bank Enterprise Survey assumed and treated both post-conflict and stable countries uniformly, when the characteristics of market activities in those areas are actually distinct. Such aggregated estimates of small enterprises credit behavior may conceal significant variations of factors limiting access to credit in post-war economy. Generally, country specific studies are limited, and those available concentrate on households or smallholders in rural areas.

³ Often loan applicants learn to exaggerate their credit needs to increase chances of requesting amount higher to their actual needs

⁴ The Comprehensive Food Security and Nutrition Survey (CFSNS) is based on cross-cutting assessment of the credit market.

From a theoretical perspective, most theories (Miller-Modigliani, 1958; Fazzari *et al.*, 1988; Myers, 1984) on firms financing have been applied capturing large/medium firms, with limited focus on small enterprises. Miller-Modigliani (1958) argue that the source of financing does not matter for firms, but this is rarely the case for small enterprises, which evidently require external capital to grow. Based on the pecking order theory that is anchored to asymmetric information, firms prioritize the source of financing from internal to external, but the former are always insufficient for small enterprises to undertake the required level of investment (Fazzari *et al.*, 1988). This presupposes that though financial institutions are disposed to excess liquidity, small firms are reportedly faced with financial constraints. The scope of small firms financing problem, which is often conceived to be mitigated by collateral availability, is wider than asymmetric information. Rigid credit policy, lack of training and development related problems are other issues necessary to assess for addressing problem of asymmetric information (Bigsten *et al.*, 2003).

The issue of loan repayment is critical for healthy credit market because the strongest appeal of credit to small businesses is the well known success of achieving high repaying record in making very small loans to large numbers of disadvantaged firms (Bhatt and Tang, 2002). However, the assertion in developed countries that low default rates has led observers to believe that small businesses might not be as risky as has been traditionally assumed (Bhatt and Tang, 2002) may not necessarily be true in the context of developing countries where market uncertainty highly characterizes the products of small businesses. With the need for effective credit system, analysis of Liberia's formal financial sector indicates prevalence of default rate as evidenced by non-performing loans⁵. Though the level of non-performing loans is not disaggregated in terms of⁶ micro, small or large enterprises, default is more likely among small businesses, because of the market volatility for their products and lack of requisite training. Despite effort by the Central Bank of Liberia (CBL) to institute mechanism for improved credit environment, the development of loan default still flagged the problem of slow loan recovery, which is unhealthy for investment. This inefficient nature of the credit market presupposes the lack of adequate information relating to empirical issues on credit market participation and access to credit, constraints and credit default. There is thus the research need to examine behavior of financial institutions towards small scale businesses.

⁵ According to CBL (2009), Liberian financial institutions are operating under difficult credit environment characterized by poor credit culture. This difficult credit environment is partly an explainable reason for the high excess liquidity ratio since banks are cautious with their lending policy.

⁶ Microenterprises are indicated to have low default rate with MFIs, SACCOs and other non-banking sources. In, Liberia, repayment rate among microenterprises is over 90% (President of Liberia Annual Message, 2011)

1.4 Research Questions

The foregoing problems suggest the below conceptual and policy questions:

- i. What factors influence small enterprises participation in the credit market and have access to desired amount of credit?
- ii. What characterizes small enterprises credit constraint and determine being credit discouraged, rationed and rejected?
- iii. What factors determine the probability and extent of credit default among small enterprises?

1.5 Objectives of the study

The overall objective of this study is to generate empirical information relating to credit market participation and access by small enterprises and how these enterprises react to credit market in post-war Liberia. Specifically, the study aims to:

- i. Analyze factors that influence small firms' credit market participation and access
- ii. Analyze credit constraints that face small enterprises
- iii. Explore the extent and probability of credit default among small enterprises

1.6 Scope of the Study

The study is limited to small firms in the most densely populated regions of Liberia. In terms of specificity, Table 2 shows the categorical activities of small businesses covered relative to manufacturing, trade (wholesale and retail) and services. This classification is based on International Standard of Industrial Classification (ISIC) to classify the economic activities a particular firm belongs.

Table 2: Composition of businesses in the sectors

Manufacturing	Service	Trading
Tailoring shop	Car-washing	Cosmetics and clothing
woodwork and Furniture	Clinics	Pharmaceuticals and medicine
Jewelry production	Bar & restaurants	Sales of second hand products
Block factory	Repairing shops	Sales of spare parts
Sawmilling	Provision shops	Rice, sugars and food-stuff
Bakery shop	Supplies services	Petroleum products
Soup making	Video clubs	
Photo studio	Printing publishing center	
Block ice production	Beauty saloons	
Furniture making	Laundry and dry cleaning	

Source: Computation by Author from Establishment Survey (2007), Ministry of Commerce and Industry of Liberia

Decision to select these regions is predicated on accessibility and the prevalence of huge social problems such as high rate of unemployment, high poverty incidence and large informal sector. The study focuses on small business financing, which includes credit from formal (banks) and informal (Credit Unions, Susu clubs, moneylender) sources. So the emphasis of the study considers firms that participate in credit market and those that did not participate. Thus, firm is considered as unit of observation.

1.7 Organization of the thesis

The remainder of the thesis is organized as follows: Chapter two (II) provides an overview of the economic situation of Liberia. This economic overview does not only highlight Liberia's financial system and investment climate, it also gives succinct analysis of the pre and post war macroeconomic performance of the country. Essentially, this chapter elicits some details of the microfinance operation and helps to further motivate the focus of this thesis. Chapter three (III) presents theoretical and empirical literature as well as overview of both theoretical and empirical literature. Based on the argument that asymmetric information is inconclusive about mitigating factors that are constraint to finance, this chapter discusses several vital theories in relation to access to credit, credit constraint and loan default. Empirically, the chapter highlights the fact that most credit analyses focus on households, rural or agricultural, with limited attempt to argue from the perspective of firms, which is considered herein. Chapter four (IV) presents the methodology considering theoretical framework and empirical models. Since the thesis is based on three key issues, this chapter discusses each of the components separately, which are then followed by their respective empirical model. The data issue is thoroughly discussed in

Chapter five (V), considering the research design, study site, data sourcing and data description. Moreover, this chapter also provides detailed discussion of the population, sampling frame, sampling technique and sample size and ethical issue. Essentially, variables used for the estimations are discussed in this chapter. The empirical estimations to address the fundamental objectives of the thesis are presented in Chapter six (VI). This chapter provides estimations of several models as well diagnostic tests based on their appropriateness to meet the objectives. Chapter seven (VII) is an informative summary and discussion of key findings, and highlights the main conclusions and implications for policy consideration. A synoptic discussion of issues providing direction for further research is given in this chapter. Finally, this chapter explains limitations surrounding the study.

CHAPTER II: OVERVIEW OF LIBERIA'S ECONOMY

2.0 Introduction

This chapter provides an overview of the economic situation of Liberia. The chapter does not only highlight Liberia's financial system and investment climate, it also gives succinct analysis of the pre and post war macroeconomic performance of the country. Important features of Liberia's credit market and microfinance operation are highlighted in this chapter. Finally, this chapter presents issues on the institutional and investment climates to evoke the need for credit market intervention to strengthen small enterprises that are evidently faced with myriad of operational challenges.

2.1 Liberia's economic performance

The macroeconomic and business environment of Liberia consists of exogenous factors such as political, regulatory, fiscal, and inflation that influence performance of firms (Kaliba *et al.*, 2010). A little over two decades, continuous political instability undermined every fabric of the Liberian society which resulted into propagation of negatively nominal and real shocks in different sectors of the economy, including small scale business sector. With the economy operating under atmosphere of political instability, productivity was eroded and private investments drastically declined. Most of the viable concession companies shutdown thereby leading to a virtual collapse of the real sector and opening of vacuum for alternative outlets of survival via micro and small scale businesses.

Once considered as middle-income country during the 1970s, Liberia was recently classified as a highly indebted and poor country (HIPC) by the World Bank and International Monetary Fund (IMF). Compliance to HIPC conditionality resulted debt relief in 2011. With a population of about 3.8 million, Liberia currently ranks as one of the lowest human development countries worldwide, with its human development index at 0.329 (ranks as 182 out of 187 in 2011); with more than 80 percent living on less than a dollar per-day, and per capita income averaging 193 USD from 2006-2011, declining from 548 USD in 1989. Thus, Liberia is now one of the poorest African Countries with poverty incidence rising from 55 percentage points (1990s) to 80 percentage points (2000-2005) and inequality represented by Gini coefficient ⁷ of 0.526 (African Economic Outlook, 2011). The rate of job loss in the formal sector is

⁷ Gini coefficient of one (1) defines perfect inequality, while zero Gini is perfect equality

recorded at 80 percentage points⁸ while the informal sector contributes an average of about 80 percentage points to the total employment from 2007-2009 (GoL, 2009). The unemployment rate is estimatedly low at 3.7 percentage points; the “vulnerable” and “informal” employments accounting for 77.9% and 68% respectively are skewed in rural areas (GoL, 2010). Massive rural-urban migration, induced by the 14 years of internal conflict that resulted into a large informal sector, has become one of the major policy challenges. These factors could threaten the low unemployment rate.

Liberia is endowed with rich resources⁹ to support its development, but the country was badly managed over the past two decades prior to 2005. The results have been deterioration in economic performance, severe inequality and social tension. Years of conflict and economic mismanagement resulted to decline in GDP by 90 percentage points (from 1989-1996). The economy is heavily dependent on agricultural sector (i.e, rubber and timber) and mining (iron ore, gold, and diamonds) and minute services. However, only the rubber subsector is organized in the agricultural sector. While rubber accounts for more than 30 percentage points of Liberia’s total exports and provides employment for significant number of workers, the logging of timber generates enormous foreign exchange and boost employment. In the mining sector, iron ore mining has resumed, while gold and diamond are mined in small volume, compared to pre-war. Traditionally, the iron ore and rubber processing activities dominated the real sector, which is yet to be fully resuscitated to significantly contribute to GDP.

Driven by the production and export of iron ore, rubber and timber, the Liberian economy grew rapidly in the 1970s, so that by 1980 (before the coup d’état) the average GDP per capita of 898USD had reached middle-income country levels as reported in Table 3. Though most literature has focused on rural analyses, Table 3 indicates increasing trend of urban population in Liberia from 1970-2011, thereby evoking the need to analyze small enterprises in urban areas.

⁸ This unemployment rates is considered by the Government of Liberia based on conjecture given the collapse of several concession companies throughout the country. The estimation is not based on any comprehensive survey to ascertain the composition of the labor market.

⁹ Natural rubber, timber, iron ore, diamond, gold and tin

Table 3: Liberia selected economic indicators (1970-2011)

Indicator	1970s	1980s	1990s	2000-2005	2006-2011
GDP Growth rate %	3.0	-4.5	1.2	1.5	7.3
GDP per capita (USD)	898	495	100	140	193
Population (Million)	1.4	1.9	2.1	3.1	3.7
Ratio of Urban to total Population %	20.5	35.2	51	54.3	61.5*
Poverty %	N/A	N/A	55	80	63.8*

Source: African Economic Outlook (2011), *LISGIS (2008)

In the 1970s, Liberia experienced strong economic growth rates averaging 3 percentage points. As indicated in Table 3, mismanagement of the economy resulted to a fall in the growth rate from 3 percentage points to less than 1 percentage points in the 1980s. In 1989, Liberia entered a protracted civil war which ruined the country's economic, political and social fabrics¹⁰. The national budget of the country, often operated in budget deficit, dropped by more than three-quarters in 2003, to 80 million USD compared to 1989 of 500 million USD, though it slightly increased to about 530 million USD in 2011. During the 1990s, the country experienced massive currency depreciation driven by persistent trade deficit and rising inflation as high as 100 percentage points in 2003, thereby contributing to high costs of living. Over the years as indicated in Table 3, population growth rapidly shifted towards urban areas since the beginning of the conflict, reaching as high as 61.5 percentage points from 2006-2011.

Following the end of the conflict in 2004, the Government of Liberia re-embarked on re-establishing the necessary infrastructure to support macro and socioeconomic policies. Despite the dismal performance of the economy during the conflict, Liberia is exhibiting incredible resilience and commitment in its recovery, evidenced by steady up surge in economic growth rate and single digit inflation since the end of the conflict in 2004 as reported in Table 4.

¹⁰ Roads and railroads, electricity generation and transmission, and portable water and sewage systems were destroyed. Delivery of health and education was completely disrupted while national and local institution became dysfunctional.

Table 4: Selected macroeconomic indicators (2005-2011)

Indicator	2005	2006	2007	2008	2009	2010	2011
Real GDP Growth rate (%)	5.3	7.8	9.4	7.1	4.6	5.1	6.9
Inflation rate (%)	11.1	7.4	11.4	17.5	7.4	7.5	8.5
Debt/GDP (%)	635	543	507.7	645	188	23	26
Exchange rate (USD-LD)	57.1	58	61.3	63.29	67.81	71.4	72.5
Net FDI Inflow (Million USD)	-1856.9	-551	-321	-182	14	17	16
¹¹ Foreign Aid (Million of USD)	222	260	701	658	505	380	253

Source: CBL (2009), African Economic Outlook (2011)

Liberia's economic growth slumped during the course of the conflict, due to low exports emanating from United Nations sanctions imposed on its timber and diamond. Thus, timber and diamond exports were depressed, but the lifting of UN imposed sanctions in 2006 is further boosting postwar economic recovery. An impressive growth averaging 7.5 percentage points was achieved from 2005-2007. Underpinned by relatively strong macroeconomic stability, key drivers of the post-war recovery are facilitated by reconstruction, donor assistance and exports (specifically rubber). The economy is very open, with heavy reliance on exports of primary products. This openness exposes the economy to exogenous shocks, which threatens the behavior of the foreign exchange market.

In the face of the global financial crisis, Liberia was not spared. Economic growth slowed in 2009, but this was offset by remarkable decline in inflation rate to 7.4 percentage points in 2009 from 17.5 percentage points in 2008. As food and oil price eases in 2008, the incidence of poverty dropped from 80 percentage points (2000-2005) to 63.8 percentage points (2005-2011). However, increasing food and transport inflation of 17 and 18 percentage points respectively in 2011 could further undermine the gains in poverty reduction. Inherited public debts¹² (4.6 billion USD) passed on from previous governments was a serious hindrance to poverty reduction, though government revenue increased during the PRS period by 36 percentage points (2008) and more than 30 percentage points (2011) due to good fiscal management. Driven by sound social policies, the Government reached HIPC completion point and obtained debt relief. Debt service as percentage of export declined from 335 percentage points in 2009 to about 30 percentage points in 2010, correspondingly leading to reduction in debt to GDP ratio to 23 percentage points (2010) from 188 percentage points (2009). The Net FDI inflow showed improvement from 2005-2010 while

¹¹Aid does not include UNMIL funding and other sources of Aid from private NGOs and some bilateral partners

¹²Liberia reached HIPC Completion point under the enhanced HIPC Initiative endorsed by the IMF in June 2010. US\$4.6 billion of the debt has either been relieved by multilateral and bilateral creditors.

foreign aid reflects an increase from 2005-2011, increasing to peak of 17 million USD and slightly declined in 2011. Most of the FDI are not targeted at SMEs, even though they seem to represent the biggest employers in postwar Liberia.

Moreover, the rapid recovery in post-war Liberia is driven by the Government of Liberia's Poverty Reduction Strategy in 2008, outlining a number of policy reforms such as tax reduction, one-stop-shop business registration and transparent legal system to enhance business growth and alleviate socio-economic impediments through its four pillars: Consolidating Peace and Security; Economic Revitalization; Strengthening Governance and Rule of Law; and Rehabilitating Infrastructure and Delivering Basic Services. At the climax of the PRS in 2011, about two-thirds of deliverables were achieved (IMF, 2012).

To encourage increased access to credit by micro and small scale firms, CBL has licensed many new banks, including microfinance institutions to meet the growing demand for finance. Access to credit may improve the investment level of micro and small scale firms, even if they do not directly receive the loans. Table 5 reports the shares of commercial bank's credit by sector and contributions of sector to GDP.

Table 5: Sectoral share of bank loans and GDP (2007-2011)

Sector	Share of Banks loans (%)					Share of GDP (%)				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Trade, Hotel & Restaurant	21.5	29.8	31.9	31.5	41.1	4.9	6	10	5.3	5.3
Transport, Storage & Communication	5.1	11.8	14.4	22.4	8.9	4	4.2	6	5.7	5.6
Construction	6.6	8.8	11	9.6	8.9	2	4.1	9	2.7	2.7
Agricultural	4.9	5.1	3.2	3.2	3.2	44.4	42.2	41.73	45.1	44.7
Mining and Quarrying	0.0	0.4	0.1	0.0	0.9	0.17	0.16	0.15	0.6	0.5

CBL (2010, 2011), African Economic Outlook, 2011

Total credit to private sector (as percentage of GDP) increased to 18.3 percentage points in 2011, compared with 17.1 percentage points in 2010 and 15.4 percentage points in 2009 (see Table 6). Unlike the pre-war period, post-war Liberia's economy is highly dependent on the Agriculture, as evidenced by its contribution to GDP, which averages about 44 percentage points from 2007-2011. Though the Agricultural Sector is vital component of GDP, its share of banks loans is small, compared with other sectors (except the mining and quarrying). A decline in the share of agriculture to GDP has been

compensated by increased role of the share of Service and Construction Sector to GDP. Interestingly, the Trade, Hotel and Restaurant Sector, which received greater share of banks' loans from 2007-2011, show less than an average of 7 percentage points contribution to GDP. Trade and transportation account for 60.3% of enterprise where most people seek employment in Liberia (GoL, 2010). This sectoral analysis signals that businesses in Liberia are faced with economic problems which tend to affect their contributions. While banks generally provide short-term loan contingent on collateral, the distribution of credit to sectors partly explains reason for the low reduction in poverty since majority of the credit does not seem to directly target more productive businesses.

2.2 Overview of Liberia's financial sector

There is scanty detail about Liberia's financial sector from 1847 (year of independence). The financial system is subdivided into two – the formal and informal financial subsystems. The former operates based on the regulatory framework provided through the Central Bank of Liberia (CBL), while the latter remains almost completely unregulated. The informal financial system rapidly expanded, during and after the conflict, due to failure of a number of banks as a result of the conflict. The formal financial system consists of banking (depository) and non-banking (non-depository) institutions. Given that Liberia did not have centralized monetary institutions from the country's independence to 1974, a foreign bank was mandated to conduct monetary policy on behalf of the Government of Liberia until 1974, when the National Bank of Liberia was established.

The National Bank of Liberia, through a Legislative Act, came into existence in 1974 in order to strengthen monetary control. However, the National Bank faced serious challenges as it did not have the sole authority to comprehensively effect monetary policy such as printing money without legislative approval and weak regulation of commercial banks. To strengthen the financial system, the transition from National Bank of Liberia to the Central Bank of Liberia (CBL) was effected in 1999 due to numerous shortcomings associated with the former. At the moment, the Central Bank is completely monitoring and regulating the activities of commercial banks to ensure diligent and sound financial practices. The CBL regulates and supervises all financial institutions, except insurance companies where there is perhaps minimum control. The credit union system is not inclusive in the purview of CBL's regulation.

With the CBL's instituted reforms to minimize bank failure and promote access to banking services, new commercial banks and microfinance institutions were licensed in post-war Liberia. Currently, there exists

eight (8) commercial banks (See Appendix Table 13) and six (6) microfinance¹³ institutions (CBL, 2009). In fact, as a result of the forceful closure or collapse of many banks during the conflict period (1989-2003), many credit institutions became cautious in extending loans to not only individuals, but businesses as well. This suggests that Liberia credit market is still battling to efficiently cater for credit needs of the private sectors, especially for small business operations.

Since the end of the conflict, the government embarked on a wide stabilization and reform programs through monetary policy to spur economic growth. Monetary policy in financial sector is conducted primarily through the direct allocation of credit and refinancing, while the monetary market still remains underdeveloped, and bond and equity markets are virtually nonexistent. Commercial banks often had to lend to priority sectors with little concern for small enterprises. Though the outcomes of those policies were initially not very positive in making the system more effective due to the war, there are signs of improvements following the end of the conflict. In terms of financial deepening, it is observed in Table 6 that both broad money (M2)/GDP) and credit to private sector/GDP ratio as measures of financial deepening showed persistent increase from 2005 to 2011 (after the war in 2004). M2/GDP ratio increased from 18.4 percentage points in 2005 to 44.3 percentage points in 2011. This reflects the growing competitiveness of the formal financial sector. In terms of credit to private sector as share of GDP, there has been improvement since the end of the conflict. However, these improvements do not seem significant as they are generally less than 20 percentage points, compared with other developing countries. Perhaps, this could be reflective of huge share of public sector in total lending from banks, which is perhaps crowding-out private sector.

Table 6: Formal financial sectors growth indicators (all in percentage)

Indicators	1997-2004	2005	2006	2007	2008	2009	2010	2011
M2/GDP	48.2	18.4	21.1	23.1	27.8	30.5	33.2	44.3
Credit to private sector/GDP	8.6	6.8	8.6	9.9	12.5	15.4	17.1	18.3
Interest rate spread	13.4	13.6	12.1	11.3	10.3	10.1	10.1	10.7
Banks liquid reserves to assets	66.9	32.1	34.5	30.8	28.9	27.4	25.6	30.1

Source: African Economic Development Indicators, 2011, CBL (2011)

The improvements in financial deepening may be related to good macroeconomic performance management instituted by the government after the war, as evidenced by maintaining single-digit inflation and broad exchange rate stability in 2011. The persistently high lending rates vis-à-vis low deposit rates,

¹³ The MFIs increased by 200%, a rise from two (2) in 2006 to six (2009).

indicative of wide interest rate margin is one of the most difficult problems facing post-war Liberia. The financial sector in Liberia remains heavily controlled; interest rates are set administratively and are usually negative in real terms. Though the spreads continued to decline, it still remains quite high compared to other sub-Saharan African countries. The trend of the interest rate and low financial deepening is inconsistent with McKinnon and Shaw analysis which predicts a financial deepening when interest rate is liberalized. However, this is not the case in Liberia, where regulated interest rate probably impedes penetration of small enterprises in credit market.

2.2.1 Credit markets in Liberia

In Liberia, the contextual view of credit points to the provision of financial resources (usually in the form of cash or tradable goods) by lender to borrower through a contractual agreement, where debt is created until arrangement for repayment or return of resources is made at a contractual date. Simply to put it, credit market is market for borrowing money in the form of loans, bonds or commodities (Mishra *et al.*, 2009), but Liberia does not have capital market.

Liberia has dualistic credit market (formal and informal) existing in rural and urban areas, where information problem is common to both credit markets, but the extent differs from one market to the other. Formal credit is defined to include access to credit from commercial banks (car, business and other personal loans), semi-formal credit included consumption credit (for household assets such as furniture and open accounts in retail stores), and informal credit specifically referred to debts from relatives/friends, money lender, credit union or less formalized financial institution. The formal credit sector in Liberia, characterized by the dominance of commercial banks, development banks and few microfinance institutions, which are used to primarily serve households and firms. Like other developing countries, Liberia financial sector is largely underdeveloped, lacking in depth and highly inefficient though it is gradually recovering from the problems of the civil war to regain public confidence and improved credit delivery. As generally noted, the banks are major players in formal credit markets, while informal institutions (such as relatives, friends, moneylenders, rotating savings and credit associations, microfinance institutions) are active in informal financial markets¹⁴.

The cost of capital is often high, and in times of economic uncertainty, lenders tend to be very risk averse. Due to this high cost of capital, small enterprises often find it difficult to finance their capital investment and daily operational needs. Liberia ranks 138 out of 183 in terms of ease of getting credit (IFC, 2010).

¹⁴See Aryeetey and Udry, 1997; Soyibo, 1996 for detailed reading on informal institutions.

This low credit ranking is supportive by the minimum rate of financial deepening (i.e private sector credit to GDP) of 18.3 percentage points of GDP in 2011.

Other than credit union, susu club and money lenders, credit market in Liberia is well defined by formal and informal credit institutions, though the market is dominated by formal credit. Existence of audited financial statements or credit histories of potential borrowers (especially small businesses) is rare in both credit markets of Liberia. Generally, credit in Liberia is provided in the form of loans, bank draft, or other convenient means for investment activities or individuals' means of optimizing their needs. Like it is in many developing countries, the formal credit market in Liberia do not only limit credit access by micro and small scale enterprises due to lack of traditional collateral (wealth or property), it is also unable to cope with existing credit demand by small and medium enterprises (SMEs) because of unreliable sources of long or short term lending.

Non-bank financial institutions are also active in the credit markets. Many of them cater for small borrowers (especially those rationed out by banks). The cooperative credit union also plays a vital role in mobilizing deposits and providing small borrowers with access to credit. However, this informal credit market, which is sometimes (if not frequently) used as alternative sources for credit, is not an adequate lending base to address financing needs of SMEs. While market uncertainty influences local price fluctuation in both urban and rural credit markets, systemic risks in the form of conflict, theft or environmental factors are potential threats to the operation of small enterprises.

With the onset of post-war financial development, private banks, including foreign banks have been encouraged through CBL's policy to start or expand operations. Four banks existed in Liberia just before the end to the civil conflict in 2004. Prior to the conflict, financial institutions were pro-actively involved in contributing to employment and economic growth. This period was marred by job availability as a multiplier effect through long term loans extended to concession companies and other enterprises. To augment credit extension, commercial banks operating in Liberia increased from 6 in 2008 to 8 in 2010, driven by stability and Central Bank policy. With the extension of banking services to other parts of the country, large segment of the population may access credit for variant investments, except small enterprises. Currently, financial institutions are cautiously advancing loans, especially to small firms, which are inadequate to expand investment. Loans provided at the moment are often based on harsh terms. With interest rates being deregulated in the flourishing unorganized market for credit, commercial banks

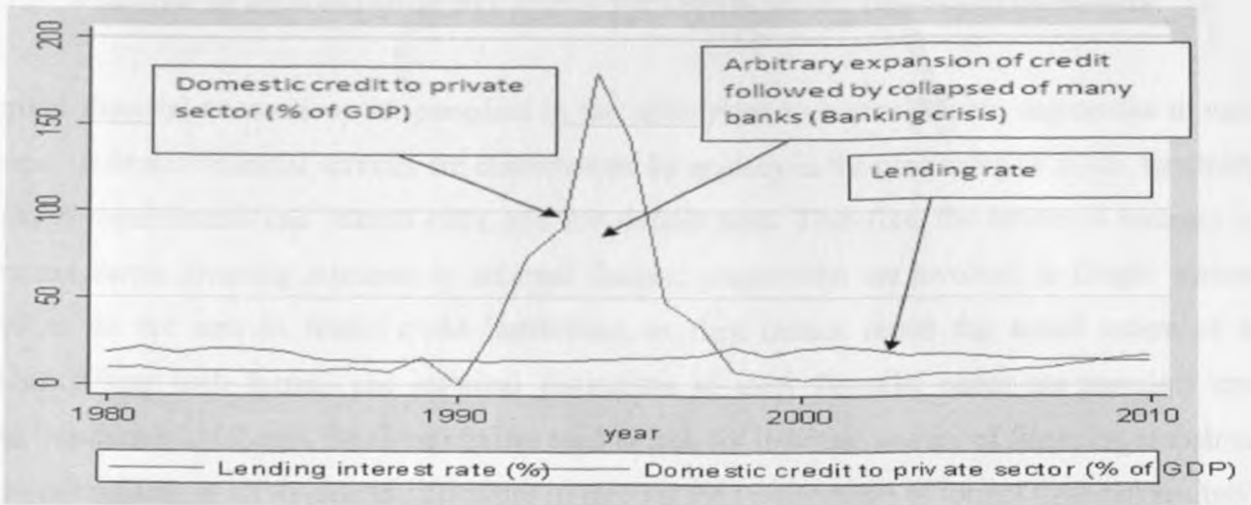
usually earmark substantial portion of credit for advancement to key sectors, mainly large and medium enterprises. This is because commercial banks in Liberia depend heavily on interest and non-interest sources of income, and do little lending to small enterprises.

More appallingly, the Liberian credit market was seriously affected by the civil crisis, whereby the number of credit unions reduced by 87 percentage points from 65, while many banks experienced bankruptcy or shutdown. Government owned banks such as the National Housing and Saving Bank (NHSB) as well as the Agricultural Cooperative Development Bank (ACDB) and other private banks like Liberia United Bank Incorporated (LUBI) and Dutch Bank Liberia Limited, which provided banking services to many small businesses before and sometimes during the crisis, were severely hit during the war. For the rural sectors, the Agricultural Cooperative and Development Bank (ACDB) served as important provider of credit before the conflict, but it is currently dormant due to decapilization.

Efforts to resuscitate those banks are still underway, though appear futile. Four of the eight commercial banks have extended branches to several parts of the country (with three of the four bank having branches in Nimba County) while at the same time instituting micro-credit schemes. Recognizing the distinct access to the financial needs of SMEs, several financial institutions have started developing strategies to cater to this market. Ecobank and LBDI, which traditionally focused on corporate clients, have just begun targeting SMEs, but with heavy reliance on donor programs. Accessbank and other financial institutions are also offering financial products to SMEs. However, it may take time for these credit institutions to acquire full knowledge about SMEs and develop appropriate financial products without a comprehensive study. This suggests that banking system, though highly liquid to cope with credit demands, provides bulk of the credit access, through stiff credit requirements.

During the course of the conflict, banks exhibited arbitrary extensions of credit, which resulted in financial distress. Persistent bankruptcy during the course of conflict exacerbated the already strenuous economic condition the economy operated under as evidenced by many businesses losing huge amount entrusted with banks. Consequently, banks experienced confidence crisis which resulted to large segment of the public seeking nontraditional means of financial windows to meet their distinct consumption and investment needs (Figure 2).

Figure 2: Trend in domestic credit and lending rate (1980-2010)



Source: World Development Indicators, 2011

Around this same period (1989-2000), six commercial banks were forced to shut down either due to voluntary closure or bankruptcy emanating from poor performance of businesses, with only one of the six banks whose depositors were liquidated by CBL. At the moment, eight commercial banks provide financial services in both urban and rural parts of Liberia. Despite tremendous growth in the banking sector, banks seem to be finding it difficult to recover loans advanced to businesses and individuals in Liberia. The ratio of non-performing to performing loan in 2003 was relatively high across the three leading banks (Ecobank, LBDI and International Bank) with Ecobank recording the highest percentage of 61.7 percentage points. However, these banks achieved slightly good results in clearing their non-performing loans from about 25 percentage points (2010) to 20.8 percentage points (2011), which are still high. This achievement indicates that banks are actively struggling to overcome the problem.

2.2.2 The informal sector of Liberia

The informal sector constitutes the largest segment of the service sector in Liberia. Of Liberia's estimated 514,714 households, it is reasonable to estimate that the informal sector accounts for at least one-third of the total labor force, and 37 percentage points of the urban labor force (UNCDF, 2004). Poverty is one of the fundamental drivers of informal activities in Liberia. Accordingly, majority of the poor with no access to formal sector credit often revert to the informal financial sector to meet their credit demand, for both productive investment and consumption smoothing. The informal financial sector is developed in response to the distinct credit needs of different clienteles. The informal sector emphasizes small-scale, self-financed and unskilled labor-intensive economic activities, and bulk of income generated is used for food (59.2 percentage points), with education taking 12.2 percentage points, transport 13.4

percent and health care 7.6 percentage points (CCA/UNDAF, 1998). This sector has become the major conduit of survival for rural and urban poor in post-war Liberia, amidst the difficult constraints.

Informal financial transactions are prevalent in the urban areas to a considerable degree due to various reasons. Informal financial services are characterized by urgency in the processing of funds, flexibility in collateral requirements and interest rates, and low default rates. Therefore, the nature of business is an important factor diverting attention to informal finance; people who are involved in illegal economic activities do not turn to formal credit institutions, as they cannot reveal the actual nature of their business. Using both formal and informal institutions to meet financial needs are prevalent among urban businesses in Liberia. Small enterprises tend to look for informal sources of financing at their early stages of business, possibly due to difficulties in meeting the requirements of formal financial institutions, lack of awareness and sense of uncertainty about the regular repayment of loans.

There is limited information on the size and growth of informal financial sector in Liberia. Across Africa, the pioneering works of Aryeetey (1994) in Ghana, Soyibo (1996) in Nigeria, and Chipeta and Mkandawire (1994) in Malawi are the only documented evidence on the growth in the activities of informal financial sector. In urban Liberia, it is now common to find large numbers of money exchange bureaus, susu collectors and cooperatives. Most of the susu collectors rove around various markets or operate in kiosks (small offices) to mobilize savings or carry on other transactions with their clients. Unlike the money changers who have fixed address, most of the susu collectors lack fixed address and their operations are strictly based on personal acquaintance with most of the small and informal businesses over the years. In many instances, these collectors escape with mobilized savings/funds belonging to other businesses. The money exchange bureaus and cooperative social clubs are also informal financial systems which have grown over the years among marketers or particular working or ethnic groups. These institutions operate in the forms of money lenders or credit unions, who mainly lend on short-term basis. Though the number of credit union dropped from 65 to 9 from 1989-2004, the number has slightly risen to 14 in the last two years. In spite of the limited details on the actual number of informal financial institutions after the war, there are still vibrant informal financial institutions that are providing relevant financial services, due to significant demand for their services.

2.2.3 Liberia microfinance sector

Liberia lagged behind in its microfinance development, due to 14 years intermittent conflict. Global experience has demonstrated that microfinance can be implemented successfully in post-conflict

environments where Liberia is no exception. UNCDF (2005) reports that microfinance programs had just started in Liberia before the war, but none were able to fully operate during the war. This situation puts post-war Liberia at the nascent stage of its microfinance development which had just started in 2004. To strengthen the microfinance development, Liberia Microfinance Network¹⁵ was formed in 2005. Since the end of the conflict in 2003, Liberia has re-established the required conditions such as political stability, sufficient economic activity for credit services, and relatively stable client population remarkable for effective microfinance program. In addition to these conditions, there are functioning commercial banks; social capital or trust; and relative macroeconomic stability to drive microfinance implementation.

While most of the microfinance institutions (MFIs) in Liberia are part of NGOs¹⁶, the number of microfinance institutions operating in Liberia currently is eight (8), increasing from seven (7) in 2010. These are still few to cope with increasing demand for credit. Given the relevance of microfinance on the transformation of small scale businesses in developing countries, microfinance services in Liberia are offered by wide range of providers, inclusive of commercial banks, private microfinance institutions, NGOs, credit unions, ROSCAs and credit institutions, and other informal credit agents such as money lenders¹⁷. Among the many commercial banks operating in Liberia, only four are involved with micro-financing including Accessbank Liberia Limited. Despite the number of firms providing microfinance services, access is limited¹⁸ because of the rigid credit requirements by formal financial institutions.

Microfinance activities have covered broad segment of the country due to pervasive economic activities among potential microfinance clients in Monrovia (Montserrado County), and Harper (Maryland County), and some secondary towns like Ganta, Saclepea (Nimba County), Gbarnga (Bong County) and Buchanan (Grand Bassa County). The United Nations Capital Development Fund (UNCDF) estimated demand for microcredit to be around 62,000 households at 13.7 million USD in 2004 while the CBL estimated demand to be about 138,000 (CBL, 2008). In 2005, the potential demand for small scale credit was high leading to large credit gap and possibility for credit rationing. However, the number of microfinance borrowers increased from 32, 286 in 2008 to 34, 636 beneficiaries in 2009 while the total outstanding

¹⁵ Network members include UNCDF, UNDP, UNOPS/UNDESA

¹⁶ Sustainable Development Partners (SDP), The Lutheran World Service (LWS), Liberty Finance and LEAP

¹⁷ UNCDF (2004) reports that Moneylenders operates with interest rates as high as 600%

¹⁸ Liberia Microfinance program is in its nascent stage and has been predominantly concentrated in Montserrado County. However, the CBL microfinance framework has led to the extension of microfinance activities in five additional counties (Bong, Nimba, Lofa, Margibi and Grand Gedeh)

loan portfolios within the three microfinance institutions stood at about 2.9 million Liberian Dollars (about 39,864 USD) at the end 2009.

With these issues, a well organized credit system and macro business environment can assist the poor and marginalized people to access credit (Rutherford, 2001, Aghion *et al.*, 2005). Credit system facilitates the process of job creation in which some will become self-employed entrepreneurs while others involve in distinct business related activities. In fostering the development of well organized credit system, CBL has instituted the Microfinance Policy, Regulatory and Supervisory Framework to guide and enhance the provision of diversified microfinance services on a sustainable long-term basis for the poor and low-income group. Supportive of this initiative, the CBL (2009) indicates that the United Nations Capital Development Fund (UNCDF) provided 145,000 USD while United Nations Development Fund for Women (UNIFEM) committed 155,000 USD from the Danish Government funds in 2009 for onward lending to small scale firms by the Local Enterprise Assistance Programme (LEAP)¹⁹.

2.3 Liberia's investment climate

The business environment, especially in post-war economy, has emerged as the prime suspect as to why firms' performance in Africa is poor, and improving the investment climate is policy priority for the continent (Bigsten and Soderbom, 2006). In Liberia, the business environment has been threatened by years of conflict. Though the political risk rating of the country shows improvement-moving from 126 in 2006 to 107 in 2011 out of 140 countries, the regulatory environment is still not too encouraging for starting business. The index of economic freedom ranks Liberia as 157 out of 179 countries in 2011. However, about eight years of peaceful environment is tremendously helping Liberia's recovery from ravages of civil conflict, thereby ensuring smooth operation of businesses.

Despite recent emergence from years of conflict, there is growing investor interest in Liberia, but at a large scale level - agriculture, construction and the extractive industries. Essentially, removal of sanctions has boosted investment activities in those sectors in spite of the enormously daunting challenges. While efforts have been made to ease the process of business establishment, dysfunctional judicial system driven by lack of training or outdated laws, inadequate salaries and culture of corruption²⁰ continue to hamper

¹⁹ LEAP is microfinance wing of Association of Evangelical. LEAP reached self-sufficiency level of 72% in 1999.

²⁰ Though Liberia experienced 37% improvement in the control against corruption, evidenced by hallmark in corruption perception index (CPI) by 10 basis from 97 in 2009 to 87 in 2010 out of 187 countries, the country is still ranked as most

investment. Commercial court exists but it is still weak in terms of capacity to expeditiously govern investment transactions (GoL, 2011). This notwithstanding, there is great demand for jobs, though most of the labor (predominantly self-employed) are unskilled and illiterate (45 percentage points). Despite efforts to amend current minimum wage law, which has existed for about 60 years, income of vulnerable workers remains substantially low compared to pre-war period (i.e, before 1990).

Liberia still lacks solid infrastructure, compared to most African countries, to boost investment and facilitate intra trade. Most of the country's infrastructures such as roads, electricity, and communication are still being revived, but not adequate to attract meaningful investment. The railway system is completely ineffective and connection to key urban cities by road remains complicated due to dilapidation. Electricity is not widely available, thereby contributing to massive use of private electricity, which has cost implications for investment. Health indicators have reduced drastically as result of low literacy rates and lack of improved sanitation. Thus, facilities for investments are mainly concentrated in urban areas and almost virtually non-existent in the rural areas.

Following the end of the civil conflict in 2004 and the ushering of a democratically elected Government in 2005, several reforms have been instituted to strengthen market related institutions to stimulate investments of distinct natures but other administrative barriers still exist. Table 7 reports the doing business statistics of Liberia.

Table 7: Doing Business Indicators for Liberia

Indicators	2010	2011
Starting Business (Rank out 183)	57	64
Getting credit Rank (Rank out 183)	135	138
Protecting Investors (Rank out 183)	146	147
Enforcing contract(Rank out 183)	166	166
Ease of doing business (Rank out 183)	152	155

Source: World Bank, 2011

Liberia was among top 10 reforming countries in 2009 Doing Business Report, but the country could not maintain the ranking in 2010. Even though there are barriers affecting the ease of businesses, Liberia improved on its ranking from 170th in 2008 to 157th in 2009 out of 181 countries in terms of the ease of

corrupt, evidenced by 89% of respondents (out of 750 persons) who claimed to have paid bribe to receive major services (TI, 2010). Besides, the World Bank Enterprise Survey (2009) alluded to corruption as constraint to investment.

Doing Business as defined by the Doing Business Survey²¹ of the World Bank in 2009. Generally, the rank in the ease of Doing Business statistics dropped from 152 (2010) to 155 (2011), which shows that reforms have not favored growth in businesses. While Liberia improved on its ranking from 57 (2010) to 64 (2011) out of 183 relative to ease of starting business, its rank of 147 out of 183 countries of protecting investor does not show impressive movement. While technological and human related factors are potential constraints, other constraints reflected in the latest World Bank Enterprise Surveys (2009) include corruption, crimes, theft and disorder as major constraints to doing business and investment. As evidence to corruption, about 55.4 percentage points of firms indicate making informal payments to get things done, compared with 36 percentage points for sub-Sahara Africa. The cost of starting business in Liberia is more than 50 percentage points of gross per-capita national income.

Seeking to empower Liberian businesses, a policy (known as Liberianization Policy) instituted to exclusively privilege Liberian citizens for specific businesses was considered as a mechanism of empowering Liberian entrepreneurs. The government of Liberia therefore approved an Act in 1975 to amend the General Business Law of Liberia regarding business regulations. The Act gives priority to twelve (12) business activities exclusively intended for Liberians. This Act was amended in 1998, thereby extending the Liberianization policy to twenty-six (26) business activities. Under the policy, only Liberians can become involved in specific businesses. Section 12.1 of the Act lists²² businesses to be operated exclusively by Liberian citizens or qualified persons of domestic entities that are 100 percentage points owned by Liberian citizens, both legally and equitably (GoL, 2008). Considering the huge expected benefits the Act envisages for Liberian, it still remains ineffective in increasing Liberian participation in commercial industries due to enforcement lapses and costs of operation.

²¹The Doing Business Survey takes into consideration "starting a business, dealing with construction permit, employing workers, registering property, protecting investors, and paying taxes. According to this statistics, it took 30 days for one to start a business. During the last 'Doing Business Survey', it was at 27. At present, records show that it takes 20 days for one to start a business in Liberia. This also means that most bottlenecks that were in the way of starting a business have been removed or improved upon in Liberia.

²²1. Block making with cement, clay or like materials; 2. Supply of sand, stone and granite; 3. Operation of Gas Stations; 4. Peddling; 5. Ice Cream Manufacturing; 6. Commercial Printing; 7. Travel Agencies; 8. Advertising Agencies; 9. Graphics and Commercial Arts; 10. Distribution in Liberia of locally manufactured; 11. Cinemas; 12. Production of poultry products; 13. Importation or sale of second-hand or used clothing; 14. Retail sale of rice; 15. Ice making or sale of ice; 16. Operation of water purification or bottling plant value at less than US\$100,000.00 or the sale/distribution of water purified in Liberia; 17. Importation and sale of used cars; 18. Tire repair shops; 19. Auto repair shop with investment of less than US\$50,000.00; 20. Entertainment centers not connected with established hotels; 21. Retail sale of animal and poultry food; 22. Taxi and trucking; 23. Shoe repair shop; 24. Retail sale of timber and planks; 25. Bakeries and 26. Retail sale of Pharmaceuticals

2.3.1 Institutions and market structures in Liberia

The institutional structures necessary to propel the functioning of the Liberian marketing system were not adequately effective before the conflict, especially at the data compilation front. Relevant agencies, such as the Liberian Marketing Association, Liberian Chamber of Commerce, Ministry of Finance, and the Ministry of Commerce and Trade, responsible for instituting this framework were inadequately capacitated, as evidenced by the lack of comprehensive records on the structure of MSEs. The situation worsened during the conflict, thereby transmitting greater spill-over effects to these institutions and businesses after the conflict. This drawback culminated in frequent leadership crisis within some of those institutions (including the marketing associations), thereby resulting to government intervention often driven by political motivation.

Like other developing countries, the market structure of Liberia is capitalistic and categorized into large, medium and small scale businesses highly concentrated in urban areas. Micro and small enterprises in Liberia are mixture of self-employment outlets and dynamic enterprises involved in an array of activities that concentrate in urban areas, but also evident in rural areas. Based on the 2009 World Bank Enterprise Survey, micro and small enterprises constitute about 94 percentage points (out of 150 firms). In terms of sectoral dominance, research has not been carried out to determine the leading sector. Anecdotal evidence suggests that most of the enterprises in post-war Liberia are in the trade sector²³, where large proportions of micro and small businesses are involved with buying and selling of commodities. It is notable that all of the small and microenterprises are non-exporters.

Prior to the conflict, many Liberians did not exhibit the culture of venturing into private businesses. The small and medium business sector was dominated by Asian and other foreign nationals from neighboring West African Countries (Guinea, Mali, Ghana, etc). Given the limited employment opportunities associated with the shutdown of many businesses, micro and small businesses now serve as springboard for income generation and employment in post-war Liberia. Out of 150 enterprises, the domestically owned firms account for 86.7 percentage points with female playing minimum role in management of those enterprises (World Bank Enterprise Survey, 2009).

²³The dominance of trade over the other sectors is not uncommon in many developing countries; though in some countries manufacturing sometimes dominates due to ease of accessing raw materials (see Kenya Micro and Small Enterprise Baseline Survey, 1999)

Table 8: Business registration trend in Liberia (2008-2011)

Form and Ownership	2008	2009	2010	2011
Liberian Business (old)	3966	3564	4709	3432
Liberian Business (new)	2198	2897	2330	3806
Non-Liberian Business	711	822	1007	112
Total	6875	7283	8046	7350

Source: GoL (2012)

Table 8 shows the business registration trend in Liberia without categorizing them into small, medium and large businesses. The trend indicates that business registration increased from 2008-2010 and later declined in 2011, due mainly to sharp fall in non-Liberian business registration. It requires eight (8) procedures and twenty five (25) days on average to start foreign-owned limited liability company in Liberia and this statistics is better when compared to sub-Sahara Africa. This suggests that business survival rate in the micro and small enterprise sector may seem difficult because of the high competitiveness among the businesses which are mostly engaged in the sale of almost similar products. In addition to the competitiveness and market uncertainty, micro and small businesses in Liberia are also faced with obstacles such as macroeconomic uncertainty (i.e, inflation and exchange rate fluctuation), corruption and possibly high tax rates which tend to suppress their growth potential (World Bank Enterprise Survey, 2009). Indeed, these institutional weaknesses could be salient arguments for the high informality of businesses in post-war Liberia.

2.4 Summary

This chapter has analyzed the economic situation of Liberia, by linking the performance of the economy to small enterprises. This economic overview has highlighted Liberia's financial system, investment climate as well as pre and post war economic performance. Essentially, this chapter has elicited some details of the credit market and the modus operandi of microfinance Liberia.

CHAPTER III: LITERATURE REVIEW

3.0 Introduction

The chapter presents a review of relevant theoretical and empirical literature. The contents of the literature is based on the argument that credit market has evolved over time with large number of analytical work venturing to provide exposition on the new theoretical development of its functional characteristics. The chapter discusses definitional and financing issues as well as imperfect information, as a direct challenge to the paradigm for the functioning of the credit market in developing economies. On this account, the works by Miller-Modigliani (1958), Akerlof (1970), Stiglitz and Weiss (1981) and pecking order theory (Myers and Majluf, 1984; Myers, 1984 and Fazzari *et al.*, 1988) are the theoretical foundation on which most body of credit literatures is centered on. On the issue of default, the works by Taslim (1995) and Tschach (2003) are extended to capture empirical estimation. This chapter therefore considers literature review based on theory of firms, theory of credit, financing of firm and other credit theories. Empirical literature is also explored to elicit insight about the direction of the study.

3.1 Theoretical literature

3.1.1 Micro and small scale businesses

It is difficult to carve a unique definition for micro and small scale firms since the condition befitting their description, in terms of location, capitalization, sales, employment, operation and financial position, differs across countries. The quantitative and qualitative measurements are often used to define these businesses based on commonly used criteria such as the number of employees, value of sales and size of capital. Thus, no conventional definition of micro and small scale businesses is acknowledged (Storey, 1994).

The inception of economic and statistical definitions of micro and small businesses points to Bolton (1971). Under the economic definition, a small business is defined when it has relatively small market share; it is managed by owners in a personalized way and not through the medium of a formalized management; and it is independent of a large enterprise. The statistical definition holds when quantifying the size of small firm sector relative to Gross Domestic product (GDP), change in small firm economic contribution over time and comparing cross country economic contribution of micro and small firms.

Based on the economical and statistical critiques²⁴ of Bolton's definition, the European Commission defined firms in three components-firms with 0-9 employees as microenterprises, 10-99 employees as small firms and 100-499 employees as medium enterprises.

United Nations Industrial Development Organization (UNIDO) provides definitions of small scale in the context of developing and industrialized countries. A more extensive definition by European Union (EU) considers a medium-sized enterprise as one with 250 employees; a small enterprise as one with less than 50 employees and microenterprises as one with maximum of 10 employees. However, according to 2002 World Bank micro and small enterprises (MSEs)-Group, small and medium scale businesses are defined to have between 51-300 employees; microenterprises have less than 10 employees and small firms have less than 50 employees. Thus, the common definition in OECD (Organization for Economic Co-operation and Development) countries is based on employment figures; correspondingly a small and medium scale business has less than 500 employees (OECD, 2002). In developing countries, firms with 5-19 workers are small firms and less than 5 workers are microenterprises while those with less than 99 workers are defined as small firms in industrialized countries (Kayanula and Quartey, 2000). The number of employees and size of asset or profits for MSEs are much smaller in developing countries vis-à-vis developed countries. The recent World Bank Enterprise Survey (2009) provides definitions of small businesses in developing countries similar to UNIDO's.

At country level, the small and medium enterprises in United States of America (USA) and Canada are defined to include firms with less than 500 employees. In the case of Asia, specifically Japan, MSEs is defined as firm with less than 300 employees. In Ghana, while Aryeetey *et al.* (1994) define SMEs as: Micro enterprises (1-9 workers), Small enterprises (10-29 workers), Medium enterprises (30-140 workers), Okoh and Song (2000) define microenterprises as firms with less than 5 employees and small scale enterprises as those with 6-29 employees. In Kenya, the 1999 Micro and Small Enterprise Baseline Survey of Kenya defined small enterprises as businesses with less than 50 employees (Government of Kenya, 1999). For the purpose of this study, the working definition of small enterprises (i.e, firms with 5-19 employees) of the World Bank Enterprise Survey (2009) is considered since the survey was recently

²⁴ The critiques are: no single definition or criteria is used for small business, definition complex to follow for cross country comparison, comparing monetary units over time requires construction of index, small firms are not homogeneous

conducted in many developing countries (including Liberia) to categorize small and microenterprises in Liberia²⁵.

3.1.2 Characteristics and roles of small enterprises

Small enterprises enhance competition and entrepreneurship. Their external benefits are enormous: efficiency, innovation and aggregate productivity. It is a common perception that micro and small enterprises (MSEs) in Liberia are primarily undertaken by vendors and small traders concentrated in urban areas, though small manufacturing activities are also an important segment of MSEs in rural areas. There is some truism associated with this assertion since majority of enterprises in other developing countries are predominantly engaged in commerce while the vast majority of establishments are sole proprietorships (Mead and Liedholm, 1998; Green *et al.*, 2008). Based on assessment by Mead and Liedholm (1998) on other African countries, majority of MSEs are operated by women, which is not the situation in Liberia (World Bank Enterprise Survey, 2009) where only few women are dominantly engaged into it. During any given period in Liberia as well as other developing countries, new firms are being created, while others are closing; at the same time, some existing firms are expanding and others are contracting in size. MSEs are vulnerable in their first year of operation, implying that closures of most MSEs occur in the early years of existence. Small firms are frequently managed by single individual who often owns all the shares. According to Mead and Liedholm (1998), one-person owned MSEs are not only the least efficient, but are also least remunerative.

Owners of small firms operate without targeting an optimal capital structure, thereby showing a clear preference for those financing forms that minimize intrusion into business operation. As a result, small enterprises' financing is initially based on internal funds and eventually on debt financing, implying that large firms are more likely to use external finance compared to small ones. Firms that started with larger capital were more likely to survive than those that started with smaller capital. In terms of location, MSEs located in urban commercial district possess greater survival rate than their rural counterpart (Mead and Liedholm, 1998). Essentially, MSEs are more efficient (due to use of fewer resources) and more labor intensive (Green *et al.*, 2008) and capable of withstanding adverse economic conditions because they manifest higher labor capital ratios (Snodgrass and Biggs, 1995).

²⁵ The GoL (2011) through the Ministry of Commerce defines SMEs as those with 4-20 employees, but we chose to use the World Bank definition since it is used in many developing countries

Due to weaknesses in transportation and infrastructure, SMEs are usually affected by access to markets and increasing costs, which tend to affect business revenue. Limited information about the different market channels and clients results into little penetration by SMEs in foreign markets through exports. This makes SMEs most vulnerable, especially in post-war countries, where lack of insurance and subsequent business failures may worsen the economic situation. Thus, the main impediments for SMEs are relatively high lending rates, limited market information and weak capacity for market planning (Ganbold, 2008).

In the face of the limited employment opportunities, MSEs are recognized as the major source of poverty alleviation via income stability, growth and employment. The sector attracts skilled persons retrenched from formal sector jobs (public and private), and serves as second-best option for those unable to keep and find job in the modern sector.

Worldwide, there is a growing impetus for the expansion of a strong MSEs as the engine of economic growth and development. As noted by Christianson (2004) small businesses are the bedrock for economic growth in Africa and are globally responsible for overwhelming generation of employment in growing economies. Similarly in Asia, Christianson (2004) points out that China's economy was largely driven by small scale businesses while the Philippines invested heavily in small scale businesses (Gungen, 2003). Within Western Europe, enterprises employing fewer than 250 persons were reported in 2004 to account for 99.8 percentage points of all enterprises and 66.2 percentage points of employment (Christianson, 2004).

African countries, in particular Liberia have generally recognized the importance of small scale businesses. In a thriving small business market, these firms offer a critical source of innovation and economic expansion by helping to create new jobs, build supply chains, and forge dynamic business clusters linked to global markets. The 2006 survey of SMEs in Ghana indicates 70 percentage points of all industrial establishments are SMEs while 85 percentage points of employments come from manufacturing sector (GoL, 2011). However, small enterprises lack assistance both for developing these new ideas and turning them into commercial products. Southwood (2004) documents that Africa's economies were often dominated by government and large corporations, but the real engine of economic growth lies within the micro and small scale businesses. Thus, priority for investment in the small scale businesses has been

widely considered by Liberia (PRS, 2008) and several African Governments including South Africa, Egypt, Morocco, Kenya, Uganda, Botswana, Zambia and Tanzania (Gordon, 2003).

3.2 Enterprise financing

Financing and good management have a vital role in the growth of small firms. Shariff and Peou (2008) as well as Toci and Hashi (2010) define firms' financing as the total amount of money invested to business, and it is one of the major factors that relate to the growth performance of small businesses. They assert that firm financing enables small business owners to support the running of their businesses and realize rapid growth in business. According to them, lack of sufficient firm financing will create a significant problems for business activities, particularly their ability to grow. Moreover, the ability to generate ideas, the ability to solve problems and the level of technical sophistication of small business has a major influence on its growth performance. However, according to Penrose (1995), the conduct of management also plays an important role in the financing of small business growth.

There are competing theories related to how small enterprises choose among various forms of finance. Mckinnon and Shaw (1973) as cited in Amonoo *et al.* (2003) attribute lack of quality firms' financing to outcomes of government policy failures. This suggests that ceilings on deposit and lending rates exacerbate demand for external finance and reduce credit supply. Miller and Modigliani (1958) argue that under perfect capital market conditions, financial decisions are made independently of investment decisions because the average cost of capital remains constant regardless of financial structure. However, imperfections in financial markets weaken the argument underlying Miller and Modigliani's assertion, given that small firms face market uncertainty (Stiglitz, 1994). According to pecking order theory (Myers, 1984; Myers and Majluf, 1984) or the hierarchy of finance hypothesis (Fazzari *et al.*, 1988) firms prefer to fund themselves with resources generated internally before resorting to the market, because the use of external finance is often more costly than the use of internal funds. In fact, Fazzari *et al.* (1988) conclude that investment is sensitive to cash flow of many enterprises, thereby making them to face more restrictions in terms of access to external finance and are therefore much more dependent on internal finance in order to finance their investment growth. In these circumstances, firms with large cash flows will grow faster, and thus a positive correlation between cash flow and firm growth is expected. The static trade-off theory (Myers, 1977) argues that marginal financing costs drive financing decisions of firms and positive relationship exists between firms' size and debt. As a result, additional financing is used from various sources based on cost-benefit analysis, because larger firms have been shown to have lower risks and relatively lower cost. The asset side theory argues that the use of funds (i.e. a firm's asset side)

matters for the optimal source of finance, but the equilibrium theory of finance (Brealey and Myers, 1994) recognizes that different types of businesses justify different financing in each economic sector. Sectors with lot of secure and tangible assets tend to borrow strongly (Rajan and Zingales, 1995), unlike other sectors whose activities are based on intangible, risky assets, and so tend to self finance their investment. While Mayer (1998) concludes that in cases of insufficiently internal fund for investment, access to external finance can be fundamental for the growth of small enterprises, Cabral and Mata (2003) show that growth of small enterprises is often hindered by small enterprises' financing restriction and shortage of resources for diverse use. Thus, decision to source of finance for investment is based on reasons such as monitoring costs (Townsend, 1979), asymmetric information (inculcating moral hazard) and adverse selection (Jensen and Meckling, 1976; and Stiglitz and Weiss, 1981), transaction costs, costs of application, screening costs and costs of insolvency.

3.2.1 Role of financial intermediaries

Driven by competitive pressure and globalization, financial institutions (in particular commercial banks) are now increasingly stretching their activities toward small businesses and poorer clients in many developed and developing countries. In recent World Bank document, De la Torres *et al.* (2010) infer that commercial banks and other financial institutions have now considered small business as a strategic sector for development. Therefore, these institutions are now aggressively expanding or planning to expand their operations to this sector. Consequently, the market for small business is becoming increasingly competitive in developed countries, which is a vital lesson for developing countries. De la Torres *et al.* (2010) further indicate that financial institutions are now developing effective business models, technologies and risk management systems to serve volatile small businesses.

While formal credit institutions try to serve small businesses in holistic way, lending serves as the minimum fraction of what financial institutions serve to small businesses. In developed countries, large and foreign universal banks provide wide range of complementary products and services that are attractive to small businesses. In so doing, they can sort out well functioning and promising small businesses via their corporate clients with which small businesses maintain supply and outsourcing relations. Many of these changes in relation to small businesses and financial institutions are linked to technological advances that afford banks opportunity to offer products and services at a better scale and cost they were unable to handle previously. Despite the appeal of advanced delivery technologies, relatively few financial institutions in developing countries have successfully deployed them to reach clients of small businesses.

3.2.2 Financing role of government

There are distinct assertions regarding whether government intervention in the financial system is capable of fostering financial development, given the underdeveloped financial system in developing countries. On this footing, the argument further extends as to the specific role or form government intervention should take in enhancing financial access. Standard arguments for government intervention in financial market is based on the fact that information asymmetry between borrowers and lenders is costly to obtain or when the social benefit is greater than private benefit the market may fail (Storey, 1994). Thus, production and processing of information are heavily relied on by financial market, and yet it is public goods.

Other distinct economic views about government intervention in accelerating financial development are anchored around two well established, but contrasting views-the interventionist and laissez-faire (free-market). While the former purports that an active public sector involvement in financial resource mobilization and allocation is essential to broaden access to credit, as private market is inadequate to expand access, the latter contends that governments can do more harm by intervening directly in the financial system. The laissez-faire further asserts that government effort should instead focus on improving the enabling environment, which helps to reduce agency problems and transaction costs as well as problem of access. The pro-market activism is the emerging view about government intervention which argues that some government actions in collaboration with market participation is warranted while institutions are taking time to build and consolidate (Ganbold, 2008).

Despite the varying assertions, the optimal role of government in improving access to finance is by offering a policy environment that allows competitively diverse financial services to flourish. Macroeconomic stability has been confirmed by theoretical and empirical literatures as essential blockade to financial contracting. Fiscal imbalances often generate high inflation, thereby making the future value of money uncertain and distorting long term credit contract. The fear of macroeconomic and financial instability also inhibits financial innovation that can promote access. Additionally, unnecessary government spending financed by borrowing tends to crowd out other borrowers such as small businesses. Though ensuring competition is essential part of broadening access, international experience suggests broadly three complementary roles that governments can use to address some of the constraints and facilitate the broadening of access to finance for small businesses. They are improving or building sound

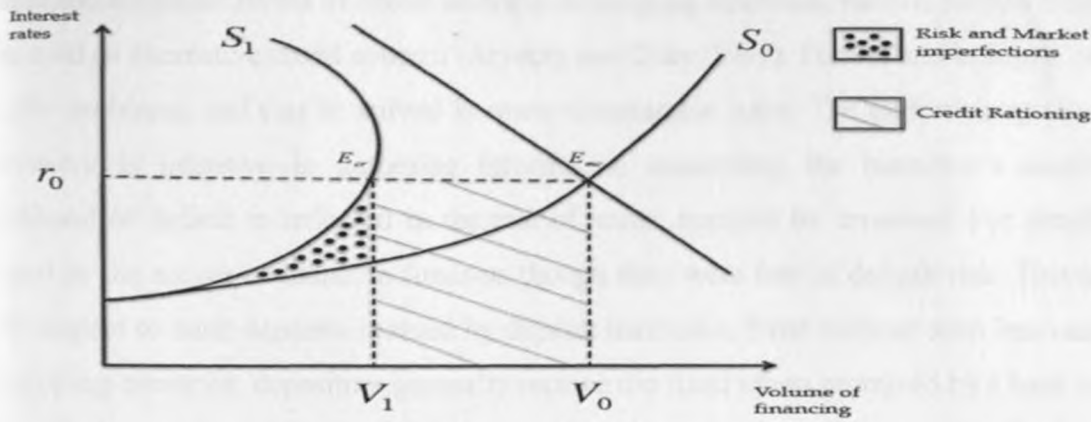
legal and judiciary infrastructure, building effective information infrastructure and make some rational direct intervention.

3.3 Credit market: theoretical issues

Credit markets differ from the product markets in that the latter (product markets), which are the focus of classical competitive theory, involve a number of agents who are buying and selling a homogeneous commodity where payment for the commodity occurs simultaneously (Jaffee and Stiglitz, 1990). By contrast, credit in the form of money or goods received today by an individual or firm, is exchanged for a promise of repayment (in money or goods) in the future. Generally, the features of credit market include the following: a multiplicity of freely operating financial intermediaries constituting the credit supply side, while homogeneous deficit-spending investors make up the demand side; both intermediation and investment activities are driven by profit maximization motive; intermediaries mobilize financial resources through the issuance of primary securities to surplus spending units or savers; resources mobilized are allocated among investors through the issue of secondary debt securities; both types of securities are designed in such a manner that they suit the investment and financing needs of both the savers and investors respectively with regards to maturity, risk-return preferences, liquidity and marketability etc; since transactions are competitive, agents do not possess undue market power which they can use to manipulate the quantity of credit or interest rates to their advantage; the assumption of perfect market symmetry and completeness of information holds as intermediaries and borrowers possess similar and all the required information on the quality of the investment projects; and intermediation transaction cost is negligible.

If credit markets were like standard markets then interest rates would be the prices that equate demand and supply for credit (Toci and Hashi, 2010). However, if there is excess demand for credit and applications for credit are frequently not satisfied, the demand for credit may exceed the supply at the market interest rate (Jaffee and Stiglitz, 1990). As indicated in Figure 3, the modern view of interest rate is based on market imperfection paradigm (Hoff and Stiglitz, 1990).

Figure 3: Prediction of Stiglitz-Weiss model about interest rate



Source: Stiglitz and Weiss (1981)

In Figure 3, the credit markets deviate from the standard model because the interest rate indicates only what the individual promises to repay, not what he will actually repay (which means that the interest rate, r_0 , is not market clearing price²⁶ with implication of credit rationing). From the side of financial institutions, the volume of loan supplied (S_0) is based on profit maximization rule, where interest rate moves to clear excess loan demand. However, this inference has been refuted given that loan repayment is inversely related to interest rate and endogenously determined. So, excess demand for loans cannot be eliminated by price effect, because the loan supply curve (S_1) decreases with interest rate (backward bending) once the turning point is reached and credit rationing occurred (shaded area). At the micro level, in the absence of a credit market, those with resources would have to invest the resources themselves, probably receiving a lower return than could be obtained by others. When credit is allocated poorly, poor investment projects are undertaken, and the financial resources are squandered. The special nature of credit markets is most evident in the case of credit rationing, where borrowers (especially small firms) are denied credit even though they are willing to pay the market interest rate (or more), while apparently similar borrowers do obtain credit.

3.3.1 Sources of credit

Lenders obviously need funds to make loans, so the cost and availability of loanable funds necessarily interacts with loan market activities. Gertler and Gilchrist (1994) argue that monetary policy contractions and banking crisis adversely affect small enterprises, and this is mainly due to lack of access to other

²⁶ If firms and financial institutions are fully informed, the interest rate is a market clearing price.

sources of finance other than bank loans. Bank lending is typical of most lending. Although bank loan is one of the dominant forms of credit in many developing countries, various forms of informal lending are also used as alternative credit sources (Aryeety and Udry, 1997). Formal and informal credit markets share similar problems, and can be solved in many comparable ways. The underwriting process for new risky borrowers is intensive in gathering information concerning the borrower's credit worthiness, and likelihood of default is reflected in the rate of return required by investors. For simplicity, deposits are treated as the source of loanable funds-as though they were free of default risk. This is actually the case with respect to bank deposits insured by deposit insurance. Even without such insurance as it is in some developing countries, depositors generally receive the fixed return promised by a bank because banks hold diversified portfolios of loans and their capital and loan loss reserves provide a further tier of protection (Jaffee and Stiglitz, 1990).

3.3.2 Asymmetry information and uncertainty

One of the most common imperfections in the credit market is the information asymmetry between lenders (financial institutions) and borrowers (small enterprises), which lead to uncertainty and poor working of financial markets in developing countries (Akerlof, 1970; Stiglitz and Weiss, 1981). Differences between promised and actual repayments on loans are the result of uncertainty concerning the borrower's ability or willingness to make the repayments. This creates the risk of borrower default (Jaffee and Stiglitz, 1990). The sources of uncertainty can be analyzed by distinguishing between two types of risks, namely business risk and financial risk. Business risk arises from the uncertainty of the realization of the expected returns of the firm. This uncertainty arises from possible changes in prices of the products and of the factors of production, changes in consumers' tastes, changes in the methods of production, and the response decisions of competitors. In other words, business risk arises from general business conditions in the economy. Financial risk arises from the use of credit for financing the firm's operations. As indebtedness increases, the fixed costs of servicing rise. Since creditors have a priority claim on earnings, the existence of debt increases the uncertainty of the flow of net earnings available to the entrepreneur (after interest payments). Furthermore, the use of debt exposes the entrepreneur to a potential loss of his total equity, if total gross earnings fall below the fixed charges of debt that is if the firm becomes insolvent (which may lead to legal bankruptcy).

Given that borrowers and lenders may have differential access to information concerning a project's risk, they may form different appraisals of risk. While symmetric information refers to the case in which borrowers and lenders have equal access to all available information, asymmetrical information is where

the borrower knows the expected return and risk of his project, whereas the lender typically knows only the expected return and risk of the average project in the economy (Jaffee and Stiglitz, 1990). Peterson and Rajan (1994) observe that small enterprises are most likely to face credit rationing because most potential lenders have little information on the managerial capabilities or investment opportunities of such firms and are unlikely to be able to screen out poor credit risks, or to have control over borrowers' investment. This information gap problem on credit supply is buttressed by Weiss and Stiglitz (1981) when they indicated that if lenders were unable to identify the quality of risk associated with particular borrower, then credit rationing would occur²⁷. The existence of asymmetric information prevents the suppliers of funds from taking the right investment decision. Mayer (1998) as well as Cabral and Mata (2003) pointed out in their analysis that firms are constrained in their growth by a shortage of capital. The implication of their research is that information barriers exist between the two groups and that it would be beneficial to the economy as a whole if these barriers were overcome. In other words, there is the problem of asymmetric information in the credit market as far as small business operations are concerned and this leads to market failure that calls for government intervention.

3.3.3 Information asymmetry in Africa's credit market

The credit market in Africa is fragmented and underdeveloped. As documented in Aryeetey *et al.* (1997), the fragmentation of credit market in Africa is anchored on two key theoretical models- the structural-institutional model and the policy-based model. The former considers imperfect information on creditworthiness, as well as cost of screening, monitoring and contract enforcement among lenders, results in market failure due to adverse selection and moral hazard, which undermines the operation of financial markets. The latter is based on fragmented credit markets, in which favored borrowers obtain funds at subsidized interest rates while others seek funds from expensive informal markets. Market segments that are avoided by the formal institutions due to institutional and structural factors are served by informal agents who use personal relationships, social sanctions and collateral substitutes to ensure repayment. An extended view of this explanation is that structural barriers result in monopoly power, which perpetuates segmentation. Generally, financial markets in African countries are characterized by imperfect and costly information, risks, and market segmentation, resulting in credit rationing. This is one of the underlying factors in the coexistence of both formal and informal credit markets²⁸ serving the needs of the different segments of the market. On the other hand, policy-based and structural-institutional explanations attempt

²⁷This phenomenon is analogous to the lemons argument advanced by Akerlof (1970).

²⁸Informal credit is defined by Adams and Pischke (1992) as all transactions, loans and deposits occurring outside the regulation of a central monetary or financial market authority

to explain the coexistence of both segments of the market as a result of policy and structural-institutional rigidities.

3.3.4 Principal-agent problem

Imperfection in the credit market stems from information asymmetries, transaction costs, and agency issues (Toci and Hashi, 2010; Tschach, 2003). Information asymmetry often causes two types of problems - adverse selection and moral hazard. These two problems are the key factors associated with the principal-agent problem in the credit market. Relative to adverse selection, Akerlof (1970) implies that there are different types of credit applicants. Contrary to high quality applicants, the low quality applicants are risked by using the borrowed money for risky investments, thereby exposing them to relatively large chance of defaulting on the loan. Credit institutions therefore prefer to select high quality applicants and the major way of examining a potential borrower is by analyzing all available information. The selection problem results from the behavior of low quality applicants that presume to submit high quality projects but do not forward all relevant negative information. Because many small firms rarely keep records and do not prepare financial statements and financial plans, financial institutions find it difficult to evaluate loan requests of these firms and to distinguish favorable from unfavorable investments. If there are proportionally many low quality credit applicants with small firms, financial institutions might refrain from extending credit to these types of firms. It is even possible that banks do not want to offer credit to applicants that are prepared to pay high interest rates, because banks may regard that as a signal of low credit quality. In that case credit rationing may take place (Stiglitz and Weiss, 1981). Faced with adverse selection, lenders will try to use non-price criteria to screen debtors or projects in apportioning credit, rather than further surging the risk premium.

Information asymmetry is also influenced by moral hazard (Pauly, 1968). A firm may have informational edge and associated incentives to use the resources (loans) in ways inconsistent with the credit market's interests. If the concept of moral hazard is applied to a lending/borrowing situation, it means that the client to whom a loan has been extended controls the money of the financial institutions. In such a case the client may use the money for his or her own interests and not consider the stakes of the bank. Credit firms thus try to monitor their clients as all principals do with their agents (Jensen and Meckling, 1976). Monitoring, however, requires some guarantees that proper information will be provided. But if repayment conditions are not fulfilled the client may not be inclined to inform the financial institutions adequately. The examination of credit applicants as well as the monitoring of existing clients is relatively easy if the applicant/client is a large firm. Large firms are usually well known and well equipped to provide the

relevant information to the bank. Small firms are less prominent and are not so much accustomed, and sometimes not even able, to provide the required information. Therefore, financial institutions perceive loans to small firms as risky. Moreover, investigating the creditworthiness of small firms requires a lot of time of lenders while the loan requests are relatively small. Financial institutions thus also consider loans to small firms as expensive.

3.3.5 Transaction costs

Even assuming that there are no principal-agent problems, a problem of loan diversion in the credit market is imminent when the transaction costs involved in accessing credit exceed the expected risk-adjusted returns. Such a scenario may arise due to inability of financial intermediaries to reduce costs. Interestingly, cost barriers often influencing misapplication of loans in credit market could also stem from deficiencies in institutions and market infrastructure, thereby making it expensive to gather information on business projects, value assets appropriately, and monitor and enforce contracts (Toci and Hashi, 2010). The question then arises regarding how the problems of information asymmetry and relatively large costs can be reduced. For these reasons, there are various critiques about ways in which asymmetry information can be mitigated to ease the problem of extending credit to small firms.

3.3.6 Information asymmetry controlling instrument

The information asymmetric theories of credit market have been criticized for assuming that financial institutions are unable to delineate among credit applicants (adverse selection), though formal credit institutions have specialized expertise for information processing (Riley, 1987). However, Scholtens (1999) provides several mechanisms to control information asymmetry. Besides the traditional credit accessibility instruments such as collateral and financial records, other tools like business relationships, ownership, reputation and human capital can assist in bridging the information gap.

Collateral is a powerful tool in bridging the information gap since it reduces the risks involved for the credit markets and, therefore, reduces the importance of the screening process (Jensen and Meckling, 1976; Binks and Ennew, 1996). Collateral accommodates both adverse selection and moral hazard, as the risk of failure is (partially) taken over by the owner of the asset. The high quality borrowers who enter the market can signal their status by their willingness to offer appropriate levels of collateral. Furthermore, the control of collateral by the financing firms can provide an incentive to ensure that the borrower will perform to the best of its abilities (Besanko and Thakor, 1987). Small firms, however, are usually less capital intensive, and thus have limited collateral. The literature provides some solutions for this problem. According to Von Pischke (1991), collateral could serve as an asset or cash flow base. Cash flow lending

does not depend on the value of pledged assets, but on expected revenues and expenses. Therefore, cash flow lending enables more credit than would be possible through strict asset-based lending. Though this system requires detailed financial and operational information about the borrower, it may be interesting for small firms that lack the necessary assets for collateral.

Another way of alleviating the problem is grouping businesses for credit. Applicability of group lending does not only reduce the costs of screening and monitoring of loans, but also reduces the risk of default through the joint liability and social pressure involved. Group loans induce interdependence between borrowers and, subsequently, group pressure improves the repayment rate and access to credit market may improve for the whole group (Besley and Coate, 1995). Finally, governments often establish guarantee schemes to improve small firms' access to credit. Though in the past quite a number of these schemes have failed (Levitsky and Prasad, 1987), others were successful, eg. in developed countries like Italy, USA, Japan, and Canada, and in developing countries like India, Korea, Paraguay and Cameroon (Levitsky, 1986).

Financial institutions also reduce the information gap with small firms' financial ratios. These are intended to give the bank more control and to prevent borrowers from engaging in risk-shifting behavior. By using specific financial ratios and activity restrictions, banks limit the firm's freedom to allocate financial resources and to recover losses (Berger and Udell, 1998). In practice, however, accounting covenants cannot be effectively imposed on small firms that do not have audited financial statements. In these cases, other types of covenants can be established, like restrictions on additional borrowings and restrictions on changes of ownership. The incorporation of the option to renegotiate can also reduce the credit gap (Gorton and Kahn, 1993). Here the bank is supposed to be able to track performance and the option gives the right to the bank to change the contract. Of course, also the borrower may try (or contractually be allowed) to renegotiate the conditions of the loan. The most well known contract that incorporates this option is the line of credit. This gives the bank the possibility to monitor the borrower closely in order to reduce the risk of default, but it also enables the borrower to prove his or her creditworthiness and to be rewarded with favorable terms of credit at future times.

According to Berger and Udell (1998), lack of business relationships is a basic cause for information asymmetry. If the credit markets are able to construct tight relationships with its borrowers, it will more easily be able to classify its clients as well as to monitor and to influence their activities. Moreover, if the

credit markets offer other services apart from financing, it will be more informed about the clients and the relationship could generate mutual trust. Equally the small firms should show their willingness to develop a relationship with the financial institutions. Small enterprises need to keep accounting records to signal their profitability and to convince lenders of their creditworthiness. Though there is a general agreement in the literature that a relationship minimizes the cost of screening and monitoring, there is a controversy on how this gain is shared with the borrowers, and in particular if the financial institution has monopoly power in the market (Petersen and Rajan, 1994). The relationship reduces the credit's risk and expected costs, but it also increases its informational monopoly. The latter effect may reduce the incentives for the lenders to pass part of the cost reductions to the borrowers.

A major issue in the literature concerns the agency problem in corporate finance and in particular the separation of ownership and control. However, agency problems driven by the separation of owner and manager are often irrelevant for small firms (Berger and Udell, 1998). Generally, the owner of a small firm has direct control and is thus committed to its success. The financial institutions may even have the opportunity to recover the loan from the owner's property in case of failure. Therefore, if the entrepreneur is the manager, the possibility of ignoring a contract will be reduced (Scholtens, 1999).

It is more difficult for individual small firms to establish a reputation with the bank. Large firms are known, and their investments more visible. For small firms it is especially the personal character, the entrepreneurs' capabilities and a track record that allow the bank to assess the quality of the company. This may influence the bank's decision about a credit application. It is only after approval of a first application that it becomes easier for small firms to establish a reputation with the bank, as a firm may prove trustworthy when it pays interest punctually and meets obligations. Particularly in developing countries a lack of educated personnel may constrain the use of some of the mechanisms discussed. The problem has two sides: the bank needs educated personnel that are able to screen and monitor clients, while the small firm owners should be able to produce financial accounts in order to provide the bank with the requested information.

3.4 Credit demand by small enterprises

Demand for credit is considered by small enterprises due to persistence of imbalance between internal financial assets and required financial assets required to expand. Based this gap, Aryeetey *et al.* (1997) categorized demand for credit into perceived, potential and revealed demand. While perceived demand is

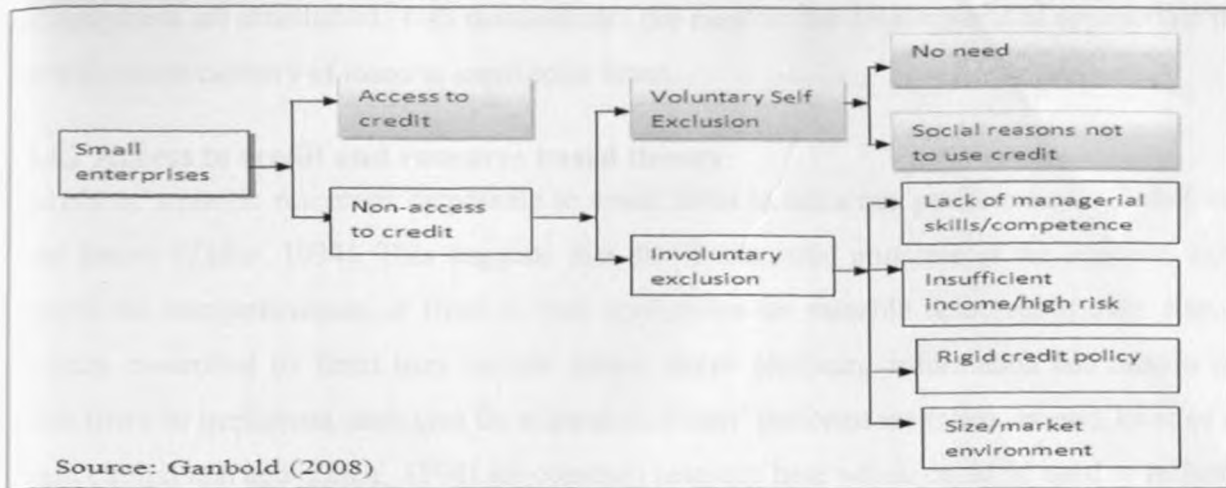
when finance is considered as constraint to firm, potential demand is characterized by a desire for credit, which is not actualized due to market imperfections and institutional barriers. Revealed demand is defined by written application for external finance at contractual interest rate. Though the study concurred with the two earlier definitions, the aspect of revealed demand is critical to both lenders and firms. However, revealed demand may not necessarily translate into effective demand, which is the actual loan approval by lending institutions to firms, at given interest rate.

3.4.1 Access to credit and credit participation

Access to credit is often confused with participation in credit programs. Indeed, the two concepts are often used interchangeably in many credit studies, but differ. The crucial difference between the two concepts lies in the fact that participation in a credit program is something that firms choose to do freely, while access to a credit program entails constraints placed on firms in terms of availability and eligibility criteria of credit programs. In other words, participation is more of a demand-side issue related to the potential borrower's choice of the optimal loan size while access is more of a supply-side issue related to the potential lender's choice of the maximum credit limit (Diagne, 1999). The lack of access to credit for a given source of credit can be defined when the maximum credit limit for that source of credit is zero. That is, one has access to a certain type of credit when the maximum credit limit for that credit type is strictly positive; and one improves someone's access to that type of credit.

The credit process involves two distinct stages. In the first stage, borrowers who have demand for credit decide how much funds to apply for and from which particular lender (formal or informal sector) at the prevailing market interest rates. In the second stage, the lenders decide who accesses credit and what amount, which constitutes the supply side (Zeller, 1994). For small and micro-enterprises, reliable access to short-term credit and small amounts of credit is more valuable, and emphasizing it may be more appropriate in credit programmes aimed at such enterprises (Adams and Von Pischke, 1992).

Figure 4: Schematic diagram of access to finance



From Figure 4, access to finance exists for small enterprises when an investment that would be internally financed does get external finance. So, in the process of credit application, there is always successful credit applicant and unsuccessful. The latter is either due to voluntary exclusion or institutional decision to exclude on the basis of set criteria, which the study endeavors to elicit. Thus, access to credit has generally been identified as one of the main determinants of economic activity and pro-poor growth in developing countries (Honohan and Beck, 2007; Beck *et al.*, 2007). By accessing credit, the poor may acquire productive capital to improve their capacity to generate income, savings and investment for better welfare (Beck *et al.*, 2007, Beck and Demirguc-Kunt, 2005). However, in practice the small firms in developing countries have very limited access to formal credit sector. The small scale businesses are constrained to credit access because formal financial institutions in developing countries are characterized by persistent market imperfections, evolving from problems linked with adverse selection, moral hazard and enforcement of credit contract. Lack of suitable collateral and complications with enforcement of loan repayments is also factors impeding access to credit in developing countries (Besley, 1994; Flesig *et al.*, 2006).

At the institutional level, the banks incur high information costs to assess the creditworthiness of small borrowers, and low returns due to the small loan amounts involved. This motivates the formal lenders to adopt strict collateral requirements as a screening mechanism to minimize default risk, hence rationing out the poor from the formal credit market. As noted by Atieno (2001), experience of the Grameen Bank shows that most of the conditions imposed by formal credit institution like collateral requirements should not actually stand in the way of smallholders and the poor in obtaining

credit. The smallholders can use the loans and repay if effective procedures for disbursement, supervision and repayment are established. This demonstrates the need for the development of appropriate institutions that will ensure delivery of loans to small scale firms.

3.4.2 Access to credit and resource based theory

Analysis of strategic resources disposable to small firms to influence performance is based on resource based theory (Zeller, 1994). This suggests that the fundamental principle of the resource based theory supports the competitiveness of firms in their application for valuable resources at their disposal. Thus, resources controlled by firms may include assets, firms' attributes, information and human capital that enable firms to implement strategies for expansion. Firms' performance (sales, assets), level of managers' human capital and age (Zeller, 1994) are common resource base which could be used to influence access to credit, but they are not sufficient. The significance of the resource based theory is that it enables identification of resource associated with successful and unsuccessful access to small enterprises finance. Reputation could also be a form of resources to enhance credit access. In fact, Diamond (1984), Petersen and Rajan (1994) and Berger and Udell (1998) suggest that relationship with financial institutions implies existence of specific information on borrowers, which is available only to lending firms.

3.5 Credit constraints

The fact that few firms obtain credit is not sufficient to prove constraints, since certain firms may not have a demand for credit while others may be refused credit as part of profit maximizing behavior by financial institutions. Economic theory suggests that credit constraints may have significantly negative consequence on income and welfare, especially low income firms. Beck *et al.* (2005) show that micro and small businesses find accessing credit more difficult than larger firms. In Africa, the lack of credit is cited by firms' managers as their most important constraint (Bigsten and Soderbom, 2005), and that credit constraints affect efficiency of investment (Bigsten *et al.*, 2003). Thus, limited credit access means some form of credit constraint being imposed (Doan *et al.*, 2010). In fact, Beck *et al.* (2005) argue that small firms are more credit constrained due to underdeveloped financial and legal systems as well as higher corruption.

The lack of the required amounts can force a firm to postpone, scale down or even abandon investment plans that are crucial for its economic viability, although affecting firms' profitability and growth. Thus, entrepreneurially talented, credit constraint prevents poor households from starting or expanding their businesses (Boucher *et al.*, 2006). Notable disadvantages of the formal financial institutions influencing

credit constraints are their restrictions of credit to specific activities, making it difficult to compensate for losses through other forms of enterprise and their use of collateral (Atieno, 2001). Stiglitz and Weiss (1981) argue that liquidity constraints become more severe as firm size decreases. They pointed out that unlike in most markets, the market for credit is exceptional in that the price of the good, the rate of interest, is not necessarily at a level that equilibrates the market. They attribute this to the fact that interest rates influence not only the demand for capital, but also the risk inherent in the different borrowers. Credit constraints thus, mean being rejected credit, discouraged from applying for credit (Jappeli, 1990) because of possible denial or obtaining less than the credit amount applied for to initiate or expand business. Considering both demand and supply factors in general terms, a firm will be credit constrained if its demand for credit is higher than the available credit supply (Kedir *et al.*, 2007). Firms that did not borrow because of adequate resources to invest are considered credit unconstrained (Doan *et al.*, 2010).

3.5.1 Credit rationing

The work by Stiglitz and Weiss (1981) marks the inception of an attempt at explaining credit rationing. Credit rationing occurs if the demand for loans exceeds the supply at the ruling price (interest rate). Adverse selection and Moral hazard, which are discussed later, provides an exposition about why formal credit institutions ration credit, since a rise in interest rate may result to more excessive risk taking by borrowers (moral hazard) and a worsening of the pool of applicants (adverse selection). Adverse selection problems arise when potential providers of external finance cannot readily verify whether the firms have access to quality projects. Moral hazard problems are associated with the possibility of firms diverting funds made available to them to fund alternative projects or develop the propensity to take excessive risks due to some pervasive incentive structure in the system. But Stiglitz and Weiss (1981) conclude that lenders may choose not to use collateral requirements as rationing device because an increase in interest rate (collateral requirement) potentially affects lender's expected return on loan. Most schools of thought, especially Keynesians have seen credit rationing as one of the most important examples of market failure in a modern capitalistic economy. We would expect that an excess demand for credit would cause the opportunistic suppliers to increase the price (interest rate), until quantity demanded equals quantity supplied. In reality, this mechanism is not always working (Riley, 1987) and consequently there are many small scale firms which cope with credit rationing under strenuous condition (Voordeckers and Steijvers , 2006).

3.6 Credit default

Definition of default varies depending on the classification of loan repayment by a particular lender. Generally, a loan is in the default stage when the principal amount of the loan is unpaid or written off by the due date of the loan contract (Chang *et al.*, 2010). Therefore, the definition of loan default is essentially restricted to whether the loan is repaid on time, which may be narrow considering multiple periods (Jaffee and Stiglitz, 1990), but realistic in the sense that other violations of loan covenants are not necessarily considered as default. Jaffee and Stiglitz (1990) argue that a lender may have incentive to postpone a default by extending additional credit to the borrowers. However, this study has not considered such cases.

Literature on credit default is limited, but still rest on the principle of asymmetric information between borrowers and lenders (Stiglitz and Weiss, 1981; Hoff and Stiglitz, 1990). According to Tschach (2003), information asymmetries make it difficult for financial institutions to assess accurately whether specific entrepreneurs are able and/or willing to repay their loans. This leads to implicit interest rate ceilings, i.e. formal financial institutions “refuse” to increase their interest rates beyond this ceiling as this would lower their net returns. Although the maximum interest rate increases as the size of enterprises decreases, such ceilings nonetheless constrain the banks’ ability to set interest rates at a level that would enable them to cover costs. If transaction costs are high, the total costs associated with granting small and medium-sized loans will exceed the maximum average return which the banks can earn by issuing such loans. For this reason, banks do not lend to small and medium-sized enterprises, and as a consequence, these businesses have no access to formal sector loans. If small firms have higher informational problems and are subject to credit constraint, it does not mean that they have bad project in hand (Toci and Hashi, 2010). In fact, Storey (1994) notes that if business plans are turned down for reasons not connected with the viability of project itself (example, because firms lack track record, collateral or are small), then government intervention could be necessary to address the credit problem of small firms.

To evaluate small business creditworthiness, lenders have traditionally relied on three approaches: financial statement lending (focused on a firm’s financial statements), asset-based lending (collateralized lending) or relationship lending (where assessment of the business owner’s character and other informal information are vital part of the lending decision)²⁹. Of these three, relationship lending is often identified as the key feature of small business credit environment. In addition to the problem of moral hazard and

²⁹ See Berger and Udell (1998) for detailed description of these lending types.

adverse selection, several bodies of literature (Berger and Udell, 1998; Miller, 1995) have considered relationship between loan officers and small business owners as potential factors that affects loan decision and characteristics of loan market. Such behavioral tendency in the credit market influences the level of default either strategically or willfully.

In some developing countries, a section of the borrowers from enterprises are found not to use the funds for the stated business purposes and deliberately default on the loans, creating severe stress for development finance. Taslim (1995) argues that when the expected pay-off from simply usurping the loan money is greater than that from investing in the stated business, the borrowers have a strong incentive deliberately to default. The default syndrome arises from, and is sustained by, a lack of sufficient entrepreneurial skills in these borrowers and the inadequacies of the institutional infrastructure in enforcing contractual obligations. The former implies that the profit to be earned from business is low, while the latter ensures a light, if any, penalty for default.

It is worthy understanding that the administrative, commercial, and legal institutions of many developing countries, in particular post-war countries, are still not adequate to enforce full compliance with contractual obligations. This provides an opportunity to people with sufficient political influence to defy the law without much fear of retribution. These people would attempt to borrow, as much as they could get away with, apparently for business investment. But if the loans are granted, they may deliberately default simply to usurp the money (Taslim, 1995). In many developing countries, however, the financial sector is subject to laws which are designed to protect borrowers and which grant creditors little scope for action. For credit institutions, initiating legal proceedings to collect their claims is a very lengthy and expensive process in which the costs of the legal measures often exceed the value of the small loans involved (Tschach, 2003).

Though lacking in many African countries, credit scoring technologies have been developed to help simplify the credit origination process by using statistical models to estimate probabilities of default for risk classes of borrowers. Most credit scoring models are developed and designed to help credit grantors predict outcome of making loan to a business. However, this method is not effective in many African countries, where there exists high information asymmetry and lack of bank account by many people.

3.6.1 Willingness and ability to repay loan

Besley and Coate (1995) clarify that repayment rate will not be 100 percentage points, even if the cost of the loan was very low and the project return is also low. Thus, repayment of a loan can be motivated by intrinsic or extrinsic factors (Tschach, 2003). In this context, intrinsic motivation means that borrowers pay back their loans because of their own attitudes, ethical considerations, personal relationships, etc., rather than because of economic considerations. In a broader sense, repaying a loan to avoid losing face is also a form of intrinsic motivation. Because borrowers' actions are noted by other persons in their social environment, they must expect social sanctions for behavior which does not comply with social norms. Intrinsic motivation will be, however, disregarded in this analysis, as one can assume that small entrepreneurs may not have any intrinsic motivation to repay a loan to a conventional bank, in the event of rigid credit environment.

There are two extrinsic factors which can motivate borrowers to repay their loans. On the one hand, they avoid costs that could arise if the bank attempted to force them to pay back their loans. On the other hand, they safeguard future benefits for themselves which can arise in the form of a continued business relationship with the bank, but which they will only be able to reap if the current credit has been repaid (Tschach, 2003). Further, the argument by Tschach (2003) that small firms have learned in the past that timely repayment of all loan installments does not guarantee their personal access to future credit may not be realistic for Africa, Liberia in particular.

3.7 Review of empirical and methodological literature

It should be pointed out that empirical evidence on the credit market in urban post-conflict environment is not very extensive. Consequently, most papers on access to credit, credit constraints and default are limited to rural-based agricultural setting or households. Thus, most of our empirical channels are based on those studies. Thus, the empirical literature of this study is disaggregated in three components considering developed countries, developing countries and Africa. Review of methodologies is considered to explore the different studies relating to the objectives in order to elicit gaps and identify the appropriate model and variables.

3.7.1 Credit application and access

Features of credit markets useful to explain the existence of formal and informal credit markets in Africa have been detailed by Besley (1994). Among these are the existence of collateral security and covariant risk. Collateral security is often beyond the reach of many borrowers doing small scale businesses. But

even where this is not the case, the ability of the lender to foreclose is often limited, making enforcement of loan repayment difficult. Such difficulties help to explain the use of informal financial markets, which use social sanctions to ensure enforcement. In rural areas, shocks in incomes that create borrowers' potential to default will affect the operation of credit markets. In most rural economies, borrowers are faced with risks arising from uncertainties about their incomes. By diversifying their loan portfolios, lenders can avert such risks (Atieno, 2001). Thus, credit markets in underdeveloped areas are segmented, with lenders' loan portfolios being concentrated on borrowers facing common shocks to their incomes.

Based on Aryeetey and Udry (1997), three fundamental units of informal finance are identified in Africa: savings mobilization units with little or no lending; lending units that do not engage in any savings; and those units that combine deposit mobilization and lending. The types of informal financial units vary mainly because they are purpose oriented and mostly developed to meet the demand for specific financial services, responding to the demands of a distinct clientele, using various socioeconomic criteria (Atieno, 2001). Assessments of informal finance in Africa indicate prospect so long as the level of economic activity demands increasing financial services for groups that cannot be reached by the formal financial institutions (Chipeta and Mkandawire, 1994; Soyibo, 1996).

Informal credit therefore seems to develop in response to an existing demand. Aryeetey and Udry (1997) have further observed that while credit from an individual lender to a set of borrowers may vary in terms of what package each borrower receives, the more significant variation in the informal credit market is in terms of what packages different lenders are able to offer in the market. They therefore note that differences in the loan characteristics represent different lender types. Informal credit markets have developed in rural areas, providing faster services to their clients. That informal finance is more important than formal finance has been proven by different approaches used to measure its magnitude in different countries, namely: Chipeta and Mkandawire (1994) for Malawi and Aryeetey and Gockel (1991) for Ghana.

Access to finance gives small scale firms means of investing and breaking out of the vicious circle and potentially enhancing investment, thereby reinforcing income (Hulme and Mosley, 1996). Bartholdy and Mateus (2008) use Portuguese firm data to test for the relevance of the three financing theories earlier mentioned and did not find support for the first two theories (static trade-off theory and pecking order theory) but some support for the third theory (asset side theory). Small businesses not requiring huge start-

up capital and high technology are more likely to finance business inception through savings or informal credit. Manigart and Struf (1995) study on Belgium (using survey data) indicates that traditional financing means are available form of start-ups with the exception of venture capital. This assertion aligned with findings of Levitsky (1989) on developing countries.

Monge-Naranjo and Hall (2002) use a survey data of 2001 and Probit model to examine the determinants of firms access to credit and the effect of credit limitations on the behavior and performance of firm in Costa Rica. They found that the probability of having banking credit and the fraction of banking credit/total debt is mostly affected by characteristics of firm and not by those of their owners. Given the findings, the authors argue that the results could have been much more conclusive in the event that better data were available.

Kochar (1997) provides analysis on credit rationing in rural India. The study adds that the literature on rural credit has generally assumed that households are rationed in their access to subsidized 'formal' credit; but the validity of this assumption hinges on the level of effective demand for formal credit, which is in turn a function of the demand for credit and its availability from 'informal' sources. This implies that the extent of credit market rationing may be less than is often assumed. Though Kochar's work differs from ours since it is based on households in rural areas; it provides cautionary guide for some of our arguments.

Joshi (2005) examines degrees of access to financial services by hawkers and determinants of matching patterns observed between various types of borrowers and lenders (informal, semiformal, and formal) in India. The author explores the role of a hawker's endowment of dimensions of formality (documentation, license, accounting record, collateral, social capital) as means to signal creditworthiness and the extent to which lending technologies, along a continuum, rely on dimensions of formality in screening and monitoring borrowers and designing and enforcing contracts. The author used Probit model to examine access to loans (influenced by the number of household income earners and type of goods sold. Heckman two-stage regression was used to explain the amount received (influenced by a license to hawk). Additionally, the ordered Logit regression was used to test for matching. Key results from the author's work indicate that hawkers with identification documents, stocks of social capital, and a house are more likely to match with institutional sources of credit while Hindu hawkers are more likely to be institutional borrowers and Muslim hawkers prefer commercial suppliers that do not charge interest. Encouragement of

innovations in lending technologies, improvements in endowments of characteristics that signal creditworthiness, and less uncertainty in the regulation of hawkers are policies cited by the author. Also, analyzing determinants of household credit participation using logistic regression in Bangladesh, Shah *et al.* (2008) found that age, household size, years of schooling and presence of formal financial institutions increase access. Both studies by Shah *et al.* (2008) and Joshi (2005) differ from ours in that the former is based on households while the latter focuses on microenterprises.

Evidence on how African Enterprises choose informal credit is noted by Kounouwewa and Chao (2011). They indicated that preference of formal credit to informal credit is based on institutional mechanisms of market interaction and that bribes increase the likelihood of accessing credit. However, the authors did not extensively address other pertinent factors such as social capital and relationship with lending institutions that could potentially aggravate access to credit, other than single components.

Aryeetey *et al.* (1994) assess the demand for finance by SMEs in Ghana and found that the size, internal management and level of capitalisation of the SMEs determine their decision to seek bank funding. In respect of size, they observed that a positive correlation exists between the size of SME and its willingness to seek credit from banks. It was also established that growth SMEs are more likely to seek credit than those that are not focused on growth. The rationale for these arguments is that the growth-oriented SMEs are more likely to have the prerequisites for borrowing than smaller ones. This gives the owners of the larger SMEs confidence to seek credit as compared to their smaller counter parts who feel reluctant to seek credit because of the perception that even if they make efforts to borrow, they are likely to fail due to their inability to meet bank requirements. Aryeetey *et al.* (1994) also found that SMEs with strong internal management systems and good managerial expertise have a higher likelihood of seeking credit than those without such systems and skills. Such SMEs have lower fear of loss of control of their business due to bankruptcy arising out of inability to pay loans and this encourages them to take on more borrowing. Along this same line, Atieno (1994) with a study on formal and informal sources of funding for SMEs in Kenya confirms the finding of Aryeetey *et al.* She observes that the perception of SME borrowers about bank lending affects their willingness to seek credit. Her study reveals that the desire of SME borrowers to seek credit is directly related to their expectations of qualifying for the credit. It was also established that when SMEs perceive that lending terms or conditions are unfair then they do not apply for credit from banks. Levy (1993) conducted a study on Sri Lanka and Tanzania and reported that 80 percentage points of firms with 16 or more workers and with 6 or more years in operation are able to access bank credit.

This success rate compared to around 55 percentage points in the case of smaller firms with 5-6 employees of similar age and to less than 10 percentage points of firms with 5 or fewer workers, regardless of age. These negative expectations are compounded by SMEs lacking information about the pre requisites for obtaining credit from banks.

Atieno (2001) identifies the different sources of credit to SMEs in rural Kenya. Using primary data involving 334 enterprises, the results based on descriptive statistics indicate that most enterprises (51 percentage points) had not used credit before; 67 percentage points used informal credit; 15 percentage points were credit constrained and only 49 percentage points had ever applied for credit. Therefore, the author recommends need for capacity expansion of informal credit sources; diversifying of loan portfolios and provision of environment that affords growth of small scale enterprises. However, Atieno failed to identify the characteristics of enterprises driving them to access credit or be credit constrained. Based on RPED data, Fafchamps *et al.* (1994) indicate that the use of trade credit in Kenya increases with firm size. The authors' evidence asserts that microenterprises are rationed out of the trade credit market if they cannot credibly be convinced to repay, and that those firms are not heavy users of trade credit. Utilizing a uniquely comprehensive dataset drawn from 1999 baseline survey of 2000 micro and small-scale enterprises (MSEs) in Kenya, Green *et al.* (2008) use the framework of a heterodox models to determine the success rate of loan applications. Major findings evolving from the study indicate that MSEs in Kenya obtain credit from variety of sources; debt-equity and gearing decisions by MSEs and their success rate in loan applications are understood by relatively simple models inclusive of heterodox and conventional variables; and tangibility of owner's assets, and the owner's education as well as training have significant positive impact on the chance of borrowing. Interestingly, Green *et al.* (2008) found evidence in support of the first theory (pecking order theory).

Guided by the framework of a household model under credit market failure, Simtowe and Zeller (2006) investigates the impact of access to credit on the adoption of hybrid maize among households that vary in their credit constraints in Malawi. Using data collected by the International Food Policy Research Institute (IFPRI) of Malawi, the authors use direct elicitation approach to classify Malawian households into constrained and unconstrained regimes. Estimating the probability of being credit constrained, followed by an estimation of the impact of access to credit for the two categories of households (credit constrained and unconstrained), while accounting for selection bias, the impact of access to credit was estimated using a switching regression in a Double-Hurdle model. The results reveal that while access to credit increases

adoption among credit constrained households, it has no effect among unconstrained households and that factors that affect adoption among credit constrained households are different from those that affect adoption among unconstrained household. Important policy recommendation is that microfinance institutions should consider scaling up their credit for the enhancement of maize adoption. Like Simtowe and Zeller (2006) whose studies were based on households, Mpuga (2004, 2010) analyses demand for credit among households in Uganda. Using limited dependent choice models, the author found that Uganda credit market is segmented with rural peasant accessing credit from informal sector. Empirically, the author found that the educated and youth are more likely to apply for credit, while women are less to apply, and women that applied, do so for smaller loan.

Along this same line, Duman (2009) analyzes the determinants of access to credit in microenterprises of Turkey using unique dataset covering a large sample of microenterprises. The author found that the size and signals of wealth positively affect the likelihood of getting a formal credit. While Okurut (2006) found that household characteristics such as age, gender and education have significant effect on access to formal and informal credit, Mohamed (2003) analyzes formal and informal credit among small holders and fishermen in Zanzibar and found that age, gender, education, income levels and degree of awareness are factors influencing access to credit. Fafchamps *et al.* (1995) used RPED data to analyze access to finance by manufacturing firms in Zimbabwe. They indicate that problem of financial access by Zimbabwe manufacturing firms significantly depend on firm's size, ethnic background of owners/managers, rate of expansion and institutional innovation. In South Africa, Fatoki and Odeyemi (2010) examine the determinate of credit approvals by new SMEs and found that managerial competencies, business information, networking, location, crime, business size and incorporation are significant determinants of credit approval. However, the study by Fatoki and Odeyemi did not consider credit market components. Like McPherson and Rous (2005) who found no significant relationship between sales growth and access to credit by small enterprises in Indonesia, Akoten *et al.* (2006) analyze 225 garment producing firms in Kenya and found that access to credit is not a significant determinant of firm's performance and that factors affecting credit access are different from performance and profitability.

3.7.2 Credit constraints

Though there is little evidence of credit constraint in developed economies, it is a typical feature of credit market in developing countries (Conning and Udry, 2005). Gilchrist and Zakrajsek (1995) show that there are many criteria to determine financial constraint. Based on their study, they use firm's size and age as criteria for determining financing constraint, because such constraint mainly apply to younger firms with

short track record and most times lack collateral. Berger and Udell (1998) found that small and young firms with generally shorter relationships pay higher interest rates and are more likely to pledge collateral. As noted by Levy (1993), restricted access to financial services slows growth and small businesses. Though credit constraint may be difficult to identify, Toci and Hashi (2010) identify one test for credit constraint as distinguishing between firms that apply for credit and those that did not apply, and between successful and unsuccessful loan approval. Based on housing loan market in USA, Kon and Storey (2001), and Jappeli (1990) explore the degree of rejection of formal credit applicants as measure of credit constraint. The authors identified another measure of credit constraint as those who did not apply for credit because of possible rejection as 'discouraged' borrowers. Also, Jaffe and Stiglitz (1990) argue that the magnitude of credit constraint could be measured if demand for and supply of credit were known, this is not the case in developing countries, whose credit markets are segmented and underdeveloped. The authors aver that only the quantity of credit transacted is observed.

Doan *et al.* (2010) examine how the poor use their loans, and factors affecting their credit constraints in Vietnam. The authors found that the presence of many commercial banks in the area does not alleviate financial problem on the poor, but the poor, which are highly credit constrained, rely heavily on informal credit. The authors also found that competition by borrowing neighbors adversely affects the opportunity for borrowing in urban wards, where poor households' borrowings rely on subsidized credit funds. On the overall, while asset holdings was found to reduce the likelihood of credit constrained, the study found that the poor in urban wards are more credit constrained because of exclusion formal credit.

Bigsten *et al.* (2003) investigate the nature of credit constraints facing manufacturing firms in six African countries³⁰. With trade credit received by 60 percentage points of sampled firms, they reveal that trade credit to majority of firms from suppliers is the single most important source of finance for working capital needs. Their study also found that 55 percentage points of firms did not apply for credit; 33 percentage points were in need of loan but their applications were rejected; and 12 percentage points of firms received loans. The same study revealed that the rate of being credit constrained decreases with increases in firm size and that banks require a profit to capital ratio of 200 percentage points to grant loan to microenterprises, 56 percentage points if the firm has between 26-100 workers. While Bigsten *et al.* (2003) observed that small firms are less likely to obtain loan than large firms, they also found that greater sales and profits are associated with greater access to credit and less credit constraint. The work by Fisman

³⁰Burundi, Cameroun, Cote d'Ivoire, Ghana, Kenya and Zimbabwe

(2001) reveals that supplier credit has a positive impact on capacity usage in African manufacturing. The author argues that increase in trade credit is likely to have significant positive effect on productivity and that supplier credit is essentially vital for firms with high liquidity constraints.

Using industrial firm surveys and panel data to identify determinants of credit constraints Mozambique, Byiers *et al.* (2010) construct five different measures of being credit constrained. Aside from firm size and ownership structure, the study found that 43 percentage points of firms are constrained, manager's education and membership in business association are factors associated with credit constraint. Due to data limitation, Byiers *et al.* (2010) provide inconclusive results about the causes of credit constraint.

3.7.3 Credit default

In Europe, Fredmuc and Hainz (2006) use a unique unbalanced panel of nearly 700 short term loans made to SMEs in Slovakia between 2000 and 2005. The authors found that above average indebtedness significantly increases the probability of default and the legal form that determines liability has important incentive effects. To concurrently address the problem of potential and actual defaulter in loan market, Moffat (2003) applies the Double Hurdle model on 2515 loan applicants of United Kingdom, for whom loans were approved and a sizeable proportion of whom defaulted in varying degrees. The value of the hurdle approach indicates several key explanatory variables have very different effects. Most notably, the effect of loan amount is strongly positive on arrears, while being strongly negative on the probability of default. The author's findings further indicate broad differences in the two hurdles such that age, gender and occupation were vital in the first hurdle, while economic characteristic such as income and tenancy status were important in the second hurdle.

Riding and Haines (2001) analyze Canadian firms regarding loan default rate, employing two measures of default rate. The first suggests that long term rates regarding default is usually unknown until the loans have run their course, while the second measure default during the initial year of loan. The authors found that default rates are higher for newer firms, and it increases with amount of funds borrowed. On a sectoral basis, they found that service and manufacturing sectors were more likely to default compared to other sectors.

In Asia, Roslan and Karim (2009) investigate the determinants of loan repayment among small business borrowers in Agrobank of Malaysia, using survey data of 2630 from 86 bank branches. Employing the Probit and Logit models, they found the determinants of repayment to be divided into three categories:

characteristics of the borrowers, characteristics of project or business and the loan characteristics. Findings from the study indicate probability for loan repayment default is influenced by the gender of the borrower, type of business activity, amount of loan, repayment period and training. Like in the case of Asia, Khemraj and Pasha (2007) ascertain the drivers of non-performing loan in Guyana (South America) using panel data. They found that highest interest rate is key contributor of default leading to non-performing loan. On the issue of asymmetric information, Jappeli and Pagano (2000) acknowledge that information sharing among lenders can increase lending and reduce default.

Similarly, Amonoo *et al.* (2003) endeavor to establish whether there is a relationship between interest rates and loan repayment by the poor and the SMEs in a rural region of Ghana. The results show evidence of a negative relationship between interest rates and the demand for credit as well as repayment. The study recommends that lowering interest rates would increase the poor and SMEs' demand for credit and loan repayment at banks and non-bank institutions.

3.8 Overview of theoretical and empirical literature

This chapter has discussed the relevant theoretical and empirical literature, venturing to bring out pertinent arguments to motivate the study. The literature has provided several distinct theories relating to credit market suggesting that availability of credit is vital for growth. The theoretical literature indicates that market uncertainty and asymmetric information are key factors associated with small enterprises and that asymmetric information about credit market participation and access by small firms is mitigated mostly by provision of collateral. While literature on small business financing almost questions the case of perfect credit market, research on the factors that determine credit market participation and access to credit, credit constraint and default remain inconclusive (See Green *et al.* 2008; Bigsten *et al.*, 2003). Thus, Stiglitz and Weiss (1987) have noted a situation whereby interest rates and collateral requirement could create corridor for risky borrowers. Stiglitz and Weiss showed that increasing collateral requirements could have negative effects on selection, because large firms may take greater risk. In addition to those two requirements, other factors such as skill/experience in business, performance indicator of firms and market environment are often ignored, but yet crucial for credit market interaction

Moreover, the literature suggests that small enterprises have received limited attention in terms of theories to explain financing preferences and access. This limitation evokes the issues as to whether these theories and findings are valid for firms other than large firms or households. According to the pecking order

theory, small enterprises with adequate internal funds, via marginal efficiency of capital (profit) from investment, are not likely to seek capital. This may not necessarily be the case as firms that performed well in terms of profitability are less likely to be constrained because they may easily access credit.

The empirical survey gives an insight into the different methods used in measuring access to credit, credit constraints and credit default, but inconclusive. The empirical issues highlighted in the literature further confirm that most studies relating to credit demand in Africa have been directed at household or rural areas (Okurut ,2006, Mpuga,2004; Simtowe and Zeller, 2006; Mohammed, 2003; Kedir *et al.*, 2007) which have indeed reflected a great divergence to this study, whose emphasis is on small enterprise at urban level. At the firm level, Atieno (1994, 2001), Aryeetey *et al.* (1994), Green *et al.* (2008), Fafchamp *et al.* (1994, 1995), Bigsten *et al.* (2003), Fatoki and Odeyemi (2010) attempt to provide empirical evidence on credit demand in Africa, but they all attached limited focus on small enterprises at the urban level. Moreover, the studies did not consider all of the attributes that limit small enterprises to demand credit. In specific context, the main characteristics influencing access to credit were not fully addressed by Atieno (1994, 2001), while Aryeetey *et al.* (1994) considerably emphasized on formal credit, managerial strength and size factors, without considering market environment and credit market factors, which could significantly influence credit demand. Furthermore, literature appeared to have insufficient information about the determinants of credit constraints in Africa, especially on post war economy. Bigsten *et al.* (2003) and Byiers *et al.* (2010) are based on panel analysis, which is inadequate in explaining country specific elements of credit constraint, while Fafchamps *et al.* (1994, 1995) and Fisman (2001) only look at trade credit. Moreover, Byiers *et al.* (2010) analyse constraint from different theoretical definition, but the method used is not adequate, because it emphasizes binary instead of multinomial models. Most existing literature considers credit market mainly at formal credit level without strictly assessing both formal and informal credit markets. Since proportionate segment of small enterprises are disposed to seek either forms of external finance, failing to analyze both forms of finance may lead to biased assessment.

Rural-urban migration is at the height of many urban development challenges, because majority of those migrants are faced with limited employment opportunities. An overview of empirical literature is also very informative and underscores the need for knowing the attributes of accessing credit not only at rural or household strata, but also at the urban level. Additionally, analysis of literature suggests that most assessment of credit market is at rural level. Empirical literatures reviewed mainly analyzed credit issues at the rural or household level without considering factors aggravating credit at the urban level. To the

best of my knowledge, limited attempts have been made to estimate determinants of firms' access to credit, credit constraints and credit default in urban setting of developing countries, especially sub-Sahara Africa. Besides, most credit related studies pertaining to urban areas are prevalent in developed countries. This study endeavors to analyze the magnitude of determinants of access to credit, credit constraints and credit default in urban setting of post-war Liberia.

On the aspect of loan default, the literature indicates limited details relating loan default by small enterprises. The probability and extent of loan default are due to quality of investment project and insufficient entrepreneur skills. From a theoretical viewpoint, Tschach (2003) acknowledges that information opacity makes it tedious to assess attributes of small enterprises to repay loan, while Taslim (1995) argues that lack of sufficient entrepreneur skills could lead to default. However, both studies failed to provide empirical support to their arguments. Empirically, the studies by Moffat (2003), Khemraj and Pasha (2007), Moffat (2003), Riding and Haines, Jr. (2001) and Roslan and Karim (2009) provide empirical evidence on loan default in developed and developing countries, without considering the issue of information opacity relating to quality of firm's project, reputational factors and credit market. Moreover, these empirical surveys did not capture any study relating to default in Africa.

It is therefore vital to investigate whether previous issues raised in other empirical work using the different financing theories are vital for small enterprises. Based on the overview of literature, this study analyzes the motivation for seeking external finance by small enterprises, the extent to which small firms face constraint to credit access, and the importance of assessing loan default. As such, this study contributes to existing literature by exhaustively providing evidence on the probability of credit market participation and access, constraints and default in urban locations of small post-conflict country.

CHAPTER IV: THEORETICAL FRAMEWORK AND MODELS

4.0 Introduction

In this chapter, the theoretical frameworks of credit market participation and access, credit constraint and default are discussed to buttress the empirical specification. The theoretical framework of each of the aforementioned components is followed by its empirical specification.

4.1 Theoretical framework for credit market participation and access to credit

This study examines the determinants of credit market participation and behavior of small scale firms in the credit market, building on the theoretical frameworks of Stiglitz and Weiss (1981), Kochar (1997), Bigsten *et al.* (2003). It is assumed that many small enterprises operate to optimize utility. Thus, firm's instantaneous utility derived from profit is given by $U(\pi_i)$ where θ_i is the rate of preference or risk aversion to expected profit. The expected utility of small enterprises is defined as:

$$U = \frac{1}{(1+\theta)^y} E(U(\pi_i)) \quad 1$$

Based on risk aversion where, $U'(\pi_i) > 0$ and $U''(\pi_i) < 0$, firms maximize expected utility at given period. Given this prime objective of small enterprises, π_i denotes firm i 's profit, which is function of the difference between revenue from sales and costs. Thus, firm i 's profit is given as:

$$\pi_i(q) = R_i(p_i) - C_i(p_{oi}) \quad 2$$

$$R'_{i_r}(p_i) > 0, R''_{i_r}(p_i) < 0, C'_{i_r}(p_{oi}) > 0, C''_{i_r}(p_{oi}) < 0 \quad 3$$

From equation 2, $R_i(p_i)$ represents revenues from sales and $C_i(p_{oi})$ denotes costs of operation. Equation 3 denotes the marginal revenues and marginal costs, which are function of price of firms' output (p_i) and input (p_{oi}) respectively. It is clear that the partial derivative in equation 2 with respect to price of input is non-negative and positive for any input for which the firm has a positive demand. Both revenue and costs are functions of price of output and input, respectively. This suggests that small enterprises are vulnerable to competitive market changes and are usually faced with uncertainty of

demand or market uncertainty, which makes it difficult to determine market demand for their products, credit market participation or repay loan. Demand uncertainty for products of firm i can be represented by an inverse demand equation given as:

$$P_i(q_i) = \bar{P}(q_i) + \varepsilon_i \quad 4$$

Where $\bar{P}(q_i)$ is the deterministic part of inverse demand function (with q_i as the output) and ε_i is uncertainty component affecting the operation of small enterprises.

From equation 2, the input costs, $C_i(p_{oi})$ of producing output q can be extended further to include costs of credit market participation and waiting costs, credit charges collected by the lender beyond interest (application and service charges, bribes, travel expenses), which are all assumed to be combined and denoted as $c(A_i)$. In the absence of any credit cost, which is almost unlikely for many small enterprises in Liberia, the profit of these small enterprises is equal to gross operating surplus, which is the difference between gross operating sales and cost of inputs. Assuming the entire costs, $C_i(p_{oi})$ to initiate or expand investment of firms is based on external financing, profit of firm i is equivalent to market return $R_i(p_i)$, less credit payments $(1+r_i)B_i$ and cost of credit market participation, $c(A_i)$. Where B_i denotes total amount borrowed, A_i is credit participation and r_i is the interest rate.

Given firm i desire for external capital, a linear approximation of credit demand schedule and supply schedule is developed. These schedules are useful to generate the marginal framework necessary to guide the decision analysis of both the small enterprises and financial institutions (formal and informal). The schedules are listed as:

$$L^d(X, M, N, r) = X_i\gamma_i - r_i\delta_i + M_i\tau_i + N_i\vartheta_i + e_i \quad \text{Loan demand} \quad 5$$

$$L^s(X, M, r) = X_i\beta_i + r_i\delta_i + M_i\tau_i + \varepsilon_i \quad \text{Credit Sector Loan Supply} \quad 6$$

Where X 's are firms' characteristics, M denotes firm manager attributes, N defines characteristics of credit market elements, L^d and L^s are unobservable firms' demand for and supply of loan, r denotes interest rates, $\gamma, \delta, \tau, \beta$, and ϑ are parameters, while e and ε are stochastic error terms. $L^d=1$, if

credit market participation is from the formal credit sector and it takes value of 2 in the informal credit market. From equation 5, L^d is demand for loan, which is an unobservable or latent variable. Though small enterprises may desire positive debt amount for expansion, it is based on lenders' (formal and informal) evaluation (shown in equations 6). Again, X_i is vector of variables that influence credit supply as well as the firm's decision to apply for and possibly access debt from the formal or informal source.

From the aspect of marginal revenue (MR) and marginal costs (MC) of credit supply and demand, the reservation interest rate equations are estimated from equations (5 and 6) with an optimal interest rate equal to zero to give the below equations:

$$MR(0, X_i, M_i, N_i, e_i) = X_i\gamma_i - r_i\delta_i + M_i\tau_i + N_i\vartheta_i + e_i \quad 7$$

$$MC(0, X_i, M_i, \varepsilon_i) = X_i\beta_i + r_i\delta_i + M_i\tau_i + \varepsilon_i \quad 8$$

Where equations 7 and 8 are the reservation credit demand and reservation credit Supply, respectively. Firms' managers perception about the (MR) and (MC) of external finance are critical for seeking credit from a particular source. Following Kochar (1997), the choice regarding which sector to seek loan is influenced by the small enterprises' demand and supply decision within the formal and informal credit markets. Following the systematic formulation, small enterprises are categorized into three based on their borrowing decisions to demand formal or informal credit. The categories include firms which decide to borrow from formal sector (f); those that borrowed from informal sector (inf); and those that applied and were denied access to credit. The reservation schedule leads to formulation of the following three index functions or decision rules:

- i) Probability of participating in credit market from formal credit sector

$$\Pr[MR(0, X_i, M_i, \varepsilon_i) > r_f; MC^f(0, X_i, M_i, \varepsilon_i) < r_f; MC^{inf}(0, X_i, M_i, \varepsilon_i) > r_f] \quad 9$$

- ii) Probability of participating in credit market from informal credit sector

$$\Pr[MC^{inf}(0, X_i, M_i, \varepsilon_i) < MR(0, X_i, M_i, \varepsilon_i); MC^{inf}(0, X_i, M_i, \varepsilon_i) < r_f] \quad 10$$

- iii) Probability of being denied or not borrowing from either credit markets

$$\Pr[MR(0, X_i, M_i, \varepsilon_i) < r; MC(0, X_i, M_i, \varepsilon_i) > r; MC(0, X_i, M_i, \varepsilon_i) > MR(0, X_i, M_i, \varepsilon_i)] \quad 11$$

Where r_f is formal interest rate and ε_i is unexplained factors which may influence decision to seek credit from specific credit market. MC^{inf} is marginal costs of opting to borrow from informal credit markets, MC^f represents marginal costs of wishing to borrow from formal and MR is marginal revenue perceived from seeking credit. On account of the foregoing index function, we consider the concept of utility optimization of credit which determines the type of credit small enterprises may opt for. Thus, small enterprises will apply for formal credit if the utility to be derived is greater than his reservation utility, which is the utility of the best alternative to informal credit.

Given that small enterprises are most likely to seek external finance (due to inadequacy of internal funds) for expansion of businesses, viable collateral (K) is vital for rapid credit application approval (Stiglitz and Weiss, 1981; Bigsten *et al.*, 2003). Thus, some of these firms may possess collateral (K) while others do not, as in the case of postwar Liberia, where most fixed assets were destroyed. So, it is logically prudent to generalize that viable collateral is almost lacking for most small enterprises, though some of these firms may have tangible substitute to ease access to credit. However, collateral is included since it is vital in mitigating asymmetric information. In sum, the profit function following demand for external capital can be re-expressed capturing collateral:

$$\pi(R_i, r_i) = \max\{R_i(p_i) - (1 + r_i)B_i, -K\}, (K=0)(\text{usually for small scale firms}) \quad 12$$

Based on the profit maximization desire of small enterprises as indicated in equations 2 and 12, these firms may demand formal or informal loans to initiate or expand businesses, which is practically the situation in Liberia. However, equation 12 just depicts the instance where small scale enterprises lack collateral³¹ ($K=0$) to ease demand for credit. Even when collateral is available, the existence of asymmetric information between small enterprises and lending institutions may lead to understatement of collateral (Myers and Majluf, 1984). Given the lending rate r_i and firms' characteristics (X_i), consideration is given to small enterprises' decision to seek credit, which is the total number of firms that seek to borrow, denoted by $L^d(r_i, X_i, M_i, N_i)$. In the credit market, this demand is contingent on the supply of loans, which is the number of loans that financial institutions (formal or informal) are willing to provide, denoted by $L^s(r_i, X_i, M_i)$.

³¹ Definition of collateral is unique to specific credit environment. From microfinance perspective, collateral is social trust. In banks it could be tangible assets while in developed markets it could be other assets. In this study, we consider collateral as social trust or tangible assets.

Considering $L^d(r_i, X_i, M_i, N_i)$ and $L^s(r_i, X_i, M_i)$, a discrete variable is defined as I_{ij} given that a small enterprise demands external capital. Based on financing desire by small enterprises to expand investment, the below equations define the decision process to demand external capital.

$$I_{ij} = f(U_i^o(R_i), U_i^*(B_i)) \quad 13a$$

Where

$$I_{i1} = 1, \text{ if } (U_i^*(B_i)) > U_i^o(R_i) \quad \text{and} \quad I_{i1} = 0, \text{ if } (U_i^*(B_i)) < U_i^o(R_i) \quad 13b$$

$U_i^o(R_i)$ is the reservation utility of firm i and $U_i^*(B_i)$ is the utility of making loan application, since internal capital is usually inadequate for small enterprises to expand and grow. Given the reservation utility $U_i^o(R_i)$, the best alternative to internal fund could be external capital (Fazzari *et al.*, 1988; Atieno, 2009; Bigsten *et al.*, 2003). Thus, the expected utility from application of credit is given as:

$$(U_i^*(B_i)) = \text{prob}(N, M, X) \bullet U_i(N, M, X) - U_i(T) + (1 - \text{prob}(N, M, X)) \bullet U_i^o(R_i) \quad 14$$

where $\text{prob}(N, M, X)$ denotes self estimation of the probability of demanding a credit, N_i is a group of variables aligned to credit market (i.e interest rate, and personal commitment such as collateral and guarantee, information on credit procedure), X_i is a group of socio-demographic characteristics of small enterprises, M_i denotes manager attributes, $U_i(N, M, X)$ accounts for utility if credit is received, and $U_i(T)$ is the disutility of transaction costs (credit charges collected by the lender beyond interest-application and service charges, bribes, travel expenses). Therefore, small enterprises which make application for credit have utility distributed as the weighted average of the utility of receiving the credit and their reservation utility. The weights are defined as probability of receiving or not receiving, which is used to construct empirical model.

4.1.2 Empirical model of credit participation and access to credit

From equations 13 and 14, this study considered credit market participation and access to credit from the perspective of all those who applied for credit and their applications were probably approved to obtain either partial or full amount of the loan. Following Maddala (1999), the returns or benefits from credit intervention such as provision of credit to small enterprises can be estimated using the equation below:

$$\pi_i = \alpha + \psi X_i + M_i \phi + N_i \tau + I_{ij} \delta + \varepsilon_i \quad 15$$

Where π_i represents outcome (profit) from credit accessibility intervention; X_i is a vector of exogenous firms' characteristics, M_i is manager's attributes, N_i is other attributes related to credit markets and I_{i1} is a binary variable which takes the value 1 if firm i did apply for credit and I_{i2} is whether firm i credit application was approved to access credit. If potential selectivity problem is assumed, the variable I_{ij} cannot be treated exogenously. By this, it means the decision of a firm, whether or not to access credit depends not only on the firm's effort or attitude towards risk, but also on the selectivity discrimination made by credit institutions.

In the case of firm's own selection to demand credit, I_{ij} is considered as endogenous, but this not often the case. To clarify this ambiguity, Maddala (1999) indicates that if I_{ij} is considered as endogenous, then instrumental technique is the most prudent equation for estimation. A more general specification by Maddala (1999) is adopted to define two categories of small firms - those that participated and those that did not participate in credit market. Based on these categories, the below equations are generated:

$$I_{i1}^* = X_{i1}\delta_{i1} + M_{i1}\phi_{i1} + N_{i1}\tau_{i1} + e_{i1} \quad 16$$

$$I_{i2}^* = X_{i2}\delta_{i2} + M_{i2}\phi_{i2} + N_{i2}\tau_{i2} + e_{i2} \quad 17$$

Where I_{i1} refers to the decision of firm to participate in credit market, which takes the value 1 if firm i chooses to participate and 0 otherwise. I_{i2} refers to credit application approval, which takes the value of 1 if credit application is approved and 0 otherwise. Based on the argument of exogeneity, Maddala (1999) suggests that I_{i2} be defined over the entire sample and the model be analyzed from truncated sample using binary choice model (i.e, considering participants and non-participants). Further, Maddala argues that since I_{i2} exists for those applicants who fail to meet credit participation requirements, we can define I in terms of single expression instead of system of equation. To further confirm Maddala's argument, an endogeneity check was carried out.

Thus, the determinants of credit participation and access to credit are estimated using a Logit regression model. The Logit model is used in this study to derive the determinants of credit market participation and access to credit since it provides results which are more easily interpreted in terms of odds ratios. The model ensures that the probability lies in the interval of 0 and 1.

The regression form of the model is as follows:

$$I_{ij}^* = \alpha_i + \delta_i X_i + \phi_i M_i + \tau_i N_i + \varepsilon_i \quad 18$$

where I_{ij}^* represents a latent variable which is assumed to be normally distributed i.e. $\varepsilon \sim N(0, \delta^2)$ but I_{ij} is not. M_i is firm manager's characteristics, X_i represents firms' attributes and N_i defines characteristics of credit market. I_{ij} denotes the observable value, which takes on the value 1 or 2 for credit market participation or access to credit. In this study, $I_{i1} = 1$ for credit market participation and $I_{i2} = 2$ for credit approval to access credit³².

$$I_{ij} = \{1 \text{ if } I_{ij}^* > 0 \quad 19$$

The cumulative logistic probability function is derived as follows

$$P_i = F(I_{ij}^*) = F(X_i, M_i, N_i) \quad 20$$

Where:

$$P_i = 1 / (1 + e^{-I_{ij}^*}) \quad 21$$

Multiplying both sides of equation (21) by $(1 + e^{-I_{ij}^*})$ we obtain

$$(1 + e^{-I_{ij}^*}) P_i = 1 \quad 22$$

dividing by P_i and subtracting 1 we get

$$e^{-I_{ij}^*} = \frac{1}{P_i} - 1 = \frac{1 - P_i}{P_i} \quad 23$$

thus taking the reciprocal we get $e^{I_{ij}^*} = \frac{P_i}{1 - P_i}$ 24

Considering log of both sides of the equation gives $I_{ij}^* = \ln \frac{P_i}{1 - P_i}$ or $\ln \frac{P_i}{1 - P_i} = Z_i = I_{ij}$ or

³² $I_{i2} = 2$ is only used for convenience to distinguish credit application from credit approval. However, in the estimation process, it (I_{i2}) takes the value 1 for successful credit approval.

$$\text{Prob}(I_i = 1) = \Lambda(I_{ij}) = \frac{e^{I_{ij}}}{1 + e^{I_{ij}}}$$

$$I_{ij} = \Lambda(X_i, M_i, N_i, \varepsilon_i)$$

25

Equation (25)³³ is vital since it indicates the probability of credit market participation and access to credit when credit application is approved or otherwise. This equation is estimated to analyze the determinants of credit market participation and access to credit based on various profile of firms.

The marginal effect, which is the change in probability of accessing credit associated with a marginal change in one of the independent variables (firms' characteristics), is defined in equation 26 as.

$$\frac{\partial \Lambda(x_i \delta_i)}{\partial (x_i \delta_i)} = \frac{e^{I_{ij}}}{(1 + e^{I_{ij}})^2} = \delta \Lambda(I_{ij}) [1 - \Lambda(I_{ij})]$$

26

From equation 26 the marginal effect of a change in firms' characteristics X_i depends on the level of other variables.

4.1.3 Multinomial Logit and Probit models

Firms are usually faced with decision of participating in formal and/informal credit markets. The study employed a Multinomial Logit (MNL) to estimate the determinants of credit market participation and access to credit from particular credit segment. The MNL model enables one to ascertain the determinants of choosing particular sources of credit (formal, informal or none). In this case, the dependent variables of credit market participation or access to credit takes one of i categories ($i = 1, 2, 3$), suggesting the different segments. Though the MNL is appropriate factors associated with different sources, it faces the likely problem of independent irrelevant alternative (IIA). So, the Multinomial Probit (MNP), which corrects for this deficiency (Bolduc *et al.*, 1996; Dow and Endersby, 2004) is estimated for comparison with the coefficients of MNL, because the disturbance terms of the MNP are identically and normally distributed (ind) with covariate matrix. In this study, the credit sources are formal, informal and none. If I_{ij} (participation or access) is outcome and X_i are characteristic elements of firms, the probability of observing outcome I based on X_i is expressed in the MNL model:

³³ The Probit version of this Logit equation is based on standard normal distribution, which is given as:

$$I_{ij} = \Phi(X_i, M_i, N_i, \varepsilon_i) = \Pr(I_{ij} = 1) = \int_{-\infty}^{\beta' x_i} \phi(z) dz = \int_{-\infty}^{\beta' x_i} \frac{1}{\sqrt{2\pi}} e^{-z^2/2} dz$$

$$P(I/X) = \frac{\exp(\beta_0 + \dots + \beta_{ni} X_{ni})}{\sum_{i=1}^k \exp(\beta_{0i} + \dots + \beta_{ki} X_{ki})} \quad 27$$

From equation 27, if observation of firm $i=1$ and the $k=1$ (i.e the number of parameter), $\beta_{0i} = \beta_{01} = \beta_{11}$. The parameters of the first choice category are used as the base against which the other choices can be compared. Given the arbitrariness of the choices, comparison between any groups can be made. Since it is difficult to interpret the coefficients from the ML estimate, the marginal effect or relative risk ratio provides easy method for interpretation. The ML expressed in terms of odds ratio is given as;

$$\psi_{n/k}(X_i) = \frac{p(n/X_i)}{p(k/X_i)} = \frac{\exp(X_i \beta_n)}{\exp(X_i \beta_k)} \quad 28$$

From equation 28, the exponent is combined and log taken on both sides to get:

$$\ln \psi_{n/k}(X_i) = X_i (\beta_n - \beta_k) \quad 29$$

Equation 29 is the Multinomial Logit model in its linear form, which makes it simple to compute the partial derivative for interpretation. $(\beta_n - \beta_k)$ is the effect of X_i on the Logit of outcome against outcome I . The partial derivative of equation 29 is expressed as:

$$\frac{\partial \ln \psi_{n/k}(X_i)}{\partial X_i} = (\beta_n - \beta_k) \quad 30$$

Interpretation of equation 30 is the marginal effect indicating that a unit change in X_i , the Logit of outcome I is expected to change by $(\beta_n - \beta_k)$ units. Though Multinomial Logit addresses the estimation involving different choices, it is inherently faced with the problem of Independent Irrelevant Alternative (IIA), which is addressed by checking for IIA or alternatively estimating the Multinomial Probit model.

For the Multinomial Probit, the probability of observing a firm choosing alternative k is given by:

$$P_{ik} = \int_{-\infty}^{A_1} \int_{-\infty}^{A_{21}} \dots \int_{-\infty}^{A_{k-1}} \Psi(\mu; \Sigma) \partial \mu \quad 31$$

Where $A_j = (\bar{Z}_{ij} - \bar{Z}_{ik})\beta + X_i(\bar{\gamma}_j - \bar{\gamma}_k)$, μ is a $(k \times 1)$ zero mean vector. $\Psi(\mu)$ is a multivariate normal density function and Σ is the covariance matrix of the different error terms. Thus, the multivariate probit to be estimated is given as:

$$I_{ij} = V(X_i, M_i, N_i) + e_i \quad 32$$

Where X_i is firm's attributes, M_i is demographic attributes of managers/owners and N_i is credit markets components.

4.1.4 Heckman and Tobit models

Though the logit model provides substantial information on credit application and the relative importance of the different credit sources, it is silent on factors that influence the amount of loan accessed. If we consider only firms with credit amount as those who have a demand for credit, it may lead to sample selection bias as it is very likely that firms without credit have desired demand for credit, but have for some reasons been rationed. Based on our description of loan quantity demanded, the Heckman two stage model is used to estimate determinants of the amount of credit received. This model controls for selection problem that is likely since credit applicant may opt not to apply or be denied credit following application. The model is specified as follows:

$$B_i^* = \alpha_i + \delta_i X_{ki} + \psi_j V_{ji} + \varepsilon_i \quad 33$$

Where B_i^* represents the latent variable of loan amount associated with the i^{th} firm, X_i is the k^{th} characteristics of the i^{th} firm and V_{ji} is the j^{th} explanatory variable (firm manager or credit attributes) that affect credit amount by the i^{th} firm. Using the Two-Step Heckman method, the data is first tested for selection bias, which is overcome by including the inverse mills ratio from the sample selection model.

Let B_i^* denote latent variable (unobservable) and B_i denote outcome variable, say the loan amount received. The outcome variable, B_i (loan amount received) is observable when B_i^* is greater than zero. Thus, estimation of B_i^* on X_i (firm characteristics) as well as B_i (loan amount received) on X_i (firm characteristics) may lead to sample selection bias since the residuals of both regression are correlated. Using the Heckman model for efficient and consistent estimates, we estimate the Probit model considering regression of B_i on X_i to obtain δ_i . The estimated δ_i is substituted in the inverse Mill

ratio {given as $\lambda(X_i, \delta_i) = \frac{\phi(X_i, \delta_i)}{\Phi(X_i, \delta_i)}$ }. In the second step, we consider the model of interest by regressing B_i on X_i and the inverse Mills ratio to ascertain the determinants of quantity of credit received. The model is expressed as:

$$B_i^* = \alpha + \delta X_{ki} + \psi V_{ji} + \varpi_i \lambda(X_i, \delta_i) + \varepsilon_i \quad 34$$

Where ϖ_i is the coefficient of inverse mills ratio

Based on equation 34, the model is first estimated on firm characteristics to capture the residual not explained by firm characteristics. Then the element of loan amount received is considered as function of firm characteristics again. Introducing what is in the residual of the previous equation (credit accessed model) not defined by the variables and find it significant suggests an inference about the possible existence of sample selection. This is captured by the coefficient of the inverse Mills ratio. If the inverse Mills ratio is significant, then sample selection bias prevails, thereby indicating that additional regressor (inclusive of the inverse mills ratio) increases efficiency. If the effect of the inverse Mills ratio is insignificant, then there is no selection bias, implying other forms of estimation could be considered.

The Heckman model is appropriate, but its major problem is the issue of identification, whereby it is theoretically cumbersome to identify strong instrument. Therefore, for comparative purposes, the factors affecting the volume of amount accessed by firms is estimated using Tobit model, since it does not face much problem with identification. To allow for the censored nature of the dependent variable, the Tobit is estimated assuming a correlation between the unobservable affecting firms' decision on how much to borrow and the amount received. The Tobit model whose marginal effects are estimated is defined as:

$$B_i^* = \alpha + \delta X_i + \zeta V_{ij} + \mu_i \quad 35a$$

$$B_i = B_i^* \text{ If } B_i^* > 0,$$

0, otherwise

Where B_i^* denotes the latent dependent variable. B_i is observable when B_i^* is non-negative. X_i represents firm's characteristics and V_i is other factors that influence loan amount by j th firm. For

those that desire credit but did not apply, B_i is measured and therefore set at zero. Since the model of determinants of the volume of credit amount can be perceived as a model of credit demand, it is not reasonable to exclude firms with zero credit/ loan amounts. The one limit and interval Tobit models handle the potential selectivity bias that arises due to the non-random choice of borrowing firms. This is because the ratio between the loan amount firms applied for and the actual loan amount received may not necessarily be 1 or zero. Some intermediate non-zero values exist, especially for firms that received less than the loan amount applied for. The marginal effect on positive observation of equation 35a is given as (Wooldridge, 2003):

$$\partial E[B_i / x, B_i > 0] / \partial x_i = \beta_i + \beta_i \frac{\phi\left(x_i \beta_i / \sigma\right)}{\Phi\left(x_i \beta_i / \sigma\right)} \quad 35b$$

In equation 35b, the term $\frac{\phi\left(x_i \beta_i / \sigma\right)}{\Phi\left(x_i \beta_i / \sigma\right)}$ captures the probability of change in amount borrowed attributable

to changes in firm characteristics. In short, the marginal effects of the two limit (interval) Tobit model controls for the ratio (loan applied/amount received) of 1 and zero, while the one-limit Tobit considers all positive credit amount other than zero.

4.2 A model of credit constraints

The theoretical framework for being credit constraint is based on the work of Bigsten *et al.* (2003) and Jappeli (1990). A firm is considered as “credit unconstrained” in the credit market if they state that they do not wish to obtain external funds for initiation or expansion of business. Those that applied and were refused, and those that did not apply because they expected to be refused, are considered “constrained” (Jappeli, 1990; Bigsten *et al.*, 2003, Byier *et al.*, 2010). Taking the broader definition, credit constraint is defined to include those denied (rejected) credit, discouraged borrower (Jappeli, 1990; Kon and Storey, 2003), and those that received positive credit amount, but less than desired loan amount (Stiglitz, 1981).

Based on credit demand, credit application implies transaction costs, waiting time and cost of application. From 5 and 6, if $L^d(r, X, N) > L^s(r, X, M)$, credit constrained may exist since only some applicants receive partial credit amount. In the case of Liberia, it is likely that $L^s(r, X, M) > L^d(r, X, N)$,

evidenced by the high liquidity ratio³⁴ in the formal credit sector, but most small enterprises may still not be prioritized due to information opacity. This is because financial institutions tend to take enormous precaution in advancing loan, especially to small scale businesses. These enterprises may therefore finance investment from internal fund (owned fund) based on retained profits from business operation (Pecking order theory). Assuming that credit applications (A_i) at any given period is approved at some future date, the amount, B_i may be obtained for successful credit and zero for unsuccessful credit applicants. Based on the credit application success rate, s , it is assumed that all credits are likely paid out in full so that $E(B_i) = sA_i$.

As indicated in equation 2, it is again considered that credit market participation cost given as $c(A_i)$ which is assumed to be convex, $c''(A_i) > 0$ based on the assertion that advancing credit to small businesses are relatively more costly and risky. Considering the cost of credit applications, equation 2 can be extended by assuming that output of small enterprises is a function of capital and labor, and that production of output highly depends on labor (input). A reformulated profit function of small enterprises is denoted as:

$$\pi_i = p_i f(\bar{K}_i, L_i) - W_i L_i - c(A_i) \quad 36$$

Where L_i is labor, \bar{K}_i is capital which is assumed to be fixed, due to limited operational cash flow for investment, p_i denotes product prices and $f(\bar{K}_i, L_i)$ is the production function.

Following the profit function in equation 14, a constraint is imposed on the value of credit market participation to ensure adequate net assets (capital goods plus internal funds minus outstanding debts) as collateral for application. Thus, the collateral constraint for loan application is given as:

$$c(A_i) \leq v_i K_i + F_i - (1 + r_i) B_i \quad 37$$

Where v_i is the value of collateral. From equation 39, applying the non-negativity constraints to internal funds (F_i), net assets and cost of credit market participation $c(A_i)$, and the conditions for making inference, the following are obtained:

³⁴ See CBL Annual Report (2009). This condition does not cover the informal sector given our lack of knowledge about the total number of credit demand and credit supply.

$$F_i \geq 0$$

$$v_i K_i + F_i - (1+r_i)B_i \geq 0$$

$$A_i \geq 0$$

38

From equations 37 and 38, decision by small firms to participate in credit market is anchored on profitability of investment relative to interest on credit and application costs. Therefore, model 38 shows that small enterprises maybe credit constrained due to credit market imperfections, lacking the cash to pay for application costs or rigid credit requirements due to low current net worth. Optimal choices by firms in terms of credit decision or response to credit market can be made following a binary choice framework. Thus, a binary choice econometric model is essential in determining credit constraint.

4.2.1 Empirical model of credit constraints

Following equations 37 and 38, this study classifies firms as constrained when they receive a credit amount less than what the firm applied for. Other constrained firms considered are the discouraged and those whose loan applications were out rightly rejected. Following Maddala (1999), the Probit model ($Con_i^* = \Phi(X_i, M_i, N_i, \varepsilon_i) = \Pr(I_{ij} = 1) = \int_{-\infty}^{\beta' x_i} \phi(z) dz = \int_{-\infty}^{\beta' x_i} \frac{1}{\sqrt{2\pi}} e^{-z^2/2} dz$)³⁵ is employed to predict the probability of being credit constrained since the dependent variable is binary.

Given an underlying latent response variable, Con_i^* is defined in the model:

$$Con_i^* = \delta X_i + \beta M_i + \tau N_i + e_i \quad 39$$

$$con_i = con_i^* \text{ if } con_i^* > 0, \quad 0, \text{ otherwise}$$

Where Con_i^* is a latent variable of credit constraint which is not observable but Con_i is observable. X_i was defined earlier in the Logit model except that the error term in Probit is based on normal distribution as opposed to logistic distribution for the Logit. Credit constraint (Con_i) is binary choice variable that takes the value of 1 if firm i attempted to borrow but was rejected, or has been discouraged to apply for credit due to fear of perceived denial or got less than loan amount requested (rationed) and 0 otherwise. Again, following Maddala (1999), we may not use system of equation since

³⁵ The marginal effect of the Probit model is given as:

$$\frac{\partial \Phi(\beta' x_i)}{\partial x_{ki}} = \phi_i(\beta' x_i) \beta_k \text{ where } \phi_i(\beta' x_i) \text{ is the standard normal density}$$

for a firm to be credit constrained is not endogenous, but this discernment was subjected to endogeneity test.

Again, the Probit model provides large amount of information, but it does not tell us anything about the characteristics that influence the particular sources of credit constraint. Given that the credit constraint may be categorized as discouraged, rationed or rejected, estimation of single model may conceal vital information for effective policy decision. The Probit model is also estimated to further elicit the probability of each category of credit constraint. The Probit model estimated is specified as:

$$\begin{aligned}
 cons^{discouraged}_i &= \omega(x_i, N_i, M_i) + u_i \\
 cons^{rationed}_i &= \psi(x_i, N_i, M_i) + e_i \\
 cons^{rejected}_i &= f(x_i, N_i, M_i) + \varepsilon_i
 \end{aligned}
 \tag{40}$$

Where x_i, N_i, M_i represent firm's characteristics, credit market components, market environment factors while u_i, e_i, ε_i are disturbance terms. $cons^{discouraged}_i$ is dependent variable which takes the of 1 when a firm fails to apply for credit due to perceived credit denial and zero otherwise; $cons^{rationed}_i$ is dependent variable which takes the of 1 when firm received less than the amount applied for and zero otherwise, 1 $cons^{rejected}_i$ is dependent variable which takes the of 1 when firm applied for credit and got disapproval and zero otherwise. Equation 40 could be estimated using MNL/MNL but there is no theoretical basis for such estimation as firms do not choose to be discouraged, rationed or rejected. Each of the categories in equation 40 is estimated separately since the each category is assumed to be independent of the other.

4.3 A model of credit default

A standard asymmetric information model of adverse selection (Stiglitz and Weiss, 1981; Taslim, 1995, Tschach, 2003) is adopted to develop a framework for credit default. Credit default is defined as occurring when a short-term loan borrowed by small enterprises in a given period is marked by being written off or unpaid at loan contractual due date. There are generally two forms of uncertainty regarding credit default. First, the borrower (firm) may partially or fully default due to bad business fortune, poor judgment or lack of diligence. Second, the borrower may be unwilling to meet his credit obligations when business apparently failed to remarkably perform. Thus, most lenders demand collateral as a way of hedging against unforeseeable credit default.

From previous analysis, small enterprises may seek loan to initiate or expand business. We again let B_i denote loan amount obtained by firm i bearing interest rate, r_i during the spell of the loan. Before obtaining the loan, it is apparent that the firm may pledge asset, K as collateral but we earlier argue that most small enterprises in developing countries are constrained by lack of collateral. Let R_i represent returns of firm i , which lender has some level of claim attributed to the loan amount. In addition to high loan costs which may lead to default, firm may also default willfully if the collateral (available), good reputation and access to credit are valued more than $(1+r_i)B_i$. A firm which places little value on assets and has good fortune to secure sizeable loan, may choose strategic default (i.e, with holding payment from onset). In other words, if $r_i B_i$ (Total cost of the loan) is very large, firm most likely option is to take the loan and decide never to repay.

Following Taslim (1995), it is assumed that the loan amount withheld by small enterprises is repayable in n equal installments of size b within successive periods of the loan. Thus, $B = \sum_{t=1}^n \frac{b}{(1+r)^t}$, where t is the total durational spell of the loan amount while r and b were earlier defined. Suppose that the business operation within the span of the loan becomes a valueless junk and the present value of profits (π^{pv}) earned by firm i is $\pi^{pv} = \sum_{t=1}^n \frac{\pi_i^*}{(1+r)^t}$, the borrowers (small firms) has an incentive of deliberately defaulting if π^{pv} is less than B (loan amount) minus any costs or penalty associated with default. This is apparently one of the cases associated with loan repayment by small firms.

In the context of adverse selection, small firms in developing countries are faced with demand uncertainty, which leads to categorizing them as either high quality or low quality businesses. Based on asymmetry information, only firms know the quality of the businesses, unlike the financial institutions. In the absence of collateral, a loan contract specifies a repayment amount, B^r that is to be repaid, but this repayment occurs only if a firm makes profits. Otherwise we suppose that borrower defaults. Since those who lend to small firms are risk adverse, they cannot distinguish between high and low quality businesses (Akerlof, 1970). Lender will therefore break-even by financing small scale business if

$$p[P_h R_i + (1 - P_h)0] + (1 - p)[P_l R_i + (1 - P_l)0] = (1 + r_i)B_i \quad 41$$

Where P_h and $(1-P_h)$ are probability of success and failure of high quality firms, respectively. Similarly, P_l and $(1-P_l)$ are probability of success and failure of low quality firms.

Equation 41 suggests that the equilibrium repayment amount is obtained when

$$R_i P(p) = (1+r_i)B_i \quad 42$$

Where $P(p)$ is the probability of loan repayment by high and low quality businesses and it is increasing in high quality business project. This is given as: $P(p) = pP_h + (1-p)P_l$. It is discernable from equation 41 that a firm may also default if $RP(p) < (1+r)B$. From equation 41, if $R_i(p, q) + K < (1+r_i)B_i$, firm i net loss is K (collateral) since it is used to fully or partly finance payment of loans. When $K = 0$, which is certainly the case with many micro and small scale firms in developing countries (such as Liberia), the financial institutions incur loss. Assuming there is available collateral, its value is denoted as, v (see equation 37 and 38), which is agreed on in advance or the ruling spot price at the time of default. This scenario justifies reason why many financial institutions find it costly to transact with micro and small scale firms. In cases where $R_i(p, q) > (1+r_i)B_i$, firms earn positive profit and this may highly reduce the possibility of default in loan repayment. Therefore, specification of loan default is based on potential and actual defaulters considering the credit market components, market environment and competence of small enterprises.

4.3.1 Estimating the credit default model

Credit default is situation whereby a loan recipient reneges on repayment at the time of call, even though some of the loan defaulters may later settle their obligation. Default by small enterprises in credit markets is associated with credit environment, skills and competence of enterprises and market environment confronting small enterprises. Thus, potential credit recipients are likely to default while others do not. Based on firms' credit approval, the firm may then default or not, which classified such firms as potential defaulters. However, default in some instances is based on credit policy and economic activities. Since there is possibility for partial or full default, this study considers loan repayment default taking into account businesses which did not honor their credit agreement at the time of call. Despite the binary nature of loan default, the binary model in estimating probability of default is not employed because it does not control for the non-defaulter. More specifically, the Probit model to be estimated is:

$$D_i^* = \delta_i X_i' + \Gamma_i \partial_i + e_i$$

Where D_i^* is a latent variable which is not observable but D_i is observable. D_i takes the value 1 if firm i ever exceeded maturity date of loan repayment in the last three years and 0 otherwise. Γ_i represents factors (credit market components, market environment) in addition to firm's attributes (X_i) that influence default. ∂ and δ are parameters to be estimated

Binary choice models may give biased results if not accounting for those that never defaulted. The extreme Tobit (Type-1 Tobit) is therefore employed to censor for small enterprises which did not default in the repayment of loan. In deriving the Tobit model to be estimated, we first consider the model below:

$$d_i^* = \delta_i X_i' + \Gamma_i \partial_i + e_i$$

Where d_i^* is a latent variable representing firm's i propensity to default, and the other variables were earlier defined in equation 44. d_i is the actual default amount captured as the ratio of default amount to total loan amount received. Following Moffat (2003), since actual default cannot be negative, the relationship between d_i and d_i^* is given as:

$$d_i = \max(d_i^*, 0)$$

Equation 45 gives rise to censored model, whose log-likelihood function for the P-Tobit is:

$$\text{Log}L = \sum_0 \ln \left(1 - \Phi \left(\frac{\delta X_i' + \Gamma_i \partial}{\sigma} \right) \right) + \sum_+ \ln \left(\frac{1}{\sigma} \phi \left(\frac{d_i - \delta X_i' - \Gamma_i \partial}{\sigma} \right) \right)$$

From equation 46, "0" in the summation notation indicates being summed over zero while + denotes being summed over positive observations. The standard normal probability density and cumulative density function are Φ and ϕ , respectively.

Equation 45 is appropriate but it only addresses the problem of corner solution relating to loan default, without simultaneously capturing those potential and actual credit defaulters. Although the Tobit model has been used to model estimates with zero observation, it assumes that explanatory variables are the same for the decision to default in credit market as they are for the default decision regarding the share of default and that their effects are of the same sign. Thus, estimation of default by only considering positive value (Tobit) could lead to biased and inefficient results. Moreover, the inherent weakness of the Tobit is that it only allows for corner solution of one type of zero, since it is based on implicit assumption that zero arises only as results of respondent's characteristics. Moffat (2003) believe there

are firms that would never take positive values (i.e, they would never adhere to loan contract). Then the use of Tobit without considering group that would never honor loan contract may give biased estimates. Deaton and Irish (1984) propose relaxation of restriction by considering probability that one would never default. Based on this, we consider proportion of potential defaulter as P, and 1-P as proportion of firms that would never default. The Tobit model would apply for potential defaulters, unlike for 'never defaulter', because the intensity of default would be zero. This gives rise to the P-Tobit in equation 4, where the parameters and P are estimated. The P may vary according to respondent's characteristics, which give rise to the Double Hurdle model.

Therefore, the Double Hurdle model following Cragg (1971), and most recently Moffat (2003) and Simtowe and Zeller (2006) essentially address the foregoing problem, where both "potential" and "extent" are treated separately in a single estimation. The essential feature of this model is that it must cross two hurdles in order to efficiently capture the extent and probability of default by small enterprises. Thus, the underlying issues in the Double Hurdle model are in two-folds: Whether a credit participant had ever defaulted on loan repayment; and what proportion of the total amount is the default. The relevance of the two issues is that factors that affect the cause of default may be different from those affecting the extent of default. In this model, those who never defaulted are considered, but borrowers are placed in a class of potential defaulters after passing the first hurdle. Whether a potential defaulter actually defaulted depends on factors relating to credit market, skills/competence of enterprises and market environment. The Double Hurdle model allows for the possibility of investigating these two issues since they may be affected by different set of variables. Since small enterprises that participate in credit market are potential defaulters, their circumstances then dictate whether they must have defaulted or not. The Double Hurdle model is a parametric generalization of the P-Tobit model, in which the causes and extent of default are determined by two separate stochastic processes given as:

$$d_i^* = z_i' \mathcal{R}_i + \varepsilon_i \tag{47a}$$

$$d_i^{**} = x_i' \beta_i + e_i \tag{47b}$$

Where d_i^* in 46a and d_i^{**} 47b are unobserved latent variables. Under the assumption that ε_i and e_i , we have the Double Hurdle model applied by Cragg (1971). The two hurdles of default are defined as,

$d_i = 1$ if $d_i^* > 0$ and $d_i = 0$ if $d_i^* \leq 0$. The vectors z_i' and x_i' are exogenous explanatory variables with β and \mathfrak{R} as parameters. The second hurdle closely resembles Tobit equation 45, which is given as

$$d_i^* = \max(d_i^{**}, 0) \quad 48$$

Where the observed default is defined as $d_i = d_i^{**}$ if $d_i^{**} > 0$ and $d_i^* > 0$ and zero otherwise.

The log likelihood of the Double Hurdle model is given as:

$$LogL = \sum_0 \ln \left(1 - \Phi(z', \mathfrak{R}) \left(\frac{\delta X_i' + \Gamma_i' \delta}{\sigma} \right) \right) + \sum_+ \ln \left(\Phi(z', \mathfrak{R}) \frac{1}{\sigma} \phi \left(\frac{d_i - \delta X_i' - \Gamma_i' \delta}{\sigma} \right) \right) \quad 49$$

Equation 49 is the Double Hurdle log-likelihood which is estimated using STATA³⁶ program. The first term in 49 corresponds to all credit market participants who never defaulted, while the second term captures all actual defaulters. Empirical results by both Moffat (2003), and Simtowe and Zeller (2006) indicate that the Double-Hurdle model provides more superior results than those from Tobit models. Thus, in this study, the decision to default and the extent of loan default by small enterprises is estimated using a Double-Hurdle model.

4.4 Summary

The chapter has discussed the theoretical framework leading to the achievement of each of the study objectives. Each of the three theoretical frameworks is followed by its appropriate empirical model, which is estimated for analysis. The study used the binary and multinomial models in assessing credit market participation and access to credit by small enterprises. Moreover, the Heckman and Tobit models were estimated to determine factors influencing the loan amount received by small enterprises in order to address problem of sample selection. While the Heckman provided better results than the Tobit, the estimates revealed that the Probit and Multinomial Probit models show almost similar results to that of the Logit and Multinomial Logit. However, the Multinomial Probit is derived under the assumption of normal distribution and the problem of IIA is strictly corrected for. The Tobit relaxes the problem of identifying instruments, though it is faced with the problem of using a single estimate for analyzing probability and extent at the same time. The Probit and Multinomial Probit were also used to examine relationship between credit constraint and other attributes of small enterprises. On the aspect of the

³⁶The STATA program to be used in estimating the double hurdle model is written by Dr. Peter G. Moffat of the School of Economics and Social Sciences, University of Anglia, United Kingdom (UK) through passionate request.

CHAPTER V: STUDY SITES, DATA SOURCING AND DATA DESCRIPTION

5.0 Introduction

This chapter presents the research design followed by description of the study areas. The chapter also provides succinct description of the sampling and survey methodology, inclusive of field work involving data collection. The survey instruments, descriptive analysis of data, ethical issues and definition of variables are discussed in this chapter. In addition to brief description of data, it presents a description of how the data was transformed from the administered questionnaires into study variables for analysis.

5.1 Sampling frame and study issues

5.1.1 Research design

This study provides an explorative examination of small enterprises financing in Liberia. The study employed a survey design, thereby collecting qualitative and quantitative data on small enterprises' credit experience in urban Liberia. The field work was implemented between the months of July 2010 and September 2010, considering fifteen (15) enumeration areas (EAs). Prior to the field work, preliminary information was gathered on the study area from the sampling frame to determine the EAs. The survey was carried out in three different periods. While the first period entailed implementation of the pilot survey, the second and third periods involved carrying out the actual data collection which constituted face-to-face interviews, direct observations and focus group discussion³⁷. Following the pilot survey, data collection instrument was appropriately refined based on results from the pilot study.

5.1.2 Sampling frame and study site

This research adopted a combination of qualitative and quantitative approaches for data collection. The main source of data for this study is the survey of small businesses using the National Account Sampling frame (Establishment Survey Sampling Frame-2007) conducted by Liberia Institute of Statistics and Geo-Information Service (LISGIS) in 2007. The target population is the set of all small enterprises in Montserrado and Nimba of Liberia, constituting the services, manufacturing and trade (commerce) sector with 5-19 employees that were operational before/in the year 2007, when the Establishment Survey (National Account) was carried out. Table 9 reports the distribution of enterprises in the region where the survey was implemented.

³⁷ The focus discussion is only used as cross-cutting issues to emphasize some of the findings.

Table 9: National account of firms in Montserrado and Nimba

Country	Employees	Sectors			Grand Total
		Manufacturing	Service	Trade	
Montserrado	<5	-	-	-	-
	5-19	388	674	745	1807
	20-99	43	80	65	188
	100+	5	6		11
Montserrado Total		436	760	810	2006
Nimba	<5				
	5-19	16	78	81	175
	20-99		1		1
	100+				
Nimba Total		16	79	81	176
Total population		452	839	891	2182
Population considered	Montserrado: 1807 Nimba: 175				

Source: LISGIS (2007)

Both formal and informal enterprises falling within the universe of small enterprises in the sampling frame were selected, but the informal enterprises were very few and were only captured during the survey exercise. The survey is supplemented by three (3) focus group discussion with members of credit union, banks executives and local officials of small enterprises. Moreover, one-to-one discussion was held with officials of financial institution to solicit opinion on issues relating to small enterprises financing.

The study relied on structured, semi-structured and unstructured questionnaire to collect data from urban areas of two of the fifteen political subdivisions in Liberia: Montserrado and Nimba. According to LISGIS urban area is defined as *'settlements with 2000 or more population possessing one or more social infrastructure or amenity (water, electricity, school, hospital or clinic and telecommunication). Nevertheless, any other locality with less than 2000 people but being the capital city of a county is also considered as an urban area. Otherwise, all other localities lacking these attributes mentioned can be termed as rural'*. Major activities influencing settlement pattern in these areas are high commercial activities, industrial production and urban infrastructures, such as electricity, better health and education

facilities. The decision to use the World Bank Enterprise results (2009) as baseline serves as potential reason for selecting the study areas.

5.1.2.1 Survey areas

As indicated in Figure 5, two counties (Montserrado and Nimba) in Liberia were purposively considered for the research because of the pronounced concentration of almost 60 percentage points of the country's population and economic activities following the end to the conflict in 2003.

Figure 5: Map of Liberia and study locations



Culled from www.mapsofworld.com (accessed November 17, 2010). Dotted areas represent study locations in Liberia

Figure 5 displays the map of Liberia. The shaded areas indicate where Montserrado and Nimba Counties, where the survey was performed.

Montserrado is the county where the principal capital city (Monrovia) of Liberia is located. It captured ten of the fifteen (15) EAs, since majority of the enterprises in the sampling frame are located there. The county is bordered by three densely populated counties-Bomi County on the western border; Bong County on the north; Margibi County on the east; and the Atlantic Ocean to the south. It is the smallest in size (737sq.miles) but largest in population (1.5million³⁸). Average household size is 4.7. This area is considered because significant segment of those who fled the war from the rural part of the country are

³⁸The pre-war population of Monrovia was 0.5million

sheltered there. Its major inhabitants consist of the Americo-Liberians³⁹, indigenous people from other parts of the country and other foreign nationals.

Montserrado contains most of the largest markets within the entire country. Faced with huge inflow of migrants due to the war, employment is mainly through informal activities, small scale ventures and absorption in government. Moreover, employment in the county is primarily through self-employment with only 17 percentage points of households having members that are salaried employees. The largest income generating activity is via petty trade or small businesses, evidenced by 46 percentage points of household engaged in these activities while 19 percentage points benefit from temporary employment (CFSNS, 2006). Unlike the other counties, agriculture constitutes small part of the economy in Montserrado. All of the commercial banks mainly operate in this county with four (4) branches in Nimba and all the eight (8) banks in Montserrado.

Nimba County is situated in the Northeastern part of Liberia and shares borders with the Republic of Cote d' Ivoire in the East and the Republic of Guinea in the Northwest. Decision to select Nimba is based on its ordinal status as the second most populated county and high level commercial presence. The population of the county increased from 310,000 persons (1989) to 462,026 persons (2008) because it was one of the most secure environments during the conflict. Its area is 11,551 km² (4,459.9 sq miles) and covers a distance of 298 kilometers from Montserrado County.

Prior to the civil war, Liberia-American Mining Company (LAMCO) and other concession companies provided huge employment opportunities for both Liberians and non-Liberians. Closure of many investments, as a direct result of the conflict, drastically limited employment opportunities. The county has large number of former combatants and returnees who have not been able to find employment in its shallow economy. Though the County was negatively affected by the civil war thereby leaving social infrastructures in poor conditions, government and private investors are exerting efforts to revive the economy. With commercial activities concentrated in the commercial capital of the County (i.e Ganta⁴⁰), life in Nimba is generally rural-based, evidenced by high level subsistence. Dispose to endowment of mineral resources such as diamond, gold and iron ore, the local economy is based on agriculture and other enterprises like trading in dry goods, used clothing, furniture and services. Despite the presence of huge microenterprises, small businesses are in large numbers with ownership based on sole proprietorship. In terms of financial services, four banks and two credit unions currently operate in the

³⁹These are settlers who were emancipated and later repatriated to Africa from America around 1600s and 1800s

⁴⁰ Ganta is a thriving commercial center in Nimba where people from Guinea, Cote d'Ivoire and nearby counties (Grand Bassa, Rivercess and Bong) often go to trade

counties but access to credit is still limited due to high credit requirements. Economic growth in Nimba is gradually taking shape, driven by growing level of trade and investment.

5.1.3 Population and sampling frame

In Liberia, businesses are registered through several institutions. These are the Liberian Marketing Associations and the Registrar of small scale businesses of the Ministry of Commerce. However, other micro and small scale businesses in the informal sector are not captured in the registry. Therefore, population of small enterprises was drawn from the Sampling Frame to carry out the study to select the sample used in the study. The sample of the study generated from the Establishment Sampling frame known as 'National Establishment Census' created by Liberia Institute of Statistics and Geo-Information Service (LISGIS) in 2007. The objective of the frame is to provide information for sound development planning; generate information for a frame for the National Accounts and initiate a process of capacity building by using the sampling frame for Annual Economic Survey. The frame covers 15 thousand establishments whose distribution in terms of micro, small and medium enterprises are determined in the preceding page. The frame enabled the identification of Enumeration Areas (EAs) for the study. This sampling frame contains information on micro, medium and small enterprises such as name, location, telephone contact, business registration, legal status, main activity and principal products. Since the listing of enterprises contained in the frame is quite recent, over 70-80 percentage points of the establishments were in existence for sampling. The list used in identifying enterprises considers all members of the universe consisting manufacturing, trade and service sectors with 5-19 employees. The unit of analysis was small enterprises constituting services, manufacturing and trade with 5-19 employees that were in operation before/in the year 2007. This unit of analysis was chosen because of the crucial roles of small firms in post-war economic recovery and its determination during the recent World Bank Enterprise Survey (RPED) on Liberia.

Though the World Bank data is recent, Claessens and Tzioumis (2006) suggest that surveys are the preferred approach for analyzing small and medium businesses because existing surveys in developing countries (like Liberia) with a 'firm-finance' component are not substantive for sound research⁴¹. The World Bank data (RPED) was collected under the assumption that countries characteristics are similar,

⁴¹ Claessens and Zioumis (2006) assertion that for the future, firms' efforts need to be more detailed and focused. This is a confirmation to our argument that the Enterprise Survey (2009) lacks important details on small business finance for comprehensive research

which may not necessarily be the case of post-war countries and peaceful countries in similar regions. Besides, the RPED data lacks detailed financial information (such as credit amount applied for, amount received, credit default, conflict related variables) on small firms for study. Moreover, only few of these firms used some type of financial statements or accounting records to respond to the survey. Implication is that there is scanty information available about these firms in the form of hard copy. In these cases, financial institutions must rely on other sources of information (mainly Surveys) in order to make their lending decision. In fact, analysis of existing RPED data demonstrates that comprehensive information on small enterprises is scarce, and most of the existing data are only confined to manufacturing sector with limited focus on other sectors. Finally, the great detail available in the sample makes it very suitable for the analysis. The survey contains a description of the firms' general characteristics (size, age, industry, ownership structure, manager's attributes, etc), demographics of the owners, and a considerable amount of financial information. Among the financial information, there is an inventory of all loans and recent credit history of the firm and its owners, information about all the financial service suppliers of the firms, and the firms' experience in the last three years in applying for credit.

5.1.4 Sampling technique and determination of sample size

The sample size is based on Yamane (1967: 886)⁴² formula to calculate sample size whose precision level is 0.045. Suitability of the Yamane technique is due to its power to generate a large sample on which reliable analysis can be conducted. Based on the 95 percentage points confidence level, the study considered the precision level of Yamane (1967) because of its greater confidence since it does not deviate much from 5 percentage points precision level. The Yamane formula is denoted as:

$$n = N/[1 + N(e)^2] \quad 50$$

Where, n is the sample size, N is the population, and e is the level of precision. Based on the small firms population of 1807 (Montserrado) and 175 (Nimba), the resulting sample, drawn with a stratified sampling scheme, consists of 328 (1st strata) and 121 (2nd Strata) small enterprises from Montserrado and Nimba Counties, satisfying the criteria of the small businesses. Controlling for both item and survey non-responses during the fieldwork, a total of 78 firms (Montserrado) and 30 firms (Nimba) were regarded as non-responses and therefore excluded. There were 21 non-existing firms which were later replaced because the sample was drawn based on replacement. Informal sector borrowing, while not

⁴²This sampling technique was recently used by Muriithi (2010) in estimating demand for health in Kenya.

uncommon, remains low in the two counties considered. Credits from informal financial institutions combined constitute less than 20.8 percentage points, which is also inclusive in sample. Thus, the study is based on working sample size of 250 (Montserrado) and 91 (Nimba) after controlling for non-responses. Considering the fifteen 15 EAs, the small enterprises were selected based on 10 sub-locations in Montserrado and 5 sub-locations in Nimba. Since the number of small enterprises were few, the total small enterprises were divided by 15 EAs to get the sampling interval, but due to limited number of small enterprises, the interval was narrowed down to twenty due to huge replacement of many non-existing firms in the sample. A random number from existing sample was selected and multiplied by sampling interval to get the random start in each stratum, respectively. This process was repeated until the 20th firm was selected. An unweighted sampling is considered because of the simple random sampling from the strata.

Since the regulatory and administrative criteria of conducting businesses in both regions are highly similar, the data from the two regions were combined for analysis. Additionally, decision to combine the data is based on the fact that businesses in both locations do not represent significant dual characteristics reflective of the existence of financial institutions (especially formal) in the study areas.

5.1.5 Data collection and survey instrument

This study relied on qualitative and quantitative primary data collected through an administered questionnaire in post-war Liberia. The questionnaires which contained both closed and open-ended questions were administered via face-to-face interviews with the respondents (managers or owners of firms) in fifteen (15) selected enumeration areas. The survey instruments captured components such as managers' characteristics, firms' composition, credit behavior, financial status, employment status and asset ownership as well as physical characteristics. Since the gender of the managers/owners was not known in advanced, the sampling was done without regard to gender. Thus, we could not over sample to get sufficient number women entrepreneurs. The data was collected from the list of the Establishment Survey or National account considering exclusion rules, non-responses.

Four (4) supervisors, two (2) research assistants and 30 interviewers were hired for the survey based on the assistance of Liberia Institute of Statistics and Geo-Information Service (LISGIS), which has trained many enumerators. These interviewers and supervisors were divided into five (5) teams. To avoid problem of suspicion, the enumerators were chosen and sent to areas, where they are familiar to the people, and community leader of each EAs was attached to the team. The role of the research assistants

was to work directly with me and the field workers in doing frequent monitoring, field checking and follow-ups in the EAs. This is indicative of my full participation in the process. Before undertaking the actual data collection, research supervisors, and research assistants were briefly trained on the use of the data collection instruments. The training exercise included interactive sessions on the objectives of the survey, definitions of concept used in the questionnaire, interviewing skills and field practices. This was implemented during the pilot study, where the same team was used for pre-testing of the questionnaires. This was to ensure clear understanding of the instrument to avoid inconsistency and incomplete response. Brief changes, including closed ended questions, were considered on the questionnaire after pilot testing. The main survey started in the first week of August, 2010 and completed in the last week of September, 2010. Based on the sampling frame, the selected firm was located from its address provided in the framework. For quality control of the data, a special team, which I served as member, was formed to do frequent follow-up and random check of enterprises to confirm the reliability of the interviews.

Following the actual data collection, examination of the questionnaires was made to determine and drop questionnaires with inconsistent as well as incomplete answers. This leaves us with specific useable questionnaires from the surveys. However, we meticulously implemented the data collection exercise in order to avoid dropping of questionnaire due to inappropriate or incomplete response. Notwithstanding, we encountered missing firms or non respondents, the missing data was dealt with by matched sample from the frame. That is, those firms not in existence were matched with other firms in the frame because of random sampling.

5.1.6 Problems encountered and solutions

During the research various problems were encountered, despite statistical advantages of microeconomic data. Delay in obtaining the sampling frame created lapses of 10 days between training and actual data collection. Problem of understanding the questionnaire by enumerators was noted during the pilot. Accessing the selected firms was difficult because the research was carried out during the rainy season. The rain often interrupted with the field work, thereby halting the survey exercises on few occasions, but the fieldworkers exercise resilience to overcome this drawback. Some randomly selected firms could not be accessed due to apparent relocations or closure which made it difficult to access respondents.

As a result of time constraints, the data collection exercises were extended to complete the exercises with good level of precision. Notwithstanding, survey and item non-responses were encountered, but the

concerned enumerators were sent back to the field to re-contact the concern managers/owners of those firms with the problems.

The issue of suspicion whereby managers/owners of businesses held the notion that the survey was intended to unearth sensitive details of businesses to unveil to Government. This indicates that being suspected as agents of Government by many small enterprises was the most striking challenges encountered during the survey. Managers of firms pose difficulties for interaction.

Several rescheduling of responses from managers of firms were made to ensure ideal environment for interaction to gather research information. In many cases, several visits (on average 4 visits) were made in order to obtain the appropriate responses. However, the problem of non-existing firm was addressed with replacement while the issue of fear was alleviated through involvement of community leader from designated EAs and communication from the Department of Economics, University of Liberia.

5.1.7 Ethical issues

The research obtained necessary approvals before its implementation. The proposal was presented and defended before embarking on data collection. The study explores managers' perception and knowledge about how credit markets response to their firms' investment needs. The aims and benefits of the study were clearly explained to the managers of firms in the study areas. Respondents were assured of privacy, anonymity and confidentiality during the study. In order to ensure this privacy, respondents were assured of not precluding their names and personal information in the report.

Essentially, respondents had the discretionary decision to participate in the survey. Thus, only respondents who were willing to partake in the study were considered. However, selected respondents had the right to consider survey or item non-response, but considerable efforts were made to minimize non-responses. Results from the study will be communicated and presented to various financial institutions, marketing association and research institutes for informative policy action.

5.1.8 Data Preparation for estimation and analysis

Based on the nature of the study objectives, data collected were analyzed both quantitatively and qualitatively by coding and entering them into excel and later transferring them to STATA software. The dataset was entered through the assistance of ten data entry clerks of LISGIS. Inconsistency (ies) noticed during the entry was corrected by phoning the manager or revisiting the questionnaire. Descriptive statistics is developed to assess the distribution of the different variables of interest.

Important elements from descriptive statistics were organized into tables, figures or summaries. Due to the nature of the data collected, we checked to ascertain existence of specification problem from post-estimation such as heteroscedasticity, multicollinearity and non-normality which may render the estimated results unreliable, biased or inefficient. In view of these problems, the data collected was subjected to appropriate tests (Breusch-Pagan test-to detect heteroscedasticity; Normality test-to detect normal distribution; Variance Inflation Factor test-to detect multicollinearity; Wu Hausman Test for endogeneity) to detect the existence of any of these problems, following the estimation of empirical models. The diagnoses revealed no serious problem of heteroscedasticity, non-normality and specification problems. Since cross sectional estimations are often associated with endogeneity, we checked the estimation of credit accessed and application using the error term from either one of the estimates to determine endogeneity. Moreover, the Wu-Hausman test was also used to determine possible endogeneity between firms performance related components and demand for credit. However, the results from the Hausman test revealed independent relationship, which therefore led us to directly estimating a single equation, instead of system of equation. Similarly, there is no evidence of endogeneity between firm size and demand based on the Hausman endogeneity test. Based on the estimates, the results indicate insignificance, thereby leading to inference of no endogeneity. We performed similar test considering the amount of credit received and amount defaulted in repaying, but also found no existence of endogeneity. Furthermore, the Wu-Hausman test revealed independence of the different credit choices, thereby addressing the problem of IIA.

5.3 Definition and construction of variables

The following represents definition of firms' attributes that are of interest in this analysis. Most of the variables below may appear latent, but they embody institutional attributes that drive the ability of enterprises to anchor on financial opportunity from other credit institutions. The explanatory and dependent variables of the survey data set and RPED are shown in Table 10, alongside their definitions.

Dependent variables

The dependent variables are captured using credit demand (application and access), credit constraint and loan default. Credit demand is captured using application for credit (APPLY) in the last three years and amount received (ACCESS) following application, including those firms that got less than applied amount and those who get full amount. Credit Constraint (CON) is constructed using rejection of credit application due to perceived rejection (Rejected), withdrawal of credit application (Discouraged) and

acquisition of credit amount less than desired loan amount (Rationed)⁴³. Loan default (Default) is constructed based on revealed details of partial or full repayment delinquency after date of loan contractual maturity.

Manager's/owner's Characteristics (M)

The characteristics of managers considered gender, age, years of schooling, ethnicity and experience. Competence of the firm's manager is captured by years of schooling and years of experience.

Firm's characteristics (X)

In order to assess every component of the size of the firm, firm characteristics is captured as number of employees, value of assets, operating capital of the firms and those that are growth oriented in terms of workforce. Moreover, the level of firm's reputation or competence is also captured by the age. Formality⁴⁴ of firms is based on whether a firm is registered relative to sole proprietorship, partnership or corporation.

Credit market characteristics (N)

Credit market characteristics include interest rate which is captured based on firms' perception on the level of interest rate- whether interest rate is high or not. Extra payment, aside from actual loan application fees, is captured to determine the level of corruption in the financial system. Knowledgeable about credit application procedure is captured to determine the level of asymmetric information in credit market using perception of firms. Ownership of saving account is intended to determine the relationship of financial institution and also availability of internal funds. Perception on collateral is captured using firm's possession of assets and is used to proxy for risk mitigation factors in credit market.

Performance of firms

Financial soundness of small enterprises is reflection of its performance. Performance is captured relative to the profitability or growth in sales.

Market environment

⁴³ Revealed credit rationing may not necessarily be reflective of credit constraint. Based on expectation, some firms may overstate the loan amount to get the actual amount.

⁴⁴ A non-registered firm could also take the form of sole proprietorship or partnership, but our study categorized all non-registered firm as informal.

Market environment is captured by the nature of investment climate including legality, stability of the environment, and whether competition exists. The environment of the market is also based on whether firms are operating in the form of a network, and the economic activities firms are engaged with.

1. Type of market structure (perfect competition, monopoly, oligopoly, etc.)	2. Nature of investment climate (legality, stability, etc.)	3. Form of operation (network, etc.)	4. Economic activities (manufacturing, services, etc.)
5. Degree of competition (high, low, etc.)	6. Regulatory environment (government policies, etc.)	7. Market size and growth (local, regional, global, etc.)	8. Technological environment (innovation, R&D, etc.)
9. Entry and exit costs (high, low, etc.)	10. Government intervention (subsidies, taxes, etc.)	11. Network structure (centralized, decentralized, etc.)	12. Industry dynamics (growth, decline, etc.)
13. Market power (high, low, etc.)	14. Legal environment (contract law, intellectual property, etc.)	15. Network effects (positive, negative, etc.)	16. Globalization (local, international, etc.)
17. Market segmentation (high, low, etc.)	18. Political environment (stability, corruption, etc.)	19. Network resilience (robust, fragile, etc.)	20. Industry consolidation (mergers, acquisitions, etc.)
21. Market entry barriers (high, low, etc.)	22. Environmental impact (sustainability, etc.)	23. Network evolution (growth, change, etc.)	24. Industry innovation (new products, services, etc.)
25. Market exit barriers (high, low, etc.)	26. Cultural environment (business practices, etc.)	27. Network integration (interconnectedness, etc.)	28. Industry competition (rivalry, etc.)
29. Market stability (high, low, etc.)	28. Environmental impact (sustainability, etc.)	29. Network evolution (growth, change, etc.)	30. Industry innovation (new products, services, etc.)
31. Market entry barriers (high, low, etc.)	31. Political environment (stability, corruption, etc.)	32. Network resilience (robust, fragile, etc.)	33. Industry consolidation (mergers, acquisitions, etc.)
35. Market exit barriers (high, low, etc.)	32. Cultural environment (business practices, etc.)	34. Network integration (interconnectedness, etc.)	35. Industry competition (rivalry, etc.)

Table 10: Definitions and construction of variables

Dependent variables					
<i>APPLY</i>	<i>APPLY</i> takes the value of 1 when a firm applied for credit in the last 36 months and 0 otherwise	<i>APPLY</i> takes the value of 1 when a firm applied for credit in the last 12 months and zero otherwise.	Dummy	<i>APPLY</i> (1) = 183 <i>APPLY</i> (0) = 158	<i>APPLY</i> (1) = 83 <i>APPLY</i> (0) = 34
<i>ACCESS</i>	<i>ACCESS</i> takes the value of 1 when a firm gets partial or full credit applied and 0 otherwise	<i>ACCESS</i> takes the value of 1 when a firm gets credit in the last 12 months.	Dummy	<i>ACCESS</i> (1) = 147 <i>ACCESS</i> (0) = 36	<i>ACCESS</i> (1) = 34 <i>ACCESS</i> (0) = 49
<i>AMOUNT</i>	Amount borrowed or total loan accessed following credit application and approval. Measured as ratio of amount received to total amount applied for	The RPED did not have this variable	Cont		
<i>CON</i>	<i>CON</i> takes the value of 1 when a firm is discouraged, rejected or received less credit than applied and 0 otherwise.	<i>CON</i> takes the value of 1 when a firm is rejected/ receives less credit than applied,	Dummy	<i>CON</i> (1) = 178 <i>CON</i> (0) = 163	<i>CON</i> (1) = 43 <i>CON</i> (0) = 74
<i>DEFAULT</i>	<i>DEFAULT</i> takes the value of 1 when firm exceeds loan repayment period and 0 otherwise.	The RPED data did not have this variable.	Dummy	<i>DEFAULT</i> (1) = 51 <i>DEFAULT</i> (0) = 132	
<i>DEFAULT AMOUNT</i>	Define as unsettled loan amount by firms at the time of repayment call/maturity. Measured as ratio of default amount to total amount received	The RPED data did not have this variable.	Cont		
Firm's characteristics (X)					
<i>NETWORK</i>	<i>NETWORK</i> takes the value of 1 when a firm has membership with business group and 0 otherwise	The RPED data did not have this variable.	Dum	<i>NETWORK</i> (1) = 46 <i>NETWORK</i> (0) = 295	
<i>SIZE</i>	<i>SIZE</i> is measured as the log of total number of employed workers in the last twelve months	<i>SIZE</i> is measured as the total number of paid and unpaid employees	Cont		

<i>SALE</i>	<i>SALE</i> is measured as the growth of sales is measured between end of sales (2010) and end of previous year sales (2009), and then divided by end of sales (2010).	<i>SALE</i> is measured as the growth of sales is measured between end of sales (2005) and end of previous year sales (2007), and then divided by end of sales (2005).	Cont		
<i>SALE/EMPLOYMENT</i>	<i>SALE/EMPLOYMENT</i> is used to also capture total sale per labor		cont		
<i>AGE</i>	<i>AGE</i> is measured as log of total age of the firm.	<i>AGE</i> is measured as log of total age of the firm.	Cont		
<i>ASSET</i>	<i>ASSET</i> is measured as log of value of business assets.	<i>ASSET</i> is measured as the net book value of machinery, vehicles, equipment, land and building at the end of 2007.	Cont		
<i>EXPAND</i>	<i>EXPAND</i> takes the value of 1 if the firm manager wishes to expand business and 0 otherwise	The RPED data did not have this variable.	Dum	EXPAND(1)=318 EXPAND(0)=23	
<i>FORM</i>	<i>FORM</i> is measured as the legal status of the firm. It takes value 1 = Partnership; 2 = Sole proprietor, and 3=, Corporation	<i>FORM</i> is measured as the legal status of the firm. It takes value 1 = Partnership; 2 = Sole proprietor, and 3=, Corporation	Dum	Corporation=26 Partnership=80 Sole proprietorship=230	Corporation=6 Partnership=22 Sole proprietorship=80
<i>LINK</i>	Firms having link with large business. <i>LINK</i> takes value of 1 if firm has link with large firms	Firms having link with large business. <i>LINK</i> takes value of 1 if firm has link with large firms	Dum		
<i>PREMISE</i>	<i>PREMISE</i> is measured as type of structure housing business, it takes 1=own; 2=Private; 3= public,	Not inclusive in RPED	Dum	Own=55, private=263, public=23	
<i>SECTOR</i>	<i>SECTOR</i> is measured by the type of business operation activities: <i>SECCO</i> (Commerce)=1; <i>SECMA</i> (Manufacturing)=2; <i>SECSE</i> (Service)=3	The particular sector in which the firm operates. RPED considered Manufacturing and service sector.	Dum	<i>SECSE</i> =129 <i>SECMA</i> =65 <i>SECCO</i> =147	<i>SECMA</i> =18 <i>SECSE</i> =99
<i>PROFIT</i>	<i>PROFIT</i> is measured as the	RPED did not capture.	Cont		

	ratio of profit to asset. Firm's profit is net return after costs				
<i>COMPETITION</i>	<i>COMPETITION</i> takes the value of 1 when a firm is facing competition from other businesses and 0 otherwise	<i>COMPETITION</i> takes the value of 1 when a firm is facing competition from other unregistered businesses and 1 otherwise	Dum	<i>COMPETITION</i> (1)=135 <i>COMPETITION</i> (0)=206	
<i>REGISTER</i>	<i>REGISTER</i> takes the value of 1 when a firm is registered	<i>REGISTER</i> takes the value of 1 when a firm is registered	Dum		
Manager characteristics (M)					
<i>EXPERIENCE</i>	<i>EXPERIENCE</i> is measured as the total years of manager's experience in the business.	<i>EXPERIENCE</i> is measured as the total years of manager's experience in the business.	Cont		
<i>AGEMAN</i>	<i>AGEMAN</i> is measured as the age of the firm's owner/manager which is categorized as follows: 30-40 years=1, 40-50 years=2, greater than 50 years=3, and less than 30 years = 4	RPED did not capture age of manager	Dum	30-40yrs=183, 40-50yrs=103, >50yrs=14, <30 yrs=41	
<i>YEARS (School)</i>	<i>YEARS</i> is measured as the number of years of formal education by the firm owner/manager	<i>YEARS</i> is measured as the total years of formal education by the owners/managers of firms.	Cont		
<i>ETHNICITY</i>	<i>ETHNICITY</i> takes the value of 1 when the firm owner/manager is Indigenous Liberian and 0 otherwise	<i>ETHNICITY</i> takes the value of 1 when the firm owner/manager is Indigenous Liberian and 0 otherwise	Dum	<i>ETHNICITY</i> (1)=264, <i>ETHNICITY</i> (0)=77	<i>ETHNICITY</i> (1)=115 <i>ETHNICITY</i> (0)=2
<i>OWNERS</i>	<i>OWNERS</i> is measured as the total number of firms' owners	RPED did not capture age of manager	Cont		
Credit market characteristics (N)					
<i>BRIBE</i>	<i>BRIBE</i> takes the value of 1 when firms report that there is corruption in credit market and 0 otherwise	Not captured in RPED	Dum	<i>BRIBE</i> (1)=52 <i>BRIBE</i> (0)= 131	
<i>OFFICER</i>	<i>OFFICER</i> takes the value of 1 if the firm manager has a relationship with	RPED did not capture this variable	Dum	<i>OFFICER</i> (1) =95 <i>OFFICER</i> (0)=246	

	credit officer and 0 otherwise				
<i>SAVING</i>	<i>SAVING</i> takes the value of 1 when a firm has savings account and 0 otherwise.	<i>SAVING</i> takes the value of 1 when a firm has savings account and 0 otherwise	Dum	<i>SAVING</i> (1)=250 <i>SAVING</i> (0)=91	<i>SAVING</i> (1) =72 <i>SAVING</i> (0)=45
<i>PROCEDURE</i>	<i>PROCEDURE</i> takes the value of 1 when firms are aware of loan application procedure and 0 otherwise	Not captured in RPED	Dum	<i>PROCEDURE</i> (1)=201 <i>PRECEDURE</i> (0)= 140	
<i>INTEREST</i>	<i>INTEREST</i> takes the value of 1 when firms perceive interest rates as high and 0 otherwise.	Captured as interest charge on loan amount	Dum	<i>INTEREST</i> (1)=228 <i>INTEREST</i> (0)= 113	
<i>REQUIRE</i>	<i>REQUIRE</i> takes the value of 1 when firms report that collateral is used as requirement for accessing credit and 0 otherwise.	<i>REQUIRE</i> takes the value of 1 when firms report that collateral is used as requirement for accessing credit and 0 otherwise.	Dum	<i>REQUIRE</i> (1)=216, <i>REQUIRE</i> (0)=125	<i>REQUIRE</i> (1)=22, <i>REQUIRE</i> (0)=95
<i>COLLATERAL</i>	<i>COLLATERAL</i> takes the value of 1 when firm possesses collateral to attain loan and 0 otherwise.	<i>COLLATERAL</i> takes the value of 1 when firms reported the collateral ratio and 0 otherwise	Dum	<i>COLLATERAL</i> (1)=15 2 <i>COLLATERAL</i> (0)=31	<i>COLLATERAL</i> (1) =22 <i>COLLATERAL</i> (0) =95
Other characteristics					
<i>SHOCK</i>	<i>SHOCK</i> takes the value of 1 when firm experiences theft or robbery and 0 otherwise.	<i>SHOCK</i> takes the value of 1 when firm had ever experienced theft or robbery 0 otherwise.	Dum	<i>SHOCK</i> (1)=151, <i>SHOCK</i> (0)=190	<i>SHOCK</i> (1) =55, <i>SHOCK</i> (0)=62
<i>EFFECT</i>	<i>EFFECT</i> takes the value of 1 when firm's operation was affected by war and 0 otherwise	Not captured in RPED	Dum	<i>EFFECT</i> (1)=126, <i>EFFECT</i> (0)=215	

Type of variable is described as: cont=continuous, Dum =categories of variable described as dummy when the condition specified is met.
Cont defines continuous variable

5.4 Non parametric data analysis

5.4.1 Managers and firm's characteristics

In terms of gender distribution of managers/owners of small enterprises, the survey shows that about 68 percentage points are males, compared to about 33 percentage points representing females.

Table 11: Characteristics of managers

	Commerce	Manufacturing	Service	Total
Manager/respondent's age				
< 30 years (Less than thirty year)	20 (13.6%)	7 (10.8%)	14 (10.9%)	41 (12.0%)
30-39.99 years	77 (52.4%)	34 (52.3%)	72 (55.8%)	183 (53.7%)
40 -49.99 years	45 (30.6%)	18 (27.7%)	40 (31.0%)	103 (30.2%)
>50 years (Greater than fifty years)	5 (3.4%)	6 (9.2%)	3 (2.3%)	14 (4.1%)
Total	147 (100%)	65(100%)	129(100%)	341(100%)
Educational level of Manager (%)				
None	10 (6.8%)	4(46.2%)	6(4.7%)	20(5.9%)
Primary	4(2.7%)	5(7.7%)	6(4.7%)	15(4.4%)
Secondary	68(46.3%)	27(41.5%)	51(39.5%)	146(42.8%)
Tertiary	65(44.2%)	29(44.6%)	66(51.2%)	160(46.9%)

Source: Computed from Survey data by Author

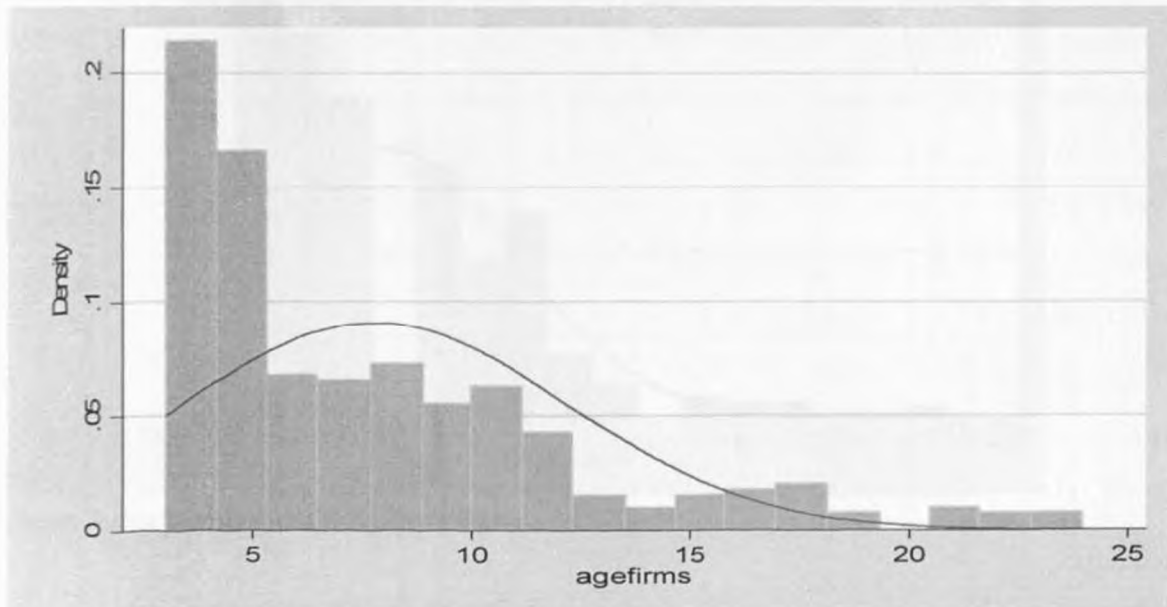
Table 11 indicates that majority of respondents are managers (about 54 percentage points) of small enterprises who fall within the age range of 30-39.99 years, implying that most of these managers may not have had much business experience prior to the inception of 1989 civil war in Liberia which lasted for about 15 years. Perhaps during the course of the conflict, most new college graduates must have managed to sway their way into business venture due to limited employment opportunities, evidenced by 46.9 percentage points of managers with tertiary education. Thus, middle age managers or owners of firms who were about 25 years or more during the war constitute 30.2 percentage points of the total respondents. Managers in the age category of less than 30 years accounted for just 12 percentage points.

Table 11 also reports the distribution of small enterprises managers by education level. While managers of firms without education account for 5.9 percentage points, those with secondary and primary education represent 42.8 percentage points and 4.4 percentage points, respectively. More than 64 percentage points of managers with tertiary education (47 percentage points) are greater than 50 years, while 46 percentage points are between the age of 40 and 50 years at the tertiary level. Median experience of majority of managers (age less than 30 years) is below 10 years for more than 50

percentage points of managers. Interestingly, the most technological manufacturing sector, which should serve as bedrock for reviving Liberia's shattered economy, represent only 44.6 percentage points of its manager with tertiary education compared with 51.2 percentage points of managers in service sector. Most experience and educated managers are knowledgeable about the credit markets compared to the other level of education.

The results of the survey show that most small enterprises are owned/managed by indigenous Liberians (77 percentage points) compared to 33 percentage points constituting non-Liberians. The median size of firm as measured by number of employees and total sales does not show greater variation. The study revealed that ages of businesses range from 4-24 years, implying that businesses are surviving despite strenuous post conflict investment climate. The median age of firms across the sector is 6 years (survey data) compared to 7 years (World Bank data), suggesting that majority of firms was established just at the end of the civil conflict in 2004.

Figure 6: Age density of small enterprises



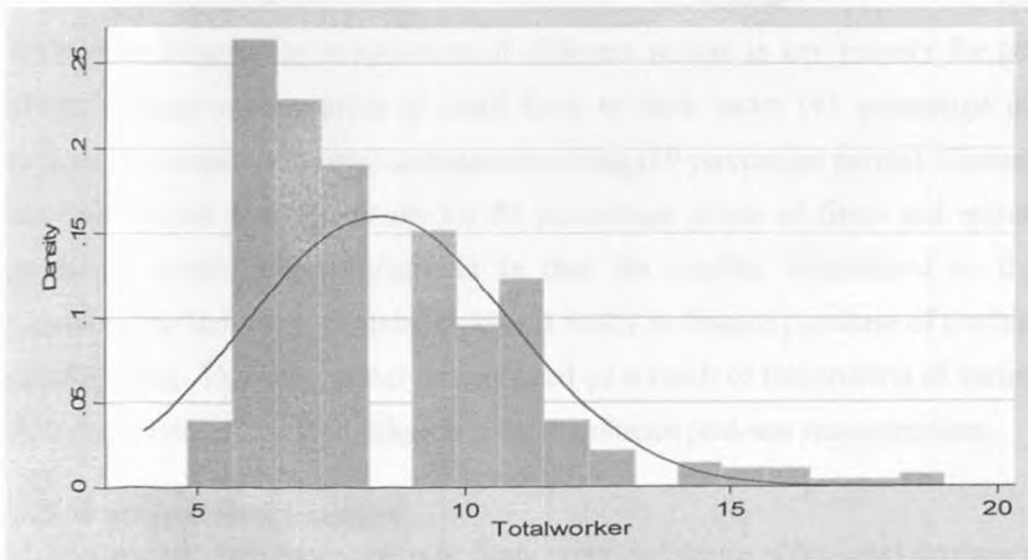
Source: Author's computation from survey dataset

On the overall, Figure 6 shows that firms are young, evidenced by more than 59 percentage points of firms established either immediately during the end of the conflict in 2004. The age of the firms reflects reputation and competitiveness, where firm's survival implies resilience to competitiveness. As it

pertains to growth, most of the businesses covered in the study attain positive growth in sales. A rise in sales growth is reported by more than 53 percentage points of firms.

In spite of the threatening investment climate associated with Liberia as a result of the prolonged civil conflict, many firms were established during the war-period (1990-2003) compared with periods before (i.e before 1990) and after the war (2004-2010). Analysis of the data suggests that 44.6 percentage points, 52.5 percentage points and 2.9 percentage points of firms were established during (1990-2003), after (2004-2010) and before (prior to 1990) war period, respectively. Comparably, analysis of the World Bank Enterprises Survey (RPED) on Liberia indicates that majority of the firms (46.67 percentage points) was established during the war period (1990-2003), compared with 35.33 percentage points and 18 percentage points of firms established after and before the war, respectively.

Figure 7: Distribution of firm size



Source: Author's computation from survey dataset

As indicated in Figure 7, the median employment by small enterprises is 7 employees for about 59 percentage points of firms (World Bank, 2009) and 6 employees for about 73 percentage points of firms (Survey data). This suggests that small enterprises still have long way to becoming medium size (i.e, employing at least 20 persons). Indeed, the two figures show that there is positive relationship between firm size and age.

As indicated by the World Bank Enterprise Survey (2009), the analysis confirmed the existence of more legal entities in Liberia, evidenced by about 94 percentage points of firms which are registered businesses. Except for few enterprises which are identified as corporation (7.6 percentage points) and partnership (23.5 percentage points), the rest of the firms are owned by single individual (68.9 percentage points) who are predominantly managed by male (about 68 percentage points). Interestingly, enterprises constituting commerce and service sectors represent the highest number of sole proprietorship (42.5 percentage points and 37.02 percentage points respectively), and their operations are highly linked with large businesses. Most of the firms (93.3 percentage points) are formally registered, though predominantly managed by male (67.7 percentage points). Despite the high level of firm's formality, about 40 percentage points still faced competitive challenges from informal firms compared with the World Bank Enterprise Survey where 60 percentage points of firms are noted to experience competition from informal or unregistered firms. One of the major effects firms endured following the conflict is rampant theft and robbery, which continue to hinder business operation.

In post-war Liberia, the reactivation of different sectors is key priority for policy reforms. There is relatively larger concentration of small firms in trade sector (43 percentage points) compared to the service (38 percentage points) and manufacturing (19 percentage points). Compared to the World Bank data, the service sector accounts for 84 percentage points of firms and manufacturing represent 16 percentage points. One explanation is that the conflict contributed to the collapse of several manufacturing industries, thereby making it costly to finance purchase of machinery and equipment for manufacturing. The trade sector promulgated as a result of importation of variant products for trading, while the service sector flourished in order to enhance post-war reconstruction.

5.4.2 Sources of firm's capital

While about 94 percentage points of firms expressed desire of business expansion, 34 percentage points of the small firms intend using internal funds as reported in Table 12, implying greater desire for external capital. Relative to inquiry from managers/owners of small enterprises if they had attempted to use external capital when they initiated their business, the survey found minimum use of external fund for business start-up. While there is nonexistence of long term loan due to apparent underdevelopment of the financial sector, the data show almost averaged use of external funds (evidenced by the median leverage ratio of 0.44) mainly for business expansion. As far as credit sources are concerned, Table 12 shows that about 80 percentage points of small businesses were initiated through the use of internal funds. Owner's equity (internal fund) was identified by most businesses for initiation of investment.

Interestingly, the survey found high usage (about 73 percentage points) of financial institutions (i.e. formal or informal) by small enterprises for saving. However, this does suggest that these institutions are highly liquid, evidenced by positive correlation between sales growth and operational costs.

Table 12: Sources of capital for business start-up and expansion

Main Source of capital	Business start-up capital				Business Expansion capital			
	Com*	Manu*	Service	Total	Com*	Manu*	Service	total
	15	7	9	31		26	58	141
Credit sources	(10.2%)	(10.8%)	(7.0%)	(9.1%)	57 (38.8%)	(40.0%)	(45.0%)	(41.4%)
	100	42	90	232		19	41	114
Self-finance	(68.0%)	(64.6%)	(69.8)	(68.0%)	54 (36.7%)	(29.2%)	(31.8%)	(33.4%)
Both self-finance & credit	25	14	24	63	31	19	26	76
	(17.0%)	(21.5%)	(18.6%)	(18.5%)	(21.1%)	(29.2%)	(20.2%)	(22.3%)
	5	2	3	10				
Inheritance	(2.7%)	(3.1%)	(2.3%)	(2.9%)				
Help from family/friends					4	1	2	7
					(2.7%)	(1.5%)	(1.5%)	(2.1%)
	2	0	3	5	1	0	2	3
Other	(1.4%)	(0.0%)	(2.3%)	(1.5%)	(0.7%)	(0.0%)	(1.6%)	(0.9%)
Total	147	65	129	341	147	65	129	341

Source: Author's computation from survey dataset. *Com=commerce; *Manu=Manufacturing

Table 12 indicates that business start-up capital highly constitute internal funds compared to credit sources. Though more than 91 percentage points of firms expressed intention to expand business in Liberia, only 141 (41.4 percentage points) firms indicate desire of utilizing credit sources while majority (33.3 percentage points) indicates the use of internal funds for business expansion. Usage of both internal and external funds for business expansion was reported by 22.3 percentage points of firms. On a sectoral basis, the manufacturing and service sectors seem highly desirous of external funds for expansion.

5.4.3 Credit application, access and constraint

Table 13 shows that though about 47 percentage points of firms did not apply for loans because they apparently have adequate funds, firms' decision to participate in credit market is limited and access to credit remains low among firms in Liberia. According to the World Bank Enterprise Survey, 22.67 percentage points reported participation in the credit market and 20.67 percentage points out of 117 firms have line of credit. Out of firms with line of credit, 45.16 percentage points and 29 percentage points constitute firms established during and after the war periods, respectively. Credit constraint is prevalent among firms in Liberia. While firms using banks to finance investment represent 10.1 percentage points, firms identifying access to finance as a major constraint represent 34.99 percentage

points. Lack of collateral is considered as potential factor limiting participation in credit market, and by extension access to credit, evidenced by 86.9 percentage points of loans requiring collateral. Complex credit application (16.7 percentage points) and unfavorable interest (16.7 percentage points) were also cited as other factors limiting participation in credit market in Liberia (World Bank Enterprise Survey, 2009).

Table 13: Credit participation and access by small enterprises

Category	Sector			Total
	Manufacturing	Service	Commerce	
Total responses	65 (19.1 %)	129 (37.8 %)	147 (43.1 %)	341
Applied & obtained full credit	11 (16.9 %)	26 (20.2 %)	22 (14.9 %)	59 (17.3 %)
Applied but got less credit	20 (30.8 %)	32 (24.8 %)	36 (24.5 %)	88 (25.8 %)
Applied and got nothing	9 (13.9 %)	11 (8.5 %)	16 (10.9 %)	36 (10.5 %)
Did not apply	25 (38.6 %)	60 (46.5 %)	73 (49.7 %)	158(46.3 %)

Source: Author's computation from survey dataset

Table 13 reflects the different categories of loan applicants, in terms of rationed, rejection and success of loan approval. It is shown that only 17.3 percentage points got full credit amount, while 25.8 percentage points of applicants got less than the full loan amount applied. Based on the survey data, 183 credit applications were made for external fund, among which 43 percentage points (147 firms) reflected the success rate of accessing full or partial credit for business venture. Based on the specific classification of credit sources, in terms of formal or informal, the study specifically identified four sources of credit predominantly existing in the financial domain of Liberia. These credit sources include banks, susu club, credit union and money lender. When credit application is considered in combination, the study found that formal institutions, dominantly banks, are the most predominant conduit for investment expansion by small enterprises in Liberia. Similarly, Petersen and Rajan (1994) found that commercial banks were the major providers of credit and other financial services to small businesses.

Table 14: Credit application and approval by financial institutions

Credit Institutions	Credit application	Credit approval	Non-approval
Banks	145	112	32
Susu Club	23	22	1
Money lender	10	8	2
Credit Union	5	5	1
Total	183	147	36

Source: Author's computation from survey dataset

The role of formal credit institutions in the urban credit market is also shown by small enterprises' borrowing desire to expand investment. This propensity is suggested by the evidence that 46 percentage points of the small enterprises in Liberia indicated a need for external funds from banks in order to expand. This indicates the relatively high success rate borrowers (firms) are perceived to have with banks than with other lending institutions such as Susu club, moneylender or credit union. As indicated in Table 14, 183 firms applied for credit approval and only 36 firms received no credit while 90 (about 49 percentage points) of the firms got less than the actual amount they applied for and 62 (about 34 percentage points) got the full amount applied for. Interestingly, only 66.8 percentage points of the total loan amount applied for was received, implying that small enterprises are still faced with financial constraint. While reduction in the size of the loan may be seen as important screening device for loan recovery, the major reasons cited for refusal of loan were lack of collateral and other riskily observatory attributes of the firm's project. The analysis of firm's credit history shows that the majority of firms in urban Liberia had accessed formal credit. Table 14 shows that 29 percentage points of the total firms in Liberia had received credit from banks, whereas less than 19 percentage points of the firms in received credit from other credit sources. From the total firms surveyed in Liberia, non-credit approval accounts for less than 8 percentage points.

Table 15: Credit application and access across credit markets

Credit Application by sector					Credit Approval by sector				
Credit Sources	Com.	Man.	service	Total	Com.	Man.	Service	Total	
formal	61 (41.5 %)	35 (53.9 %)	49 (37.9 %)	145 (42.5 %)	47 (63.5 %)	26 (65 %)	39 (56.5 %)	112 (61.2 %)	
informal	13 (8.8 %)	5 (7.7 %)	20 (15.5 %)	38 (11.1 %)	11 (14.9 %)	5 (12.5 %)	19 (27.5 %)	35 (19.1 %)	
none	73 (49.7 %)	25 (38.5 %)	60 (46.5 %)	158 (46.3 %)	16 (21.6 %)	9 (22.5 %)	11 (15.9 %)	36 (19.7 %)	
Total	147	65	129	341	74	40	69	183	

Source: Author's computation from survey dataset. Com=Commerce, Man=Manufacturing

Table 15 reveals that credit application and access in relation to formal credit as compared to informal. The finding indicates that formal credit application represents 42.5 percentage points compared with 11.1 percentage points for the informal. Across the three sectors, the service sector seems to borrow more from the informal credit market compared with the trade sector, which borrow highly from the formal credit market. This only suggests that urban sector of Liberia has more penetration of formal

credit. Relative to access, the approval rates represent 61 percentage points for formal credit, out which less than 50 percentage points actually got some credit amount.

Table 16: Credit constraint by sector

Definition of Credit Constraint	Sectors			Total
	Manufacturing	Service	Commerce	
Discouraged applicants	8 (12.3 %)	15 (11.6 %)	31 (21.1 %)	54 (15.8 %)
Rationed applicants	19 (29.2 %)	32 (24.8 %)	37 (25.2 %)	88 (25.8 %)
Rejected applicants	9 (13.9 %)	11 (8.5 %)	16 (10.9 %)	36 (10.6 %)
Unconstrained	29 (44.6 %)	71 (55 %)	63 (42.9 %)	163 (47.8 %)
Total firms	65	129	147	341

Source: Author's computation from survey dataset

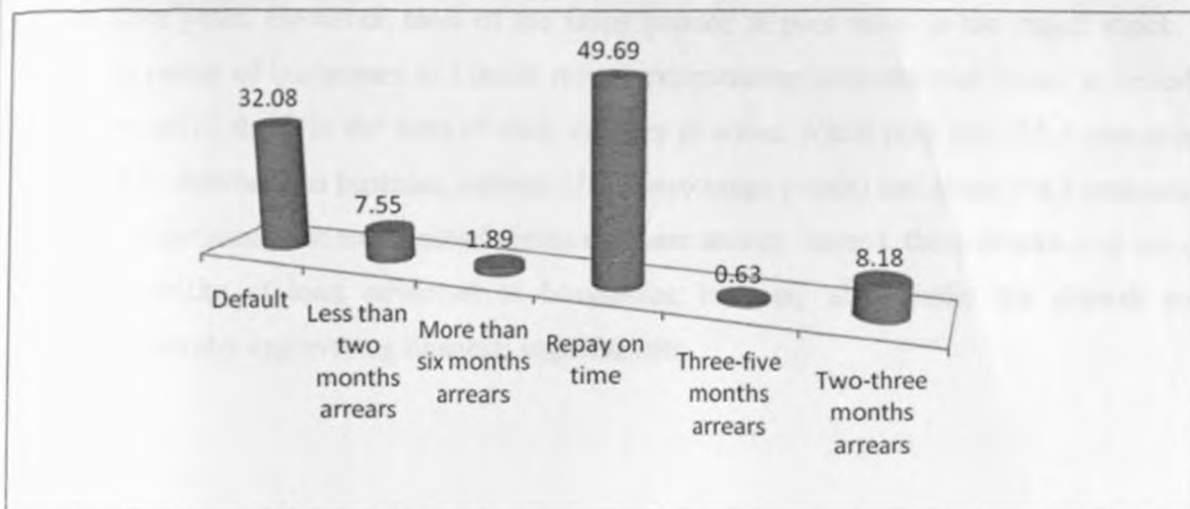
As indicated in Table 16, about 52 percentage points of small enterprises are credit constrained in Liberia based on the theoretical definition relating to those that received credit amount less relative to amount applied for; firms that are discouraged about the credit requirements and those whose loan applications were rejected. Out of the 54 discouraged applicants, 22 firms withdrew and 32 did not apply due to apparent denial of credit application. It is worthy to point that majority of firms identified to be credit constrained befits the definition of credit rationing whereby most applicants got less than the actual credit amount they had applied for.

Table 16 also shows that credit rationing is the major forms (25.8 percentage points) of credit constraint confronting small enterprises in Liberia. Credit constraints seem more pronounced in the manufacturing (55.4 percentage points) and trade sectors (56.5 percentage points), compared with the service sector (43.7 percentage points). In terms of gender, male are more constrained (53 percentage points) to female (49 percentage points) and this due to the fact that most of the small enterprises are managed by male. Managers of small enterprises whose ages above 50 years were found to be most constrained, while those below 30 years fell in the least category of the definition of credit constrained.

5.4.4 Descriptive analysis of default

Based on financial institutions definition of loan default where short-term loan transcends payment due period, existence of credit default was noted from the survey. As indicated in Figure 15, though the repayment rate seems relative high (49.7 percentage points), 51 firms (32.08 percentage points) reported that they actually defaulted in honoring loan repayment contract.

Table 17: Pattern of small enterprises loan repayment



Source: Author's computation from survey dataset

While the study did not investigate about possibility for rollover of loan, firms currently in arrears, falling within the loan contractual period represents 18.3 percentage points, considering the various monthly arrears. Interestingly, the defaulted amount ranged from 50USD to 5000USD and the mean defaulted amount is 262 USD. Most of these defaults emanate from the manufacturing sector (21 out of 51 firms). However, major incidence of default points to failure to honor payment of debt at the time of maturity, evidenced by 32.08 percentage points of firms which exceeded maturity date (with service and trade accounting for 36.2 percentage points and 44.6 percentage points, respectively). In terms of disaggregation of default by sector, the service and the trade sectors account for 24.6 percentage points and 28.4 percentage points, respectively. High loan cost (42.5 percentage points) and low profit (25.76 percentage points) are major reasons cited by firms for either exceeding maturity date of loan repayment or eventually defaulting. Despite other default related reasons pointing to loan diversion (5 percentage points), about 15 percentage points of default cases was associated with causes emanating from eventual collapse of businesses. Banks (92.3 percentage points) and Susu club (80 percentage points) were leading financial institutions from where most of the small businesses encountered those loans repayment default in Liberia.

5.4.5 Business environment

The study revealed existence of negative shocks in the form of arson, robbery (theft) and poor sales as potential perturbation hampering the operation of businesses in Liberia. Out of the 183 firms that did

5.5 Descriptive statistics of variables used in estimations

Table 18: Descriptive statistics (RPED/World Bank)

Variable	Mean	Std. Dev.	Min	Max
Dependent Variables				
<i>APPLY</i>	0.829	0.378	0	1
<i>ACCESS</i>	0.179	0.385	0	1
<i>CON</i>	0.367	0.484	0	1
Credit Market variables				
<i>INTEREST</i>	0.040	0.089	0	0.3
<i>SAVING</i>	0.615	0.489	0	1
Competence/Skills in business				
<i>EXPERIENCE</i>	12.495	9.175	2	48
<i>YEARS (SCHOOL)</i>	11.632	4.344	0	18
<i>AGE (IN LOG)</i>	2.089	0.628	1.099	3.892
Size of the Firm				
<i>SIZE (IN LOG)</i>	2.054	0.659	0	4.762
<i>ASSET (IN LOG)</i>	11.796	2.543	6.397	20.439
Firm performance indicators				
<i>SALE</i>	434.59	2901.75	-0.997	29999
Market environment that defines firm's operations				
<i>COMPETITION</i>	0.615	0.489	0	1
<i>SHOCK</i>	0.470	0.501	0	1
<i>REQUIRE</i>	0.137	0.345	0	1
<i>REGISTER</i>	0.692	0.463	0	1

Table 19: Descriptive statistics (SURVEY)

Variable	Mean	std. Dev.	Min	Max
Dependent Variables				
<i>APPLY</i>	0.537	0.499	0	1
<i>ACCESS</i>	0.803	0.399	0	1
<i>AMOUNT (amount received/amount applied for)</i>	0.628	0.370	0	1
<i>DEFAULT</i>	0.279	0.450	0	1
<i>DEFAULT AMOUNT (amount defaulted/amount received)</i>	0.091	0.243	0	2.083
Credit Market variables				
<i>HIGH INTEREST</i>	0.519	0.501	0	1
<i>INTEREST</i>	0.215	0.042	0.17	0.35
<i>PROCEDURE</i>	0.589	0.493	0	1
<i>REQUIRE</i>	0.633	0.483	0	1
<i>COLLATERAL</i>	0.831	0.376	0	1
<i>SAVING</i>	0.733	0.443	0	1
<i>BRIBE</i>	0.284	0.452	0	1
<i>OFFICER</i>	0.279	0.449	0	1
Skills/experience in business operations				
<i>YEARS (SCHOOL)</i>	11.953	3.830	0	16
<i>AGE (IN LOG)</i>	1.924	0.486	1.386	3.178
<i>AGE OF FIRM SQUARE</i>	3.938	2.040	1.921	10.100
<i>EXPERIENCE (YEARS)</i>	9.309	5.959	0.58	26
Size of the firm variable				
<i>SIZE (IN LOG)</i>	2.090	0.272	1.609	2.944
<i>ASSET (IN LOG)</i>	8.083	0.971	5.704	10.127
Firm performance indicators				
<i>PROFIT</i>	0.998	1.519	-1	12.820
<i>SALE</i>	0.637	1.913	-0.979	19
Market environment that defines firm's operations				
<i>EFFECT</i>	0.369	0.483	0	1
<i>NETWORK</i>	0.135	0.342	0	1
<i>LINK</i>	0.305	0.461	0	1
<i>REGISTER</i>	0.935	0.246	0	1
<i>COMPETITION</i>	0.396	0.490	0	1
<i>SHOCK</i>	0.443	0.497	0	1
<i>ETHNICITY</i>	0.226	0.419	0	1
<i>SECTOR (MANUFACTURING)</i>	0.191	0.393	0	1
<i>SECTOR (SERVICE)</i>	0.378	0.485	0	1
<i>OWNERS</i>	1.686	2.008	1	32

CHAPTER VI: EMPIRICAL ANALYSIS

6.0 Introduction

This chapter reports parametric estimates of the different models estimated for this study. As indicated in chapter one, the main aim of this study is to generate empirical information relating to credit market participation and access to credit by small enterprises in post-war Liberia, and how these enterprises interact (default) with the credit market. This chapter presents results from the RPED (baseline) dataset, which is used for comparison with results from the SURVEY we carried out. The intent of the comparison is to check whether there is consistency relating to factors influencing demand for credit by small enterprises in post-war Liberia. Moreover, the RPED data set alone is inadequate for bringing out factors affecting credit market participation, access to credit and credit constraint, since the RPED questionnaire captured all countries uniformly. Specifically, it does not capture information relating to default, rent-seeking, desire for expansion and conflict related variables.

The study addresses the following specific research objectives: it analyzes factors that influence small firms' credit market participation and access to credit, explores the nature of credit constraints, and investigates the extent and causes of credit default among small enterprises.

In the sections that follow, the study highlights empirical results on credit market participation and access to credit, credit constraints and credit default. The empirical investigation looks at the key factors that influence credit market participation, access to credit, credit constraint and credit default, including: credit market variables such as interest rate, requirement and procedure; skills/experience in business operations, firm size; firm performance; and market environment that defines firm operation.

In order to address the objectives of this thesis, distinct econometric models are used to analyze the data. While the Heckman and Tobit models (controlling for sample selection) are used to analyze access to credit proxied by loan amount received, the binary choice and Multinomial Logit (MNL) models are used to explain specific factors explaining credit market participation and access to credit. To account for recipients of zero and non-zero loan amounts, the marginal effects of the two and type-1 Tobit models are used to estimate determinants of access to credit proxied as loan amount received relative to loan amount applied for. Also, the marginal effect of the type-1 Tobit model is used to capture factors explaining credit default among small enterprises, but the estimates from type-1 Tobit are not adequate for concrete policy formulation since the model does not capture probability and intensity of default

simultaneously. To correct for this deficiency, the Double Hurdle⁴⁵ model is used to concurrently estimate the probability and extent of loan default. Due to limitations of RPED dataset, in terms of omission of key market environment indicators and credit market variables for comparison, similar factors are initially considered in the binary estimations of credit market participation, access and constraint models, and thereafter, the same models are extended by including variables, which are not in the RPED dataset, yet are important from the theoretical framework. It may well be the case that the difference in the sign of some coefficients is due to the use of the data sets that were generated in two different periods and the small size of the RPED sample.

To capture the particular credit source (formal or informal) of small enterprises credit market participation and credit access, the Multinomial Logit and Probit (MNL and MNP) models relating to application and access to credit are only estimated for the SURVEY dataset in order to determine factors influencing credit market participation and access to credit from a particular credit source such as formal or informal. The estimation of each model includes various diagnostic tests (normality, heteroscedasticity, multicollinearity and endogeneity) to authenticate the reliability of the results.

6.1 Demand for credit by small enterprises in Liberia

6.1.1 Credit application by small enterprises

On the basis of the theoretical and empirical framework, Logit and Probit⁴⁶ models were estimated to analyze factors influencing credit market participation by small enterprises in Liberia. To ensure reliability of the estimates, post-estimation diagnostic tests were carried out to check for multicollinearity and heteroscedasticity. The results from the Breusch-Pagan test with chi square and probability chi squared statistics of 0.260 and 0.612 respectively, accept the null hypothesis of homoscedasticity as reported in Appendix Table 1. The mean Vector Inflation Factor (VIF) for credit market participation as indicated in Appendix, Table 2, implies that multicollinearity, which could have resulted to change in the directional signs of some of the coefficients, is not a serious problem. Credit market participation may depend on possible access and the reverse is likely true. This means access to credit is potentially endogenous. The results of Wu-Hausman test for endogeneity show chi square of 0.753 (P-value of 0.231) and 13.10 (P-value of 0.562), suggests that the null hypothesis of no significant

⁴⁵Dr. Peter Moffat of University of East Anglia in the United Kingdom was helpful with comments to estimate the Double Hurdle model.

⁴⁶Probit model estimates are reported in appendix, Table 4. This model and Logit are binary and reports similar results for large, but differ only relative to the distribution of the error term. Probit has normal distribution whereas Logit is logistically distributed.

Table 20: Estimated results of credit market participation (Logit) model

Credit market variables	RPED		SURVEY I		SURVEY II	
	Logit Coefficients	Marginal effect	Logit Coefficients	Marginal effect	Logit coefficients	Marginal effect
<i>REQUIRE</i>	0.650 [0.48]	0.047 [0.58]	1.849*** [6.38]	0.434*** [7.36]	1.725*** [5.45]	0.406*** [6.09]
<i>PROCEDURE</i>					0.938*** [3.09]	0.227*** [3.17]
<i>OFFICER</i>					1.485*** [3.93]	0.324*** [4.72]
<i>HIGH INTEREST</i>	-7.450 [-1.46]	-0.646 [-1.37]	-2.145*** [-6.60]	-0.453*** [-8.45]	-2.088*** [-5.96]	-0.439*** [-7.63]
Skills/experience in business operations						
<i>YEARS (school)</i>	-0.021 [-0.30]	-0.002 [-0.30]	-0.015 [-0.46]	-0.004 [-0.46]	-0.003 [-0.09]	-0.001 [-0.09]
<i>EXPERIENCE</i>	-0.064* [-1.77]	-0.006* [-1.63]	0.035* [1.67]	0.010* [1.71]	0.032* [1.67]	0.010* [1.66]
<i>AGE</i>	1.597 [0.62]	0.139 [0.61]	4.348* [1.83]	1.069* [1.84]	0.863 [1.31]	0.210 [1.31]
<i>AGE2</i>	-0.216 [-0.38]	-0.019 [-0.38]	-0.954* [-1.67]	-0.232* [-1.68]	-0.340 [-0.53]	-0.083 [-0.53]
Size of the firm variable						
<i>SIZE</i>	0.014 [0.03]	0.001 [0.03]	-0.862* [-1.63]	-0.210* [-1.67]	-1.280** [-2.26]	-0.311** [-2.26]
Market environment that defines firm's operations						
<i>COMPETITION</i>	-2.484* [-2.26]	-0.194*** [-3.20]			0.718 [1.55]	0.171 [1.60]
<i>SECMA</i>			0.155 [1.38]	0.127 [1.47]	0.362 [0.88]	0.086 [0.90]
<i>SECSE</i>	-0.022 [-0.02]	-0.002 [-0.02]	-0.548 [-0.61]	-0.045 [-0.62]	-0.193 [-0.59]	-0.047 [-0.59]
<i>NETWORK</i>					0.908* [1.81]	0.201** [2.08]
<i>EFFECT</i>					1.001** [2.07]	0.233** [2.21]
<i>constant</i>	2.705 [0.423]		3.564 [1.19]		1.091 [0.37]	
Observation	117	117	341	341	341	341
LR chi squared (P-value)	29.39 (0.001)		123.31 (0.000)		171.86 (0.000)	
Pseudo R squared	0.275		0.262		0.365	
Marginal effect	0.928		0.555		0.564	

NB: *, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

The estimation results in Table 20 reveal several factors influencing decision of firms in to apply for credit. Comparing results from the RPED and the SURVEY datasets, the significance of the coefficients of key determinants are mixed. The SURVEY dataset shows that skill/experience of business operator, credit market variables, firm size and market environment influence the probability of small enterprises applying for credit.

The credit market variables are statistically significant using the SURVEY dataset. Perceptions about high lending rates (*HIGH INTEREST*) reduce the probability of credit market participation. Given its implications on the cash flows, firms may not opt for such forms of external finance for operation. Knowledge about collateral requirements for credit (*REQUIRE*) increases the probability of the firm participating in credit market. With such information, small firms get more confident with what is required of them by the banks. Furthermore, knowledge of credit application procedures (*PROCEDURE*) also increases the probability of a firm applying for credit as the firms are more aware of the operations of the credit market. The relationship with the credit officers (*OFFICER*) is also an important factor (significant at 10 percent) influencing credit application as firms are able to gather information they need on credit market operations and also to build some level of trust with the banks. These results are consistent with Petersen and Rajan (1994), Diamond (1984), Berger and Udell (1998) who observe that a firm's relationship with financial institutions induces more participation in the credit market. Holding other factors constant, the probability of credit market participation when firms perceive prevailing interest rate as "high" is lower by about 45 percentage points while the probabilities of credit application increase by 32.4 percentage points, 22.7 percentage points and 40.6 percentage points, respectively when firm managers have a relationship with loan officer, possess knowledge about credit market application procedure and cognizant of collateral requirement, respectively. Unlike Aryeetey *et al.* (1994)⁴⁷ who found that high interest rates were not a problem for small enterprises, the results in the present study show that small enterprises are sensitive to interest rates. In addition, the results confirm that collateral is a major requirement for credit market participation which is consistent with Bigsten *et al.*(2003).

⁴⁷ Definition of small enterprises by Aryeetey *et al.* (1994) for Ghana differs from this study, which defines small firms as those with 5-19 employees.

The total number of years of experience of business manager (*EXPERIENCE*) is critical in deciding whether or not to make application for credit. A manager with more years of experience understands the business environment and is thus able to identify the opportunities and challenges that a firm is likely to face in putting together strategic plan. The results from the SURVEY dataset show that managers with more years of experience in business have higher probability of participating in credit market to finance business operations. Using the age of the firm (*AGE*) as a proxy for reputation, the results show a non-linear relationship between age of firms (*AGE*) and probability of credit market participation. The propensity of firms participating in credit market for loan is high at the initial stage of firm's life, but declines as the firm ages. These results are consistent with those of Rand (2007). This may imply that at the initial stage of firm's life, external financing is critical for its growth. To corroborate this finding, the results of the study show that ownership of saving account is higher among older firms than younger firms, implying that older firms are able to rely on internally generated funds. However, aging firms run by experienced managers are more likely to participate in credit market. This is because experienced manager explores new opportunities to keep the firm competitive in the market.

The years of formal education of the business manager (*SCHOOL*) is not significant, contrary to studies from other developing countries which find education has an important role in making decision to participate in credit markets (Zeller, 1994; Mpuga, 2010). However, the finding suggests that younger firms in Liberia are managed /owned by individuals with more years of schooling, who are self-employed, fresh from post-secondary institutions or employed workers, and that younger firms are more inclined to participate in credit market, hence we may not ignore year of formal education of business manager.

Furthermore, the probability of credit market participation decreases with firm size. The results show a negative and statistically significant relationship between the firm size (*SIZE*) and probability of credit market participation. The probability of credit market participation decreases by 21-31 percentage points as firm size increases. While banks seem to perceive the small enterprises as not good clientele for loans, firms require credit to finance their growth and banks need to support such growth. This is possible as larger firms may be well capitalized to cope with operational costs (Geltler and Gilchrist, 1994).

Though the market environmental factors that enable small businesses to thrive are important, there is inconsistency in the estimates from the RPED and SURVEY datasets. While competition in the market reduces the probability of firm participating in credit market using the RPED (coefficient significant at 5 percent), it increases the probability of credit market participation when the SURVEY dataset is used. Many firms facing stiff competition in market resort to financial institutions to augment their capital base for expansion, but most of the financial institutions consider such firms risky. In fact, a President of one of the commercial banks indicated that his institution would exercise caution in lending to businesses that are engaged in rivalry, due to foreseeable risk of default. The inconsistency in the direction of relationship is explained by policy differences by financial institutions to lend to small enterprises that are facing rivalry and different data.

The civil conflict has policy implication for recovery of small enterprises financing in Liberia as majority of them were affected by the war, either via destruction of their assets or theft of properties. The study finds that war effect (*EFFECT*) increases probability of credit market participation by 23.3 percentage points. It is possible that as a country comes out of war firms have run down their savings while the opportunities for business growth are huge and thus firms turn to banks for financial support. The study also finds that credit market participation is positively associated with membership of small enterprises in business network (*NETWORK*). The probability of credit market participation increases by 20.1 percentage points when a firm is a member of a business network. Business network in post-war Liberia is regarded by financial institutions as an effective mechanism of cross guaranteeing repayment, especially in the absence of physically tangible asset to secure the loan.

In summary, the credit market participation decision by small firms is influenced by diversity of factors. Belonging to a business network increases the probability of credit market participation as banks recognize such networks in evaluating the collateral requirements. There is hope for reviving the firms destroyed by war as owners have a higher probability of seeking external funding to rebuild their businesses. Further, small firms need external credit to grow while mature businesses have options to use internal funding to finance their operations. Interaction with loan officers is critical as it serves as a source of information on the credit market operations to the potential borrower as well as building trust. Similarly, knowledge of the credit application procedures including the collateral requirements is important in building confidence among the small enterprises in participating in credit market. Furthermore, the experience in business matters a lot for credit market participation. Finally, the

perception of the existing interest rate levels matters for credit participation, given the implications on cost of capital especially for growing firm.

6.1.2 Revealed access to credit by small enterprises

Table 21 reports Logit model estimates of the determinants of access to credit by small enterprises in Liberia. The dummy dependent variable is defined by whether credit application is approved in the last three years. It takes value of one if application approved and zero if not approved. The test for endogeneity was performed following Mcpherson and Rous (2010) argument that firm's performance influences access to credit. Moreover, it is argued that the size of the firm (*SIZE*) also determines access to credit. To address these inherent endogeneity problems, the Wu-Hausman test was performed after regressing size of the firm on access to credit and access to credit on size of the firm, using credit market and market environment variables as control factors. The result of the Wu-Hausman test with chi square of 160.56 (p-value of 0.758) and 0.5358 (p-value of 0.112), suggests that the problem of endogeneity is not important enough to affect the parameters. Similarly, when the performance of the firm variables, in terms of profitability (*PROFIT*) and sales growth (*SALE*), were assessed, the problem of endogeneity emerged only when profit proxied for firm performance, but not in the case of sales growth. We decided to drop the profit variable because it was also not significant and created problem of endogeneity. Thus, the credit access model was estimated by considering sales growth (*SALE*) as the only performance variable in the estimation. In Table 21, there are seven columns. While the first column reports name of variables, the second to seventh columns represent Logit parameter estimates and corresponding marginal effects based on using the RPED and SURVEY datasets.

Table 21: Estimation results of credit access (Logit) model

variables	RPED		SURVEY I		SURVEY II	
	Logit Coefficients	marginal effect	Logit Coefficients	marginal effect	Logit Coefficients	marginal effect
Credit market variables						
<i>SAVING</i>	0.050 [0.08]	0.004 [0.08]	-1.243** [-2.29]	-0.151*** [-2.86]	-1.368** [-2.27]	-0.120*** [-2.71]
<i>BRIBE</i>					1.971*** [2.94]	0.162*** [3.84]
<i>OFFICER</i>					1.517*** [3.09]	0.156*** [3.18]
Skills/experience in business operations						
<i>EXPERIENCE</i>	-0.009 [-0.26]	-0.001 [-0.26]	0.057 [1.57]	0.008 [1.59]	0.075* [1.92]	0.008* [1.92]
<i>AGE</i>	0.437 [0.76]	0.032 [0.77]	-0.193 [-0.46]	-0.028 [-0.46]	-0.233 [-0.36]	-0.025 [-0.36]
Size of the firm						
<i>SIZE</i>	-1.178* [-1.74]	-0.087* [-1.72]	0.235 [0.30]	0.034 [0.30]	0.015 [0.02]	0.002 [0.02]
<i>ASSET</i>	0.307** [2.34]	0.023** [2.07]	0.222 [1.10]	0.032 [1.10]	0.151 [0.69]	0.016 [0.68]
Firm performance indicators						
<i>SALE</i>	0.001* [1.79]	1.25x10 ⁻⁵ * [1.85]	-0.257** [-2.03]	-0.037** [-2.02]	-0.384*** [-2.67]	-0.041** [-2.64]
Market environment that defines firm's operations						
<i>COMPETITION</i>	3.543*** [2.86]	0.244*** [4.35]	-0.086 [-0.22]	-0.012 [-0.22]	-0.038 [-0.09]	-0.004 [-0.09]
<i>NETWORK</i>					1.331* [1.77]	0.107** [2.36]
<i>EFFECT</i>					-0.149 [-0.24]	-0.016 [-0.23]
<i>constant</i>	-6.726*** [-2.85]		0.063 [0.03]		0.238 [0.09]	
Observations	117	117	183	183	183	183
LR chi squared (P-value)	24.9 (0.008)		14.5 (0.043)		41.32 (0.000)	
Pseudo R squared	0.2268		0.0799		0.228	
Marginal effect		0.0798		0.827		0.879

NB: *, **, *** denote significant level at 10 percent, 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

The estimates in Table 21 reveal that the determinants of access to credit are ambiguous when the results using the RPED dataset are directly compared with the SURVEY dataset. This shows that mixed results are reported for variables such as *SAVING*, *EXPERIENCE*, *AGE*, *SIZE*, *SALE* and *COMPETITION* in Table 21.

Looking at the credit market variables, possession of savings account by small enterprises negatively influences access to credit (SURVEY dataset), but positive in the case for RPED (though coefficient is insignificant). The coefficient of whether a firm has saving account (*SAVING*) is significant at 5 percent (SURVEY dataset). Holding other factor constant, the probability of accessing credit is lower by 15.1 percentage points (SURVEY I model) and 12 percentage points (SURVEY II model) for firms that reported having saving account, than for firm without one. Ownership of saving account reflects financial soundness of small enterprises, which may not necessarily be the case for small enterprises in Liberia. This is because many small enterprises are not able to constantly save (though they have saving accounts) due to limited operating capital. Relationship with credit officer (*OFFICER*) of lending institutions increases the probability of small enterprises access to credit, and the coefficient is significant at 1 percent level. The foregoing results imply that small enterprises usually lack relevant information about credit application procedures, even though they often lack collateral. The study found that small enterprises, which offered tips (*BRIBE*), have 16 percentage points higher probability of accessing credit compared to those that do not. The coefficient is significant at 1 percent level. This is suggestive of the underdevelopment of the credit market in Liberia especially with regard to prudential regulations, evidenced by systemic corruption involving loan officers in the financial system.

As expected, managers with more years of experience in business (*EXPERIENCE*) have greater probability of accessing credit. An additional year in manager's experience increases the chance of accessing credit 0.8 percentage points chance of accessing credit. The coefficient is significant at 10 percent level. Compared to results based on SURVEY dataset in Table 21, manager experience has negative effect on access to credit for RPED dataset, and it is insignificant. Financial institutions associate lower risk with businesses whose managers have more years of business experience. It is found that reputation as proxied by age of the firm variable does not influence access to credit in both datasets. The difference in signs could be explained by asymmetric information relating to small enterprises (Petersen and Rajan, 1994) and the distinction of the datasets.

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The results based on SURVEY dataset suggest that size of the firm (*SIZE*) and asset do not influence firms' access to credit. However, the results of RPED dataset reveal that the firms' asset (*ASSET*) and size (*SIZE*) have significant influence on access to credit. While the increase in firm size reduces the probability of accessing credit by 8.7 percentage points, asset increases the probability of credit access by 2.3 percentage points (RPED dataset). The significant effect of asset on access to credit adds to similar findings by Kedir *et al.* (2007), Jappeli (1990), Zeller (1994), and Binks and Ennew (1996), because access to credit by small firms is often collateral-based (Kon and Storey, 2003).

The results show that the growth in sales is significantly associated with access to credit. Sales growth (*SALE*) increases the probability of being allocated the applied loan (RPED dataset), but result obtained from the SURVEY dataset show a negative and significant effect. With sales growth, the probability of access to credit is reduced by between 3.7 percentage points and 4.1 percentage points in the SURVEY dataset, while the increase is 0.0025 percentage points using the RPED. Firms with sales growth are less likely to use credit, possibly because their earnings are sufficient to fund the growth of their capital requirements (Pecking Order Theory). It is also the case that the financial soundness of businesses may not only be anchored on sales growth without controlling for other factors such as high costs for other inputs, which is also noted from the SURVEY dataset. Due to the positive correlation between sales growth and high costs of small enterprises' operation, financial institutions may not consider small enterprises worthy, hence may less likely access credit. Petersen and Rajan (1994) also argue that information opacity about small business could also serve as potential hindrance of accessing credit from financial institutions, but they could easily access trade credit. The estimated relationship between access to credit and sales growth in this study is inconsistent with findings by Daniels and Mead (2003), Akoten *et al.* (2006) and McPherson and Rous (2010), which were insignificant. But it is consistent with findings by a Hansen *et al.* (2004) and Bigsten *et al.* (2003) for the RPED dataset.

With respect to market environment variables, the results indicate that being faced with competition from other firms (*COMPETITION*) reduces the likelihood of accessing credit, but the coefficient is insignificant using SURVEY dataset. Compared with the RPED dataset, competition from firms increases the probability of accessing credit by 24.4 percentage points. Membership in business network eases access to credit, as evidenced from the finding that operating in network of businesses is positively related to access to credit with a rise in probability by 10.7 percentage points. This finding is consistent with Fafchamps (2000) and Byiers *et al.* (2010).

Another aspect of the market environment is the presence (or absence) of civil war or conflict. The results show that civil conflict or war often has negative effects on the operation of businesses, thereby evoking the need for finance to recover. Small enterprises affected by war (*EFFECT*) are less likely to access credit with probability reducing by 1.6 percentage points. The insignificance of the coefficient could be attributed to limited priority in advancing credit to war-affected firms, and this result only explains how small enterprises that survived the civil war lack adequate capital and assets to influence their credit access.

In summary, the results have shown that access to credit is driven by many factors, including skills/experience in doing business, performance of firm, and market environment related factors. Financial institutions have rigid bureaucracy in credit market, given that access to finance is found to be enhanced through rent-seeking practices. Corruption is endemic in post-war Liberia's credit market as managers who professed to offer percentages of the loan amount to credit officer are more likely to get their loan approved. Essentially, it is found that a firm's competence as explained by manager experience in business provides better signal to financial institutions for extending credit. As a way of mitigating moral hazard in credit market, financial institutions prioritize membership in business network for advancing credit as businesses which are in network were found to likely access credit. It is found that increase in sales growth cushion probability of accessing credit as financial institutions are able to assess the performance of the firms in terms of ability to repay the loan.

6.1.3 Factors influencing the choice of sources of credit

The dichotomous models analyzed in Tables 20 and 21 significantly help to investigate the effects of firms' characteristics and other factors on credit market participation and access to credit without consideration to credit sources. Also, the binary model is inadequate for examining the different roles of each factor in specified segment of credit markets (formal and informal), because pooling the different segments of credit markets conceal vital information to inform credit policy. The study therefore employed MNL/MNP models to analyze the multiple response dependent variables (formal credit application, informal credit application and did not apply). Decision to choose the MNL/MNP is based on Kochar (1997)⁴⁸, where a firm is free to opt for formal or informal credit. Thus, the multinomial

⁴⁸Kochar (1997) divided the households into those who borrowed formal credit; those who borrowed from informal credit and those who did not borrow at all from either credit source.

models become vital to address such behavior. In this study, we classified small enterprises into three groups. The objective is to examine factors influencing probability of participating in credit market and accessing credit from specific credit source in Liberia. Due to inherent weakness of Multinomial Logit associated with IIA, the Multinomial Probit is also estimated for comparative purposes and to overcome the weakness inherent in the MNL⁴⁹. The Hausman test of no significant difference between common parameters supports the IIA assumption and the validity for Multinomial Logit results.

In terms of the decision to source external finance, the three groups relative to credit market participation and access to credit are: Formal, informal and none (i.e did not apply / did not access). Based on disaggregation of the 341 firms, 42.5 percentage points participated through formal credit, 11.1 percentage points participated through informal credit and 46.3 percentage points abstained. From the estimates in Table 22, the MNL enables comparison of each probabilistic outcome using the base outcome as the non-applicant group. The estimated coefficients of the MNL are difficult to interpret in terms of magnitude (Wooldrige, 2003). Therefore, the marginal effects were computed to provide information on the change in predicted probability of credit choices due to change in credit market, firm size, skill/experience and market environment variables. From the marginal effects, we found that the predicted probability of formal credit market participation is below 50 percentage points, and it is 74 and 11.6 percentage points for access to formal and informal credits, respectively. In Tables 22 and 23, estimates of the MNL with their corresponding marginal effects are reported in columns two to five.

⁴⁹ The Wu-Hausman was also performed to check for IIA

Table 22: Estimates of revealed sources of credit application (Multinomial Logit) model

Credit Market variables	Formal		Informal	
	Coefficients	Marginal effect	Coefficients	Marginal effect
<i>REQUIRE</i>	1.446*** [4.24]	0.253*** [3.60]	2.373*** [3.89]	0.126*** [3.58]
<i>PROCEDURE</i>	1.275*** [3.85]	0.302*** [4.51]	0.027 [0.06]	0.052 [1.39]
<i>OFFICER</i>	1.572*** [4.01]	0.300*** [4.13]	1.408*** [2.69]	0.044 [1.04]
<i>HIGH INTEREST</i>	-2.279*** [-6.13]	-0.418*** [-6.57]	-2.00*** [-4.15]	-0.057 [-1.51]
Skills/experience in business operations				
<i>YEARS (SCHOOL)</i>	0.008 [0.18]	0.003 [0.26]	-0.015 [-0.28]	-0.002 [-0.39]
<i>EXPERIENCE</i>	0.057* [1.95]	0.013* [1.94]	0.024 [0.53]	0.000 [0.12]
<i>AGE</i>	1.451 [0.49]	0.371 [0.55]	-0.249 [-0.06]	-0.086 [-0.27]
<i>AGE2</i>	-0.427 [-0.63]	-0.095 [-0.61]	-0.237 [-0.25]	-0.002 [-0.02]
Size of the firm variable				
<i>SIZE</i>	-1.108* [-1.87]	-0.186 [-1.38]	-1.997** [-2.30]	-0.126* [-1.86]
Market environment that defines firm's operations				
<i>COMPETITION</i>	0.355 [0.71]	0.015 [0.14]	1.402** [2.12]	0.121* [1.80]
<i>SECMA</i>	0.519 [1.21]	0.134 [1.39]	-0.128 [-0.20]	-0.032 [-0.77]
<i>SECSE</i>	-0.418 [-1.18]	-0.113 [-1.43]	0.231 [0.50]	0.040 [1.00]
<i>NETWORK</i>	1.047** [2.04]	0.231** [2.32]	0.485 [0.73]	0.012 [0.27]
<i>EFFECT</i>	0.905* [1.78]	0.164 [1.47]	1.164* [1.71]	0.063 [1.04]
<i>constant</i>	-0.592 [-0.19]		2.525 [0.59]	
Observations	341	341		341
LR chi squared (P-value)	210.75 (0.000)			
Pseudo R squared	0.320			
Marginal effects after Logit		0.457		0.411

NB: Dependent variable is defined by 1= formal credit application, 2=informal credit application and 3= Did not apply (base category); *, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

Table 23: Estimates of sources of credit access (Multinomial Logit Model)

variables	Formal		Informal	
	Coefficients	Marginal effect	Coefficients	Marginal effect
Credit market variables				
<i>SAVING</i>	-0.964 [-1.57]	-0.044 [-0.48]	-2.124** [-3.07]	-0.164** [-2.18]
<i>BRIBE</i>	2.098** [3.04]	0.178** [2.47]	2.019* [2.55]	0.018 [0.34]
<i>OFFICER</i>	1.631** [3.21]	0.185** [2.53]	1.402* [2.20]	0.003 [0.06]
Skills/experience in business operations				
<i>EXPERIENCE</i>	0.087* [2.16]	0.013** [2.17]	0.039 [0.75]	0.004 [0.83]
<i>AGE</i>	0.043 [0.06]	0.069 [0.60]	-0.711 [-0.79]	-0.077 [-0.92]
Size of the firm				
<i>SIZE</i>	0.063 [0.07]	0.067 [0.07]	-0.639 [-0.55]	-0.071 [-0.76]
<i>ASSET</i>	0.529* [2.10]	0.185*** [2.10]	-0.964** [-2.91]	-0.145*** [-4.60]
Firm performance indicators				
<i>SALE</i>	-0.423** [-2.83]	-0.054* [-1.85]	-0.321 [-1.35]	-0.004 [-0.15]
Market environment that defines firm's operations				
<i>COMPETITION</i>	-0.282 [-0.60]	-0.106 [-1.42]	0.568 [0.98]	0.086 [1.63]
<i>NETWORK</i>	1.552* [2.02]	0.183*** [2.62]	0.825 [0.91]	0.049 [0.99]
<i>EFFECT</i>	-0.339 [-0.50]	-0.106 [-0.93]	0.457 [0.54]	0.078 [0.96]
<i>constant</i>	-4.081 [-1.41]		9.783** [2.63]	
Observation s	183	183	183	183
LR chi squared	98.33 (0.000)		98.33 (0.000)	
Pseudo R squared	0.286		0.286	
Marginal effect		0.740		0.116

NB: Dependent variable is defined by 1= access to formal credit, 2= access to informal credit and 3= Did not access (base category); *, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

Tables 22 and 23 show estimates of the MNL for credit market participation and access to credit, in order to ascertain the specific segments of the credit markets chosen by small enterprises. The results of the MNL all interpreted with reference to the base categories which are considered as 'did not apply' for sources of credit market participation model and 'did not access' for sources of access to credit model. Considering the credit market variables: perception about collateral (*REQUIRE*), knowledge about credit market application procedure (*PROCEDURE*), relationship with credit officer (*OFFICER*) and perception about high lending rate (*HIGH INTEREST*) show significant influence for participation in both credit markets. Except for the variable representing knowledge of credit application procedure, which is insignificant for the choice of informal credit, the others are significant. The marginal effects suggest that credit market variables seem to have greater effects on formal credit market participation than the informal. The probability of applying for formal and informal credits are increased by 25.3 percentage points and 12.6 percentage points respectively, when collateral is perceived to be required compared to not applying. Relationship with credit officer increases probability of credit market participation by 30 percentage points for formal credit. While knowledge of credit market application procedures reduces the probability of informal credit participation by 5.2 percentage points, it increases the probability of formal credit participation by 30.2 percentage points. Perception that interest rate is 'high' reduces probability of formal and informal credit market participation by 41.8 percentage points and 5.7 percentage points, respectively.

Ownership of saving accounts (*SAVING*) affects access to credit across both credit markets. But the effect is only significant for the informal credit segment, whose probability increases by 16.4 percentage points with ownership of saving account. This further supports the earlier argument that ownership of saving account does not necessarily reflect financial soundness of small enterprises, since the bulk of small enterprises capital is withheld for investment operation. Similar to credit market participation, the study found that having relationship with lending officer positively determines probability of access to credit from either credit markets and they are significant at 1 percent and 5 percent level, respectively. However, the marginal effect is only significant at 5 percent level relative to probability of accessing formal credit, implying that the probability of accessing formal credit is increased by 18.5 percentage points when a manager of firm has relationship with credit officer. Corruption seems to reflect cushioning effect on access to formal credit. Small enterprises, which claimed to have offered tips to loan officers, are more likely to access credit, especially formal credit whose probability is increased by 17.8 percentage points.

Looking at skill/experience variables, the MNL estimates reveal that the manager's business experience (*EXPERIENCE*) is significant at 10 percent level in explaining credit application from the formal credit segment. The probability of formal credit application increases by 1.3 percentage points for additional year of business experience. Across segments, the manager's years of schooling (*SCHOOL*) positively influences formal credit participation, but negatively affects informal credit participation, relative to not participating in credit market.

However, access to credit with the experience of manager (*EXPERIENCE*) in both credit segments, but the results are only significant in the formal credit segment. The results also show that older firms (*AGE*) are more likely to apply for formal credit, while they are less likely to apply for informal credit relative to not applying. The estimated coefficients of firm's age in the two segments of the MNL model possess opposite signs, implying that age increases the probability of applying and accessing formal credit, but reduces credit application and access for informal credit. The marginal effects indicate that a rise in firm's age by a year increases the probability of formal credit participation and access by 37.1 percentage points and 6.9 percentage points, respectively, though they are not significant.

The findings from the MNL estimation also reveal that the coefficient of firm's size negatively influences credit participation in both formal and informal credit markets. Across both segments, pointing to formal and informal credit markets, the coefficients are significant at 10 and 5 percent level, respectively. An increase in firms' size by one worker reduces the probability of applying for formal and informal credits by 18.6 percentage points and 12.6 percentage points, respectively.

The MNL estimates in Table 23 indicate that access to credit is positively influenced by firm size in the formal credit segment, and negatively for the informal credit segment. The firm's size variables are insignificant in influencing credit from both credit markets and the probabilities are increased by 6.7 percentage points for formal and reduced by 7.1 percentage points for informal credit given an additional rise in the worker of firms. The finding is similar to Levy (1993) and Aryeetey (1994) who found that firms with more workers are more likely to access formal credit in developing countries and Ghana, respectively. The coefficient of asset is highly significant for accessing formal and informal credits. Findings from MNL estimations indicate that assets negatively influence access to informal credit with probability reducing by 14.5 percentage points, but positive for formal credit whose

probability is increased by 18.5 percentage points for rise in value of firm asset. Asset is highly regarded by formal financial institutions for hedging against risk. This finding concurs with Storey (1994), and Binks and Ennew (1996) as well as Berger and Udell (1998).

Performance of firm, in terms of sales growth, does not ease access to credit by small enterprise. The results from the MNL show that growth oriented businesses are less likely to access credit. Based on the marginal effects, a percentage increase in sales growth reduces the probability of accessing formal credit by 5.4 percentage points. Though high costs of operations partly explains factor for lack of credit access, growth oriented firms with adequate internal funds may not consider credit as best alternative for expansion.

The MNL estimates reveal that credit market participation is not driven by factors associated with market environment. However, previous shock such as the effect of war on business (*EFFECT*), membership in business network (*NETWORK*) and competition with other firms (*COMPETITION*) are significant and have positive effect on application across both credit sources. Small enterprises which are faced with competition from other firms are more likely to apply for credit. The probability of credit market participation increases by 12.1 percentage points when a firm is faced with competition. Firms faced with competition are more likely to access informal credit, though the coefficients are not significant across the various outcomes. The results also show that firms affected by war are more likely to apply for credit, but the chances of applying are greater for informal credit, though the coefficients are all insignificant. However, firms claiming to be affected by war are more likely to access informal credit and less likely to access formal credit, which supports the earlier results that war affected firms are not prioritized by banks. The results also show that being a member in a business network increases the chance of credit market participation and access to credit, particularly from the formal credit source. From the marginal effects, the probability of accessing formal credit is increased by 18.3 percentage points when a firm is a member in business network. Relative to the sector of operation (commerce), the multinomial estimates reveal no significant evidence that small enterprises operating in manufacturing (*SECMA*) and service (*SECSE*) sectors are more likely to participate in formal and informal credit markets.

6.1.4 Determinants of loan amount by small enterprises

To analyze the factors influencing the volume of loan credit received by small enterprises, the Heckman model is estimated to address the problem of potential sample selection bias. Sample selection could occur as there are firms that desired credit, but could not apply, and those who applied and did not get the credit. Consequently, firms that received credit maybe a non-random sample. If the model of loan amount is estimated without controlling for potential non-randomness of the sample of loan recipients, the estimates could be biased. Table 24 therefore reports results on factors influencing the amount of loan received considering the Heckman and Tobit models. Column one of Table 24 reports Heckman estimates, whereas column two and three report the estimated marginal effects⁵⁰ of Tobit. The selection variables to the Heckman estimates are also reported in Table 24.

	Heckman	Tobit	Tobit
Constant	1.234	1.234	1.234
Age	0.05	0.05	0.05
Size	0.1	0.1	0.1
Industry	0.02	0.02	0.02
Region	0.01	0.01	0.01
Time	0.03	0.03	0.03
Selection	0.05		
Interaction	0.01		
Other	0.02		
Control	0.01		
Fixed	0.01		
Effect	0.01		
Model	0.01		
Estimate	0.01		
Standard	0.01		
Error	0.01		
Term	0.01		
Statistics	0.01		
Test	0.01		
Results	0.01		
Table	0.01		
24	0.01		

⁵⁰ The Tobit marginal effect has three parts to capture how much the expected loan amount, $E(\text{tobAMT})$ change when firm's characteristics change; how much expected loan amount, $E(\text{tobAMT} >)$ change when characteristics of firm change; and how much the probability loan amount (tobAMT) change as result of change of firm's attributes. Actually, the third category is considered for estimation in order to ensure consistency of analysis in the estimated results that were initially based on probability.

Table 24: Estimates of the determinants of loan amount received

Dependent variable (<i>Amount</i>)	Marginal effects		
	Heckman Estimates	Interval Tobit	One Limit Tobit
variables	Coefficients	Coefficients	Coefficients
Credit Market variables			
<i>INTEREST</i>	-14.652*** (-6.31)	-0.447* (-1.76)	-1.51** (-2.50)
<i>BRIBE</i>	0.353* (1.75)	0.080* (1.76)	0.139** (2.52)
Skills/experience in business operations			
<i>EXPERIENCE</i>	0.017* (1.83)	0.002* (1.68)	0.007* (1.73)
Size of the firm			
<i>ASSET</i>	0.547*** (5.77)	0.029** (2.69)	0.071*** (2.75)
<i>SIZE</i>	0.789*** (2.60)	0.039 (1.06)	0.088 (0.98)
Firm performance indicators			
<i>SALE</i>	0.163** (2.22)	0.017** (2.21)	0.053*** (2.94)
Market environment that defines firm operations			
<i>NETWORK</i>	0.150 (0.70)	0.040* (1.165)	0.114* (1.82)
<i>Constant</i>	4.651*** (3.52)		
Selection			
<i>PROCEDURE</i>	0.166 (0.58)		
<i>ETHNICITY</i>	1.038** (2.38)		
<i>OFFICER</i>	0.904*** (3.15)		
<i>REGISTER</i>	-0.299 (-1.56)		
<i>LINK</i>	-0.440 (-1.56)		
<i>NETWORK</i>	0.887** (2.18)		
<i>INTEREST</i>	9.976*** (2.68)		
<i>BRIBE</i>	1.123*** (3.13)		
<i>EXPERIENCE</i>	0.0345 (1.57)		
<i>ASSET</i>	0.0761 (0.56)		
<i>SIZE</i>	-0.124 (-0.24)		
<i>Constant</i>	-1.609 (-0.88)		
Mills Lambda	-0.833** (-2.03)		
Rho	-0.821		
Sigma	1.014		
Number of observations	341	183	183
Marginal effect after Tobit		0.540	0.651
Wald chi squared (P-value)	198.44 (0.000)		

*, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

The Heckman model results show that the coefficient of the inverse Mills ratio is significant at 5 percent level (with p-value of 0.042). Moreover, the likelihood of the Heckman in Table 24 is significant with Wald chi square statistics of 198.44 and P-value of 0.000 showing strong explanatory power of the model. This suggests that sample selection bias is a problem, and that an additional regressor (inverse mills ratio) increases reliability of model. Concerning identification, several variables were first considered in the binary model (credit market participation model) to determine those that influence credit market participation, but not the loan amount of credit received. Thereafter, the ordinary least square (OLS) was estimated considering the first and second stage (See appendix Table 10 for the first stage results) to determine the effect on the amount of credit received, after which the variables were then compared to select the instruments⁵¹ for identification in the Heckman estimation. Following comparison of both estimations, it was observed that ethnicity of manager (indigenous Liberian manager or foreign manager) and relationship with credit officers are plausible instruments that could influence credit market participation, but not the loan amount received. Kedir *et al.* (2007) used ethnicity as a strong instrument in estimating factor that influences the loan amount received by households in Ethiopia.

Thus, the credit market participation takes value of zero to one, depending on whether the loan is approved. This may not be addressed by the Heckman's selection estimates. In this case, as shown in Table 24, the one and two limit Tobit models are estimated because they allow for censoring of the extremities (applicants that received no credit amount and those that got full amount). Essentially, the Tobit models help to overcome the problem of possible biasness associated with heteroscedasticity (Wooldridge, 2003). The dependent variable (*AMOUNT*) used for estimating the Heckman and Tobit was generated by taking the ratio of loan amount received to total loan amount applied for.

Based on the estimates in the Heckman and Tobit models, the study found significant evidence the Tobit model that variable associated with market environment, in particular, membership in business network (*NETWORK*) influences the amount of loan received. However, variables relating to credit market, skills/experience of business manager (*EXPERIENCE*), asset (*ASSET*) and performance of firm (*SALE*) explain the variations in amount of loan received across the models. Firm size (*SIZE*) is only significant in the Heckman model.

⁵¹ The problem of identifying strong instrument remains an ongoing contention as it relates to selectivity. Until now, theory is yet to define appropriate strategy or method of identifying strong instrument (Wooldridge, 2003).

As it relates to credit market variables, interest rates (*INTEREST*) negatively affect loan amount received by small enterprises and the coefficient is significant at 1 percent (Heckman estimate), 5 percent (one limit Tobit) and 10 percent (interval Tobit). High interest increases the cost of credit. This leads to demand for significantly higher amount of cash flows to cover the loan repayments. Firms that are unable to generate enough growth to satisfy such cash flows risk defaulting and banks thus allocate small amounts of loans to reduce their exposure to credit default risk. This then translates to reduce loan amounts received by the firms. This result seems to corroborate the earlier finding on the low probability of credit market participation when interest rates are perceived as 'high'. Given that an increase in interest adversely affects profitability, small enterprises growth could be hindered by high interest since they may not seek for external funds to finance expansion of their operations.

The amount of credit received is significantly influenced by governance issues in the credit market. The results indicate that firms which offered bribe (*BRIBE*) usually received either the full/ greater proportion of loan amount applied for in all the selection models in Table 24. In both estimates (Heckman and Tobit), the coefficient of the variable is significant at 5 percent (but 10 percent in the one limit Tobit). The findings corroborate those of Kounouwewa and Chao (2011). The results suggest that the credit market of Liberia is still underdeveloped with weak prudential guidelines and feeble regulatory framework. Further, this could also reflect the limited alternatives for external financing that faces the firms while the existing sources are not able to satisfy the market with the increasing demands to rebuild after the conflict period. As a result, the credit market is vulnerable to such rent-seeking practices which expose them to poor quality asset portfolio. Most firms indicated in a focus group discussion, that on average, they had to concede to offering between 5-10 percentage points of the total loan amount received to loan officers to speed up loan approval. This is an implicit cost that adds to the cost of credit, but firms are willing to accept because they are in dire need of the loans for business operation.

The business experience of firm's manager (*EXPERIENCE*) has a positive effect on the amount of loan received. The coefficient on this variable is significant at 5 percent (in the Heckman and interval Tobit models) and 10 percent (in the one limit Tobit model). Experience in doing business may signal managerial competence in handling firm operations, thereby enhancing the firm's reputation with financial institutions and enabling access to larger loan amounts to meet their growing investment needs. Thus, firms whose managers have more years of experience tend to receive greater amount of loans.

This is consistent with earlier finding that experienced managers do not only tend to have a higher probability of credit market participation, but also manage growth oriented firms.

Firm size is an important determinant of the amount of loan received. The firm size coefficient is significant at 1 percent in Heckman Selection model. An increase in firm size (*ceteris paribus*) signals that growth-oriented objective of a firm and thus the prospects for expanding the operations with more labor productivity and possibly diversifying the products. This in turn means growing cash flows to meet the loan repayments. Furthermore, the results show that as firms grow in rebuilding their asset base, they are likely to receive adequate financing from the banking sector to support them in their growth path.

Another aspect of firm size measurement is asset, which is also significant in all the selection models. The interval and one limit Tobit estimates reveal that loan amount received by small enterprises increases with asset and the coefficient is statistically significant at 5 percent level in the interval Tobit estimates and 1 percent in both the one limit Tobit and Heckman models. Looking at the coefficients from both models, it is evident that asset plays a vital role in influencing the loan amount received, which does not augur well for small enterprises' growth in Liberia. The assets of most of these enterprises were either destroyed or stolen during the conflict.

Sales growth (*SALE*) increases the amount of loan received across the estimated models. The positive relationship between amount of loan received and sales growth suggests that growth-oriented firms need credit to support their expanding operations and investments. Thus, sales growth may be interpreted as signaling prospects for growth in cash flows, because the study found that firms with sales growth are also associated with realizing profit. Our results then imply that sales growth is measuring the cash flow factor and not the internal funds, and for that reason these results seems to support Myers (1984).

Membership of a firm in a business network (*NETWORK*) positively drives the volume of credit accessed, but the coefficient is only significant in the Tobit models. It is possible that while banks look at networks as collateral for the loan applied, the strength of group members in repaying the loan based on their activities is critical for the amount of loan allocated. And having included the asset variable in the estimation, the model incorporates key tangible collateral for loan and so takes away that element in the network variable. This is certainly the situation in Liberia, where financial institutions exercise flexibility when it comes to advancing loan to group, instead of individual firms. Advancing loan to firms in business network tremendously helps to reduce information asymmetry and loan recovery.

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In summary it is found that sales growth of the firm is signaling the ability of the firm to repay the loan. To reduce their exposure to default risk, banks ration the amount of loans allocated to a firm using the prospects of growing cash flows. Firms with a growth-oriented objective have prospects for expanding their operations and investment. Given their source base for cash flows, banks are attracted to take a risk with them. This means that there is prospect for rebuilding businesses that were destroyed by war as long as they have hope for growth. Experience of managers signals the ability to navigate the firm activities on the growth path and thus confidence building for the banking institutions. High interest rates demand significant cash flows to meet repayment obligations and can be a hindrance to accessing adequate amount of loan. Weak prudential guidelines and regulatory framework is vulnerability in the waiting especially if this gives way to poor governance in the credit market as it threatens the quality of assets for the banking sector. Finally, although networking is a key factor in determining credit market participation, the ability to pay which is defined by the activities of a group remains a major factor in determining the amount of loan that is allocated by the banks.

6.2 Credit constraint and revealed sources of credit constraint

6.2.1 Analysis of determinants of small enterprises credit constraint

Many small enterprises are underserved by formal financial institutions, thereby making them credit constrained (Aryeetey *et al.*, 1997; Bigsten *et al.*, 2003; Byiers *et al.*, 2010). As estimated in Table 25, an enterprise is credit constrained if it falls in any one of the following categories: discouraged (Jappeli, 1990), rationed (Kochar, 1997; Byiers *et al.*, 2010) or rejected (Bigsten *et al.*, 2003, Byiers *et al.*, 2010). In estimating the binary model, the dummy dependent variable takes value of 1 when a firm is credit constrained and zero, otherwise. Using only those who are generally constrained may conceal vital information about the specific source of credit constraint. To bring out factors influencing each of the types of credit constraint, Probit models are estimated. The results are reported in Table 26. Credit constraint is defined in three theoretical contexts-‘discouraged’, ‘rationed’ and ‘rejected’. The ‘discouraged’ borrowers refer to managers of small enterprises who are in need of loan, but choose not to apply or withdraw credit application because of perception of credit denial. The ‘rationed’ credit applicants are those who got less loan amount than desired credit amount at the ruling loan price (*interest rate*). The ‘rejected’ applicants are borrowers (firms) who received zero loan amount following application for loan. Based on the estimated marginal effects after Probit in Table 25, the predicted probability of being credit constrained is less than 50 percentage points using RPED data, but greater than 50 percentage points for SURVEY dataset. The Probability chi square which is less than 1

percentage points reveals that the model of credit constraint appropriately fits the data for analyzing credit constraint reported in Table 25. The results in Table 25 indicate that credit constraint is not only driven by firms' attributes, but also by the financial institutions which select firms based on specific set of criteria. The predicted probabilities in Table 25 of being discouraged, rationed or rejected are all low, as evidenced by the 12.7 percentage points for being discouraged, 22.5 percentage points for rationed and 8.8 percentage points for being discouraged. In Table 25, the first column reports variables while the second to seventh columns represent Probit estimates and corresponding marginal effects using the RPED and SURVEY datasets. In Table 25, estimates of the Probit with their corresponding marginal effects are reported in columns two to seven considering the different definitions of credit constraints.

Variable	RPED	SURVEY	RPED	SURVEY	RPED	SURVEY
Constant	-0.001	0.004	-0.101**	0.000**	-0.001	0.000**
Age	0.000	0.000	0.000	0.000	0.000	0.000
Size	0.000	0.000	0.000	0.000	0.000	0.000
Profit	0.000	0.000	0.000	0.000	0.000	0.000
Industry	0.000	0.000	0.000	0.000	0.000	0.000
Region	0.000	0.000	0.000	0.000	0.000	0.000
Year	0.000	0.000	0.000	0.000	0.000	0.000
Observations	100	100	100	100	100	100
LR	100	100	100	100	100	100
Chi2	100	100	100	100	100	100
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000
LR	100	100	100	100	100	100
Chi2	100	100	100	100	100	100
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000
LR	100	100	100	100	100	100
Chi2	100	100	100	100	100	100
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000

Table 25: Estimated results of small enterprises credit constraint (Probit) model

Credit Market variables	RPED		SURVEY I		SURVEY II	
	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
<i>HIGH INTEREST</i>	8.902*** [4.03]	3.329*** [3.75]	-0.603*** [-3.97]	-0.234*** [-4.16]	-0.591*** [-3.82]	-0.230*** [-3.99]
<i>SAVING</i>	0.065 [0.20]	0.024 [0.20]	0.440 [1.63]	0.173* [1.69]	0.530* [1.91]	0.206** [2.03]
Skills/experience in business						
<i>EXPERIENCE</i>	0.038* [1.97]	0.014** [1.97]	-0.006 [-0.44]	-0.002 [-0.44]	-0.004 [-0.33]	-0.002 [-0.33]
<i>YEARS (SCHOOL)</i>	-0.014 [-0.39]	-0.005 [-0.39]	-0.007 [-0.36]	-0.003 [-0.36]	-0.013 [-0.67]	-0.005 [-0.67]
<i>AGE</i>	-0.182 [-0.71]	-0.068 [-0.71]	-0.104 [-0.67]	-0.041 [-0.67]	-0.224 [-0.97]	-0.089 [-0.97]
Size of the firm indicator						
<i>ASSET</i>	-0.022 [-0.36]	-0.008 [-0.36]	-0.163** [-2.11]	-0.065** [-2.11]	-0.203** [-2.52]	-0.081** [-2.52]
Firm performance indicators						
<i>PROFIT</i>					-0.019** [-2.56]	-0.008** [-2.56]
Market environment that defines firm's operations						
<i>EFFECT</i>					0.419* [1.87]	0.165** [1.91]
<i>SECMA</i>			-0.129 [-0.67]	-0.052 [-0.67]	-0.202 [-1.02]	-0.080 [-1.03]
<i>SECSE</i>	1.289** [2.41]	0.362*** [3.77]	-0.368** [-2.32]	-0.146** [-2.35]	-0.356** [-2.21]	-0.141** [-2.23]
<i>PREMISE(Pub)</i>					0.263 [1.33]	0.105 [1.34]
<i>PREMISE (PRIV)</i>					0.019 [0.06]	0.007 [0.06]
<i>REGISTER</i>	-0.772** [-2.42]	-0.294** [-2.46]	0.274 [0.93]	0.109 [0.94]	0.247 [0.82]	0.098 [0.83]
<i>OWNERS</i>					-0.012 [-0.35]	-0.005 [-0.35]
<i>constant</i>	-0.960 [-0.99]		1.236* [1.74]		1.844** [2.37]	
Observations	117	117	341	341	341	341
LR chi-squared	47.83 (0.000)		28.6 (0.001)		45.25 (0.000)	
Marginal effects		0.359		0.524		0.521

NB: *, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

Table 26: Estimates of categories of credit constraint (Probit model)

Credit market variables	Discouraged		Rejected		Rationed	
	Probit Coefficient	Marginal effect	Probit coefficient	Marginal effect	Probit Coefficient	Marginal effect
<i>HIGH INTEREST</i>	0.758*** [3.48]	0.137*** [4.13]	-0.386* [-1.93]	-0.064* [-1.79]	-0.946*** [-5.76]	-0.308*** [-5.65]
<i>SAVING</i>	0.216 [0.61]	0.040 [0.68]	0.498 [1.03]	0.056 [1.46]	0.173 [0.58]	0.049 [0.61]
Skills in business						
<i>EXPERIENCE</i>	-0.039** [-2.21]	-0.008** [-2.25]	-0.010 [-0.58]	-0.002 [-0.57]	0.031** [2.21]	0.009** [2.22]
<i>YEARS (SCHOOL)</i>	-0.033 [-1.45]	-0.007 [-1.46]	-0.079** [-2.09]	-0.012** [-2.22]	-0.019 [-0.90]	-0.006 [-0.91]
<i>AGE</i>	-0.136 [-0.47]	-0.028 [-0.47]	-0.178 [-0.60]	-0.027 [-0.60]	-0.359 [-1.37]	-0.108 [-1.38]
Size of the firm						
<i>ASSET</i>	0.059 [0.60]	0.012 [0.60]	-0.109 [-1.07]	-0.017 [-1.08]	-0.244*** [-2.80]	-0.071*** [-2.81]
Firm performance indicators						
<i>PROFIT</i>	-0.022* [-1.82]	-0.004* [-1.88]	-0.004 [-0.48]	-0.001 [-0.48]	-0.009 [-1.04]	-0.003 [-1.04]
Market environment that defines firm's operation						
<i>SECMA</i>	0.429* [1.68]	0.076** [2.01]	-0.058 [-0.23]	0.009 [0.22]	0.020 [0.09]	0.006 [0.09]
<i>SECSE</i>	-0.281 [-1.42]	-0.056 [-1.48]	-0.233 [-1.03]	-0.034 [-1.08]	-0.098 [-0.54]	-0.029 [-0.55]
<i>EFFECT</i>	-0.255 [-0.91]	-0.051 [-0.94]	0.551* [1.90]	0.093* [1.73]	0.499** [2.02]	0.167** [1.96]
<i>REGISTER</i>	0.516 [1.25]	0.082* [1.73]	0.226 [0.43]	0.029 [0.51]	-0.088 [-0.27]	0.027 [-0.26]
<i>OWNERS</i>	-0.016 [-0.28]	-0.003 [-0.28]	-0.017 [-0.44]	-0.003 [-0.44]	-0.041 [-1.01]	-0.012 [-1.01]
<i>PREMPUB</i>	-0.308 [-1.30]	-0.070 [-1.19]	0.191 [0.67]	0.027 [0.72]	0.558** [2.34]	0.147*** [2.72]
<i>PREMPRIV</i>	-0.332 [-0.80]	-0.058 [-0.98]	-0.050 [-0.10]	-0.007 [-0.01]	0.289 [0.74]	0.094 [0.69]
<i>constant</i>	1.696 [1.78]		1.704 [1.50]		1.911** [2.24]	
Observations	341	341	341	341	341	341
Log likelihood	-132.5		-104.19		-167.24	
LR chi squared	32.89 (0.003)		21.55 (0.088)		54.95 (0.000)	
Marginal effect		0.127		0.082		0.225

NB: *, **, *** denote significant level at 10 percent; 5percent; and 1percent, respectively. The figures in parenthesis [] are z values.

From Table 25, the estimates show that credit market variables exert significant influence on the probability of firm being credit constrained. The Probit estimates for each form of constraint show that having a saving account (*SAVING*) is positively related with predicted probability of being 'discouraged', 'rationed', and 'rejected', but they are insignificant. This shows that firms with saving-accounts (*SAVING*) are more likely to be credit constrained, across the estimated models. The probability of being credit constrained is significantly increased by 17.3 percentage points and 20.6 percentage points (*SURVEY* dataset), when a firm owns saving account. The positive relationship between ownership of saving account and credit constraint is explained by the fact that ownership of saving account by small enterprises does not often reflect the actual business turnover, thereby resulting to being credit constrained.

The coefficient of interest rate variable (*HIGH INTEREST*) is significant using both datasets though the sign differs. While in the *RPED* dataset, the likelihood of credit constraint is positively related to the interest rate, it is negative in the *SURVEY* dataset. The probability of credit constraint is increased by 3.3 percentage points in the *RPED* dataset, while in the *SURVEY* dataset the probability is about 23 percentage points lower if interest rate is perceived as 'high'. The results in Table 26 indicate that the interest rate variable has negative effect on probability of being 'rationed' (significant at 1 percent) and also probability of being 'rejected' (significant at 10 percent), but positive effect on probability of being 'discouraged' (significant at 1 percent). The results further show that perception about high interest rate (*HIGH INTEREST*) increases probability of 'discouraged' by 13.7 percentage points, while 'rejected' and 'rationed' are reduced by 6.4 percentage points and 3.1 percentage points, respectively. Based on the results from *SURVEY* dataset, majority of those who perceived interest to be high were, however, still able to access full loan amount.

The results relating to skills/experience in business are mixed, in terms of significance across the estimated models. Unexpectedly, the results on manager experience in business (*EXPERIENCE*) indicates that credit constraint is positively influenced by years of experience of manager in business (*RPED* dataset) as compared to manager years of formal schooling (*SCHOOL*), which has negative relationship across both datasets. Dissecting the different definitions of credit constraint as it relates to skill/experience, the manager business experience (*EXPERIENCE*) variable has negative effect on 'discouraged' (significant at 5 percent) and 'rejected' (insignificant. Additional year of business experience has positive effect on increasing the probability for 'rationed' (significant 5 percent), but

negative effect on 'discouraged' (significant at 5 percent) and 'rejected' (insignificant). Using the RPED dataset, the probability of credit constraint is significantly increased by 1.5 percentage points with additional year of business experience by manager. Years of formal schooling (*SCHOOL*) have a negative effect on 'discouraged' (insignificant) and 'rationed' (insignificant), but positive effect of 'rejected' (significant at 5 percent). This shows that an additional year of education increases the probability of 'rejected' by 1.2 percentage points. This result is not surprising since firms whose managers possess more years of formal schooling are perceived to be capable of managing business and also, have the ability to identify other sources of credit. Moreover, analysis of skills/experience related variables show that the age of business (*AGE*) is negatively related to being credit constrained, though it is insignificant in both datasets. The results show that age of firm is negatively related to credit constraint across both datasets. Considering the three definitions of credit constraint, the age of the firm (*AGE*) is insignificant, but negatively determines being 'discouraged', 'rationed' and 'rejected'. As a firm aged, it builds credibility and capability necessary to cope with financing challenges.

Relating to variables defining the size of the firm, there is negative relationship between credit constraint and assets (*ASSET*), but the coefficient is only significant (at 5 percent level) using the SURVEY dataset. Firm asset reduces the probability of being credit constrained by 6.5 and 8.1 percentage points. Asset is negatively related to 'rationed' in credit market at 1 percent significant level, implying a firm may not be 'rationed' when it has asset. Results show that change in asset of small enterprises does not explain 'discouraged' and 'rationed'. However, assets have a vital influence on credit constraint, as it reduces the problem of moral hazard. Firms with tangible assets tend to have high financial leverage, but this could serve as serious hurdle for small enterprises to be included in the debt market, even if such a firm has membership in business network. .

Better performance of firms is crucial for mitigating financial constraint. Profitability of the firm (*PROFIT*) was found to be significant and with a negative effect on the likelihood of being credit constrained. An increase in profit reduces the probability of credit constraint by 0.4 percentage points. On the overall, profitable businesses are less likely to be credit constrained, thereby enabling them to explore diverse means of generating substantial capital or possess high prospect of securing desirable credit amount to address investment needs. This is attributable to the fact that profitable firms easily have access to credit and cash flows to finance its loan repayments. As indicated in Table 26, analysis of the various types of credit constraint reveals that profitable firms are less likely 'discouraged' (significant at 10 percent), 'rationed' (insignificant) and 'rejected' (insignificant). This finding is

consistent with the hierarchy of finance by Fazzari *et al.* (1988) since businesses realizing profit are less likely to be credit constrained, given that they have adequate internal funds to operate. On the other hand, this finding indicates that a firm may easily acquire external finance because the lender is able to discern the quality of the firm.

Market environment variables in postwar Liberia serve as vital factors explaining credit constraint. The study found that small enterprises affected by war (*EFFEFFECT*) were more likely to be credit constrained and the coefficient is statistically significant at 10 percent level. Being affected by war increases the probability of credit constraint by 16.5 percentage points. Across the different element of credit constraints in Table 26, firms affected by war (*EFFEFFECT*) are more likely to be 'rationed' (significant at 5 percent), 'rejected' (significant at 10 percent) and 'discouraged' (insignificant). This finding reinforces the earlier results in Table 21 that firms affected by war are often denied access to credit. The change in the probability of 'rationed' and 'rejected' when affected by war are 16.7 percentage points and 9.3 percentage points, respectively. Small firms that survive the war are either rejected or mostly accessed credit from informal source, which is inadequate for their growth and expansion.

Given that the premises in which business located would implicitly determine cost variation of business operation, the study found no evidence that businesses located in rented premises- public (*PREMPUB*) or private (*PREMPRIV*) influence credit constraint though most of Liberia's infrastructures were damaged during the war. It is found that firms located in public (*PREMPUB*) premises are more likely 'rationed' (significant at 1 percent level in the marginal effect of RPED dataset) and 'rejected' (insignificant), but less likely 'discouraged' (insignificant for all). This shows that the war seriously damaged owned properties and firms located in public or private premise are implicitly faced with high cost of operating business.

The sector in which a firm operates also has implication for probability of being credit constrained. The study found that businesses operating in the service sector (*SECSE*) are more likely to be credit constrained (RPED), while those operating in manufacturing sector (*SECMA*) are less likely to be credit constrained, compared with the commerce sector (*SECCO*). Unlike the businesses in the service sector variable that is significant (5 percent level with RPED and SURVEY dataset) and (1 percent level in SURVEY dataset), the businesses operating in the manufacturing sector variable is insignificant using the SURVEY dataset. The marginal effects indicate that operating in the service sector reduces the probability of credit constraint by 14.1 percentage points (SURVEY dataset) and 14.6 percentage points (SURVEY dataset). At the sectoral level, results show that firms generally operating in the

manufacturing (*SECMA*) sector are more likely 'discouraged' (insignificant) and less likely 'rejected' (insignificant). Operating in manufacturing sector increases the probability of 'discouraged' by 7.6 percentage points, because most of such firms are managed by experienced managers, but needed financing is huge to resuscitate manufacturing firms. This finding suggests that firms operating in the service sector are less likely to be credit constrained (insignificant), though operating in the manufacturing sector is associated with minimum risk.

Referring to market environment that defines firm's operations, the results reveal that registered firms (*REGISTER*) at the inception of operation are more likely to be credit constrained (*SURVEY* models). This finding is contrary to result found in the *RPED* model, where registered firms are less likely to be constrained, though the coefficient is only significant (5 percent level) in the *RPED* model. Registered firms reduced the probability of being credit constrained by 29.4 percentage points (*RPED*). Firms with large ownership (*OWNERS*) in terms of number of owners are less likely to be credit constrained (insignificant), because such firms are able to attract more capital for operation. In general, firms with large member of owners are less likely to be 'discouraged', 'rationed' and 'rejected', but the coefficients are insignificant across the different definitions of credit constraint.

In summary, there is ambiguity regarding the effect of credit market variables, size of the firm and market environment variables on credit constraint. Though perception on interest as 'high' should discourage application and increase likelihood of credit constraint, we observed that the price for credit (interest rate) negatively influences credit constraint as majority of firms did not have alternative means for financing, and those that applied for credit were still able to access full amount. Small enterprises have a huge challenge of accessing credit in postwar Liberia because financial institutions still consider asset as major pre-requisite for mitigating credit constraint, even though majority of assets owned by those firms must have been destroyed during the war. Firm performance also helps to alleviate credit constraint, because increase in profit provides better signal to financial institutions to provide credit to those firms. It is found that firms affected by war are likely to be entrapped in financing difficulty for investment operation, since financial institutions are wary of their ability to repay the loans.

6.3 Causes and extent of loan default

Default in loan repayment is defined in terms of firm's failure to fully or partly honor loan contractual obligation at the maturity time of call within the last three years. Moreover, default is also termed relative to complete failure to fully or partly honor loan contractual obligation. The decision never to

Table 27: Estimates of causes and extent of default by small enterprises

	Double Hurdle model		One Limit Tobit (Marginal effects)	
	Coefficients	Z	Coefficients	Z
2. Extent of Default (second hurdle)				
Credit market variables				
<i>HIGH INTEREST</i>	0.055	0.47	0.329	0.97
Competence/Skills in business operations				
<i>EXPERIENCE</i>	-0.022**	-2.13	-0.004*	-1.82
<i>AGE</i>	-0.114	-0.66	-0.016	-0.41
Size of the firm variables				
<i>SALES/EMPLOYMENT</i>	0.0001	1.59	1.83E-05	1.20
Firm performance indicators				
<i>PROFIT</i>	-0.003	-0.69	-0.001	-0.53
Market environment that defines firm's operations				
<i>EFFECT</i>	0.278*	1.69	0.066*	1.64
<i>LINK</i>	-0.237*	-1.89	-0.059**	-2.17
<i>REGISTER</i>	-0.360*	-1.65	-0.095	-1.30
Other variables				
<i>AGE MAN (BELOW 30 YEARS)</i>	0.164	1.33	0.076**	2.01
<i>AGE MAN (40-50 YEARS)</i>	0.306	1.23	0.065*	1.94
<i>AGE MAN (ABOVE 50 YEARS)</i>	-0.522**	-2.36	-0.099	-1.30
<i>Constant</i>	0.474	1.32		
1. Probability of default (First Hurdle)				
Credit market variables				
<i>REQUIRE</i>	-0.933	-0.54		
<i>INTEREST</i>	33.086	1.44		
<i>BRIBE</i>	3.719*	1.68		
Skills/experience in business operations				
<i>YEARS (SCHOOL)</i>	-0.332*	-1.92		
Firm performance indicators				
<i>SALE</i>	-1.532*	-1.87		
Market environment that defines firm's operations				
<i>SHOCK</i>	6.118*	1.81		
<i>COMPETITION</i>	-1.525	-0.80		
<i>OWNERS</i>	-0.479	-0.95		
<i>FORM (CORPORATION)</i>	-1.819	-0.80		
<i>constant</i>	15.323	1.49		
observations		183	observations	183
Wald chi squared		18.76	Marginal effect after Tobit	0.328
Prob chi squared		0.095		

NB: *, **, *** denote significant level at 10 percent; 5percent; and 1percent, respectively.

Table 27 shows how attributes of firms and other factors influence the probability and extent of credit default in Liberia. The fact that there are two responses of firms regarding repayment of loans (default or not default) justifies the use of one limit Tobit and Double Hurdle model in analyzing the probability and extent of credit default by small enterprises in Liberia.

From the estimation, it is evident that only one of the credit market variables (*BRIBE*) has significant effect on the probability of loan default relative to extent of default. The results show no evidence that interest rate variable (*INTEREST and HIGH INTEREST*) explains the probability and extent of loan default in both the Double Hurdle and Tobit estimates. Also, the perception of collateral as requirement (*REQUIRE*) for accessing credit does not also explain the probability of loan default.

Interestingly, the study found that enterprises which provide tips, that is, making extra payment to loan officer outside of the required loan processing requirement (*BRIBE*) to access credit positively affect the probability of loan default (at 10 percent level of significance). This only suggests how loan officers of financial institutions often temper with loan contract from the inception of loan application by creating condition to be tipped in order to hasten processing of loan with minimum focus on objective assessment of the ability of the firm to repay. As noted during the group discussion with firms' managers, this behavioral pattern is commonly carried out within the formal financial institutions.

Managerial skill/experience in business (*EXPERIENCE*) has negative effect on the extent of the default, whereas manager years of formal schooling (*SCHOOL*) negatively affects of loan default. Across both hurdles, the variables are significant at 5 percent and 10 percent, respectively. This finding suggests that the level of human capital possessed by managers/owners is vital in minimizing the risk of default by small enterprises (Taslim, 1995). However, the age of the firm (*AGE*) does not explain default by small enterprises, though the result conforms to economic theory, whereby older firms usually experience economies of scales and may not easily default.

In terms of the size measures of small enterprises, the study does not find evidence of the extent of loan default being influenced by firm's size (*SIZE*). In addition, the ratio of firm's sales to total labor force is insignificant.

Performance of firms as captured by the sales growth (*SALE*) and ratio of profit to asset (*PROFIT*) may influence credit access and reduce the extent of loan default (Akerlof, 1970; Tschach, 2003). The results

show that sales growth (*SALE*) significantly reduces the likelihood of default in loan payment at 10 percent level, whereas profit is insignificant in explaining the intensity of loan default, though both variables show the apriori expected sign. This finding in relation to sales growth is consistent with expectation, since growth in sales is important in mitigating many forms of financing constraint.

Considering the risky nature of Liberia's market environment which is vulnerable to theft and other forms of robbery, the extent of default is significantly influenced by the effect of war, while the probability of default has positive relationship on the coefficient of *SHOCK* (theft or robbery). Small enterprises which were somehow affected by the war have 27.8 percentage points higher default rate. This finding suggests that conflicts in society lead to political uncertainty, thereby increasing the rate of default.

Small enterprises with many owners and linked with other business subsidiaries have high propensity of accumulating adequate capital for operation to fulfill their financial obligation. The study found that the extent of default is negatively related to having link with large firms, while firms with more than two owners negatively affect the probability of loan default. The coefficient of having link with large firm is only significant at 10 percent level relative to the extent of default in the Double Hurdle and 5 percent in Tobit selection model.

The legality of businesses (i.e being registered) seems to be essential in explaining the extent of loan default (coefficient is significant at 10% in Double Hurdle model). Competition from other businesses (*COMPETITION*) is negatively related to the probability of loan default. However, the coefficients are insignificant. The study found mixed results as it relates to the effect of age on default. It is found that older managers *AGEMAN* (*ABOVE 50 YEARS*) are less likely to default and the coefficient is significant at 5 percent. Older managers have good managerial expertise to diversify their business operation and generate enough capital to fulfill financial obligation. Managers whose age is less than thirty years (significant in one-limit Tobit) and between forty and fifty years (significant in second hurdle) are more likely to default.

In summary, we observe distinct factors explaining the intensity and probability of default in post-war Liberia. It is found that level of skills and training of managers of firms has negatively pronounced implication on the default. Thus, loan repayment default is reduced by the level of skills and experience of manager, due to expertise to design innovation for growth and expansion. We also observe that having links with large firms, formality and age of manager above 50 years reduce the intensity of

default. However, the extent of default increases when a firm is affected by shock (i.e, theft or robbery). It is also observed that the likelihood of default increases with extra payments made to loan officer outside of credit processing requirements to cushion credit approval (loan officers), while it is reduced by firm's performance through sales growth.

6.4 Elasticities and simulations

Small enterprises have the potential of creating employment and enhancing economic growth in post-war Liberia, but they are trapped in external financing difficulties. In order to establish how policy could affect the demand for credit, vis-à-vis credit application, access, constraint and default we have chosen to estimate the elasticity as a simulation to understand the effect of a change on credit demand. Evidence from the Logit model shows that the variables used in the simulation were significant and that small scale enterprises are heterogeneous. Thus, the significant variables are considered, because they affect the classification of credit application, access, constraint and default. Estimates not different from zero indicate that the explanatory variables concerned do not affect the utility derive by financial institutions in making credit demand decision. Table 28 reports the elasticities calculated at the overall sample means.

Table 28: Estimates of elasticities for policy

Variables	Application	Access	Constraint	Default
Credit market Variables				
<i>REQUIRE</i>	0.450*** [5.03]			
<i>PROCEDURE</i>	0.243*** [3.20]			
<i>HIGH INTEREST</i>	-0.566*** [-5.74]		-0.293*** [-3.71]	
<i>SAVING</i>		-0.105** [-2.26]	0.303 [1.59]	
<i>BRIBE</i>		1.065*** [3.23]		1.167** [2.12]
<i>OFFICER</i>	0.175***[4.02]	0.074****[2.95]		
Skills/experience in business operation				
<i>YEARS (SCHOOL)</i>		-0.206** [-2.08]		-0.092[-0.25]
<i>EXPERIENCE</i>		0.067 [1.57]		-0.105[-0.52]
Size of the firm variables				
<i>SIZE</i>	-1.215** [-2.49]			
<i>ASSET</i>			-0.995** [-2.09]	
Firm's performance indicators				
<i>SALE</i>		-0.020** [-2.48]		-0.049 [-1.02]
<i>PROFIT</i>			-1.065** [-2.46]	
Market environment that defines firm's operations				
<i>SECSE</i>			-0.025 [-0.90]	
<i>SHOCK</i>				0.013 [0.11]
<i>SECMA</i>			0.110** [2.38]	
<i>NETWORK</i>	0.051* [1.82]	0.035** [2.11]		-0.125 [-1.40]
<i>EFFECT</i>	0.098** [2.09]		0.075* [1.78]	0.209* [1.67]
<i>REGISTER</i>				-0.885* [-1.81]

NB: *, **, *** denote significant level at 10 percent; 5 percent; and 1 percent, respectively. The figures in parenthesis [] are z values.

Analysis of the results in Table 28 shows that all of the variables influencing credit application are inelastic, except for the coefficient of firm size (*SIZE*) which is elastic. The credit market variables are inelastic, suggesting that a small change does not have more than proportionate effect on credit application. In other words, a firm will apply for credit irrespective of using collateral as requirement, understanding credit application procedure, having relationship with credit officer and perceiving interest rate as 'high'. This is also the same when a firm is affected by war or has membership in business network. However, the coefficient of firm size is elastic, implying that larger firms are not

likely to apply for credit. This also means that a 10 percentage point change in firm's size from an average of 8 to 16 employees leads to more than 12.2 percentage point change in credit market participation. The finding supports the trade-off theory which indicates that larger firms have less demand for debt, since they have adequate internal funds to tap on. Notwithstanding, the coefficients of other components influencing credit access reveal that they are all inelastic, implying probability of the change in credit access is not greatly affected by marginal change, as a 10 percentage point change in the variables leads to less than proportionate change in the probability of accessing credit.

Looking at the credit access components, the coefficient of extra payment (*BRIBE*) outside of credit application requirement is elastic (1.065). Implication is that, 10 percentage points increase in bribe payment from an average of 5 to 10 percent of approved loan has a huge percentage change (10.7 percent) on credit access, because finance officers are notable for creating rigid bureaucracy to influence bribe. Such tendency does not only reflect the underdevelopment of the credit market, but also have serious negative implication for small enterprises to default in loan repayment. The result shows that payment of bribe to access credit more than proportionate increases the level of loan default. Therefore, prudential regulation is necessary to reduce extra cost in small business operation by 5-10 percentage points, thereby potentially reducing default rate by 34.7 percentage points.

To gain further insight into the factors affecting credit constraint, it is shown that credit constraint is highly reduced by an increase in profitability of small enterprises from an average of 0.99 to 12 USD per month, evidenced by its elastic nature. A 10 percentage point change in profit leads to 10.7 percentage points decrease in the likelihood of being credit constrained. This finding aligns with earlier finding from the Probit and Multinomial Probit estimates, and also supports the hierarchy of finance hypothesis. Clearly, the finding indicates that a small change in profit has a huge effect on reducing credit constraint, because financial institutions are able to discern the quality of the firms to grant credit.

It is observed that policy for credit application are driven by the behavior of financial institutions, as evidenced by the credit market variables which are inelastic, though the size variable is inelastic as large firm has less incentive for credit. Rent-seeking (corruption) is common (elastic) in post-war Liberia's credit market to cushion credit access by small enterprises and firms engaged in payment of bribe are most likely to default. Interestingly, it is also observed that network is a vital policy instrument to reduce moral hazard and adverse selection problem to ease access to credit. While asset is almost elastic and vital for hedging risk by financial institutions, firm's performance variable (*PROFIT*) is elastic as it relates to mitigating credit constraint.

CHAPTER VII: SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

7.1 Summary

This thesis is grounded on currently emerging debate on small enterprise financing, thereby analyzing the interaction between credit markets and small enterprises from credit demand perspective to facilitate holistic integration of small enterprises in credit programs of Liberia. The thesis is focused on post-war period, where no studies have aspired to analyze credit demand and default related to small enterprises in Liberia. There is hope for reviving the destroyed firms by war as owners have a higher probability of seeking for external funding to rebuild their businesses. It is observed that small firms need external credit to grow while mature business has options to use internal funding to finance their operations. Though inception of small firms is highly sourced from internal funds, small enterprises averred that they would use additional credit/finance to seize expansion opportunities. The thesis expands and adds to the limited literature by empirically presenting evidence of the contextual nature of interaction between small firms and credit market.

The empirical issues investigated are disaggregated into three core components based on factors mitigating asymmetric information for credit market participation and access to credit, to analyze credit constraint, and to assess the probability and extent of loan default by small enterprises. These issues are elicited using firm level micro data based on a survey capturing small firms in urban settlements of Liberia. After controlling for items and survey non-responses, 341 small enterprises were considered for analysis. For comparative purposes with some of our findings, the World Bank Enterprise survey (RPED data) on Liberia is used, despite its limitations emanating from omission of many key variables.

The study used the binary and multinomial models in assessing credit market participation and access to credit by small enterprises. Moreover, the Heckman and Tobit (one and interval) models were estimated to determine factors influencing the loan amount received by small enterprises in order to address problem of sample selection. While the Heckman provided better results than the Tobit, the estimates revealed that the Probit and Multinomial Probit models show almost similar results to that of the Logit and Multinomial Logit. However, the Multinomial Probit is derived under the assumption of normal distribution and the problem of IIA is strictly corrected for. The Tobit relaxes the problem of identifying instruments, though it is faced with the problem of using a single estimate for analyzing probability and extent at the same time. The Probit model was also used to examine relationship between credit constraint and other attributes of small enterprises. On the aspect of the probability and extent of loan

default, both the Double Hurdle and one-limit Tobit models were estimated. Though the Tobit model controls for sample selection by accounting for those who never defaulted, it does not give much explicit results for concrete policy prescription compared to the Double Hurdle, which provides estimate for both the probability and extent of loan default separately, considering the first (probability of defaulting) and second hurdles (extent of default) in the estimation.

It is observed that credit market participation decision by small firms is influenced by diversity of factors. Belonging to a business network increases the probability of credit market participation and access as banks recognize such networks in evaluating the collateral requirements. Interaction with loan officers is critical as it serves as a source of information on the credit market operations to the potential borrower. Similarly, knowledge on the credit application procedures including the collateral requirements is critical in building confidence among the small enterprises to participate in credit market. Furthermore, the experience in business matters a lot for credit market participation and access to credit, because it provides better signal to financial institutions for enhancing credit access. Finally, it is not just the level of interest rate that matters, but the perception of the existing levels given the implications on cost of capital especially for a growing firm. Corruption is endemic in post-war Liberia's credit market as managers who professed to offer percentages of the loan amount to credit officer are more likely to get their loan approved. The performance of the firm is signaling the ability of the firm to repay the loan. It is found that increase in sales growth cushion probability of accessing credit as financial institutions are likely able to assess the performance of the firms in terms of ability to repay the loan.

Credit constraint is endemic among small enterprises in post-Liberia. As evidence to the growing financing hurdles, about 52 percentage points of small enterprises in Liberia are credit constrained; implying that limited credit access could indeed hinder future growth and development of small enterprises. Evidence of the theoretical definition of credit constraint among small enterprises takes the forms of 'discouraged' (15.8 percentage points), 'rationed' (25.8 percentage points) and 'rejected' (10.6 percentage points), and shows many effects on firms' characteristics. Though perception on interest rates as 'high' should discourage credit market participation and increase likelihood of credit constraint, we observe that the price for credit (interest rate) negatively influences credit constraint. This is because majority of firms did not have alternative means for financing, and those that applied for credit were still able to access full amount. Small enterprises have huge challenge of accessing credit in post-war Liberia because financial institutions still consider asset as major pre-requisite for mitigating credit constraint,

even though majority of assets owned by those firms must have been destroyed during the war. Firm's performance also helps to alleviate credit constraint, because increase in profit provides better signal to financial institutions to provide credit to those firms. It is found that firms affected by war are likely to be entrapped in financing difficulty for investment operation, since financial institutions are wary of their ability to repay the loans. In terms of definitions of credit constraint, the study found that years of experience, profitability and sector (manufacturing) reduce likelihood to be 'discouraged', while variables such as perception about interest rates reduces rejection and effects of war increase likelihood of rejection. Credit ration was found to be reduced by perception about interest rate, manager's business experience and value of asset and it is increased by location of firm in public premise and being affected by war. Manufacturing firms are discouraged due to high capital requirements for their financing.

Credit default is critical to the success of credit intervention, because it determines likelihood of credit continuation to small enterprises. The study finds that there is variation in the extent as well as the probability of loan default such that lack of sufficient managerial competence, rigid credit environment and shock on the firms are key components influencing loan delinquency in the credit market. The level of skills and training by managers of firms has negatively pronounced implication on default. Thus, loan repayment default is reduced by the level of skills and experience of the enterprise, due to expertise to design innovation for growth and expansion. We also observe that having link with large firms, formality and age of manager above 50 years reduce the intensity of default. However, we find that the extent of default increases when firm is affected by shock (i.e, theft or robbery). It is also observed that the likelihood of default increases by extra payments to loan officer outside of credit processing requirements to cushion credit approval (loan officers) and shocks emanating from theft or robbery, while it is reduced by firm's performance through sales growth.

7.2 Conclusions

This thesis has identified demand-side factors influencing small enterprises credit market participation, credit constraint and default in postwar Liberia by estimating several models. Previous research is inconclusive on country specific determinants of credit market participation, constraint and default, especially concerning the aspects of market environment that defines firms operation. Since there are no rigorous studies on credit demand aspect by enterprises in Liberia, vital parametric covariates of credit market are elicited to cultivate small enterprises financing hurdles.

In general, the nonparametric survey results indicate that bulk of small firms used internal capital for start-up, but later appeared disadvantaged in terms of accessing credit for expansion, where small firms rely mainly on credit from formal banking sector. Scarcity of existing data and information were challenges, but we were fortunate in accessing data from RPED and conducting survey on small enterprises. The study supports the argument that the credit market of Liberia is segmented and underdeveloped, with high level of asymmetric information, which has implications for screening errors, credit market participation and access, and credit default.

Credit market participation decision and access to credit are influenced by diversity of factors. Interaction with loan officers is critical as it serves as a source of information on the credit market operations to the potential borrower as well as building trust. Similarly, knowledge of the credit application procedures including the collateral requirements is important for building confidence among the small enterprises in participating in credit market. It is not just the level of interest rate that matters, but the perception of the existing levels given the implications on cost of capital especially for growing firm. Though perception on interest as 'high' should discourage application and enhance credit constraint, the price for credit (interest rate) influences credit constraint as majority of firms did not have alternative means for financing, and those that applied for credit were still able to access full amount. High interest rates demand significant cash flows to meet repayment obligations and can be a hindrance to accessing adequate amount of loan. Financial institutions have rigid bureaucracy in credit market, given that access to finance is enhanced through rent-seeking practices. Corruption is endemic in post-war Liberia's credit market as managers who professed to offer percentages of the loan amount to credit officer were successful in having their loan approved. Weak prudential guidelines and regulatory framework are vulnerability in the waiting especially since it gives way to poor governance in the credit market as it threatens the quality of assets for the banking sector. Rent-seeking (corruption) is common (elastic) in post-war Liberia's credit market to cushion credit access by small enterprises and firms engaged in payment of bribe are most likely to default, but further research is required to ascertain the productivity of those firms. Policy for credit market participation and access are driven by the behavior of credit market institutions, as evidenced by the inelastic nature of credit market factors.

Firm's skill as represented by manager experience in business provides better signal to financial institutions for extending credit. The experience in business matters a lot for credit market participation. Managers experience signal the ability to navigate the firm activities on the growth path and thus confidence building for the banking institutions. Skills and training of managers of firms have

pronounced implication on the default as experienced managers have expertise to design innovation for growth and expansion.

There is prospect for rebuilding businesses that were destroyed by war as long as they have hope for growth. Sales growth cushions access to credit as financial institutions are likely able to assess the performance of the firms in terms of ability to repay the loan. To reduce their exposure to default risk, banks ration the amount of loans allocated to a firm using the prospects of growing cash flows. Firms with a growth-oriented objective have prospects for expanding their operations and investment and less risk of defaulting. The results support the Hierarchy of Finance theory for short term credit as firm performance helps to alleviate credit constraint. Profit provides better signal to financial institutions to provide credit to those firms. Given their source base for cash flows, banks are attracted to take a risk with them. Thus, firm performance is elastic as it relates to mitigating credit constraint.

Small enterprises have a major challenge of accessing credit in post-war Liberia because financial institutions still consider asset as major pre-requisite for mitigating credit constraint, even though majority of assets owned by those firms must have been destroyed during the war. The study supports the trade-off theory suggesting that large firms have less incentive for debt. The size factor is inelastic as large firm has less incentive for credit. Asset is almost elastic and vital for hedging risk by financial institutions.

There is hope for reviving the war affected firms as owners have a higher probability of seeking external funding to rebuild their businesses. Belonging to a business network increases credit market participation as banks recognize such networks in evaluating the collateral requirements. As a way of mitigating moral hazard in credit market, financial institutions prioritize membership in business network for advancing credit as businesses which are in network were mostly able to access credit. Although networking is a key factor in determining credit market participation, the ability to pay which is defined by the activities of a group remains a major factor in determining the amount of loan that is allocated by the banks. Interestingly, network is a vital policy instrument to reduce moral hazard and adverse selection problem to ease access to credit. Further, small firms affected by war are desperate for external credit to grow while mature businesses have options to use internal funding to finance their operations. However, firms affected by war or shocks are highly entrapped in financing difficulty for investment operation, since financial institutions are wary of their ability to repay the loans. But having

links with large firms, formality and age of manager above 50 years signal confidence to financial institutions about firms ability to settle loan repayment.

7.3 Policy implications

The findings of the study are of policy relevance to promote and develop financing of small enterprises in Liberia. These are essentially helpful for policy direction to minimize the possibility of Liberia reverting to conflict.

Credit market indicators are vitally significant for credit market participation, though war affected firms are found to be entrapped in financing difficulties and are less likely to access finance from financial institutions. In order to foster and enhance credit market participation by small enterprises, rigid bureaucratic procedures (i.e, assets) should be relaxed and substituted by policy to guarantee formal credit institutions in case of bankruptcy. This could diminish the risk associated with small enterprises credit (Tschach, 2003). With such policies, control mechanism should be put in place so that bulk of the funds actually goes to small businesses, because evidence has shown that some large scale businesses understate their sizes or capital to be classified as small enterprises.

Businesses operating in network immensely reduce moral hazard and adverse selection in the credit market. The adverse selection problem about small enterprises could be dealt with by promoting and emphasizing networking of enterprises or considering link with large business as mechanism to enhance confidence and reduce the probability of default, since many firms lack collateral. Promoting networking among small enterprises and between the small and large firms through sub-contracting could enable financial institutions encourage credit market participation and access to small enterprises operating through network in order to build confidence.

The negative and significant relationship between skills/experience in business and credit default suggests the need for training to strengthen entrepreneurship. Policy should prioritize entrepreneurial training to firm management for business growth. Instituting periodic training for managers of small enterprises about strategy of managing their enterprises could lead to impressive performance. Thus, financial institutions should not only focus on advancing loan, without providing training on how business could manage and repay the loan.

Financial institutions are characterized by rent-seeking behavior in post-war Liberia's credit market to cushion credit access by small enterprises but firms engaged in payment of bribe are prone to default in

repayment. Appraisal technique and method of loan disbursement should be improved. This should be followed by periodic visit by special risk management officers after loan disbursement to ensure proper utilization of borrowed fund.

Strengthening the legal system and prudential regulations on credit market is essential to ensure credit rights⁵² and prevent rent-seeking with credit officers or curtail delinquency in loan settlement. Imminent legal reform to be taken should include strong small businesses emancipative laws to cover the informal lending institutions and individuals, because of their dominance in the urban credit markets of post-war Liberia. Existing laws such as the Financial Institutions Act, the Microfinance Act, the Money lender Act, the CBL Act, among others are required strengthening to regulate or enforce access to credit in Liberia. Improving the credit reference bureau to disseminate information and harmonization or amendments of laws incorporating provisions to ease legal constraints to access to credit is imperative. Furthermore, employing local information based on social network is vital to minimize loan repayment delinquency. However, there should be greater regulations to protect small firms from high loan costs, which could potentially endanger financial soundness of credit markets.

Finally, a deliberate effort by government to enhance enabling business environment is imperative for attracting businesses and to spur inclusive growth. A stable business environment is essential to enable businesses operate smoothly in order to realize their growth aspiration.

7.4 Limitations of the study and issues for further research

7.4.1 Limitations of the study

Several limitations are noticeable from the study. The study was conducted in Liberia, with little link to the West African Region. With the exception of World Bank Enterprise Survey (2009) that briefly captures small enterprise financing, there has not been thoroughly documented research on small business financing that this study could build upon. Besides, the study was based on the assumption that the sampled small scale firms were unbiased representation of the rest of small firms because of their homogeneous characteristics in socioeconomic status. The Survey did not consider the agricultural economy because of its predominance in rural areas. Moreover, the sampling data excludes the following sectors: financial intermediation, real estate and renting activities, activities involving schools and churches, and all public or utilities-sectors.

⁵² A set of laws and institutions that protect lenders from nonpayment of loan. These are the most vital underpinning of financial system, which makes it underdeveloped

Given that the study is based on responses from firms in two of the largest counties in Liberia, the study could not cover most parts of the country since there were very few small scale businesses in those areas at the time of the Survey, when the country had just emerged from war. Micro and informal enterprises were excluded from the sample due to lack of stability in location and poor record keeping. Due to the fact that most small firms do not keep records, the accuracy of most of the data collected is depended on respondents or managers' ability to recall. However, it is believed that the data obtained provide a useful basis of information for making recommendations aimed at not only improving access to credit, but also to minimize the challenges of loan default by small scale firms and enhance the effectiveness and efficiency of credit delivery as well as recovery mechanisms of various credit institutions. The study does not capture trade credit, purely focusing on demand component.

Despite these limitations the study remains relevant in addressing the policy concern for effective small enterprise financing, which could minimize their constraints and enable them to thrive in postwar Liberia. Moreover, effective policy directed at small enterprise financing is vital for poverty reduction to mitigate the threat of war in Liberia.

7.4.2 Issues for further research

The debate of credit demand, constraint and default by small-enterprises will continue for the foreseeable future. Small enterprises financing is central to the successful prioritization of initiation and expansion for sustainable economic growth.

This study is based on credit demand component of small enterprises in Liberia, which is inadequate for holistic policy implementation without investigating supply component of small enterprise financing. Thus, research could be directed at analyzing supply side component of small business financing in Liberia. Moreover, a comprehensive research is required to assess the micro, small, medium and large scale enterprises of financial access and how these small firms respond to credit markets, both in rural and urban location. Further, macro assessment of credit to private sector is also lacking in Liberia.

Small firms have heterogeneous characteristics, but the current study has assumed some level of homogeneity. Given that the World Bank has embarked on periodic surveys of enterprises in Liberia, it is important for future research to consider panel analysis of these small businesses in order to address possible problem of endogeneity and control for heterogeneity. Future research on specific categories of firms should take cognizance of the non-homogeneity of small-scale enterprises.

Analyzing the effect of credit on firms' productivity using the total factor approach is also important to determine whether credit directed to small firms is vital for enhancing their productivity. This study could not address this issue. In order to support the policy recommendation, future research should endeavor to look at credit effects on productivity. The sample used for this study is not considerably large, though the results are meaningful. This requires that future research must be based on large sample for more representativeness of small enterprises, especially when the population increases in other counties that are still sparsely populated.

Default could be understated if control mechanism is not ensured to capture possible loan rollover, which has not been considered in this study. As a result if some of the loans were rolled over to avoid default, the default rate maybe understated. Thus, future research must be directed to credit supply-side by investigating the effect of loan rollover on default rate.

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APPENDIX

Introduction

The appendices are divided into several sections. The appendix is based on tables, summary of field report. Moreover, the questionnaire and other supportive documents are presented.

A1: Model (Tobit)

One type Tobit Model

$$y_i^* = x_i' \beta + u_i \perp u_i \succ (0, \sigma^2) \text{ Where } y = y^* \text{ if } y^* > 0 \text{ and } y_i = 0 \text{ if } y^* \leq 0 \quad 1.0$$

In the one type Tobit, y_i and x_i are observed, but y_i^* is not observed when $y_i^* \leq 0$

Two type Tobit (Interval Tobit)

$$y_{1i}^* = x_{1i}' \beta_1 + u_{1i} \perp u_{1i} \succ (0, \sigma^2)$$

$$y_{2i}^* = x_{2i}' \beta_2 + u_{2i} \perp u_{2i} \succ (0, \sigma^2)$$

$$\text{Where } y_{2i} = y_{2i}^* \text{ if } y_{1i}^* > 0 \text{ and } y_{2i} = 0 \text{ if } y_{1i}^* \leq 0 \quad 1.1$$

It is assumed that only the sign of y_{1i}^* is observed and that y_{2i}^* is observed only when $y_{1i}^* > 0$. Also, x_i is observed for all i , but x_i need not be observed for i such that $y_{1i}^* \leq 0$.

The expected value of the observed variable in Tobit is given below as:

$$\begin{aligned} E(y_i / x_i) &= 0 \cdot P(y_i^* \leq 0 / x_i) + E(y_i^* / y_i^* > 0, x_i) \cdot P(y_i^* > 0 / x_i) \\ &= [x' \beta_i + \sigma \phi(x' \beta_i / \sigma) / \Phi(x' \beta_i / \sigma)] \Phi(x' \beta_i / \sigma) \\ &= x' \beta_i + \sigma \phi(x' \beta_i / \sigma) \end{aligned} \quad 1.2$$

Marginal effect of Tobit

Since we are interested in the effect on the expected value of the observed (censored) value, the marginal effect of the Tobit is given.

$$\frac{\partial E(y_i^* / x_i)}{\partial x_{ik}} = \beta_k \Phi(x' \beta) / \sigma \quad 1.3$$

The marginal effects depend on individual characteristics of credit market, market environment and firms.

A2: Diagnostic Results

Several diagnostic tests were performed following estimation to determine outliers, normality, heteroscedasticity and appropriate specification. Both graphical approach and formal tests were done to ensure that we do not obtain data that exert undue influence on our results. However, tests for endogeneity and multicollinearity were performed. It is worthy to note that most of the tests carried on are attributable to all the empirical models.

Unusual and influential data

The test for outliers is to examine the presence of observation whose dependent variables value is unusual. In cases, where we encountered outliers we tried to counter-check data and explore the questionnaire to address the problem. The graphical method was also used to detect heteroscedasticity.

Test for heteroscedasticity

For each of the model estimated, the Breusch-Pagan and White Tests are used to detect the presence of heteroscedasticity. The null hypothesis for each is constant variance. Rejection of the null hypothesis thereof implies no existence of heteroscedasticity.

Appendix Table 1: Breusch Pagan and White Tests for Heteroscedasticity

	Source	Breusch Pagan Test		White Test
Application	chic square	RPED	0.12	8.98
		Survey	0.26	143.7
	Prob>chi 2	RPED	0.723	0.11
		Survey	0.612	0.08
Access	chic square	RPED	23.06	70.21
		Survey	28.35	86.3
	Prob>chi 2	RPED	0.09	0.05
		Survey	0.123	0.41
Constraint	chic square	RPED	1.39	40.5
		Survey	0.47	146.8
	Prob>chi 2	RPED	0.239	0.49
		Survey	0.495	0.35
Default	chic square		10.3	46.7
	Prob>chi 2	Survey	0.203	0.156

Given the null hypothesis that the residual are homoscedastic, we fail to reject the null hypothesis and conclude that the residuals are homoscedastic at 5 and 10 percent based on the p-values of all the estimates in Appendix Table 1.

Specification test

Model specification to determine whether addition of variables is necessary was implemented using the Ramsey reset test. The null hypothesis for this test is 'model has omitted variable'. Based on the specification test we can conclude that no omitted variable bias exists because the error term and the independent variables in the model are not correlated. We tested the null hypothesis: that the model does not have omitted variable bias. Our results suggest existence of no omitted variable bias, because the P-values are all higher than the usual threshold of 0.05(95 percent) significance), so we fail to reject the null that no omitted variable bias exists and conclude that more variables are not needed.

Multicollinearity test

Test for multicollinearity was done for the binary choice models. The results show that multicollinearity is not severely high across the variables.

Appendix Table 2: VIF test for Multicollinearity

		Credit application	Credit access	Credit constraint	Credit default
Mean	SURVEY	11	1.3	1.3	1.13
VIF	RPED	9.7	1.23	1.26	

Evidently, the mean VIF for the credit application is 11, whereas it is 1.3 for the credit access and constraint, respectively. Relative to default it is 1.13. Given the various statistics, which are between 1 and 11, it can be inferred that multicollinearity is not much of a problem.

Test for IIA in Multinomial Logit

The multinomial logit model was estimated to detect the existence of IIA. Using the Wu Hausman test, the null hypothesis was accepted for non systematic difference in coefficient and results for both diagnostic tests confirm non-existence of IIA for the application and access model.

Appendix Table 4: Probit estimates for credit application and corresponding marginal effect

Credit market variables	RPED		SURVEY I		SURVEY II	
	Coef	Marginal effect	Coef	Marginal effect	Coef.	Marginal effect
<i>REQUIRE</i>	0.457 [0.57]	0.417*** [0.72]	1.099*** [6.63]	0.0624 [0.72]	0.936*** [5.15]	0.359*** [5.51]
<i>PROCEDURE</i>					0.524*** [3.01]	0.205*** [3.06]
<i>OFFICER</i>					0.913*** [4.23]	0.329*** [4.92]
<i>HIGH INTEREST</i>	-4.737 [-1.59]	-0.438*** [-1.55]	-1.224*** [-6.89]	-0.807 [-1.55]	-1.214*** [-6.31]	-0.428*** [-7.6]
Skills/experience in business operations						
<i>YEARS (SCHOOL)</i>	-0.015 [-0.37]	-0.003 [-0.36]	-0.007 [-0.33]	-0.003 [-0.36]	-0.008 [-0.34]	-0.003 [-0.37]
<i>EXPERIENCE</i>	-0.038* [-1.79]	-0.009* [-1.71]	0.023* [1.71]	0.006* [1.71]	0.028* [1.75]	0.011* [1.75]
<i>AGE</i>	0.971 [0.64]	0.962* [0.64]	2.430* [1.75]	0.165 [0.64]	0.568 [0.36]	0.223 [0.36]
<i>AGE2</i>	-0.134 [-0.41]	-0.207 [-0.4]	-0.523 [-1.59]	-0.023 [-0.4]	-0.216 [-0.58]	-0.085 [-0.58]
Size of firm						
<i>SIZE</i>	0.014 [0.05]	0.183 [0.05]	-0.462 [-1.57]	-0.002 [-0.05]	-0.743** [-2.31]	-0.292** [-2.32]
Market Environment that defines firm's operation						
<i>COMPETITION</i>	-1.391** [-2.49]	-0.089*** [-3.54]			0.376 [1.41]	0.146 [1.44]
<i>SECMA</i>			0.291 [1.35]	0.123 [1.40]	0.209 [0.89]	0.081 [0.91]
<i>SECSE</i>	0.022 [0.05]	-0.048 [0.05]	-0.121 0.004		-0.118 [-0.62]	-0.046 [-0.62]
<i>NETWORK</i>					0.460* [1.66]	0.172* [1.79]
<i>EFFECT</i>					0.617** [2.21]	0.235** [2.33]
<i>constant</i>	1.492 [0.78]				0.549 [0.32]	
Observations	117				341	
LR chi squared (p-value)	23.96 (0.004)				175.24 (0.000)	
Pseudo R squared	0.224		0.372			
Marginal effect	0.548		0.904			

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent..

Appendix Table 5: Estimates of drivers of small enterprises credit access

variables	RPED		SURVEY I		SURVEY II	
	Probit Coef.	Marginal effects	Probit Coef.	Marginal effects	Probit Coef	Marginal effects
Credit variables						
<i>SAVING</i>	0.047 [0.12]	0.008 [0.12]	-1.242** [-2.29]	-0.155*** [-2.87]	-0.739** [-2.3]	-0.131*** [-2.76]
<i>BRIBE</i>					1.071*** [3.07]	0.176*** [4.05]
<i>OFFICER</i>					0.806*** [3.05]	0.162*** [3.16]
Skills/experience in business operations						
<i>EXPERIENCE</i>	-0.002 [-0.11]	-0.001 [-0.11]	0.057 [1.57]	0.008 [1.52]	0.041* [1.86]	0.009* [1.87]
<i>AGE</i>	0.201 [0.61]	0.033 [0.62]	-0.193 [-0.46]	-0.031 [-0.5]	-0.140 [-0.38]	-0.03 [-0.38]
Size of the firm						
<i>SIZE</i>	-0.523* [-1.69]	-0.086 [-1.64]	0.235 [0.3]	0.043 [0.37]	-0.008 [-0.02]	-0.002 [-0.02]
<i>ASSET</i>	0.184** [2.52]	0.030*** [2.61]	0.221 [1.1]	0.034 [1.16]	0.076 [0.6]	0.016 [0.60]
Performance						
<i>SALE</i>	8.73E-05 [1.58]	1.43E-05 [1.63]	-0.257** [-2.03]	-0.039** [-2.13]	-0.2284*** [-2.85]	-0.048*** [-2.87]
Market Environment that defines firm's operation						
<i>COMPETITION</i>	3.543*** [2.86]	0.248*** [4.48]	0.086 [0.22]	0.001 [0.17]	-0.019 [-0.08]	-0.004 [-0.08]
<i>NETWORK</i>					0.769* [1.89]	0.125*** [2.58]
<i>EFFECT</i>					-0.099 [-0.28]	-0.021 [-0.28]
constant	-3.974*** [-3.11]		0.063 [0.03]		0.322 [0.23]	
Observations		117		183		183
LR chi squared (p-value)		24.75(0.001)		14.66 (0.041)		41.12 (0.000)
Pseudo R squared		0.2247		0.0808		0.2266
Marginal effect after probit			0.091		0.824	0.87

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent.

Appendix Table 6: Estimates of credit application determinants (Multinomial Probit)

Credit market variables	Formal Coefficient	Formal Marginal effect	Informal Coefficient	Informal Marginal effect
<i>REQUIRE</i>	1.128*** [4.3]	0.230*** [3.48]	1.613** [4.17]	0.125*** [3.56]
<i>PROCEDURE</i>	0.978** [3.85]	0.276*** [4.35]	0.096 [0.31]	-0.051 [-1.27]
<i>OFFICER</i>	1.281** [4.28]	0.286*** [4.08]	1.116** [3.00]	0.057753 [1.23]
<i>HIGH INTEREST</i>	-1.744** [-6.38]	-0.387*** [-6.23]	-1.436** [-4.33]	-0.063 [-1.56]
Skills in business				
<i>YEARS (SCHOOL)</i>	0.005 [0.14]	0.003 [0.31]	-0.022 [-0.57]	-0.003 [-0.71]
<i>EXPERIENCE</i>	0.046* [2.04]	0.012** [2.01]	0.018 [0.60]	-0.001 [-0.17]
<i>AGE</i>	1.276 [0.55]	0.384 [0.61]	-0.069 [-0.02]	-0.095 [-0.27]
<i>AGE2</i>	-0.373 [-0.7]	-0.097 [-0.67]	-0.205 [-0.3]	-0.003 [-0.03]
Size of the firm				
<i>SIZE</i>	-0.876* [-1.93]	-0.162 [-1.32]	-1.472* [-2.42]	-0.140* [-1.95]
Business environment				
<i>COMPETITION</i>	0.213 [0.55]	-0.004 [-0.04]	0.910* [1.92]	0.119* [1.75]
<i>SECMA</i>	0.391 [1.17]	0.128 [1.42]	-0.190 [-0.42]	-0.047 [-1.1]
<i>SECTOR</i>	-0.338 [-1.23]	-0.110 [-1.5]	0.142 [0.43]	0.043 [1]
<i>NETWORK</i>	0.734* [1.9]	0.205** [2.12]	0.182 [0.38]	-0.027 [-0.61]
<i>EFFECT</i>	0.777* [1.94]	0.161 [1.53]	0.932* [1.9]	0.076 [1.16]
constant	-0.627 [-0.25]		1.927 [0.63]	
Number of observations	341			
LR chi squared (p-value)	136.87 (0.000)			
Marginal effect		0.447		0.098

Base= did not apply.* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent.

Appendix Table 7: Estimates of credit access determinants (Multinomial Probit)

Variables	Formal Coefficient	Formal Marginal effects	Informal Coefficient	Informal Marginal effects
Credit market variables				
<i>SAVING</i>	-0.657 [-1.48]	0.041 [0.46]	-1.479** [-3.04]	-0.177** [-2.29]
<i>BRIBE</i>	1.533** [3.18]	0.178** [2.34]	1.453** [2.65]	0.036 [0.57]
<i>OFFICER</i>	1.197** [3.22]	0.198*** [2.65]	0.881* [1.96]	-0.004 [-0.07]
Experience/Skills in Business operations				
<i>EXPERIENCE</i>	0.065* [2.12]	0.013** [2.17]	0.030 [0.8]	-0.003 [-0.63]
<i>AGE</i>	0.034 [0.06]	0.067 [0.6]	-0.492 [-0.74]	-0.082 [-0.88]
Size of the firm variable				
<i>SIZE</i>	-0.026 [-0.04]	0.064 [0.43]	-0.602 [-0.69]	-0.092 [-0.84]
<i>ASSET</i>	0.444* [2.33]	0.199*** [4.53]	-0.707** [-2.96]	-0.164*** [-5]
Performance				
<i>SALE</i>	-0.342** [-2.9]	-0.058* [-1.9]	-0.257 [-1.46]	-0.003 [-0.01]
Business environment that defines firm's operations				
<i>COMPETITION</i>	-0.237 [-0.66]	-0.102 [-1.31]	0.335 [0.8]	0.083 [1.42]
<i>NETWORK</i>	1.219* [2.14]	0.206** [2.69]	0.580 [0.87]	-0.055 [-0.92]
<i>EFFECT</i>	-0.297 [-0.58]	-0.111 [-0.95]	0.278 [0.45]	0.080 [0.89]
constant	-3.239 [-1.55]		7.504** [2.78]	
Observations	183			
LR chi squared (p-value)	63.69 (0.000)			
Prob chi squared	0.00			
		0.717		0.127

Base= did not access. * Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent.

Appendix Table 8: Credit application test for independent irrelevant alternative (IIA)

	---- Coefficients ----			sqrt(diag(V _{b-V B})) S.E.
	Partial (b)	All (B)	Difference (b-B)	
Credit market variables				
<i>REQUIRE</i>	1.387	1.446	-0.058	
<i>PROCEDURE</i>	1.215	1.275	-0.059	0.071
<i>OFFICER</i>	1.614	1.572	0.041	0.044
<i>HIGH INTEREST</i>	-2.265	-2.278	0.013	0.083
Skills/experience in business operations				
<i>YEARS (SCHOOL)</i>	0.0194	0.008	0.011	0.016
<i>EXPERIENCE</i>	0.052	0.057	-0.005	0.006
<i>AGE</i>	1.545	1.450	0.095	0.786
<i>AGE SQUARE</i>	-0.461	-0.426	-0.034	0.161
<i>FIRM SIZE</i>				
<i>SIZE</i>	-0.824	-1.108	0.283	0.055
Market environment that defines firm's operations				
<i>COMPETITION</i>	0.337	0.354	-0.017	0.118
<i>SECMA</i>	0.421	0.519	-0.097	0.066
<i>SECSE</i>	-0.416	-0.417	0.001	0.095
<i>NETWORK</i>	0.980	1.046	-0.066	0.091
<i>EFFECT</i>	0.926	0.904	0.021	0.162
Constant	-1.191	-0.591	-0.599	1.021

B = inconsistent under H_a , efficient under H_0 ; obtained from mlogit

H_0 : difference in coefficients not systematic

χ^2 (chi squared of 17 degree of freedom) is -6.11 (p-value = 0.795)

Appendix Table 9: A test for Independent irrelevant alternative (IIA) in the revealed sources of credit access

	---- Coefficients ----			
	Partial(b)	All(B)	Difference(b-B)	sqrt(diag(V b-V B)) S.E.
Credit market variables				
<i>SAVING</i>	-0.9181	-0.964	0.046	0.170
<i>BRIBE</i>	2.086	2.098	-0.011	0.086
<i>OFFICER</i>	1.646	1.631	0.0156	0.140
Skills/experience in business operations				
<i>EXPERIENCE</i>	0.073	0.087	-0.014	0.005
<i>AGE</i>	0.112	0.042	0.069	0.101
<i>FIRM SIZE</i>				
<i>SIZE</i>	0.118	0.062	0.055	0.231
<i>ASSET</i>	0.484	0.528	-0.044	0.074
<i>SALE</i>	-0.421	-0.423	0.0018	0.025
Market environment that defines firm's operations				
<i>COMPETITION</i>	-0.31953	-0.282	-0.037	0.128
<i>NETWORK</i>	1.453874	1.552	-0.098	0.092
<i>EFFECT</i>	-0.41103	-0.338	-0.072	0.142
constant	-3.7912	-4.081	0.290	

Ho: difference in coefficients not systematic

χ^2 (chi squared) is -1.25 (p-value = 0.4532)

APPENDIX TABLE 10: First Stage Regression of Loan Amount

AMOUNT	Coefficient	t
EXPERIENCE	0.017	1.5
YEARS (SCHOOL)	0.015	0.73
AGE	-0.134	-0.67
SIZE	0.516	1.59
SALE	0.097	1.28
COMPETITION	-0.212	-1.21
SHOCK	0.063	0.35
ASSET	0.665	6.92
SAVING	0.271	1.31
PROCEDURE	0.229	1.07
ETHNICITY	0.919	4.06
OFFICER	0.194	1.11
REGISTER	0.258	0.73
LINK	0.294	1.57
constant	0.052	0.05

Source	SS	DF	MS
Model	154.295	14	11.02109
Residual	135.741	132	1.028342
Total	290.036	146	1.986551
Observations	147		
F(14, 132)	10.7		
Prob>F	0.000		

SS=sum of square, DF=Degree of Freedom, MS=Mean Square

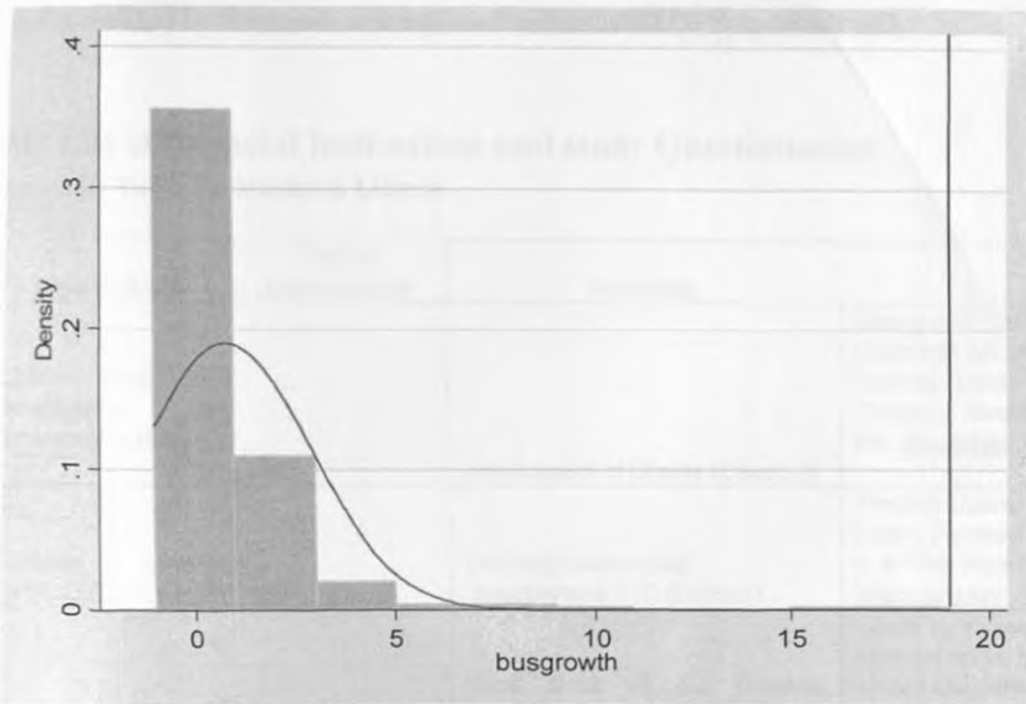
Appendix Table 11: Small enterprises credit constraint Logit model

Credit market variables	RPED		Survey I		Survey II	
	Logit Coefficient	Marginal effects	Logit coefficient	Marginal effects	Logit Coefficient	Marginal effects
<i>HIGH INTEREST</i>	14.834 [3.73]	3.367*** [0.35]	-0.980*** [-3.92]	-0.236*** [-4.17]	-0.967*** [-3.76]	-0.235*** [-3.99]
<i>SAVING</i>	0.182 [0.32]	0.041 [0.33]	0.718 [1.6]	0.176* [1.69]	0.845* [1.82]	0.205** [1.96]
Skills/experience in Business operations						
<i>EXPERIENCE</i>	0.069 [2.02]	0.016** [2.05]	-0.010 [-0.49]	-0.003 [-0.49]	-0.009 [-0.41]	-0.002 [-0.41]
<i>YEARS (SCHOOL)</i>	-0.023 [-0.37]	-0.005 [-0.37]	-0.012 [-0.38]	-0.003 [-0.38]	-0.0209 [-0.66]	-0.005 [-0.66]
<i>AGE</i>	-0.372 [-0.83]	-0.084 [-0.83]	0.167 [0.66]	0.042 [0.66]	-0.361 [-0.95]	-0.090 [-0.95]
Firm size						
<i>SIZE*EMPLOYMENT GROWTH</i>	-0.036 [-0.37]	-0.008 [-0.37]	-0.003 [-0.19]	-0.001 [-0.19]	-0.005 [-0.28]	-0.0013 [-0.28]
<i>ASSET</i>	-0.042 [-0.41]	-0.010 [-0.41]	-0.263** [-2.09]	-0.066** [-2.09]	-0.323** [-2.45]	-0.081** [-2.45]
Performance						
<i>PROFIT</i>					-0.030** [-2.45]	-0.008** [-2.45]
Market environment that defines firm's operations						
<i>EFFECT</i>					0.687* [1.88]	0.169* [1.93]
<i>SECMA</i>			-0.205 [-0.65]	-0.051 [-0.65]	-0.318 [-0.98]	-0.079 [-0.98]
<i>SECSE</i>	2.216 [2.28]	0.353*** [3.73]	-0.597** [-2.32]	-0.148** [-2.35]	-0.582** [-2.2]	-0.145** [-2.23]
<i>PREM (PUB)</i>					0.436 [1.33]	0.109 [1.34]
<i>PREM (PRIV)</i>					0.045 [0.08]	0.011 [0.08]
<i>REGISTER</i>	-1.313 [-2.42]	-0.307** [-2.48]	0.445 [0.94]	0.111 [0.95]	0.394 [0.81]	0.098 [0.82]
Constant	-1.571 [-0.95]		2.004* [1.73]		2.977** [2.34]	-0.005 [-0.37]
Number of observations	117		341		341	
LR chi squared	47.57 (0.000)		28.65 (0.001)		45.08 (0.000)	
Marginal effects	0.348		0.525		0.523	

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent.

A5: Figures

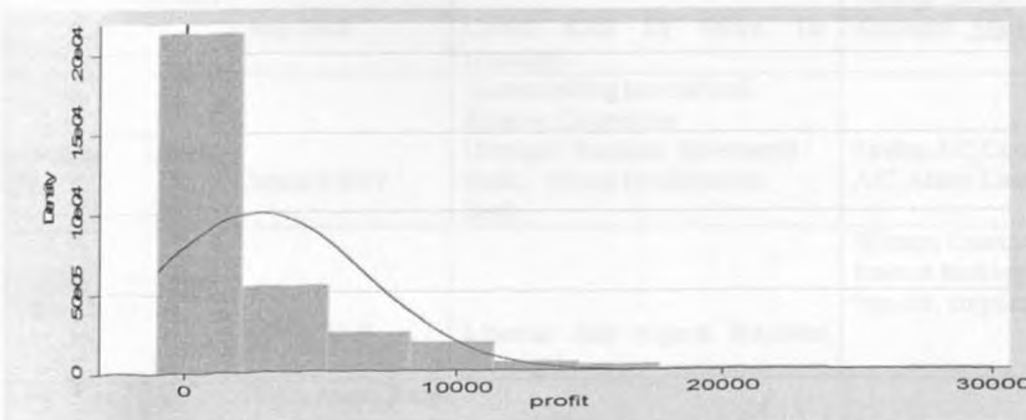
Appendix Figure 1: Distribution of firm's growth



Source: computed from Survey dataset

Appendix Figure 1 shows how each unique value of business growth is associated with its own bar. Business growth is continuous and skewed leftward from the center. The height of the bar shows there are few cases with relatively high density. Essentially, many businesses in post-war Liberia are impressively realizing doubling or tripling of their annual sales.

Appendix Figure 2: Distribution of profit



Source: computed from Survey dataset

Reinforcing the preceding argument about the positive business growth, the above density chart shows how many businesses are realizing positive annual profit. However, figure C2 indicates how annual profits realized by firms are concentrated around 4000USD to 5000USD.

A6: List of financial institutions and study Questionnaire

Appendix Table 12: Banks in Liberia

Name of Bank	Year of Establishment	Ownership	Products
Liberia Bank for Development & Investment (LBDI)	1965	Government of Liberia (Liberian)	Saving A/C, Current A/C, Western Union, Corporate A/C, Current A/C, Internet Banking, Direct Deposit, Manager Cheques, Transfers, FX Trading ,Loans Etc. Microfinance
Ecobank Liberia Limited (EBLL)	1999	Ecobank transactional incorporated(ETI) (Foreign)	Western Union, VISA Card, Mortgage Loans, Personal & Corporate Savings, U. S. A Visa Fees Payment, ATM . Microfinance
International Bank Liberia Limited (IBLL)	2000	Trust Bank of the Gambia, Databank Financial Services of Ghana and Pan African Capital Group, LLC of United States of America. (Foreign)	Checking account, Savings account, personal loans, business credit facilities, inward and outward remittances, Moneygram services and payment centers.
Global Bank Liberia Limited (GBLL)	2004	Bank PHB Of Nigeria (Foreign)	Current A/C, saving A/C, loans, Moneygram services, corporate A/C, internet banking,
First International Bank Liberia Limited (FILL)	2009	Foreign	Current A/C, saving A/C, money gram services, corporate A/C, internet banking, loans, time deposit, SME, etc.
United Bank for Africa Liberia (UBA)	July 2008	United Bank for Africa Tlc (Foreign)	ATM, POS, VISA Card, Mobile Money, Prestige Savings, Current & Savings Accounts. Microfinance
AccessBank Liberia (ABL)	January 2009	Accessholding International Finance Corporation (foreign) European Investment Bank, African Development Bank	Saving A/C,Current A/C,Term Deposit A/C ,Micro Loan. Microfinance
Guaranty Trust Bank Liberia (GTBL)	March 2009	Liberian And Nigeria Business (Foreign)	Western Union, saving A/C, current A/C, internet banking, ATM ,corporate A/C, loan etc. corporate saving,

Source: Central Bank of Liberia's Annual Report

Appendix A6: SURVEY Questionnaires

This questionnaire is to enable the collection of information intended for completion of PhD thesis, which is titled: Credit Access, Constraints and Default Evidence from Small Scale Enterprises in Urban Liberia. All information provided will be treated with strict Confidentiality and your anonymity is assured

Issues of Identity

Area identification Number	001	
Name of Supervisor/monitor	002	
Name of Enumerator	003	
Name of Enumeration area	004	
Street Firm is located	005	
Date of Interview	006	
Name of Interviewer	007	
Start time/date	008	
Finish time/date	009	

A: Manager/owner's Characteristics

A01: Gender of Manager	A02: Age of Manager	A03: Education level of manager	A04: Marital Status
Male	Less than 30	None	Never married
Female	Between 30 and 40 inclusive	Primary	Married
	between 40 & 50 inclusive	Junior high	separated
	Greater than 50	Senior high	Divorced
		Vocational	Widowed
		Training College	Other
		Tertiary	

A05: main occupation of spouse if married (skip if not)	A06: years of experience in doing this business	A07: Nationality of Manager/owner
Business		Domestic
Civil servant		Foreign
Employed in private sector		
other (specify)		

B: Firm's characteristics

B01: Main activities of business (check listing below)*	Bo2: Age of Firms	B03: What were you doing before starting this business?	B04: Why do you choose to Start this business
Manufacturing		Unemployed	Failure of previous business
Commerce (trading)		Employed worker	Could not find waged job
Services		Self-employed	Was redundant
		Schooling	Could not get job of my desire
		Other (specify)	Lost my waged job
		none	Want to be self-employed
			Other (specify)

B05: What was the estimated capital to start this business	B06: Now, what is the business estimated operating capital	B07: Is this firm formally registered
		Yes
		No

B08: Does this establishment have link with any large firm	B09: What is this firm current legal status	B10: Number of person(s) who owned business
Yes	Sole proprietorship	
No	partnership	
	Corporation	
	None	

B11: What is the gender distribution of the firm's owners	B12: Is this business housed in (check one of them)	B13: Problems faced in last 3year	B14: Number of person employed (salaried workers)
all men	Rented premise (private)	Poor sales	
majority men	Owned premise	Robbery or theft	
all women	Rented premise (public)	Arson	
majority women		Others	
equally divided		None	

B15: Number of person employed (unpaid workers)	B16: How many workers did you have to start this business
Yes	Sole proprietorship
No	partnership
	Corporation
	None

C: Financial Characteristics

C01: How often do you take financial stock on this business	C02: In terms of capital, What is the approximate value of this business currently	C03: In the last 12 months, What is the average net profit recorded monthly	C04: In the last 12 months, what is the average approximate monthly expenses recorded
Daily			
Monthly			
Only festive period			
Other (specify)			

C05: where is proceed/income from business saved	C06: Tick any of the following asset(s) owned by this firm	C07: What is the total value of the assets
Home	Land	
Susu club/Daily susu	House	
Credit Union	Car	
Money lender	Others (specify)	
Bank		
None		

D: Credit application and access

D01: How did you start this business?	D02: If credit, what is the source of the credit?	D03: Are you knowledgeable about procedures of applying for formal credit?
Self-finance	Banks	Yes
Credit sources	Susu Club	No
Both self finance & Credit	Credit union	
Inheritance	Money lender	
Other		

D04: If no, Why?	D05: Have you ever applied for credit in last 3 years?	D06: Through which credit source(s)?	D07: Was your credit application approved
Low bank publicity	Yes	Banks	Yes
Not member credit group	No	Susu Club	No
Not interested		Credit union	
Other		Money lender	

D08: If no, why was your credit not approved	D09: How would you rate banks in terms of approving/ getting credit?	D10: Are you acquainted with Member (s) of lending firm	D11: Are you a member of any business group that seek credit based on cross-guarantee
Lack of collateral	poor	Yes	Yes
Banks do not credit this type of investment	fair	No	No
First time applying	good		
Don't know anyone in bank	excellent		
No guarantor			
Other			

D12: If you are not a member, do you want to join a group credit scheme	D13: What is/are reasons you do not want to join	D14: Have you ever accessed credit thru group business
Yes	Difficult to deal with group credit	Yes
No	Afraid of being affected by default of other members	No
	Easier to get individual credit	
	Other	

D15: Which credit source(s) do you find easiest to access credit	D16: What was the last time you accessed credit	D17: In the absence of collateral has anyone guarantee for you to access credit	D18: What was the total credit amount received/accessed in last three years
Banks	Less than a week	Yes	
Susu Club	between 2-3 weeks	No	
Credit union	between 1-4 months		
Money lender	Almost a year		
	More than a year		

D19: What was the total interest amount paid on the credit	D20: Do you want to expand this business	D21: Through which means would you like to expand this business
	Yes	Credit sources
	No	Profit from business
		Both self finance and credit
		Help from friends/relatives
		Other

D22: Have you ever applied for credit in the last 3years to expand or establish business	D23: If you have never applied for credit before, what is/are the reasons	D24: Other than credit for business, have you ever applied for credit for other needs in the last 3years	D25: What are the other reasons you applied for credit other than business
Yes	Did not need credit	Yes	School fees
No	No Collateral	No	To repay other loans
	Did not have ability to repay		To do another business
	Long loan processing time		Medical bills
	Ignorant of lending procedure		Other (specify)
	Other		

D26: Do you have other sources of credit other than banks	D27: If yes, what are they	D28: Other than business, what do you use the loan for after receiving
Yes	Susu Club	School fees
No	Credit union	To repay other loans
	Money lender	To do another business
	Other	Medical bills
		Buy fixed assets
		Other (specify)

H08: To get the actual amount you need, do you step up the amount applied for	H09: What is/are reasons	H10: In the last three years, has there been significant changes in the interest rate for bank loan?	H11: what has been the change in interest rate in the last three years
Yes	Banks often fail to approve actual amount	Yes	
No	Based on experience from others	No	
	Difficult to loan		
	Others		

H12: when your credit was approved, in which form did you get the loan?
Cash
Asset
Goods
Other

E: Credit constraint

E01: Was there any occasion, you wanted loan but got less than the amount you applied for	E02: Why you did not get full loan amount	E03: Would you describe your business as not requiring credit	E04: From your borrowing experience-which lender (s) often demand collateral?
Yes	Lack of collateral	Yes	Banks
No	first time applying	No	Susu Club
	High interest rate(High cost of loan)		Credit union
	Already heavily indebted		Money lender
	Other (specify)		

E05: Does collateral help to get full credit amount	E06: Did you have Collateral while applying	E07: Did you get the full credit amount applied for thru collateral
Yes	Yes	Yes
No	No	No

E08: Are you discouraged about the process of getting loan and decided not to apply	E09: If you did apply for loan, how much did you apply for	E10: Based on amount applied for, how much did you get	E11: Are you acquainted/friendly/related with any member of banks' credit credit department
Yes			Yes
No			No

E12: Did you get credit because of friendship with member of credit department	E13: Have you ever applied for credit & later withdraw	E14: Why did you withdraw your application
Yes	Yes	Long procedure
No	No	High interest
		Short repayment time
		Other

E15: Over the last 12 months, what percent of firm goods were paid for before or on delivery	E16: Over the last 12months, what percent of the firm's working capital was financed by owned funds/retained earning	E17: Over the last 12months, what percent of the firm's working capital was financed by banks loans

E18: Over the last 12months, what percent of the firm's working capital was financed by purchases on credit from suppliers	E19: Over the last 12months, what percent of the firm's working capital was financed by moneylender, Susu Club	E20: In the last 12month, what was the average monthly sale	E21: What was the average monthly sale in the last 2years

E22: Does this firm currently benefit from credit	E23: what is the interest rate on this most recent line of credit	E24: How much time month/days/weeks) was this firm granted to payback when the credit was received	E25: Did the financing require collateral
YES			Yes
No			No

E26: What type of collateral was required	E27: On average, how long does it take to process loan from bank
land & building	
personal asset (House)	
Account receivables	
Inventories	
Others	

E29: Main reason of not applying for credit	E30: Over the last 3years, did this firm apply for any credit that was rejected	E31: How many of those credits application(s) was/were rejected	E32: Over the last 3years, what reasons were given for rejection of credit
No need	Yes		Unacceptable collateral
Complex credit procedure	No		Unacceptable cosigner
Unfavorable interest rate			Insufficient profitability
High collateral requirement			Problematic credit record
Did not think it will be approved			Incomplete application
Size of loan and maturity insufficient			Already high indebtedness

E33: What is the total travel time spent to get to bank for loan	E34: What is the total travel cost before getting the loan(LD)	E35: What is the total distance from business to banks/lender

F: Issues of loan default

F01: Are there factors that affect your loan repayment	F02: What are the factor (s) that affect your loan repayment	F03: Does credit application take long time to get approve
Yes	High cost of credit	Yes
No	Low return from business	No
	High business competition	
	Other	

F04: If yes to G05, why	F05: Have you ever exceeded maturity date of repaying loan	F06: Why did you exceed the maturity date of credit repayment
No Collateral	Yes	Low profit
No relationship with members of credit officer	No	High loan costs
Loan officer want tips		Good stolen
Other		Diverted loan into other business
		Other

F07: Have you ever defaulted in settlement of loan	F08: Why did you default?	F09: Which credit firm did you default in repaying?	F10: Does this entity currently have outstanding debt
Yes	Collapse of business	Banks	Yes
No	High loan costs	Susu Club	No
	Good stolen	Credit union	
	Diverted loan into other business	Money lender	
	Other		

F11: What is the debt amount	F12: Which credit firm is this entity indebted to currently	F13: How long has your outstanding debt been existing	F14: How can you categorize your current loan?
	Banks	Less than 6months	Less than 2 month arrears
	Susu Club	Almost a year	2-3 months arrears
	Credit union	More than a year	3-5 month arrears
	Money lender	Other	Above 6 months
			Default

F15: What was the amount you defaulted in repaying	F16: Is your business frequently monitored by the lender	F17: How often is your business monitored	F18: Was there any occasion your business was directly affected by the war
	Yes	Daily	Yes
	No	Once every week	No
		Once every month	
		Other	

F19: When?(Major war period)	F20: How did you restart	F21: Is there any occasion you were asked for/gave extra payment (outside loan requirement) to speed your loan process
1989-1990	Self finance	Yes
1992	Loan	No
1996	Help from friends/relative	
2003	Other	

F22: Which credit firm(s) is/are notable for this act	F23: What percentage of the credit amount are usually given as extra payment	F24: How often do you repay your loan	F25: How much were you asked to repay per month/week/Daily
Banks	5 percent	Weekly	
Susu Club	10 percent	Monthly	
Credit union	Less than 5 percent	daily	
Money lender	More than 10 percent	Other	
	Other (specify)		

F26: What are other sources used to repay loan	F27: Does this firm compete against any unregistered or informal firms
Salaried wage	Yes
Relative income	No
Other contract	
Other debt	
None	

Informal borrowing

G01: Have you ever borrowed from friends/moneylenders/relatives in last three years	G02: Why did you choose to borrow from this informal source	G03: Are you currently a member of any informal group like susu	G04: What is the average monthly interest on informal loan
Yes	Most favorable interest	Yes	less than 10 percent
No	Easier formalities	No	10-25 percent
	No collateral required		25-35 percent
	Flexible payback		35-50 percent
	Other		Above 50 percent

G05: How long does it take to process informal loan	G06: In last 12months,has this firm faced losses due to theft, robbery or arson	G06: Are there neighboring firms doing this same business
Less than a day	Yes	Yes
More than 3days	No	No
3-5 days		
More than a week		

Questionnaire for discussion

H01: Types of financial institutions	H02: How many credit application(s) did this institution receive in last 12 months?	H03: What percentage was approved	H04: Why are key reasons for rejection of some credit applications
			Tight screening
			Poor loan history
			Lack of collateral
			Risky business
			Other

H05: Does this entity classify businesses in terms of access to credit	H06: Which category of business(es) is/are prioritized	H07: Which sector do you direct most of your credit (Rank) 1st, 2nd etc
H05	H06	H07
Yes	Large businesses	Trade
No	medium size	Manufacturing
	Small scale	Service
	Others	Mining
		Agriculture

H08: Does this entity have SME finance unit?	H09: If no, why	H10: what is the duration of accessing SME loan if all requirements are met	H11: Does access to credit require cross guaranteeing by colleague of other businesses?
H08	I09	I10	I11
Yes	No support from Government	Less than a month	yes
No	Still seeking support	between 1-6 months inclusive	No
	Highly risky and cost intensive	Almost a year	
	other	other	

H12: Why does it require cross guaranteeing by colleague of other businesses?	H13: Most credit worthy criteria you consider to lend to SME	H14: When did you establish the SMEs-finance unit
High default rate	Age of business	
Highly risky business	Size of firm	
other	Collateral	
	Relationship with manager	

H15: Does this entity approve all of the amount a micro & small scale business applied for	H16: If no, why	H17: Does this entity have subsidized credit facility from Government or NGOs	H18: Does this entity carry on group lending?	H19: Does everyone in the group get the full amount applied for
Yes	lot of applicants	Yes	Yes	Yes
No	Risk reduction	No	No	No
	Inadequate cash			
	other			

H20: Does this entity frequently experience loan delinquency	H21: What are some reasons reported for loan delinquency	H22: Do some creditors default in repaying loan	H23: What are potential reasons for default
Yes	Low business activities	Yes	Poor monitoring
No	Theft of goods	No	Diversion of loan
	Other		Lack of collateral
			High loan cost
			First experience with clients

H24: Which category of businesses often default	H25: Percent of non-performing loan to total loan now	H26: Does your entity see micro & small businesses as potential drivers for poverty reduction in Liberia
Small scale businesses		Yes
Large scale businesses		No
Microenterprises		
Other		

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H27: If yes, why?	H28: What impediments do you think micro & small businesses are facing	H29: From your institution's experience with micro and small firms, what is their growth status	H30: If they are growing, what is your projection of their survival rate	H31: What are other policy issues you may want to recommend
Have ability to grow	Low capital	they are growing	less than 25 percent	
Proven to be worthy and innovative	Huge tax burden	They are stagnate	between 25-50 percent	
Create more employment	Lack of access to credit	They are not surviving	Between 50-75 percent	
	Lack of requisite business skills		greater than 75 percent	
	Others			