



ESSAYS ON MICROFINANCE INSTITUTIONS AND HUMAN CAPITAL

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I state that the present study entitled "Essays of Microfinance Institutions and Human Capital" presented by Frank Gyimah Sackey for the award of the degree of Doctor, has been carried out under my supervision at the Department of Economics of this University and that it fulfills all the requirements to be eligible for the International Doctorate Award

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The real wealth of every nation is its people and this is the belief of the United Nations, with its Millennium Development Goals, that aims at improving the lives of the citizens to which every country must aspire to. Over the past decade absolute poverty has been halved for the rest of the world but has not occurred in Africa. The vulnerable, mainly women and the youth, struggle against employment, incomes, health and education. But even where these countries would focus on health, education, employment creation and fairer societies, more Africans will have a chance to live a better life. These, to a large extent, will depend on institutions, policies and the leaders themselves and the type of governance systems. If leaders and institutions will develop policies aimed at improving financial access and human capital then these goals would be achieved in no time. Access to credit has been a major problem facing the vulnerable. By their nature, they are often rationed out of credit by the formal financial sector, mainly the commercial banks. Access to microcredit has therefore been the only alternative as a means of empowering the vulnerable to have sustainable jobs and incomes. A decade since the United Nations declared year 2005 as the international year of microcredit the need for an overall appraisal of microfinancing has not given much prominence. At the time of this declaration it was believed that reducing poverty and empowering the vulnerable would be nearly impossible if the poor and the vulnerable do not have access to credit.

In sub-Saharan Africa, governments have appreciated the impact of microfinancing in bridging the income gap and creating macroeconomic stability and have enacted various laws and policies and encouraged the promotion of microfinancing. It is believed that microcredit is an effective means of alleviating poverty in Africa. The growth of the informal and formal business sectors largely depend on the availability and accessibility of capital, as this will enable businesses to expand, for start-up, create more employment and sustainable incomes especially

for the micro and small businesses. The growth of microfinance has been formidable as data by the Microfinance Information Exchange shows that between 2002 and 2012 the microfinance sector expanded by 1,300%. During this period the number of microfinance customers including depositors grew from 3 million to 20 million with active borrowers increasing from 3 million to 7 million.

Despite the impressive growth of microfinance in Africa its impact on empowering the vulnerable through employment creations and earning sustainable incomes remains relatively marginal though there has been some success. The industry still serves a small fraction of the population and offers short-term loans at very high interest rates. This has often been attributed to undercapitalization as many are operating just a little above the threshold demanded by regulators. The capital and deposit requirements of the various types of the microfinance institutions by regulators often leave very little capital for outreach as well as increasing the supply of loans. Directing capital into microfinance to enable lenders to provide bigger and long term loans at lower interest rates will make it easier for the industry to contribute effectively in reducing poverty. But the question often raised is whether regulators should fix a minimum threshold for all microfinance institutions irrespective of the type so as to enable them to effectively administer credit that satisfies both lenders and borrowers. Using a dataset on 1,429 borrowers from 14 microfinance companies from the four main types of microfinance institutions in Ghana we examine the extent to which regulators laws and policies affect the operations and the rationing behavior of the microfinance institutions and the extent to which they impact on the major objective of microfinancing which is to empower the vulnerable.

In paper one; we examine the extent to which microfinancing and credit rationing are influenced by the microfinance type. This has become necessary because microfinance institutions are differentiated according to their capital base, sources of funding, ownership, social responsibilities, profit and economic motives, capital and deposit requirements. These, to

a large extent, influence their operations and their rationing behavior. This is relevant because if Africa is to develop through sustainable incomes and employment creation then the microfinance sector must be given all the needed support. The vulnerable who are often rationed out of credit from the commercial banks can only be empowered through microcredit access. Evidence shows the positive impact of microfinance on poverty reduction as it relates to the first six of the seven Millennium Development Goals. Our results show that the rationing behavior is not influenced by the microfinance institutions' types but by the individual microfinance companies whilst we observe that the Government's microfinance company is the most severe in the rationing of microcredit. Since most of these microfinance companies also draw funds from the Government's microfinance companies the government can influence policy that will ensure the availability of more funds at lower interest rates by reducing its interest rates to these microfinance companies so as to enable them to supply loans at lower interest rates. The government should also set a minimum capital and deposit requirements for all microfinance companies irrespective of the type whilst intensifying its monitoring functions so as to enable them to use larger amount of the credit for lending and increasing outreach as the rationing behavior is not according to the microfinance type.

In paper two, and in Ghana's context, we examine the extent to which the Ghana Microfinance Policy 2006 has met its main objective of empowering the vulnerable. We resort to the Blinder-Oaxaca decomposition to determine if there is positive discrimination in favor of women and young entrepreneurs in the rationing behavior of the microfinance companies. This is what we should expect if the policy is effective as it entreats the microfinance companies to give priority to the vulnerable, namely; women, the youth and the physically disabled. Our results show that even after controlling for a large number of borrower characteristics, microfinance type and credit worthiness variables, there is positive discrimination that favors female and young entrepreneurs as this discrimination is largely determined by the differential

treatment these groups receive in respect of men and older borrowers from microfinance institutions.

The third and the last chapter looks at the importance of African countries' leaders' characteristics and regime transitions that brought the leader into power and how these factors affect the health status as a development indicator of their citizens using infant mortality rate as a measure. The African continent has leadership gaps and political leadership, which is the core of any social system, has become a huge challenge. For Africa to become development-focused there is the need for strong and transformative leadership and regimes that are development oriented. The need for leaders who can effectively mobilize resources and possess the vision and building of strong institutions that will stand the test of time beyond the single leader are therefore required. Such leaders must be endowed with strong political will, committed to the development needs of its citizens at large and an engagement towards desirable development results as a whole. African countries are still less affected in governance, regimes and leadership thereby, hindering the achievement of the desired development results. Addressing these challenges requires that individual and institutional capacity, good governance and regimes that ensure the respect for rule of law, human rights, participation and consensus orientation, accountability, equity fairness and inclusiveness are achieved. These, including policies and knowledge, planning, executing and monitoring, require leaders who are committed to the benchmarks. Leadership characteristics and regimes cannot therefore be downplayed in the quest for achieving that growth and development needed to be compared to the western developed world.

One of the major problems confronting Africa's growth and development is diseases that have overburden the continent. Meeting the 2015 targets of the Millennium Development Goals has been impossible though few countries have made strides in meeting some but not all of the targets. For Africa to effectively deal with the health challenges of the continent it requires the

commitment of more resources towards the health sector, enactment of good health policies and good governance. All these require quality leaders and desired regimes that ensure development. Leader characteristics regimes and transitions are therefore relevant in this endeavor. It is for these reasons that we examine the characteristics of leaders and regimes and how they impact on the health status of their citizens. Using a unique dataset comprising 44 sub-Saharan African countries spanning from 1970 to 2010 and controlling for leader fixed effects rather than country fixed effects we find results that are suggestive of a democratic advantage in the process of achieving effective health policy outcomes for promoting health and the wellbeing of the citizens in contemporary sub-Saharan Africa, at least in the long run. Whilst there is evidence of more private and public investments in the health sector under democratic leadership, Government's health policy is virtually non-existent under dictatorships as there is total neglect of the health sector as public sector investments in the health sector is not encouraging. The evidence that the interaction between the years of tenure and transitions from an autocratic leader to a democratic leader increases health status by reducing infant mortality rates conforms to expectations that the advantages of democracy expand over time.

These papers, it is hoped, will serve as a guide to leaders, institutions, policy makers and the general public as a whole in appreciating quality leadership, policies and institutional setups in the journey of growth and development of the African continent. It is also hoped that it will add and improve on the literature on the microfinance sector and the burgeoning democracy as well as the political debate about the ideal political leadership and regimes that will enhance human capital development and economic growth and development as a whole.

CHAPTER 1

Microfinance and Credit Rationing: Does the Microfinance Type Matter?

1. Introduction

Ghana's micro and small enterprises (MSEs) employ about 80% of the working population in the private sector. This sector is characterized by the difficulty in accessing the credit required to expand, boost production and increase employment and incomes. The main reason for this difficulty is that the microfinance institutions that are set up to provide the necessary credit engage in credit rationing. A major problem that remains a puzzle in trying to overcome this difficulty is determining the extent and nature of this credit rationing across the microfinance types. The research aims to test the extent and degree of rationing across the microfinance types in Ghana. It will therefore test for the significance of the firm, loan and borrower characteristics in determining credit rationing. This is necessary because of the likelihood of the credit-rationing problem differing across microfinance types and therefore there is a need not only to view the problem holistically but also to consider it based on the institutional type so that it can be resolved effectively. We are doing this because each microfinance type has different sources of funding, different in terms of ownership, corporate responsibility, capital requirements, outreach, mission and other goals which may influence their operations and therefore their lending that are likely into influencing their rationing behavior differently from each other.

One major challenge we encountered was the fact that we could not get information and data on applicants who were rejected outright or did not apply even though they needed credit as eligibility of being given some or all the amount being requested was done in the informal

way through interviews before loan application forms were issued to prospective borrowers and this was the norm for all the microfinance institution types.

Our results show that the rationing behavior is not determined by the microfinance institution type but by the individual microfinance companies whilst most of the individual, firm and loan characteristics determine the rationing behavior of these microfinance companies. Our results revealed that the Government microfinance company rationing behavior was the most severe. This does not augur well in the microfinance market since of the microfinance companies also draw some of their loanable funds from the Government type. Relaxing their conditions and being flexible with regards to lending will go a long way to affect the rationing behavior of the other microfinance companies and thereby minimizing the rationing in the microfinance market. In so far as the Government is a source of funding to these microfinance companies and many individuals it can play a vital role in reducing, if not eliminating the credit rationing problem being faced by the Micro and small enterprises.

The introduction of the financial reforms in 1989 in Ghana triggered massive growth in the financial sector, as witnessed by the increase in the number of commercial banks, which has led to competition and market efficiency. However, these commercial banks charge high interest rates (between 24% and 30% per annum) and consider the amount of the loans required by these micro and small businesses too small in relation to the cost of lending. Another problem faced by these micro and small businesses is that the requirements for accessing loans from the commercial banks are too cumbersome (Economic Reforms in Ghana: Miracles and Mirage, 2000).

Over the past decade and since the United Nations declared 2005 as the International Year of Micro Credit, much recognition has been given to microfinancing as a means of bridging the credit gap created by commercial banks. Microfinance institutions (MFIs) have undergone various phases and currently four major types exist in Ghana. These are non-governmental

organization microfinance, rural and community banks, savings and loans companies and government-sponsored microfinance. The microfinance sector in Ghana has witnessed growth in outreach as well as in the number of registered and non-registered microfinance institutions. The sector served over 5.4 million clients as of December 2010 (GHAMFIN, 2011). The Bank of Ghana (BOG), by the end of October 2012, had registered a total of 161 MFIs and granted them a provisional license (BOG, 2012). The challenge, however, is that the growth of the industry is yet to reflect the scope of microfinance products available for microfinance clients (Ayeh, 2012). A major problem faced by these micro and small entrepreneurs is that they are unsure which of these microfinance institutions would give them the credit needed for their operations since they perceive these MFIs as not different from commercial banks.

It must be emphasized that though these microfinance institutions' operations are guided by the Ghana Microfinance Policy (GHAMP), their individual policies and modes of operation often deviate from it as they frequently request various pieces of information from borrowers as the basis for granting loans. The applicants are therefore not certain which part of the information required by these institutions in the loan processing will ensure that the credit needed will be granted. Another problem that is of great concern is that these microfinance institutions charge interest rates that are even higher than those charged by commercial banks. It was the intention that these MFIs would charge interest rates that are lower and affordable by micro and small businesses, but whereas commercial banks charge annual interest rates ranging from 21% to 30%, microfinance institutions charge annual rates ranging from 24% to 60%. Though MSEs are seen as risky, high interest rates are used to make up for the defaults; this nonetheless has not reduced the number of desperate applicants who are considered to be risky demanding credit from this credit market. Understanding microfinance as a financial transaction with MSEs and as a tool for development is the key to ensuring sustainable private sector growth and the growth of the economy as a whole.

The study will test the hypothesis that credit rationing is influenced by the microfinance type. It will determine the extent to which, once we control for firm and borrower characteristics, the microfinance type still plays a role in determining credit rationing. The outcome of this research will therefore offer policy recommendations to the various microfinance institutions for addressing the problem of credit rationing effectively.

1.2 Theoretical Framework

Credit rationing is a situation in which borrowers are given just some or none of the amount they request from lenders even though they are willing to pay the market rates of the cost of borrowing (interest rates). This basically occurs as a result of the existence of information asymmetry. It is therefore a situation in which the equilibrium price (interest rate) does not ensure efficient allocation of credit; hence, rationing is performed instead of allocation using a non-price mechanism. The studies by Jaffee and Russell (1976) and Stiglitz and Weiss (1981) demonstrated that the difficulty in gaining access to credit might persist even in equilibrium markets using information-based models. To them interest rates cannot function as an allocator of credit in so far as information asymmetries exist and therefore credit rationing may persist even in the face of interest rate liberalization. Stiglitz and Weiss (1981) argument was in disagreement of the interest rates liberalization proponents of McKinnon (1973) and Shaw's (1973) that when interest rates are liberalized financial markets will allocate credit based on the interest rates that reflects scarcities. Despite these theoretical efforts, there remains little consensus about whether this difficulty with regard to access to credit is an economically significant phenomenon. Whereas Riley (1987) argued that this difficulty in the Stiglitz–Weiss environment is limited to the marginal class of distinct risk pools, Stiglitz and Weiss (1987) counter argued that Riley's result is model-specific rather than general. Others have argued that contractual mechanisms, such as loan commitments (Boot and Thakor, 1989; Sofianos et al,

1990) and collateral (Bester, 1985; Chan and Kanatas, 1985) may mitigate the problem of access to credit. The significant effect of information asymmetry on credit access is largely accepted in the literature; however, given the arguments on all sides of this issue, it is clear that there are competing theories on the persistence of difficulty in gaining access to credit and these render the explanations for access to credit inconclusive.

Empirical studies seeking to test these competing theories have made a better job of explaining such a phenomenon; however, very few such studies exist in this regard. Those that do exist either paid little attention to the credit-rationing problem or were unable to explain adequately the credit constraints facing micro and small enterprises (Akoten et al, 2006; Petrick, 2005). There is also an absence of studies that holistically tested various theories that attempt to explain access to credit.

While financial loans are sticky, unable to adjust quickly to changes in the open-market rates, which is consistent with credit allocation, this stickiness varies with loan contract terms in ways that are not predicted by equilibrium credit markets. It must be emphasized that interest rates are often fixed by the various microfinance institutions and are set very high to discourage less profitable businesses from applying for loans even before the credit-rationing processes begin. Our sample shows large differences in the interest rates depending on the institution type.

Access to credit and credit rationing may differ according to the MFI type since the MFIs may be differentiated by their lending policies, mission drift, organizational form and institutional transformation as well as by their disclosure and transparency (Akoten et al, 2006; Von Pischke, 2008). Again, these are issues that have not been empirically studied to a large extent and warrant further investigation. It is clear that access to credit by micro and small enterprises is difficult but the extent and severity of this phenomenon are unknown. This situation therefore calls for an empirical estimation to determine the extent to which loan, firm

and borrower characteristics determine the access to credit and rationing of credit in microfinance and the extent to which institutional factors influence the rationing and credit access. Various researchers have reached the conclusion that credit rationing exists in most developing countries even in the face of interest rate liberalization (Okerenta et al, 2005; Rahji et al, 2009; Zeller, 1994; Zeller et al, 2002). According to Duong and Izumida (2002), the terms and conditions under which credit is transacted vary substantially based on the characteristics of the borrower and the lender and the relationship between them. In other words, borrower–lender variables determine the terms of a credit contract.

Since credit markets are characterized by imperfect information and high costs of contract enforcement, an efficiency measure that exists in a perfectly competitive market will not be an accurate measure against which to define market failure. The problems leading to credit rationing in credit markets in developing countries are basically the problems of adverse selection and moral hazard. Adverse selection arises because in the absence of perfect information about the borrower, an increase in interest rates encourages the borrowers with the most risky projects, hence those who are least likely to repay, to borrow, whilst those with the least risky projects cease to borrow. Interest rates will thus not play the allocative role of equating demand and supply for loanable funds and will affect the average quality of lenders' loan portfolios. Moral hazard occurs basically because projects have identical mean returns but different degrees of risk, and lenders are unable to discern the borrowers' actions (Besley, 1994; Stiglitz and Weiss, 1981).

According to Atieno (2001), the problem of access to credit is one created by the institutions mainly through their lending policies. Schmidt et al (1987) observed that lending policies affecting access to credit are often displayed in the form of minimum loan amounts, complicated application procedures and restrictions on credit for specific purposes. Schmidt et al (1987) argued that the type of financial institution and its policy determine access to credit.

Atieno (2001) further observed that the lending terms and conditions imposed by lenders, such as the application fee, collateral value, application period, repayment period and purpose, influence the enterprise's decision on whether to apply for credit or not as well as to which type of MFI to apply. Aquire et al (2011) found that MFIs may adopt different policies, such as solidarity group lending, which includes the Grameen Bank model and the Latin American model, individual lending, the village banking model and the credit union model, and all of these tend to affect access to credit. Aquire et al (2011) further observed that MFIs' policy often hinges on areas of operation, borrowers' eligibility, eligible projects, loan maturity periods, business operations, interest rates, collateral, loan limits, credit contracts and secrecy of information, which tend to affect access to credit. According to Hardy et al (2002), a microfinance institution's commitment may be replaced or supplement other private or public objectives, such as maximizing share value, the direction of investment in priority sectors or the mobilizing of savings to finance government operations, and this may greatly affect credit access. Since microfinance operations are influenced by their institutions and policies, source of funding and objectives, it is possible that their rationing behavior may differ based on the microfinance institutional type. It is for these reasons that we find it pertinent to determine the extent to which credit rationing is determined by the microfinance institution type.

1.3 Review of the Empirical Literature

Various studies have been conducted in the area of access to credit and credit rationing. The results, however, show strong and significant relationships with the loan, firm and borrower characteristics as well as mixed results for some of them. It is relevant and imperative, however, to distinguish between studies conducted in developed countries and those conducted in developing countries, since the institutional, legal and development nature of the financial sectors as well as the business environments differ among these countries.

1.3.1 Studies from Developed Countries

In their study determining the factors affecting credit rationing using 6,250 UK firms in the 2004, 2008 and 2009 *Survey of Small- and Medium-Sized Enterprises' Finances*, Armstrong et al (2013) observed that firm characteristics were the major determinants of credit rationing, with firms with a higher credit risk rating, previous financial delinquency and lower sales more likely to be rejected whilst older and more established businesses were less likely to face rejection. Using credit information on 56,752 firms between 1993 and 2008 from the Spanish Banking Association (AEB) and the Spanish Confederation of Savings and Banks (CECA), Carbo-Valverde et al (2011) found that firms with more intense lending relationships, as measured by the lower number of banks that they dealt with, enjoyed a greater supply and a lower degree of credit rationing. Becheti et al (2009) noticed that the borrower's past record was significant in determining credit rationing, whilst the number of pre-existing loans with other banks and the loan duration were also significant but negatively correlated with the supply of credit, using a sample of 1,009 Italian loan applicants from the official bank records of Banca Etica for the period 1999 to 2006. Using a sample of 2,698 SMEs reporting data over the period 1993–2001 in Belgium, Steijvers (2008) found that applicants for long-term bank credit were rationed more than those applying for short-term bank credit. He also noticed that the firms that applied for credit and were rationed were firms that were smaller in terms of size and had a low return on assets.

When determining credit rationing for 1,140 business starters in the Dutch County South Limburg for the period 1998–1999, Blumberg and Latterie (2008) observed that credit denial largely depended on entrepreneurs' commitment and signals regarding the repayment of the loan and the success chances of the proposed business. In a similar study conducted by Atzeni and Piga (2007) on 3,144 firms in Italy, the authors concluded that the probability of being denied credit was high for firms with no or low research development intensity. Thus, the credit

constraints were severe for innovation firms. When determining access to credit for corporate farmers in the 2003 BASIS Survey in Russia, Subbotin (2005) observed that farm specialization and profitability were significant and positive. Using a sample of more than 3 million loan applicants between 1998 and 2000 from the Spanish Credit Register (Central de información de Riesgos or CIR), Jimenez and Saurina (2003) observed that the bank–borrower relationship was an important factor in determining access to credit. Based on the US Survey of Consumer Finance of 1998, involving a sample of 2,733 applicants, Chakravarty (2002) found that relationship variables were very important determinants of credit rationing. In a study on the evidence concerning the empirical significance of credit rationing using 1,103 borrowers, with 933 independent observations from the Federal Reserve’s survey of terms of bank lending in the United States between 1977 and 1988, Berger et al (1999) discovered that commitment borrowers were not rationed whilst non-commitment borrowers were rationed.

The above studies show that firm characteristics, such as firm size, return on assets and profitability, are vital and important in determining credit rationing, whilst borrower characteristics, such as the borrower–lender relationship and past record, also play significant roles in determining credit rationing. With regard to loan characteristics, the duration of the loan repayment period is an important determinant with a preference for short-term loans determining a lower likelihood of being rationed.

1.3.2. Studies from Developing Countries

Access to credit by MSMEs in developing countries has become very challenging and many efforts to face this challenge are being made. It is therefore not surprising that contemporary research has paid much attention to this area.

Using a sample of 4,300 financially distressed SMEs to determine the factors influencing the access to credit in Croatia, Ana et al (2011) observed that enterprise size was significant in

determining credit rationing and that having a relatively larger enterprise size reduced the likelihood of being rationed. Investigating credit rationing by commercial banks in Ghana using 178 SMEs for the period 2000–2004, Ahiawodzi et al (2010) noticed that higher interest rates, lower maturity of loan repayment, a higher value of assets, experience and higher profits reduced the probability of being rationed. Using a sample of 411 applicants in the Peri-Urban District in Ho Chi Minh City of Vietnam, Doan et al (2010) found that wealthier households, in terms of asset holding and mobile phone possession, and the distance to the nearest banks were the significant factors determining credit rationing. Using a sample of 1,076 respondents from 34 randomly selected villages in Bangladesh, Chakravarty et al (2010) observed that respondents who built a longer membership with a micro credit provider and had non-mandatory savings accounts and a track record of payments of previous loans were more likely to apply and be approved.

With the aim of determining the access to credit and borrowing behavior of rural households in a transition economy using data from the Vietnam Living Survey (VLSS) for the period 1992/93 and 1997/98, Nguyen (2007) observed that the age of the household head and the working adult rate had a positive and significant relationship with access to credit, whilst the distance to the bank was negative and significant in determining access to credit. Similar research was conducted by Lawal et al (2009), using 150 randomly selected cocoa farming households in Nigeria, and they observed that requests for collateral and the gender of the household head increased the constraints to access to credit, whilst the educational status, years of experience and presence of savings reduced the constraints to access to credit. Nuryartono et al (2005) also conducted similar research using 63 households in rural areas of Central Sulawesi in Indonesia. They observed that human capital (education and age) as well as wealth and risk-bearing indicators (distance from the house to the road) were significant in determining credit constraints. Using a sample of 290 borrowers from 20 formal and informal financial institutions operating in the Niger Delta of Nigeria, Okerenta and Orebiyi (2005) found that access to credit

was determined by the profitability level, value of assets and interest rates and that the higher these were, the less likelihood there was of being denied access to credit. Similarly, in determining access to credit and the loan amount, using the Fourth Round Ethiopian Urban Survey involving 1,500 households for the 2000 period, Kedir (2000) observed that the geographical location, value of assets, value of collateral, number of dependents and marital status as well as outstanding debts were significant factors determining credit rationing. The above studies from developing countries show that for firm characteristics, a higher value of assets, higher profits and the value of collateral feature prominently in reducing the likelihood of credit being rationed, whilst with regard to borrower characteristics, longer years of experience in business, a desirable borrower–lender relationship, past records, the distance of the borrower to the lending institution and the educational status are the important factors reducing the likelihood of being rationed. Concerning the loan characteristics, higher interest rates, a shorter maturity loan period and having non-mandatory savings are the important factors that reduce the likelihood of being rationed.

1.3.3. Studies from Developed and Developing Countries Compared

The empirical studies in both developed and developing countries have shown that credit rationing exists among micro, small and medium enterprises across the various countries. The various studies show that both the developed and the developing countries use firm, borrower and loan characteristics in determining credit rationing, but the use of borrower characteristics in rationing credit is more severe in developing countries than in developed countries. This may be due to the fact that the financial sector in the developed countries can boast a fairly enabling environment and a strong legal system, which tend to reduce the default risk, thereby reducing credit rationing, whilst the unavailability of credit bureaus in developing countries may account for the severe nature of the rationing problem. As we will observe in the empirical analysis, our

results show that individual, firm and loan characteristics influence the credit-rationing behavior of the various microfinance institutions in Ghana.

1.4 Institutional Framework

To understand fully the credit-rationing problem and the factors influencing the credit-rationing behavior of the microfinance institutions in Ghana and Africa as a whole, it is pertinent to discuss the nature, characteristics, policy guidelines and mode of operations of these microfinance institutions so that the credit-rationing problem can be addressed holistically.

Financial inclusion has been uneven across African countries. Whereas some countries, such as Kenya and Uganda, have been successful, other countries, such as Liberia and Namibia, are extremely underdeveloped, especially in the microfinance market. African microfinance is distinguished by the availability of financial service providers, ranging from cooperatives, community-based models and non-governmental organizations to commercial banks and savings and postal banks. This is due to the nature of the financial system in Africa and thereby influences the role of its stakeholders in the continent and its impact. A large number of informal sector intermediaries and individuals who provide financial services, such as the *tonties* in Cameroun, the *banquiers ambulants* in Benin and the *susu* in Ghana, have taken root in African countries. These providers charge large interest rates on loans administered mainly to poor people who conduct business in the informal sector. They operate largely without formal recognition in terms of licenses and registration. Because of their nature, they have few opportunities to grow and expand (UN, 2011). Another type of microfinance provider is the credit unions, which provide savings and credit services to their members and occasionally to non-members but at different interest rates. Membership is essentially based on the principle of a common bond, such as the workplace, the community or producers of a particular commodity. Also known as savings and credit cooperative organizations (SACCOs), they have grown

significantly in Africa. Non-governmental MFIs are another type, normally affiliated with international NGO networks and offering services for humanitarian or social reasons. As a way of ensuring their sustainability, however, they are increasingly becoming more finance and profit driven. Also operating in Africa are rural and community banks, which are well established in countries such as Ghana, Nigeria, Tanzania and Sierra Leone. Microfinance banks, mostly found in Southern Africa and Nigeria, are another type of microfinance institution. They are often regulated by commercial banks and offer a broad range of services and products. The market structure of microfinance institutions across Africa has been changing over the past few years, as more of the non-profit MFIs are now changing to a profit-based structure. All the institutional types of MFIs offer voluntary savings products. Most loans are classified either as microenterprise or as household loans and have terms of usually less than two years (Mix, 2011). The institutional differences across sub-regions are partly explained by the specificities of the microfinance laws governing them.

Despite the remarkable successes achieved by some African countries in the role played by their MFIs, there are major constraints that hinder their growth. In most countries, the lack of capacity is most acute, especially at the retail level, which is the backbone of the financial system. The operational costs are high, making it difficult to extend services on a large scale. There is also excessive government intervention in terms of regulatory issues, some of which harm the development of microfinance in some African countries, especially interest rate ceilings, which do not allow the microfinance institutions to set their own interest rates to be able to maximize their profits. In countries where microfinance performance is not encouraging, these countries have financial sectors that are not fully liberalized, whilst in the countries where the financial sector has been liberalized, borrowers face severe rationing and high interest rates. The tax regime, for instance, remains unclear, unfair or both. For example, fiscal advantages may be offered to charter types such as cooperatives, but not to other institutional types.

Microfinance in Ghana has passed through four distinct phases. The first phase, which started in the 1950s, involved the provision of subsidized credit by the Government. The second phase was the provision of microcredit to the poor through NGOs in the 1960s and 1970s. During this phase, sustainability and financial self-sufficiency were not considered important. The third phase saw the formalization of microfinance institutions, which began in the 1990s. The fourth phase, the current phase, involves the commercialization of microfinance institutions. This started in the mid-1990s and gained much importance with the mainstreaming of microfinance and its institutions in the financial sector. According to Aryeetey et al (2000), the microfinance institutions in Ghana belong to the informal financial markets, which are basically fragmented, faced with information asymmetries and often grant small, short-term loans to risky borrowers who are already rationed out of credit from the formal financial sector.

The term microfinance institution in Ghana is understood as a sub-sector of the financial sector, comprising most different financial institutions that use a particular financial method to reach the poor. The microfinance sector in Ghana comprises four tiered ranges: formal suppliers, which include the savings and loan companies and rural and community banks; semi-formal suppliers, including credit unions, financial non-governmental organizations (FNGOs) and cooperatives; informal suppliers, including *susu* collectors and clubs and rotating and accumulating savings and credit associations (ROSCAs and ASCAs); and government-sponsored microfinance schemes and programs, which have also been instigated, the current scheme being the Micro and Small Loans Centre (MASLOC).

In Ghana, the clients of microfinance are predominantly women in both rural and urban centers. These women are engaged in activities such as farming, food processing, petty trading, service provision and street vending. It is known that loans advanced by microfinance institutions are normally for purposes such as housing, petty trade and as “start-up” loans for

farmers to buy inputs for farming, including rice seeds, fertilizers and other agricultural tools; some of the loans are used for a variety of non-crop activities, such as dairy raising, cattle fattening, poultry farming, weaving, basket making, leasing farm and other capital machinery and woodworking. Microfinance loans may also be used for a number of other commercial activities, including cloth trading, pottery manufacturing, wholesaling and retailing. Microfinance institutions have been grouped into four main types based on their nature, mode of registration and operations, sources of funding, capital requirements and depth of outreach. Microfinance institutions in Ghana are registered and operated under the supervision of the Bank of Ghana and are guided by the Ghana Microfinance Policy.

The Ghana Microfinance Policy (GHAMP) reports that the national data and reporting systems, institutional data and clientele data are inadequate and weak in their dissemination within and between institutions. Overall, there is a paucity of information on microfinance institutions, their operations and their clients in the country and the attempt to develop a national data bank is yet to be fully realized. Developing countries' financial institutions, including those of Ghana, face various challenges in terms of reaching MSEs. They also operate within a limited infrastructure and a difficult business environment that is heightened when it comes to targeting MSEs. In Ghana, for instance, the minimum capital deposit requirements with the Central Bank make it difficult for microfinance institutions to expand their outreach and reach more MSEs. The Banking Law of 1989, which is silent on collateral confiscation in the case of default, makes lending more difficult to applicants who are conceived as riskier. All these issues contribute to the rationing problems in Ghana and in Africa in general.

The four major types of microfinance institutions in Ghana are rural and community banks, savings and loans companies, NGO-based institutions and government-sponsored institutions.

Rural and community banks (RCBs) are the type of MFIs that operate as quasi-commercial banks under the Banking Act, 783 of 2007. Their minimum requirement is GH¢300,000.00 (US\$144,000.00), which is, however, lower than that of commercial banks and they are not permitted to undertake foreign exchange transactions. They are owned by members of the rural community through equity participation and are licensed. Perhaps this may be the reason for them having the lowest capital requirement among the MFIs. Their main objectives are to mobilize savings and provide loans within their operational areas (Addo, 1998). Over the past decade, RCBs have adopted a more commercial approach and have introduced innovative programs, often in collaboration with NGOs. Rural and community banks have a low capital base and this problem hinders their expansion and depth of outreach. They provide loans to clients who have either a current or a savings account, who are in a productive business or who need loans to meet certain expenditure requirements. They give priority to clients who reside and conduct business within the community. They provide both individual and group loans and repayments are mostly on a monthly or biweekly basis. Their loan sizes are tied to the repayment performance and the collateral provided. Their interest rates are the market rates but are sometimes lower, depending on the source of funding. Their loan screening techniques include project appraisal and character and business references (Adjei, 2010).

Savings and loans companies (SLCs) are the type of MFIs that are licensed and regulated by the Bank of Ghana. They emerged in 1993 when the non-banking law came into existence. They are, however, restricted to a limited range of services. Their main functions include deposit mobilization from the general public and extension of credit to clients in the form of loans. They are located in the urban centers of the country, where they provide services to the urban poor. Their main target clients are micro and small entrepreneurs as well as female traders. The growth of SLCs in Ghana is slow due to the inability of new entrants to meet the requirements set by the Bank of Ghana. Their minimum capital requirement is far higher than

that of the RCBs and is pegged at GH¢15,000,000.00 (US\$7,200,000.00). They serve clients who normally hold either a current or a savings account and are in a productive business or a start-up. They provide loans to their clients with a monthly or biweekly pay-up period, depending on the nature of the business. The loan size also depends on the repayment performance and collateral type and their interest rates are at the market level. The loan screening techniques include the provision of business plans, project appraisals and character references.

NGO-based MFIs are incorporated as companies limited by guarantee (not for profit) under the Company Code 1973 (Act 179). Their poverty focus enables most of them to provide multiple services to their clients, especially micro-credit and skill training. They are not licensed to take deposits from the general public and therefore rely on external funding (donor agencies). The minimum requirement set by the Bank of Ghana is GH¢500,000.00 (US\$240,000.00). Their operations are normally financed by donor agencies as well as managed funds from the Government and development partners, equity capital and loans from commercial banks (Adjei, 2010). Their poverty focus leads them to achieve relatively deep penetration to poor clients, adopting innovative microfinance methodologies. They serve clients with a current or a savings account, who are in a productive business, for start-up as well as to meet expenditure needs. The loan repayment periods are monthly or biweekly. They practice progressive lending and depend largely on the repayment performance. Their interest rates are also at the market rate but sometimes lower, depending on their source of funding. The loan screening is based on project appraisal and character and business references.

The government-sponsored MFI currently in operation is the Microfinance and Small Loan Centre (MASLOC). It is the apex body responsible for implementing the Government of Ghana's microfinance program targeted at reducing poverty and creating jobs and wealth. Most of their target clients are women, who are often rationed out of credit from the commercial

banks, as well as youths, through the Ghana Youth Employment and Entrepreneurial Development Agency (GYEEDA). Established in 2006, MASLOC performs the function of holding in trust funds of the Government of Ghana and development partners for the purpose of administering micro- and small-scale credit programs as well as providing, managing and regulating approved funds for microfinance and small-scale credit loan schemes and programs. Because of the Government's policy of creating employment avenues for the unemployed, loans are normally given to individuals for start-up, mostly under the GYEEDA (Ghana Youth Employment and Entrepreneurial Development Agency) program. Apart from these people, women and youths are often the targets. Access to credit and rationing therefore favors women and youths in the government-sponsored microfinance schemes.

1.5 Data Description and Methodology

1.5.1 Data

The rationing processes that are followed by all four types of MFIs involve three stages, as observed by Lapar and Graham (1988). These involve having interactions with prospective loan applicants and assessing their business plan or visiting the business premises of applicants who are already in business to ascertain their creditworthiness. Applicants who are perceived to be very risky are turned down before the loan application process begins through the issuance of the loan application forms. The decision on whether to grant an applicant the full or part of the amount requested depends on the information given by the applicant via the application forms.

A total of 14 microfinance institutions were able to provide us with data on their borrowers. Of these, 3 were savings and loan companies, 1 was government-sponsored, 5 were from non-governmental organizations and 5 were community and rural banks. A total of 1,429 observations, being the number of granted loans (both partially and fully granted) from the microfinance institutions, were used for the study. The data collected on these 1,429 borrowers

consist of information about the individual, firm and loan characteristics as well as their status with regard to being rationed or otherwise. This information was gleaned from the microfinance clients' database for the 2012/2013 financial year. Of these observations, 372 (26.03%) correspond to the number of borrowers of the savings and loan companies, 127 (8.89%) relate to the government-sponsored MFI, 512 (35.83%) are from the NGO type and 418 (29.25) correspond to the rural and community banks.

It was not possible to collect data from the microfinance institutions on applicants who were turned down completely in the loan application process, as this took place through the interaction process and therefore no application forms were completed and no records were made.

It was also difficult to have a very large sample as some of the microfinance institutions were unwilling to provide information on their borrowers even though they had indicated their willingness to provide such information during the preliminary and feasibility study stages. The non-availability of credit bureaus in Ghana also made it difficult to obtain more MFIs' data and hence a larger sample. According to Ayeh (2013), the fiercely competitive nature of these microfinance institutions makes them unwilling to provide data and information on their clients and operations to their APEX body, the Ghana Microfinance Institutions Network (GHAMFIN), to enable it create a credit bureau for fear that a competitor may use such information for its counter benefit. The difficulty in accessing data from the government-sponsored microfinance scheme (MASLOC) was also due to the perception that successful applicants are members of the political party in power and therefore a change of the party in power would lead to the persecution of these applicants, as happened in 2009 during the change of government from the National Patriotic Party (NPP) to the National Democratic Congress (NDC). It is hoped that when the Right to Information Bill, which is currently before the Parliament of Ghana, is passed,

it will make it easier to access such information and also contribute to the research growth and development of the country.

A total of 418 observations represented the number of applicants who applied for loans at the rural and community banks. Of these, 198 (47.37%) were rationed. The number of female applicants was 261 (62.44%), whilst 169 (40.43%) were youths (based on the GYEEDA module). The percentage of females with respect to gender confirms the observation made that the clients of microfinance and microcredit are mostly women. The classification of applicants based on economic sectors shows that 171 (40.91%) were from the commerce sector, 33 (7.89%) were from the transport sector, 29 (6.94%) were from the manufacturing sector, 169 (40.43%) were from the agricultural sector and 16 (3.83%) were from the service sector. With regard to the educational background of the applicants, 197 (47.13%) had tertiary education, 99 (23.68%) had secondary education, 86 (20.57%) had primary education and 36 (8.61%) had no formal education. The number of applicants with non-mandatory savings was 376 (89.95%).

In our data, 127 borrowers applied for loans from the government-sponsored microfinance scheme. Of this number, 65 (51.18%) were rationed. Of the total number of applicants, 106 (83.46%) were female, which again confirms that the majority of microfinance and microcredit clients are women. It also confirms the priority given to women in the government microfinance scheme. Of the total number of applicants, 54 (42.52%) were youths. With regard to the economic sectors, 39 (30.71%) were from the commerce sector, 7 (5.51%) were from the transport sector, 18 (14.17%) were from the manufacturing sector, 47 (37.01%) were from the agricultural sector and 16 (12.6%) were from the service sector. With respect to the educational background of the applicants to the government-sponsored scheme, 57 (44.88%) had tertiary education, 21 (16.54%) had secondary education, 49 (38.58%) had primary education and none had no formal education. All the applicants had non-mandatory savings. It must be emphasized that the record keeping and disclosure of records on applicants

have become difficult due to the fear of political witch-hunting as well as forcing them to pay up the loan even when the repayment period is not due, especially for applicants believed to be sympathizers with the then ruling government when there is a change of government to a different political party.

The number of applications for loans in the NGO type was 512. Of these, 146 (28.52%) were rationed. Of the total number of applicants, 229 (44.73%) were female whilst 178 (34.77%) were youths. The applicants from the commerce sector accounted for 151 individuals (29.49%), the transport sector accounted for 27 (5.27%), 115 (22.46%) were from the manufacturing sector, 104 (20.31%) represented the agricultural sector and 115 (22.46%) were from the service sector. With regard to the educational background of the applicants, 217 (42.38%) had tertiary education, 149 (29.1%) had up to secondary education, 140 (27.34%) had up to primary education and 6 (1.17%) had no formal education. Of the total number of applicants, 398 (77.73%) had non-mandatory savings.

Finally, 372 individuals applied for loans from the savings and loan microfinance companies. Of these, 108 (29.03%) were rationed. Of the total number of applicants, 211 (56%) were female, again confirming the observation made that the majority of microfinance and microcredit clients are women. The total number of applicants who were youths was 151 (40.59%). With regard to the economic sector of the applicants, 171 (46.77%) were applicants from the commerce sector, 16 (4.3%) were from the transport sector, 29 (7.80%) were from the manufacturing sector, 77 (20.70%) were from the agricultural sector and 76 (20.43%) were from the service sector. Of the total number of applicants, 364 (97.85%) had non-mandatory savings.

The table below presents the descriptive analysis of the total number of applicants used for the study. The table shows that of the 1,429 applicants, 517 (36.18%) were rationed, whilst 912 (63.82) applicants received the entire amount that they requested. Of the 1429 borrowers,

966 (67.60) were youths aged between 18 and 35 based on the GYEEDA module. Female borrowers made up 56.47% (807) and this number also confirms that the clients of microfinance and microcredit are mostly women. The classification of borrowers based on economic sectors shows that 535 (37%) were in the commerce sector, 83 (6%) were in the transport sector, 191 (13%) were in the manufacturing, 223 (16%) were in the service sector and 397 (28%) were from the agricultural sector. The large number of clients representing the commerce and agricultural sectors also supports the claim that the microfinance sector has a large number of female clients who are basically petty traders and a large number of clients from the agricultural sector, who normally need small loans for their operations. Borrowers in the manufacturing and transport sectors normally demand large sums of money and therefore turn to the formal financial sector, normally commercial banks, for loans. With regard to the educational background of the borrowers, 714 (50%) were clients who had attained some tertiary education, 299 (21%) had attained secondary education, 367 (26%) had attained primary education and 49 (3%) had not attained any formal education. The statistics on the educational background are slightly surprising since it was expected that a large number would be borrowers who had attained secondary and primary education. The microfinance sector is supposed to serve the vulnerable, who are often termed semi-literate people who are frequently turned down by formal commercial banks as they basically serve clients who have tertiary qualifications who are capable of preparing and keeping good financial records. The large number of borrowers who have attained tertiary education indicates the extent of rationing in the formal financial sector as well as the progress with which Ghana is making tertiary education accessible, as witnessed by the large number of private universities being established in the country. With regard to the closeness of borrowers to the microfinance institutions to which they applied for loans, 914 (63%) were borrowers who were located within the district in which the microfinance institution operates, whilst 515 (36.04%) were borrowers who were located outside the district within which the microfinance institution operates.

Table 1.1: Descriptive Analysis of Data

Variable	Description	Mode of measurement	Mean	Standard deviation
Amount requested	Amount of money requested	Ghana Cedis	4425.36	5389.37
Amount granted	Amount of money granted	Ghana Cedis	3652.09	4318.83
Education	Borrower's educational level	education tertiary 50 Secondary 21 elementary 26 illiterate 3	percentage 1.82	.93
Sector	The business sector of the borrower	sector commerce 37 transport 6 manufacturing 13 agric 28 service 16	percentage 2.78	1.55
Sex	Sex of the borrower	1= female 0 = male	.56	.49
Profits	Profits after tax,	Ghana Cedis	899.44	1643.74
Assets	Borrower's Assets	Ghana Cedis	7020.34	12932.87
Age	Borrower's Age	Years	38.75	8.43

1.5.2 Econometric Estimation

We assume that the microfinance type influencing the credit rationing and the factors influencing the credit-rationing behavior of the microfinance institutions are determined by the following linear relationships:

$$y_i = \beta' X_i + \varepsilon_i \quad (1)$$

In equation (1), we consider two outcomes. In one regression, the outcome y_i is a dummy variable that takes the value one if the loan amount requested is not fully granted and zero otherwise. That is, with the binary outcome variable in model (1), we estimate the probability of being credit rationed. In this case, we resort to the probit model. The second regression considers the outcome y_i to be the share of the total amount requested that has been granted. In this case, we estimate equation (1) using the OLS estimation method. The matrix X contains a

set of individual characteristics and variables picking up the creditworthiness of the loan, that is, the microfinance type and the borrower's individual characteristics. These variables concern the borrower's economic and financial characteristics, the trust variables and the loan characteristic variables. β is a vector of parameters to be estimated and ε is random error term with the standard distributional properties in each case.

1.5.3 The Probability of Being Credit Rationed

In table 1.2, we show the estimated effects of the determinants of the probability of being credit rationed. To allow for interpretation and comparison across alternative models, we report the marginal effects instead of the estimated coefficients. The degree/percentage of the rationing and the direction will be determined by the marginal effects and their signs, whilst the significance or otherwise will be determined by their corresponding p-values. Our estimation strategy consists of introducing each set of variables sequentially. We start with the most parsimonious model, which only includes a set of dummy variables identifying the type of microfinance institution (column 1). In column 2, we add the individual and credit characteristics. Finally, in column 3, we include the monthly interest rate associated with each loan, which varies not only across borrowers but only across microfinance institutions. In columns 4, 5 and 6, we repeat the same sequential procedure, but now we include dummies for each microfinance institution (lender) instead of the type of microfinance institution to test whether within each institution type we can observe some heterogeneity across microfinance institutions regarding the amount of borrowers who are credit rationed.

Our general results support the existing theory and other empirical studies, since all our control variables behave according to expectations. Having a relatively high number of years of experience, some relationship with the lender, being in the manufacturing sector and mandatory

savings reduce the likelihood of being credit rationed and increase access to credit. On the contrary, having no formal education in relation to tertiary education, providing a guarantor and being in the Agriculture sector increases the likelihood of being credit rationed. Obviously, the need for a guarantor indicates that the loan might be risky. We find striking that being a female and a young entrepreneur rather reduce the likelihood of being credit rationed which do not support theory and other empirical studies in different countries. We think that this result might be due to the Ghana government's efforts at making access to credit to the marginalized and the vulnerable a priority through its Ghana Microfinance Policy.

We start commenting on the results of the models considering dummies for the type of microfinance institution. The government-sponsored microfinance institution type is set as the base category. The results in column (1) of table 1.2 indicate that the savings and loans microfinance type reduces rationing by 20%, whilst the NGO type reduces rationing by 21%, according to their marginal effects, with the rural and community bank type not showing any significance. The results above show that the government-sponsored type rather increases rationing. In column (2), we observe some individual and loan characteristics that are significant in determining rationing but the degree of rationing by the microfinance types does not change significantly, as indicated by their corresponding marginal effects. It is interesting and pertinent to perform a simulation; combining the interest rate as an explanatory variable with the microfinance type and individual and loan characteristics as in column (3), we observe that the marginal effects for all the microfinance types change sign from negative to positive and have much higher rates (marginal effects), as the savings and loans type increases rationing by 43%, the NGO type increases it by 58% and the rural and community bank type increases it by 66% in the same way as the base category, being the government-sponsored type. The results in column (3) therefore indicate that the interest rate as a risk minimizing factor is very important

in determining credit rationing and that all the microfinance types use interest rates to ration credit.

The results in column (4) indicate the rationing behavior of the various microfinance institutions under the four microfinance types with the government-sponsored type as the base category. Their marginal effects show that the various microfinance institutions reduce rationing but at varied degrees even within each type and in relation to the base category, which rather increases rationing. It is interesting to note that the variations in the rationing behavior of these microfinance institutions are not according to their microfinance types. In column (5), we introduce individual and loan characteristics into the model with the microfinance institutions using the government-sponsored type as the base category. Just like the results obtained in column (2), we do not find any significant change in the rationing behaviors of the microfinance institutions as indicated by their marginal effects; however, we find some individual and loan characteristics that are significant in determining rationing. An interesting simulation, again, is performed in column (6); after introducing interest rates into the model, some of the microfinance institutions increase rationing as the signs of the marginal effects change from negative to positive. This observation lends support to Stiglitz and Weiss's (1981) assertion that credit rationing may still persist even in the face of interest rate liberalization credit as lender will raise interest rates and ration credit and that it is the information provided by the borrowers that will determine credit rationing and access to credit. Our observation is that interest rates have rather worsen the rationing behavior of the microfinance companies and the likelihood of being less rationed is rather determined by the borrower and firm characteristics as well as the loan characteristics.

It is imperative to note that the rationing behaviors of the microfinance institutions differ even within the same type as there are some that behave just like the government-sponsored type whilst others do not. The final result is that the rationing behavior is not influenced by the microfinance types but by the individual microfinance institutions.

Table 1.2: Credit Rationing and Microfinance Type: Probit Estimation with Marginal Effects

	(1) Ration	(2) Ration	(3) Ration	(4) Ration	(5) Ration	(6) Ration
Savings & loans	-0.202*** (0.041)	-0.237*** (0.043)	0.432*** (0.147)			
NGO type	-0.213*** (0.042)	-0.226*** (0.048)	0.585*** (0.150)			
Rural & Comm.	-0.035 (0.047)	-0.054 (0.052)	0.658*** (0.118)			
Maturity		0.018*** (0.003)	0.019*** (0.003)		0.021*** (0.003)	0.021*** (0.003)
Assets value		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
Profits		0.000 (0.000)	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)
Experience		-0.014*** (0.003)	-0.014*** (0.003)		-0.013*** (0.004)	-0.013*** (0.004)
Second Cycle		0.025 (0.041)	0.030 (0.042)		0.086* (0.046)	0.086* (0.046)
Primary		-0.054 (0.037)	-0.051 (0.037)		-0.035 (0.039)	-0.035 (0.039)
No Education		0.434*** (0.085)	0.456*** (0.082)		0.463*** (0.109)	0.463*** (0.109)
Female		-0.106*** (0.029)	-0.100*** (0.029)		-0.088*** (0.030)	-0.088*** (0.030)
Youth		-0.122*** (0.028)	-0.107*** (0.029)		-0.122*** (0.029)	-0.122*** (0.029)
Collateral		0.000 (0.000)	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)
Location		0.029 (0.029)	0.046 (0.030)		0.044 (0.030)	0.044 (0.030)
Guarantor		0.318*** (0.035)	0.281*** (0.036)		0.266*** (0.043)	0.266*** (0.043)
Relationship		-0.108*** (0.028)	-0.102*** (0.028)		-0.121*** (0.029)	-0.121*** (0.029)
Purpose		-0.031 (0.031)	-0.021 (0.032)		-0.026 (0.032)	-0.026 (0.032)
Transport		-0.015 (0.062)	-0.014 (0.062)		-0.030 (0.063)	-0.030 (0.063)
Manufacturing		-0.062 (0.047)	-0.080* (0.047)		-0.104** (0.047)	-0.104** (0.047)
Agric		0.171*** (0.044)	0.168*** (0.044)		0.163*** (0.046)	0.163*** (0.046)
Service		0.036 (0.048)	0.025 (0.048)		0.037 (0.050)	0.037 (0.050)
Savings		-0.233***	-0.264***		-0.228***	-0.228***

Table 1.2
 cont

	(0.045)	(0.041)	(0.075)	(0.075)
Int. rate		-0.374*** (0.080)		-0.188*** (0.033)
MFI1		-0.183*** (0.044)	-0.186*** (0.048)	0.172** (0.080)
MFI 2		-0.284*** (0.033)	-0.276*** (0.036)	0.015 (0.082)
MFI 3		-0.099* (0.052)	-0.179*** (0.048)	0.081 (0.068)
MFI 5		-0.335*** (0.025)	-0.319*** (0.030)	
MFI 6		-0.164*** (0.049)	-0.164 (0.112)	0.203 (0.168)
MFI 7		-0.210*** (0.043)	-0.086 (0.065)	0.303*** (0.080)
MFI 8		-0.243*** (0.039)	-0.257*** (0.038)	0.150 (0.095)
MFI 9		0.015 (0.062)	-0.082 (0.066)	0.309*** (0.084)
MFI 10		-0.231*** (0.044)	-0.243*** (0.046)	0.068 (0.093)
MFI 11		0.008 (0.068)	-0.059 (0.078)	0.334*** (0.087)
MFI 12		0.040 (0.073)	0.149 (0.091)	0.510*** (0.065)
MFI 13		-0.046 (0.055)	0.007 (0.063)	0.400*** (0.068)
MFI 14		0.083 (0.070)	-0.067 (0.071)	0.325*** (0.084)
Sample size	1429.00	1429.00	1429.00	1429.00

1.5.4. The Size of the Credit Rationing

Table 1.3 is a linear (OLS) estimation of the data to determine the percentage of the loan requested by borrowers that are conceded, that is, the size of the rationing. The degree/percentage of the credit access and the direction will be determined by the coefficients and their signs, whilst the significance or otherwise will be determined by their corresponding p-values. The results of this model are qualitatively the same as those for the probability of being rationed as the control variables behave in the same way as in our probit estimation and

therefore lend support to theory and other empirical studies except for being female and young entrepreneur that goes contrary to theory and other empirical studies and the reasons, perhaps, is what we have attributed to in sub section (5.1). Column (1) of table 1.3 shows the results of the dummies for the microfinance types. Setting the government-sponsored type as the base category, we observe that the access to credit increases by 13% for the savings and loan type, 14% for the NGO type and 8% for the rural and community type, as indicated by their corresponding coefficients. In column (2), we observe that the increases in the access to credit by the various microfinance types do not show much difference when compared with those in column (1) when the individual, firm and loan characteristics are introduced into the model, as indicated by their corresponding coefficients, though we observe some significant variables with regard to the individual, firm and loan characteristics in determining the access to credit. It is important to note that in column (3), we do not observe any significance in the access to credit by all the microfinance types as we introduce the monthly interest rate into the model, though the various individual, firm and loan characteristics are still significant in determining it, as indicated by their significant p-values.

In columns (4), (5) and (6), we repeat the same procedure but we now include dummies for each microfinance institution instead of the dummies for the microfinance type, using the government-sponsored microfinance institution (MASLOC) as the base category, to test whether within each institution type we can observe some heterogeneity across the microfinance institutions regarding access to credit. A very important simulation is performed here; in column (6), we observe that some of the microfinance institutions reduce the access to credit at varied rates, as indicated by their corresponding coefficients across and within each type of institution as we introduce the monthly interest rate into the model, whilst we do not observe any significance with regard to access to credit for some of the microfinance institutions even within the same type, as indicated by their insignificant p-values. Our observation is that interest rates have rather reduced access to credit by the microfinance companies and access to

credit is determined by the borrower and firm characteristics as well as the loan characteristics. We also observe some individual, firm and loan characteristics that are significant in determining access to credit. The final result is that access to credit is not influenced by the microfinance types but by the individual microfinance institutions.

Table 1.3: Credit Rationing and Microfinance Type: Linear Regression

	(1) Access	(2) Access	(3) Access	(4) Access	(5) Access	(6) Access
Savings & loans	0.136*** (0.019)	0.145*** (0.019)	-0.039 (0.054)			
NGO type	0.142*** (0.018)	0.148*** (0.019)	-0.079 (0.064)			
Rural & Comm.	0.085*** (0.019)	0.100*** (0.019)	-0.102* (0.058)			
Maturity		-0.004*** (0.001)	-0.005*** (0.001)		-0.006*** (0.001)	-0.006*** (0.001)
Assets value		0.000 (0.000)	0.000 (0.000)		0.000 (0.000)	0.000 (0.000)
Profits		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
Experience		0.003*** (0.001)	0.003** (0.001)		0.003** (0.001)	0.003** (0.001)
Second Cycle		-0.020 (0.014)	-0.022 (0.014)		-0.039*** (0.015)	-0.039*** (0.015)
Primary		0.014 (0.013)	0.013 (0.013)		0.004 (0.013)	0.004 (0.013)
No Education		-0.121*** (0.032)	-0.126*** (0.032)		-0.119*** (0.039)	-0.119*** (0.039)
Female		0.031*** (0.010)	0.029*** (0.010)		0.026** (0.010)	0.026** (0.010)
Youth		0.020** (0.010)	0.016 (0.010)		0.023** (0.010)	0.023** (0.010)
Collateral		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
Location		0.002 (0.010)	-0.003 (0.010)		-0.003 (0.010)	-0.003 (0.010)
Guarantor		-0.096*** (0.012)	-0.085*** (0.012)		-0.079*** (0.014)	-0.079*** (0.014)
Relationship		0.028*** (0.010)	0.026*** (0.010)		0.033*** (0.009)	0.033*** (0.009)
Purpose		0.017 (0.011)	0.014 (0.011)		0.015 (0.011)	0.015 (0.011)
Transport		-0.004 (0.022)	-0.003 (0.022)		0.005 (0.022)	0.005 (0.022)
Manufacturing		0.036** (0.017)	0.043** (0.017)		0.050*** (0.018)	0.050*** (0.018)
Agric		-0.036** (0.015)	-0.035** (0.015)		-0.028* (0.015)	-0.028* (0.015)
Service		-0.013 (0.016)	-0.009 (0.016)		-0.009 (0.016)	-0.009 (0.016)
Savings		0.074*** (0.022)	0.087*** (0.022)		0.055 (0.034)	0.055 (0.034)
Int. rate			0.100*** (0.027)			0.077*** (0.010)

Table 1.3
 cont

MFI1				0.129*** (0.022)	0.135*** (0.023)	-0.020 (0.023)
MFI 2				0.162*** (0.023)	0.146*** (0.023)	-0.009 (0.023)
MFI 3				0.119*** (0.023)	0.147*** (0.023)	0.030 (0.021)
MFI 5				0.197*** (0.024)	0.193*** (0.025)	
MFI 6				0.144*** (0.024)	0.155*** (0.048)	0.000 (0.050)
MFI 7				0.146*** (0.024)	0.108*** (0.025)	-0.047** (0.024)
MFI 8				0.190*** (0.024)	0.194*** (0.024)	0.001 (0.026)
MFI 9				0.036 (0.024)	0.076*** (0.026)	-0.078*** (0.026)
MFI 10				0.157*** (0.027)	0.162*** (0.027)	0.008 (0.026)
MFI 11				0.087*** (0.026)	0.122*** (0.029)	-0.033 (0.027)
MFI 12				0.026 (0.027)	0.004 (0.029)	-0.151*** (0.029)
MFI 13				0.093*** (0.022)	0.082*** (0.022)	-0.073*** (0.022)
MFI 14				0.057** (0.025)	0.109*** (0.026)	-0.046* (0.026)
Constant	0.778*** (0.016)	0.773*** (0.023)	0.581*** (0.057)	0.778*** (0.016)	0.791*** (0.023)	0.636*** (0.037)
R-squared	0.051	0.143	0.151	0.101	0.179	0.179
Sample size	1429.00	1429.00	1429.00	1429.00	1429.00	1429.00

6. Conclusions

In this paper, we investigated the various microfinance types and the rationing behavior in the microfinance markets in Ghana. This research has become necessary and important since most research on credit rationing has not taken into consideration the fact that microfinance institutions have different policies, objectives and funding and therefore their rationing behavior may differ. We conclude that there is credit rationing in the microfinance market and that the rationing behavior is not influenced by the microfinance type but by the individual microfinance institutions. Our results also confirm what prevails in the microfinance markets in developing

countries, where the rationing is influenced by the individual, firm, loan and borrower economic characteristics.

Ghana's financial liberalization policy, which includes interest rate liberalization for all forms of financial institutions and seeks to encourage financial institutions to lend to the private sector, especially micro and small-scale entrepreneurs, is exploitative and abusive as these lending institutions charge exorbitant interest rates on the loans granted to these vulnerable and frustrated entrepreneurs, who are often rationed out of credit by commercial banks. It also rather leads to some microfinance institutions folding as the default rates increase due to the fact that borrowers are unable to pay such huge interest rates. Our primary data show that MFIs charge very high interest rates between 24% and 60% per annum, which is a very disturbing development in the quest to make credit easily accessible to entrepreneurs who are desperate for loans because they are not served by commercial banks. The higher interest rates may defeat the policy intentions of the microfinance program, which mainly targets the poor and the marginalized. The interest rates liberalization that seeks to allocate credit at interest rates that reflects scarcities have rather worsen the rationing behavior of the microfinance companies as they tend to raise interest rates and rather increase rationing.

There is a need for government intervention in this sector until such time that the microfinance sector is fully developed. Regulations through interest rate ceilings are necessary if more credit is to be extended to more micro and small businesses at affordable rates. The Financial Liberalization Policy is therefore not the best option for the microfinance sector in so far as the market is not competitive enough and rationing persists. Our results show that the Government microfinance type was the most severe with regards to the rationing behavior and this turns to affect the rationing behavior of the other microfinance companies. We say this because the fact that individual microfinance companies themselves are allowed to outsource funds from the Government type (MASLOC), means that it is possible influence the credit

rationing behavior of these microfinance companies by providing loanable funds with relaxed and flexible conditions to companies who are willing to reduce interest rates and eliminate all barriers to access. Monies outsourced from MASLOC funds by the microfinance companies at lower interest rates will therefore mean that these companies can also lend to these MSEs at lower interest rates and reduce rationing. Another observations made during our study is that the huge capital requirements deposited with the Bank of Ghana leaves the microfinance companies with limited loanable funds which often do not meet the borrowers' demands and this may also contribute to the rationing behavior of these companies. One way of dealing with this problem is to encourage merging of smaller companies at the institutional level so as to join resources, both capital and skill as this will go a long way in reducing rationing and increasing access and outreach.

Ghana, through the Bank of Ghana's capital requirement policy, which sets different minimum capital requirements for each type of microfinance institution, is also not moving in the right direction, as our results show that the rationing behavior is not determined by the microfinance types but by the individual microfinance institutions. Setting a minimal and a fixed amount as capital requirements for all microfinance types will make more funds available, which will increase microfinance institutions' outreach and allow them to serve more clients who are vulnerable, desperate and unable to access loans from commercial banks. This will also promote the growth of the microfinance sector and enable it to become more competitive. The minimum capital requirements set for the various microfinance types are therefore not appropriate, as they tend to stifle the growth of the microfinance market, making it uncompetitive and unable to increase its outreach and meet the demands of the large number of micro and small-scale entrepreneurs. One striking feature we observe is that whereas Bank of Ghana requires the various microfinance types to deposit various sums of monies according to the institution type as capital requirements, the government owned microfinance institution is not required of such. This means that it is possible to effect policy change or influence policy by

increasing outreach and access with their allocated funds including fund which hitherto, would have been deposited with Bank of Ghana as capital requirement, our results show that the government owned microfinance rather engages in severe rationing using it as a base category. Microfinance institutions should also consider economic factors rather than using individual characteristics and other discriminating factors that are non-business-related as well as improving their monitoring systems as a way of minimizing and eliminating credit default.

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Empowering the Vulnerable to be Entrepreneurs: An Empirical Test on the Effectiveness of the Ghana Microfinance Policy 2006

1. Introduction

Issues relating to the vulnerable and access to credit in Ghana within the context of Ghana's Financial Sector Reforms have gained much prominence. The National Gender and Youth Policy was developed in 2004 with its overall goal in addressing gender and youth concerns into the national development process so as to improve the social, legal, political and economic wellbeing of women and the youth in particular. While the government of Ghana established an institutional structure aimed at promoting gender equality, the effectiveness of this goal suffered from weak institutional capacity (GHAMP, 2006). Policy makers in Ghana have now come to the realization that women and youth empowerment and access to resources by affirmative action through gender and youth prioritized policies rather than equality is the only way to addressing the challenges being faced by these vulnerable groups. In this regard, various policies, to the extent of setting up different Government Ministries for women and the youth have been implemented under various Governments. The setting up of the Ministry of Women's and Children's Affairs and later the Ministry of Women, Gender and Social Protection are in a bid to addressing the problems facing women and empowering them. The setting up of the Ministry of Youth and Sports that later changed to the Ministry of Manpower, Youth and Employment are also in a bid to making the youth employable and economically active. Various gender and youth empowerment intervention programmes were set up with the sole aim of

empowering these vulnerable groups through access to resources, employment and other income generating activities but these programmes did not yield the required results.

In a bid to finding solutions to the problems confronting these vulnerable groups, the Ghana Government encouraged the promotion and development of the microfinance sector as a way of ensuring that women and young entrepreneurs meet their financial demands. The Ghana Microfinance Policy (GHAMP) was therefore developed in 2006 as a way of regularizing the operations of the MFIs in line with the objectives of the Ghana Government in reducing poverty and empowering women and young entrepreneurs who constitute the majority of the working population. Ghana's Microfinance Policy Document emphasizes the need for microfinance institutions to make credit more available and accessible to the vulnerable group of the society notably the youth and women. If the operations of the microfinance institutions are guided by this policy, then the gender and age gap in credit rationing, if there was any, must not be influenced by the borrowers' attributes and loan characteristics, but from a differential treatment of these attributes by microfinance institutions in favor of women and youth, i.e. positive discrimination. In this paper, our main objective is to determine the extent to which the operations of the microfinance companies are influenced by the Ghana Microfinance Policy. To do so we resort the Oaxaca decomposition method, which allow us to determine the extent to which potential difference in credit rationing between men and women, and between young and older entrepreneurs are due to differences in their credit worthiness characteristics or by an unequal treatment received from microfinance institutions. Unequal treatment in favor of women and the youth would imply positive discrimination. The data we use in order to test the effectiveness of the Ghana Microfinance Policy (2006) was gleaned from fourteen microfinance companies in Ghana: thirteen private and one governmental.

Our results show that the rationing and discrimination behavior of the microfinance companies favor women and young entrepreneurs, which means that the operations of the microfinance companies are influenced by the Ghana Microfinance Policy.

2. Institutional Setting

2.1 Empowerment Programmes for Female and Young Entrepreneurs

The Ministry of Women's and Children's Affairs in 2001 was the main vehicle for government programmes aimed at targeting poor women. The Ministry established the Women's Special Microfinance Fund with assistance from the Japanese government. The aim was to help in the development of women-owned enterprises, especially those in the rural and deprived areas, to augment their earnings from agricultural processing and marketing activities and to enable them access funds for future investments. The fund was disbursed through some of the microfinance institutions including the Rural and Community Banks. In addition, the Department of Youth Development within the Ministry of Youth and Sports and the Ministry of Employment and Social Welfare under the National Youth Employment Programme (NYEP) provided a number of training programmes for the poor and unemployed youth aged between 18 and 35 years. The intervention programme was basically to address the problem of the inadequate technical skills, lack of financial capital and the lack of labor market information.

Funds for youth development through the Communication Service Tax, was instituted in June 2008 through the Communication Service Tax Act (Act 754). This act had often been breached through diversion of funds collected for other competing uses. Funds were also made available through the Government microfinance company (MASLOC) and other microfinance companies for programme participants to access to buy inputs as well as to expand their microenterprises. This programme was later changed to the Ghana Youth Employment and Entrepreneurial Development Agency (GYEEDA) as a way of giving more attention to the youth in acquiring entrepreneurial skills and becoming economically independent. A grant of 65 million dollars was provided by the World Bank to strengthen youth entrepreneur projects under the collaboration between the then NYEP and the World Bank. Various models were established but surprisingly they became avenues through which political cronies siphoned

monies by not using funds meant for the programme. Typical ones were the Agams and Jospong group of companies. It was therefore not surprising that a Presidential Commission set up to investigate the corruption at the Agency asked these two groups to refund various sums of monies to the state (Korboe David, 2014). The Rural Enterprise Programme (REP) was also part of government efforts aimed at reducing poverty and improving living conditions in the rural areas. It was a micro and small scale enterprises support system piloted in all the regions of Ghana with its development partners including IFAD and AFDB. The programme centered on technology transfer and access to rural and microfinance through linkages with participating financial institutions including Rural and Community Banks. Its gender strategy focused on supporting rural women's access to finance, skill training and capacity building. It also focused on Rural Youth Entrepreneurship interventions and approaches that aimed at attracting the youth to micro and small scale enterprises as a way of addressing youth unemployment. There was also the "Women in Agricultural Development" (WIAD), with its main objective of developing effective policies and programmes that support livelihood and wellbeing of women in Agriculture. It had collaborating institutions including the German International Agencies (GIZ), Canadian International Development Agency (CIDA), and USAID that provided funds for skill training and equipment.

Despite these efforts women, youth and other vulnerable groups remain marginalized as access to credit has become problematic to the extent that even funds meant to be disbursed through these intervention programmes do not reach them as these intervention programmes by governments have often been hugely politicized thereby failing to achieve the desired goals. According to the Ghana's population and Housing Census (2010) 90.9% of the total female labor force is found in the private informal sectors that are discriminated against in access to formal credit. Compared with their older counterparts it has been observed that the youth in Ghana are 3.5 times more likely to be unemployed (Darvas et al, 2014; Gyampo, 2012; ISSER, 2012) with youth unemployment more than doubling since 1992).

2.2 The Ghana Microfinance Policy (GHAMP)

In 2006, the Ghana Microfinance Policy (GHAMP) was developed and implemented as the policy guideline for the microfinance intuitions in Ghana. The policy has its primary objectives that include; to create an enabling environment at the micro and macro levels that supports the operations of the sub-sector, to provide avenues for the sustainable flow of funds, adequate infrastructure and development of human capital, ensure an integrated and sustainable financial system that reaches and serves the poor, to facilitate activities that ensure consumer protection and to ensure a harmonized and coordinated sub-sector. The overall guiding principle was to introduce the microfinance sub-sector as an integral part of the financial sector development in Ghana. An additional guiding principles adapted from the Consultative Group to Assist the Poor (CGAP, 2006) that informed this policy were that; the Microfinance was a powerful tool for poverty reduction and economic development, its policies must be results-oriented and gender sensitive, adequate institutional arrangements be put in place so as to enhance the growth of the sub-sector, microfinance service providers operate in a competitive and coordinated environment.

The policy directions is that it shall seek to improve and deepen financial intermediation to serve the poor and low-income people by supporting and building of an inclusive, sustainable and efficient service system. The policy therefore has institutional arrangements, coordination and collaboration among the institutions within the sub-sector that minimizes duplication and foster complementarities of activities by all stakeholders within the industry.

The policy mandates microfinance institutions to make microcredit targeted and accessible to those who can use it productively and service debt. The policy specifically mandates microfinance institutions to provide savings, credit and other financial services to the vulnerable and the marginalized, which in the context of Ghana, have been identified to be women, the youth and the physically-challenged. The policy seeks to protect potential and actual end users

of microfinance products and services from unfair practices such as exorbitant interest rates and ensures public disclosure and transparency in the operations of the institutions. To ensure that data and information gathering and dissemination are enhanced the Ghana Microfinance Institutions Network; an apex body that has been empowered to ensure the harmonization of information gathering, processing and dissemination of data in order to enhance the activities of the subsector through the creation of a central based system which will be accessible by all stakeholders.

To ensure proper and efficient regulation and supervision all MFIs seeking assistance from the government of Ghana or donor programmes shall require certification that it is a member in good standing with its respective sub-sector apex organization. All MFI Apex Bodies are to establish appropriate bye-laws, criteria for registration and standards, which shall be reviewed periodically in accordance with prevailing circumstances within the economy and in response to international practices and standards. To ensure effective monitoring and evaluation in line with the objectives of the policy, the following are being pursued; baseline studies on operations and outreach of institutions and a range of issues such as policies, institutional arrangements and regulatory mechanisms, operations research geared towards improving the efficiency of on-going projects and MFIs, collaborations with Universities and other research institutions in conducting periodic research into various aspects of the operations of the sub-sector and the development of key indicators for monitoring and evaluating the impact of programmes and activities and feedback mechanisms for review of implementation and policy. The government of Ghana, through the Ministry of Finance and Economic Planning shall monitor as well as provide progress report on the policy annually to stakeholders through the Microfinance Forum and at the end of every three years is the Microfinance Conference to review the policy.

2.3. The Microcredit Application Process in Ghana

The first stage of the loan application process is done in an informal manner. First the prospective applicant visits the microfinance company, have an interaction with the loan processing officer to ascertain his/her creditworthiness. Where the applicant is already in business and not loan for start-up the loan officer visits his/her business to familiarize himself with the business of the applicant. Where the loan officer is in doubts about the background or the business of the applicant the officer turns down the application and therefore no application forms is given to the prospective applicant to continue with the process. After the loan application form is given to the applicant he/she then supplies all the information therein and other requirements, submits the forms to the loans officer who will then examine and determine whether to partially or fully grant the amount being requested for.

This informal application process makes it impossible to have information on the outright rejected applicants since such records are not taken by the loan officers of the microfinance companies. This situation means that we cannot control for sample selection in the application process. However, as we will discuss bellow, we do not expect this to be a serious problem for our empirical analysis.

2.4 Review of Related Literature

Recently studies about discrimination in the banking industry have gained much prominence in research. Few of these researches include, (Baydas et al, 1994; Blanchflower et al, 2003; Diaz-Serrano and Raya, 2014; Nti-Addae et al, 2012; Berkovec et al, 1998; Cavalluzzo et al; 2002). Discrimination in the financial markets occurs when the lender's decisions on loan applications are influenced by group membership such as gender, age or race of the borrower that are not relevant to the transaction. Becker (1957) notes that this type of discrimination diminishes as the financial market develops and competition becomes intense among lenders to the extent that they are no longer able to bear the cost of the non-economically motivated choices. An

alternative model, the statistical model that counter Becker's argues that as long as borrowers' demographic characteristics are correlated with their credit worthiness, lenders may use the former as a proxy for the risk factor associated with loans. This is the case when lenders cannot observe the risk factors or unable to collect relevant information due to the cost involved (Phelps, 1972; Arrow, 1973). The severity of gender and age discrimination is often determined by the market condition in the country and in a more competitive loan market, lenders have less incentive to discriminate based on gender and age (Cavalluzzo et al, 2002; Berkovec et al, 1998). The majority of studies analyzing discrimination in credit markets generally focus on discrimination towards minorities such as black, Hispanic or immigrants. The literature aimed at analyzing discrimination against other more vulnerable groups, e.g. women and the youth, are much scarce. Andrea et al., (2010) observed that female entrepreneurs in Italy face tighter credit availability even though they do not pay higher interest rates, while Alberto et al. (2013) observed that women in Italy pay more for credit than men although they do not find evidence that women are riskier than men. Alexander et al. (2009) observed that in the UK female entrepreneurs were less likely to obtain a loan compared to their male counterparts and that female entrepreneurs were charged higher interest rates than their male entrepreneurs. Using US data, Mijid et al. (2013) observed that there is a higher loan denial rate and lower loan application rates for women compared to men. Similarly, Canton et al (2010), concluded that in the EU entrepreneurs age played an important role in that older entrepreneurs perceived external financing as less difficult

So far, evidence from developed countries shows that women and young are likely to be discriminated against in the loan market. In this context, one might expect the extent of this discrimination against women and young entrepreneurs to be amplified in developing countries. One of the reasons of why women and young entrepreneurs may experience difficulties in accessing credit regards to the lack of collateral, which also makes women and young people face legal obstacles in starting and running a business. According to World Bank report (2012) on

Women and Business Law, women in Middle East and North African Countries have fewer inheritance rights than men. The reports also indicate that women have only one percent of the world's property and in two thirds of countries, legal rights of women decline with marriage. According to Agarwal (2003) biased inheritance rights often grant land to male relatives, leaving both widows and daughters at a disadvantage. In settings where adult men are perceived as breadwinners, young people and women's ability to offer family assets as collateral and the incentives to invest in productive activities are influenced by family dynamics that are likely to prioritize adult men's investments (Ospina, 1998). The above mentioned factors affect women and young people in the credit market especially the formal financial markets as they are used to deny them the amount of credit they require to run or set up their businesses thereby making them poorer and vulnerable.

Although various researches have been conducted in the area of credit rationing and access to credit very little have explained the gender and youth characteristic aspects that influence the discrimination and rationing behavior of the MFIs. Most of these researches have also concluded that women and young people are often discriminated against in the credit markets. Khalid et al (2009) observe that in rural Zanzibar factors determining credit constrain were influenced by different characteristics for male and female borrowers. According to them, whereas wealth and risk bearing factors were significant for male borrowers, income levels were the significant factor for female borrowers. Zeller (1994), observed that young entrepreneurs were more likely to be rationed out of credit in his research in the informal financial markets in Madagascar during the period of 1993 and 1994. In a similar research Pariente (2005), observed that youth entrepreneurs are credit constraints compared to their older counterparts in Brazil. Using a sample of entrepreneurs in Ruiru Municipality of Kenya, Phylis et al., (2014) observed that women were less likely to obtain the required credit due to their low levels of literacy and lack of ownership of tangible assets and collateral. However, using data from 16 sub-Saharan African countries, Hansen et al (2014) observed that small enterprises owned by female

entrepreneurs were less likely to be credit constrained compared to their male counterparts, whilst this was reversed for medium size enterprises, showing female favoritism for this type of firms. Fletscher (2008) observed that in Eastern Paraguay, women were more likely to be constrained than men, and that women's rationing status responds to a different set of factors than men. In a research to determine the extent of women access to credit constraints in Sri Lanka, Suresh et al., (2009) observed that gender gaps do not simply masks differences in ability, risk aversion, entrepreneurial attitudes or differences in reporting behavior, but there is some evidence that the gender gap is larger in female-dominated industries.

3. Empirical Framework: Testing for positive discrimination in favor of the vulnerable targeted in the Ghana Microfinance Policy 2006

We assume that the credit rationing and the factors influencing the credit-rationing behavior of the microfinance institutions are determined by the following linear relationships:

$$y_i = \beta' X_i + \varepsilon_i \quad (1)$$

where the outcome y_i can be either a dummy variable that takes the value one if the loan amount requested is not fully granted and zero otherwise, or the share of the total amount requested that has been granted. When our outcome variable y_i is binary, we may estimate the probability of being credit rationed resorting to the probit or the linear probability model (LPM). In the second case, when the outcome variable y_i is a proportion, we may estimate equation (1) using the probit and the OLS estimation method.

In equation (1) the matrix X contains a set of variables picking up the credit worthiness of the loan, borrower's characteristics and the type of microfinance institution granting the loan. The borrowers characteristics included in the model are experience (the number of years in

business), education (the level of formal education), profession (the sector of business), assets (the value of assets of the business), profits (the monthly profits of the business), collateral (the value of collateral), location (the distance from the firm to the microfinance company), guarantor (an individual promising to pay in the case of default), relationship (whether borrower has contracted a loan with the microfinance company before), purpose (whether the requested loan is meant for the business or other purpose), maturity (the number of months for the repayment of loan), savings (whether mandatory or non-mandatory savings) and interest rate (the amount of loan accepted by the borrower). The type of microfinance institution include savings and loans (microfinance 1, 2 and 3) the government's microfinance (microfinance 4), the NGO type (microfinance 5, 6, 7, 8 and 9) and the community and rural banks (microfinance 10, 11, 12, 13 and 14). The vector β contains the set of parameters to be estimated and the ε is random term with the standard distributional properties in each case. The vector of estimated parameters β reflects the marginal contribution of each factor to the probability of being rationed or to the size of the rationing.

The Ghana microfinance Policy among other things, entreats the microfinance companies to give priority to the vulnerable, namely, women and the youth in the granting of microcredit. The policy therefore expects the microfinance companies to first consider women and young entrepreneurs before any other groups of applicants. In other words, we should expect to detect positive discrimination in favor of these vulnerable groups.

We rewrite now equation (1) as follows:

$$y_{ij} = \beta_j X_{ij} + \varepsilon_{ij} \quad (2)$$

where in equation (2) the subscript j reflects the belonging to a certain population group, e.g. male and female, or young and older borrower. Assume $j=m$ for men, and $j=w$ for women, and also, β_m and β_w the marginal effects in each case. Discrimination will exist if males and

females are treated differently by microcredit institutions in those relevant variables (X_{ij}) determining the rationing of a credit, that is, if $\beta_m \neq \beta_w$. The necessary assumption is that the distribution of unobservables ε_{ij} is independent of individual i belonging to group $j=m$ or $j=f$. In this context, discrimination can be either in favor of or against a specific group. In this study, our assumption is that if the Ghana Microfinance Policy 2006 is being effective, there should be positive discrimination in favor of the vulnerable targeted groups, i.e. women and young borrowers, in respect to their men and older counterparts.

Suppose the coefficients β_{cm} and β_{cw} to be the marginal effect of the collateral on the probability of being rationed for men and women, respectively positive discrimination in favor of women would require that for each additional unit of collateral, the probability being rationed decreases more for women than for men, that is, $|\beta_{cw}| > |\beta_{cm}|$. If a difference in the credit rationing between men and women was observed, in the absence of discrimination ($\beta_m = \beta_w$), then this differences would be attributable to the fact that one group is endowed with a set of characteristics that makes lenders to consider credit worthiness better, or less risky for one of the two groups, i.e. $X_{im} \neq X_{iw}$.

In order to carry our test on the effectiveness of the Ghana Microfinance Policy 2006, we resort to the Oaxaca-Blinder decomposition.¹ This method allows us to quantify the role of the observables X_{ij} (endowments) and coefficients β_j (discrimination) in explaining the credit rationing gap between two groups, namely vulnerable (v) and non-vulnerable (nv). With the Oaxaca-Blinder method, we can decompose the estimated gap in the credit rationing between the vulnerable (y_v) and the non-vulnerable (y_{nv}) into two components as follows:

$$\hat{Y}_{nv} - \hat{Y}_v = (\bar{X}_{nv} - \bar{X}_v)\hat{\beta}_v - \bar{X}_v(\hat{\beta}_{nv} - \hat{\beta}_v) \quad (3)$$

¹ See Blinder (1973) and Oaxaca (1973)

The left hand side of Eq. (3) measures the estimated gap in credit rationing between the two groups. The first term on the right hand side picks up the part of the gap attributable to differences in the endowments between both groups (loan, borrower and lender characteristics), whilst the second term concerns the part of the gap caused by differences in the coefficients (discrimination). The latter picks up differences in the treatment that lenders give to the vulnerable and the non-vulnerable.

It could be the case that there is no gap between both groups. In this case, equation 3 is still useful to test for discrimination. It is possible that differences in the in the endowments between both groups are canceled out by a disparate treatment. This might explain why there could be no gap in the average outcomes in the presence of discrimination, either in favor or against specific population group.

4. The Data

The data for the study was gleaned from the 14 microfinance companies of the various microfinance institutions and consisted of 1,429 borrowers. The data on these 1429 borrowers comprised of their individual socio-economic characteristics, firm and loan characteristics and their status regarding the supply of credit (whether rationed or not rationed) during the period 2012 and 2013. Gathering information on borrowers turned down in the loan application process was not possible as loan application from the microfinance institutions in Ghana first begins with interactions with the credit officer to ascertain the credit worthiness of the borrower before the application forms are handed to the prospective borrower. Where the credit officer find the borrower very risky the application is turned down and hence no application form is given to the borrower and therefore no information on the borrower is gathered. The non-availability of credit bureaus also made it difficult to obtain more data on borrowers and hence large sample size as this had to be done at the individual microfinance level and depended on the willingness of these microfinance companies to provide such information. None the less the

number of microfinance companies according to the microfinance types used for the study and fairly distributed based on mix market (2012), both at the regional and national level. We therefore do not anticipate any biasedness with regards to our sampling.

The variables for the study were therefore entered and coded as follows; maturity (the duration for the repayment of the loan in months), savings (non-mandatory savings of the applicant) that takes the value “0” if applicant has non-mandatory savings and “1” if otherwise, interest rates (interest on loan charged per month), assets (value of the assets of the business in monetary terms), profits (monthly profits declared in monetary terms). The variable, purpose(purpose of the loan) that takes the value “0” if directly related to the business and “1” if otherwise, collateral(the value of fixed or movable assets confiscable in case of default), guarantor(a person guaranteeing to pay up the loan with interest in the case of default and absence of collateral) that takes the value “0” if applicant provides a guarantor and “1” if otherwise), location(the distance from the business to the microfinance) which also takes the value “0” if the business or applicant is closer to the microfinance company and “1” if otherwise. Gender takes the value “1” if female and “0” if male, youth (if age between 18 and 35 based on the Ghana Youth Policy) takes the value of “1” if youth and “0” if otherwise. Education(level of formal education attained) ranked as “1” if tertiary, “2” if secondary, “3” if Primary and “4” if no formal education, sector(the sector in which the applicant operates his business), ranked “1” if commerce, “2” if transport, “3” if manufacturing, “4” if agriculture and “5”if service, relationship with lender that takes the value as “1” if applicant is a first time borrower and “0” otherwise, experience in business being the number of years the applicant has been in business constituting the individual characteristics. Also included in the model are the microfinance dummies for the microfinance companies according to their institutional types.

In table (2.1) we report the descriptive statistics of our sampled data. Our data confirms the MIX (2012) report on the microfinance market in Ghana which reports that almost 60% of the microfinance clients are women both at the regional and the national level. Comparatively

more male are rationed. This is similar to the observations made by Henrik et al (2011) who observed that more women are less likely to be rationed compared to their male counterpart for Ghana. Our data also show that relatively small number of young borrowers was rationed (28.8%) compared to their adult counterpart of (40.82%).

The distribution of borrowers according to sectors shows more women to be in the agric and commerce sectors whilst more men were found in the manufacturing sector. This also confirms the Ghana Living Standard Survey (GLSS6) report of the Ghana statistical service that found comparatively more women in the commerce and agric sector and more men in the manufacturing sector. Proportionately more young borrowers constitute the commerce and service sectors whilst relatively more adults are found in the transport and manufacturing sectors. This is not surprising since the youth do not have the necessary capital to venture into the transport and manufacturing sector that requires huge capital for startup. More females have attained tertiary education (51.8%) whilst their male counterparts have only 47.59% that have tertiary education. The illiteracy rate for females was only 2.11% whilst that of the males was 5.14%. This gap may be attributed to the Girl Child Education policy and the free compulsory Basic Education (FCUBE) that were implemented some two decades ago. In the same vein we found the illiteracy rate for young borrowers to be only 1.45% whilst that of adults was 4.68%.

On the average men and adults have relatively high value of assets and collateral whilst their female and younger counterparts have relatively low value of assets and collateral. It is therefore not surprising that female and young borrowers provided more guarantors (74%) and (76.6%) respectively whilst their male and adult counterparts were 71% and 70.4% respectively. This is not surprising as in the Ghanaian social and cultural set up family assets and properties are inherited by the male members whilst most of these assets and properties are also entrusted to the head of the households who can offer them as collateral. Apart from the NGO

microfinance type that served comparatively more adult borrowers, almost same proportions for young and adult borrowers were served by the other three microfinance types. With regards to the female and male groups the savings and loans microfinance type served proportionately same amount of females and males whilst the government type and the community and rural banks served more women whilst the NGO type serve comparatively more men.

Table 2.1: Descriptive Analysis of Data

	Description	Female	Male	Youth	Adult
Rationed	Borrowers who received only part of the amount requested	279(34.6)	238(38.3)	159(28.8)	358(40.82)
Business sector of borrower	Commerce	319(39.53)	216(34.73)	236(42.75)	299(34.09)
	Transport	47(5.82)	36(5.79)	19(3.44)	64(7.30)
	Manufacturing	84(10.41)	107(17.20)	49(8.88)	142(16.19)
	Agriculture	243(30.11)	154(24.76)	147(26.63)	250(28.51)
	Service	114(14.13)	109(17.52)	101(18.3)	122(13.91)
Borrower's educational level	Tertiary	418(51.8)	296(47.59)	292(52.9)	422(48.12)
	Secondary	185(22.92)	114(18.33)	103(18.66)	196(22.35)
	Primary	187(23.17)	180(28.94)	149(26.99)	218(24.86)
	Illiterate	17(2.11)	32(5.14)	8(1.45)	41(4.68)
Classification of monthly interest rates	Low (2-3%)	177(21.93)	75(12.06)	80(14.49)	172(19.61)
	High (3.5-4.5)	630(78.07)	547(87.94)	472(85.51)	705(80.39)
Guarantor	Guarantor provided	597(73.98)	443(71.22)	423(76.63)	617(70.35)
Relationship	Borrowed in the past more than once in the same MFI	327(40.52)	253(40.68)	232(42.03)	348(39.68)
Microfinance1	Savings and Loans	58 (7.19)	73(11.74)	79(14.31)	52(5.93)
Microfinance2		82(10.16)	34(5.47)	46(8.33)	70(7.98)
Microfinance3		71(8.80)	54(8.68)	26(4.71)	99(11.29)
Microfinance4	Governmental	106(13.14)	21(3.34)	54(9.78)	73(8.32)
Microfinance5	NGO	67(8.30)	33(5.31)	38(6.88)	62(7.07)
Microfinance6		25(3.10)	75(12.06)	20(3.62)	80(9.12)
Microfinance7		44(5.4)	56(9.00)	34(6.16)	66(7.53)
Microfinance8		49(6.07)	57(9.16)	35(6.34)	71(8.10)
Microfinance9		44(5.45)	62(9.97)	51(9.24)	55(6.27)
Microfinance10	Rural and	41(5.08)	29(4.66)	38(6.88)	32(3.65)
Microfinance11	Community Banks	47(5.82)	26(4.18)	22(3.99)	51(5.82)
Microfinance12		44(5.45)	21(3.38)	37(6.70)	28(3.19)
Microfinance13		81(10.04)	47(7.56)	55(9.96)	73(8.32)
Microfinance14		48(5.95)	34(5.47)	17(3.08)	65(7.41)
Observations		807	622	522	877

5. Econometric Results

5.1. The Probability of being rationed

In table 2.2, we show the estimated effects of the determinants of the probability of being credit rationed. To allow for interpretation, we report the marginal effects instead of the estimated coefficients. The size of the rationing and the direction will be determined by the marginal effects and their signs, whilst the significance or otherwise will be determined by their corresponding p-values. Our estimation strategy consists of introducing each set of variables sequentially to see how the membership group dummy (women/young) evolves as we include each group of covariates. We start with the most parsimonious model, which only includes a set of dummy variables identifying the group policy variables (column 1). In columns 2 and 3, we repeat the same sequential procedure, but now we include the individual characteristics, the firm and finally the loan characteristic. In column 4, we add the dummies for the microfinance companies to test whether within the microfinance companies we can observe some heterogeneity across them regarding the borrowers who are credit rationed.

Our general results support the existing theory and other empirical studies (Alberto et al, 2013; Alexander et al, 2009; Hansen et al, 2014; Khalid et al, 2009) since all the control variables behave according to expectations. We start commenting on the results of the models considering dummies for the policy group variables. In column (1), without other covariates than the youth dummy, the female dummy as a policy variable, both was negative though not statistically significant. However, once we include individual characteristics (column 2) the female dummy variable remains negative and becomes statistically significant, though only at 10% level. Once we control for the credit worthiness of the loan (column 3), the probability of being credit rationed falls up to 6.7 percentage points for females and the effect becomes statistically significant at 5% level. Finally, the probability of being credit rationed falls in almost 8 percentage points as we introduce the dummies for the microfinance companies, being the

government microfinance company the base category (column 4). In the most parsimonious model in column 1, the female dummy variable was not significant, which indicates the inexistence of the credit rationing gender gap. However, the fact that the marginal effect associated to this variable becomes statistically significant as we control for individual and loan characteristics suggests that the treatment that women receive from microfinance institutions might differ from the treatment received by their male borrower counterparts.

The behavior exhibited by the marginal effect associated to the youth policy variable was however quite different to the female case. The effect for the youth dummy is statistically significant at 1% level and almost constant across alternative models. In the most parsimonious model reported in column (1), without additional controls than the female dummy, the probability of being credit rationed decreases in 12 percentage points for young borrowers and decreases further to 13 percentage points once we include individual characteristics (column 2). In column (3), after controlling for the credit worthiness of the loan, the probability of being credit rationed for youth decreases in 11.3 percentage points, but reduces further to almost 12 percentage points (as in column 1) after including the dummies for the microfinance companies, being again the government type the base category (column 4).

With regards to the borrower's individual characteristics, we will focus on the results of the full model reported in column (4). We observe that for each additional year of experience the probability of being credit rationed decreases in 1.3 percentage points. The probability of being credit rationed increases in 48.6 percentage points for a borrower with no formal education. For borrowers operating in the manufacturing industry the probability of being credit rationed is 11.4 percentage points smaller. On the contrary, working in the agriculture industry increases the borrower's probability of being credit rationed in 15.2 percentage points.

The amount of borrower's declared profits in his/her activity has turned out not to be statistically significant. However, the amount of collateral and assets exhibit an inverted U-shaped effect on the probability of being credit rationed. That is, the impact of these variables on

credit rationing becomes negative only after a given amount of collateral and assets. For those borrowers who are required to provide a guarantor, the probability of being credit rationed increases in 25 percentage points. This is so because the need of guarantor indicates that the risk of the loan is perceived to be high by the lender. Having savings and a previous relationship with the lender also decreases significantly the probability of being credit rationed in 25 and 11.7 percentage points, respectively. It is also worth noting that, the government MFI is the one which is practicing credit rationing more intensively. With few exceptions, with respect to other non-governmental MFIs, the probability of being rationed by the government MFI is between 17 and 30 percentage points higher. We find this result a bit odd, since is the governmental MFI the one who seems to be acting against the Ghana Microfinance Policy promoted by the government of Ghana.

Table 2.2: Determinants of the probability of being credit rationed (Probit model)

	(1)	(2)	(3)	(4)
Female	-0.0348 (0.0258)	-0.0477* (0.0266)	-0.0676** (0.0283)	-0.0792*** (0.0298)
Youth	-0.120*** (0.0255)	-0.131*** (0.0267)	-0.113*** (0.0280)	-0.120*** (0.0289)
Experience		-0.0121*** (0.00306)	-0.0145*** (0.00321)	-0.0130*** (0.00367)
Secondary		0.0604 (0.0381)	0.0186 (0.0400)	0.0800* (0.0461)
Primary		0.0121 (0.0356)	-0.0515 (0.0362)	-0.0391 (0.0382)
Illiterate		0.260*** (0.0795)	0.486*** (0.0790)	0.486*** (0.110)
Transport		0.143** (0.0621)	-0.0135 (0.0614)	-0.0312 (0.0622)
Manufacturing		-0.0599 (0.0431)	-0.0972** (0.0452)	-0.114** (0.0451)
Agriculture		0.174*** (0.0379)	0.190*** (0.0433)	0.152*** (0.0455)
Service		-0.0509 (0.0399)	0.00422 (0.0459)	0.0389 (0.0492)
Collateral			2.60e-05*** (6.65e-06)	1.60e-05** (7.56e-06)
Collateral sq.			-7.46e-10*** (2.46e-10)	-5.89e-10** (2.71e-10)
Assets value			3.17e-06 (4.46e-06)	1.48e-05*** (4.85e-06)
Assets value sq.			-5.60e-11 (6.91e-11)	-1.90e-10** (7.80e-11)
Declared profits			1.51e-05 (2.36e-05)	2.57e-06 (2.51e-05)
Declared profits sq.			-1.11e-10 (1.85e-09)	9.64e-10 (1.95e-09)
Location			0.0236 (0.0288)	0.0354 (0.0300)
Guarantor			0.273*** (0.0351)	0.248*** (0.0431)
Relationship			-0.0925*** (0.0279)	-0.117*** (0.0286)
Purpose			-0.0467 (0.0309)	-0.0312 (0.0316)
Savings			-0.264*** (0.0418)	-0.248*** (0.0653)
Maturity			0.0163*** (0.00310)	0.0192*** (0.00338)

Type of MFI (base <i>Governmental</i>)				Table 2.2 contd
<u><i>Savings and Loans</i></u>				
MFI 1				-0.172*** (0.0480)
MFI 2				-0.288*** (0.0306)
MFI 3				-0.176*** (0.0464)
<u><i>NGO</i></u>				
MFI 5				-0.304*** (0.0296)
MFI 6				-0.216** (0.0908)
MFI 7				-0.101 (0.0622)
MFI 8				-0.263*** (0.0343)
MFI 9				-0.0939 (0.0633)
<u><i>Rural and Community Bank</i></u>				
MFI 10				-0.240*** (0.0427)
MFI 11				-0.0640 (0.0757)
MFI 12				0.141 (0.0968)
MFI 13				0.0149 (0.0637)
MFI 14				-0.0830 (0.0681)
Observations	1,429	1,429	1,429	1,429

Notes: Significance, * (10%), ** (5%), *** (1%); Marginal effects reported instead of coefficients; standard errors in parentheses.

5.2 Testing for discrimination

5.2.1. Group interactions regressions

In this subsection we discuss the marginal effects of the coefficients of the various groups. That is, we estimate separate regressions for women and men, and for adult and young borrowers. This analysis is carried out in order to observe the extent to which estimated marginal effects are different between men and women, and between young and older borrowers. If estimated marginal effects for the determinants of the probability of being credit rationed significantly differ between both groups (women vs. men and young vs. older), the hypothesis of discrimination cannot be rejected. In case that discrimination favors female and young borrowers, then this would imply the existence of positive discrimination, and we can conclude the Ghana Microfinance Policy 2006 is being effective.

In table (2.3), column (1) we report the marginal effects of our estimation when borrowers are males; column (2) reports same when borrowers are females, column (3) when borrowers are adults and column (4) when borrowers are youth. We discuss columns (1) and (2) concurrently and same for columns (4) and (5). In columns (1) and (2) we observe that the probability of being credit rationed reduces in 14.6 percentage points for female young borrowers, in respect to older female, and this effect being statistically significant at 1% level. For young men, compared with their older men counterparts, the probability of being credit rationed decreases in 8 percentage points, and this effect being only significant at 10% level. Analogously, among young borrowers, women are 12.7 percentage points less likely to be credit rationed than men, while for older borrowers the gender gap is still negative in favor of women but not statistically significant. These results are quite revealing, since they indicate that young women (the intersection of both targeted groups) are the group that has a smaller probability of being credit rationed.

For the sake of brevity, we will not comment all the results regarding all variables for all groups. In all population groups the sign of the significance for most of the variables coincides

with the results provided by the pooled model reported in table 2.2. A first look at the results reported in Table 2.3 suggests that male and female borrowers are treated differently by MFIs in Ghana, since for a number of variables estimated marginal effects look very different between men and women, and between young and older borrowers. Indeed, marginal effects associated to most of the microfinance institutions dummies are generally statistically significant across groups, and also apparently different when we compare men vs. women and young vs. older borrowers. In order to statistically test the extent to which men and women, and young and older borrowers are treated differently, we resort to the decomposition analysis introduced in section 3, which results are presented in the next subsection 4.2.2.

Table 2.3: Interactions of Group Specific Regression (Probit)

	(1) male	(2) female	(3) adult	(4) youth
Female			-0.0448 (0.0406)	-0.127*** (0.0451)
Youth	-0.0797 (0.0486)	-0.146*** (0.0383)		
Experience	-0.0142** (0.00615)	-0.0165*** (0.00499)	-0.0158*** (0.00438)	0.00312 (0.00890)
Secondary	0.213** (0.0876)	-0.00904 (0.0596)	0.151** (0.0636)	-0.0231 (0.0636)
Primary	-0.0350 (0.0631)	-0.0678 (0.0503)	0.00534 (0.0539)	-0.0640 (0.0535)
Illiterate	0.617*** (0.0771)	-0.0304 (0.231)	-0.0379 (0.178)	
Transport	0.133 (0.111)	0.000137 (0.0994)	-0.0209 (0.0824)	-0.143** (0.0694)
Manufacturing	0.0511 (0.0895)	-0.214*** (0.0485)	-0.109* (0.0605)	-0.142** (0.0576)
Agriculture	0.353*** (0.0785)	0.0803 (0.0594)	0.0557 (0.0602)	0.223*** (0.0776)
Service	0.0238 (0.0783)	0.0590 (0.0692)	-0.0354 (0.0642)	0.109 (0.0788)
Collateral	5.06e-06 (1.05e-05)	3.06e-05** (1.45e-05)	1.69e-05 (1.07e-05)	1.69e-05 (1.12e-05)
Collateral sq.	-2.45e-10 (2.79e-10)	-1.07e-09 (8.02e-10)	-6.34e-10 (3.88e-10)	-3.39e-10 (4.32e-10)
Assets value	1.02e-05 (6.61e-06)	2.56e-05*** (9.58e-06)	2.23e-05*** (6.54e-06)	1.35e-05 (9.96e-06)
Assets value sq.	-1.15e-10 (8.84e-11)	-5.13e-10** (2.49e-10)	-2.73e-10*** (9.98e-11)	-2.68e-10 (2.46e-10)
Declared profits	-4.86e-05 (3.58e-05)	3.66e-05 (4.10e-05)	1.51e-05 (3.30e-05)	-5.79e-05 (5.80e-05)
Declared profits sq.	3.48e-09 (2.66e-09)	-0 (3.88e-09)	-0 (2.29e-09)	9.45e-09 (8.85e-09)
Location	-0.00988 (0.0493)	0.0817** (0.0414)	0.101** (0.0396)	0.00591 (0.0460)
Guarantor	0.0941 (0.0746)	0.387*** (0.0571)	0.194*** (0.0569)	0.314*** (0.0791)
Relationship	-0.0603 (0.0460)	-0.198*** (0.0399)	-0.0902** (0.0384)	-0.210*** (0.0429)
Purpose	-0.0331 (0.0528)	-0.0309 (0.0437)	0.0629 (0.0424)	-0.0794 (0.0523)
Savings	-0.403*** (0.0704)	0.376 (0.242)	0.0774 (0.186)	-0.251*** (0.0335)
Maturity	0.0218***	0.0202***	0.0159***	0.0149**

Table 2.3 cont

	(0.00542)	(0.00488)	(0.00414)	(0.00656)
<i>Type of MFI (base Governmental)</i>				
<u><i>Savings and Loans</i></u>				
MFI 1	-0.230** (0.0990)	-0.216*** (0.0521)	-0.143* (0.0755)	-0.206*** (0.0490)
MFI 2	-0.369*** (0.0360)	-0.283*** (0.0385)	-0.376*** (0.0284)	-0.168*** (0.0549)
MFI 3	-0.224** (0.0982)	-0.224*** (0.0470)	-0.183*** (0.0622)	-0.221*** (0.0349)
<u><i>NGO</i></u>				
MFI 5	-0.392*** (0.0317)	-0.222*** (0.0570)	-0.355*** (0.0342)	-0.206*** (0.0454)
MFI 6	0.0173 (0.240)	-0.337*** (0.0220)	-0.404*** (0.0435)	-0.0585 (0.190)
MFI 7	-0.313*** (0.0715)	-0.0708 (0.0873)	-0.195*** (0.0708)	-0.0407 (0.0949)
MFI 8	-0.402*** (0.0383)	-0.140** (0.0710)	-0.349*** (0.0337)	-0.116 (0.0710)
MFI 9	-0.174 (0.117)	-0.161** (0.0713)	-0.139* (0.0817)	-0.118 (0.0767)
<u><i>Rural and Community banks</i></u>				
MFI 10	-0.321*** (0.0562)	-0.229*** (0.0553)	-0.206*** (0.0747)	-0.241*** (0.0327)
MFI 11	-0.189 (0.124)	-0.0953 (0.0937)	-0.0338 (0.110)	-0.127 (0.0792)
MFI 12	0.176 (0.205)	0.101 (0.126)	0.219 (0.142)	-0.0193 (0.116)
MFI 13	-0.136 (0.124)	0.0721 (0.0818)	-0.0365 (0.0837)	0.0339 (0.0940)
MFI 14	-0.158 (0.130)	-0.111 (0.0833)	-0.0747 (0.0918)	-0.179*** (0.0672)
Observations	622	807	877	544

Notes: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
 Marginal effects reported instead of coefficients.

5.3 Testing for Positive Discrimination in favor of women and young borrowers

In order to test for positive discrimination, we resort to the Oaxaca-Blinder decomposition method shown in equation (3). Given the binary nature of our outcome variable (being rationed or not), in the previous section we used a non-linear model to analyze the determinants of the probability of being credit rationed. This means that the linear decomposition equation presented in equation (3) need to be manipulated in order to be adapted to a non-linear framework. Thus, following Fairlie (1999), the decomposition equation becomes now as follows:

$$\hat{Y}_{nv} - \hat{Y}_v = \left[\sum_{i=1}^{N_{nv}} \frac{F(X_i^{nv} \hat{\beta}_v)}{N_{nv}} - \sum_{i=1}^{N_v} \frac{F(X_i^v \hat{\beta}_v)}{N_v} \right] - \left[\sum_{i=1}^{N_{nv}} \frac{F(X_i^{nv} \hat{\beta}_{nv})}{N_{nv}} - \sum_{i=1}^{N_{nv}} \frac{F(X_i^{nv} \hat{\beta}_v)}{N_{nv}} \right], \quad (4)$$

where the first term in brackets represents the part of the gap in credit rationing due to group differences in distributions of X , and the second term represents the part due to differences in the group processes determining levels of Y . In other words, the first term refers to differences in endowments between the vulnerable (women/young) and the non-vulnerable (men/older), while the second term refers to differences in the treatment received by MFIs between both groups. $F(\bullet)$ represents the cumulative distribution function, and if we assume a linear function, then equation (4) becomes as equation (3).

Results of the decomposition are reported in columns (3) and (6) in table 2.4. As we already observed in table 2.2, the gap in the probability of being credit rationed is higher for men than for women, 3.7 percentage more, though it is not statistically significant. Results of the decomposition reveal that that men and women are treated differently by MFI in that regarding credit rationing. The endowments component is of -0.062, which means that men and women are endowed with different characteristics. This result indicates that if both men and women where endowed with same characteristics ($X_{men}=X_{women}$), the gap will increase up to 9.9

percentage points (0.037-(-0,062)) against men. Analogously, the reported discriminatory component is of 0.099, almost three times the size of the gap, which indicates that if men and women were not treated differently ($\beta_{men}=\beta_{women}$), the gap in the probability of being credit rationed would be -6.2 percentage points (0.037-0.099) higher for women than for men. This result indicates that there exists strong positive discrimination in favor of women.

For the group of youth, we also observe positive discrimination. The probability of being credit rationed is 12 percentage points smaller for youth borrowers than for their older counterparts. The endowments component is practically null (-0.006), which means that youth and older borrowers are endowed practically with the same characteristics ($X_{youth}=X_{older}$), therefore the gap is totally attributable to a different treatment by MFIs. If youth and older borrowers were not treated differently by MFIs ($\beta_{youth}=\beta_{older}$) the gap in the probability of being credit rationed would be -0.6 percentage points (0.12-0.126) smaller for older borrowers. That is, the gap would be practically removed. This result indicates again strong positive discrimination in favor of young borrowers.

To better understand the implications of our results, we will resort to the counterfactual analysis by means of the following expressions:

$$\dot{P}_{nv}^v (y = 1) = \Phi(\bar{X}^v \hat{\beta}_{nv}) \quad (4)$$

$$\ddot{P}_v^{nv} (y = 1) = \Phi(\bar{X}^{nv} \hat{\beta}_v) \quad (5)$$

where $\Phi(\bullet)$ is the cumulative normal distribution of the inner argument, and the subscript and superscript v refers to the vulnerable targeted group (female/youth) and nv refers to the non-vulnerable group (male/older).

With Equation (4), we simulate which would be the probability of being credit rationed if the average vulnerable borrower (\bar{X}^v) was treated as his/her average non-vulnerable

counterpart ($\hat{\beta}_{nv}$). Analogously, equation (5) simulates the opposite situation, that is, what would be the probability of being credit rationed if the average non-vulnerable borrower (\bar{X}^{nv}) was treated as his/her average vulnerable counterpart ($\hat{\beta}_v$). According to the decomposition analysis, what we should expect is that vulnerable borrowers treated as the non-vulnerable should increase their probability of being credit rationed, while this probability should decrease for the non-vulnerable if they were treated as the vulnerable. Results of the counterfactual analysis are reported in the last row of table 2.4.

In column (1) we show the counterfactual for the probability of being credit rationed for female treated as male borrowers. This counterfactual probability is of 0.43, which is 12 percentage points higher than the predicted probability for women (0.31). Analogously, if male borrowers are treated as their female counterparts (column 2), their counterfactual probability is 0.324, which is 4 percentage than the observed probability for male borrowers. Counterfactual analysis for youth-older borrowers also report similar results. That is, if young borrowers were treated as their older counterparts (column 4), the counterfactual probability of being credit rationed would be of 0.385, 7 percentage points than the observed probability (0.317). On the contrary, if older borrowers were treated as their young counterparts (column 5), their probability of being credit rationed would be of 0.392, 6 percentage points higher than their observed probability (0.332). These results are in line with the evidence of positive discrimination in favor of female and young borrowers.

Table 2.4: Decomposition and Counterfactual Analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	Female	Male		Young	Older	
P(ration=1), observed	0,346	0,383		0,288	0,408	
Gap (Endoments+Discrimination)			0,037			0,12
t-test (H ₀ : Gap=0)			1,44			4.63***
P(ration=1), predicted	0.310	0,363		0,317	0.392	
<i>Decomposition results</i>						
Endowments			-0,06			-0,006
			-168%			-5%
Discrimination			0,099			0,126
			268%			105%
<i>Counterfactual analysis</i>						
P(ration=1), counterfactual	0,430	0,324		0,385	0,332	

Notes: *** p<0.01, ** p<0.05, * p<0.1

5. Conclusions and Policy Implications

Access to credit has become a huge problem to micro and small entrepreneurs and the groups that are badly affected are the vulnerable who are mostly made up of women and the youth, both in the formal and the informal sectors. There has been various intervention programmes aimed at empowering the vulnerable through the provision of the needed resources that will enable them to be employed and earn sustainable incomes and live a meaningful and dignified lives. One of the major policies aimed at providing access to credit to these vulnerable groups is the Ghana Microfinance Policy which enjoins the microfinance institutions to give priority to the vulnerable in their administering of credit. Our research was set up to determine the extent to which the operations of the microfinance companies in the microfinance market in Ghana are influenced by the Ghana's Microfinance Policy. We observed that whereas the microfinance companies are using individual and loan characteristics to ration credit towards male and adult entrepreneurs this approach is very minimal and relaxed towards female and young

entrepreneurs. Thus, the rationing behavior of the microfinance companies favors female and young entrepreneurs and this favoritism is not influenced by their group endowments.

Our results imply that the microfinance companies' operations in Ghana are in line with the Ghana Microfinance Policy. Though the policy is in the right direction, there is the need to complement it by introducing and intensifying policies that seek to give skill training and accessible education to these vulnerable groups to enable them to effectively and efficiently utilize the funds being provided them. Making microcredit readily and easily accessible to these groups without proper entrepreneurial skills and formal education, will not achieve the desired results. There is therefore the need to making education and training go hand in hand with the supply of investible funds. It is also recommended that current government intervention programmes be given legal backing and as much as possible be depoliticized.

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Do Leaders' Characteristics and regime transitions in Africa Matter for

Citizens' Health Status

1. Introduction

There is an increasing recognition that health creates wealth and advances GDP. Africa has made significant strides in certain areas of socio-economic development; however, there is the potential to achieve more if it can overcome the large burden of diseases which continue to be a barrier to faster development. It is estimated that for every 10% increase in life expectancy at birth there is a corresponding rise in economic growth of 0.4% and this in turn leads to a further rise in life expectancy at birth (WHO, 2014). According to Deaton (2003), increases in growth leads to increases in incomes which in turn cause good health. Gupta and Mitra (2004) observe that growth tends to reduce poverty and improves health status. They also observe that growth and health status are positively correlated and have a two-way relationship, suggesting that better health enhances growth by improving productivity and higher growth allows better human capital formation.

Significant progress is being made in achieving many of the millennium development goals; Average overall incomes have increased by 20% between 1990 and 2002. Child mortality rates fell from 103 deaths per 1000 live births to 88 in 2002 and a further decrease to 43 in 2015 (UN, 2015). In Sub-Saharan Africa the annual rate of this reduction was over five times faster during 2005-2013 than it was during 1990-1995 though not uniform across countries. There are

huge disparities as the progress has been far from uniform across countries and across the goals. Sub-Saharan Africa is the epicenter of crisis, with continuing food insecurity, high child and maternal mortality, a rise in extreme poverty and a wide spread shortfall for most of the Millennium Development Goals (MDGs) (UN, 2015). Africa is still not on track to meeting the health Millennium Declaration targets. The maternal mortality rate will need to drop from between 500 and 1500 to 228 per 100,000 and under 5 years old mortality from 171 to 61 per 1000 to reach the respective Millennium Development Goals. Women and Children carry a disproportionate share of Africa's heavy disease burden, with 4.8 million children dying annually from preventable diseases.

Whether explicit or implicit, a vision of improved and access to health facilities must be embedded in the country's policies and programmes and these are largely influenced by the leader's interest, initiatives and commitments. Quality health that ensures quality human capital for sustainable and accelerated growth largely depends on the quality of leadership. According to Jones and Olken (2005), quality leadership matters for economic growth as individual leaders play significant role in accelerating overall economic development. The quality of leadership is enhanced through education, honesty, responsibility, commitment, etc. Our research examines the extent to which African leaders' characteristics and regime transitions impact on the citizens' health status conditioned on growth. It also examines the extent to which leader characteristics and regime transitions influence health policies through the allocation of resources to the health sector. We are doing this because the policy direction of every nation and therefore the growth and development of that nation at any point in time depends largely on the leadership qualities of its ruler and the political regime of the country.

Recent literature on the relationship between regime and growth suggests that the relationship may well be different across regions of the world (Krieckhaus, 2006), due to historical factors. Econometric analyses of Africa's growth strategy in the 1970s and 1980s have

largely ignored regime-transition variables as (Easterly and Levine, 1997) focused on ethnic fragmentation; (Englebert, 2000) on artificial nature of African state borders; (Sachs and Warner, 1997) on geographical characteristics of the region and (Bates, 1981) on power of urban interest groups, with the exception of (Ndulu and O'Connell, 1999) who attributes the phenomenon on the authoritarian nature of most of its rulers and (Masaki and van de Walle, 2014) who find a strong evidence that democracy promotes growth in Africa. The only research close to ours is that of Jorgensen and Bjornskov (2015) who considered both leader characteristics and transitions but only with first African leaders. Our paper is different in that we combine both leader characteristics and regime transitions in examining their effects on health status conditioned on growth as an indicator of economic wellbeing. An annual infant mortality rate was chosen as the health indicator over the other health indicators due to the fact that it takes relatively less time to react to health policy changes than other indicators as life expectancy. Thus a leader who immediately implements effective health policies is likely to observe a reduction in the infant mortality rate the following few years, unlike life expectancy that may take relatively longer period.

In our empirical model, we control for leader specific effects instead of country specific effects due to the following reasons; changes in policy may not only be due to changes in transitions but also depend on the characteristics of the leader; leaders vary significantly and therefore different leaders will impact on outcomes differently; leaders matter more in certain regimes as they have fewer constraints on the power that they exert according to Jones and Olken (2005). Since one leader can be in office only in one country, the leader-specific effects also absorb the country specific effects. We test these for transitions from an autocratic leader to a democratic leader and from a democratic leader to an autocratic leader to examine which transition and regime in the African perspective have a desirable effect on the health of the citizens.

According to Jones and Olken (2005), Dreher et al (2009) Besley and Reynol-Querol (2011), Jong-A- Pin and Mierau (2013) or Diaz-Serrano and Perez-Reynosa (2013), leaders matter for ensuring growth since more competent leaders are more likely to make better policy choices that enhance economic development. This assertion to them comes from the assumption that quality leaders are more likely to act in the public interest, society's aspirations and goals. In the case of post-independent Africa, the leaders in many cases determine and influence the rules of the game and the abilities and choices of the leader have greater influence on how resources are distributed. Sub-Saharan Africa remains poorest in the world as a consequence of 20 years of declining GDP, from a massive decline in 1972 until the 1990s and 2000s when many of these countries embraced democracy (Paldam, 2013).

Additionally, the literature considers the barriers for institutional reforms, policy interventions and implementations and in this; emphasis is put on shocks including transitions which can also open up for these barriers (Bjornskov and Potrafke, 2011; Diaz-Serrano and Perez-Reynosa, 2013; Jorgensen and Bjornskov, 2015). The question we would like to find answers to is whether the window of opportunity created by transition from one regime to another impacts positively on citizen's health status conditioned on growth and leader characteristics. If the standard of living of citizens, measured by GDP, health status and education depends to a large extent, on the quality of leadership, then we should be able to observe differences in a variety of outcomes that occur under their stewardship by holistically looking at the various factors that constitute the characteristics or the personality of the leader. These will be tested empirically with a panel data set consisting of observation from African countries between 1970 and 2010.

Our results show that increases in GDP per capita reduces infant mortality and supports the various studies that find evidence that increase in growth increases health status. We also observe that transition from an autocratic leader to a democratic leader, reduces infant

mortality and increases public health expenditure. When this particular transition prevails over a longer period there is continuous reduction in infant mortality and public health expenditure is increased. In the case of a transition from a democratic leader to an autocratic leader infant mortality rate increases and there is reduction in public sector investments in health. Infant mortality growth rate continues increasing when such transition prevails for a longer period.

This paper contributes to the burgeoning literature with the view that the health needs and the development of Africa, to a large extent, depends on the leadership characteristics of its leaders and regime. What makes post-independence sub-Saharan Africa so interesting is that they have witnessed all forms of transitions, from democratic regime to dictatorship and vice-versa. All these have possibilities of changing and creating new institutions and policies that affect the quality of life of the citizens in their respective countries.

With the aim described above, this chapter has been structured as follows. In section 2 we begin an overview of the literature on leadership qualities with emphasis on the African leadership and health perspective, good governance policy and health and the effects of leader characteristics, regimes and transitions on policy outcomes especially on growth and health. Section 3 discusses the framework of our hypothesis testing; section 4 focusses on the data used for the study and the description of the variables used for the study. Section 5 reports on the specification of the empirical model and the discussions of the results and finally section 6, on the conclusion.

2. Theoretical literature

A body of literature has focused on explaining factors determining growth as well as development and in line with this paper we discuss a selection of the potential determinants in the literature and the literature imposing that the quality of the institutions as well as its leaders are the underlying factors when it comes to poor growth and development.

Various theories have explained the selection of leaders as means of achieving societal aspirations and goals. One of such theories is the citizen-candidate type as explained by Osborne and Slivinski (1996) and Besley et al (1997). They see political competition and selection as a game between people competing to hold office where with limited commitment, selection based on policy preferences, talent or virtue can affect policy outcomes. This theory has motivated the studies on effects of political reservation that is, reserving political office for particular groups in society, and argues that reservation matters by changing the identities of those elected into office (Pande, 2003; Duflo, 2004). Lee et al (2004), using US data on close elections also argue that political affiliations matter.

Another theory, the quality based in political selection has been propounded in a citizen-candidate framework by Caselli and Massimo (2002) and Poutvarra and Thomas (2003). Caselli and Massimo (2002) explain that the supply and selection of bad politicians exist and the factors that explain such supply include rents that such politicians earn whilst in office and the existence of imperfect information that make it difficult to spot candidate quality. Poutvarra and Thomas (2003) also develop a model in which the value of holding office impacts on the candidate quality through its effects of election campaigns. Cross country empirical studies have found evidence showing that more competitive election often increase government responsiveness in terms of providing more public goods and services (Brown and Wendy, 2004; Lake and Baum, 2001).

We base our study on (Jones and Olken, 2005; Besley and Reynol-Querol, 2011 and Diaz Serrano and Perez Reynosa, 2013) who show that the quality of leaders matters for growth, with emphasis on African leaders. Our study will contribute to literature in that our empirical evidence will explain the mechanism for this assertion. There is the suggestion that some leaders may be more inclined to influence policy on the provision of public goods and other social capital which have wide range of economic benefits. There is also the view that some leaders are

more competent and effective than others and more able to make rational and economic policy choices which enhance economic development. In relation to this is the possibility that some leaders focus on broad based economic objectives rather than promoting narrow sectional interest which favor protectionist policies. In all of the above the returns to having a good leader comes from the assumption that good leaders are also better citizens who will promote policies that will better the lots of its citizens and therefore more likely to operate in the broader public interest. According to Kodila-Tedika (2014), if indeed, all quality leaders productively use their intelligence in the economy, chances are that society will benefit from a more productive labor force at all levels of governance, state or local. This in turn allows society to take advantage of being able to mimic the positive experiences of successful nations, including the area of governance as well as the advantages of imitations and innovation predicted in the theories of endogenous growth (Aghion and Howitt, 2009), which in turn leads to a virtuous cycle of development of which improvement in the health status is an important indicator.

3. Conceptual framework

3.1. African Leadership and Health in Perspective

The beginning of African leadership came with the massive support of the communistic and Marxist ideas by the people and this ideology came with the retreat of colonial rule as the colonial masters were associated with capitalist imperialism. The African socialism was then formed in the 1950s, spearheaded by Kwame Nkrumah, the first African president of Ghana. The socialism ideology was combined with indigenous traditions and the Marxist-Leninist model of one party rule with the argument of rapid modernization was the order of the day (Encyclopedia Britannica). Notable followers of this ideology included Julius Nyerere of Tanzania, Ahmed Sekou Toure of the Republic of Guinea, Ahmed Ahidjo of Cameroon, Antonio Agostinho Neto of Angola and Houphet Boigny of Cote d'Ivoire. These leaders initiated several

infrastructural and development projects such as schools roads state owned enterprises and hospitals.

However, their one party state and dictatorship governance system begun to crumble as they faced various kinds of resistance and coup d'états, some of which were unsuccessful. Nkrumah was overthrown through coup d'état, Nyerere had to resign in 1985 as a result of fierce resistance to some of his hostile policies whilst Ahidjo had to resign on health grounds, Ahmed Sekou Toure, Antonio Agostinho and Houphet Boigny died whilst as leaders leading to various kinds of uprising as well as ethnic and religious tensions (Jorgensen and Bjornskov, 2015). There have been various leadership crises in Africa after independence as leaders who fought for this independence were often unwilling to relinquish power leading to coup d'états and uprisings.

After independence in Nigeria in 1960 the country had been under the control of tyrannical and autocratic military dictators for about 30 years before finally embracing democratic governance (Afegbua and Adejuwon, 2012). Zaire also never experienced Stable democratic governance as a result of despotic and tyrant leadership of Patrick Lumumba. Mobutu after terminating the government of Lumumba in 1960 acclaimed himself life President of Zaire and is known as one of the African leaders who overstayed their glorious days until was chased out of office. The present administration in Zaire is not ready to give room for popular elected leader (Afegbua and Adejuwon, 2012). In Zambia the ambition of President Kenneth Kaunda of becoming a life President was cut short after ruling for 21 years, from 1970-1991 when Federick Chiluba was popularly elected as President in the general election.

The political situation in Ghana had not been different, after independence in 1957 Kwame Nkrumah ruled until 1969 when his government was toppled. Afterwards Military rule was the order of the day for almost 20 years. Jerry Rawlings governed as a Military ruler from 1981 and changed to President after 12 years in power through a series of less-than-legitimate

elections before handing over power to John Kuffour in 2001. Kamuzu Banda became head of state in Malawi in 1966 and proclaimed himself life president for the country and life chairman for his party amidst human rights abuses. It took the Amnesty International to alert the world on the frightening situation about the suppression being meted to the opposition in the country.

In Kenya, Daniel Arap Moi became the leader after the death of President Jomo Kenyatta in 1977. He also ruled autocratically for years and rejected any reforms that could pave way for democratic governance in the country (Afegbua and Adejuwon, 2012). Similarly in Liberia, in 1980, Samuel Doe killed William Tolbert who had been in government since 1951 with President Tubman in a bloody coup. Samuel Doe ruled for 10 years and turned Liberia into a personal courtyard until 1990 when he was brutally murdered by Prince Yormie Johnson version of rebel. The rebel version of Charles Taylor ruled the country in a tyrannical and despotic manner until recently when peace returned to Liberia and the country became the first African country to elect a female President in a general election.

In the Central African Republic, Emperor Jean Bokassa toppled the regime of President David Dacke in 1966 and refused to allow democratic governance to operate but being governed by his entire family. One country, whose independence did not follow the normal trend of the African socialism ideology and today remains a model of the development story is Botswana, under Sir Seretse Khama, a college degree graduate from Britain, and has since independence been one of the fastest growing economies in the world (Seddon, 2005), even as a landlocked country. Unlike most of the African countries that were left with a legacy of well laid institutions and infrastructure as well as resources, Botswana did not start out with advantageous conditions after attaining independence.

The political leadership in African has been parochial rather than nationalistic as it corruptly converts resources into projects of primitive accumulation of which (Agbaje and Roberts 2002) pointed out that “post-independence leaders in Africa not only personalized

power but also privatized the state for the purpose of primitive accumulation, clientelism, repression and all forms of opposition. Instead of using the state for initiating development, African leaders utilized it as a vehicle for terrorizing the citizenry, thereby leading to the disengagement of the populace from the public realm.” The fundamental problem militating development in Africa is the poverty of leadership making it the key issue even in the process of democratization. Adeola (2007) argues that the history of great nations have been linked to visionary and purposeful leadership, such leaders have played significant roles in the socio-economic development and political upliftment of their countries. According to him the absence of leadership to give a clear-cut ideology leads to the lack of orientation and commitment. The transitions and regime changes in Africa have been various and different African leaders have had different policies and commitments that affect growth and hence the health status of their citizens over the years. However, African leaders have realized the need to put in much effort at reducing if not eliminating the diseases that have plunged their countries and characterized them as death trap zones.

For the past two decades African leaders have had series of meetings, commitments and conventions among themselves and have made various declarations towards improving the health needs of their respective countries, some of which have not been met. These have given the cause to question the extent to which these leaders are committed to improving the health needs of their people. In 2001, in Abuja, Nigeria, African leaders met and considered AIDS an emergency on the continent and called for the mobilization of all sectors and pledged 15% of public spending for health. Since then health funding has risen, but has still not reached the level that the Abuja declaration promised. Only few member states (Liberia, Madagascar, Malawi, Rwanda, Togo and Zambia) have achieved the Abuja target of allocating 15% of public expenditure to health whilst a number of member countries (eg Djibouti, Ethiopia, Lesotho and Swaziland) are within the reach of 15% target with a vast majority not meeting this essential commitment (UNAIDS, 2015). According to the World Health Organization (WHO, 2014), only

eight African countries are on track to meeting the Millennium Development Goals (MDGs)—Algeria, Cape Verde, Egypt, Eritrea, Madagascar, Rwanda, Seychelles, and Tunisia whilst most African countries are achieving less than 50% of the gains required to reach the goals by 2015. Progress on improving maternal health (MDG 5) is particularly slow.

Some countries have enacted some health policies that have been commended: Ghana's national health policy that exempts women from paying for delivery care in public, mission and private health facilities in 2004 of which a number of African countries have followed suit namely, Burundi, Burkina Faso and Kenya. The National Health Insurance policies of South Africa, Ghana, Tunisia and Kenya that have improved healthcare delivery in their respective countries and the free primary healthcare policy of Ethiopia making it possible for more than 85% of the population having access to primary healthcare. To advance toward the Roadmap's first pillar, a number of countries have begun to implement innovative AIDS financing measures intended to reduce dependence on external funders. Kenya and Zimbabwe now earmark a portion of domestic tax revenues for an AIDS Trust Fund, while countries including Benin, Congo, Madagascar, Mali, Mauritius, Niger, Rwanda, and Uganda have established special HIV levies on mobile phone usage and airfares. Taking a different approach, South Africa reduced its spending on antiretroviral medications by 53% by reforming its tender process to increase competition among suppliers (UNAIDS, 2013)

The allocation of public expenditure to the health sector is mainly for the reason that it has positive effects on the formation of quality human capital, which boost economic growth while promoting equity and reducing poverty. The productivity and benefit of spending on health will however depend among other things on how funds are allocated within the health sector. In the attempt to improve social welfare of citizens, many governments chose to change the composition and direction of public expenditure. Among other socioeconomic priorities, health issues is one of the issues at the forefront of the millennium Development Goals which is

to reduce under five mortality rate by two-thirds by 2015; the fifth goal is reducing maternal mortality ratio by three-quarters by 2015, and the sixth is to try to reduce infection rates of HIV/AIDS, malaria, and other communicable disease associated with hygiene and environment. Health issues are therefore of very importance in the development agenda of Africa in meeting the MDGs and these to a large extent depend on leadership's commitment, which in effect depends on the wide range of resources including the personal characteristics of its leaders.

The above, and in the view that leaders can influence institutions as well as the allocation of resources towards the health sector through commitments, initiatives and self-interests, it is imperative that we investigate the extent to which the characteristics of African leaders and regimes affect the development of the health sector and hence the health status of its people, which is a very vital indicator for economic performance.

3.2. Good Governance Policy and Health

Improvement in the health status of every country has largely been linked to good governance (Kirigia and Kirigia, 2011). The United Nations Development Programme (UNDP, 1997) outlines five principles of good governance: legitimacy and voice (participation and consensus orientation), direction (strategic vision), performance (responsiveness, and effectiveness and efficiency), accountability (and transparency), and fairness (equity and inclusiveness, and rule of law) According to Kaufman et al (1999) the World Bank also has three clusters (with six domains) of governance that include: processes by which those in authority are selected and replaced (voice and accountability, and political instability and violence); ability of government to formulate and implement sound policies (government effectiveness and regulatory burden); and respect of citizens and the state for institutions which govern their interaction (rule of law and control of corruption) The World Health Report 2000 has six domains of stewardship and include: generation of intelligence, formulating strategic policy framework, ensuring tools for

implementation (powers, incentives, and sanctions), building coalitions/partnerships, ensuring fit between policy objectives and organizational structure and culture, and ensuring accountability.

Siddiqi et al (2008) outline ten principles (and 22 domains) for assessing governance of the health system : strategic vision (long vision, comprehensive development strategy including health), participation and consensus orientation (participation in decision-making process, stakeholder identification and voice), rule of law (legislative process, interpretation of legislation to regulation and policy, enforcement of laws and regulations), transparency (transparency in decision making and resource allocation), responsiveness of institutions (response to population needs and to regional local health needs), equity and inclusiveness (equity in access to care, fair financing of health care, disparities in health), effectiveness and efficiency (quality of human resources, communication processes, capacity for implementation), accountability (internal and external accountability), intelligence and information (information generation, collection, analysis and dissemination), and ethics (principles of bioethics, health care and research ethics). The framework assesses each of the 22 domains along three levels (national, health policy formulation, and policy implementation).

Siddiqi et al (2008) framework has been acclaimed as the most comprehensive in assessing governance and health development (Kirigia and Kirigia, 2011). This is because the UNDP and that of the World Bank are very necessary but not sufficient for assessment of governance and health development whilst the WHO's six domains do not include external partnership for health, efficiency in resource allocation as well as macroeconomic (fiscal policy) and political stability. Siddiqi's, though comprehensive, also fails to include macroeconomic and political stability as a separate principle. These are very important factors in determining good governance and health development as successive governments may thwart previous government's comprehensive and result oriented health policies, improve upon or implement better policies that affect the health status of their citizens.

In this paper we include leader characteristics, regime transitions and fiscal policies through the allocation of resources, both public and private to the health sector to examine the extent to which these factors impact on the health status of their citizens. We choose infant mortality rates as a measure of health status because it does not take a longer period of time for changes to be observed whenever there is a change of leader and regime. We control for leader specific effects instead of country specific effects because different leaders have different characteristics and therefore may impact on outcomes differently and also changes in policy largely depend on the characteristics of the leader. Also leaders matter more in certain regimes as they have fewer constraints on the power that they exert (Jones and Olken, 2005). We are doing this because the significant negative impact of political and macroeconomic instability on health development has been starkly demonstrated in the diminished health indicators of the African countries that have undergone various forms of political and macroeconomic turmoil and these to a large extent have been attributed to the kind of political leaders and regimes Africa has had over the years

A lot of studies have shown that health interventions significantly improve health status (Banister and Zhang, 2005; Lensink et al, 2003; Bidani Ravallion, 1997; Cremieux et al, 1999; Chocrane et al, 1978). Using a cross sectional data Filmer and Pritchette (1999) observe that health spending reduces infant mortality and similar findings were made by (Musgrove 1996; Issa and Oattara, 2005). The above findings provide solid basis that health policy that ensures increases in the allocation of resources to the health sector have a positive effect in improving health status of that country. Leaders who therefore commit resources towards the improvement of the health sector with effective policies are likely to improve on the health status of their citizens but this to a large extent depend on the type of leader.

3.3. Health Trends in sub-Saharan Africa

Figures 1-4 present the graphical view of infant mortality rates, public and private health expenditure per GDP and life expectancy at birth for the sub-Saharan countries used for the study in 2010 whilst figures 5-7 presents the annual averages of these health indicators during the period of study (1970-2010). Of the 44 countries that were used for the study, almost half (21) had their 2010 infant mortality rates below the continent's average as shown in fig. 1. Interestingly, all these countries that had their infant mortality below the average also had their life expectancy below the average with the exception of Benin, Comoros, Liberia, Niger and Mauritania (fig. 2). Quite frightening was governments' commitments to investments in the health sector as 25 countries had their public health expenditure per GDP below the average. It is interesting to note that all the countries that had their infant mortality rates below the average also had their public health expenditure per GDP below average with the exception of Burundi, Burkina Faso and surprisingly, Lesotho which was ranked the highest in the public health expenditure per GDP as shown in fig.3.

The above on public health expenditure per GDP confirms WHO's report (WHO, 2014) that African governments' commitment to meeting the Millennium Development Goals (MDGs), especially of infant and maternal mortality rates has not been encouraging. Our observations suggest that governments that commit more resources towards investments in the health sector are able to reduce infant mortality rates, increase life expectancy and hence improve health status. Only few countries had their public health expenditure above the continent's average. Countries that had both public and private health (fig. 4) expenditures below the average include Equatorial Guinea, Ethiopia, Madagascar, Senegal, Benin, Mauritius, Mauritania, Democratic Republic of Congo, Central African Republic, Kenya, Gabon, Eritrea, Chad and Nigeria. Even though these countries' public and private health expenditures per GDP were below the average we observe that countries such as Eritrea, Gabon, Kenya, Mauritius, Senegal,

Madagascar and Ethiopia had their infant mortality rates below the continents average. These observations suggest that perhaps, reducing infant mortality and improving the health status of the citizens depend not only on investments in the health sector.

Fig 1: Infant mortality (2010)

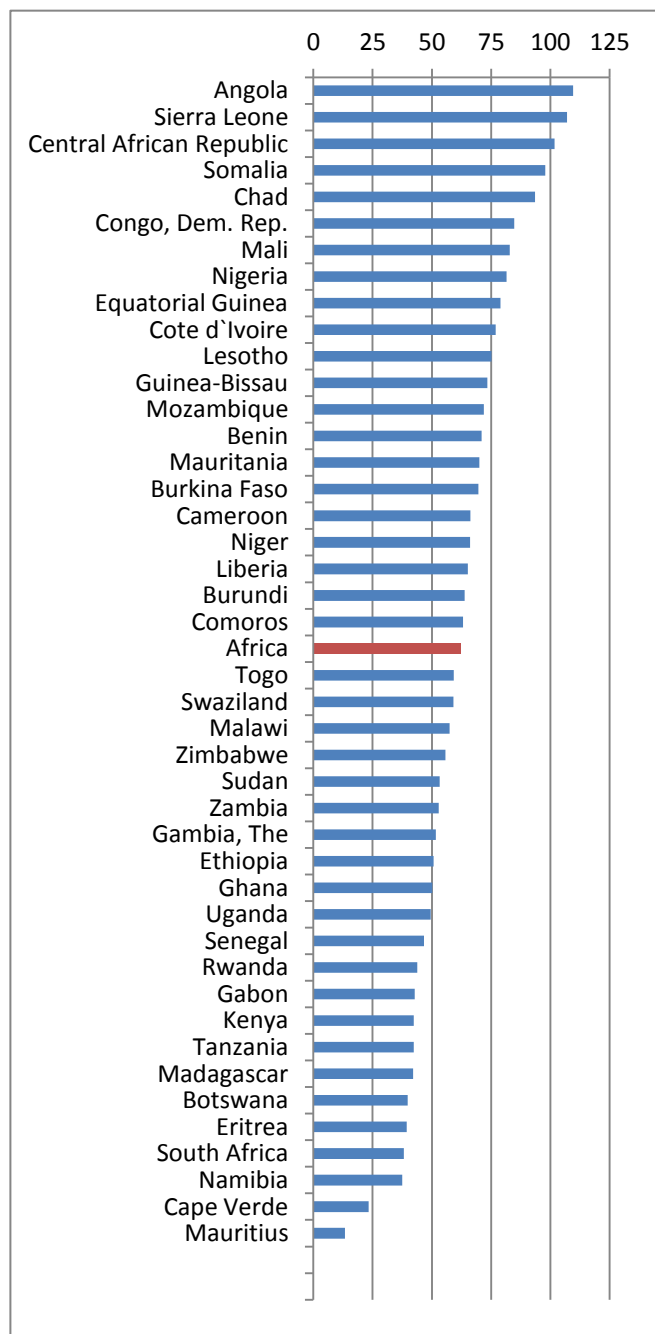


Fig 2: Life Expectancy (2010)

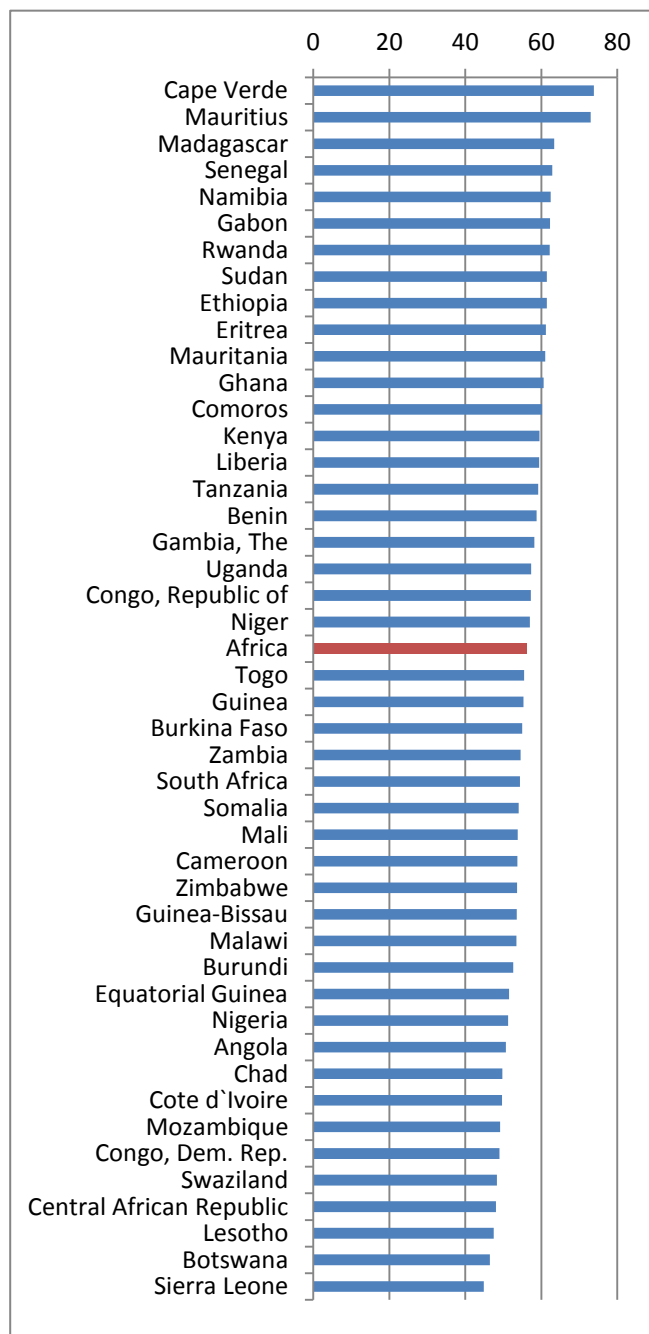


Fig 3: Public Health Expenditure per GDP (2010)

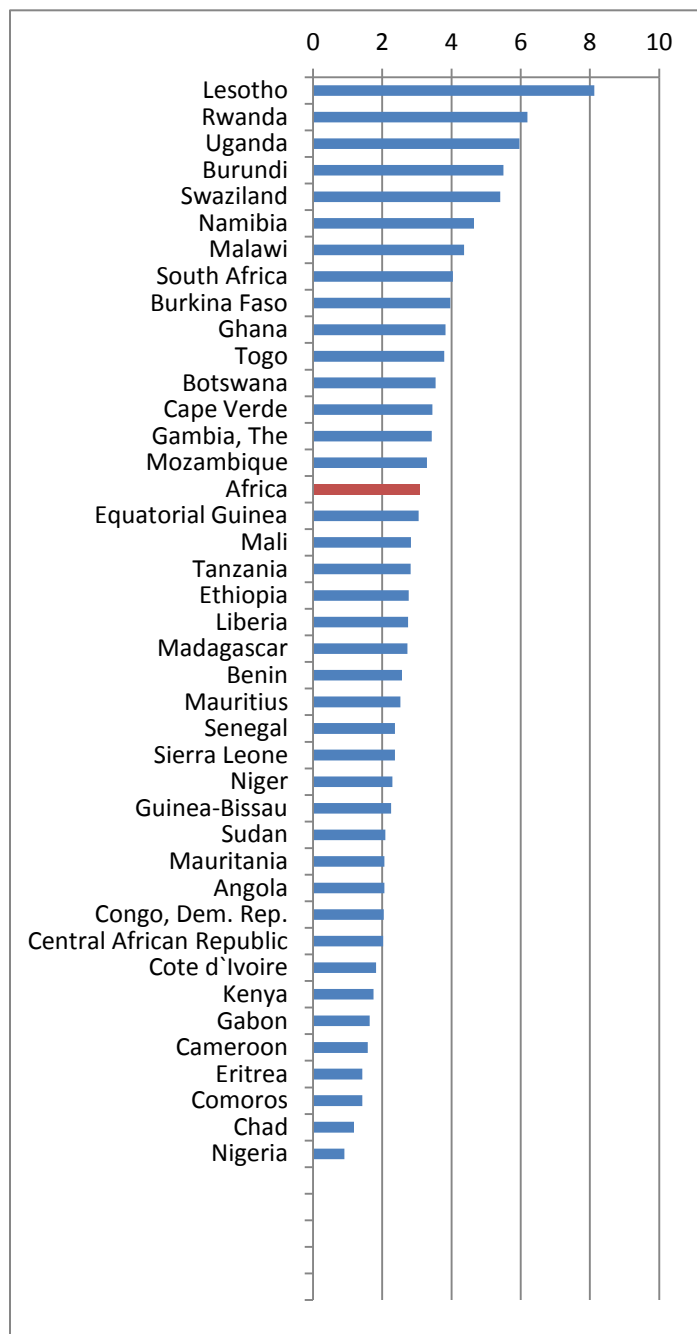


Fig 4: Private Health Expenditure per GDP (2010)

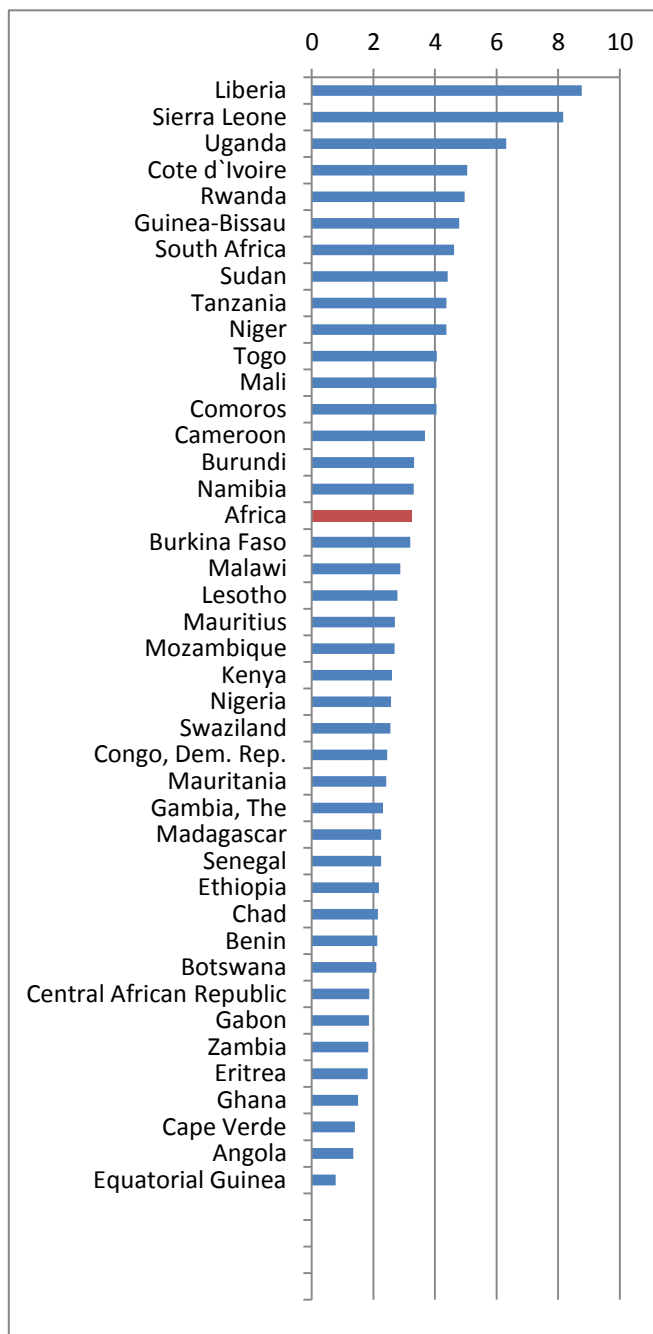


Fig.5 presents the graph of the annual averages of infant mortality rates between 1970 and 2010 for the sub-Saharan African countries used for the study. We observe that, between 1970 and 1990 infant mortality rates was reducing but after 1990 there was a sharp increase in the annual averages until in the mid-90s when it began to reduce again. This same phenomenon was observed in fig. 6 for the annual averages of life expectancy from 1970 to 2010. These may be largely attributed to the conflicts that occurred in some countries in the 1990s (see appendix 2) as well as the world economic recession in the 1990s that also affected Africa's economy. Fig.6 shows the graphical presentation of public vs private health expenditure per GDP between 1995 and 2010. Surprisingly, during this period private health expenditure was relatively higher than public health expenditure per GDP. This again supports WHO's report (WHO, 2014) that African governments' commitments to meeting the MDGs has been quite low. However, the graph in Fig.6 shows continuous rise of public health expenditure that is catching up with private health expenditure indicating a promising trend that public sector investments in the health sector is being continuously improved and hence health status would be improve to meet the MDGs in due course.

Fig 5: Average Under-5 Infant Mortality in Sub-Saharan countries (1970-2010)

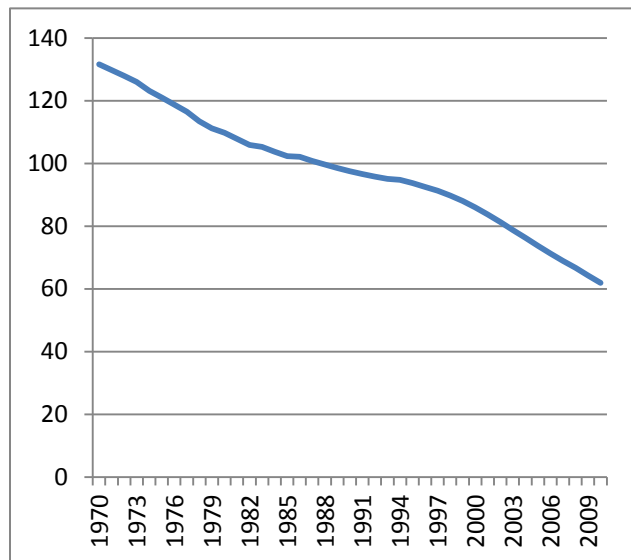


Fig 6: Average Life Expectancy in Sub-Saharan countries (1970-2010)

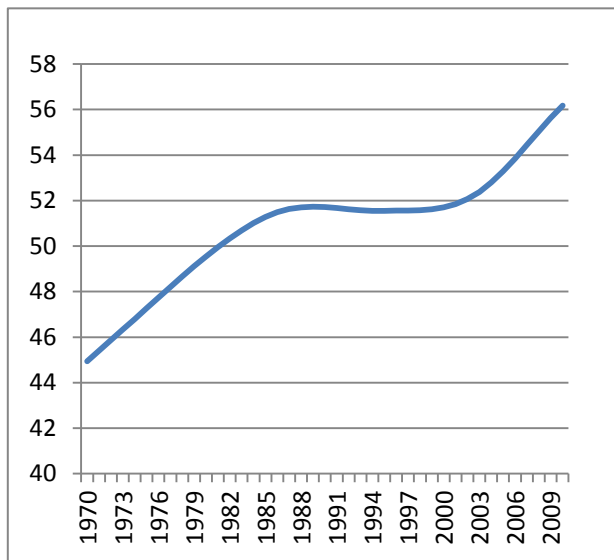
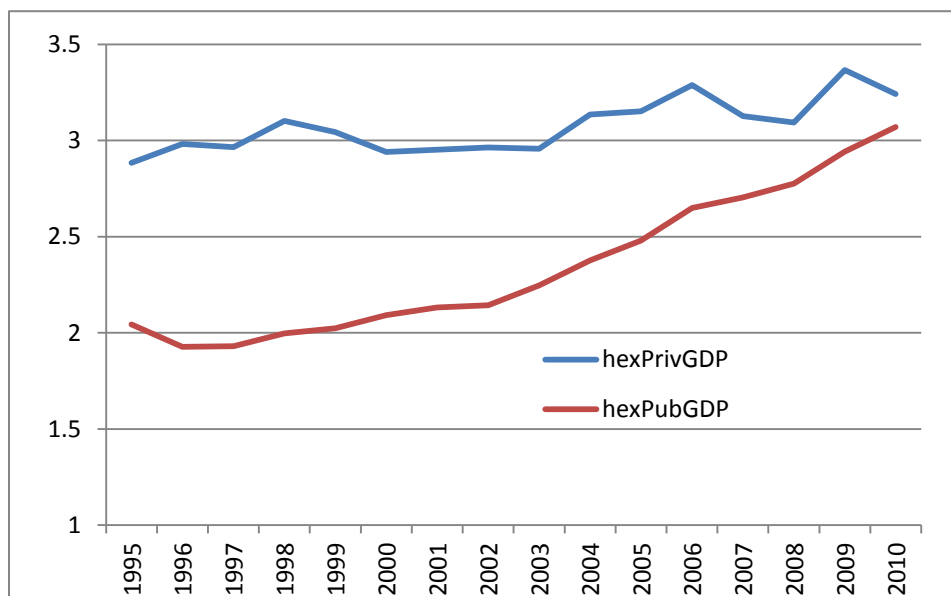


Fig 7 Average Public and Private Health Expenditure per GDP in Sub-Saharan countries (1970-2010)



3.4. Do Leader Characteristics and Regime Transitions Matter?

Until recently the role of the leader in impacting on economic growth has had little attention in economic research. A growing literature connects personal traits of politicians with policy outcomes. One of such early research on leaders of countries is Jones and Olken (2005) who examines whether leaders matter. Using leader's transition where leader's rule ended by death, they observe a significant change in growth patterns as consequences of these transitions. They also find that leaders matter more in autocratic regimes and also in settings where the leaders have fewer constraints on their power.

Using a world data to determine the dynamics of political regimes and their impact on economic development Przeworski et al (2000) observe that economic development does not tend to generate democracies, but democracies are much more likely to survive in wealthy societies. They also observe that political instability affects growth only in dictatorships and that per capita income rises more rapidly in democracies because population increases faster under dictatorships. Using a dataset of 44 Sub-Saharan African countries from 1956-2010 Jorgensen and Bjornskov (2015) observe that, conditional on time, a leader with a social profession has a negative effect that persist up to 10 years after independence whereas lawyers and business profession have a positive effect up to 10 years after independence. They also observe a positive effect of a removal of a communistic leader both by political death and regime change on investment growth. Hayo and Neumeier (2012) observe in Germany that prime ministers tend to favor fiscal policies supporting the social class in which they are socialized. They also observe that governments led by prime ministers from a poor socioeconomic background spend significantly more on social security, education, health, infrastructure and public safety. Explaining why some countries democratize and others do not, using a world data between 1946 and 2004, Gift et al (2015) observe that leaders educated at Western Universities are more likely to democratize than other leaders because western education socializes leaders to prefer

democracy and creates transitional linkages that alter the strategic calculus of democratization. They also observe that western educated leaders significantly and substantially improve a country's democratic prospects. Likewise Siplimbergo (2009) who observe that foreign-educated individuals promote democracy in their home countries but only if the foreign education is acquired in democratic countries using a world data from 1960 to 2005. Diaz-Serrano and Perez Reynosa (2013) on educated leaders' impact on educational attainment show that there is a significant effect of transitions on educational attainment of the population and that more educated leaders generate higher growth.

Osterloh (2010), in examining policy preferences of parties on economic growth for 23 OECD countries also observe a negative impact on growth for parties that support market interventions and a positive impact for parties which aim at setting incentives for business as well as those which promote technology and infrastructure. According to Aghion and Howitt, (2007) democracies tend to have much lower entry barriers than autocracies, because political accountability reduces the protection of vested interests, and entry in turn is known to be generally more growth-enhancing in sectors that are closely to the technological frontier. Brown et al (2011) observe that democratic governments devote a higher percentage of their educational resources towards primary education and that they maintain higher absolute spending levels on education in the aggregate, thereby enhancing the prospects of human capital formation. They also find the same towards health and social security spending per capita. Their findings support that of Lake and Baum, (2001) who observe that increases in democracy are significantly related to increases in the provision of public services, school enrolment and this is disproportionately large for countries that have undergone regime transition using a world data between 1970 and 1992. With regards to immunization against measles they observe that political change is associated with decreased rates of immunization against measles. Among countries that have undergone a maximum regime transition, the rate of measles immunization is more than 84 percentage points lower than among those with no regime change.

On whether Africa's first leaders had persistent effect on the economic development, Jorgensen and Bjornskov, (2015) finds a strong and significant effect from ideology, profession and education. Bjornskov Potrafke (2011) find political ideology affecting the degree of privatization after the collapse of communism in Central and Eastern Europe and therefore ideology affects growth. Further, Paldan (2013) finds that the cyclical path of growth in Africa correspond to the changes in development strategy where African socialism has been dominating one since 1965. Using a poll covering 92 countries of at least once in four year waves of 1990, 1995, 2000 and 2005 with a total of 200 polls, Bjornskov and Paldam, (2012) show that the west which stands out as the most capitalist minded area of the world has been relatively successful for the last 3-4 centuries and has reached an income level that is a great deal higher than most other countries and are able to form unions that are stable such as the EU.

4. Hypothesis and a priori setting

Hypothesis 1: democratic and political transitions of political leaders impact on the health of the people conditioned on growth

Good governance is a very important impetus for improved health status. The United Nation (UND, 1997) outlines five principles of governance and health development and indicate that legitimacy and voice (participation and consensus orientation), direction (strategic vision), performance (responsiveness, and effectiveness and efficiency), accountability (and transparency), and fairness (equity and inclusiveness, and rule of law). These are also characteristics and functions of democracy. Similar outlines are drawn by (Kaufman et al, 1999 and Siddiqi et al, 2008). Good governance therefore includes the ability of the leader to formulate and implement good policies for desired outcomes. Leaders who are committed to improving the health status of their citizens will therefore implement good health policies and ensure increased allocation of resources to the health sector to achieve the desired results.

A change in political institutions alters the distribution of *de jure* political power, but creates incentives for investments in *de facto* political power to partially or even offset change in *de jure* political power. A change in transition, whether positive or negative, impacts on the growth of the economy and hence the health status of the citizens. Jorgensten Bjornskov (2015) observes a positive effect of a removal of a communistic leader both by death or regime change on investment growth. Diaz-Serrano and Perez Reynosa (2013) observe that transitions to more educated leaders increase the educational attainment of the population. According to Acemoglu and Robbinson (2002) countries with better institutions, more secure property rights and less distortionary policies will invest more in physical and human capital, and will use these factors more efficiently to achieve a greater level of income. Acemoglu and Robbinson (2002) further argues that institutions and ideology matter as they are witnessed in the divergent paths of North and South Korea, or East and West Germany, where one part of the country stagnated under central planning and collective ownership, while the other prospered with private property ownership and market economy. Osterloh (2010) finds a negative impact on growth for parties that support market interventions and a positive impact for parties that aim at setting incentives for business as well as those which promote technology and infrastructure. In democratic countries where private sector participation is acclaimed to be the engine of growth, both private and public health expenditures are likely to increase to affect the health status of such countries.

Bjornskov and Potrafke (2011) consider that the prospects for ideology-induced implementations may differentiate over the course of transition. Consequently, it is argued that within a window of opportunity in the first year of the transition, it is more likely for privatization and ideology-induced policies to occur. Transitions to democratic governance ensures stability and are more likely to attract private participation in all sectors include health that are likely to improve the health needs of the citizens.

The type of democratic regime and that which allow free expression and market economy is likely to impact positively on the growth of the economy than one with autocratic regime. Researchers have argued that the greater accountability of democratic regimes whose poor performance can be sanctioned at the ballot box on a regular basis were more likely to outperform most authoritarian leaders who were able to stay in power regardless of their performance (Schedler et al., 1999). According to Jorgensen et al (2015) a coup gives a shock that breaks with the special interest. In a presidential and mixed democracy where leaders are voted into parliament to enact laws that affect the wellbeing of the people such regimes are likely to impact positively on the growth and the well-being of the people. Such regimes are likely to allocate a greater proportion of GDP to the health sector. Masaki and van de Walle (2014) find strong evidence that democracy promotes growth in Africa even though democratization in Africa has been relatively recent. On the influence of women representation in local council for instance, Chattopadhyay and Dufflo (2004) show that council members invest more in infrastructure that is directly related to the needs of their own gender. According to their findings women invest more and are likely to vote for the implementation of projects in the area of roads, water health and education. In democratic regimes where there is greater participation of women either as parliamentarians or council members and where women representation are ensured, the allocation of more resources towards health and welfare improvement will be championed and advocated for since women are known to be socially oriented.

We therefore expect that quality leaders and transitions from an autocratic leader to a democratic leader and hence democratic regimes would ensure the implementation of good health policies through the allocation of resources, both public and private that will lead to improved health status thorough reduction in infant mortality rates. We expect longer tenure of such transition would continue to have a positive effect on public and private health expenditures per GDP and a continuous reduction in infant mortality.

Hypothesis 2: the age of the leader and the duration of presidency impacts on the health of the people conditioned on growth

According to Jorgensen and Bjornskov (2015) leaders who stay in power for a shorter period of time than the window of opportunity, might not have the same persistent effect as those staying in power beyond the window of opportunity. Olson (1993) observe that leaders in power for a shorter period of time have had a negative effect on development, whereas leaders staying in power for longer period of time will have a longer and a more positive effect on development. These observations are true because it takes time for policies to achieve desired results. Policy analysts have often indicated that policies must often be assessed and reviewed from time to time for the overall desired results to be achieve and therefore policy effectiveness is dependent on time. This means that a leader must stay in power for a reasonable time period especially if policies initiated are to achieve the desired results. Transitions and tenure of the leader can change the allocation of health expenditure and this can affect the health status of the citizens, either negatively or positively. According to Jorgensen and Bjornskov (2015) as many African leaders have indulged in autocratic leadership styles and often stay in power for longer periods, this mechanism can also be relevant in relation to them. According to (Olson, 1993; McGuire et al, 1993) dictators care less about the future of the economy as they grow older and the probability of natural death increases. They in fact find evidence that an increase in the time horizon of a dictator leads to less investment in the productive capital and thereby less capital.

According to Dreher et al (2006) with a longer period in office, the leader might feel greater responsibility for all citizens, as compared to being interested mainly in approval by his former peers. The leader is also able to communicate with parliament and public and organize majorities due to learning effects. Such leaders are able to enact policies that have positive effects on their citizens such as health. Diaz-Serrano and Perez-Reynosa (2013) observe that age and tenure affect positively on the educational attainment of the population which is also a

development indicator, like health. We expect longer periods of transitions from an autocratic leader to democratic leader to have a positive effect on the allocation of public and private health expenditure per GDP in ensuring reductions in infant mortality whilst we expect increase in age to also reduce infant mortality but to a limit in the increase in age. We therefore expect longer duration of tenure of a particular leader and increase in age beyond a desired limit to have dire consequences of the health status of the people.

5. Data and variables

To examine the impact of leader characteristics and regime transitions on the health status of the citizens and also assess the extent to which they affect fiscal policy with regards to health expenditures, we use annual panel data of up to 44 sub-Saharan African countries from 1970-2010. This period is selected based the data available. We draw our country characteristics data from the following; public and private health expenditures as a percentage of the GDP data are culled from the WHO Global Health Expenditure database. Infant mortality rates per 1000 live births data was drawn from the World Bank Development Indicators (WDI) whilst GDP per capita data is drawn from the World Bank database. These country data were drawn from these sources because they were the most comprehensive in terms of coverage. Data about health expenditures were available only from 1995. The independent variables of interest which are basically the leader characteristics and regime transitions were drawn from three different sources. In order to identify each primary ruler in each country we resort to the current version 4.1 of the Archigos data in Goemans et al (2009). This database identifies the effective ruler of each independent state and year based on the characteristics of the political system. We then draw our leader characteristics data from Besley and Reynal-Querol (2011), whilst that on the regime transitions from Jorgensen and Bjornskov (2015).

Data on leader characteristics as control variables comprised of the number of years in office of the leader before leaving office, either by death, coup d'état, ill health or elections as year of tenure and the age of the leader at the time he took office and each year that he is in office. It would have been appropriate to include a dummy for whether the leader was a political activist or not before assuming office but this information was nonexistent for most of the leaders.

In order to assess the impact of changes in political regime we create two types of regime transitions; positive and negative. A positive regime change is picked-up by a dummy variable that takes the value 1 when a country transitions from a dictatorship leader (royal dictatorship, military dictatorship or civilian dictatorship) to a democratic leader (presidential democracy, mixed democracy or parliamentary democracy) whilst a negative regime change is picked-up by a dummy variable that takes the value 1 when a country transitions from a democratic leader (presidential democracy, mixed democracy or parliamentary democracy) to a dictator (royal dictatorship, military dictatorship or civilian dictatorship). For country control variables, the GDP growth rates, public and private health expenditures per GDP were used for the study. We did not include the gender, education and other characteristics of the leader that are constant over time.² The reason for this is that we estimate a model with leader fixed effects, therefore, any characteristic that do not vary over time is automatically dropped from the model. . Also Sao Tome and South Sudan which are sub-Saharan African countries were excluded from the study because we did not have available data on most of the variables for the study.

In table 3.1, we show a descriptive statistical summary of the types of regime considered in our dataset. We observe that during the period used for the study dictatorship rule constitutes 84.1% whilst democratic rule constitutes only 15.9%. Out of this civilian dictatorship alone forms 45.3% whilst military dictatorship forms 36.3% with royal dictatorship, constituting only 2.5%. Presidential democracy forms 7.1%, mixed democracy forms 6.2% whilst parliamentary

² The period in which our research covers has only one female leader (Liberia) as president from 2006.

democracy forms 2.6%. Our data supports the observations made by Paldam (2013), that sub-Saharan African governance system has been dominated by dictatorship until in the 1990s and 2000s when many of the countries embraced democracy. Africa's democratic governance is therefore a burgeoning one. With regards to regime transitions, Africa has had 149 periods of transitions from a democratic ruler to a dictator (negative transitions) with only 47 periods of positive transitions (from a dictator to a democratic ruler).

Table 3.1: Descriptive statistics for Regime types

Leaders' Regime				
Royal dictatorship	A type of dictatorship regime	46	2.5	0.159
Military dictatorship	A type of dictatorship by a military leader	644	36.3	0.481
Civilian dictatorship	A type of dictatorship by a civilian leader	804	45.3	0.498
Dictatorship (Total)	Putting all types of dictatorship as one	1494	84.1	0.393
Presidential democracy	A type of leader in a democratic regime	126	7.1	0.257
Mixed democracy	A type of leader in a democratic regime	109	6.2	0.240
Parliamentary democracy	A type of leader in a democratic regime	46	2.6	0.159
Democracy (Total)	Putting all types of democracies as one	281	15.9	0.359
Democratic to dictator (negative transition)	Transition from a democratic leader to and autocratic leader	149	8.3	0.272
Dictator to Democratic (positive transition)	Transition from an autocratic leader to a democratic leader	47	2.6	0.158

Table 3.2: Descriptive Statistics of Study Variables (in sample)

Variable	Overall			Democratic			Dictatorship		
	N	Mean	Std.Dev	N	Mean	Std.Dev	N	Mean	Std.Dev
Country characteristics									
Public health expenditure/GDP	397	2.092	0.930	116	2.166	0.786	281	2.061	0.983
Private Health expenditure/GDP	407	2.993	1.478	116	3.00	1.88	291	2.989	1.287
Under-5 mortality(per 1000 live births)	1374	101.93	34.733	185	80.031	36.736	1187	105.337	33.156
GDP per capita	1395	643.831	926.143	184	767.85	956.576	1211	624.986	920.374
Leader characteristics									
Age	1495	54.686	11.93	190	59.647	10.217	1302	53.98	11.99
Leaders in office up to 4 years	440	29.31(%)	0.455	107	56.315	0.4973	330	25.23	0.434
Leaders in office up to 8 years	336	22.38(%)		46	24.21	0.429	290	22.17	0.415
Leaders in office beyond 8 years	725	48.30(%)		37	19.4	0.397	668	52.59	0.499

Table 3.2 presents the summary statistics of the variables for our study. The first column presents the variable, the second column represents the overall summary statistics of the variables, the third column shows the summary statistics for democratic regimes and the fourth column, the summary statistics for autocratic regimes. It has been argued that democratic leaders tend to be socially inclined, committed to the health and social needs of its citizens and therefore allocate more resources towards social infrastructure in health and education. Our table shows that the average public and private health expenditure per GDP are greater under democratic lead exceeding the overall average, whilst autocratic averages falls a little below the overall averages. The most striking of them all is the infant mortality rates as we observe that the average infant mortality rate under democratic leadership is 80.03, far below the overall average of 101.93 whilst that under dictatorship governance is 105.34 which is higher than the overall average. These averages support the claims made by (Massaki and Robert, 2015, Kaufman et al, 1999, UNDP, 1997) that in democratic governance where there is increase in growth, rule of law, participation and consensus orientation, accountability and transparency, development is enhanced and health status improved. The observations made by Massaki and van de Walle (2015) that democracy brings about increase in growth is also supported as we observe an average GDP per capita to be higher under democratic leadership (767.85), higher than the overall average of 643.831 whilst that under dictatorship leadership is relatively lower (624.98) and below the overall average.

The average age of a democratic leader is 59.65, higher than the overall average of 54.67 whilst that of a dictator is 53.98, lower than the overall average. This is not surprising as according (Agbaje and Roberts, 2002), democratic leaders who are older are committed to the social needs of the people whilst the relatively younger dictator commits resources to his security and protection so as to stay in power for life. With regards to the number of years of tenure in office we find that 56.31% of democratic leaders stay in power up to the first 4 years, 24.21% do get the chance to rule for a second term (up to 8 years) and 19.4%. It must be

emphasized that though some countries practice democratic governance their constitution allows a sitting leader to continue to contest in elections even after a second term in office. The percentages for the tenure of up to 4 years and up to 8 years are relatively higher than the overall percentages but leaders the percentage of leaders staying in power beyond the 8 years is lower than the overall percentage of 48.30% Dictatorship leaders who stay up to 4 years constitute 25.23% those who stay for up to 8 years constitute 22.17%, all lower than the overall average whilst 52.59% of dictators stay beyond 8 years which is higher than the overall average. Based on the documented profession of the leaders 24.58% of democratic leaders were military rulers. This is not surprising as in Africa most leaders were military rulers who came through coup d'états and later, embraced democracy, formed their political parties, contested elections and won. A typical example is Ghana and Nigeria. It is also not surprising that 45.83% of the dictators are military officers which are higher than the overall average. Whilst 17.31% democratic leaders are lawyers only 4.9% of their counterparts are lawyers. Graduate democratic leaders form 37.28%, higher than the overall average whilst their counterpart dictators constitute 16.74% with undergraduate democratic leaders being 51.05% whilst their dictator counterparts constitute 41.01%.

Overall, the number of democratic leaders under the period of study is 190 and constitutes 12.68% whilst dictatorship leaders are 1304 constituting 87.32%. It must be emphasized that the African political governance has been dominated by dictatorship rule.

6. Empirical Model

In order to test our hypotheses, we consider the following empirical model:

$$\Delta Y_{ilt} = \alpha + \theta Y_{il,t-1} + \beta T r_{it} + \gamma C_{it} + \tau X_{it} + \mu_l + \varepsilon_{ilt}, \quad (1)$$

where Y_{ilt} can be the log of infant mortality rate, public health expenditure per GDP or private health expenditure per GDP in country i at time t when leader l is in office; Δ is the difference operator. In order to capture potential state-dependence in our outcome variable (ΔY_{ilt}), that is, changes in the growth rates of our outcome variables depends on its initial value when a leader takes office, we include $Y_{il,t-1}$, which is the lag of our outcome variable, the lag of the log of infant mortality rate, public expenditure per GDP or private expenditure per GDP. We estimate the determinants of the growth rate of our outcome variables and not the determinants in levels in order to capture the contributions or the rate of change brought about as a result of a new leader; Tr_{it} picks the transitions, the change of the regime of in country i at time t ; C_{it} is a matrix containing the leader characteristics; X_{it} is a matrix containing a set of covariates controlling for country characteristics; μ_l is a leader-specific fixed effect; ε_i is a time-varying error term, whilst $\theta, \alpha, \beta, \gamma$, and τ are a set of parameters to be estimated.

Since we are interested in the impact of the characteristics of the leader, the inclusion in equation (1) of leader specific fixed-effects μ_l is very convenient. We control for leader's unobserved heterogeneity, which is not controlled for through the leader characteristics included in C_{it} . We control for leader specific fixed-effects for the following reasons; leaders' characteristics vary significantly and therefore different leaders will impact on outcomes differently; we also control for leader specific effects due to the fact that changes in policy may not only be due to changes in transitions but also depend of the characteristics or ideology of the leader; according to Jones and Olken (2005) leaders matter more in certain regimes as they have fewer constraints on the power they exert. Also, since one leader can be in office only in one country, the leader-specific effects also absorb the country-specific effects. That is, controlling leader fixed-effects is also an indirect way of country specific effects. As we already discuss in sections 3.4 and 4, depending on the characteristics of the leader they are more prone to adopt certain types of policies. Our main coefficients of interest are β , and γ which reflect the

effects of the transitional regimes (from dictatorship to democratic regimes and vice versa) and leader characteristics respectively on the infant mortality rate and health policy with emphases on public or private health expenditure per GDP (Y).

For the characteristics of the leader, the age and number of years in office (tenure) of the leader at the time he assumed office are considered. We consider a square polynomial of age and year of tenure to examine the effect that age and year of tenure assume an inverted U-shaped respectively. Our econometric strategy to our empirical model is that the equation is differenced in order to remove the leader-specific effect μ_i . However, by doing this strictly exogenous variables could become endogenous, in addition to non-strictly exogenous variables already present. By constructing our equation (1) therefore we lag the difference of our endogenous variable since it may be that the difference of other explanatory variables is correlated with the error term, which in turn creates a severe problem of endogeneity. Our core specification will therefore include not only correlated and heteroskedastic residuals, but also non-strictly exogenous and endogenous variables as covariates. The Newey-West corrected covariance fixed effect model provides consistent estimates of standard errors in the presence of serial correlation and heteroscedasticity in the residuals. In this context however; severe identification problem is created due to the presence of endogenous covariates leading to inconsistent estimates.

Endogeneity constitutes one of the major concerns that have plagued the growth of democracy literature (Masaki and van de Walle, 2014). To tackle this problem, we resort to the Generalized method of moments (GMM) estimation method. We estimate our model by using a variant of the Arellano and Bond (1991) GMM estimator. Bond (2002), Blundell and Bond (1998) and Arellano and Bover (1995) show that often lags of the levels of these variables are poor instruments and suggest suitable conditions for fixing this problem. An alternative is to instrument endogenous and non-strictly exogenous variables with lags of their own first

differences, instead of with lags of the variables in levels. To estimate this model, we resort to a variant of the Arellano and Bond's GMM estimator. This is the system GMM which is more efficient compared to the difference GMM since it uses moment conditions from the estimated first differences of the error term as well as the levels of the residuals. The method used here has both one-step and two-step versions of which we adopt the two-step version as it is the most efficient; the estimated variances tend to be biased downwards. To fix this, we apply the finite-sample correction of the two-step covariance matrix proposed in Windmeijer (2005), otherwise standard errors would tend to be severely biased downwards. Similar to Masaki and van de Walle, (2014), we lag all leader and country characteristic variables and regime transition variables so as to eliminate the reverse effect of our dependent variables on our endogenous variables.

7. Econometric results

Panel data models account for the structure of the dataset by modelling the effects in the composite errors. A widely used panel data model, and thus in the literature on leader's effects, the fixed effects have been used repeatedly (Jorgensen and Bjornskov, 2015), which generally tend to be estimated by ordinary least squares (OLS). However, since the structure of our empirical model expressed in equation (1) is dynamic and hence the data generating process is an autoregressive process, using the OLS estimation method to estimate a fixed effects model will produce inconsistent estimates. However, a version of our equation (2) in levels can be used as a preliminary to examine the behaviour of the control variables on the outcome variables. It shall also be used to test the null hypothesis that leader characteristics do not matter, thus, $\gamma = 0$. Therefore, before to estimate equation (1) by the GMM method, we first estimate the following model resorting the fixed-effects OLS method:

$$Y_{ilt} = \alpha + \gamma C_{it} + \tau X_{it} + \mu_l + \varepsilon_{ilt}$$

where left and right hand side in equation (2) contains the same variables as in equation (1), except the regime transition variables.

Table 3.3 presents the FE estimation results for determining the effect of leader characteristics, GDP and type of regime on infant mortality and investment in the health sector. The F-test results in all the three models are highly significant at 99% level. We therefore reject the null hypothesis of $\gamma = 0$ as the results show that we cannot reject the alternate hypothesis that leader characteristics matter. According to ongoing debates that economic growth leads to improvement in health status, we observe that in democratic countries increases in GDP per capita reduces infant mortality growth rates as reported in column 1 of table 3 though it reduces both public and private investments in the health sector as observed in columns 2 and 3.

Table 3.3: Estimation of Equation (2). OLS Fixed-Effects Model

VARIABLES	Log(Infant Mortality)	Public Health Expenditure/capita	Private Health Expenditure/capital
Year of tenure	0.00495*** (0.00131)	0.0367 (0.0255)	-0.0424 (0.0271)
Year of tenure (squared)	-4.05e-05 (3.39e-05)	-0.00146*** (0.000528)	0.00167*** (0.000560)
Age	-0.0175*** (0.000956)	0.0625*** (0.0239)	0.0233 (0.0254)
Log(GDP per capita)	-0.0597*** (0.00727)	-0.612*** (0.0975)	-0.339*** (0.103)
Democracy	0.650*** (0.209)	-2.937 (2.429)	0.381 (2.583)
Democracy xlog(GDPpc)	-0.0601*** (0.0199)	0.286 (0.230)	-0.0346 (0.244)
Constant	6.094*** (0.0813)	4.981*** (1.504)	5.444*** (1.598)
Observations	1,213	397	407
R-squared	0.627	0.216	0.064
Number of leader_n	147	75	77
Adjusted R-squared	0.574	0.0170	-0.174
Ftest	297.2	14.47	3.662
Prob > F	0	0	0.00156

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The results in column 1 also show that as the year of tenure increases infant mortality rate also increases, public health expenditure per GDP is reduced as shown in column 2 but private health expenditure per GDP is increased as indicated in column 3. The age of the leader is highly significant in reducing infant mortality rates and shows that older leaders are socially oriented and enact policies that improve the health status of their citizens though their health policies

that seek to allocate more public expenditure towards the health sector is reduced when they are ageing as shown in column 2 whilst private investment in the health sector in turn increases.

In table 3.4, we report the results of the GMM estimation of equation (1). Columns 1, 2 and report the results on the impact of leader characteristics and regime transitions on infant mortality by considering transitions from an autocratic leader to democratic leader, whilst columns 4, 5 and 6 report the results of the impact by considering the reverse transitions, i.e. from a democratic to an autocratic leader. Studies have linked leader characteristics to growth and development and the age and tenure of the leader have been found to have significant impacts (Jorgensen and Bjornskov, 2005; Olson, 1993; McGuire 1996, Dreher et al, 2006). The age of the leader, to a large extent determines how healthy and active the leader would be, to be able to monitor and assess the policies he has implemented whilst it also requires that the leader should stay in office for a desirable period within which policies enacted could be effectively promoted to ensure that it achieves the desired results.

In columns 1 and 4, we observe that year of tenure of the leader as well as the age of the leader are u-shaped with infant mortality rates, which indicate as the leader grows older and stays in office for longer years his ability to influence health policy that ensures the reduction of infant mortality rates dwindles. These results mean that as the leader assumes office, initially he is relatively younger and has the strength to effectively initiate good health policies and effectively monitor to achieve positive outcomes but as the leader grows older and stays in office much longer weakness and fragility sets in and unable to effectively impact favourably on the health status of the citizens. These findings support our hypothesis 2 for both transitions. Similarly in columns 2 and 3 we observe a u- shape for the age of a democratic leader and public and private health investment where at the beginning of the tenure in office both public and private investments in health is low but as the leader serves more years in office the investments in health is increased . These findings lend support to to Dreher et al (2006) who observe that a

leader with a longer period in office might feel greater responsibility for all citizens, as compared to being interested mainly in approval by his former peers, that leader is also able to communicate with parliament and the public and organize majorities due to learning effects. Such leaders are able to enact policies that have positive effects on their citizens such as health. We also observe a u-shape for the age of a dictator and public and private health investments.

We now examine the regimes and transitions to observe their impact on infant mortality rate and public and private investments in health. In column 1 we find that a democratic leader is able to bring about a greater reduction in the annual infant mortality growth. By way of elaboration we find that during a transition from a dictator to a democratic leader and for which such transition prevails for up to 4 years, infant mortality growth rate is lowered whilst beyond the first 4 years (5 to 8 years) infant mortality growth rate reduces further in much greater points. These results mean that improving the health status of the citizens is a long run process and would be ideal if transitions from an autocratic leader to a democratic leader could be sustained for better and effective implementation of health policies for desirable outcomes. In column 4 we find that a leader who is a dictator is ineffective in bringing about improvement in the health status of their citizens as we observe that the annual infant mortality growth rate increases. The leader however, is able to reduce the annual growth rate, during the first 4 years of the transition but this is short-lived as it further worsens. Our results suggest that the highest increase in infant mortality occurs in years 5 to 8 after the transition from a democratic leader to a dictator. We may not be wrong to assert that perhaps the improvement in the infant mortality growth rate that was chalked during the first 4 years may be attributed to the effective and desirable policies that was initiated and implemented by the democratic leader before the successful transition from that democratic leader to the dictator. The above results confirm our hypothesis that democracy and transition from dictatorship to democratic rule improves the health status of the citizens whilst dictatorship and transitions from democratic rule to dictatorship deteriorates the health status of the citizens.

Improving upon the health and the wellbeing of the citizens by the leader to a greater extent depends on how effective their fiscal policies, especially that of health is implemented. Effective health policy that will allocate much resource to the health sector to effectively execute its implementation is therefore very necessary. We observe in column 2 and 3 that democratic leaders are able to attract and invest more in the health sector. This investment in the health sector is further increased from both the public and private sector during the first 4 years of the transition from dictatorship to democratic rule. The investment in the health sector is however reduced after the first 4 years and this may be due to the case that such investments were huge from both the public and private sector during the first 4 years as shown in columns 2 and 3.

Columns 5 and 6 show a total neglect of the health sector when there is transition from a democratic leader to an autocratic leader as public sector investments in the health sector reduces during the first 4 years of the transition. Though there is a little improvement after the first four years this improvement is still not in desirable terms. The health sector which is very vital for the growth of the economy is left in the hands of the private sector only to invest as shown in column 6. In the transition from democratic leader to a dictator therefore Government's health policy is virtually non-existent. It is therefore not surprising that under a dictatorship leader infant mortality growth rate is increased. The above results that increase in health investment spending increases the health status of countries confirm that of (Filmer et al, 1999; Lensink et al, 2003; Banister et al, 2005; Issa et al, 2005), for democratic countries. The above results also support to the outlines in assessing good governance of the health system by (Siddiqi et al, 2008; UNDP, 1997; Kaufman, 1999) that better health governance and policy outcomes include, long vision, participation in decision making and consensus orientation, equity in access to care, quality human resources, fair financing of health care, political stability and rule of law, all of which are characteristics and functions of democratic governance. Our results further support our second hypothesis

Our results in all the models show negative coefficients for the log of infant mortality, public and private health expenditure per GDP and the log of GDP per capita except the log of infant mortality growth when we have transition from a democratic leader to a dictator as in column 4 (at 90% level). These are quite intuitive as it demonstrates that countries that suffer from decline in infant mortality growth rates, public and private health expenditure per GDP and GDP per capita are more likely to improve upon them. Whilst the positive coefficient for the log of infant mortality rate in column 4 reaffirms our findings that infant mortality growth rates deteriorates under dictatorship leaders.

Lastly, we report Hansen test for overidentifying restrictions. The Hansen j statistics replaces the Sargan test used in the original one-step Arellano-Bond estimator since the Hansen test is robust to heteroscedasticity and autocorrelation. We find that the validity of the instrument is confirmed for all specifications used since χ^2 statistic is not significant in any of the models. We also show the results of the Arellano-Bond test for autocorrelation AR (1) and AR (2). Whereas AR (1) cannot be rejected for all the models at least at the 90% level, AR (2) which is used to detect autocorrelation on the other hand is rejected for all of the models and these indicate that there is no serial correlation between the differenced variables used as instruments and the first differences of the residuals ε_{ilt} implying that they are good instruments.

Table 3.4: GMM Estimation for Determinants of Health Status and Health Investments in Africa.

VARIABLES	(1) Log(Infant Mortality)	(2) Public Health Exp. / GDP	(3) Private Health Exp. / GDP	(4) Log(Infant Mortality)	(5) Public Health Exp. / GDP	(6) Private Health Exp. / GDP
log(Infant mortality) _{t-1}	-0.026*** (0.000)			0.001* (0.001)		
(Pub. Health Exp/ GDP) _{t-1}		-0.520*** (0.012)			-0.595*** (0.019)	
(Priv. Health Exp/ GDP) _{t-1}			-0.254*** (0.017)			-0.246*** (0.006)
ΔLog(GDP per cap.)	-0.008*** (0.000)	-0.341*** (0.024)	-0.517*** (0.043)	-0.011*** (0.000)	-0.396*** (0.050)	-0.358*** (0.035)
Year tenure _{t-1}	-0.003*** (0.000)	0.010 (0.008)	-0.013 (0.009)	-0.006*** (0.000)	-0.013 (0.009)	0.003 (0.006)
Year tenure _{t-1} (squared)	0.000*** (0.000)	-0.000* (0.000)	0.000 (0.000)	0.000*** (0.000)	-0.000 (0.000)	0.000 (0.000)
Age _{t-1}	-0.008*** (0.000)	-0.105*** (0.008)	-0.153*** (0.024)	-0.006*** (0.000)	-0.090*** (0.009)	-0.135*** (0.010)
Age _{t-1} (squared)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Democracy _{t-1}	-0.133*** (0.000)	0.396*** (0.115)	-0.868*** (0.119)			
(Dicta-to-Democ 1-4yrs) _{t-1}	0.106*** (0.001)	0.333*** (0.092)	1.685*** (0.158)			
(Dicta-to-Democ 5-8yrs) _{t-1}	0.087*** (0.001)	-0.798*** (0.101)	0.129 (0.119)			
Dictatorship _{t-1}				0.064*** (0.001)	-0.059 (0.045)	-0.012 (0.075)
(Democ-to-Dicta 1-4yrs) _{t-1}				-0.022*** (0.001)	-2.089*** (0.609)	1.963*** (0.485)
(Democ-to-Dicta 5-8yrs) _{t-1}				0.015*** (0.001)	-0.299** (0.142)	1.191*** (0.206)
Constant	0.335*** (0.004)	3.779*** (0.143)	4.778*** (0.707)	0.097*** (0.005)	3.868*** (0.176)	3.737*** (0.282)
Observations	1,057	320	328	1,057	320	328

Table 3.4 cont

Number of leaders	128	61	63	128	61	63
Leader effect	YES	YES	YES	YES	YES	YES
Hansen Test (stat.)	119.90	47.95	43.26	117.84	50.57	44.39
Test AR(1) (z-stat.)	1.85	-3.03	-1.78	2.38	-3.13	-1.91
Test AR(2) (z-stat.)	1.25	1.31	0.15	2.34	1.73	0.13

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

8. Conclusions

The success or otherwise of any country depends on the quality of its leaders and its political regime. Leadership characteristics and political regime are of essence in any human set up and it is tantamount to a stable polity and development. African growth and development path cannot be effectively studied without examining the quality of leadership, transitions and regimes in the decision making and the policy effectiveness that ensures growth and development. In this paper, we examine the importance of a country's leader's individual characteristics and regime transitions that brought the leader into power and how these affect the health status as a development indicator of their citizens using infant mortality rate as a measure. A unique dataset comprising of 44 sub-Saharan African countries spanning from 1970 to 2010 were used for the study. We control for leader fixed effects for the fact that; leaders can impact on outcomes in that leaders vary significantly that different leader's lead to different outcomes; the impact of leader transitions is large relative to events that occur in their countries. Again since one leader can be in office only in one country, the leader-specific effects also absorb the country specific effects. Lastly changes in policy may not only be due to changes in transitions but also depend on the leader characteristics

The overall results are suggestive of a democratic advantage in the process of promoting growth and the wellbeing of the citizens in contemporary sub-Saharan Africa, at least in the long run. We observe that both public and private investments in the health sector are enhanced during the periods of transition from dictatorship to democracy whilst during the periods of transition from democratic rule to dictatorship there is total neglect of the health sector as public sector investments in the health sector are largely reduced and annual infant mortality rates increases. It is therefore not surprising that there is reduction in infant mortality rates reduces during transitions from an autocratic leader to a democratic leader and reduces relatively more when this transition prevails for relatively longer period (5 to 8 years). We also

find that as leaders grow older and stay in office for a longer period of time infant mortality growth rates begin to deteriorate which indicate that there is a limit to which the age and tenure of the leader can have a favourable impact on health policy outcomes and hence the health status of their citizens. The evidence that the interaction between the years of tenure and transitions from an autocratic leader to a democratic leader increases health status by reducing infant mortality rates conforms to expectations that the advantages of democracy expand over time. Our results also suggest that the highest increase in infant mortality occurs in years 5 to 8 after the transition from a democratic ruler to a dictator.

The policy implication is that the process of development and effective policy, be it social or capital, is built of finance and for Africa to really develop and improve its health status, effective health policies and commitments of more resources towards its effective implementation and to achieving the desired results is inevitable. Our data shows that public health expenditure per capita over the years, at least during the period of years under study are far below that of private health expenditure per capita. The continent can only develop if and only if African states, through the African Union (AU) will embrace democratic rule as the African governance policy, as it has been observed that much progress and development are enhanced through this type of regime. African states must also adopt and implement policies, targets or strategies of financing for development needs in the years ahead. It is also incumbent on electorates to elect quality but not aged leaders who will ensure that effective policies and resource allocation towards the health sector is increased, and monitoring enhanced to achieved desired results. African states must desire for change through democratic rule for better and quality leaders but must ensure that there is continuity in terms of effective policies implemented by former leaders as our results show that greater reduction in infant mortality rates and hence improvement in health status is a long process. In Africa, lots of projects and policies that would have brought about development in the respective countries are often abandoned when there is a change in power especially from one party to another party.

We do not contest that some authoritarian leaders are good in promoting health policies through private participation in the health sector as evident in our results however there is clear evidence of a democratic advantage over autocracy, at least in Africa today. We therefore recommend that African countries must embrace and sustain democratic governance as the best alternative that ensures the provision of social capital and infrastructure, promotion of human rights and human development in enhancing sustainable growth and development.

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Appendix 1: Countries and Regime Periods

Country	Periods under Dictatorship	Periods Under Democracy
Angola	1970-2010	
Benin	1970-1990	1991-2010
Botswana	1970-2010	
Burundi	1970-1992; 1996-2004	1993-1995; 2005-2010
Cameroon	1970-2010	
Cape Verde	1970-1989	1990-2010
Central Africa Republic	1970-1992; 2003-2010	1993-2002
Chad	1970-2010	
Comoros	1970-1989; 1995-2003	1990-1994; 2004-2010
Congo Dem.	1970-2010	
Congo Rep.	1970-1991; 1997-2010	1992-1996
Cote d'Ivoire	1970-2010	
Equatorial Guinea	1970-2010	
Eritrea	1970-2010	
Ethiopia	1970-2010	
Gabon	1970-2010	
Gambia The Rep.	1970-2010	
Ghana	1972-1978; 1982-1992	1970-1971; 1979-1981; 1993-2010
Guinea	1970-2010	
Guinea Bissau	1970-1999; 2003-2004; 2009-2010	2000-2002; 2005-2008
Kenya	1970-1997	1998-2010
Lesotho	1970-2010	
Liberia	1970-2005	2006-2010
Madagascar	1970-1992; 2009-2010	1993-2008
Malawi	1970-1993	1994-2010
Mali	1970-1991	1992-2010
Mauritania	1970-2006; 2008-2010	2007-2008
Mauritius		1970-2010
Mozambique	1970-2010	
Namibia	1970-2010	
Niger	1970-1992; 1996-1999; 2010	1993-1995; 2000-2009
Nigeria	1970-1978; 1983-1998	1979-1982; 1999-2010
Rwanda	1970-2010	
Senegal	1970-1999	2000-2010
Sierra Leone	1970-1997	1998-2010
Somalia	1970-2010	
South Africa	1970-2010	
Sudan	1970-1985; 1989-2010	1986-1988
Swaziland	1970-2010	
Tanzania	1970-2010	
Togo	1970-2010	
Uganda	1970-1979; 1985-2010	1980-1984
Zambia	1970-2010	
Zimbabwe	1970-2010	

Appendix 2: Conflicts in the sub-Saharan African Countries (1990-2004)

Dates	Countries involved	Description	Death toll
1986-1993	Nigeria	Communal Violence	10000
1986-2004+	Uganda	Ethnic violence	12000
1988;1991;1993- 2004+	Burundi	Ethnic violence; civil violence; ethnic warfare	10000;1000;100000
1998-2004	Somalia	Civil war	100000
1989-1990	Mauritania-Senegal	International violence	500
1990;1994;1994- 1998	Rwanda	Ethnic warfare; ethnic violence; ethnic warfare	15000;500000;15000
1990-1995	Mali	Ethnic violence	1000
1990-1997	Liberia	Civil War	40000
1990-1997	Niger	Ethnic violence	1000
1991-1993	Kenya	Ethnic violence	2000
1991-2001	Sierra Leone	Civil, ethnic war	25000
1992-1999	Senegal	Casamance Separatism	3000
1994	Ghana	Ethnic violence	1000

Source: (DFID, 2006)