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The Effect of Financial Deepening on the Performance of Smallholder Farmers in Homa Bay County, Kenya

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Abstract
Theory shows that financial sector deepening has a positive impact on performance of and could widen access to financial services for the Small Holder Farmers (SHF). However there is no consensus on empirical relationship between financial deepening and performance of SHF. This study aimed at analyzing the empirical relationship between financial deepening and the performance of SHF in Homa Bay County, Kenya. The research covered two years starting from 2011/2012 to 2012/2013 because records for previous periods were not easily accessible. The study used the multiple regression analysis. The dependent variable was performance of SHF while total assets, deposits, loans and share capital were the regressors. The research established that the performance of farmers would still grow by Ksh. 2,155.92 annually independent of any factors determining SHF performance. However, SHFs' average assets, loans, share capital and deposits do significantly influence the performance of SHF. The coefficient of determination indicated that 65% of variation in SHF was attributed to assets, loans, share capital and deposits. It was found that a 1% rise in share capital would result in 1.74% drop in performance of SHF and that increasing deposits by 1% would lead to 1.71% drop in performance of SHF if all other variables remain constant. Hence, share capital and deposits are negatively related to performance of SHF. It was also found that 1% rise in Loans would lead to 0.96% rise in performance of SHF and that 1% rise in private credit would drive 1.03% rise in performance of SHF. Therefore, loans and other forms of private credit negatively influence the performance of SHF. Thus, it is recommended that strategies to enhance financial deepening be put in place as a mechanism of stimulating performance of SHF in Homa Bay County.
Keywords: Financial Deepening, Financial Performance, Smallholder Farmers, Credit Access, Agricultural Finance, Agricultural Development, Economic Growth

1. Introduction

Financial deepening is a process whereby financial institutions and markets provide a range of services and instruments that allow for efficient exchange of goods and services (e.g. payments services), effective savings and investment. The financial sector can also create a broad menu of assets for risk sharing purposes. In other words, it can be understood as a process of increasing the efficiency, depth (e.g. credit intermediation and market turnover), breadth (e.g. range of markets and instruments) and reach (e.g. financial access) of financial systems (IMF, 2012).

Small Holder Farmers (SHF) have limited resource endowments relative to other farmers in the sector. In favorable areas with high population densities they often cultivate less than one hectare (ha) of land, whereas they may cultivate 10 ha or more in semi-arid areas, or manage 10 heads of livestock (FAO). Agricultural performance can be defined in financial terms as the ability to achieve gross margin efficiency, operating profit efficiency, positive return on equity, positive returns on assets, sales, net income, working capital ratio etc (CAPI, 2009).

The agricultural sector is the mainstay of the Kenya's economy (Kenya Agricultural Research Institute). The sector directly contributes 24% of the Gross Domestic Product (GDP) and 27% of GDP indirectly through linkages with manufacturing, distribution and other service related sectors. Approximately 45% of Government revenue is derived from agriculture and the sector contributes over 75% of industrial raw materials and more than 50% of the export earnings. It is also the largest employer in the economy, accounting for 60 per cent of the total employment.

According to Strategic Plan for Homa Bay County 2013-2023, there are approximately 150,000 farming families with an average of 2.2 acres farm per family. The main crops produced in the Homa Bay County include maize, beans, sorghum, millet, kales, sweet potatoes and peas and this is grown in about 6,000 hectares. The vast majority (80 per cent) of the farmers produce maize and beans. This is because maize and beans are considered the staple foods of the county. The average productivity of maize is 0.9 tons per hectare in the County and the total production of Maize was 67,965 tons in 2012, down from 88,143 tons in 2011.

Some of the hindrances to smallholder farming success in the County were identified as inadequate financial facilities, lack of farm machineries and poor business management among others. The potential for irrigated agriculture stands at 8,966 hectares with only 13.3% exploited. Small holdings are prominent in densely populated areas of Homa Bay Town, Rangwe, Kasipul and Kabondo Kasipul where the main crops grown are maize, beans, pineapples, ground nuts and potatoes. (Homa Bay County Integrated Development Plan, 2013 –

2017).

Financial sector deepening is not a goal in itself rather it is a tool for economic growth (Beck, 2007). Improving the production capacity of agriculture in developing countries through performance increases is an important policy goal where agriculture represents an important sector in the economy as it provides livelihood directly and indirectly to a significant portion of the population of all developing countries. Therefore, this study investigated the relationship between financial deepening and performance of smallholder farmers in Homa Bay County, Kenya. Emphasis is placed on performance because expansion of arable land is very limited in most countries due to lack of suitable land and/or because of environmental priorities (Zepeda, 2001). Homa Bay County government has one of her goals for agriculture to **s**trengthen access to credit through Agriculture Finance Corporation and SACCOs.

2. Financial Deepening and Performance of Smallholder Farmers

Financial deepening is often understood to mean that sectors and agents are able to use a range of financial markets for savings and investment decisions, including at long maturities (access), financial intermediaries and markets are able to deploy larger volumes of capital and handle larger turnover, without necessitating large corresponding movements in asset prices. The financial sector can create a broad menu of assets for risk-sharing purposes.

Deepening by increasing transaction volumes can enhance the capacity to intermediate capital flows without large swings in asset prices and exchange rates. But it can also attract volatile capital inflows, complicating macroeconomic management. It can lower the reliance on foreign savings and attenuate balance sheet mismatches by increasing the scope to raise funds in domestic currencies and at longer maturities (IMF, 2012). One of the most pressing issues for Africa is to channel existing resources into productive investment so that they can stimulate productivity, create employment, provide individuals and enterprises with basic utilities, and contribute to efficient natural resource management (OECD, 2009).

Agriculture is the lifeblood of African economies and societies - more than half a billion Africans, or some 65% of the population (more than 80% in some countries), depend on small-scale farming as their primary livelihood source. Yet they are marginalized and often do not produce enough to feed their families throughout the year, primarily because they lack access to the inputs, services, credit and markets that would enable them to increase their production. SHF are also deeply vulnerable to climate and economic shocks (African Smallholder Farmers Group website).

United States Department of Agriculture used a model known as total factor productivity (TFP) to measure agricultural productivity. TFP takes into account all of the land, labor, capital, and material resources employed in farm production and compares them with the total amount of crop and livestock output. If total output is growing faster than total inputs, it is an improvement in total factor productivity ("factor" = input). Agricultural total factor productivity (TFP) was stagnant in the Sub Saharan Africa (SSA) region between 1961 and 1985 and then grew at about 1 percent per year through 2008.

Although an improvement, the TFP growth rate for SSA is still only about half the average for all developing countries during the same period. However, some SSA countries achieved productivity growth rates averaging 2 percent per year or higher. Agricultural research investments, economic reform, and other factors account for the fact that some countries improved their agricultural TFP more than others. USDA (2013) found out that the factors promoting productivity were economic and trade policy reforms and low investments in land improvement and fertilizer use among others.

Increasing value in agriculture is one of the six key factors given priority under the economic pillar in Kenya Vision 2030. Kenya will raise income in agriculture, livestock and fisheries by processing and thereby adding value to her products before they reach the market. The annual economic reports produced by Kenya National Bureau Statistics for the 2013 and 2014 indicated a positive correlation between the national economic growth and the growth of the agricultural sector and the sector is said to contribute about 26 % of the national GDP. Growth in the agricultural sector decelerated in 2013 to 2.9 per cent from a revised growth of 4.2 per cent in 2012 and this contributed 17.6 per cent of the overall Gross Domestic Product (GDP), this is according to the Kenya National Bureau of Statistics (KNBS) 2014 Economic Survey.

A study by African Development Bank in 2010 concluded that the expansion of smallholder farming can lead to a faster rate of poverty alleviation, by raising the incomes of rural cultivators and reducing food expenditure, and thus reduces income inequality (World Bank, 2008). As observed by Ravallion (2001), a rise in average household income by 2 percent leads to a fall in the poverty rates by about 4 percent on average. Faster agricultural growth has put countries on the path of a much broader transformation process: rising farm incomes raising demand for industrial goods; lowering food prices, curbing inflation and inducing non-farm growth, and creating an additional demand for workers. Rising on-farm productivity also encourages broad entrepreneurial activities through diversification into new products, the growth of rural service sectors, the birth of agro-processing industries, and the exploration of new export market (World Bank, 2008).

The 2008 World Development Report also observed that GDP growth originating in agriculture is about four times more effective in reducing poverty than GDP growth of other sectors (World Bank, 2008). Various estimates have indicated that there have been positive, though marginal, changes in the poverty profiles of the four studied countries, but not to the level needed to meet the MDG - eradicate extreme poverty and hunger (World Bank, 2008).

3. Research Problem

According to theoretical literature, there are several mechanisms though which access to finance and performance may be related. (Loayza & Ranciere, 2005) in their IMF working paper WP/05/170, concluded that economic growth is positively and significantly linked to the measure of financial intermediation in the long run. The hypothesis upon which this study is based is that there is a co-relationship between financial deepening or access and performance of SHF. According to Ghosh, Mookherjee & Ray (1999), credit is essential in poor rural economies as it is required to finance working capital and investment in fixed capital particularly among farmers too poor to accumulate much saving. Credit cushions farmers from risks associated with consumption during difficult times and it enables them to undertake riskier investments as it will enable them to better deal with the consequences of poorly performing investments (Eswaran &Kotwal, 1990). Klapper, Laeven and Rajan, (2004) argue that access to credit permits greater market entry by talented new entrants and this causes continuous disequilibria in the market that creates opportunity for value creation in the market and affects firms' responsiveness to new market conditions. When producers are unable to make the necessary upfront investments or cannot bear additional risk, they have to forgo opportunities to boost their productivity, enhance their income and improve their well-being (FAO, 2011 March). Diagne and Zeller, (2001) says without adequate access to loans or insurance, producers who face negative shocks, such as droughts, illness or a significant drop in the prices they receive, can lose some of the few assets they do have.

Looking at Homa Bay County, farmers have faced low production in the last decade due to many challenges one of them being lack of access to finance. Action Aid (2001) also identified competition from foreign producers arising from economic liberalization and the high cost of crop production which increases the prices of the products and makes them vulnerable when competing against cheaper imported products. Lack of capital to invest in farming and a general low level of funding from the government has also hindered increased crop production (UNESCO, 2006). According to the World Bank, small-scale farmers require access to four kinds of financing: 1) credit used as working capital; 2) savings for lean months; 3) transactional facilities; and 4) insurance of crops and livestock.

From the above discussion, theory shows that financial sector deepening has a positive impact on growth and widens access to financial services for the SHF. However, Action Aid (2001) noted that low production was experienced in areas around South Nyanza which include Homa Bay County due to lack of financial access among other reasons. However the issue of the relationship between financial deepening and performance of SHF has not been exhaustively studied. Therefore, this study sought to establish whether financial deepening has had any effect on the performance of smallholder farmers in Homa Bay County. And so the research question is: What is the effect of financial deepening and the performance of SHF in Homa Bay County, Kenya?

4. Literature Review

This section discusses both theoretical and empirical literature on the relation to financial deepening and performance of industries.

4.1 Theoretical Literature

This section presents five different theories of financial deepening. That is Edward Shaw's Theory, Ronald McKinnon's Theory, Financial Liberalization Theory, Financial Repression Theory and Fry's Theory.

4.1.1 Edward Shaw's Theory

The Theory was developed by Shaw (1973). He argued that financial liberalization permits a centralization of the funds market, which is a necessary condition for economic development. According to him, financial repression has several negative consequences: In contrast, financial liberalization has positive effects on growth thanks to an optimal allocation of resources with a saving price that reflects its scarcity and the unification of the domestic financial system. Moreover, it also leads to less unemployment (as the price of capital increases and as there is substitution of capital by labor), a better financial credit offer (with longer maturity for instance) and the entry of foreign capital.

According to Shaw financial deepening occurs when the accumulation of financial assets at a faster pace than the accumulation of non-financial wealth and total output. Thus, when deepening is occurring stocks of financial assets aggregative grow relative to income or in proportion to tangible wealth and their range of qualities widens. His contention is that the development of the financial sector of the economy does matter

despite the little attention which has been paid to it in the development literature.

Shaw presents first the implications of money and finance for growth in a basic neoclassical model and in a Keynesian version which allows for risk and risk aversion. In both versions money is seen as part of real wealth. The major value of the wealth view is seen in the emphasis on the relative price of money and its significance in money deepening, which in its turn has important effects: a negative income effect due to substitution of money to physical wealth in savings allocation and a positive income effect due to the increase in productivity of labour and capital brought about by the services of money.

He makes few assumptions, that; money not being wealth there is no substitution effect, but there still is a positive and even more accentuated income effect, while the absorption of factor inputs by the monetary industry has a negative one, furthermore there is a positive effect of growth in real money on the propensity to save and an investment effect brought about by the unification of the capital market, diminished uncertainty regarding forward rates of return and more discrimination choice among investments alternatives. Shaw's predicament for financial liberalization is very simple: let prices for financial instruments are relevant prices and ensure that markets for financial instruments are competitive, while controlling money supply.

4.1.2 Ronald McKinnon Complementary Theory

This theory was developed by Ronald McKinnon (1973). It asserts that money and investment are complementary due to self-financed investment, so that a real deposit rate is the key determinant of capital formation for developing economies. In emerging markets, saving resources exist but are badly managed. Emerging economies are fragmented so there is a greater likelihood of having investments that are less productive. Capital accumulation is discouraged by the fact that for a high inflation rate, nominal interest rates are set too low and thus real interest rates could be negative. As capital supply of banking sector is limited and banks have only specialized credit activities, people have to finance their investment projects by themselves or have to go to the informal sector where interest rates are often usurious.

For McKinnon, financial liberalization lead to unified financial markets and the best strategy is to let interest rates freely fluctuate. In this case, interest rates would reflect the capital scarcity and the information costs about borrower quality. Beside, high interest rates would stop low yield investments. The authorities should limit their role to ensure low inflation and to promote financial sector development.

McKinnon's model has received several criticisms. First, financial repression is not the only cause of credit rationing. According to Weiss and Stiglitz (2000), information asymmetry, monopolistic banks and other market imperfections can lead to the same result. Second, financial repression may be the only choice for financing governments when there is no government bond market or no efficient tax system. Third, the relation between interest rates, saving and investment is not so obvious. It is worth examining whether, as Shaw believes, the substitution is actually stronger than that of revenue. Finally, a market oriented financial system may increase the quantity of investment but not necessarily its quality.

4.1.3 Financial Liberalization Theory

McKinnon and Shaw (1973) later came up with Financial Liberalization Theory. This theory argues that financial repression, through interest rate ceilings keeps interest rates low, discouraging savings with the consequence that the quantity of investment is stifled. Thus investment is constrained by savings. The quality of investment is also low because the projects that will be undertaken under a regime of repression will have a low rate of return. With financial liberalization, interest rate deregulation means that the interest rate is raised thereby increasing savings and also investment. The increased investment results in the rationing out of low-yielding projects and the subsequent undertaking of high-yielding projects. The quality of investment rises and this will ultimately increase economic growth. McKinnon and Shaw therefore advocated the liberalization of such repressed financial systems so as to promote economic growth (Fowowe). However, this view was strongly contested with (Stiglitz, 2000) arguing that if financial integration proceeds fast the propensity of crisis events is higher. Additionally financial Liberalization may turn to be excessively selective, leaving smaller businesses or smaller economies without sufficient access to finance.

4.1.4 Financial Repression Theory

The seminal works of McKinnon (1973) and Shaw (1973) attributed financial repression as the cause of the unsatisfactory growth performance of developing countries. Both McKinnon and Shaw advocated that financial liberalization was needed to remedy the problems caused by the financial repressive policies of developing countries. According to their argument, a repressed financial sector discourages both saving and investment because the rates of return are lower than what could be obtained in a competitive market. In such a system, financial intermediaries do not function at their full capacity and fail to channel saving into investment efficiently, thereby impeding the development of the overall economic system. It posits therefore that the Liberalization of these countries from their repressive conditions would induce savings, investment and growth.

A general criticism that has been leveled against this tradition is that its view on the role of institutions is negative. Their view of the role of institutions, it is argued, conflicts with what goes on in any real economy where markets work through a whole network of institutions. Inclusive in these institutions are trade unions,

firms, and the state which play a crucial role in collecting information and reducing uncertainty (Graham, 1996).

4.1.5 Fry's Theory on Financial Liberalization

Michael J Fry (1978) theory assumes that inflation is a monetary phenomenon that is defined as the difference between the rate of growth of nominal money supply and money demand in real per capita terms. In his model, real money demand is supposed to be positively related to the real deposit rate and real permanent income. On the other hand, inflation is assumed to be a positive function of the increase in money supply and is negatively related to the real deposit rate. Fry summarizes the distorting effects of interest rate ceilings on deposits as follows. First, in an inter-temporal maximization of consumption framework, low interest rates make current consumption more attractive relative to future consumption and hence decrease the current saving rate. Second, the efficiency of investment falls both because low yielding projects become feasible and because of credit rationing that distorts the efficient allocation of funds.

Third, if the ceiling is imposed only on deposit rates and loan rates are able to adjust accordingly, then the spread between loan and deposit rates is much higher than it would be if deposit rates were left to reach equilibrium levels. This might create a problem of credit rationing from the banks related to adverse selection since very high loan rates might attract borrowers that engage in very risky projects and hence ration out borrowers with moderate but profitable projects. Fourth, even if ceilings are imposed also on the loan rates, the situation is no better since banks cannot attach risk premiums to these rates and hence, not only investment is allocated inefficiently but also there is a problem of viability and fragility of financial institutions and the financial system. v) Financial fragility can emerge also by government policy to subsidize loan rates to the financing of projects by the banks that it thinks to be necessary for economic development. In this case, there might be a decreased incentive on subsidized borrowers to repay their loans and this would certainly add to the financial viability problem of banks.

4.2 Determinants of Performance of SHF

Farmers require four kinds of financial services to achieve their economic goals: credit, savings, transfer and payment facilities and insurance (CGAP and IFAD 2006). Access to financial services has the potential to improve commercialization of smallholder agriculture and contribute to poverty alleviation among rural communities (Kirui, O.K et al, 2010). A growing body of evidence suggests that increasing poor people's access to better financial tools can help accelerate the rate at which they move out of poverty and help them hold on to economic gains (Bills & Melinda Gates Foundation).

A number of agents in rural areas such as government departments, commercial banks, microfinance institutions, traders, telecommunications companies, community-based organizations, families, and friends provide financial services, which can include credit, savings, insurance, transfers, and payments. Even so, tailoring and providing financial services for small-scale farmers' remains challenging they are located in remote and often sparsely populated areas, and rarely possess the sorts of physical or financial assets that financial institutions customarily accept as collateral. Typical rural assets, such as livestock, pose challenges of inventory assessment and management, and collateral substitutes based on warehouse receipts or returns from future crops are unavailable in many countries. Farmers also have a special need for financial products with a time horizon extending over multiple crop cycles (Bagazonzya et al).

4.2.1 Credit (Loans)

Credit in the form of loans, personal loans, salary loans, overdraft facilities, or credit lines, is often used as working capital at the beginning of the growing season to purchase inputs and prepare land. They also need capital to invest in equipment such as tractors or drip irrigation and to harvest, process, market, and transport their produce. It is important to distinguish between short-term loans, which microfinance institutions usually provide, and the long-term financial services required for agricultural and livestock enterprises. (CGAP & IFAD, 2006) Agriculture is often perceived as much riskier than other sectors, particularly by financial institutions that lack in-house expertise on agriculture. This lack of understanding leads many MFIs to inflate the risk of farm microfinance. Financing farmers presents risks that vary in both likelihood and severity, but they are identifiable and possible to mitigate effectively.

For smallholder farms usually those supporting single family expenses come early in the season before the planting while income arrives only several months later with the harvest. How, then, can these farmers access the cash they need to plant their crops and, more importantly, to survive between harvests? Access to credit and, thus, access to seeds, soil nutrients, equipment, extension advice, and improved technology can help change that. (Thurow, 2014), El-Osta and Johnson (n.d.) on their paper 'Determinants of Financial Performance of Commercial Dairy Farms' found out the financial position of farmers hinges on many factors in addition to the price of produce a factor no farmer can control.

4.2.2 Savings/Deposits

Savings may be in the form of current accounts, savings accounts, or fixed or time deposits. Famers have a significant need for savings, because their income is seasonally tied to the harvest, and for much of the year they

rely on savings to smooth consumption (CGAP & IFAD, 2006). The revolution in agriculture will impact immediately on reducing poverty by increasing household incomes and level of savings, and enhancing the quality of life. Savings help farmers to prepare for future emergencies or risks, to smooth out variations in income and consumption: Saving during surplus periods to use during difficult periods or to invest in opportunities potentially profitable (purchasing a cow, starting a small enterprise, storing grain to resell during high price season, etc.) (FAO). Village savings and loans groups in which members pool resources and lend to members in need are also a low-cost solution that could help to reduce the worst impacts of the lean season or extreme weather events, while creating local funds that farmers can tap into for other development activities.
Ashraf et al, (2005) run an evaluation in the Philippines that tested commitment accounts with great success which were designed so that the customer chose a savings goal (either a date or amount) that they had to reach before withdrawing funds. The bank also offered additional commitment mechanisms including a safe box (similar to a piggy bank) and automatic transfers. The commitment savings product had positive impacts in Malawi on the amount of planting for the next season, sales from the next harvest, and consumption after harvest. Committed farmers spent 26 percent more on inputs, had increased sales by 22 percent and consumed 17 percent more after the harvest.

4.2.3 Transactions

Good financial transaction systems help farmers to make and receive payments securely, access other financial services such as micro-insurance, and connect to local and regional agribusinesses. Farmers can sell their produce and receive cash from the comfort of their farms by use of mobile phone to call and pay for services reducing distance and losses in the production cycle. They can also use these services to pay for wages, utility bills, etc.

Good transactions systems allow for local and international money transfers, remittances, government transfers, and check clearing (CGAP & IFAD, 2006) Mobile money and agent banking have proven we can increase access and also reduces the time used collecting or sending cash. Mobile money system also allows farmers to borrow and repay without the need to necessarily physically visit a lender and this reduces the cost of borrowing and therefore a positive move towards affordable credit.

4.2.4 Insurance

Insurance may cover crops and livestock as well as human life and health (CGAP and IFAD 2006). Insurance companies pay farmers in the event that a portion of their crops cannot be harvested because of bad weather or if prices for cash crops fall precipitously between planting and harvesting. If those farmers took out they will be paid for the crops destroyed by drought at the price they would have fetched at the market. Agricultural insurance schemes are a potential tool to cope with income losses though indemnity payments and therefore stabilize income and economic performance of farms. The support of insurance use would be possible through direct subsidies for insurance premiums, through providing reinsurance, or through more indirect support by enhancing research and development of insurance products and providing an institutional framework for the agricultural insurance market (Iturrioz 2009) Under certain conditions, the support of insurance can be regarded as a Green Box measure within the WTO agreements (OECD 2009).

According to Livestock Kenya (2011), Livestock Insurance helps farmers in Pastoralists are able to restock animals lost following a severe drought. Insurance policies can be used by herders as collateral to buy food or drugs to help their animals survive difficult periods. Livestock insurance can provide herders with the means to obtain credit from financial institutions that are currently unwilling to lend due to climatic risks, some insurers like Blue Shield Insurance add value to this service by joining hands with other stakeholders to create a market for insurance services. This is by educating farmers on avoiding risks, ensuring that farmers have loans to do their farming and initiating the drilling of boreholes in the low rainfall areas. Livestock insurance is a risk management tool for livestock farmers facing frequent or severe drought.

4.2.5 Farm Size

Sharma, Bangarva & Sharma (2007) on their study 'Factors Affecting Gross and Net Income of Farmers in Different Farming Systems' concluded that the size of land holding possessed by respondent is most the important variable affecting annual gross and net income obtained from various farming system. On the contrary the variables namely house and farm building, farm machinery and power, information and recreation facility source of energy and social participation did not affect significantly either the gross income or the net income from the farming system.

Mazumdar (1965); Dyer (1991) found out that inputs, costs, and output per hectare seemed to decrease as farm size increased, while output per unit of input increased. Ghose (1979) concludes that small farms' allocative efficiency is due not to the superiority of peasant organization of production, but relies on primitive technology and undeveloped markets: in the absence of saving technologies and developed markets in inputs (such as fertilizer) and labor, small farms, with abundant labor and the use of farmyard manure, have the advantage.

4.3 Empirical Literature

This section looks at empirical literature on the relationship between financial deepening and performance.

4.3.1 Review of International Literature

Rajan and Zingales (1998) on their study, 'Financial Dependence on Growth' developed a new methodology to investigate whether financial sector development has an influence on industrial growth. They suggested that financial development has a substantial supportive influence on the rate of economic growth and this work partly by reducing the cost of external finance to financially dependent firms. They added that there was no contradiction when the lack of persistence of economic growth is set against the persistence of financial development. Other factors may cause changes in a country's investment opportunity set. Finance may simply enable the pursuit of these opportunities and thereby enhance long term growth.

Financial dependence and growth was revisited by Fisman & Love (2003) who argued that Rajan & Zingales (1998) may be implicitly testing whether financial intermediaries allow firms to better respond to global shocks to growth opportunities, rather than the extent that financial intermediaries allow firms to grow in industries with an inherent (technological) financial dependence (Fisman & Love, 2003).

Levine (2004) on his study 'Finance and Growth' appraised and critiqued theoretical and empirical research on the connections between the operation of the financial system and economic growth. While subject to ample qualifications and countervailing views, the preponderance of evidence suggested that both financial intermediaries and markets matter for growth and that reverse causality alone is not driving this relationship. Furthermore, theory and evidence imply that better developed financial systems ease external financing constraints facing firms, which illuminates one mechanism through which financial development influences economic growth.

Trew (2006) critiqued Levine study by arguing that growth theory and growth empirics have become disconnected especially in relation to the question of finance and growth. Theory and empirical evidence make it difficult to conclude that the financial system merely and automatically responds to economic activity, or that financial development is an inconsequential addendum to the process of economic growth. The theory he reviewed suggested that greater financial efficiency reduces the disincentive to entrepreneurship or the accumulation of human capital, thus increasing the rate of technological progress and consequently also the long-run growth rate of the economy.

Carter, Cheng & Sarris did a study on 'Financial Deepening and Small Farm Productivity' their paper developed twin puzzles. 1) Ample evidence that uninsured risk depresses small holder productivity and the development of rural financial markets and 2) Yet, to date it has proven hard to sustain formal agricultural insurance despite apparent need. They explored prospects for resolving these twin puzzles with formal theory of the behavior of smallholder household and a competitive sector of rural lenders. They demonstrate that neither credit nor insurance markets are likely to fully develop in isolation. However, "interlinking" these markets and contracts is more likely to succeed. How inter-linkage works depends on collateral environment. Insurance subsidies may be smart.

4.3.2 Review of Local Research

Ambunya (2003) did a study to trace the impact of financial liberalization on financial deepening and growth through the increment in credit channel to the private sector following financial deregulation. The study looked at the period 1991 – 2002 and found that the growth of the financial sector and the real sector moved interdependently in the period of financial liberalization in Kenya. Financial deepening makes it possible for credit availability and capital. Economic growth on the other hand is expected to raise income levels and hence savings mobilization through the interest rate channel. The results showed that financial reforms undertaken in Kenya impacted positively on economic performance but it did not explain how much of economic growth was affected by the deepening.

Odhiambo (2009) did a paper on the impact of interest rate reforms on financial deepening and economic growth in Kenya, using two models: the financial deepening model and the dynamic Granger causality model. The study attempted to answer two critical questions: Does interest rate liberalization in Kenya have any positive influence on financial deepening? Does the financial depth which results from interest rate liberalization lead to economic growth? Using co-integration and error-correction models, the study found strong support financial depth to Granger cause economic growth in Kenya. The study, therefore, concluded that the interest rate liberalization in Kenya has succeeded in increasing economic growth through its influence on financial depth.

Ndege (2012) carried out a study to establish the impact of financial sector deepening on economic development in Kenya. The study targeted the 44 banking institutions operating in Kenya as at 31st December 2011 and adopted a Quantitative comparative design. During the period of the study (2007-2011), financial sector deepening was high as a result of commercial banks leveraging their operations through adoption of new technologies including automation. During the period, economic growth started at a high of 7.1 then fluctuated to a low of 1.5 in 2008. However, the study focused only on the banking sector ignoring other sectors' contribution

to financial deepening.

Aduda, Chogii & Murayi (2014) did a study on the effect of capital market deepening on economic growth in Kenya. The research objective that was set out was to determine the effect of Capital Market deepening on the economic growth of Kenya. The study adopted five independent variables for capital market deepening and one dependent variable. The study suggested that three out of five variables for capital market deepening have a significant positive relation with GDP and therefore be concluded that indeed capital market deepening has a significant positive effect on economic growth in Kenya. The results were found to be consistent with previous research conducted on the stock market deepening variables and economic growth.

The research further lend support to the finance-growth nexus which suggested the positive role played by finance in mobilizing savings and investments through creation of efficient capital markets. The study however failed to find a bidirectional relationship between economic growth and finance in Kenya as suggested by some researchers including Owiti (2012) and Osamwonyi and Kasimu (2013).In conclusion they said that a deep market will act as a spur to economic growth in Kenya.

Ochanda (2014) carried out a study to examine the effect of financial deepening on growth of small and medium-sized enterprises in Kenya: A case of Nairobi County. The study sought to find out the effect of financial innovation, financial sector regulation and inflation and general interest rates on growth of SMEs. It was also determine the effect of credit access on growth of SMEs in Nairobi County. Regression models were used to examine the effect of financial deepening on growth of SMEs. The study found that access to credit positively influenced the growth of 92% of SMEs. Financial innovation was also found to have a strong positive influence on the growth of SMEs. High financial sector regulation, inflation and interest rates were found to hinder growth of SMEs. The study found out that for years 2009 to 2013, annual inflation and general interests were seen to be very high and negatively affecting SMEs growth. The study recommended for establishment of subsidized credit for SMEs and a research organ to steer ahead financial innovation as well as financial sector deregulation.

Wanyama et al (no date provided) concluded that access to credit enabled farmers to purchase inputs or acquire physical capital, thus contributing to technology adoption, increased capital accumulation and input intensity in agriculture. Subsequently this may promote increased input use and production and marketing of high value crops (horticultural crops) and intensification of livestock production (Dairy, Poultry).

5. Research Methodology

5.1 Research Design

This study used quantitative techniques to get information. The quantitative technique used was descriptive research design because it uses description as a tool to organize data into patterns that emerge during analysis. Descriptive research design helps the researcher to clearly identify and describe true characteristics of a research problem without manipulation of research variables (Mugenda & Mugenda, 2003). Descriptive also seeks to portray accurately the characteristics of a particular individual, situation or a group.

5.2 Population and Sample

Population refers to an entire group of individuals, events or objects having common observable characteristics (Zikmund, 2003). He also states that, a target population is the complete group of specific population elements relevant to the research project. The populations under this comprise the Small Holder Farmer Groups in Homa Bay County who have engaged in farming for economic purposes between the years 2011 – 2013 and farmers' cooperatives. Farmers in cooperatives were chosen because of ease of access to information.

A sample is a subset, or some part of a larger population. Sampling design deals with the method of selecting items to be observed for the given study. The numbers of registered Agriculture SACCOS at SASRA are 10 and they were all tested. These represent about 4,178 farmers in Homa Bay County.

5.3 Data and Data Collection Instruments

This study used secondary data. Several sources were utilized for data collection. The study collected financial performance reports from targeted SACCOS' annual reports. These were collected from the SASRA offices within the study period 2011-2013. Other data were collected from Kenya Horticultural Competitiveness Annual Reports.

5.4 Data Analysis

Quantitative data analysis was carried out to establish the relationships between the variable of the study. Data was presented in the form of tables and diagrams so as to make more sense of the information.

5.4.1 Conceptual Model

Linear regression model was used to analyze the data. Regression analysis is used in finding out whether an independent variable predicts a given dependent variable .The regression model used was in the form;

$$Y = f(SC, L, D, A) \quad (1)$$

In this study, performance of SHF was the dependent variable (Y) while financial deepening aspects were the independent variable (X). Performance of SHF was determined by use of the regression model based on the resulting linear regression.

5.4.2 Analytical Model

The study used the multiple linear regression model for analysis.

$$SFP = \alpha + \beta_i SC + \beta_{ii} L + \beta_{iii} D + \beta_{iv} A + \varepsilon_t \quad (2)$$

Where SFP= Smallholder Farmer Performance as measured by Income.
α=Constant term
β_i=coefficients of *i*
SC= Average Share Capital of farmer
L = Average Loans taken by farmer
D = Average amount deposited by farmer
A = Average Assets belonging to farmer
e =Standard Error
SFP = Performance of SHF

5.4.3 Data Reliability and Validity

To test the reliability of the study, official data from reliable Government agency was obtained. This government agency, The Sacco Societies Regulatory Authority (SASRA) is mandated to regulate all cooperatives in Kenya and has official records. Only data from farmers' cooperatives in Homa Bay County was obtained. Further, the relevance rate was achieved at 90% on all the variables. The draft data was improved to produce the final data that was consistent.

6. Data Analysis and Results

This section presents analysis of the empirical results of the study. Section 4.2 discusses summary statistics, section 4.3 discusses the estimated or empirical model, section 4.4 discusses the results and section 4.5 summarizes the section.

6.1 Summary Statistics

6.1.1 Performance of SHF (Income)

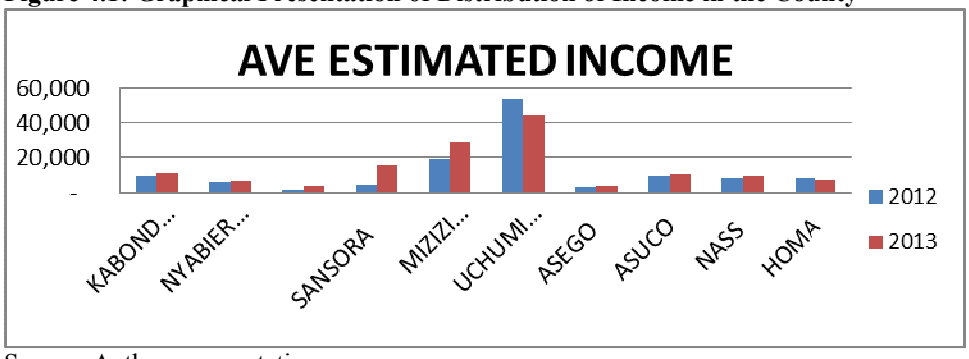
Table 4.1: Summary Statistics for performance of SHF

	Percentage
Mean	6.66%
Median	9.46%
Standard Deviation	-8.51%

Source: Authors computations

Table 4.1 provides the summary statistics for performance of SHF measured by income in Homa Bay County, Kenya in 2011/2012 and 2012/2013. The percentage change in mean on income per farmer was 6.66% (σ = -8.51%). The percentage change in median for the same period was 9.46%.

Figure 4.1: Graphical Presentation of Distribution of Income in the County



Source: Authors computations

As shown in Figure 4.1 the overall behaviour of farmers' income in the county increased slightly in the period 2012/2013 compared to 2011/2012, however Uchumi Bora and Homa had a slight decrease in income.

6.2.2 Share Capital per Smallholder Farmer

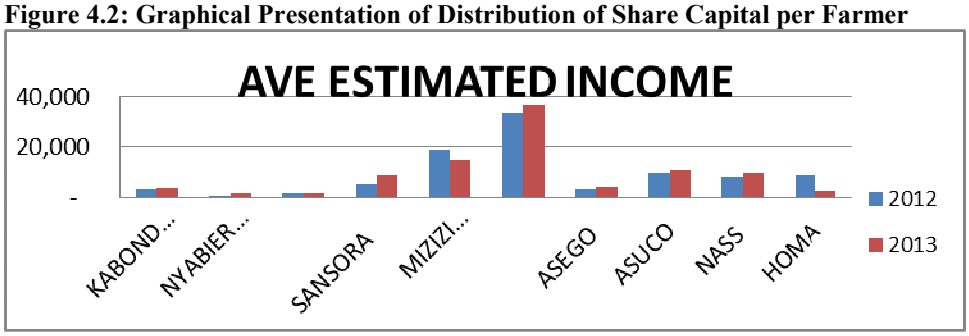
Table 4.2: Summary Statistics for Share Capital per Smallholder Farmer

	Percentage
Mean	1.00%
Median	-2.02%
Standard Deviation	1.91%

Source: Authors computations

Table 4.2 provides the summary statistics for Share Capital per smallholder farmer in Homa Bay County, Kenya in 2011/2012 and 2012/2013. The percentage change in mean on share capital per farmer was 1.00% (σ = 1.91%). The percentage change in median for the same period was -2.02%.

Figure 4.2: Graphical Presentation of Distribution of Share Capital per Farmer



Source: Authors computations

As shown in Figure 4.1 there was no big change in share capital per farmer in the period 2012/2013 from the previous period 2011/2012. In Uchumi Bora Corporative, the share capital per farmer was slightly higher in 2011/2012 period than in 2012/2013 while at NASS, the reverse was witnessed.

6.2.3 Farmers Deposits to Cooperatives

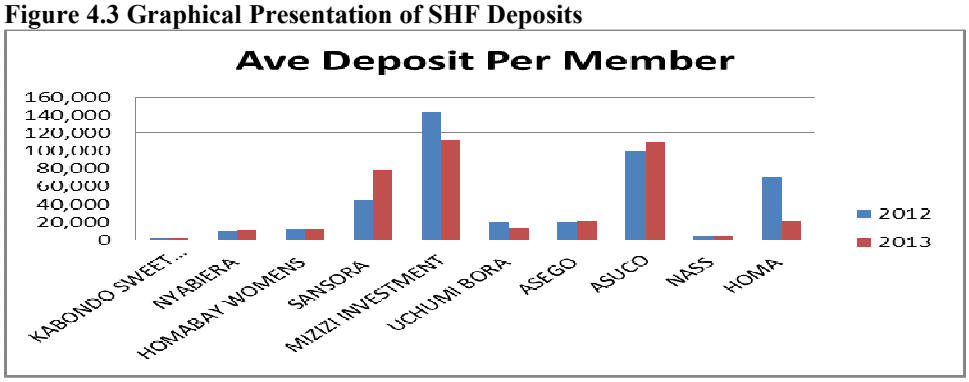
Table 4.3 Summary Statistics for SHF Deposits

	Percentage
Mean	-4.57%
Median	-5.82%
Standard Deviation	-4.10%

Source: Authors computations

Table 4.3 provides the summary statistics for deposits/savings by SHF in Homa Bay County, Kenya in 2011/2012 and 2012/2013. The percentage change in mean on deposits per farmer was -4.57 % (σ = 4.10%). The percentage change in median for the same period was -5.82%. This means that there was a decrease in contribution by members in 2012/2013 period compared to 2011/2012 period.

Figure 4.3 Graphical Presentation of SHF Deposits



Source: Authors computations

As shown in Figure 4.3 the deposit by members to Homa in 2012/2013 period was less than half of what was deposited in 2011/2012 period. Mizizi Investment also had a slight decrease in members' contributions. On the other hand, Sansora had more than half increase in the 2012/2013 period. Overall, the there was a decrease in deposits compared to the previous period.

6.2.4 Loans per Smallholder Farmer

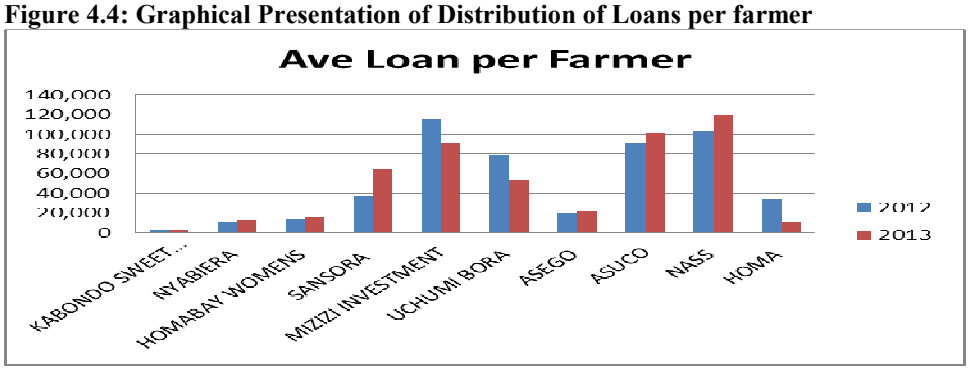
Table 4.4: Summary Statistics for Loans per Smallholder Farmer

	Percentage
Mean	13.43%
Median	34.74%
Standard Deviation	-1.79%

Source: Authors computations

Table 4.4 provides the summary statistics for Loans per smallholder farmer in Homa Bay County, Kenya in 2011/2012 and 2012/2013. The percentage change in mean on loans per farmer was 13.43% (σ = -1.79%). The percentage change in median for the same period was 34.74%.

Figure 4.4: Graphical Presentation of Distribution of Loans per farmer



Source: Authors computations

As shown in Figure 4.4 the average loan per member in Mizizi Investment, Uchumi Bora and Homa decreased slightly while that of Sansora, Asuco and Nass increased slightly within the two periods. The other groups were almost stable.

6.2.5 Assets per Smallholder Farmer

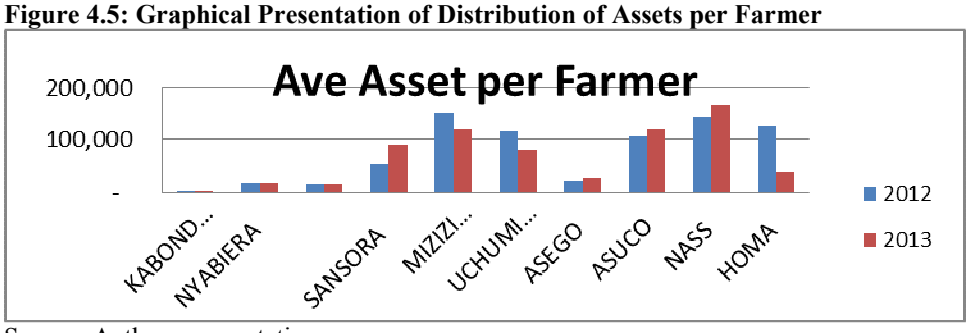
Table 4.5: Summary Statistics for Assets per Smallholder Farmer

	Percentage
Mean	-5.53%
Median	-14.95%
Standard Deviation	-3.34%

Source: Authors computations

Table 4.4 provides the summary statistics for Assets per smallholder farmer in the cooperatives in Homa Bay County, Kenya in 2011/2012 and 2012/2013. The percentage change in mean on Asset per farmer was -5.53% (σ = -3.34%). The percentage change in median for the same period was 14.95%.

Figure 4.5: Graphical Presentation of Distribution of Assets per Farmer



Source: Authors computations

As shown in Figure 4.4 the average Asset per member in Sansora, Asuco and Nass increased slightly while that of Mizizi Investment and Uchumi Bora decreased slightly. There was a more than half decrease in assets per farmer in Homa. The rest were a little bit stable.

6.3 Relationship between Financial Deepening and Performance of SHF

6.3.1 Correlation Analysis

Table 4.6: Correlation Matrix

	Performance of SHF	*Share Capital*	*Deposits*	*Loans*	*Assets*
Performance of SHF	1.00				
Ave Share Capital	0.37	1.00			
Ave Deposits	0.21	-0.33	1.00		
Ave Loans	0.52	0.57	0.57	1.00	
Ave Assets	0.54	0.62	0.52	0.94	1.00

Source: Authors computations

As shown in Table 4.6 there was strong positive correlation between performance of SHF and loans (r = 0.52), and between performance of SHF and assets (r =0.54).

6.3.2 Results of Model Goodness of Fit Test

Data was analysed using the goodness of fit test. Performance of SHF is the dependent variable and the independent variables are Share capital, deposits, Loans and Assets.

Table 4.7: Goodness of Fit Statistic

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson Sig. F Change
1	0.81	0.65	0.37	8058.57	1.42

Source: Authors computations

The study established an R square of 0.65. This implies that 65% of the SHF performance in Homa Bay County is attributed to changes in independent variables. The Durbin-Watson test statistic tests the null hypothesis that the residuals from an ordinary least-squares regression are not auto correlated. The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value between 2 and 4 indicates negative autocorrelation. Since the Durbin-Watson value of 1.42 was close to 2, then it was concluded that there was no autocorrelation among the model residual.

6.3.3 Results of ANOVA

Data was analysed using the goodness of fit test. Performance of SHF is the dependent variable and the independent variables are Share capital, deposits, Loans and Assets.

Table 4.8: Analysis of Variance (ANOVA)

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	4	603,299,295.83	150,824,823.96	2.32	0.19
Residual	5	324,702,399.07	64,940,479.81		
Total	9	928,001,694.90			

Source: Authors computations

The study used ANOVA to establish the significance of the relationship between financial performance and the independent variables. The regression model is not significant given the level of significance F (4, 5) = 2.32, p = 0.19 which is above 0.05. Therefore, all the variables though individually significant, are not jointly significant..

6.3.4 Estimated Model

Multiple regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Performance of SHF is the dependent variable and the independent variables are Share capital, deposits, Loans and Assets.

Table 4.9: Regression Results

	Coefficients	Standard Error	*t* statistic	*p*-value
Constant	-2155.92	4937.11	-0.44	0.68
Ave Share Capital	-1.74	0.78	-2.23	0.08
Ave Deposits	-1.71	0.76	-2.25	0.07
Ave Loans	0.96	0.46	2.08	0.09
Ave Assets	1.03	0.45	2.28	0.07

Source: Authors computations

The results show that all the variables are not statistically significant at 5% level of significance in explaining the performance of SHF.

6.4 Discussion

The coefficient loans was 0.96 which was not statistically significant, t= 2.08, p > 0.05. The coefficient indicated that 1% rise in loans would lead to 0.96% rise in performance of SHF if all other variables remain constant. The

positive relationship confirms the findings of Ochanda (2014) who carried out a study to examine the effect of financial deepening on growth of small and medium-sized enterprises in Nairobi County. The study among other objectives sought to determine the effect of credit access on growth of SMEs in Nairobi County. The findings were also similar to those of Wanyama et al (n.d.) who found out that access to credit enabled farmers to purchase inputs or acquire physical capital, thus contributing to technology adoption, increased capital accumulation and input intensity in agriculture. Subsequently this may promote increased input use and production and marketing of high value crops (horticultural crops) and intensification of livestock production.

The coefficient of the variable Deposits was -1.71 which was not statistically significant, $t = -2.25$, $p > 0.05$. This coefficient indicated that increasing deposits by 1% would lead to 1.71% drop in performance of SHF if all other variables remain constant. The findings are similar to that of Ashraf et al, (2005) who tested commitment accounts in Philippines with great success which were designed so that the customer chose a savings goal (either a date or amount) that they had to reach before withdrawing funds. The commitment savings product had positive impacts in Malawi on the amount of planting for the next season, sales from the next harvest, and consumption after harvest. Committed farmers spent 26 percent more on inputs, had increased sales by 22 percent and consumed 17 percent more after the harvest.

The coefficient of the variable Assets was 1.03 which was statistically significant, $t = 2.28$, $p > 0.05$. The coefficient indicated that 1% rise in private credit would drive 1.03% rise in Performance of SHF if all other variables remain constant. This is in agreement with Schneider & Gugerty (2011) who argued that asset endowments are significant determinants of households' ability to access and effectively use productivity enhancing knowledge and technologies. The findings were also similar to Tatwangire (2011) study which investigated the joint contribution of four productive asset endowments to welfare improvement of households in rural Uganda by testing for alternative functional forms and possible asset interaction effects using Cobb-Douglas, translog, and semi- parametric specifications of the production function. The findings of the study suggested that accumulation of productive assets can be a good instrument for poverty reduction in rural areas.

In summary, loans and assets have a positive impact on SHF performance while share capital and deposits have a negative impact on SHF performance.

7. Conclusion

This study draws the following three conclusions. First, there is a strong relationship between Performance of SHF and financial deepening. Second, the performance of SHF in Homa Bay County is negatively influenced by deposits and share capital. Third, Deposits, Loans, Assets and Share Capital do not jointly influence the performance of SHF in Homa Bay County. Clearly, the strong negative influence of deposits and share capital swamp the positive influence of loans and assets on the performance of smallholder farmers in Homa Bay county in Kenya.

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