

# **Does Source of Finance Matter for Microenterprise Productivity Growth in Ghana?**

**Eric Osei-Assibey**

**Graduate School of International Development  
Nagoya University**

**oassibey@yahoo.com**

## ***Abstract***

The primary goal of this study is to gauge the incentive properties of the various sources of microenterprise financing. Specifically, the study seeks to investigate the effects of nature and a range of institutional sources of finance on micro and small enterprises' (MSEs) productivity edge and growth. Using non-farm household enterprise data from Ghana, the study findings suggest that too much of grant and internal source of finance, compared to debt finance, can be counterproductive. It has the tendency to undermine the motivation and incentive for a microentrepreneur to be innovative in bringing about a higher productivity. However, awareness of appropriate sources, and access to a more formal finance, are found to be associated with productivity edge. Having access to semi-formal and formal financial institutions do not only afford microentrepreneurs to make the needed investment in innovations and newest vintage of capital stocks, which embodied modern technologies and productive efficiencies, but also MSEs are more likely to receive technical and managerial advice that will eventually lead to higher productivity and growth.

**JEL Classification: G2, G3, O31**

**Keywords: Financing Source, Microenterprise, Productivity Growth, Ghana**

## **1. Introduction**

One often-cited reason for Africa's slow pace of growth and underdevelopment is low productivity growth (Wolf, 2007; Bloom *et al.*, 2010). Although several underlying factors have been identified for this in the region, financial constraints particularly among micro and small enterprises (MSEs) have received much more attention in recent times. This is because evidence abounds that lack of finance stifles innovations, investments in physical capital and new technology that are likely to stimulate productivity growth (Wolf, 2007; World Bank, 2008). Moreover, the significant role MSEs play in reducing poverty through income and employment of the vast majority of labour force in Africa is widely acknowledged. For example, the results of the 2000 Population and Housing Census of Ghana show that about 80% of the economically active population works in the informal sector.

Additionally, the latest 2005/2006 Ghana Living Standard Survey reports that approximately 3.2 million, representing about (46.4%) of all households in Ghana, operate non-farm enterprises of which 72% are women (Ghana Statistical Service Report, 2008).

Thus, improving the productivity of this sector is likely to have a greater growth potential in the economies of Africa. This is because it does not only serve as a training ground for developing technical and entrepreneurial skills, but also by virtue of their greater use of indigenous technological capabilities, they promote local inter-sectoral linkages particularly with agriculture and contribute to the dynamism and competitiveness of the economy (Brunton, 1987).

In this regard, though policy responses have been mixed, governments, international community and NGOs are increasingly rolling out credit support programs or providing interest subsidised credits to ease the credit constraints of the MSEs. This, in part, has resulted in many microfinance institutions (MFIs) and government credit guarantee schemes providing important sources of MSEs' financing - albeit on short-term or sometimes inadequate - in many countries like Ghana. Whilst this direct intervention is going on, many governments are also fostering a policy of all-inclusive formal financial system. This is where mainstream formal banking institutions are being encouraged to broaden access to these under-served MSEs. Although formal banks are believed to have a wider scale, offer large size and longer term loans, they have long restricted access to MSEs because of perception of risks and high transaction costs of delivery (Beck and Demirguc-Kunt, 2006).

Despite these interventions from MFIs and mainstream commercial banks, however, the majority of MSEs, particularly at start-ups, are still severely constrained. Thus, they are forced to often rely on limited household savings (self-raised financing), remittances or even donation from charitable organisations as well as sometimes on informal finance, which are known to charge exorbitantly high interest rates (Osei-Assibey, 2010). The implication of all these is that MSEs in Africa, as some of the preceding chapters of this study and many previous studies (Green *et al.*, 2002; Abor 2008) have shown, obtain finance from a variety of different sources. These sources thus reflect both microentrepreneur's preferences and the options that are available to them. Yet, the relative advantages and the output growth potentials of these respective sources are still unclear, particularly in the context of African rural financial system.

The question thereby remains as to which of these financing sources are important and more associated with productivity growth of the enterprise. In other words, what are the incentives properties of financing sources in spurring enterprise output growth besides the contributions of labour and capital? In the recent Africa Investment Forum 2010, held in Accra, one of the key policy fall-outs was that improving access to finance is not sufficient for building successful enterprise. Much more significantly is capital that drives the levers of firm-level productivity growth.

Given that the nature as well as the institutional source of these finances differs markedly, their precise relative importance in stimulating growth via productivity effect is also likely to be different. For example, while some of the financing sources come with technical and managerial advice necessary for productivity growth, Beck *et al.* (2009) have argued that financing source that provides interest subsidies will not only result in negative incentives for repayment, but also a potential disincentive for adopting-market based innovations for growth. Furthermore, according to Giugale *et al.* (2000), exogenous "Help" packages such as grants, subsidised interest rates, tax incentives targeted to informal firms promote MSE (i.e., increase their numbers) but do not "develop" them or foster their growth. To them, this breeds complacency and generates a short-term span of abnormal profits that only perpetuate and encourage smallness, as they increase the relative attraction of informality.

This issue therefore re-ignites the old-age debate on the source of enterprise productivity growth. Despite the neoclassical view that exogenous technical progress drives long-run productivity growth which has been severally countered by the new growth models that explain technical progress internally or endogenously; both theories make significant contributions to our understanding of productivity growth and the importance of investment as a fundamental part of the growth process. Our study seeks to explain that when a microentrepreneur has access to credit/loan, particularly from the formal mainstream banking sector, it can then invest in newest equipments and benefit from recent vintages of capital inputs which embody more advanced technology and have a higher productive efficiency. Moreover, access to external finance that comes along with technical and managerial advice can also be an important source of productivity growth with given capital and labour inputs.

In light of the foregoing, and since the varying sources of finance has different incentive properties, we point out that understanding what kind or nature of financing source needed to spur productivity growth of MSEs, holds promise to building and promoting the necessary rural financial system likely to drive the overall growth of African economies. However, to our best knowledge, no study has empirically explored these issues particularly in African context. Therefore, this study aims at filling the gap by investigating how the nature and varying institutional sources of MSEs' financing influence the productivity growth.

Specifically, our study contributes to the existing literature in many respects. First, we highlight three distinct natures of financing source peculiar to MSEs, namely self-finance, debt finance and grant/donation finance. Second, we made a distinction among a range of institutional financing sources beyond which is typically the case in the capital finance literature. These are self-finance, informal finance, semi-formal finance and formal finance as well as an alternative categorisation into internal vs. external finance, while assessing their respective impacts and complementarities in driving productivity and growth. Third, the unique and detailed survey data-set on nonfarm household enterprises from Ghana allows us to focus on micro-enterprises which have long been overlooked in the literature. Fourth, as many of such previous studies potentially suffer from endogeneity problems, we overcome these problems by using past or start-up financing sources on the present MSE's productivity indicators. Finally, we uniquely measure productivity edge or technical efficiency from a cross-sectional unexplained residual with labour and capital inputs as well as estimating other measures of factor intensities and growth perception as robustness checks.

The rest of the paper proceeds as follows. Section two explores the theoretical and empirical literature of the relationship between sources of finance and productivity growth. Section three describes an empirical framework of analysis, estimation procedure and data source. Section four reports the estimation results. Finally, section five summarises the study findings and policy implications.

## **2. The Literature**

### **2.1 Finance and Productivity Growth Nexus: what are the channels?**

Despite the wealth of empirical literature underpinning the positive growth effects of finance (e.g., Levine, 2005; King and Levine, 1993; Beck and Demirguc-Kunt, 2006), the exact channels through which finance affect growth remain to be resolved. However, what appears to be unanimous and clear in both past and recent development literature is its impact

through enterprise productivity growth. Historically, theoretical literature (Tobin, 1965; McKinnon, 1973; Shaw, 1973) has sought to relate the possible channel through which finance affects growth to improvement in productivity. For example, Shaw (1973) emphasises the role of external rather than internal finance as an effective constraint on firm growth. He shows that external finance raises the average efficiency of investment because financial intermediaries can use their expertise to allocate efficiently. In this regard, the link between financial intermediation and economic growth as postulated by the McKinnon – Shaw hypothesis is shown via productivity growth. This also raises the issue of the debate on the sources of productivity growth. Hereafter, we discuss this debate and identify the position of finance in driving enterprise productivity growth.

## **2.2 Source of Productivity Growth**

The standard neoclassical growth model pioneered by Solow (1956) postulates that generally capital accumulation drives growth in the short run, but capital eventually yields to diminishing returns. Therefore, long-run productivity growth is entirely driven by exogenous technical progress rather than capital and labour inputs. However, modern endogenous growth theories have tended to invalidate this theory because, in their view, it did not consider the possibility of external effects such as R&D and stock of knowledge available to all firms (see Romer, 2006; Jorgenson 1996). The seminal paper by Romer (1986) that ignited the new endogenous growth theory, provides a mechanism and corresponding economic explanation for why capital might not suffer from diminishing returns in the long-run - mainly through R&D efforts and knowledge spillovers among firms. Thus, productivity growth can continue indefinitely without the elixir of exogenous and entirely unexplained technical progress (Stiroh, 2001). The literature on this has since been growing rapidly - albeit varied with alternative explanations ranging from many factors like different production structures, the dynamics of competition, innovation, increasing returns, and production spillovers.

However, even before this renewed interest in explaining long-time productivity growth by Romer, several studies have indicated the importance of explaining technical change endogenously. For example, Arrow (1962) emphasizes “learning-by-doing,” in which investment in tangible assets generates spillovers as aggregate capital increases. Further, Jorgenson and Griliches (1967) show that changes in the quality of capital and labour inputs and the quality of investment goods explained most of the Solow residual.

It must be stressed however that investments - which includes expenditures on tangible assets, education, training, and other human capital accumulation, as well as R&D — play a pivotal role in both Solow’s and Romer’s framework as well as all other view points, although investment’s precise impact on productivity growth differs (Stiroh, 2001). This has led to several lines of subsequent research on the relationship between investment and productivity growth. For example, the issue of investment in physical capital recalls the so-called “vintage capital” models, which predict that firms with new capital equipment technologically outperform existing firms or those without, and constitute an important channel for productivity improvements in the market (Campbell, 1998; Giannangeli and Gómez-Salvador, 2008). Similarly, Bloch and Madden (1995) concludes that embodiment of technical change in capital equipment means that labour productivity reaches its full potential only when workers are equipped with the newest equipment. Their study further finds that when the stock of equipment consists of a mixture of old and new vintages, average labour productivity falls short of the best practice level.

As financially constrained firms or firms without access to external finance are known to be deficient in investing in new capital (Kaplan and Zingales's, 1997), recent strand of literature has sought to move the debate further by gauging the relative importance of finance and firm's productivity growth. In a recent study by World Bank (2008), for example, it outlines three potential channels through which finance is associated with firm's productivity growth. First, the availability of external finance is positively associated with the number of start-ups—an important indicator of entrepreneurship—as well as with firm dynamism and innovation. Second, finance is also needed if existing firms are to be able to exploit growth and investment opportunities and to achieve a larger equilibrium size. Third, firms can safely acquire a more efficient productive asset portfolio where the infrastructures of finance are in place and they are also able to choose more efficient organizational forms such as incorporation.

Similarly, Wolf (2007), exploring a study of how to encourage innovation for productivity growth in Africa, asserts that the ability to adopt new technologies, information and skills - technical, managerial and institutional - necessary to innovate and adapt them to local conditions will be crucial first step to increase productivity, which is a precondition for growth. She further observes that to increase productivity at the firm-level, several of the following have to come together: investment in new equipment, reorganization of the production process, research and development activities, access to higher quality inputs, training of workers and marketing of the improved or new products. To achieve all of these, however, Wolf (2007) believes access to finance is key.

### **2.3 Empirical Evidence of Finance and Productivity Growth**

Empirical evidence supporting the finance and productivity growth nexus has also been unambiguous. For example, Gatti and Love (2006) provide one of the strongest evidence yet in support of the hypothesis that access to finance improves productivity. Using data from a cross section of Bulgarian firms, they estimated the impact of access to credit (as measured by indicators of whether firms have access to credit or overdraft facility) on productivity. To overcome potential omitted variable bias of OLS estimates, they used information on firms' past growth to instrument for access to credit and concluded that credit is positively and strongly associated with TFP. In a rather experimental based study, Butler and Cornaggia (2008) also find a positive relationship between access to finance and productivity. Specifically, they exploit an exogenous shift in demand for an agricultural product to expose how producers adapt their productivity in the presence of varying levels of access to finance. Using a triple difference testing approach and using crop yield as a proxy for productivity, they find that production increases the most over the sample period in areas with relatively strong access to finance, even in comparison to a control group.

### **2.4 Does Source of Finance Matter for Productivity Growth?**

#### **- Formal vs. Informal Finance**

Even though the potential of finance to impact positively on enterprise's level productivity growth has been well documented (as explored above), there is paucity of evidence on which source or what nature of finance is better associated with MSEs' productivity growth. The literature on capital structure of firms has mainly emphasised source as either debt vs. equity (or external vs. internal finance) (Greene *et al.*, 2002). Although the notion of external finance as a homogenous source of funds is a powerful construct and a useful first step, Jaramillo and Schiantarelli (2002) argue that one must go beyond this or the leverage decision and investigate other dimensions of external finance.

This is particularly important because the type of finance and its incentives properties can differ considerably. For example, its maturity (whether short or long term), its degree of formality (whether formal, semi-formal or informal), or its nature (whether non-cash, grant/subsidised interest or debt) varies markedly. Although there is scanty of evidence on these dimensions, two recent studies by Du and Girma (2008; 2009), and Maksimovic *et al.* (2008) have attempted to empirically investigate the effects of formal vs. informal financing sources on firm's productivity growth. Interestingly, however, both studies had focused on China's economy.

Before trying to answer the question of whether financing sources matter for growth, Du and Girma (2008) point out that while mainstream theories and evidence in the finance and growth literature are developed with the default focus on formal finance, which is indeed justified in most developed economies where the formal financial system dominates, for many developing economies in which informal financial institutions may be just as important or even more so, its role in the economy are largely limited. However, it is commonly believed that countries like Taiwan and China have grown rapidly despite underdeveloped formal financial sectors as their fastest growing firms have relied on alternative or informal financing channels rather than formal external finance (Allen *et al.*, 2005).

In that regard, while Du and Girma (2008) affirming emphatically that source of finance matters for firm's growth, particularly in China, they argue that it is too sweeping to draw a conclusion that the formal finance is more important than informal one or vice versa. In their view, it is the mixture of various financial arrangements and agents from which the industrial firms have benefited - "perhaps what matters in the end is not the specific channel of finance, but the 'structure' of finance". Controlling for endogeneity of finance variable and using TFP to proxy for firm's growth, they find that foreign finance leads to the highest growth rate in the examined period. Self-raised finance and domestic bank loans follow next, while state budget finance is the least efficient financing source in driving firm growth. They therefore conclude that there are apparent well-built complementarities between formal financing channels and informal ones, as well as between domestic finance and foreign investment.

In an alternative argument, however, Maksimovic *et al.* (2008) argue that informal financial institutions may play a complementary role other than substitute to the formal financial system by serving the lower end of the market. According to them, the informal financial institutions serve firms which cannot access the formal financial system due to the lack of good growth opportunities or poor credit ratings. Empirically, however, although Maksimovic *et al.* (2008) find that a relatively small percentage of firms in their 2400 sample of Chinese firms utilized formal bank finance with a much greater reliance on informal sources to confirm their earlier observation, the relative impact of both sources on growth is in the opposite direction. Their results suggest that financing from the formal financial system is associated with faster firm growth, whereas fund raised from alternative channels is not.

While these previous studies are important starting point for understanding the relationship between source of finance and MSEs' productivity growth, they are nonetheless conclusive and leave a lot more questions than answers. In particularly if we consider financing within the context of African's rural financial system, where the complex socio-economic status of microentrepreneurs and the undeveloped markets mean that MSE's financing is not only about sources, but also the nature of it.

## **2.5 Why should a greater formality or nature of financing matter in African Context?**

The financial markets in Africa are characterised by a number of market imperfections often resulting in incentives problems such as adverse selection and moral hazards. These problems are even more acute within the rural financial market which is characterised by risk, high transaction cost and uncertainty (Kimuyu and Omiti, 2000). The result, particularly in SSA countries like Ghana, has been underdeveloped financial markets which have given way to market segmentations and fragmentations (Nissanke and Aryeetey, 2006). For example, the information problem in Ghana has meant that the formal commercial banking industry, despite its rapid growth and keen competition in recent times, has restricted access to the MSEs. These constraints in accessing formal finance coupled with the widespread poverty in the sub-region mean that financing patterns of MSEs differ widely from the rest of the developing world. Evidence abounds that microentrepreneurs tend to rely heavily on their past savings, followed by informal sources of credit from family and friends, money lenders, SUSU operators and trade credits as well as donations particularly at start-up (Aryeetey, 1994). A significant number also obtained subsidised interest loan from some semi-formal financial institutions such as financial NGOs, Credit Unions, Saving and Credit companies, and government sponsored schemes.

However, as mentioned previously, the incentives properties of each of these financing for spurring MSEs' productivity growth still remain unresolved. For example, despite their limited usage, formal finance, which is commonly known to have the ability to give large and long term loan, may be more associated with MSEs' productivity. This is because while access to formal finance may allow firms access to better and more productive technologies, provision of long term finance by formal finance may avert a squeeze on working capital, and that could have favourable consequences on productivity (Jaramillo and Schiantarelli, 2002).

Moreover, Du and Girma (2009) observe that the formal finance does not only convey information *ex ante* regarding the value of potential investment projects to individual savers, but also it monitors and motivates firm's managers and ensures that effective corporate governance mechanisms are in place. This managerial and technical advice may improve the skill and human capital abilities of the enterprise leading to changes in organisational structures and core functions, management systems as well as work arrangements to take the best advantage of new technologies and changing market opportunities.

In regard to the informal financing source, however, Jaramillo and Schiantarelli (2002) argue that despite the fact that they have been found to charge astronomically high interest rates that can be inimical to the growth potentials of MSEs, if their short-term loans entails more continuous monitoring, it may force firms to reduce inefficiencies and to increase productivity at each level of measurable inputs (capital stock, number of workers, materials). However, since short-term loans do not also allow investment in new vintages of capital that embodies modern technologies; informal financing source may have a chilling effect on productivity growth. Furthermore, those without access to external finance or use their own limited internally generated fund are more likely to employ outmoded second hand inputs

## **2.6 Nature of Financing**

Another important dimension of the financing pattern of MSEs in Ghana and Africa in general is the nature of financing. By nature of financing, we refer to the structure of financing whether it is a self-raised financing, a loan finance with commercial interest rates

or a “free loan” finance such as interest-free, subsidised or even financing from grants or donation where beneficiaries are not under any obligation to repay or pay a competitive interest rate. The grant or subsidized type of external financing is particularly important for starting up small household enterprises among the relatively poor in Africa. The sources usually range from the semi-formal financial institutions such as FNGOs or governments agencies, religious organisations to close relatives.

For instance, as an integral part of social norms in most family settings in Ghana, wealthier kin or family members are supposed to help the underprivileged ones, usually with some small amount of start-up capital (referred to in the Akan language as *dwetiri*) for them to begin a small business to make a living. While in most cases these amounts of money borrowed from kin are not expected to be paid back nor documented, Aryeetey (2004) observes that they, nevertheless, a fact which partly explain why a considerable part of the borrowings done within the rural financial market in Africa for setting up small businesses are from family, friends etc. But, however handy or beneficial these types of financing may be, the existing literature argues that a firm that generates too much free cash may find its insiders making poor investments and relaxing cost control efforts. In this case, free cash or grant could actually weaken the growth process compared with a situation where the enterprise sector has to rely more on external finance provided by an efficient and competitive financial system (Jensen 1988; also cited in World Bank, 2008). Such financing can make MSEs complacent and sluggish or wasteful which do not encourage productivity growth.

### **3. Analytical Framework and Model Specification**

#### **3.1 MSE Productivity and Source of Financing Framework**

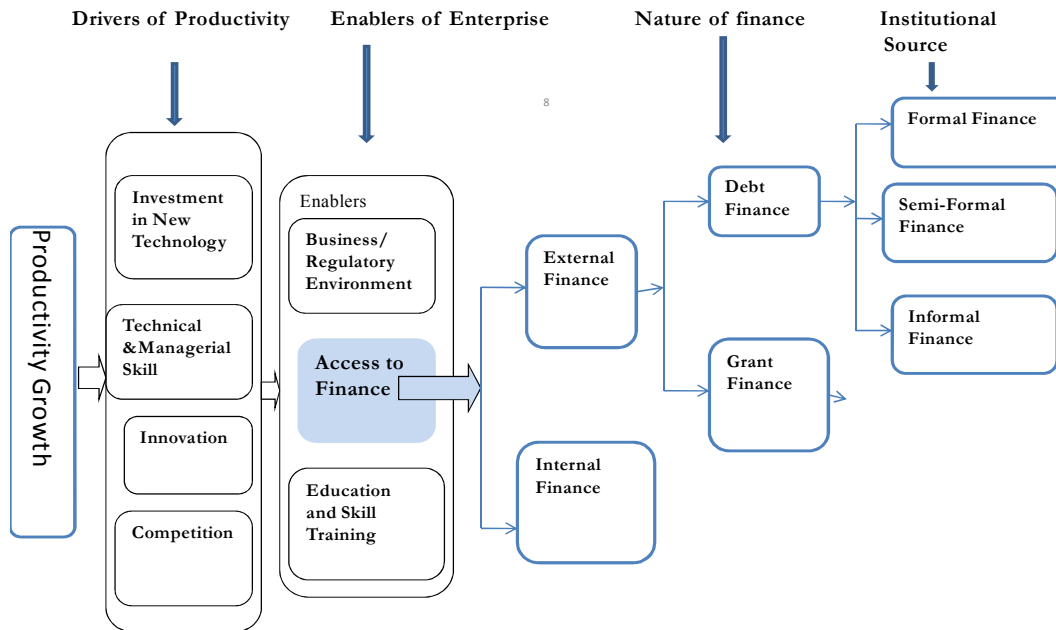
Building on the existing literature, we show in the framework below that enterprise productivity are mainly driven by four factors, namely investment in new technology, technical and managerial skills, innovation and competition (see Figure 8.1). The framework also shows that these drivers are essentially enabled by three underlying proximate factors, namely business and regulatory environment, education and skill training of the workforce and managers, and perhaps most importantly, access to finance<sup>1</sup>. As we seek to make the argument that it is not just any finance that is important in enabling the right kind of drivers of productivity, but an appropriate source of finance that support investment in newest vintages of physical capital and human capital development, we extend this framework further to include the nature and institutional sources of finance available to microentrepreneurs within the rural financial market in Ghana. We first categorise these sources into a simple debt-equity dichotomy or external vs. internal finance.

---

<sup>1</sup> See also HM Treasury (2008) for a detailed analysis of enablers of enterprise productivity.



**Figure 1 Microenterprise Productivity Growth and Source of Financing Framework**



Source: Author's

While External Finance comprises all finance sourced outside the domain of the enterprise, Internal Finance is made up of all funds raised internally including retained profit and household savings. External Finance is further categorised according to its nature, i.e., whether financing is a Debt (or loan, which requires repayment with market interest) or a Grant (i.e., donation where no repayment is required - a kind of free money - or where interest rate is heavily subsidised). Furthermore, we disaggregate Debt into its institutional sources, namely, Formal Finance; Semi-formal Finance, and Informal Finance. Formal finance includes all mainstream commercial and universal banks as well as rural banks. The Semi-formal Finance sources, on the other hand, comprise financial NGOs, Credit Unions, Savings and Loans companies and government agencies. The Informal Finance sources include Moneylenders, SUSU/ROSCAs, and friends or relatives, etc.

### 3.2 Study Hypotheses

Following the literature and the conceptual framework, three main hypotheses are specified as follows:

- $H_1$ : External source of finance of any kind is more associated with MSE's productivity growth than Internal or Equity finance.
- $H_2$ : Debt finance is more associated with MSE's productivity growth than both Grant and Internal finance.
- $H_3$ : A greater formality of institutional source of finance is more associated with MSE's productivity growth than a more informal source.

### 3.3 Model Specification

In an attempt to investigate the impact of source and nature of financing on MSEs' productivity and growth, we specify the following generic productivity growth equation:

$$\text{Productivity growth } (Y_{ij}) = \delta_0 + \mathbf{f}_{ij}\theta_i + \mathbf{x}_i\beta_i + \mathbf{z}_i\alpha_i + \epsilon \quad [8.1]$$

Where Productivity growth is primarily proxied by what we referred to as productivity edge as well as other proxies such capital deepening, labour productivity and growth perception (a detailed discussion of measurement procedure follows this section)

Our main explanatory variable of interest,  $\mathbf{f}_{ij}$ , represents a vector of the various financing sources and nature. The subscript  $j$  represents individual cases, while the subscript,  $i$ , ( $i = 1, 2, 3$ ) represents different vectors of different structures of finance considered in this study (as shown below. Each is considered in a separated regression (refer to Figure 8.1).

1. a vector of financing sources (where  $j =$  formal, semi-formal, informal and self-finance).
2. a vector of the nature of financing (where  $j =$  Debt, Grant and self-raised finance) as well as
3. a simple binary dummy of external vs. internal finance.

However, while our baseline Equation (8.1) generally hypothesised a positive relation between a more formal finance, and debt finance (or a negative relation between self-finance or Grant finance) and enterprise productivity growth, there is a concern that this may be due to a reverse causality. Nevertheless, as observe by Maksimovic *et al.* (2008), to the extent that we are primarily interested in establishing a broad association between the sources or nature of financing and MSEs' productivity, the direction of causality is of no consequence. Besides, we attempt to overcome endogeniety problem by simply using past or start-up capital financing sources, where the dependent variable, productivity, is the firm current productivity growth. We believe that past factors that are likely to gauge these initial sources of capital are unlikely to correlate with current observed and unobserved characteristics of the enterprise current productivity shocks.

Aside from the fact that data on nature of financing variable is only available for MSEs' start-up-capital, the present model is somewhat justified on the basis of the robust evidence provided by (Aw, 2001) that the initial productivity of firms, is a significant determinant of subsequent growth. Thus, a financing source, if for instance, has caused initial firm productivity growth, then, *ceteris paribus*, it is more likely to influence subsequent growth - although remotely. Even though this approach may appear over-simplification of the solution to the problem of endogeniety, the approach, nonetheless, reduces the degree to which the problem could occur.

#### 3.3.1 Control Variables

The variable  $\mathbf{x}_i$  in the model is a vector of firm level control variables that have been studied in recent literature (Du and Girma, 2009; Maksimovic *et al.*, 2008; Gatti and Love, 2006) such as firm size, age, ownership type, industry dummies etc. To the extent that firm age and large size are good for productivity growth, we expect positive relations between both ageing and increasing size of firms and productivity growth. However, these relationships may be nonlinear and/or non-monotonic. For instance, as enterprise increase in size, benefit relating to scale is only to a point. Beyond that, however, laxity in supervision and lack of effective coordination can make production inefficient and hence retards

productivity. In this case we also included in the regression squared terms for both age and size of the enterprise.

The variable  $\mathbf{z}_i$  is a vector included to control for employees educational status or proportion of skilled labours employed by the firm. It also includes a location dummy to control for unobserved heterogeneity at urban/rural level. (See Table 8.2 for detailed descriptions of these variables). We expect enterprise that employs high proportion of skilled and trained labour to be more productive. This is because skilled labours are able to adapt to new technology/management style easier and quicker than their unskilled counterparts. We also expect firms located in the urban areas to be associated with higher productivity growth because of competition and larger market exposures. In the section that follows, we introduce how MSE's productivity growth is measured and other measurement of firm growths for robustness checks.

### 3.3.2 Measuring MSE's Productivity

It has been observed that the neoclassical model has proven to be a useful tool for understanding the proximate factors that contribute to output and productivity growth (Stiroh, 2001). Furthermore, Basu and Fernald (1997), reporting a high correlation between a traditional Solow residual and a more sophisticated index of technology that controls for market imperfections, contend that the Solow residual is an important welfare measure, even when it is not a measure of pure technical change. Stiroh (2001) further argues that the sophisticated methodological tools developed by neoclassical economists enable us to measure the rate of technical change, while the sophisticated models of the new growth theorists provide an internal explanation for the sources of technical change. The famous Solow residual, within a growth accounting framework, also known as technical efficiency/progress or TFP growth, is therefore defined as the difference between output growth and the share-weighted growth rates of primary inputs (capital and labour) – thus, productivity growth is due to exogenous and entirely unexplained technical progress (Stiroh, 2001). In other words, although firm productivity is an unobservable firm characteristic, estimates of productivity can be recovered as the difference between actual output and output estimated by a production function using actual input quantities (Gatti and Love, 2006). Therefore, the estimated residual of a production function, which is actually the technical efficiency or a measure of TFP of a firm, is given as:

$$\text{Technical Efficiency (or Residual)} = \hat{\varepsilon}_i = \ln Y_i - \ln \hat{Y}_i \quad [8.2]$$

where  $\ln Y$  is a production function given as:

$$\ln Y_i = \delta + \beta_1 \ln K_i + \beta_2 \ln L_i + \varepsilon \quad [8.3]$$

The time subscripts are removed for ease of exposition. The dependent variable,  $\ln Y_i$ , is a natural log of MSE's total output or receipts per 12 months period. The  $\ln K_i$  variable represents the natural log of real capital stock or tangible assets, which is proxied by the book value of such physical assets as machines, simple tools and equipment, land, vehicles, etc. The variable,  $\ln L_i$ , measures the total number of people engaged by the by the enterprise. It has been argued that with an increase in part-time employment, hours worked provide a more accurate measure of labour input. Accordingly, the average total hours worked per year by employees were used as a proxy for labour variable.

Several recent studies such as Du and Girma (2009); Gatti and Love (2006); and Levinsohn and Petrin (2003) had adopted this method in measuring firm's productivity growth or TFP over time. This study takes a similar view in measuring enterprise productivity growth.

However, the limitation with the present study is that it uses a cross-sectional dataset instead of a growth accounting or time series which accurately measures technical progress or changes over time. Nonetheless, the argument we advance here is that even at one-point in time or within a fixed time frame, in a relative term, we are likely to observe cross-sectional variations in enterprise productivity. For example, in a cross-sectional context, for the same level of capital stock and labour inputs, some enterprises may be producing more compared to others or show differences in output levels. On the other hand, we may observe that at different levels of capital stock and labour inputs, some enterprises' output levels may coincide or are comparatively the same. This seemingly unexplained variation in outputs is a typical case of one enterprise having a productivity edge over the other. This productivity edge is therefore a shock that is likely to be captured by the unexplained residual or the stochastic error term even at one point in time. In that regard, we will refer to the unexplained residual generated from the difference between actual output and output estimated by a production function as specified in Equation 8.2 (the stochastic error term) as a cross-sectional productivity edge instead of productivity growth.

Why does enterprise have productivity edge? As previously mentioned elsewhere in this chapter, this could be that it is not just the book value of capital (as often use in measuring capital stock) that explains output levels, the quality of the stock of capital and the labour inputs. The enterprise may be using a more modernised capital or newest vintage of capital that embodies a more advanced technology and thus has a higher productive efficiency. Therefore, even though the values of the capital stock are the same, in terms of vintages, one could be new the other is old or outmoded. In that case, MSEs having access to external long term finance are more likely to invest in such new equipment and hence be associated with a greater productivity edge. Alternatively, an enterprise can have productivity edge which may not be reflected in or attributed to the vintage of capital, but may mainly due to the quality of human capital or labour intensity. It may also be due to the enterprise having access to newer technical ideas or information to engineer efficient production process. Although these cannot be included in measurement of capital stock and labour inputs, they are likely to show up in the cross-sectional residual. In this regard, MSEs which have access to finance from say the formal or semi-formal institutions, which often give technical and managerial advice or skill training to their clients, are more likely to be associated with a higher productivity edge than their counterparts who rely on self-finance or informal source of financing.

### **3.3.3 Other Proxies of Productivity (as robustness check)**

Stiroh (2001) argues that growth in average productivity depends on three factors. These are capital intensity or deepening (that is capital to labour ratio), which captures the increase in capital services per hour, and the growth in labour quality, which measures substitution toward workers with higher marginal products, as well as the growth in TFP, defined in the Equation (8.2) above, which captures the impact of technical change and other factors that raise output growth beyond the measured contribution of inputs. Moreover, it has been observed that the level of productivity which prevails is largely the result of a combination of choices made by firms and the efforts of those that work in them. In this regard, since the level of productivity is also directly related to the quality of the factor inputs – capital and labour force -, as robustness check, we directly gauge the influence of finance on productivity through capital intensity and labour productivity. While Capital intensity (capital deepening)

is estimated by the capital/labour ratio, labour productivity is measured by the ratio of Value Added to labour input, where labour input is hours worked. Value added is defined as Total Receipts or Sales minus Total Intermediate or Input Costs.

Additionally, due to possible factor inputs measurement errors which can either overstate or understate the importance or the size of Solow residual, and the fact that for the majority of MSEs the composition and the value of their resources (or fixed asset base) tend to be low (and in some cases non-existence), we also used a qualitative binary response data on owners/managers' own perception of enterprise growth as compared to the previous year. The managers were asked to indicate how they would compare their gross receipts of their enterprise over the past 12 months to the preceding year. Using a simple logistic regression, the dependent variable, *Growth*, in the baseline model (Equation 8.1) takes the value one, if the enterprise reported of higher growth and 0, if it experienced a decrease or stagnation. All things being equal, we expect a high productive enterprise to have a higher growth in output, thus showing similar responses with our financing variables of interest in the baseline equation. The following shows the three main equations (Equation [8.4]; [8.5] and [8.6]) that are to be estimated with the various measures of productivity of MSEs:

$$1. Y_{ij} = \delta_0 + \theta_i \text{Nature of Finance} + \beta_1 \text{Age} + \beta_2 \text{Age square} + \beta_3 \text{Sector of Activities} \\ + \beta_4 \text{Size} + \beta_5 \text{Size Square} + \beta_6 \text{Skilled Labour} + \beta_7 \text{Location}_i +$$

$$2. Y_{ij} = \delta_0 + \theta_i \text{Institutional Source of Finance} + \beta_1 \text{Age} + \beta_2 \text{Age square} \\ + \beta_3 \text{Sector of Activities} + \beta_4 \text{Size} + \beta_5 \text{Size Square} + \beta_6 \text{Skilled Labour} \\ + \beta_7 \text{Location}_i +$$

$$3. Y_{ij} = \delta_0 + \theta_i \text{External Finance Dummy} + \beta_1 \text{Age} + \beta_2 \text{Age square} \\ + \beta_3 \text{Sector of Activities} + \beta_4 \text{Size} + \beta_5 \text{Size Square} + \beta_6 \text{Skilled Labour} \\ + \beta_7 \text{Location}_i +$$

Where  $Y_{ij}$ , the dependent variable, takes different measures of productivity growth, namely productivity edge (residual) ( $i = 1$ ), a dummy of perception of growth ( $i = 2$ ), Labour Productivity ( $i = 3$ ) and Capital Labour ratio ( $i = 4$ )

### 3.4 Data Source and Summary Statistics

#### 3.4.1 Data Source

The main dataset used in this study was based on the fifth round of Ghana Living Standard Survey (GLSS 5) of 2005/2006. The GLSS 5 is a nation-wide survey which collects a comprehensive data on areas such as demographic characteristics of the population, education, health, employment and migration as well as a special module on Non-Farm Household Enterprises. The non-farm household enterprises dataset consists of a total sample of 5057 enterprises and provides detailed information on firm-specific level characteristics such as output levels, revenue, age, and wages as well as manager or owner's and employees' characteristics. It also reports on enterprise's start-up capital and ongoing financing or working capital sources in the last 12 months. The survey also covers three ecological zones namely, Savannah, Coastal and Forest with a further stratification into urban and rural areas (Ghana Statistical Service, 2008). However, to limit this study to microenterprises, only enterprises engaging less than 10 employees were included in our analysis. This means all

those employing 10 and more were deleted as outliers, although this reduced the sample size by just less than one percent to 5023.

### **3.4.2 Preliminary Survey Results**

The respondents or microentrepreneurs of the GLSS5 were asked in the survey to indicate the main source of capital in setting up their businesses. The preliminary results show that the main source of start-up capital for these microenterprises was from Self-finance (69.3%). The next important source of start-up capital was Informal finance (28.6%) of which approximately 70% were from friends and relatives (see Table 5 in appendix for a detailed summary description of the data). Formal and semi-formal finances together constitute just about 2% of the source of capital for setting up business. However, these latter sources almost doubled when the enterprise was up and running as a working capital from banks was 3.6%. Interestingly, almost 90% of all the MSEs did not seek any credit to finance their working capital needs. On the nature of start-up financing, whereas 14.7% of the start-up capital was debt-finance which had to be paid back, a little over 18% were considered as grant finance or free money for that matter, with the remaining 67.2% being self-raised finance. As well as the financing data, the summary statistics for the all other variables including the proxies for MSE's productivity measurements are presented in Tables 6 and Table 7 in appendix.

Whereas the Table 6 shows the descriptive statistics of various measurements of MSE's productivity and growth performance, the Table 7 shows all the descriptive statistics of the control variables used in estimating the models. The Table 6 shows that the maximum number of labour employed is nine but the minimum is zero, implying that some MSEs do not hire any labour at all. Likewise, in terms of physical assets, the results show a very wide dispersion. While the maximum asset employed in production is about GHc83500, the average is just about GHc341, indicating that most microenterprises use either limited capital stock or very low valued (simple) equipment. This is, however, not surprising since the Table 8.3 shows that about 60 percent of the MSEs are engaged in the service sector or trading activities. Similarly, MSE's value-addition shows a wide dispersion. While it averages about GHc129, the standard deviation is about GHc9844. Further, the results indicate approximately 40 percent of owners or managers of MSEs cited a positive growth of their outputs or revenue levels compared to the previous year. With regard to MSE's productivity edge, as by definition a stochastic error term, it expectedly averaged out to zero with the maximum being 6.8 and minimum -4.8.

## **4. Regression Results**

This section discusses econometric evidence of the effect of source and nature of financing on MSE's productivity growth. We performed a series of linear and non-linear regressions with varying measures and proxies of MSE's productivity. Our main model with the dependent variable productivity edge (estimated from the unexplained residual as specified in Equation 2), was linearly estimated on three separate occasions. Each regression contains either the nature of financing, institutional source of financing or a simple external financing dummy. The results are reported in Tables 1, 2 and 3 respectively. In all the cases, the one-way analysis of variance (ANOVA) F test shows that the differences between two group means of various financing sources are statistically significant (however, these were not reported here for the sake of brevity). Except for the Capital Labour Ratio model, this procedure was repeated for the other proxies, namely the Labour Productivity model and the MSEs' owners Growth Perception model - all are reported alongside the main model in the tables specified above. With regard to the capital labour ratio (K/L) model, we found that

estimating the one-way ANOVA between K/L and the financing sources with all the cases did not show any significant differences between two group means. However, when we selected only the cases that had access to external finance (i.e. informal, semi-formal and formal finances) in starting their businesses, ANOVA was significant. Thus, we run a regression with this selected cases to gauge the relationship between financing source and K/L.

As previously mentioned, Table 1 presents the regression results of nature of financing and MSEs' productivity urge. The results show that Debt finance, compared to Grant finance, is statistically significant and positively associated with the MSEs' productivity edge. However, as expected, Self-raised finance, relative to Grant finance, does not appear to have a significant relationship with productivity edge. This result is robustly supported by the findings from estimation of the relationship between growth perception and debt finance. Although the relationship involving the other two factor intensities are insignificant, compared to grant finance, debt finance shows a significant and positive relation to perception of growth. This suggests that MSEs which used debt or loans (where repayments were required with interest) as a start-up capital were more likely to report of positive growth of their business compared to those who used grants or free money.

**Table 1 Productivity and Nature of Financing Estimation Results**

Variables	Main Model 1		Robustness			
	Productivity Edge		Labour Productivity		Growth Perception (Logistic Regression)	
	Estimate	Std Error	Estimate	Std Error	Estimates	Std Error
Age of MSE	0.471**	0.179	-0.202	0.671	0.133	0.251
Age square	-0.003	0.095	-0.065	0.352	-0.078	0.129
Nature Finance:						
<b>Debt Finance</b>	0.468***	0.080	-0.111	0.299	0.186*	0.110
<b>Self-raised Finance</b>	0.013	0.060	-0.386*	0.225	-0.052	0.084
Secondary Industry	-0.516***	0.049	-0.361*	0.184	0.024	0.243
Services Industry					0.072	0.242
Size of MSE	-0.124	0.136	-0.225	0.505	0.335*	0.072
Size square	-0.220**	0.115	0.071	0.430	-0.166	0.304
Skilled/educated labour	0.095*	0.051	-0.417**	0.202	0.264***	0.076
Location (Urban=1)	0.624***	0.047	0.576***	0.177	-0.240***	0.066
Constant	-0.122	0.153	1.633***	0.578	-0.006	0.984
Durbin Watson		1.534		1.97		
Overall Percentage Correct						59.6
R-square		0.017		0.08		0.017
Observation		3845		4196		4231

\*10% Significant; \*\*5% Significant; \*\*\*1% Significant

Note: Grant finance is set as the reference category to the other nature of financing (see the nature of finance in Figure 1)

As the incentive properties of debt and grant finances differ markedly, these findings seem to imply that debt/loan financing appears to exert pressure on MSEs owners to be more efficient or apply more innovative ways anxiously to increase enterprise productivity in order to leverage their ability to repay their loans. On the contrary, financing that comes “free” may stifle efforts, encourage complacency and eventually have a chilling effect on enterprise productivity growth.

Looking at finance from the perspective of institutional source, the regression results, as presented in Table 2, show somewhat strong associations between more formal sources of finance and MSE’s productivity edge. Compared to self-finance, both formal and semi-formal financing sources show statistically significant positive associations with productivity edge. These relationships are robust in the growth perception model. In the growth perception model, also reported in Table 2, both Formal and Semi-formal, compared to Self-raised finance appear to have significant positive impacts on MSEs’ growth. However, the results show no significant difference between self-finance and informal financing source in driving MSEs productivity or growth.

Furthermore, when all these financing sources were modelled in a binary choice variable or a dummy representing whether a source was external or internal (a debt-equity dummy) in the third model, the regression results again robustly confirm the positive impact of external finance on MSEs productivity edge (see Table 3). Relative to internal finance, the result indicates a statistically significant positive relationship between external financing source and MSEs’ productivity edge. Similar outcome was also found with the relationship between external finance and perception of growth in the logistic regression model. However, the relationship between financing source and labour productivity appears weak and in most cases insignificant.

Nonetheless, the foregoing results suggest that MSEs that have access to external finance, particularly from a more formal source, are more likely to have productivity edge and perhaps experience growth over time. This is because with access to external finance, they are able to invest in the newest vintage of capital that embodies new technology to make, for example, capital per worker more efficient. Moreover, as aspect of the survey results suggest some MSEs receive technical and managerial skill training, monitoring and appropriate marketing information from the financial institutions, access to external finance were more likely to spur productivity edge and growth.



**Table 2 Productivity and Institutional Sources of Finance Estimation Results**

Variables	Main Model 2		Robustness			
	Productivity Edge		Labour Productivity		Growth	Perception
	Estimate	Std Err	Estimate	Std Error	( Logistic Regression)	
				Estimate	Std Err	
Age of MSE	0.363*	0.179	0.240	0.672	0.154	0.252
Age square	-0.164*	0.115	0.074	0.430	-0.180	0.162
Ownership	-0.181	0.127	-0.437	0.484	-0.638***	0.179
Type (sole proprietor)						
Secondary	-0.516***	0.049	-0.342*	0.185	-0.054	0.069
Industry						
Primary	-0.173	0.180	0.430	0.672	-0.088	0.242
Industry						
Services1	0.512***	0.048	0.406**	0.164	0.080	0.242
Industry						
Size of MSE	0.024	0.136	-0.272	0.505	0.337*	0.187
Size square	-0.070	0.095	-0.058	0.352	-0.078	0.130
Skilled labour	0.100*	0.055	0.420*	0.203	0.273***	0.076
Registered	0.504***	0.069	0.132	0.259	0.135	0.097
Source of Finance:						
<b>Formal</b>	0.900***	0.189	1.694*	0.713	0.855***	0.266
<b>Semi-Formal</b>	0.876***	0.269	0.210	0.946	1.120**	0.374
<b>Informal</b>	0.032	0.052	0.055	0.196	0.224**	0.072
Urban Location	0.658***	0.047	0.567***	0.177	-0.233***	0.066
Constant	-0.204	0.147	1.336**	0.561	0.238	0.585
Durbin		1.488		1.97		
Watson						
Overall Percentage Correct						60
R-squared		0.128		0.09		0.24
Observation		3887		4200		4234

\*10% Significant; \*\*5% Significant; \*\*\*1% Significant

Note: Self-finance is set as a reference or base category (see institutional source of finance in Figure 8.1)

**Table 3 Productivity and External Financing Source Dummy Regression Results**

Main Model 3			Robustness			
Variables	Productivity Edge		Labour Productivity		Growth Perception	
	Estimate	Std Error	Estimate	Std Error	Estimate	Std Error
Age of MSE	0.478**	0.180	-0.225	0.671	0.143	0.251
Age square	-0.020	0.096	-0.056	0.352	-0.080	0.130
<b>External =1</b>	0.122**	0.051	0.151	0.189	0.273***	0.070
Ownership Type	-0.272**	0.127	-0.456	0.483	-0.628**	0.178
Primary	-0.251	0.183	0.380	0.672		
Secondary	-0.513***	0.049	-0.365**	0.184	0.058	0.244
Services					0.104	0.242
Size of MSE	-0.090	0.137	-0.242	0.504	0.330*	0.186
Size square	-0.234**	0.115	0.068	0.430	-0.173	0.162
Skill/educated labour	0.093*	0.055	-0.404**	0.202	0.265***	0.076
Urban/Rural Location	0.615***	0.047	0.599**	0.176	-0.234**	0.066
Constant	-0.045	0.148	1.339**	0.560	-0.056	0.311
Durbin Watson		1.53		1.974		
Overall Percentage Correct						59.7
R-squared		0.1		0.09		0.021
Observation		3847		4199		4234

\*10% Significant; \*\*5% Significant; \*\*\*1% Significant

Note: Internal finance is set as the reference category (refer to Figure 8.1).

Again, as a robustness check, we estimate the K/L ratio separately from the other forms productivity measurement to gauge more directly the relationship between source of finance and capital deepening. As previously mentioned, this is relevant because in the neoclassical Solow growth model, increase in capital labour ratio or capital deepening defines the per capita output of labour, which in essence is labour productivity. Thus, in the neoclassical growth context, capital deepening should show up in increase in productivity. In that regard, estimating the K/L model tests the direct relationship between capital expansion and source of finance. The result, as presented in Table 4, is consistent with the study hypothesis that a more formal financing source is associated with enterprise productivity growth. The results show a statistically significant positive relationship between a more formal financing and capital labour ratio.

The outcome of these empirical analyses (particularly in relation to the external financing dummy results shown in Table 3) suggest that there are somewhat complementarities among this range of financing sources – formal, semi-formal and informal finance, which appears to support Du and Girma (2009) conclusions that the formal financing source is no better in spurring firms growth than the informal ones or vice versa. Thus, in Ghana's context, much as we have provided some evidence to show that the formal and semi-formal financing sources are relatively better associated with productivity edge, it is more evidently clear that a mixture of these institutions and the traditional informal financing sources are even more likely to have a greater growth or development outcomes - as they reinforce one another.

**Table 4 OLS Regression of Capital-Labour Ratio and Institutional Source of Finance**

	<b>Estimates</b>	<b>Std. Error</b>
<b>External Source of Finance</b>	0.1193**	0.0582
<b>The ratio of skilled to total labour</b>	-0.0208	0.0634
<b>Size square</b>	-0.0825	0.1066
<b>Age square</b>	-0.0528	0.1345
<b>MSE Size</b>	0.0372	0.1566
<b>Formal (Registered=1)</b>	0.1877**	0.0798
<b>Ownership Structure (Sole Proprietor =1)</b>	-0.5890***	0.1200
<b>Age</b>	0.1481	0.2041
<b>Secondary Industry</b>	-0.0936	0.0590
<b>Primary Industry</b>	-0.0565	0.1870
<b>Locality Dummy (Urban=1)</b>	0.0887*	0.0553
<b>Constant</b>	0.3972*	0.1860
<b>Durbin-Watson</b>		1.9140
<b>R-Squared</b>		0.0440
<b>Observation</b>		1183

Note: The External Source of Finance variable is modelled as informal finance =1, semi-formal finance = 2 and formal finance = 3. Thus, positive sign means K/L is more associated with formal finance. ANOVA F-statistics = 4.502 (0.000)

Turning briefly to the other controlled variables, the level of MSE's productivity edge and growth appear also to be influenced by age of the enterprise, proportion of skilled labour to total workforce, industry type, registration status and location. The results indicate that the age of an enterprise appears to have diminishing marginal effect on enterprise productivity edge. Specifically, while age appears to have a statistically significant and positive relationship with MSE productivity edge in most of the regressions, age square has a negative sign whenever it was significant. The results further show that MSEs that employ high proportion of skilled or trained labour, relative to unskilled labour, are positively associated with high productivity edge and growth of the enterprise.

Similarly, the location of the enterprise or spatial dimension appears robust and consistent in explaining enterprise productivity edge. The positive and significant sign in most of the estimation suggests that MSEs located in urban areas are more likely to be associated with productivity growth than their counterparts in rural areas. This is not surprising as urban areas permit wider market outreach and keen competitions. Finally, the results also show that MSEs that work in the service industry are more likely to be associated with higher productivity growth than their counterparts in manufacturing or service industries. Likewise, where the ownership type is partnership or the enterprise is registered with a government agency, the enterprise appears to be associated with productivity edge and growth.

## 5. Conclusion

This chapter investigated the effects of nature and sources of finance on MSE's productivity growth. Specifically, the paper sought to find out whether nature of finance (i.e., if loan, grant – 'free money' - or self-raised financed) mattered for MSEs' productivity edge and growth. Further, we examine which institutional sources (e.g., formal, semi-formal, informal, and self-finance) are more associated with enterprise productivity. Using a unique non-farm household enterprise survey data from Ghana, we employ various measures of MSEs productivity such as a cross-sectional comparative unexplained Solow residual as a proxy for productivity edge, labour productivity, capital labour ratio (as capital deepening) and microentrepreneurs own perception of growth.

After controlling for specific firm-level characteristics such as size, age, ownership type etc, the study reports the following findings. First, we found that where the nature of enterprise's start-up capital was loan or debt finance, compared to grant finance, the enterprise is associated with a higher productivity edge. In other words, debt finance was found to be positively associated with productivity edge of the enterprise, while financing from donation or charity did not. Second, we found significant positive associations between a more formal financing source (i.e. formal and semi-formal financing sources) and MSE's productivity edge. This finding was robustly confirmed by the other proxies of MSEs productivity growth such capital labour ratio (measuring capital deepening) and growth perception. Further, compared to internal finance, external financing sources dummy was found to be positively associated with MSEs' productivity edge - indicating a somewhat complementarities among all external financing sources in driving growth.

In conclusion, while noting that it is not giving out grants or free money to microentrepreneurs, particularly the underprivileged ones that are being questioned - such people without doubt need help, and making grants or subsidised interest loans are necessary in some cases -, the study sought to imply that too much of such free money can be counterproductive. It has the tendency to undermine the motivation and incentive for microentrepreneur to be innovative in bringing about a higher productivity. Awareness of appropriate sources, and improving access to external finance at a reasonable cost, will not only afford microentrepreneurs to make the needed investment in innovations and newest vintages of capital which embodies technologies and productive efficiencies, but also they are more likely to receive technical and managerial advice that will eventually lead to higher productivity and growth.

## Reference

- Allen, F., Qian, J. and M. Qian, 2005, "Law, finance, and economic growth in China", *Journal of Financial Economics* 77, 57-116
- Aryeetey, E., 2004, "Household asset choice among the rural poor in Ghana", presented at the Authors' Workshop for the Project on "Understanding Poverty in Ghana" Organized by the ISSER, University of Ghana and Cornell University, Accra, January

- Aryeetey, E. 1994, 'Financial Integration and Development in Sub-Saharan Africa: A Study of Informal Finance in Ghana', Overseas Development Institute Working Paper 78, London: ODI.
- Aw, B. Y. 2001, "Productivity dynamics of small and medium enterprises in Taiwan (China)." The World Bank Institute
- Beck, T and A. Demirguc-Kunt, 2006, "Small and medium-size enterprises: access to finance as a growth constraint", *Journal of Banking and Finance*, Vol. 30, pp. 2931–2943
- Beck, T., Demirguc-Kunt, A. and P. Honahan, 2009, "Access to financial services: measurement, impact, and policies", *The World Bank Observer*, Vol. 24, No. 1, pp. 119-145
- Bloch, H., and G. Madden, 1995, "Productivity growth in Australian manufacturing: A vintage capital model." *International Journal of Manpower* 16, 21-30
- Bloom, N., A. Mahajan, D. McKenzie, J. Roberts, 2010, "Why do firms in developing countries have low productivity?" *American Economic Review*, 100 (2), 619 -23
- Brunton, P. D. 1999, "Financing small-scale rural manufacturing enterprises", Caribbean Development Bank Working Paper Series, Barbados
- Butler, W. A. and Cornaggia, J. 2008, "Does access to external finance improve productivity? Evidence from a natural experiment" *Journal of Financial Economics* (Forthcoming)  
Available at SSRN: <http://ssrn.com/abstract=1084154>
- Du, J. and S. Girma, 2008, "Financing source and firm growth in a hybrid financial system: evidence from China" available at: <http://ssrn.com/abstract=1032942>
- Du, J. and S. Girma, 2009, "Source of finance, growth and firm size – evidence from China", UNU –WIDER Research Paper No. 2009/03, January
- Gatti, R. and L. Love 2006, "Does access to credit improve productivity? Evidence from Bulgarian firms", *The World Bank Policy Research, Working Paper Series No. 3921*
- Ghana Statistical Service Report, 2008, "Ghana living standard survey (GLSS 5)", Ghana Statistical Service, Accra
- Giugale, M. M., S. El-Diwany, and Everhart, 2000, "Informality, size, and regulation: theory and an application to Egypt", *Small Business Economics*, Vol. 14, No. 2, pp. 95 - 106
- Green, J. C., P. Kimuyu, R. Manos, and V. Murinde, 2002, "How do small firms in developing countries raise capital? Evidence from a large-scale survey of Kenyan micro and small scale enterprises", Centre for International, Financial and Economics Research, Loughborough University, Economic Research Paper No. 02/6
- Heckman, J., 1976, "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models", *Annals of Economic and Social Measurement* 5 , 475–492.

- Jaramillo, F. and F. Schiantarelli, 2002, "Access to long term debt and effects on firms' performance: lessons from Ecuador" *Latin American Economic Policies Newsletter*, Network Working paper No.R-460, July, Available at: [www.iadb.org/res](http://www.iadb.org/res)
- Jensen, M. 1988, "Agency costs of free cash flow, corporate finance, and the market for takeovers", *American Economic Review*, Vol. 76(2), pp 323-29
- Jorgenson, D.W. and Z. Griliches, 1967, "The explanation of productivity change". *Review of Economic Studies* 34 (99): 249–283.
- Kimuyu, P and Omiti, J (2000), "Institutional impediments to access to credit by micro and small scale enterprises in kenya", IPAR Discussion Paper No. 026/2000, Institute of Policy Analysis and Research.
- King, R. G and R. Levine, 1993, "Finance, entrepreneurship and growth: theory and evidence", *Journal of Monetary Economics*, Vol.32, pp.513-42.
- Levine, R. 2005, "Finance and Growth: Theory and Evidence", Chapter 12 in P. Aghion and S. Durlauf (eds). *Handbook of Economic Growth*. The Netherlands: Elsevier Science.
- Levinsohn, J. and A. Petrin, 2003, "Estimating Production Functions Using Inputs to Control for Unobservables" *Review of Economic Studies*, 70(2): 317–41.
- Maksimovic, V., A. Demirgüç-Kunt and M. Ayyagari, 2008, "Formal versus informal finance: evidence from China", World Bank Policy research working paper No. 4465. Available at SSRN: <http://ssrn.com/abstract=1080690>
- Masakure, O., J. Cranfield and S.Henson, 2008, "The financial performance of non-farm microenterprises in Ghana", *World Development*, Vol. 36, No. 12, pp. 2733–2762
- Mckinnon, R. (eds), 1973, *Money and Capital in economics*. Brookings Institution, Washington DC.
- Nichter, S. and I. Goldmark, 2005, "Understanding micro and small enterprise growth" U.S. Agency for International Development (USAID), microREPORT No. 36, Washington, November, Available at: [www.microLINKS.org](http://www.microLINKS.org)
- Osei-Assibey, E., 2010, "Choosing not to borrow: an evaluation of perception and socio-cultural factors underlying voluntary self-exclusion. *The IUP Journal of Financial Economics*, Vol. VIII, No. 1 & 2, pp: 36-66
- Osei-Assibey, E, 2009, "Financial exclusion: what drives supply and demand for basic financial services in Ghana?" *Saving and Development Journal*, Vol. 33, No 3, pp 207 - 238
- Romer, P. 1986, "Increasing returns and long-run growth." *Journal of Political Economy* 94, no. 5, 1002-37.

- Shaw, E. (Ed), 1973, *Financial deepening in economic development*, Oxford University Press, New York
- Solow, Robert M. 1956, “A contribution to the theory of economic growth”, *Quarterly Journal of Economics* 70, no. 156-94
- Stiroh, K. J. 2001, “What drives productivity growth? *FRBNY Economic Policy Review* pp 37-59
- Syeda K. 2007, “Microenterprise and entrepreneurship development through microfinance”, *Regional Development Studies*, Vol.11, pp 55 – 70
- Tobin, J. 1965, “Money and economic growth”, *Econometrica*, Vol. 33 pp.671-684
- Wolf, S. 2007, “Encouraging innovation for productivity growth in Africa” United Nations Economic Commission for Africa (UNECA), African Trade Policy Centre Working Paper, No. 54, January, [www.uneca.org/atpc/Work%20in%20progress/54.pdf](http://www.uneca.org/atpc/Work%20in%20progress/54.pdf)
- World Bank (Eds), 2008, “Finance for all? Policies and pitfalls in expanding access”, World Bank Group, Washington D.C

## Appendix

**Table 5 Descriptive Statistics of the Enterprise Sources and Nature of Start-up Capital**

<i>Financing Source</i>	Observation	Minimum	Maximum	Mean	Std. Deviation
Formal Finance	5016	.00	1.00	.0138	.1165
Semi-Formal Finance	5016	.00	1.00	.0078	.0878
Informal Finance	5016	.00	1.00	.2825	.4503
Self- Finance	5016	.00	1.00	.6914	.4619
External Finance	5016	.00	1.00	.3086	.4619
<i>Nature of Finance:</i>					
Debt Finance	5012	.00	1.00	.1478	.3549
Grant Finance	5011	.00	1.00	.1808	.3848
Self- Raised Finance	5012	.00	1.00	.6714	.4697

Source: Data from GLSS5

**Table 6 Descriptive Statistics of the Enterprise Outputs and Inputs Data**

<i>Firm Performance</i>	Observation	Minimum	Maximum	Mean	Std. Deviation
Labour Hours / Day	5021	.00	18.00	8.042	3.406
Value Added	5020	-1.42E5	4.80E5	129.100	9843.535
Labour Engaged	5022	.00	9.00	1.512	1.101
Total sales/receipt	5021	.00	27200.00	128.910	595.176
Nat. log of output	4899	-1.83	10.21	3.555	1.504
Total physical Assets	5022	.00	83500.00	340.560	3295.087
Productivity Edge	4511	-4.8040	6.8815	.000	1.467
Positive Growth (=1)	5005	.00	1.00	.390	.4878

Source: Data from GLSS5

Note: All values are measured in local currency, Ghana Cedi (where US\$1 equivalent to about GHc1.42)



**Table 7 Descriptive Statistics of the Survey Data used in Regression**

<i>Firm Characteristics</i>	Observation	Minimum	Maximum	Mean	Std. Deviation
Ratio of skilled to total labour	4856	.00	1.00	.6919	.43144
Size square	4984	.00	4.83	.3065	.68419
Age square	4567	.00	3.84	.7982	.71910
MSE's size (Nat. log of employee)	4984	.00	2.20	.2716	.48244
Nat. log of MSE age	4567	.00	1.96	.7789	.43767
Primary activity such as agric/mining	5003	.00	1.00	.0174	.13073
Secondary or Construction Ind.	5002	.00	1.00	.3796	.48535
Trading or Servicing Ind.	5003	.00	1.00	.6030	.48932
Ownership Type (sole proprietorship = 1)	4856	.00	1.00	.9685	.17470
Registered with any Gov. =1)	5016	.00	1.00	.1579	.36468
Locality (Urban =1)	5022	.00	1.00	.4630	.49868
Labour Engaged	5022	.00	9.00	1.512	1.1010
				3	

Source: Data from GLSS5.

## Résumé

L'objectif principal de cette étude est d'évaluer les propriétés incitatives de différentes sources de financement de la microentreprise. Plus précisément, l'étude vise à étudier les effets de la nature et une gamme de sources institutionnelles de financement sur les micro et petites entreprises "bord de la productivité (MPE) et la croissance. En utilisant les données non-agricoles entreprise familiale du Ghana, les résultats de l'étude suggèrent que trop de subventions et de source interne de financement, par rapport au financement de la dette, peut être contre-productif. Il a tendance à miner la motivation et l'incitation pour les micro-entrepreneurs à innover entraîner une augmentation de la productivité. Toutefois, la connaissance des sources appropriées, et l'accès à un financement plus formel, se trouvent à être associé à bord de la productivité. Avoir accès à des semi-formelles et formelles des institutions financières ne sont pas seulement les moyens de microentrepreneurs à faire les investissements nécessaires dans les innovations et les nouveautés vintage des stocks de capital, qui consacre les technologies modernes et de l'efficacité productive, mais aussi les MPE sont plus susceptibles de recevoir des conseils techniques et de gestion qui finira par conduire à une plus grande productivité et la croissance.