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Determinants of growth of micro and small enterprises (MSEs): Empirical evidence from Ethiopia

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Broad-based growth and transformation through the promotion of micro and small enterprises (MSEs) has been robustly underscored in various development plans in Ethiopia, but both the level of unemployment and quality of jobs remain a concern. In order to make the MSE sector the engine of economic growth and reduce the problem of unemployment, it is important to understand what factors determine growth and investment in innovation in MSEs in the context of Ethiopia. In this paper, we provide microeconomic evidence on the determinants of firm performance in Ethiopia, with a focus on MSEs. The main objective of this study was to identify the determinants of growth and of investment in innovation in MSEs using a survey of 300 firm level data from Addis Ababa, Ethiopia. Both descriptive statistics and econometric methods have been used to analyse both internal and external factors, and the relative impacts of these factors on the performance of MSEs. The findings of the study reveal that MSEs suffer from a host of internal problems (e.g. weak human resources and other assets) and of external factors including lack of access to credit, limited market facilities, policy and regulatory bottlenecks. For small enterprises, access to credit appears to be a binding constraint for their growth as they are 'too big' for microfinance institutions, but they are 'too small' for formal banks in terms of the size of loan, reflecting the 'missing middle financial intermediaries' that serve small enterprises. Hence without renewed focus on promoting firm growth, especially MSEs through improving access to warehouses, relaxing credit constraints, and improving the macroeconomic and regulatory environment, the potential for MSEs for creating more jobs will be severely compromised.

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Abstract

Broad-based growth and transformation through the promotion of micro and small enterprises (MSEs) has been robustly underscored in various development plans in Ethiopia, but both the level of unemployment and quality of jobs remain a concern. In order to make the MSE sector the engine of economic growth and reduce the problem of unemployment, it is important to understand what factors determine growth and investment in innovation in MSEs in the context of Ethiopia. In this paper, we provide a microeconomic evidence on the determinants of firm performance in Ethiopia, with a focus on MSEs. The main objective of this study was to identify the determinants of growth and of investment in innovation in MSEs using a survey of 300 firm level data from Addis Ababa, Ethiopia. Both descriptive statistics and econometric methods have been used to analyse both internal and external factors, and the relative impacts of these factors on the performance of MSEs. The findings of the study reveal that MSEs suffer from a host of internal problems (e.g. weak human resources and other assets) and of external factors including lack of access to credit, limited market facilities, policy and regulatory bottlenecks. For small enterprises, access to credit appears to be a binding constraint for their growth as they are 'too big' for microfinance institutions, but they are 'too small' for formal banks in terms of the size of loan, reflecting the 'missing middle financial intermediaries' that serve small enterprises. Hence without renewed focus on promoting firm growth, especially MSEs through improving access to warehouses, relaxing credit constraints, and improving the macroeconomic and regulatory environment, the potential for MSEs for creating more jobs will be severely compromised.

Key Words: Microenterprises; innovation; learning model; firm size; Ethiopia

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1. Introduction

Many countries in Africa suffer from high rates of unemployment and under-employment and low labour productivity. In addition, because of demographic factors, a large number of people enter into the labour market each year (Iacovone *et al.,* 2012). Consequently, these countries have been promoting job creation through a variety of means such as targeting labour-intensive manufacturing industries, promoting labor-intensive infrastructure, expansion of micro and small enterprises (MSEs), and education expansion (e.g. technical and vocational education and training etc.) (Ferede *et al.*, 2014). In particular, very recently, these countries have mainly emphasized the promotion of MSEs as a means to improve the wellbeing of local, national and regional communities (Gebreyesus, 2007). Empirical evidence also suggests the contribution of MSEs in generating employment and income has become increasingly recognized around the world (Liendholm, 2001). From an economic perspective, micro and small-enterprises represent a growing source of productive employment, especially for the lowest income groups, because these firms are more labor intensive than large industry, and require fewer technical skills (Robert and Maria, 1985). For instance, according Bereket (2010), the income contribution of the micro and small enterprises sector in Tanzania was about 20-30 percent of the GDP, and they consist of more than 1 million enterprises engaging 3 to 4 million persons, that are about 20-30 percent of the labour force of the country. In most African countries, micro and small enterprises (MSE) account for a significant share of production and employment and are therefore directly influencing poverty alleviation (Agyapong, 2010). Micro and small enterprises (MSEs) are considered as spring board for broad-based growth and enhance competition and entrepreneurship, and hence have external benefits in terms of economy-wide efficiency, innovation, and aggregate productivity growth. In addition, MSEs boost/enhance employment more than large firms as MSEs are more labour-intensive (Ayyagari *et al.*, 2005). Furthermore, in many African countries MSE employment is nearly twice the level of total employment in registered large-scale enterprises and the public sector confirming that micro and small enterprises are a major source of livelihood for a significant proportion of the population in these areas (Liedholm, 2001). Therefore, MSEs are considered to be critical in kick starting broad-based growth and enhance employment creation, especially in developing countries that aspire to have sustainable economic growth.

Cognizant of this, the Ethiopian government issued the National Micro and Small Enterprises (MSE) strategy in 1997 and established the Federal Micro and Small Enterprises Development Agency (FMSEA) to harness the benefit of such strategy. Consequently, the government has emphasized the role of MSEs and provided support to this sector. Accordingly, the share of formal employment increased in urban areas, while informal employment declined from 4.3 percent in 2005 to 3.2 percent in 2013, declined by 1.1 percentage points. In 2005, of the 4.0 million employed people living in urban areas, 1.32 million were employed in the informal sector, and the same figure increased to 1.33 million in 2013. This implies that while there are still a large number of workforces employed in the urban informal sector, it has not grown significantly since 2005 (Ferede *et al.*, 2014). This evidence/figure confirms that although a focus on broad-based growth and transformation through the promotion of MSEs has been underscored in various development plans, both the level of unemployment and quality of jobs remain a concern in Ethiopia. MSEs have been performing below capacity and their growth has been severely constrained by a number of factors (Gebreyesus, 2007). Thus, job creation or employment opportunities to alleviate the widespread poverty and create an internationally competitive industrial structure are among the policy challenges the Ethiopian government is currently confronting. Faced with these challenges, the government has realized that enabling strong employment growth is an essential part of the strategy to achieve inclusive growth through MSEs expansion.

Against this background, the main objective of this study is to identify the determinants of the growth of MSEs in terms of employment using a firm level survey in Addis Ababa, Ethiopia. There are a number of specific research questions that this study intends to address including the following. The first set of questions involves growth and employment. Is there vivid growth in MSEs in terms of employment in Ethiopia? Are MSEs in Ethiopia survivalists or growth oriented? The second set of questions focus on technological upgrading and innovation. Are there technological innovations or upgrading in MSEs? What can be done to boost their innovative capacity and contribute to employment creation? The final set of questions is on linkages and markets. Are MSEs in Ethiopia integrated into the international market? To what extent MSEs are linked with large domestic firms, i.e. extent of domestic value chains?

The paper is structured as follows. Section 2 deals with literature review. Sections 3 and 4 present the overall methodology and analysis of results and discussions, respectively. Section 5 concludes.

2. Brief literature review

The theoretical basis for this study is the augmented form of the learning model which includes a measure the business environment and characteristics of the firm. The learning model of Jovanovic (1982) posits that there is an inverse relationship between the growth of MSEs and the characteristics, age and size of the enterprises.

According to "learning models" a firm "learns" about its productivity over time-efficient firms invest and expand while less productive ones stay small, shrink or exit. This class of models also predict that firm age and size are both negatively correlated with firm growth: as firms grow older or become larger, their rate of growth slows (Stella *et al*, 2014).

Hence, several empirical evidences exist to explore what factors determine the growth of MSEs, if any, in terms of employment. A firm's ability to grow and strengthen its competitiveness depends highly on its potential to invest in new ventures, innovation, improvements and diversification over time (ITC SME Competitiveness, 2015). While small firms mainly employ or engage the poor, the growing firms can help them out of poverty with higher, more stable wages (ANDE, 2012). For instance, Gebreyesus (2007) conducted a study using learning model of firm growth to investigate some key determinants of success, particularly employment expansion among micro-enterprises in six major towns in Ethiopia. The findings indicate that firm's initial size and age are inversely related to growth providing evidence that smaller and younger firms grow faster than larger and older firms and the finding is consistent with the learning hypothesis. A study by Haile *et al.* (2014) revealed that access to credit from formal financial sources, access to infrastructures and access to working premises are significant factors affecting the growth of MSEs. Besides, a study conducted by Tefera *et al* (2013) on growth determinants of MSEs in *Mekele* city indicates that sex of the manager, initial investment on the firm, location of, and the sector in which firms operate determine the growth of MSEs.

Testing growth model of firms using firm level data from Ghana, Teal (1999) finds that the rate of job creation in Ghana's manufacturing sector is highest in medium-sized firms and that small firms do not grow more rapidly than larger firms.

On the link between MSEs success (or growth) and innovation, the literature also indicates that innovation activities are seen as driving forces for business success and economic development. Owing to this, innovation has frequently been credited for improving organizational competitiveness and success in a dynamic market environment (Chen, 1994; Enos, 1989; Tyre, 1997; Bozic and Radas, 2005; Handoko *et al.*, 2014). Innovation is the "implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (OECD/EC, 2005).In this study we adopt innovation defined as the implementation of a new or significantly improved product and /or a new process. Innovation by firms is associated with better access to finance by firms. A study of firm innovation in over 19,000 firms across 47 developing economies (Ayyagari, Demirgüç-Kunt, and Maksimovic, 2011) found that external finance was associated with greater innovation by all private firms. Innovative firms tend to experience higher levels of productivity and economic growth (Cainelli, Evangelista and Savona, 2004). They are more likely to export, and export successfully (Love and Roper, 2013). It does so by stimulating innovation in products, processes, management routines and marketing strategies.

Using data on Indian manufacturing firms, Bas and Paunov (2014) analyzed the heterogeneous impacts of inward liberalization policies (e.g. dismantling of 'License Raj') on firms' decisions to invest in research and development (R&D). The results show that the probability of undertaking investment in R&D increased by about 92 percent compared with firms operating under production licenses. The result also indicated that smallest and least efficient firms were less likely to do invest in R&D even under a liberalized production system.

It can be concluded from the above literature that the key factors for the growth of micro and small enterprises include characteristics of MSEs and managers, institution, location, the sectors in which the MSEs operate and innovation or competitiveness. It is worth noting that the correlation between growth of the firm and its size is inconclusive for the fact that some argue that smaller firms don't grow more than the larger ones, on the one hand, and others argue that the growth and size of MSEs is inversely related. But, most of the empirical studies from African countries, including Ethiopia, are consistent with the latter finding that growth of MSEs is inversely related with their size.

3. Methodology

3.1 Definition of MSEs

Though there are different definitions of micro and small enterprises[5], the revised definition of MSEs by the Ethiopian government will be used in this study (Table 1). Accordingly, employment and assets have been used to define MSEs (FDRE, 2011).

Table 1: Definitions of micro and small enterprises

Level of enterprise	Sector	Employment	Total asset(in Birr)
Micro enterprise	Industry	≤5	≤100,000
	Service	≤5	≤50,000
Small enterprise	Industry	6-30	≤1.5 million
	Service	6-30	≤500,000

Source: FDRE (2011)

3.2 Sample design and sample size

3.2.1 Selection of study areas

Ethiopia has nine Regional States and two City Administrations or Governments (Addis Ababa and Dire Dawa). Each region is divided into zones and each zone into Woredas. Woredas are further divided into Kebeles, the lowest administrative units. In City Governments, the administrative division follows slightly a different hierarchy. Each city is divided into sub-cities and each sub-city into Woredas, the lowest administrative unit in city government structure.

Likewise, Addis Ababa is divided into Sub-cities, and Sub-cities are divided into Woredas, the lowest administrative unit. Accordingly, Sub-cities have been grouped into two: those with high concentration of MSEs and those with low concentration of MSEs to account for location effects. Next, two Sub-cities were randomly selected, namely *Yeka* sub-city (representing high concentration of MSEs) and *Akaki* sub-city (representing low concentration of MSEs). In each target Sub-cities, two Woredas from *Yeka* Sub-city and five Woredas from Akaki Sub-city were purposively selected as only these Woredas have complete information on MSEs that serve our purpose. The rationale for choosing Addis Ababa as the study area is that it can fairly be a representative of all the major cities in Ethiopia in terms of MSEs concentration.

[5] We use the word enterprise and firm interchangeably though we believe that there are some differences between these in different contexts.

3.2.2 Sample size

After the final list of study areas has been determined, the number of respondents in each subcity for the main survey was decided based on the relative share of MSEs. Overall, about 300 MSEs were proportionally and randomly selected for the survey from manufacturing, construction, service, trade and urban agriculture. A structured questionnaire was used to collect the data in October 2015 through face to face interview of sample firm operators on selected MSEs

Time and financial limitations were also taken into account in determination of the sample size for the survey.

4 Descriptive analysis

4.1 Characteristics of manager's and MSE's

The average age of top managers (or owners) of micro enterprises is 38.5 years, while that of small scale enterprises is 32 years. With regard to the gender distribution of top managers, the share of male top managers is 54% in micro enterprises, while it is 46% in small scale enterprises. This shows that more managers-owners are male in microenterprises than in small enterprises. The average experience of managers-owners both in micro and small enterprises are nearly the same. With regard to the ownership structure of the enterprises, the share of owner-managers is 50% and 25% in micro enterprises and small enterprises, respectively.

Regarding education, 9% of the top managers in micro enterprises cannot read and write (read and write both in local and English languages), while there are none who cannot read and write among the top managers in small scale enterprises. About 27% and 24% of the top managers have primary education (grade 1-8) in micro and small scale enterprises, respectively. Close to a third of top managers (or owners) in micro and small enterprises with secondary school education (Grade 9-12). Further, about 15% and 25% of managers (or owners) with TVET diploma in micro enterprises and small enterprises. About 34% of top managers in both enterprises have first degree level education and above.

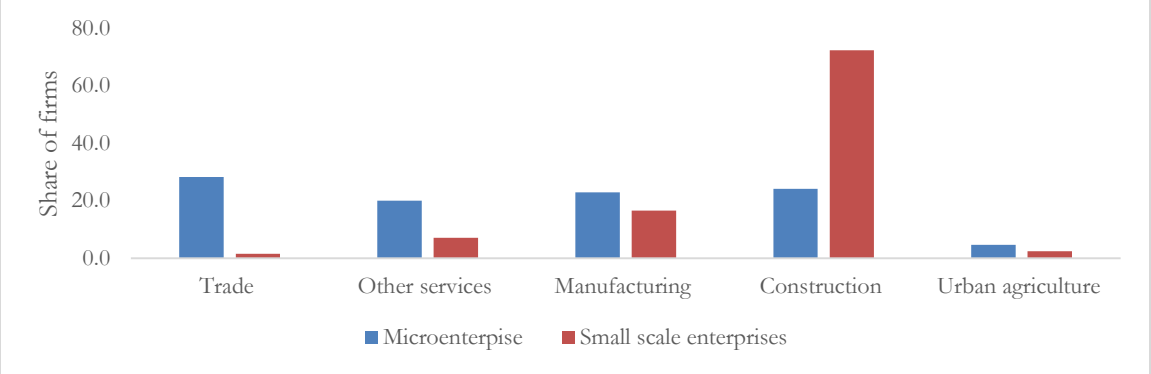
With regard to the legal status of MSEs, nearly all of them are registered and have licenses. However, it took on average 20 and 46 days to get a business license for micro and small scale enterprises, respectively. As far as the year of establishment of MSEs is concerned, 72% of the sample micro enterprises and 89% of small scale enterprises were five years old. The average number of years of stay in business is 4 years for both micro and small enterprises.

In terms of employment size, it appears that the average number of workers at the time of establishment was 5 and 10 for micro and small scale enterprises, respectively. In 2014, the figures were 4 and 9, indicating that MSEs are not expanding to create additional job opportunities for the growing labour force. The average number of full-time female workers (permanent and temporary workers) was 1.5, and the figure for male workers was 7 in 2014. The gender composition of workers in the MSEs seems skewed toward male workers. The proportion of full-time workers with upper secondary (grades 11-12) and tertiary education is 25% and 13%, respectively. The figures for primary and lower secondary (grades 9-10) are 33% and 22% in that order. A small proportion (1.32%) proportion of MSEs workers are unionized: 0.65% for microenterprises and 2.23% for small enterprises.

As for the sector of operation, a large proportion (28%) of micro enterprises are engaged in domestic trade (e.g. wholesale, retail, hotels, etc.), followed by construction (24%), manufacturing (23%) (Figure 1).[6] Contrary to microenterprises, a large proportion of small enterprises are engaged in construction (72%), followed by manufacturing (17%) These results suggest that a larger share (28%) of the sample micro enterprises are engaged in trade activities, while the majority (72%) of the sample small enterprises works in the construction sector. The recent boom of construction in the nation might have defined the business choice of the small enterprises.

[6] Sector classification is based on the Central Statistical Agency's system which uses the International Standards Industrial Classification (ISIC) system. Note that the entire economy is dominated by the services and agriculture sectors, together accounting for more than 85% of GDP. So, the concentration of MSEs on service-oriented activities is not surprising for countries like Ethiopia where the share of the manufacturing sector in the total economy is very small.

Figure 1: Sector of business



Source: Firm survey

With respect to keeping business record in the MSEs, the share of micro enterprise and small enterprise that continuously keeps business records are 41% and 76%, respectively. This implies that a majority of the sample micro enterprises do not keep business record compared to the small enterprises.

Possession of nationally recognized certificate ('graduation certificate') is one of the variables on which data have been collected to see whether or not some MSEs are growing and moving to the next stage. The results indicate that about 49% of small enterprises possess nationally recognized graduation certificate that is microenterprises transformed to small enterprises based on employment and /or asset criteria.

Table 2: Descriptive summary of manager's and MSEs characteristics

	Enterprises	
General socio-demographic characteristics of top manager	**Microenterprises**	**Small scale**
Average age (years)	38.55	32
Share of male top manager (%)	54	46
Average experience of top manager in business (years)	6.84	6.72
Share of married top manager (%)	74	62.9
Share of owner top manager (%)	50	25
Share of top manager as a member of owners' association	47	70
Share of top manager who cannot read and write (%)	9	0
Share of top manager with primary school education (%)	27	24.41
Share of top manager with secondary school education (%)	35.29	29.92
Share of top manager with TVET and diploma (%)	14.70	25.2
Share of top manager with first degree and above (%)	13.56	20.47
Characteristics of MSEs		
Share of formal MSEs (registered & have license) (%)	100	99.7
Share of MSEs five years old (%)	72.35	88.79
Share of MSEs located in traditional markets (%)	53.53	38.76
Share of MSEs located in neighborhood (home) markets (%)	28.24	28.35
Share of MSEs located in industry zone markets (%)	17.65	31.50
Share of MSEs keeping business record continuously (%)	41.18	75.59
Share of MSEs not keeping business record continuously (%)	48.82	6.30
Average number of years MSEs have been in the business(years)	4.35	3.11
Share of MSEs having nationally recognized graduation certificate	18.24	48.82

Source: Firm survey (2015)

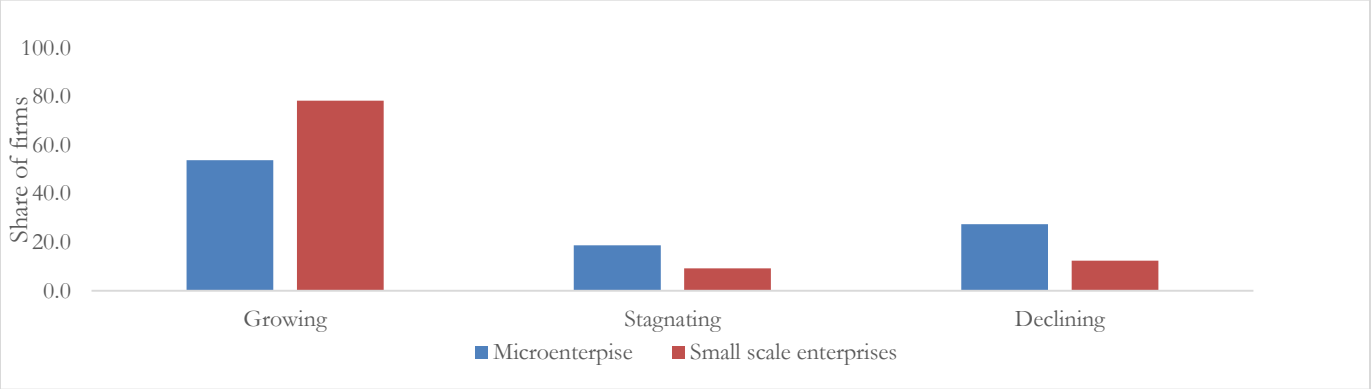
In an attempt to investigate whether or not MSEs are growth oriented[7] or survivalists[8], about 53%, 19% and 28% of microenterprises reported as growing, stagnant and declining, respectively. And the figures for small enterprises are 78%, 9% and 15% in that order. In both enterprise types, the self-reported proportion of stagnant firms is small, but the share of firms who reported a declining performance is higher in micro enterprises compared with small enterprises. Even though further investigation on the reasons why these firms are not growing is needed, these results show that

[7] We use the word enterprise and firm interchangeably though we believe that there are some differences between these in different contexts.

[8] The survival based micro enterprises comprises those people engaged in economic activities to fulfil basic need of their family and themselves, smoothen consumption, reduce their vulnerability to income fluctuation but not primarily by aiming at profit maximization and vertical growth of their business or to graduate into the other level of business (Berner *et al.*, 2008; Gomez, 2008:10; Kanothi, 2009). These enterprises are also called as 'necessity driven enterprise' that refers to enterprise created due to lack of employment opportunities and/or economic shocks (Gomez, 2008).

interventions are required to reduce the share of survivalist and declining enterprises (Berner *et al.*, 2008).

Figure 2: Self-reported growth performance



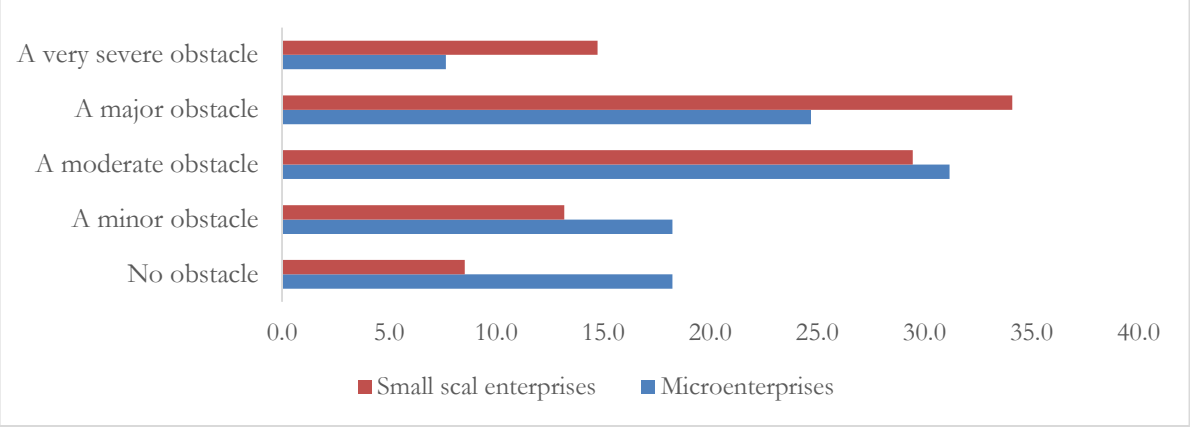
Source: Firm survey

4.2 Business environment of the MSEs

4.2.1 Finance

A majority of the enterprises, 79% and 72%, micro and small enterprises finance their businesses from their own source, respectively. This implies that the proportion of enterprises that finance their business through borrowing from banks is found to be insignificant despite availability of financial institutions in Addis Ababa. It seems that access to finance appears to be a very severe or major obstacle as reported by about 55% and 64% of micro and small enterprises (Figure 3). The problem of access to finance is more severe for small enterprises compared with micro enterprise as the latter often have access to microfinance institutions (MFIs). In the case of small enterprises, they are too big for MFIs in terms of the amount of loan they require, but they are too small for commercial banks in loan size, reflecting the missing middle financial intermediary that cater the needs of small enterprises.

Figure 3: Perception of firms on access to finance



Source: Firm survey (2015)

Similarly, the share of MSEs that have access to non-bank financial sources is small; about 15% and 19% of micro and small enterprises finance their business through borrowing from non-bank financial institutions (e.g. microfinance institutions). About 62% and 58% of micro and small enterprises do not apply for loan or credit, and the major reasons for not applying include cumbersome bureaucracy, limited working premises, and high collateral requirement.

4.2.2 Marketing

Several indicators of business environment have been used in this study including marketing and infrastructure availability. The average annual sale of small enterprises is nearly six times that of microenterprises and almost 100% of their sale is for the domestic market. This implies that the MSEs in the study area are not integrated to international markets. The share of MSEs subcontracting their products with other larger firms is 10% and 19% for micro and small enterprises, respectively. This limited vertical linkage may hinder the growth and competitiveness of MSEs. However, a majority of both micro and small enterprises depend on domestic supply of inputs: 81% and 91% for micro and small enterprises. Access to transport is an obstacle as reported by majority of micro (67%) and small (75%) enterprises.

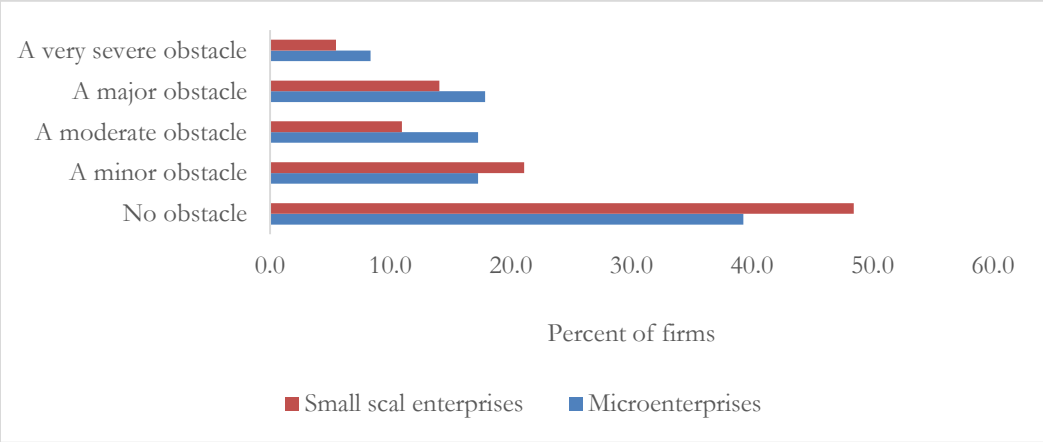
Firms were asked whether or not they faced competition with unregistered or informal businesses. About 43% and 31% of micro and small enterprises reported as competition with informal businesses as moderate or very severe problem (Figure 4).

Table 3: MSEs and business environment

Marketing	**Micro**	**Small scale**
Average annual sales (in Birr)	108,590.9	672,718.9
Share of domestic sale	99.41	99.21
Share of subcontracting any part of their products	10.0	18.9
Share of depend totally on domestic supply of inputs (%)	81.18	91.34
Share of firms with access to transport for marketing is an obstacle (%)	67.06	75.4

Source: Firm survey (2015)

Figure 4: Competition with unregistered/informal businesses



Source: Firm Survey

4.2.3 Infrastructure

Regarding power, about 69% and 70% of micro and small enterprises experienced power outage in 2014; the average number of power outage per week is about 7 hours and 5 hours for micro and small enterprises. On average, micro enterprises lose about 17% of their annual sale due to power outage, while the figure for small enterprises is 20% because of power shortage. Similarly, for the last two years, about 48% of micro enterprises and about 63 % of small enterprises reported to have insufficient supply of water. In particular, micro and small enterprises faced water shortage, on average, for about 12 and 10 days per month, respectively.

Table 4: Selected infrastructure indicators

Selected infrastructure indicators	Micro	Small
Share of firms faced power outage in 2014	68.71	70.16
Average number of hours power outage lasts per week	7.17	5.10
Average loss of annual sale due to power outage (%)	17.05	19.80
Share of firms with insufficient water supply for the last two years (%)	48.13	62.7

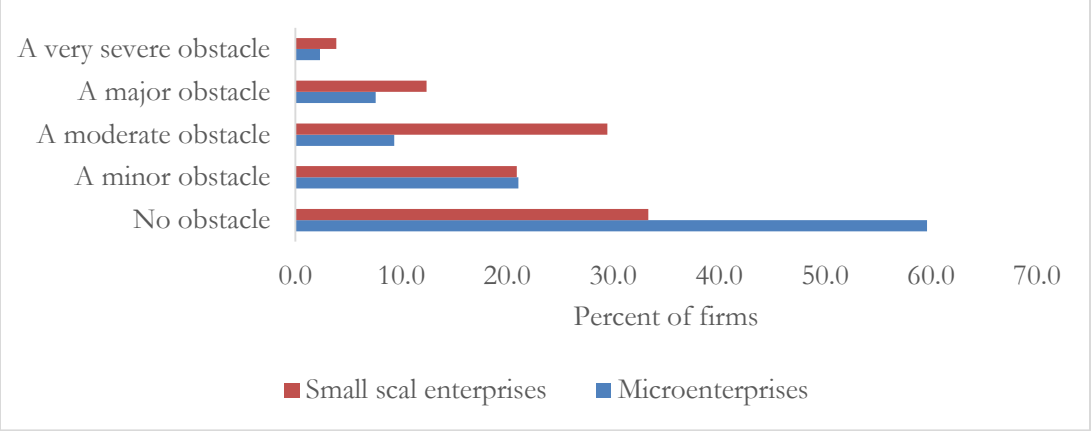
Source: Firm survey (2015)

4.2.4 Other indicators of business environment

Firms were also asked to evaluate other aspects of the business averment such as the business licenses and permission, tax administration and corruption. The responses were framed in five categories: no obstacle, minor obstacle, major obstacle, very severe obstacle. The perception of firms about the business licenses and permission shows that this is more of a problem for small scale enterprises compared with micro enterprises (Figure 5). Similarly, firms also faced problems with tax administration as close to half of small scale enterprises considered tax administration as moderate, major or severe problem compared with 38% of micro enterprises (Figure 6).

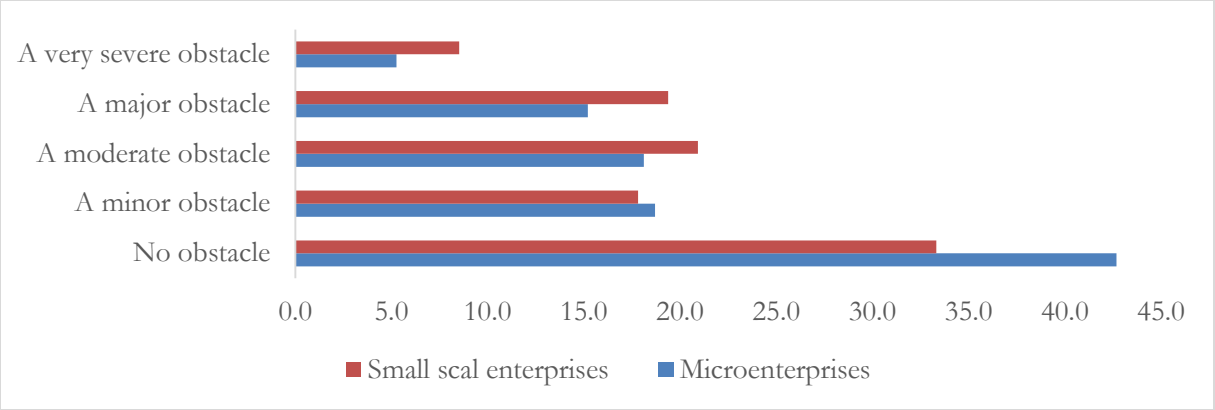
About 55% of small scale enterprises perceived corruption as moderate, major or very severe problem compare with only 28% of microenterprises (Figure 7).

Figure 5: Perception of firms on business licenses and permission



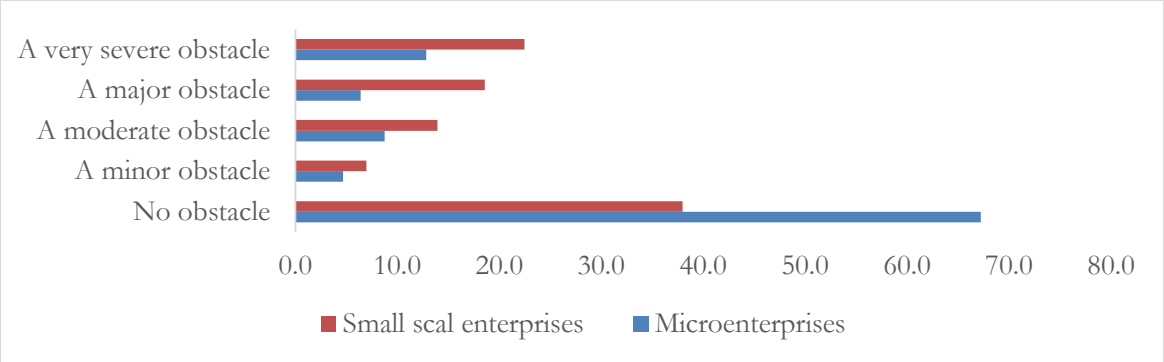
Source: Firm Survey (2015)

Figure 6: Perception of firms on problem of tax administration



Source: Firm Survey (2015)

Figure 7: Perception of firms on corruption



Source: Firm Survey (2015)

4.3 Innovation and subcontracting in MSEs

To capture innovativeness in the MSEs in the study area, we used indicators such as whether or not MSEs introduced a new product, service, method of manufacturing, offering service in their business, and introduced new methods of discipline in managing system. In micro enterprise, about 12% of micro enterprises reported to have introduced a new product or service in their business, 9% introduced new method of manufacturing or offering services and 11% introduced new methods of discipline in managing system. In small enterprises, 17% introduced a new product or service in their business, 17% introduced new method of manufacturing or offering services and 9% introduced new methods of discipline in managing system.

In terms of networking, we collected data on MSEs sub-contracting the sale of their products with larger firms, and whether or not MSEs are members of cluster of firms in a similar activities. The results indicate that, about 12% of micro enterprises are subcontracting their product for sale with

larger firms and 26% are members of clusters in similar activities (Table 5). About 21% of small enterprises reported to have linkages with larger firms and 36% of are reported to have members of industrial clusters. Although there is some degree of interfirm linkages, this can be further improved through training and other capacity building activities. About 20% and 44% of micro and small enterprises have access to trainings on improved technologies, and a large fraction of sample MSEs have access to government training centers.

Table 5: MSEs and innovation and networking

	Micro	Small scale
Innovation		
Share of MSEs introduced a new product or service in their business (%)	12.35	17.32
Share of MSEs introduced new method of manufacturing or offering services (%)	8.82	16.67
Share of MSEs introduced new methods of discipline in managing system (%)	11.24	8.66
Share of MSEs getting trainings on new or improved technologies (%)	19.88	44.19
Share of MSEs having access to government training center (%)	63.16	68.99
Networking		
Share of MSEs that have product sell sub-contract with larger firms (%)	11.7	20.93
Share of MSEs that are members of a clusters of firms in a similar activities (%)	25.73	36.43

Source: Firm Survey (2015)

5. Quantifying growth determinants of MSEs

5.1 Econometric model and estimation

Beyond descriptive analysis, it is useful to identify and quantify the relative (un)importance of factors affecting growth of MSEs. Following Evans (1987), the functional relationship between firm growth ($\dot{S_t}$), age (A_t) and size of firm (S_t) can be expressed as:

$$\dot{S_t}=[G(A_t,S_t)]^d(S_t)e^{u_t} \qquad (1)$$

Where G is the growth function and d denotes the time interval and u_t log-normally distributed error term.

Taking logarithm on both sides of equation (1) and re-arranging, we have

$$\frac{log(\dot{S_t}) - \log(S_t)}{d} = \log(A_t, S_t) + u_t \qquad (2)$$

The specific functional form of the right hand side of equation (2) can also be expressed as:

$$\log(A_t, S_t) + u_t = \alpha_0 + \alpha_1 \log(A_t) + \alpha_2 \log(S_t) + \alpha_3 (logA_t)(logS_t) + \alpha_4 (logA_t)^2 + \alpha_5 (logS_t)^2 + u_t \quad (3)$$

Augmenting equation (3) by a vector of factors (X) that accounts for other factors that affect firm growth and denoting the left hand side of equation (2),Y_i, as the average annual growth rate of a firm in terms of employment, we have the following equation (4)(Iacovone *et al.*, 2012).

$$Y_i = \alpha_0 + \alpha_1 \log(A_t) + \alpha_2 \log(S_t) + \alpha_3 (logA_t)(logS_t) + \alpha_4 (logA_t)^2 + \alpha_5 (logS_t)^2 + \sum_i^n \alpha_i X_i + u_t \quad (4)$$

The vector X_i captures factors such as characteristics of the top manager, firm characteristics, location and business environment of the firms, sector of operation, availability of infrastructures, etc. According to Stella *et al.*, (2014), firm growth is defined as the relative change in a firm's number of permanent employees over a period of time, a definition we adopt for this study. More specifically the annual growth rate of firms in terms of number of permanent employees between establishment year and the time of the survey, 2014.

An appropriate empirical model we apply in the analysis of the determinants of firm's growth in this study is Ordinary Least Square (OLS) as the dependent variable (average annual growth in this case) is a continuous variable. And also, OLS provides an estimate of the best way linearly to combine the explanatory variables to predict the dependent variable and the estimator is the most basic estimation procedure in econometrics (Hayashi, 2000). Measuring MSEs growth in terms of employment growth is preferable to other measures such as sales, profits or fixed assets because it is less susceptible to measurement error and is not correlated with inflation (Harrison, 2013).

Factors that affect firm growth include top manager's (or owner's) characteristics age, marital status, previous experience, sex and education are included in the model. Age (in log), start-up size (in log), sectors in which the MSEs operate (service, manufacturing, construction), whether or not the MSEs are located in high concentration of MSEs are included in the model as characteristics of the

enterprises. Furthermore, whether or not the MSEs face competition from unregistered informal firms, power outage (i.e. the number of hours per week the MSEs without access to electricity) and access to finance(coded as 1 for rates of how obstacle access to finance for firms' performance ranging from severe to moderate and 0 otherwise) are included in the model. Covariates including marital status, education levels, technical and vocational education training, sector, location, existence of competition, access to finance and ownership are dummy coded whereas ages, firm size and number of skilled production workers are coded as continuous variables.

5.2 Discussion of results

5.2.1 Determinants of firm growth

Table 5 presents results of firm growth. We estimated three models in this study. In the first model, we included both micro and small enterprises and estimated the pooled model (see the first column of Table 6), and next, we separately estimated micro and small enterprises (the third and fourth columns of Table 6) for comparison purposes.

In the model, top manager's and MSEs characteristics, business environment, working environment and institutional arrangements were included to explore the relative (un) importance of these factors affecting firm growth. In the pooled model, age is positively related to MSEs growth, while this is not the case when the sample is divided between micro and small enterprises. Marital status and education of top managers are statistically related to growth of micro enterprises only. In particular, MSEs managed by relatively older persons grow more than those managed by younger persons. Micro enterprises managed by married individuals grow relatively faster than those managed by their counterparts. Micro enterprises managed by individuals having secondary education (grades 9-12) and technical and vocational education training show higher growth performance compared with those with primary education.

Start-up size and growth of the MSEs are negatively correlated, indicating that MSEs that start business larger in size in terms of employment grow slower than their counterparts. This finding is consistent with the relatively recent learning model of firms discussed previously that there is a negative correlation between firm size and firm growth. As firms grow older or become larger, their rate of growth slows down due to the scale effect.

As for the sector of operation, the finding for the pooled model indicates that firms engaged in the manufacturing and construction sectors grow faster compared with those in service sector. For micro enterprises, firms engaged in the construction sector grow faster compared with those in the service sector. For small enterprises, we don't find any indication of sector effect.

Location is also included in the model to see whether or not it is correlated with the growth of MSEs. More specifically, whether or not the growth of MSEs located in business 'hotspot' areas differs from those operating in an area with less concentration of businesses. The result indicates that MSEs located in high business concentration areas grow faster compared with those located in areas with less business concentration. This finding could be related to availability of different services, infrastructures, access to market etc. the presence (or absence) of which can affect firm growth.

As an indicator of human capital, the number of skilled production workers in the MSEs was also included in the model to see its effect on the growth of MSEs. The number of skilled production workers has a positive effect on the growth of MSEs, which is consistent with the finding that human capital does significantly affect enterprise growth. For example, Parker (1994) found that business with workers trained formally at vocational schools show statistically significantly higher growth than those businesses with untrained workers once all other variables are controlled. We acknowledge that the analysis has a limitation because we estimate a static specification and fixed effects cannot be implemented in this study.

A positive and statistically significant correlation between firm growth and non-existence of competition from unregistered or informal firms in the study area may imply that an environment with similar cost of doing business for MSEs positively affects firm growth. This also suggests that the co-existence of formal MSEs and informal MSEs operating in the similar business may erode the growth potential of the former.

We included access to finance and power outage in our model as these two factors can serve as a proxy for weak business environment. The result indicates that power outage, in terms of the number of hours the MSEs face power interruption, is negative and statistically significant at the 1 percent level, implying that MSEs, particularly small enterprises experiencing frequent power shortage grow slower than their counterparts. With regard to access to finance, we find that

inadequate access to finance negatively correlates the growth of both micro and small scale enterprises in the study areas.

To capture ownership effect on the growth of MSEs, we included ownership variables such as whether or not an MSE is owned by private or by associations. The finding seems to suggest that MSEs owned by associations shows better growth compared with those privately owned, the reference ownership.

We also include innovation dummy as determinant of MSE growth, but it was statistically insignificant. This could be due to the fact that the proportion of MSEs where innovation is taking place is very small that we were unable to find correlation between firms' growth and innovation.

Table 6: OLS parameter estimates

Variables	Pooled model (MSEs)		Microenterprises		Small enterprises	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Constant	-0.242**	0.124	-0.209**	0.097	0.261**	0.077
Top manager's characteristics						
Age(in log)	0.113**	0.057	0.030	0.046	0.116	0.157
Marital status(dummy:1 if married)	0.001	0.045	0.113**	0.049	-0.124	0.076
Secondary level education(9-12)♦	-0.044	0.049	0.082**	0.032		
Technical and vocational training	-0.024	0.061	0.141*	0.079	-0.202	0.129
MSEs related characteristics						
Age(in log) of MSEs	-0.176**	0.084	-0.047	0.030	-0.523*	0.297
Start-up size(in log)	-0.459***	0.089	-0.406***	0.066	-0.771***	0.219
Sector2(dummy:1 if manufacturing)	0.123*	0.073	0.053	0.045	-0.142	.136
Sector3(dummy:1 if construction)	0.195**	0.101	0.099*	0.058		
If the MSE is located in high concentration of MSEs (Yeka sub-city)	0.101**	0.049	0.039	0.028	0.225**	0.098
Number of skilled production workers in MSE	0.038***	0.007	0.039***	0.008	0.039***	0.011
Competition(dummy:1 if no competition from unregistered)	0.123**	0.059	-0.047	0.029	0.280**	0.135
Power outage(hours per week)	-0.007**	0.003	-0.012**	0.005	-0.024***	0.006
Inadequate access to finance	-0.111**	0.049	-0.079*	0.043	-0.229**	0.115
Ownership(dummy:1 if owned by association)	0.214***	0.064	0.215**	0.099	-0.087	0.137
N	290		170		120	
R-squared	0.42			0.59	0.72	
F-test	F(25, 152) = 126.98		F(25, 79) = 14.5		F(22, 39) = 13.03	

*** p<0.05; * p<0.1; *** p<0.01; ♦ indicates that no top manager with the missing level of education for small enterprises.*

5.2.2 Determinants of innovation

It is useful to identify what factors affect MSEs capacity to innovate which is very important for enterprises growth and competitiveness. For this, the dependent variable takes a value 1 if a respondent answers 'yes' to the question whether or not there is innovation[9] taking place in the enterprise in terms of product and process innovation, and a value 0 otherwise.

Table 7 reports result for logit model used to identify factors that affect the probability of innovativeness of micro and small enterprises. Out of the covariates included in the model, age of the manager, current size of the firm, sector of operation, training and experience sharing (i.e. employees of an MSE visit another MSEs to get experience on how things work there) and access to internet are found to affect innovativeness of MSEs. The probability to innovate in an MSE increases with age of a manager (owner) of the enterprises, after controlling for other characteristics. This may be due to the fact that older managers have accumulated experience compared with younger managers. The current size of an MSE is also positive and significant at 5 percent significant level. This can be interpreted as the bigger the current size of an MSE, the more likely that firms make investment in activities (e.g. research) that increase the chance of innovation. This is consistent with the findings from Paunov and Rollo (2016), where only firms with adequate absorptive capabilities are found to benefit from the widespread Internet adoption. The firm in manufacturing is also positive and significant at 1 percent significance level. This may be due to the fact that firms in manufacturing sector are more likely to innovate compared to the service sector (the base category).

The other covariate that is found to affect the probability of innovativeness in the MSEs is access to training and experience sharing. This variable is positive and statistically significant at 5 percent level, indicating that improving human capital through training and experience sharing could increase the probability that innovation takes place in MSEs, controlling for the other factors. And also, we find that the use of internet by firms for their business is positive and statistically significant at 10 percent level. This may reveal that the use of internet is correlated with the chance to innovate of MSEs in improving their product by accessing new designs of furniture, footwear, dresses and others from internet.

[9] Innovation in this case refers to product and/or process innovation.

Table 7: Determinants of innovation (results from Logit model)

Variables	Coefficient.	Std. Err.
Characteristics of MSE manager		
Age(in log)	1.736**	0.914
Sex (dummy:1 if female)	-0.128	0.550
Business experience (in years)	-0.131	0.356
Secondary school education	0.412	0.461
Technical and vocational education training	0.402	0.669
Characteristics of MSEs		
Current firm size(in number)	0.594**	0.268
Sector1(dummy:1 if construction)	2.253***	0.639
Sector2(dummy:1 if manufacturing)	0.049	0.645
Location1(dummy: 1 if MSEs are at home)	0.685	0.501
Location2(dummy: 1 if MSEs are at industry zone)	0.238	0.588
Cluster member(dummy:1 if an MSE is cluster member)	-0.895	0.549
If MSEs have access to training and experience sharing	0.835**	0.415
Age(in log) of MSEs	0.273	0.372
If MSEs have access to internet	1.264*	0.689
Cons	-10.319**	3.474
Log likelihood	-87.62	
LR $chi^2(14)$	50.64	
Prob > chi2	0.0001	
Pseudo R2	0.224	
Number of observations	268	

6. Conclusions and implications

6.1 Conclusion

Broad-based growth and transformation, through the promotion of MSEs, has been underscored in various development plans in Ethiopia, but both the level of unemployment and quality of jobs remain a concern in Ethiopia. Thus, increasing employment opportunities to alleviate the widespread poverty and create an internationally competitive industrial structure are among the policy challenges the Ethiopian government is currently confronting. In order to make the MSEs sector the engine of economic growth and reduce the problem of unemployment, it is important to understand factors influencing the growth of MSEs in the context of Ethiopia. We provide empirical evidence on the anatomy of MSEs based on a sample 300 micro and small enterprises in Addis Ababa. We use both descriptive and econometric methods to analyse the data. In particular, the econometric model is based on an augmented form of learning models of firms.

The result shows that MSEs have limited linkages with other firms, and are less integrated with the external market, suggesting MSEs, especially small enterprises have not benefited from linkages with larger firms. In addition, limited integration with the external market means that MSEs, especially small scale enterprises have not benefited from technology transfers and other useful business related exposures.

The result also indicates that access to finance appears to be a very severe or major obstacle as reported by about 55% and 64% of micro and small scale enterprises. The problem of access to finance is more severe for small enterprises compared with micro enterprise as the latter often have access to microfinance institutions (MFIs) as their loan requirement is within the capacity of MFIs. A large proportion of both micro and small enterprises have not applied for a loan or credit due to cumbersome bureaucracy, limited working premises, and high collateral requirement.

The quantitative analysis also indicates that characteristics of both top managers (owners) and firms do matter for the performance of MSEs. Among manager's or owner's characteristics, age, marital status and education were important factors affecting growth of both micro and small enterprises. Most importantly, human capital development targeting managers of MSEs can boost employment creation via the expansion of MSEs as reflected by the fact that an MSE manager having secondary school education and technical and vocational education training is positively related with firms' growth. Besides, human capital development is also important for the workers of the enterprises as it was found that businesses with larger proportion of skilled production workers shows statistically significantly higher growth than those businesses with less trained workers.

The finding of this study also reveals that weak business environment influences the growth of firms. In particular, frequent power interruptions, lack of access to credit, and shortage of water is inversely correlated with growth of MSEs. For small enterprise, access to credit appears to be the main problem as these firms are too big for non-bank financial institutions at the same time they are too small for commercial banks, reflecting the missing middle financial intermediation.

The major finding of this study is that start-up size and growth of the MSEs are negatively related, which means that MSEs that start business larger in size in terms of employment grows slower than their counterparts. This finding is consistent with the relatively recent learning model of firms; as

firms grow older or become larger, their rate of growth slows because they are already at a higher level of productivity.

Innovation activities are seen as driving forces for business success and enhance competitiveness as it has often been credited for improving organizational productivity. But the finding from this study indicates that innovation is taking place only in a small proportion of MSEs in the study area. The findings suggest that policies to improve the share of MSEs where innovation takes place need to be in place to enable MSEs play the role of acting as engines of economic growth by creating more jobs thereby improve the conditions of the unemployed people in the country. Furthermore, developing human capital of the MSEs through providing training, encouraging experience sharing, improving access to internet and taking account of sector dependent nature of innovation are very important should the policy of development through expansion of MSE be successful.

6.2 Recommendations

The findings of the study call for appropriate supportive interventions to improve the performance of micro and small enterprises in Ethiopia. Hence, the primary focus should be to enhance the growth and productivity of MSEs through targeted support aimed at generating employment opportunities for the rapidly growing work force, especially in urban areas of Ethiopia. Specific interventions shall focus on the following.

- There is a need for developing continuous capacity building program to enhance the capability of MSEs, especially human capital through anchoring with relevant training institutions that cater the needs of MSEs.
- It is recommended to improve access to finance, especially small enterprises. This requires establishing a special window at commercial banks or improving the capacity of MFIs to enable them avail adequate loan to small enterprises.
- There is a need for improving key infrastructure such as power supply and distribution and access to water.
- It is recommended to enhance the integration and linkage of micro and small enterprises with medium and large enterprises through training, experience sharing and access to improved technologies. Networking and sub-contracting with other firms is a key to develop technology capability.

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