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Constraints and Growth Potentials of Micro and Small Enterprises: Case from Mekelle City

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Abstract
This study examines the constraints and growth potentials of micro and small enterprises. To undertake this study primary data were collected through well-structured and self-administered questionnaire to a sample of 85 micro and small-scale enterprises operated in Mekelle City. In order to explore the relationship between the explanatory variables with the dependent variable different econometric models like multiple regression to examine the growth of MSEs is associated with diffrent constraints and logit model to analyzes how and to what extent the operators' socio-economics characterstics affect the income growth potential of enterprises were applied. The study result indicated that micro and small enterprises employment growth was significantly affected by constraints like crrent capital, current employment level, start up employment level, access to business services, and by motivation of the enterprises. Moreover, age,sex, experience access to finance and motivation of the enterprises affect growth potential of enterprises income. Therefore, these results highlight that the growth of MSEs in the study area are highly influenced by the specified business constraints.
Keywords*:* Growth Potential, MSEs, and Constraints

I. Introduction

In Ethiopia, the role of micro and small enterprises (MSEs) in the socio-economic development as a means of generating sustainable employment and income is increasingly recognized. The MSEs sector is the second largest employment generating sector for the poor households following the agriculture sector. According to the Central Statistical Agency (2003), almost 50% jobs created in Ethiopia are attributable to small business enterprises. The study conducted by Aregash (2005) revealed that 98% of business firms in Ethiopia are micro and small enterprises out of which micro enterprises represent 65% of all business. According to Central Statistical Agency (2003), in Ethiopia, there were 974,676 micro and 31,863 small enterprises are established, which accounts for 99.40% and 0.46% respectively. Large and medium enterprises that hired more than ten employees were 642 accounting for the remaining 0.14%. In addition, micro enterprises and small enterprises provide employment opportunities to 89.75% and 0.91% respectively (CSA, 2003). Large and medium enterprises on the other hand accounted for about 9.34% and 0.91% of individual employment respectively (CSA, 2003). In Tigray there were around 72,259 MSEs as of 2008 and in Mekelle there were 20,409 MSEs only as of 2008 (BoTI, 2008). Female entrepreneurs' in particular own majority of MSEs that exist in Tigray in general and in Mekelle, this accounts around 55% and 52% of MSEs in Tigray and in Mekelle respectively (BoTI, 2008).

Despite the fact that micro and small enterprises have been recognized as a major contemporary source of employment and income in a growing number of developing countries, yet relatively little is known and emphasized about the characteristics and growth of these enterprises. In a study by Eshetu and Mammo (2009) it is reported that 98% of business firms are micro and small enterprises out of which small enterprises represent 65% of all businesses. The fact that the majority of enterprises are micro and small indicates that established enterprises find it difficult to grow to the next stages of middle and large scale industries. Many of the MSEs in Mekelle are unable to realize their full potential due to the existence of different factors that inhibits their growth and performance. Thus, critical assessment of the association between growth and constraints of enterprises is needed so as to achieve the contributions of their growth to the city's economy by overcoming a series of constraints they are facing. Therefore, the objective of this study is to idenify the constriants of micro and small scale enterprises and to assess the growth potentials.

II. Materials and Methods

1. Data Sources

The data for the study was collected both from primary and secondary sources. The main source of primary data was the micro and small-scale enterprises survey. Structured questionnaire was used to collect information on various aspects of enterprises. Pertinent secondary data was also collected from respective bodies.

2. Data Gathering Tools

Appropriate structured questionnaire was prepared and used to collect primary data through enterprises survey. The questionnaire included questions related to attributes of ownermanagers of the enterprises, enterprise characteristics, and enterprise information such as capital, business activities, competition,

employment, sales, and business growth. Moreover, the survey questionnaire also included questions related to constraints and problems in business environment such as access to finance, working premises, infrastructure, business development services as well as policy environment and institutional linkage.

In this study, two stage sampling procedure was used. At the first stage, the city categorized in to seven strata based on sub city administration. In the second stage, a representative proportional sample enterprises randomly drawn from each sub city. Hence, the data were collected from Kedamay Woyane, Adi Haki, Ayider, Hadinet, Hawelti, Quiha and Semein. The data were collected mainly from a sample of 85 enterprises. Specifically 10, 15, 12, 10, 13, 14 and 11 sample enterprises were taken respectively.

3. Method of Data Analysis

Both quantitative and qualitative data analysis techniques have been employed to analyze the data collected from primary and secondary sources. The study used statistical tools including descriptive statistics as well as econometric model for the analysis as briefly described below.

Descriptive analysis: Descriptive analysis such as percentage, average and measures of central tendencies and dispersions will be used to make analysis in the form of tables or graphs. To supplement the data collected through questionnaires, qualitative information was collected through focus group discussions and key informant interviews.

Econometrics Model: In measuring employment growth, although theoretically alternative measurement tools such as growth rate of sales or profits could give precise results, in practice they are not as credible as the employment growth measure because of entrepreneurs' hesitation to report the true values of their sales and profits. This hesitation, which leads to measurement errors, makes the employment based measure preferable in studies considering enterprise growth. Moreover, in a relatively high inflationary economy, avoiding data in value terms is preferable, so using the employment growth rate as the measurement tool is beneficial. In addition, taking employment as measure of enterprises growth needs to be consistent with the goal set for the sector. In this study, therefore, the growth rate of the number of persons engaged is used as growth measure.

Therefore, employment is the most preferred measure of enterprise growth. So that in this part of analysis, growth in terms employment is applied. The critical issue here is how the dependent variable employment growth is defined. Thus, before specifying the model of multiple regression analysis, let's first discuss about growth measures on employment that have been used in the literature. Employment growth is defined in a number of ways. According to Liedholm and Mead (1999) there are three ways of defining employment growth. These are annual compound growth rate measured in percent, average annual growth rates measured in percent and average annual growth in jobs since start up measured in number of jobs created. The compound annual growth rate (CAGR) is a rate of growth that tells what an enterprise growth in employment over the years on an annually compounded basis is measured in percent and its formula is presented as follow:

$$[(CE / IE)1/ EA -1] \quad (1)$$

The average annual growth rate (AAGR), which is the average increase in the employment over the years since start up measured in percent, is calculated as:

$$[(CE - IE) / IE]/ EA \quad (2)$$

The average annual growth in jobs since start up which is measured in number of jobs created per enterprise is calculated as:

$$[(CE - IE)]/ EA \quad (3)$$

In several studies of employment growth compound annual growth rate is preferred for measuring employment growth than average, growth rates or number of changes in employment since start-up.The use of CAGR permits a much more precise assessment of the timing of employment growth effects (Liedholm and Mead 1999). Thus, in this study CAGR is employed so as to measure employment growth in particular and growth of enterprises in general.

In this part of analysis, a multiple linear regression was used to test whether or not the key independent variables were related to the dependent variable. In multiple linear regression models, the dependent variable is explained by means of a set of independent variables. The multiple linear regression analysis was chosen because growth measure, annual compound growth of enterprises, used as the dependent variable takes a continuous measure.

Now we are in a position to formulate the MSE growth model. Thus, the cross-sectional estimation for the constraints and determinants of growth is conducted through the following specifications: Enterprise growth is as a function of constraints and control variables

Enterprisegrowth=f(currentcapital, startupcapital, currentemployment, startupemployment, financesource, motivation, accesstobusiness, familysize, education, experience, sex, age) (4)

The general multiple linear regression model is then specified as:

$$Entgrowth=\beta_0+ \beta_1 \text{ currentcapital} + \beta_2 \text{ startupcapital} + \beta_3 \text{ currentemployment} + \beta_4 \text{ startupemployment} + \beta_5 \text{financesource} + \beta_6 \text{motivation} + \beta_7 \text{ accesstobusiness} + \beta_8 \text{ familysize} + \beta_9 \text{ education} + \beta_{10} \text{ experience} + \beta_{11} \text{ sex} + \beta_{12} \text{ age} + +\mathcal{E} \quad (5)$$

Where β_0, β_1, β_2 and $\beta_{12}$are parameters to be estimated, while '$\mathcal{E}$' the error term and β_0 is constant. The terms

entgrowth is enterprise employment growth, the dependent variable. And the term n stands for a respective enterprise.

Regression models that include yes or no type of response are known as dichotomous or dummy dependent variable regression model were applied in the study in which the determinants of an event happening or not happening are identified. They are applicable in a wide variety of fields and are used in survey data. Among the methods that are used to estimate such models, as indicated by Gujarati (2006) are the linear probability model (LPM), the logit model, and the probit model.

These methods are used to approximate the mathematical relationship between explanatory variable and dependent dummy variable, which is always assigned qualitative values (Gujarati, 2006; Maddala, 1999). The LPM is the simplest of the three models to use but has several limitations, namely, non-normality of the error term, and the possibility of the estimated probability lying outside the 0-1 bounds. Even if these problems are resolved, the LPM is not a very attractive model in that it assumes that the conditional probability increases linearly with the values of the explanatory variables. So that the fundamental problem with the LPM is that it assumes that the marginal or incremental effects of explanatory variables remain constant throughout, which seems patently unrealistic (Gujarati, 2006).

Thus, due to the limitation of the LPM there is a need to have an appropriate model in which the relationship between the probability an event will occur and the explanatory variable is non-linear. The most common probability models that fill the identified gaps in LPM are the logit and probit models, which has the S-shaped of the cumulative distribution function (CDF). The Logit model is based on the logistic CDF where as the probit model is the normal CDF and both models guarantee that the estimated probabilities lie in the 0-1 range and that they are non-linearly related to the explanatory variables. The logistic and probit formulations are quite comparable; a chief difference being that logistic has slightly flatter tails that is a normal curve approaches the axes more likely than logistic curve. Therefore, the choice between the two is one of the mathematical convenience and matter of choosing between the cumulative distributions functions (Gujarati, 2006).

To determine the relationships of business constraints that affect MSEs operator perception on growth potential of enterprises income by asking the operators about the income situation of the enterprises (that is, whether it increased, remained the same or declined). To measure the perception of respondents on income of the enterprises the dummy variable is constructed as dummy one if an enterprise experiences growth in income and zero otherwise.

Therefore, the model indicates the probability that enterprise will experience growth in income given the different explanatory variables constraints and control variables. Thus, the logit model on the conditional expectation of the growth potential of income given explanatory variables specified.

Following Green (2003), and Gujarati (2006), the logit model for extension participation determinant specified as follows:

$$P(Y_i = 1/x) = \frac{1}{1+e^{-(\beta_i x_i)}} \qquad (6)$$

For ease of the expression this can be written as follows,

$$P(Y_i = 1/x) = \frac{1}{1+e^{-(Z_i)}} \qquad (7)$$

Where: P (Yi=1/X) is the probability that MSEs income being increased or not, Z_i= the function of a vector of n explanatory variables, e- represents the base of natural logarithms and equation (7) is the cumulative logistic distribution function.

If P (Yi=1) is the probability of MSEs income being increased, then 1- P (Yi=0) represents the probability of MSEs income being constant or declining and is expressed as:

$$1\text{- P (Yi=1)} = 1\text{-}\frac{1}{1+e^{-(Z_i)}} = \frac{1}{1+e^{(Z_i)}} \qquad (8)$$

$$\frac{\text{P (Yi=1)}}{1-\text{P (Yi=1)}} = \frac{1+e^{Z_i}}{1+e^{-(Z_i)}} = e^{Z_i} \qquad (9)$$

Equation (9) simply is the odds ratio, the ratio of the probability that enterprises income being increased to enterprises income being either constant or declining. Taking the natural logarithm of equation (9), we can get:

$$L_i = \ln\left(\frac{\text{P (Yi=1)}}{1-\text{P (Yi=1)}}\right) = Z_i \qquad (10)$$

Where Li, is log of the odds ratio, which is not only linear in Xi but also linear in the parameters. Finally, by introducing the stochastic disturbance term (Ui) we get the logit model that is given as:

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \text{Ui} \qquad (11)$$

Where: X's = are explanatory variables that determines MSEs income growth or not, β_0 is the constant term and β's are coefficients to be estimated.

In this study, therefore, the logit model is customized by the equation (11) in order to analyze how various different factors affecting MSEs income growth. The empirical model for MSE income growth or not is specified as follows:

P (Incomegrowth= 1 / x) = β_0 + β_1 age + β_2 sex + β_3 experience + β_4 education + β_5 enterpriseage + β_6

accesstofinance + β_7 accessbusiness + β_8 familysize + β_9 motivation + + ε

4. Definition of Variables used in Model

Dependant variable

In the logit model, income growth has been designated by 1 if the enterprises income increased and 0 if otherwise (when enterprises income decline and constant). In a multiple regression model the dependent variable is employment growth regressed as dependent variable with the independent variables mentioned and the hypothesized in the table below.

Table 1: Definition, Hypothesis of Variables Used in the Model

Variable name	Type	Definition
age	Continuous	Age of the operators' of micro and small scale enterprise
sex	Discrete	Gender of the operator, It takes a value 1 if sex of respondent male, 0 otherwise.
experience	Continuous	Experience of the operator measured in years, it takes a value greater than zero
education	Discrete	Education level of the operator that is a dummy variable takes a value 1 if the respondents are literate either from formal or informal education and 0 otherwise.
enterpriseage	Continuous	Enterprise age is measured since the start of the business enterprise
accesstofinance	Discrete	A variable takes a value 1 if the enterprises have access for finance and 0 otherwise.
accessbusiness	Discrete	It takes a value of 1 if an enterprise has access to business counseling and advice and 0 otherwise.
familysize	Continuous	Family size of the operator
motivation of the operator	Discrete	Motivation =1 if the operator self motivated otherwise 0
financesource	Discrete	Finance source of the enterprise 1 if own source 0 otherwise
startupemployment	Continuous	The number of workers at the beginning of the operation
currentemployment	Continuous	Existing number of workers
startupcapital	Continuous	Initial working financial capital
currentcapital	Continuous	Existing capital of the enterprise

III. Result and Discussion

The result and discussion parts are divided in to two: descriptive and econometric analysis. In the first section of descriptive analysis, the characteristics of micro and small scale owners' attributes and the enterprises' characteristics will be explained using the summary statistics. Then, determinants of the income and employment growth of the enterprise are analyzed based on different economic models.

1. Characteristics of Sample Micro and Small Scale Enterprises

This study focuses on the 85 micro and small scale enterprises located in Mekelle City in all seven sub city that responded to all questions. Regarding the MSEs' socio economics characters tics as shown in table 2 and 3 below, out of the total 65.88% of the enterprises were owned by women and the rest 34.12% of enterprises were operated by men. This indicates that women's participation in the business activities particularly in heading the enterprises is relatively higher than their counterparts. However, past studies indicated that only 19% of the business operators are females (G/egziabher and Demeke, 2004). This may be attributed mainly to the government's action to increase women participation in micro and small-scale enterprises that is part of growth and transformation plan. The owner lowest age is 20 while highest age is 54, and thus the mean age is 33.6. This shows that since the sector absorbs more of the young labor force as one objective of the sector, creating employment opportunity mainly to the young is achieved. Only 28.3 % of the operators had no any school education and the majority i.e 71.77% had either formal or informal education. It obvious that as individuals makes effort on education, the possibility of being entrepreneur is very high. This is the reason why the participation of educated people in these sample micro and small enterprises revealed. The mean value of experience of owner managers is about 3.83 years. The lowest and the highest years of experience of the owner-managers are 1 and 12 respectively. Among those who have experience, some of them had related experience and some others had experience in a different sector. In most cases, having experience in business activities is the main factor for the success or failure of a particular business sector. In addition, 55.29% of the owner of micro and small-scale enterprises started their business because they wanted to be self-employed and the rest 42.35% of them engaged in micro and small-scale enterprises using the chance created by the government.

Sometimes people explain their reasons why they join micro and small enterprises as there are work freedom if they are self-employed than being salaried. This could also be the reason for those who are engaged in micro and small enterprises in mekelle city. In addition, the government of Ethiopia is expanding micro and small enterprises as a panacea to reduce an employment and poverty in the country. By using this opportunity as a road to start business, many people have been participating in small and micro enterprises.

Table 2: Summary statistics of discrete explanatory variables

Explanatory Variables		Obs.	Freq.	%
sex	female	85	56	65.88
	male		29	43.12
education	illiterate	85	24	28.23
	literate		61	71.77
accesstofinance	no	85	52	61.17
	yes		33	38.83
accessbusiness	no	85	43	50.58
	yes		42	49.42
motivation	self	85	38	44.70
	other		47	55.29
financesource	self	85	49	57.64
	other		36	42.35

Source: own survey 2013

Table 2 shows that the mean number of workers at start-up and current time for sample micro and small scale enterprises are 7 and 9 respectively; the range varies from 1 to 23 for start-up employment and from 1 to 51 for employment at current-time. This shows that the mean of the employment currently exceeds that of employment at start up only by two employees. The mean capital of micro and small-scale enterprise during their start-up was Br. 11,283.26 and the current average capital is Br. 29,221.63. The range also varies from Br. 400 to 130,000 for the start-up and from as low as Br. 650 to maximum of Br.650, 000 for current time.

Table 3: Summary statistics of continuous explanatory variables

Variables	Obs.*	Mean	Std. Dev.	Min.	Max.
age	85	33. 6	9.50	20	54
experience	85	3.83	4.32	1	12
enterpriseage	85	3.68	3.19	1	19
familysize	85	3.75	2.06	0	11
startupemployment	85	7	4.36	1	23
currentemployment	85	9	7.05	1	51
startupcapital	85	11,283.26	16656.95	400	130000
currentcapital	85	29,221.63	54463.78	650	650000

Source: own survey 2013

2. Influential Factors Affecting the Income Growth of Micro and Small Scale Enterprises

Factors inhibiting the growth of micro and small Enterprises income growth were investigated in this section. Thus, a logit model analysis has applied to investigate factors that affect income growth of enterprises. Thus, a set of explanatory variables have used in this analysis. The estimation results of the binary logit regression are presented in table 4. Regarding the overall significance of the model, the computed log likelihoods, chi-square values and the corresponding probability value show that the overall model is significant and explains the observed behavior. Having this statistically significant over all model, the estimation result of the table depicts that the first three variables age, sex and experience are significantly and positively affects the income growth potential of enterprises. These variables are statistically significant at 1%, 5% and 5% respectively. Moreover, access to finance and motivation of the micro and small-scale enterprises positively affects the income growth at 1% and 5% respectively.

Table 4: Logit result of determinants of income growth

Logistic regression — Number of obs = 85; LR chi2(9) = 78.80; Prob > chi2 = 0.0000

Log likelihood = -141.09847 — Pseudo R2 = 0.2483

Incomegrowth	Coef.	Std. Err.	Z	P>|z|
age	1.240367 ***	.4030926	3.08	0.002
sex	.7295175**	.3165236	2.30	0.021
experience	1.448586 **	.7088618	2.04	0.041
education	-.4482329	.3236237	-1.39	0.166
enterpriseage	.3079663	.342379	0.90	0.368
accesstofinance	.2689223 ***	.0907089	2.96	0.003
accessbusiness	-.7803478	.4799395	-1.63	0.104
familysize	-.2780106	.4762711	-0.58	0.559
motivation	1.01143 **	.4815043	2.10	0.036
cons	-2.82213 ***	.9997022	-2.82	0.005

* = Significant at 10% ** = Significant at 5% *** = Significant at 1%

Source: own survey 2013

3. Determinants of Micro and Small Scale Enterprises Growth

The estimation result of the multiple regressions is presented in table 5 below. Regarding the constraints of enterprises' employment growth, variables such as current capital, current employment, start up employment, finance source, motivation of the enterprises, access to business service counseling, family size of the operator and education level of the operator, were found to be important in explaining growth of employment of the enterprises in the study area. The signs for these variables are positive, revealing strong direct relationship between the explanatory variable and employment growth of enterprises. The coefficients for these variables explain the magnitude of the constraints towards affecting the growth of enterprises.

Table 5: multiple regression result on employment growth of micro and small enterprises

F (12, 72) = 1.60; Prob > F = 0.000; $R^2 = 0.7952$

Variable	Coef.	Std. Err.	t –score	P-value
Currentcapital	0.238737***	0.019764	12.08	0.00
Startupcapital	0.014019	0.021266	0.66	0.51
currentemployment	0.154134***	0.022907	6.73	0.00
Startupemployment	0.13813***	0.018899	7.31	0.00
Financesource	0.145284***	0.04602	3.16	0.002
Motivation	0.052293**	0.020878	2.5	0.012
Accesstobusiness	0.143561***	0.018486	7.77	0.00
Familysize	1.080896***	0.020955	51.58	0.00
Education	0.095882***	0.017261	5.55	0.00
experience	-2.04269***	0.187188	-10.91	0.00
Age	-1.66658***	0.123966	-13.44	0.00
Sex	-1.50404***	0.289222	-5.2	0.00
Cons	1.593	0.618001	2.57	0.01

* = Significant at 10% ** = Significant at 5% *** = Significant at 1%

Source: own survey 2013

IV. Conclusion

The empirical findings of this study revealed that sex of the operator, age and experience negatively affects the employment growth potential of MSEs. Whereas, current capital, current employment, initial employment, motivation of the operator, the existing of business counseling are significant factors that positively affecting the growth potential of micro and small-scale enterprises. Thus, accesses to these constraints are important factors for the micro and small scale enterprises to perform better and to grow in order to achieve the growth and transformation plan of Ethiopia. Both approaches of enterprise growth measures and proves that accesses to business constraints are strongly affect the growth potential and performance of micro and small-scale enterprises.

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