The Impact of Microfinance on the Development of Small and Medium Enterprises: The Case of Taizhou, China

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Abstract

This paper studies the impact of microfinance on the development of small and medium enterprises (SMEs). The main contribution of this paper is to use survey data collected from SMEs in Taizhou, Zhejiang, the largest home of SMEs in China. The study first shows that microfinance plays a crucial rule in the revenue and profit growth of SMEs. The study then reveals that the SMEs with higher financial risk and lower level of productivity are more likely the firms to seek microfinance. Furthermore, the paper finds that firm characteristics including product innovation efforts and managerial and entrepreneurial attitudes are the keys that determine the likelihood of receiving microfinancing.

Keywords: Microfinance, Small and Medium Enterprise (SMEs), Source of Financing, Firm Characteristics, Taizhou, China.

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1. Introduction

The rise of small and medium enterprises (SMEs) in China is gaining increasing attention worldwide. The production of SMEs accounted for over 60% of China's total GDP by March of 2012, increasing from 1% in the 1980s [1]. However, SMEs in China have been facing challenges of financing or refinancing since their birth as it is difficult to obtain conventional loans from commercial banks to start up small or medium scale enterprises. The main reason is that commercial banks demand collateral before giving loans for business purposes. The higher the risk the business has the more the collateral the banks need to charge, whereas SMEs are subject to higher risk and easily default. The limited funding sources of SMEs make the issue of providing sufficient collateral even worse. The high collateral demanded by commercial banks basically cuts the official channel of SMEs in obtaining loans. Thus, the difficulty of access to loans from state financial institutions such as commercial banks constitutes a great setback to entrepreneurial development.

One of the responses to the challenges of the lack of financing options for SMEs is the introduction and development of microfinance. According to the China Association of Microfinance, microfinance in China refers to financial services provided for the middle and low income population that cannot get loans from traditional banks. Microfinance has the ability to strengthen SMEs and encourage best practices among operators of SMEs. In terms of supply of microfinance, diversified microfinance suppliers and supply channels have emerged in China since the 1990s. However, the overall volume of supply is limited, and the majority of such supply is in its experimental stage. From the perspective of demand, there are various types of people in need of microfinance, including urban laid-off workers, rural households, and microentrepreneurs. At the same time, the types of demand for microfinance services is also

diversified, such as microcredit, microsavings, microinsurance, and investment (He, Du, Bai, and Li, 2009)[2].

The paper is organized in the following way. Section 2 is a literature review that aids the analysis and establishes some hypotheses. Methodology, including a brief description of the survey from which the data for this study was drawn, is interpreted in Section 3. Section 4 reports the results of the research, and Section 5 summarizes findings and key conclusions.

2. Literature Review and Framework

A number of studies have been conducted on microfinance and SMEs in China. China Microfinance Industry Assessment Report provided by the China Association of Microfinance gives the definition of microfinance in China, and examines the impacts of microfinance development at macro, meso, and micro levels, spanning over agricultural industry, financial markets, and social vulnerable groups such as women and farmers (He, Du, Bai, and Li, 2009). Many studies then have focused on each level specifically. Li (2006)[3] concludes that microfinance has offered an effective finance method for the construction of new socialist rural regions and has won the support of agriculture and farmers. Dyar, Harduar, Koenig, and Reyes (2006)[4] together examine the impact of microfinance on gender inequality in China and have discovered that there are many benefits to providing microfinance to women, despite lack of conclusive evidence on significantly reducing gender inequality. Microfinance allows women to enjoy greater economic power, better living quality, and stronger social and political empowerment. Park, Ren, and Wang, (2004)[5] assess the potential role of microfinance for financial reform in China and suggest that China's financial reforms have yet to create an

institutional space in which microfinance can operate, thrive, and expand. Therefore, expansion of microfinance will almost definitely have to await substantial further progress in creating a well-developed commercial, financial system. In the meantime, however, microfinance programs are competing with China's official financial institutions and levying pressure on the practice and reform of the rigid state-owned financial institutions.

In addition to research on reform, studies have also been conducted on the structure of microfinance. Sun (2008)[6] studies the policy and legal framework for microfinance in China and suggests that the Chinese government will have to continue to focus on improving the legal and political environment for microfinance if the industry is to continue to grow and prosper. Park and Ren (2001)[7] study the nongovernmental and governmental microfinance programs from cultural perspective and find that nongovernmental programs perform well in aspects of reaching the poor (targeting), guiding financial and operational performance (sustainability), and establishing program benefits (impact). Meanwhile, Tsai (2004)[8] points out four reasons for the existence of informal microfinance service: i. the limited supply of formal credit; ii. limits in state capacity to implement its policies; iii. the political and economic segmentation of local markets, and the institutional weakness of many microfinance programs.

To study the development of SMEs in China *per se*, Chen (2006) [9] gives an overview of the historical development and current status of Chinese SMEs and examines major political initiatives contributing to the development of SMEs. Liu and Yu (2008) [10] look into the structure of China's financial system and argue that insufficient development of rural SMEs and regional divergence in SME development are important causes of urban-rural income inequality. Shen, Shen, Xu, and Bai (2009)[11] further examine how bank size, discretion regarding credit, incentive schemes, industrial competition, and institutional environment could affect lending.

As we can see, little research has found the connection between microfinance and the profitability of SMEs. We have seen the research conducted in Africa that aims to find the impact of microfinance on entrepreneurial development in Nigeria. However, countries in Africa are less developed. The impact of microfinance is not significant. The main contribution of this paper is to focus on China - the most fast-developing country – by using a primitively-designed survey and by collecting two waves of panel data in 2010-2011 to study the relationship between the profitability and the microfinance of small and medium enterprises. The paper shows that microfinance plays a crucial rule in the revenue and profit growth of SMEs. The paper also reveals that the SMEs with higher financial risk and lower level of productivity are more likely the firms seek to microfinance. Furthermore, the paper finds that firm characteristics including product innovation efforts and managerial and entrepreneurial attitudes are the keys that determine the likelihood of receiving the microfinancing.

3. Methodology

3.1. Questionnaire and Sample

The data used in this paper is derived from investigation results of a primitively-designed questionnaire (see Table 1). The independent survey was conducted from January to March, 2013. This questionnaire was designed to collect information on SME characteristics and the source of financing. The questionnaire contains three parts. The first collects information on the characteristics of the SME, focusing on basic characteristics including industry, size (number of employees), age, level of productivity, and its breakdown by education, and innovation capability from 2010 and 2011. The second part gathers information on the performance of firms

including revenue and net profit. The third part collects the financial information including the participation of microfinance, the amount of microfinancing, and the weight of each financed amount for future investments.

Many basic characteristics were conducted for the survey. Firm size is defined in terms of number of employees and SMEs are defined as those with employees less than 2000. Out of 323 effectively surveyed firms, 211 fall into this category. An effective survey is one which answers all the questionnaire questions and answers are valid based on common sense. For example, a sum of weights in each respective financed amount equaling 100% is considered a valid answer. Particularly, a firm with less than 2000 employees but more than 300 employees is considered a medium enterprise, while a firm with less than 300 employees is considered as small enterprise[12]. Table 2 summarizes the key characteristics of the effective surveyed SMEs. SMEs with employees less than 300 accounted for 85.8% of the total, following by 12.3% of firms with employees of more than 300 but less than 2000. The average age of the SMEs was more than 11.6 years.

The source of financing for firms is divided into four categories including microfinance, retained earnings, personal funds, and other. According to effectively surveyed SMEs, the number of those that used microfinance in 2010 and in 2011 was 73 and 76, accounting for 34.6% and 36.0% of the total surveyed SMEs, respectively. There were only four SMEs that participated in microfinance in 2010 that didn't participate again in 2011. Similarly, there were only seven SMEs that participated in microfinance in 2011 that were not among the SMEs that participated in microfinance in 2010. Among four sources of financing, microfinance accounts for 11.9% on the average for the surveyed SMEs.

Small adjustments may be made during the collection of data in ways to keep logical and consistent. For example, for the SMEs that filled in the amount of microfinancing in the questionnaire but did not indicate whether or not they used microfinance during a given year, I assumed that they used microfinance; otherwise, the amount of microfinancing wouldn't be applied. As a result, for inferable incomplete or missing information in the survey, I inferred the number during the data entry process. I did not try to substitute the missing data (requested by questionnaire) that needed predictions because this data already contained errors and the existing information from the surveys was not reliable enough to generate predicted values. Adjustments made and missing information significantly reduced the effective observations for econometric analysis from approximately 323 to 211 SMEs.

The questionnaire doesn't study the total capital for each individual firm directly. In order to estimate the capital amount, the following assumptions have been made. First of all, the paper assumes the total amount of capital equals the total source of financing, which is the sum of microfinancing, retained earnings, personal funds, and other sources. Second, if capital is a dependent variable, while labor and level of productivity are independent variables, there exists a linear relationship between the dependent variable and the independent variables. As such, the capital of the SME is estimated by the following ways. Given the amount of microfinancing and weight of microfinancing, I first calculated the total capital by dividing the amount of microfinancing by its weights. I then regressed those with nonzero capital amounts on the number of employees and the level of productivity. After that, I used the estimated coefficients to impute capital amounts for those SMEs with zero capital amount using their labor and level productivity. By doing that, 46 negative observations were eliminated and the paper successfully fit the rest of 165 SMEs with nonzero capitals.

3.2. Statistical Method

The determinants of SME development in terms of revenue growth and net profit growth are examined by way of statistical regression. The statistical model will use multiple linear regression model and parameters are estimated by Ordinary Least Square (OLS) method as

$$Y_i = \beta_o + \beta_1 \times X_1 + \beta_2 \times X_2 + \ldots + \beta_n \times X_n + \Sigma_i$$

Where β_o is the intercept, β_1 is the parameter associated with X_1, β_2 is the parameter associated with X_2 , and so on. Σ_i is the error term.

The multiple linear regression model is applied because it is easier to adjust independent variables as it allows us to explicitly control many other factors that could simultaneously affect the independent variable. In addition, the regression model can match fairly general functional form relationships. Table 3 studies the impact of independent variables on the development of SMEs in terms of net profit growth, where i represent firm i, X_i represents the variable on independent variables that we are interested. Table 4 is in the similar spirit of Table 3 except that the dependent variable is the revenue growth from 2010 to 2011.

3.3. Measurement of Variables

The following variables are used to classify firm characteristics. Firm size is measured by number of employees instead of average annual revenue. By doing this, sensitivity to the changes in the business cycle or macroeconomics variables can be largely eliminated. Meanwhile, the age of the firm is proxied by the number of years the plant has been in commercial production.

The sources of funds are measured by the percentage of different sources accounting for the total investments in a certain year. It is noteworthy that the total amount of one year's investment (working capital) and the percentage of each source largely depend on the firm's performance during the previous year in terms of revenue growth and net profit growth. Therefore, this paper uses the dependent variables in 2010 to regress the change in independent variables from 2010 to 2011.

The measurement of SMEs productivity is based on the self-assessment. The surveyed SME is asked to score its level of productivity on a scale of 0 to 10. A score of 0 means the least productive while a score of 10 means the most productive. Each SME is asked to measure its level of productivity in 2010 and 2011. This paper chooses to use self-reported scores because it is very hard to measure productivity given the limited information. Given the output function, labor and capital are the two main factors. Therefore, this paper studies the number of employees and their self-scored level of productivity.

The measurement of SME characteristics in terms of a firm's product innovation efforts are employed in Harvie (2010)[13]*'s* Firm Characteristic Determinants of SME Participation in Production Networks. The article points out that in measuring the extent of a firm's product innovation efforts, four dummy variables could be employed to identify whether a firm has: (1) bought new machines, (2) improved its existing machinery, (3) introduced new know-how or knowledge into its production, and (4) introduced new products or services onto the market. The value of each of these variables is equal to unity if a firm has a conducted effort attached to each of these variables in the 2010 and 2011 period from the survey, or zero otherwise.

Harvie (2010) also indicates that two dummy variables are necessary to capture firm managerial and entrepreneurial attitudes. The first dummy variable is created to identify perceptions about taking business risks. It takes the value of unity if managers/owners have a positive attitude towards taking business risks or zero otherwise. The second dummy variable is created to identify willingness of the managers/owners to adopt a new business strategy. The variable takes the value of unity if there is a positive attitude towards adopting a new business strategy or zero otherwise. This paper chooses to study the latter one but not the first one because whether the firm has a positive attitude or not towards taking business risks is rather subjective. Moreover, this paper studies whether the firm has adopted the new business strategy or not, instead of asking about the willingness.

In addition, the paper also introduces the availability of training as one of the characteristics of each SME. The availability to train is a very important criterion in forecasting the growth of a SME and its level productivity. SMEs who train their employees frequently tend to have a higher productivity and better employees satisfactions. The paper attempts to further reveal its relationship with participation in microfinance and development of SMEs in the following analysis.

4. Results and Analysis

The paper focuses on the effects of microfinance on the following year's SMEs performance. In order to measure the impact of microfinance on the development of SMEs, I first regressed the *growth rate of net profit from 2010 to 2011* on the key factors of SMEs, which included *capital, number of employees, level of productivity, and weight of microfinancing in*

terms of total capital (%) within 2010. These are essential factors in determining the SMEs' output. Column (1) of Table 3 reports the statistical inference results of the regression.

Results in Column (1) of Table 3 indicate that using microfinance brings a significantly higher profit to SMEs than those that did not. Having microfinancing to be one of the capital sources is important in 2010. The estimated coefficient of the weight of microfinancing in terms of total capital in 2010 (%) is the largest positive number among other coefficients. Moreover, the value of the estimated coefficient suggests that the effect of the amount of microfinance is also significant. It suggests that the SMEs that doubled the weight of microfinancing during 2010 would have 3.0% more net profit growth than those that did not from 2010 to 2011, holding all others equal. The results also indicate that the SMEs with more employees and a higher level of productivity tend to have a higher net profit growth. The estimated coefficient suggests that for every 1 point of increase in productivity, the net profit growth is higher by 7.3%.

I regressed the revenue growth from 2010 to 2011 on the same factors I had for the regression on net profit growth. Column (1) of Table 4 reports the statistical results. The number of employees and the level of productivity still show positive effects on the revenue growth. However, the impact of having more microfinancing among the total capitals (%) is counter intuitive. In fact, the signs of estimated coefficients suggest that the effects of having more microfinancing among the total capitals are negative. Particularly, the value of the estimated coefficient suggests that on the average, the SMEs that doubled the weight of microfinancing(%) during 2010 would have approximately 29.3% lower revenue growth from 2010 to 2011, holding all others equal.

These results were unexpected. In order to further investigate the problem, the paper first attempts to unveil those factors that determine the probability of participating in microfinancing. I performed Tobit regression of dependent variables *Weight of Microfinance 2011 (%)* and *Participation in Microfinance in 2011* on independent variables including *Revenue Growth from 2010 to 2011*, *Level of Productivity in 2010*, and *Retained Earnings (%) in 2010*.

Table 5 shows the statistical results. From both column (1) and column (2) in Table 4, the estimated coefficient suggests that the effects of the productivity and retained earnings are negative. From column (1) in Table 4, the coefficient of the level of productivity indicates that on the average, an increase in the level of productivity by 1 will decrease the weight of microfinancing (%) by about 2.9%. Moreover, on the average, doubling the weight of retained earnings (%) will decrease the weight of microfinancing (%) by 14.0%. From column (2) in Table 5, on the average, an increase in the level of productivity by 1 will decrease the chances of having demand for microfinancing by about 9.2%. Furthermore, on the average, doubling the weight of retained earnings will decrease the demand for microfinancing by about 22.8%.

The results reveal the important implications that the greater demand for microfinancing may largely due to a lower level of productivity and lower retained earnings. First of all, a firm that has a lower level of productivity tends to have a lower output. This could lead to a result of management, financial, or labor problems. One way for a firm to increase its level of productivity is to borrow more and use the capital for further investment in order to increase its level of productivity and output. SMEs have a tendency to borrow from microfinance institutions as they are increasingly accessible to them. The amount of microfinancing available could be used to increase SMEs' spending on technology, machinery, and divisions, and consequently, increase the output. Moreover, a firm with smaller retained earnings (%) as capital in a given

year indicates that its profit was likely to have been smaller in the previous year, and therefore, will have less flexible capital for future investment. To some degree, it means that the firm faces a potential financial risk, and it is likely to increase its demand for microfinancing if the firm wants to maintain its current investment or seek greater investment.

Microfinancing is in demand when SMEs are in unhealthy conditions. SMEs may face problems in terms of financial risks and low levels of productivity. Since microfinancing is one of the most accessible approaches for SMEs to finance themselves, many SMEs will consider using it. Moreover, for SMEs with smaller revenue and smaller retained earnings, funding through microfinancing is likely to be a big portion of their capital. This can well explain why there is a negative relationship between the revenue growth and the participation of microfinancing.

From Column (1) in Table 3 and Column (1) in Table 4, it is worth noting that both the estimated coefficient on capital for net profit growth and revenue growth are negative, although both are very small numbers (-0.0000155 and -0.00000145 respectively). The paper already suggests that SMEs that demand microfinancing may very likely be the firms with relatively lower levels of productivity and more financial distress. The other reasons for this could be that the data from the questionnaire is focused on 2010 and 2011, when the global economy was recovering slowly after the recession. Data from Taizhou Bureau of Statistics shows that the growth rate of Taizhou's GDP in 2011 decreased by 39.4% compared to the growth rate of GDP in 2010. We have seen a decrease of total amount of financed microfinancing from 142.3 billion RMB in 2010 to 101.6 billion RMB in 2011. An increase in capital may not be necessarily associated with a growth in net profit or revenue. It is more likely a way for SMEs to maintain their revenue and net profit growth in bad times.

Given the implications above, the paper extends the model to study the impact of microfinance on both net profit growth and revenue growth. The statistical model uses linear regression and the parameters are estimated by OLS. I regressed both the *growth rate of net profit* and the *growth rate of revenue* from 2010 to 2011 on *capital, number of employees, level of productivity, participation in microfinance,* and *personal funds* within 2010.

Column (2) in Table 3 and column (2) in Table 4 shows the statistical results respectively. As we can see, personal funds are significant in both magnitude and direction, in addition to factors that include the participation of microfinancing, the number of employees, and the level of productivity that all have positive impact on both net profit growth and revenue growth. Personal funds play an important role in the development of SMEs. As a source of financing, the estimated coefficient suggests that on the average, doubling the weight of personal funds (%) will increase the net profit growth and revenue growth by about 11.0% and 25.6% respectively. The results indicate that the availability of financing is very important to the growth of SMEs. Having sufficient personal funds is equivalent to having precautionary savings when facing financial distress. It also implies a better ability to take investment opportunities.

It is clear that the SMEs that participated in microfinancing had better performance in terms of higher net profit growth and revenue growth. The paper further studies the likelihood of getting microfinancing in 2011 if SMEs participated in microfinancing in 2010. The paper uses the logit model and runs the regression of the dependent variable *Participation in Microfinance in 2010* on independent variables including *Participation in Microfinance in 2010, Training in 2010, Introduction of New Technology in 2010, Launch of New Division in 2010, Consumption of New Machinery in 2010, Upgrade of New Machinery in 2010, Introduction of New Product in 2010, and Adoption of New Business in 2010* (odds ratio applied).

Table 6 shows that the use of microfinancing in 2010 significantly increased chances of getting microfinancing in 2011. The use of microfinancing is significant (1%) in both magnitude and direction. The estimated odds ratio suggests that if microfinance is used in 2010 (=1), the chances of getting microfinancing in 2011 increased by approximately 782.4. Meanwhile, given the odds ratio from statistical results, whether the firm had training, technology upgrades, new divisions, new machines, upgraded machines, new productions, and new business strategies also played a significant role in determining how likely the firm was to get microfinancing in 2011.

5. Conclusions

This paper provides an investigation into the impact of microfinance on the development of SMEs. It studies the impact on firm level in terms of their net profit growth and revenue growth. It has also tried to reveal the key firm characteristic determinants of SME's profit and revenue growth. The paper utilized results from questionnaire surveys in Taizhou, Zhejiang in China, which was conducted over a period about three months at the beginning of 2013. The approach examines the difference in firm's financial conditions and characteristics of different groups of SMEs defined by participation status and to estimate how the microfinance and firm characteristics determine SME development.

The study suggests that firms that participate in microfinancing will see a significant increase in their revenues and net profits. The labor (number of employees) and level of productivity are the most important firm characteristics that determine SMEs development in China. They play a very important role in generating output for firms. In terms of SMEs' financial conditions, the personal funds and retained earnings are not only important to the

development of SMEs, but also important to the demand for microfinancing. The analysis particularly finds SMEs that with lower productivity and lower retained earnings are those that may face problems and are more eager to demand for microfinancing. This can explain why a SME that has a large portion of capital from microfinancing doesn't perform as well as expected. However, this paper indicates that in the long run, microfinance will play a very important role for those SEMs who are borrowing under unhealthy conditions. Due to the data unavailability, this paper cannot further study the impact of microfinance on the development of SMEs over the long term, but further research can be done as more waves of data are collected.

The study also shows that SMEs that have participated and received microfinancing before are very likely to apply for and receive microfinancing in the future again. Moreover, SME characteristics are very important in determining the likelihood of getting microfinancing funds. Furthermore, it would be interesting to investigate whether there is adverse selection among SMEs who apply for and receive microfinancing. This would further help explain the relationship between participants of microfinance and the development of SMEs in terms of revenue growth and net profit growth.

Reference

1. People.Com, http://finance.people.com.cn/GB/70846/17368560.html, 2012

2. He, Guangwen, Xiaoshan Du, Chengyu Bai, and Zhanwu Li. "China Microfinance Industry Assessment Report." China Association of Microfinance, Beijing, China (2009)

3. Li, Chao. "Research on Rural Microfinance Serving “Agriculture, Countryside and Farmers”."Information and Business Intelligence.Springer Berlin Heidelberg, 2012.693-699.

4. Dyar, Cindy, et al. "Microfinance and gender inequality in China." International Economic Development Program, Ford School of Public Policy, University of Michigan (2006)

5. Park, Albert, Changqing Ren, and Sangui Wang. "Microfinance, Poverty Alleviation, and Financial Reform in China." (2004)

6. Tongquan, Sun. "The Policy and Legal Framework for Microfinance in China." Geneva Papers on Inclusiveness 2 (2008)

7. Park, Albert, and Changqing Ren. "Microfinance with Chinese characteristics." World Development 29.1 (2001): 39-62.

8. Tsai, Kellee S. "Imperfect substitutes: the local political economy of informal finance and microfinance in rural China and India." World Development 32.9 (2004): 1487-1507.

9. Jia Chen, (2006) "Development of Chinese small and medium-sized enterprises", Journal of Small Business and Enterprise Development, Vol. 13 Iss: 2, pp.140 – 147

10. Liu, Mingquan and Yu, Jiantuo. "Financial Structure, Development of Small and Medium Enterprises, and Income Distribution in the People‘s Republic of China‖." Asian Development Review 25.1 (2008): 2.

11. Shen, Yan, et al. "Bank size and small-and medium-sized enterprise (SME) lending: Evidence from China." World Development 37.4 (2009): 800-811.

12. Taizhou Bureau of Statistics, Internal Documents, 2013

13. Harvie, Charles, Dionisius NARJOKO, and Sothea Oum. "Firm Characteristic Determinants of SME Participation in Production Networks."ERIA Discussion Paper Series 11 (2010).

Appendix

Table 1. Sample Questionnaire

Questionnaire: The Impact of Microfinance on Small and Medium Enterprises

Firm Name: _____ Date: _____

1. How long had your firm existed by the end of 2011?

_____ years

2. What industry does your firm belong to (Check one that applies)?

Garment _____

Auto Parts and Components _____

Chemical & Pharmaceutical _____

Electronic & Electronic Parts and Components _____

Others _____

3. Had your firm conducted training at least once every three months in 2010 and 2011 (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

4. What is the breakdown of your employees' education?

High school or less than high school _____ %

2-year Community College _____ %

4-year College _____ %

Ph.D. _____ %

Other _____ %

5. What was the revenue in the following years?

2010: _____ million RMB 2011: _____ million RMB

6. What was the net profit growth in the following years?

2010: _____ million RMB 2011: _____ million RMB

7. Did you receive microfinance in 2010? If so, what was the amount of microfinancing?

A. No _____ B. Yes _____, I have received _____ million RMB.

Questionnaire: The Impact of Microfinance on Small and Medium Enterprises (Continued)

8. Did you receive microfinance in 2011? If so, what was the amount of microfinancing?

A. No _____ B. Yes _____, I have received _____ million RMB.

Questionnaire: The Impact of Microfinance on Small and Medium Enterprises (SMEs) (Continued)

9. What was the weight of each source of capital including microfinancing, retained earnings, personal funds, and other?

2010		2011	
Microfinancing	_____ %	Microfinancing	_____ %
Retained Earnings	_____ %	Retained Earnings	_____ %
Personal Funds	_____ %	Personal Funds	_____ %
Other	_____ %	Others	_____ %

10. Has your firm introduced new technology in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

11. Has your firm launched new divisions in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

12. Has your firm bought any new machinery in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

13. Has you firm upgraded the machinery in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

14. Has your firm introduced new products in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

15. Has your firm adopted any new business strategies in the following years (Check those that apply)?

2010: Yes _____ No _____ 2011: Yes _____ No _____

16. What do you score for your level of productivity in the following years (from 0 – 10, 0 means least productive, while 10 means most productive)?

2010: _____ 2011: _____

17. What is the number of employees now?

_____ persons

Table 2. Characteristics of the Surveyed SMEs

Characteristics	Small Enterprise					Medium Enterprise				
	N	Mean	S.D.	Min	Max	N	Mean	S.D.	Min	Max
Age	181	11.63	7.79	1.00	53.00	26	18.00	6.85	7.00	33.00
Employees	181	80.64	73.35	2.00	290.00	26	502.00	158.23	310.00	900.00
Growth										
Revenue Growth (%)	181	0.26	1.06	-0.92	11.00	26	0.87	2.54	-0.04	9.76
Net Profit Growth (%)	181	0.23	1.01	-2.30	10.00	26	0.51	2.45	-4.52	9.76
Employees by Education (%)										
High School	181	0.67	0.21	0.00	1.00	26	0.62	0.21	0.20	0.96
Graduate Certificate	181	0.18	0.15	0.00	0.80	26	0.19	0.12	0.03	0.50
Bachelor Degree	181	0.08	0.08	0.00	0.40	26	0.10	0.07	0.00	0.20
PHD	181	0.00	0.01	0.00	0.05	26	0.00	0.00	0.00	0.02
Others	181	0.08	0.16	0.00	0.85	26	0.09	0.19	0.00	0.73
Source of Financing 2010 (%)										
Microfinance	181	0.13	0.21	0.00	1.00	26	0.05	0.08	0.00	0.30
Retained Earnins	181	0.30	0.28	0.00	1.00	26	0.30	0.31	0.00	1.00
Personal Funds	181	0.37	0.77	0.00	10.00	26	0.16	0.20	0.00	0.80
Others	181	0.25	0.30	0.00	1.00	26	0.50	0.31	0.00	1.00
Source of Financing 2011 (%)										
Microfinance	181	0.13	0.18	0.00	1.00	26	0.05	0.08	0.00	0.30
Retained Earnins	181	0.31	0.28	0.00	1.00	26	0.30	0.31	0.00	1.00
Personal Funds	181	0.32	0.27	0.00	1.00	26	0.17	0.21	0.00	0.75
Others	181	0.26	0.33	0.00	2.00	26	0.48	0.30	0.00	1.00

Table 3. Multiple Linear Regression on Net Profit Growth from 2010 to 2011

Dependent Variable: Net Profit Growth from 2010 to 2011

Independent Variables	**(1)**	**(2)**	**(3)**
Capital	-0.0000155 (0.000014)	-0.0000171 (0.0000146)	0.00000273 (0.0000113)
Weight of Microfinance 2010 (%)	0.2992445 (0.6410941)	_____	0.0731747 (2.713872)
Number of Employees	0.0009783 (0.0010124)	0.0012534 (0.0010411)	0.0015951* (0.0009391)
Level of Productivity 2010	0.0729815 (0.0855055)	0.069099 (0.0826076)	0.1609754 (0.1302896)
Age of Firm	_____	_____	-0.0029871 (0.0166909)
High School (%)	_____	_____	-6.180057 (15.56142)
Graduate Certificate (%)	_____	_____	-5.785461 (15.62162)
Bachelor (%)	_____	_____	-7.129355 (15.69683)
Ph.D (%)	_____	_____	0.2261087 (27.05745)
Other education (%)	_____	_____	-6.500504 (15.62027)
Revenue 2010	_____	_____	-0.0000198 (0.0000168)
Net Profit 2010	_____	_____	-0.00000163 (0.0000053)
Use of Microfinance 2010 (dummy)	_____	0.2467135 (0.2697118)	0.3941185 (0.3007067)
Amount of Microfinancing 2010	_____	_____	-0.0004425** (0.0001747)
Retained Earnings 2010 (%)	_____	_____	-0.7587151 (2.701045)
Personal Funds 2010 (%)	_____	0.3284172 (0.3274988)	-0.2671003 (2.702218)
Other financing source 2010 (%)	_____	_____	-0.5146546 (2.689132)
Training 2010 (dummy)	_____	_____	0.4225496 (0.344272)
New Technology (dummy)	_____	_____	0.2032512 (0.298187)
New Division (dummy)	_____	_____	0.130457 (0.295374)
New Machinery (dummy)	_____	_____	-0.0863835 (0.3855578)
Upgrade Machinery (dummy)	_____	_____	0.045433 (0.3649926)
New Product (dummy)	_____	_____	0.0826085 (0.1363193)
New Business Strategy (dummy)	_____	_____	-0.3103046 (0.3077393)
Intercept	-0.4352035 (0.7116333)	-0.59686 (0.6147104)	5.208113 (15.79093)
Observations *R-Squared*	165 0.0329	165 0.0423	165 0.1260

* Significant at 10% ; ** Significant at 5%

Table 4. Multiple Linear Regression on Revenue Growth from 2010 to 2011

Dependent Variable: Revenue Growth from 2010 to 2011

Independent Variables	**(1)**	**(2)**	**(3)**
Capital	-0.00000145 (0.00000356)	-0.00000214 (0.00000315)	0.00000000211 (0.0000116)
Weight of Microfinance 2010 (%)	-0.2928914 (0.2177663)	_____	0.2534569 (2.80116)
Number of Employees	0.0009804 (0.0010375)	0.0013547 (0.0010433)	0.0019033** (0.0009619)
Level of Productivity 2010	0.0951189 (0.0799632)	0.1085407 (0.0810437)	0.0150065 (0.1344801
Age of Firm	_____	_____	0.0066894 (0.0172278)
High School (%)	_____	_____	-2.395589 (16.06192)
Graduate Certificate (%)	_____	_____	-3.449893 (16.2017)
Bachelor (%)	_____	_____	3.003337 (16.2017)
Ph.D (%)	_____	_____	-8.020613 (27.92771)
Other education (%)	_____	_____	-2.423826 16.12267
Revenue 2010	_____	_____	-0.0000418** (0.0000174)
Net Profit 2010	_____	_____	0.00000168 (0.00000547)
Use of Microfinance 2010 (dummy)	_____	0.1474793 (0.2310037)	0.1538967 (0.3103784)
Amount of Microfinancing 2010	_____	_____	-0.0000494 (0.0001803)
Retained Earnings 2010 (%)	_____	_____	0.5928711 (2.78792)
Personal Funds 2010 (%)	_____	0.4048474 (0.2206333)	1.342494 (2.789131)
Other financing source 2010 (%)	_____	_____	0.8032535 (2.775623)
Training 2010 (dummy)	_____	_____	0.376591 (0.355345)
New Technology (dummy)	_____	_____	0.3347218 (0.3077777)
New Division (dummy)	_____	_____	-0.4433553 (0.3048742)
New Machinery (dummy)	_____	_____	0.0417557 (0.3979587)
Upgrade Machinery (dummy)	_____	_____	-0.0102445 (0.376732)
New Product (dummy)	_____	_____	0.0444274 (0.1407037)
New Business Strategy (dummy)	_____	_____	0.0364479 (0.3176372)
Intercept	-0.5067209 (0.5667412)	-0.8952865 (0.6432003)	1.033762 (16.29882)
Observations *R-Squared*	165 0.0247	165 0.0310	165 0.1568

* Significant at 10%; ** Significant at 5%

Table 5. Tobit Regression on Weight of Microfinance and Participation in Microfinance within 2011

Dependent Variable: (1) Weight of Microfinance & (2) Participation in Microfinance within 2011

Independent Variables	**(1)**	**(2)**
Revenue Growth	-0.0100728 (0.0086544)	0.004657 (0.0254338)
Level of Productivity 2010	-0.0291077*** (0.0107668)	-0.923046*** (0.0355859)
Retained Earnings 2010 (%)	-0.1398445*** (0.0409936)	-0.2280882* (0.1279386)
Intercept	0.394325 (0.0866532)	1.232971 (0.2829834)

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

Table 6. Logit Regression on Participation in Microfinance in 2011

Dependent Variable: Participation in Microfinance in 2011

Independent Variables	**(1)**
Use of Microfinance 2010 (dummy)	782.3741*** (769.9183)
Training 2010 (dummy)	1.023219 (1.023878)
New Technology (dummy)	1.744554 (1.570451)
New Division (dummy)	3.505718 (3.23399)
New Machinery (dummy)	1.262583 (1.545044)
Upgrade Machinery (dummy)	0.5047522 (0.591073)
New Product (dummy)	0.1941655 (0.2099688)
New Business Strategy (dummy)	0.255927 (0.2786968)
Intercept	0.1719429 (0.161259)

* Significant at 10%; ** Significant at 5%; ***Significant at 1%