Lengyel I. – Vas Zs. (eds) 2016: *Economics and Management of Global Value Chains*. University of Szeged, Doctoral School in Economics, Szeged, pp. 143–154.

9. Assessing the impact of the credit guarantee fund for SMEs in the field of agriculture - The case of Hungary

Thai Binh Dang

Credit guarantee has an important role in promoting the development of small and medium sized enterprises (SMEs). Especially many countries including Hungary applied the credit guarantee fund to promote SMEs in the field of agriculture and rural. This study aims to assess the impact of credit guarantee foundation through the case of Rural Credit Guarantee Foundation of Hungary for SMEs in the agricultural sector. In this study, the author used quantitative method to evaluate the impact of Rural Credit Guarantee Foundation for SMEs in reducing financial cost, increasing sales, increasing investment etc.

Keywords: SMEs, credit guarantee foundation, finance

1. Introduction

SMEs are an important part of the economy and the driving force for development of each country. However, in the process of development, SMEs face many difficulties and challenges, such as technology, management skills, problem of information asymmetry, quality workforce, competition, market, economic and financial crisis, etc. Among them one of the major difficulties of SMEs is accessing capital from banks and credit institutions. To solve this problem, the countries around the world have used different financial tools to help SMEs easily access finance. One of the effective financial instruments applied by more countries in the world is credit guarantee.

Credit guarantee institutions have played an essential role in the financial framework of the European economy (Leone et al. 2012). In some European countries, credit guarantee works fairly well, for instance Italy, Portugal and Hungary. In Europe and in the world, the credit guarantee system of Hungary is one of the largest credit guarantee systems with well-structured and long tradition. Besides, the credit guarantee system in Hungary is a model successfully applied in credit guarantee activities. The credit guarantee system of Hungary includes 3 major credit guarantee institutions: Garantiqa Creditguarantee Co. Ltd, Rural Credit Guarantee Foundation (AVHGA) and Venture Finance Hungary Private Limited Company. In particular, AVHGA was established by Ministry of Agriculture in 1991 with the aim of supporting farmer, SMEs in the agricultural sector easier access to finance and promote rural development.

2. Literature review

According to research by Levitsky (1997) credit guarantee scheme began appearing in the Philippines as far back as 1952, then appeared in Indonesia, Malaysia, Pakistan, Korea, etc in the 1970's; and Chile, Columbia, India and Thailand in the 1980's. And the first credit guarantee schemes were established in Europe in the 1840s (Deelen − Molenaar 2004). Until 2003, there were 2250 credit guarantee schemes existing and operated in 100 countries in the world (Green 2003). In particular, many countries chose the credit guarantee as a financial instrument to deal with the financial crisis in 2008. 19 of the 23 OECD countries used credit guarantee schemes as a support for SMEs to easily access finance and overcome financial crisis (Uesugi et al. 2010). Thus, it can be said that credit guarantee scheme has become a trend and it is applied in most of the countries around the world. So what is the reason for the rise of credit guarantee schemes in the world?

More researchers have shown that credit guarantee schemes were set up to help SMEs to resolve the difficulties in accessing finance from banks. The difficulties of SMEs in accessing finance from bank are due to the following reasons: (1) Lack of collateral, (2) Problem of information asymmetry, (3) High cost of lending to SMEs and (4) High risk in the process of lending to SMEs.

Although SMEs were recognized as an important sector that helps in creating jobs and are the driving force of economic development, but the process of developing SMEs face many obstacles, especially the limited access to finance. A research by the European Commission (2013) pointed out that one third of the SMEs survey did not manage to get the full financing they had planned for during 2013 and 15% of survey respondents saw access to finance as a significant problem for their companies. One of the main reasons for the access to finance from banks is the lack of collateral and this is a particularly important problem for start-ups and young SMEs.

Most start-up and SMEs when starting to do businesses tend to use their own resources, from family and friends and also from the other external funding sources such as banks. Therefore in order to develop, expand production and business, SMEs looks to external sources and mainly access bank financing. On the other hand, banks before lending to SMEs they often follow the precautionary principle and risk prevention. One of the requirements of banks when making lending to SMEs is to have collateral. Effective collateral will help SMEs to easily borrow money from the bank by reducing the risks and losses of the banks when providing loan based on good collateral (OECD 2013). However SMEs are

characterized by small scale, lack of capital, poor technical equipment, weak management capabilities and marketing etc. Therefore a lot of SMEs cannot access funds from banks because they do not meet the conditions for collateral. Moreover, banks are often restricted in the types of collateral that they accept (Deelen − Molenaar 2004). Many central banks in many countries have the regulations for the type of collateral and they do not accept some kind of collateral such as stocks, receivables, etc. Especially during the financial crisis, many countries collateral requirement increased significantly, and it affected the ability of SMEs to access credit. Thus it can be said that collateral is great challenge and obstacle for SMEs in process of accessing finance.

Beside the difficulty in meeting the requirements on collateral during accessing financing banks, SMEs still have trouble in getting loans from banks due to the problem of information asymmetry. Research by the European Bank Coordination Initiative (EBCI 2014) indicated that SMEs are more affected by credit rationing than larger companies, since the information asymmetry is more pronounced for SMEs. Information asymmetry is a big and serious problem that exists between SMEs and credit institutions. The existence of information asymmetry which affects the decisions of bank when lending to SMEs is due to the fact that the banks cannot assess creditworthiness of SMEs, as well as SMEs lack of relevant information, lack of financial records, credit history, etc. In addition, for SMEs evolving in the formal sector, the absence of accounting standards or, on the contrary, the excessive level of accounting information (Lifilleur 2009) also results to information asymmetry. The lack of information affects the decision of banks and credit institutions in the process of lending to SMEs. According to Stiglitz and Weiss (1981), asymmetric information can lead to adverse selection moral hazard.

The adverse selection occurs when information relating to borrowers, such as the effectiveness of the project, project risk, project plans and so on which are known more by the borrower rather than credit institutions. Therefore, the lenders who are in the relatively disadvantaged position are only able to raise interest rate to reduce potential risk of credit losses. The research by Stiglitz and Weiss (1981) pointed out that in order to protect them and to avoid adverse selection banks often raise the cost of bank debt or limit credit for SMEs when SMEs are not ready to get funds at higher price. In particular, for the SMEs with weak operations, increasing interest rate makes it difficult for them in accessing finance and they are not willing to pay higher interest rate. On the other hand, most of banks choose higher interest rates to avoid the risk of loans or rejecting loan demand of SMEs. Because of the relative weakness of SMEs compared with larger enterprises, banks often choose and prefer

to lend to larger enterprises. It is understandable that SMEs become the main targets to which "credit rationing" is administered. Many SMEs have been eliminated from market because of lack of access to loans. Thus, asymmetric information leads to adverse selection which makes it difficult for SMEs to access finance.

Besides, information asymmetry also leads to moral hazard because the banks cannot monitor the entire time of the borrower, business activity of the borrower and what purpose the borrower uses the loan for, etc. In addition, banks can not completely know and control whether the borrowers are willing to repay the loan or not? Thus, moral hazard leads to bad debt for banks and financial institutions making loans, especially loans for SMEs difficult. In order to reduce risk in the lending process and get profit, banks and credit institutions have implemented limited credit policy for SMEs. This policy reduces lending to SMEs to avoid moral hazard or banks can reduce lending thresholds for SMEs and collateral requirements from SMEs during the lending process. SMEs also have difficulty to come up with satisfying mortgages to the financial institution. Therefore, financial institutions may not dare to lend any loans to SMEs. In conclusion, asymmetric information leads to moral hazard, which would further exacerbate the financing difficulties of SMEs.

Due to the effects of information asymmetry, banks and credit institution spend more time and resources in monitoring SMEs than large enterprises. Banks need to supervise and monitor the actual situation of the borrower to ensure the safety and effectiveness of the loan as well as the prevention of fraud from borrowers. Therefore the bank desire to achieve much information about the borrowers as much as possible but the information related to the borrower will not be easy to achieve. In addition, information relating to borrowers is also very diverse such as financial statements, credit history, cash flows, business operations etc. In particular when borrowers are SMEs, it will be very difficult for the bank to obtain full information about them and also there are difficulties during routine monitoring. Most SMEs have weak accounting systems and non-standard, non-transparency rules, no distinction between company and personal assets etc. By contrast, large companies have more advantage in aspects such as the credit rating, valuable mortgage, etc. Also, they have relative transparency and accessibility of information. These advantages can effectively translate to total cost reduction in searching for information relating to a transaction object as well as supervision by banks. When the comparison of the cost, benefit and risk between large companies and SMEs, banks prefer lending to large enterprises, which reduces the loan to SMEs and aggravate the financing difficulty facing SMEs.

3. Methods

This study focuses on assessing the impacts of Rural Credit Guarantee Foundation for SMEs. Based on the purpose of the research, hypotheses are formulated at the beginning of the research and tested in the research. It is described by the following Table 1.

Table 1 Hypotheses of the research

Hypothesis	Description
H1	H0: There is no significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA HA: There is a significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA
H2	H0: There is no empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA HA: There is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA
H3	H0: There is not a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA HA: There is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA

Notes: (H0 = Null Hypothesis and HA = Alternate Hypothesis)
Source: own construction

I presented the hypotheses of my research as well as the methods that were applied to test the hypotheses. Also, it is used to analyze the impact of Rural Credit Guarantee Foundation for SMEs. From identifying hypotheses and methods as well as the content of the impact of Rural Credit Guarantee Foundation, the author started to do deep and detailed research on methods. The data needed were collected and compliance with the research.

In this research, the author use main econometric test methods will ensure better evaluation and its results are strong evidence, meaningful. To test the hypotheses, the author needs to determine what kind of methods suitable for applying. Because the data was collected from 50 companies during the 3 years from 2012 to 2014 so the data is panel data.

Therefore, Fixed effects model[1] or Random effects model[2] are appropriate methodology for testing. These hypotheses were tested with 0, 05 level of significance and were done by EVIEW. All hypotheses are tested and evaluated specific results which are presented in section 4.

4. Research results

4.1. Testing hypothesis 1.

H0: There is no significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA.

HA: There is a significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA.

In order to determine whether there is a strong positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA, a Fixed effects model was applied using EVIEW.

First, the author needs to check the Hausman ratio to choose which model (Fixed effects model or Random effects model) will be used. From the Table 2, we can observe that the Hausman ratio is 0.0000 < 0.05 therefore Fixed effects model was selected to test hypothesis.

Table 2 Hausman test for hypothesis 1

Hausman Test	
Chi-Sq. Statistic	22.560417
Chi-Sq. d.f	1
Prob	0.0000

Source: own construction

[1] In statistics, a fixed effects model is a statistical model that represents the observed quantities in terms of explanatory variables that are treated as if the quantities were non-random. In panel data analysis, the term fixed effects estimator (also known as the within estimator) is used to refer to an estimator for the coefficients in the regression model. If we assume fixed effects, we impose time independent effects for each entity that are possibly correlated with the regressors.

[2] In statistics, a random effects model, also called a variance components model, is a kind of hierarchical linear model. It assumes that the data being analyzed is drawn from a hierarchy of different populations whose differences relate to that hierarchy. In econometrics, random effects models are used in the analysis of hierarchical or panel data when one assumes no fixed effects. The random effects model is a special case of the fixed effects model.

From the Table 3. we can observe that R-squared is 0.996506 and its corresponding P value is 0.0002 < 0.05. Due to P value less than 5% we reject hypothesis H0 and accept hypothesis HA: There is a significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA.

Table 3 Test Hypothesis 1 by using Fixed effects model

Fixed effects model	
R-squared	0.996506
Coefficient	–0.007716
Prob (F-statistic)	0.0002

Notes: There is a significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA
Source: own construction

4.2. Testing hypothesis 2

H0: There is no empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA.

HA: There is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA.

In order to determine whether there is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from credit guarantee institutions in Hungary, a Fixed effects model was applied using EVIEW.

First, the author needs to check Hausman ratio to choose which model (Fixed effects model or Random effects model) will be used. From the Table 4. we can observe that the Hausman ratio is 0.0042 < 0.05 therefore Fixed effects model was selected to test hypothesis 2.

Table 4 Hausman test for hypothesis 2

Hausman Test	
Chi-Sq. Statistic	8.182772
Chi-Sq. d.f.	1
Prob.	0.0042

Source: own construction

From the Table 5. we can observe that R-squared is 0.926926 and its corresponding P value is 0.000000 < 0.05. Due to P value less than 5% we reject hypothesis H0 and accept

hypothesis HA: There is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA.

Table 5 Test hypothesis 2 by using Fixed effect model

Fixed effect model	
R-squared	0.926926
Coefficient	0.000693
Prob (F-statistic)	0.000000

Notes: There is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA.
Source: own construction

4.3. Testing hypothesis 3

H0: There is not a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA.

HA: There is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA.

In order to determine whether there is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from credit guarantee institutions in Hungary, a Fixed effects model was applied using EVIEW.

First, the author needs to check Hausman ratio to choose which model (Fixed effects model or Random effects model) will be used. From the Table 6. we can observe that the Hausman ratio is 0.0326 < 0.05 therefore Fixed effects model was selected to test hypothesis 3.

Table 6 Hausman test for hypothesis 3

Hausman Test	
Chi-Sq.	4.567985
Chi-Sq. d.f	1
Prob	0.0326

Source: own construction

From the Table 7. we can observe that R-squared is 0.940442 and its corresponding P value is 0.0062 < 0.05. Due to P value less than 5% we reject hypothesis H0 and accept hypothesis HA: There is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA.

Table 7 Test Hypothesis 3 by using Fixed effects model

Fixed effects model	
R-squared	0.940442
Coefficient	–2.49E-07
Prob (F-statistic)	0.0062

Notes: There is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA
Source: own construction

5. Conclusion

The main contribution of this research is to evaluating the impact of the Rural Credit Guarantee Foundation for SMEs in agriculture sector. Through the above analysis, this paper shows that AVHGA has significant impact in bringing many benefits to SMEs in agriculture sector such as reducing financial cost, increasing sales, and increasing investment. To achieve the objectives of this research, a quantitative research method was applied. By using quantitative research methods combined with the actual evidence, it will ensure that the result of this research is credible and valuable for utilization. Based on the literature review, data analysis and hypotheses testing, the following are the results of the finding and research:

Thesis 1.: There is a significant positive correlation between guarantee loans and sales of SMEs which received guarantee loans from AVHGA.

Thesis 2.: There is empirical evidence point out that guarantee loans can reduce financial cost of SMEs which received guarantee loans from AVHGA.

Thesis 3.: There is a strong positive correlation between guarantee loans and investment of SMEs which received guarantee loans from AVHGA.

References

Deelen L. − Molenaar K. (2004): G*uarantee Funds for Small Enterprises. A manual for guarantee fund managers*. International Labour Organisation, Geneva.

EBCI (2014): *Credit Guarantee Schemes for SME lending in Central, Eastern and South-Eastern Europe*. A report by the Vienna Initiative Working Group on Credit Guarantee Schemes. European Bank Coordination Initiative, Luxembourg.

EC (2013). *Report on the Access to Finance of Small and Medium-sized Enterprises (SAFE) in 2013*. European Commission, Brussels.

Green, A. (2003): *Credit Guarantee Schemes for Small Enterprises: An effective Instrument to Promote Private Sector-led Growth?* SME Technical Working Paper Series, UNIDO, Vienna.

Lifilleur, J. (2009): Financing SMEs in a context of strong information asymmetry. *Proparco's magezin*, 1.

Levitsky, J. (1997): Credit guarantee schemes for SMEs–an international review. *Small Enterprise Development*, 8, 2, pp. 4−17.

OECD (2013): *SME and Entrepreneurship Financing: The Role of Credit Guarantee Schemes and Mutual Guarantee Societies in supporting finance for small and medium-sized enterprises.* Center for Entrepreneurship, SMEs and local development, Organisation for Economic Co-operation and Development, Paris.

Leone, P. − Vebto, G. A. (eds) (2012): Credit guarantee Institutions and SME Finance. Palgrave Macmillan, New York.

Stiglitz, J. E. − Weiss, A. (1981): Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 71, 3, pp. 393−410

Uesugi, I. − Sakai K. − Yamashiro, G. M. (2010): The Effectiveness of the Public Credit Guarantees in the Japanese Loan Market. *Journal of the Japanese and International Economies,* 24, pp. 457−480.

http://www.avhga.hu/ (Rural Credit Guarantee Foundation)

Appendix

Appendix 1 Testing Hausman ratio of hypothesis 1

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.560417	1	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
Guaranteed loans	-0.007716	-0.005389	0.000000	0.0000

Cross-section random effects test equation:
Dependent Variable: Net sales
Method: Panel Least Squares
Date: 03/30/16 Time: 10:09
Sample: 2012 2014
Periods included: 3
Cross-sections included: 50
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	987774.9	52179.90	18.93018	0.0000
Guaranteed loans	-0.007716	0.001985	-3.886609	0.0002

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.996506	Mean dependent var	792262.4
Adjusted R-squared	0.994741	S.D. dependent var	2341623.
S.E. of regression	169810.3	Akaike info criterion	27.18724
Sum squared resid	2.85E+12	Schwarz criterion	28.21085
Log likelihood	-1988.043	Hannan-Quinn criter.	27.60310
F-statistic	564.6796	Durbin-Watson stat	2.849358
Prob(F-statistic)	0.000000		

Source: own construction

Appendix 2 Testing Hausman ratio for hypothesis 2

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.182772	1	0.0042

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
Guranteed loans	0.000693	0.000476	0.000000	0.0042

Cross-section random effects test equation:
Dependent Variable: Interest paid
Method: Panel Least Squares
Date: 03/30/16 Time: 10:28
Sample: 2012 2014
Periods included: 3
Cross-sections included: 50
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7010.908	2525.094	-2.776494	0.0066
Guaranteed loans	0.000693	9.61E-05	7.214740	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.926926	Mean dependent var	10552.09
Adjusted R-squared	0.890019	S.D. dependent var	24778.79
S.E. of regression	8217.472	Akaike info criterion	21.13040
Sum squared resid	6.69E+09	Schwarz criterion	22.15401
Log likelihood	-1533.780	Hannan-Quinn criter.	21.54626
F-statistic	25.11567	Durbin-Watson stat	1.784201
Prob(F-statistic)	0.000000		

Source: own construction

Appendix 3 Testing Hausman ratio of hypothesis 3

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.567985	1	0.0326

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
Guranteed loans	-0.000000	-0.000000	0.000000	0.0326

Cross-section random effects test equation:
Dependent Variable: Fixed tangible asset ratio
Method: Panel Least Squares
Date: 03/30/16 Time: 11:16
Sample: 2012 2014
Periods included: 3
Cross-sections included: 50
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	53.84628	2.338145	23.02949	0.0000
Guranteed loans	-2.49E-07	8.90E-08	-2.796220	0.0062

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.940442	Mean dependent var	47.54334
Adjusted R-squared	0.910362	S.D. dependent var	25.41482
S.E. of regression	7.609080	Akaike info criterion	7.161046
Sum squared resid	5731.912	Schwarz criterion	8.184662
Log likelihood	-486.0785	Hannan-Quinn criter.	7.576909
F-statistic	31.26498	Durbin-Watson stat	2.145162
Prob(F-statistic)	0.000000		

Source: own construction