

## JUSTUS-LIEBIG UNIVERSITÄT GIESSEN

Fachbereich 09: Agrarwissenschaften, Ökotrophologie und Umweltmanagement

### **Access to Credit and Household Income in the Northern Mountains of Vietnam**

Inaugural-Dissertation zur Erlangung des Doktorgrades (Dr. Agr.)

Fachbereich Agrarwissenschaften, Ökotrophologie und Umweltmanagement  
Institut für Betriebslehre der Agrar - und Ernährungswirtschaft  
Professur für Projekt – und Regionalplanung

Eingereicht von: Do Xuan Luan (MSc.)

Erstgutachter: Prof. Dr. Siegfried Bauer  
Zweitgutachter: Prof. Dr. Rainer Kühl

Giessen – November, 2015

## PREFACE

This volume provides a comprehensive analysis on the issues of rural credit conducted in the Northern Mountainous Region of Vietnam. The study has been carried out within the “Agricultural Economics and Related Sciences” program at the University of Giessen, Germany. A crucial advantage of this study is that it combined various econometrics tools using data collected from the national household surveys to examine the extent to which credit serves the poor, with regard to access constraints and income impacts.

The empirical findings reveal that the poor, especially the poorest households are still underserved by overall rural credit. The Agribank credit tends to provide to wealthier households and informal credit serves households that are closer to and above the relative poverty line. Subsidized credit successfully targeted the poor, implying that governmental subsidies are necessary to reach the poor. Credit accessibility analysis has highlighted the importance of social capital and agricultural extension services in determining credit accessibility by rural households. Whereas a significant increase in household income can be achieved through accessing commercial and informal loans, there is no significant increase in all income components for associated recipients of subsidized credit. Based on the findings of the study, a set of policy implications aimed at improving poverty targeting and credit access can increase the impact of credit on reducing poverty in a sustainable manner.

For the editors: Siegfried Bauer, University of Giessen, Germany

## ACKNOWLEDGEMENTS

First and foremost, I am deeply indebted to my first supervisor Prof. Dr. Siegfried Bauer for his continuous guidance, moral support and encouragement throughout this process. I am also thankful to my second supervisor Prof. Dr. Rainer Kühl for his constructive suggestions. Guidance and understanding from both supervisors proved crucial to the successful completion of this work. My thanks also go to the members of the examination committee, Prof. Dr. Ingrid-Ute Leonhäuser, Prof. Dr. Joachim Aurbacher and Prof. Dr. Michael Schmitz. The administrative support and cooperation of Mrs. Schlocker, Dr. Evelina and Dr. Tarig is also worth mentioning. I would also like to express my appreciation to Heinz Lakos for his technical support, to Mr. Danner McCulloh for his English correction of the text, to Mr. Max and Dr. Aaron for their correction of the German summary. I also acknowledge the Vietnamese Ministry of Education and Training for the doctoral scholarship. My sincere thanks go to the faculty of economics and rural development at Thai Nguyen University of Agriculture and Forestry. I would like to thank the Central Institute for Economic Management (CIEM) of Vietnam for providing the data and Dr. Kieu Thi Thu Huong for supporting me in my application for the doctoral program. I would like to take this opportunity to thank Mr. Nguyen Thanh Vu and international colleagues for their support.

The inspiration and support of my father Do Xuan Luong, mother Vu Thi Sau, my brothers and sisters were my main source of strength. My heartfelt appreciation goes to them. My deepest thanks go to my son Do Anh Duc, my daughter Do Khanh Linh and my wife Duong Thi Thu Hang for their inspiration, support and sacrifice.



**TABLE OF CONTENTS**

TABLE OF CONTENTS .....	i
LIST OF TABLES.....	viii
LIST OF FIGURES .....	x
LIST OF ACRONYMS AND ABBREVIATIONS .....	xi
1. INTRODUCTION .....	1
1.1 Background of the study.....	1
1.2 Statement of the problem .....	1
1.3 Objectives.....	3
1.4 Hypotheses of the study .....	4
1.5 Scope and limitations of the study .....	4
1.6 Contribution of the study.....	4
1.7 Structure of the study .....	5
2. AN OVERVIEW OF ECONOMY, POVERTY AND RURAL CREDIT SYSTEM IN VIETNAM.....	6
2.1 Geography .....	6
2.2 Macroeconomic performance.....	6
2.2.1 Key development indicators .....	6
2.2.2 GDP, credit and inflation in Vietnam.....	7
2.2.3 Economy's structure share in Vietnam.....	8
2.3 Agriculture and Poverty .....	9
2.3.1 Agricultural performance.....	9
2.3.2 Rural labors.....	11
2.3.3 Fragmentation of agricultural land .....	11
2.3.4 Poverty in Vietnam .....	12
2.3.5 Agricultural insurance in Vietnam .....	13
2.4 Rural credit in Vietnam .....	14
2.4.1 Brief history of rural credit policy in Vietnam.....	14
2.4.1.1 Credit cooperatives before 1986 .....	14

2.4.1.2 Replacement of the mono-tier banking system after 1986 .....	15
2.4.1.3 The separation between preferential and commercial lending .....	16
2.4.1.4 Incorporation of microfinance institutions in the financial system	17
2.4.1.5 Priorities for lending agricultural and rural sector.....	18
2.4.2    Rural credit demand .....	18
2.4.3    Supply side of rural credit in Vietnam .....	20
2.4.3.1 Formal, semiformal and informal credit .....	20
2.4.3.2 Market share and financial sustainability .....	22
2.5    Summary of the chapter .....	24
<b>3. THEORETICAL AND EMPIRICAL FOUNDATIONS OF THE STUDY ....</b>	<b>25</b>
3.1    Concept of credit and general issues.....	25
3.1.1    The credit concept .....	25
3.1.2    Types of credit.....	26
3.1.3    The triangle of credit .....	27
3.1.4    Challenges for the provision of credit to rural households .....	28
3.1.4.1 Principle of marginal return to capital .....	28
3.1.4.2 Information asymmetry .....	29
3.1.4.3 Characteristics of farming activities .....	30
3.1.4.4 Principal – agent problem in rural credit market .....	31
3.1.4.5 Transaction cost and borrowers’ risk management .....	32
3.2    Poverty outreach of credit.....	33
3.2.1    Depth of outreach concept and measurement .....	33
3.2.1.1 Concept .....	33
3.2.1.2 Measurement .....	33
3.2.2    Empirical evidence on poverty outreach of credit .....	35
3.2.2.1 The extent to which credit serves the poor .....	35
3.2.2.2 Reasons explaining the credit exclusion of the poor .....	35
3.2.3    Credit subsidy .....	37
3.2.4    Summary.....	37
3.3    Access to credit .....	38
3.3.1    Concepts and approaches of analyzing credit accessibility .....	38

---

3.3.2 Empirical determinants of credit access at household level .....	40
3.3.3 Summary .....	41
3.4 Credit repayment .....	42
3.4.1 Role of credit repayment .....	42
3.4.2 Measurement for repayment performance.....	42
3.5 Welfare impact of credit.....	44
3.5.1 How credit affect households .....	44
3.5.2 A foundation for impact estimation.....	46
3.5.3 Empirical evidence on impact of credit .....	47
3.5.3.1 Significantly positive impact of credit .....	47
3.5.3.2 Limited impact of credit and reasons .....	49
3.5.3.3 Mixed impacts of credit under certain conditions.....	50
3.5.4 Summary .....	50
3.6 International experiences in rural credit development.....	51
3.6.1 Germany.....	51
3.6.2 Bangladesh.....	52
3.6.3 Philippines .....	54
3.6.4 Indonesia.....	55
3.6.5 Thailand .....	56
3.6.6 Lessons to be learnt .....	57
3.7 Conceptual framework .....	58
<b>4. RESEARCH AREA AND ANALYSIS OF SAMPLED HOUSEHOLD CHARACTERISTICS.....</b>	<b>60</b>
4.1 Overview of the Northern Mountainous Region of Vietnam .....	60
4.1.1 Overall socio-economic conditions .....	60
4.1.2 Overview of the selected communes .....	62
4.2 Data source .....	63
4.3 Composition of selected households by sources of loans .....	66
4.3.1 Loan characteristics .....	68
4.3.1.1 Loan amount, duration and interest rate.....	68
4.3.1.2 Collateral security.....	69

4.3.1.3 Mode of repayment .....	70
4.3.1.4 Credit use purposes .....	70
4.4 Demographic characteristics of selected households.....	72
4.5 Main agricultural activities .....	74
4.5.1 Crop production.....	74
4.5.2 Livestock production.....	75
4.5.3 Land size and land use certificate.....	76
4.6 Access to extension services .....	78
4.6.1 Receives of extension services categorized by sources of loans.....	78
4.6.2 Feedback of household to extension services .....	79
4.6.3 Extension and credit access .....	81
4.6.4 Extension and household income .....	82
4.6.5 Extension and other household endowments .....	84
4.7 Shocks and economic losses .....	86
4.7.1 Type of shocks and distribution of shock affected households by loan sources and provinces .....	86
4.7.2 Economic losses due to shocks .....	88
4.7.3 Household endowments categorized by shock affected.....	89
4.7.3.1 Income difference .....	89
4.7.3.2 Differences in selected variables between shock-affected and shock non- affected households .....	91
4.7.4 Household responses to shocks .....	93
4.8 Household savings .....	94
4.8.1 Savings and credit access .....	94
4.8.2 Motives for savings .....	96
4.8.3 Savings and household endowments .....	98
4.8.3.1 Savings and income .....	98
4.8.3.2 Savings and other household endowments based on loan sources .	99
4.9 Ethnicity and credit access .....	101
4.9.1 Credit recipients categorized by ethnicity group.....	101
4.9.2 Ethnicity and credit volumes .....	102

4.9.3	Ethnicity and household endowments .....	103
4.10	Summary of the chapter .....	106
<b>5.</b>	<b>POVERTY OUTREACH OF RURAL CREDIT.....</b>	<b>108</b>
5.1	Introduction .....	108
5.2	The methodology for evaluating poverty outreach .....	108
5.2.1	Principal Component Analysis: main ideas.....	108
5.2.2	Selection of variables for Principal Component Analysis.....	110
5.2.2.1	Point-Biserial Correlation .....	111
5.2.2.2	A description of selected variables .....	112
5.3	Empirical results and discussion .....	114
5.3.1	Results of Principal Component Analysis .....	114
5.3.2	Poverty outreach of rural credit .....	116
5.3.2.1	Depth of outreach based on relative poverty .....	116
5.3.2.2	The association between poverty scores and loan amount .....	118
5.3.2.3	Depth of outreach based on categories of credit exclusion.....	119
5.3.3	Summary of the chapter.....	120
<b>6.</b>	<b>DETERMINANTS OF CREDIT ACCESSIBILITY BY RURAL HOUSEHOLDS.....</b>	<b>121</b>
6.1	Introduction .....	121
6.2	Methodology .....	121
6.2.1	Choice of explanatory variables .....	121
6.2.1.1	Social capital .....	121
6.2.1.2	Human capital.....	123
6.2.1.3	Financial capital .....	124
6.2.1.4	Physical capital.....	125
6.2.2	Bayesian Model Average applied to the Heckman Selection Model	126
6.2.2.1	Credit access model.....	127
6.2.2.2	Credit Amount Model .....	129
6.3	Results and discussions .....	131
6.3.1	Endowment difference between household groups .....	131
6.3.2	Result of Bayesian Model Averaging (BMA).....	134

6.3.3 Determinants of credit access.....	135
6.3.3.1 Determinants of accessing overall credit .....	136
6.3.3.2 Determinants of accessing subsidized credit .....	140
6.3.3.3 Determinants of accessing Agribank credit .....	141
6.3.3.4 Determinants of accessing informal credit .....	144
6.4 Summary of the chapter .....	146
<b>7. INCOME IMPACT OF CREDIT ON RECIPIENTS.....</b>	<b>147</b>
7.1 Introduction .....	147
7.2 Impact Estimation by Using Propensity Score Matching.....	147
7.2.1 Reasons for choosing Propensity Score Matching.....	147
7.2.2 Main ideas of Propensity Score Matching .....	148
7.2.3 Assumptions of Propensity Score Matching .....	150
7.2.4 Choice of matching algorithm.....	151
7.2.4.1 Nearest neighbor matching and radius matching.....	151
7.2.4.2 Kernel matching .....	153
7.2.4.3 Stratification matching .....	153
7.2.5 Assessment of the matching quality .....	154
7.2.6 Bootstrapping with Propensity Score Matching.....	155
7.3 Estimation Results.....	156
7.3.1 Income Impact of Credit without Using Matching Techniques.....	156
7.3.2 Income Impact of Credit by Using Matching Techniques .....	159
7.3.2.1 Income impact of overall rural credit.....	160
7.3.2.2 Income impact of subsidized credit .....	162
7.3.2.3 Income impact of commercial credit by the Agribank (VBARD)	166
7.3.2.4 Income impact of informal credit .....	169
7.3.2.5 Income impact per VND million of credit.....	171
7.4 Summary of the chapter .....	172
<b>8. SUMMARY OF THE STUDY: RATIONALE, MAIN FINDINGS, CONCLUSIONS AND POLICY RECOMMENDATIONS.....</b>	<b>173</b>
8.1 Introduction .....	173
8.2 Rationale of the study .....	173

8.3 Methodological approaches.....	174
8.4 Main findings .....	174
8.4.1 Household characteristics .....	174
8.4.2 Poverty outreach of credit.....	176
8.4.3 Determinants of credit access .....	176
8.4.4 Income impact of credit .....	177
8.5 Conclusions .....	177
8.5.1 The extent to which credit reaches the poor .....	177
8.5.2 Factors influencing credit access.....	178
8.5.3 Income impact of rural credit .....	178
8.6 Policy implications .....	179
8.6.1 Improve the extent to which credit reaches the poor.....	179
8.6.2 Credit schemes should be adaptable to the farming seasonality and the cash flow of households .....	179
8.6.3 Development of risk coping measures for the poor.....	180
8.6.4 Encouraging the provision of commercial loans .....	180
8.6.5 Informal credit still retain as a necessity for the poor .....	181
8.6.6 Facilitating access to extension services .....	181
8.6.7 Mobilization of rural savings as the important source of credit.....	182
8.7 Limitations and suggestions for further studies .....	182
ZUSAMMENFASSUNG .....	183
REFERENCES .....	188
APPENDIX.....	200