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Approaches to Modelling Vulnerability to Poverty in Rural Households in Thua Thien Hue Province, Vietnam

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Abstract

Economic reforms have transformed Vietnam into one of Asia's fastest growing countries which has achieved impressive progress on cutting poverty. The success of its agricultural sector remains a key factor for maintaining this positive trend since the majority of the population still lives in the countryside. Idiosyncratic and covariate shocks pose a threat to the rural economy and can cause households to fall back or deeper into poverty. However, positive shocks like the recent price surge for food crops also offer opportunities. Modeling the reactions of rural households to shocks presents a challenge. Several steps are necessary Firstly, a good understanding of the Household's decision-making processes, his income portfolios and his coping capacity are needed. Secondly, a good concept to build such models that incorporate vulnerability in the criterion function is needed. Thirdly, a good empirical data base is necessary.
This paper focuses on the third aspect, namely the collection of data and the formulation of respective household models which are typical for the farm household systems in Thua Thien Hue Province in Central Vietnam. In this study primary data from 718 households in were collected. Results of a descriptive analysis indicate that two groups of typical farm households can be identified: Those households who are exclusively engaged in own agricultural activities and those who are engaged in both own agriculture and off-farm employment. The first group accounts for a larger share of households in the mountainous areas of the province which is predominantly inhabited by ethnic minorities. Major shocks by which households were affected in a reference period of 5 years are unusually heavy rainfall, flooding and illness of household members. Shock-affected households applied different coping activities such as borrowing from different sources, taking up of additional occupation and adjusting their agricultural production portfolio. A considerable share of households did nothing when a shock occurred. The outcome of the study points to the importance of a more profound analysis of the effect of shocks on farm households and their risk coping behaviour.

Introduction

The impact of shocks poses a threat to the Vietnam's rural economy and makes rural households vulnerable to fall back or deeper into poverty. Shocks can be both covariate shocks (e.g. climatic

events, price fluctuations) which concern all households of a community or region, and idiosyncratic shocks (e.g. illnesses of household members, theft) which affect solely an individual household. In order to mitigate the adverse effects of shocks, households use ex-ante risk-management and ex-post risk-coping strategies (Dercon 2002[1]). Modelling the application of these strategies by rural households presents a challenge.

Objectives

The main objectives of this study are:

(1) to collect the data needed to mathematically program agricultural household models which can contribute to a better understanding of the reactions of rural households to agricultural income shocks, and

(2) to formulate agricultural household models which are typical for the farm household systems in Thua Thien Hue province in Central Vietnam and relevant in the context of vulnerability to poverty.

Conceptual Framework

The data that form the basis of this study were gathered in 2007 from 718 households in Thua Thien Hue province. These households are supposed to be representative for the rural population in the different agro-ecological zones of the province. The statistical analysis of the data focuses on that part of the rural population who lives in mountainous areas. This enables the consideration of ethnic minorities who account for a considerable share of the local population. The ethnicity of households is presumed to be of particular interest in the context of vulnerability because of the widening economic gaps between Vietnam's Kinh majority and ethnic minorities (World Bank 2006). Concentrating on a single agro-ecological zone also allows for a manageable scope of natural conditions in the agricultural household models.

Since the data from the 2007 base survey give a rather broad view of shocks and coping strategies (see Table 2), additional information which allows for a more profound analysis of how shocks affect the agricultural production of rural households is needed. Specifically, the questions of which shock types affect which elements of agricultural production to what extent, and which motivations and costs are associated with different coping strategies, need to be answered. Furthermore, data about input use in farming systems and agricultural output are required in order to derive the parameters for the mathematical programming models.

Therefore a sub-sample of 60 typical farm households living in mountainous areas of Thua Thien Hue province has been purposively selected to be interviewed in an in-depth socio-economic case study. The selected typical farm households are being interviewed in two waves in May 2008 and January 2009. Households were selected into the sub-sample based on the criteria of being both representative for the study site and relevant in the context of vulnerability to poverty. Table 1 shows a descriptive analysis of variables which were used as proxy variables for the selection criteria.

As first selection criteria, the experience of shock events by households was used in order to get useful information about households' coping activities in the advent of relevant economic shocks. Therefore, only households who had reported at least one shock with at least medium estimated severity in a reference period of 5 years were considered to be selected into the sub-sample. Shocks with low estimated severity are assumed to induce little coping-necessity, if there is any

coping-necessity at all. Among all reported shocks in the 2007 base survey those with low estimated severity were the least prevalent ones.

	Mean	Linearized Std. Err.
Number of shocks per household		
Total	1.74	0.07
High estimated severity	1.28	0.10
Medium estimated severity	0.38	0.04
Low estimated severity	0.07	0.02
Share of remittances on total income per capita (%)	5.4	2.9
Monthly income per capita (VND)[1]	288.31	40.08
Share of land used mainly for cropping on total land per household (%)	52.7	4.2

Table 1: Descriptive analysis of rural households in the mountainous uplands of Thua Thien Hue (N=239)

[1] US$ = 17108.7 VND (Vietnamese Dong) [16.07.2008]

Second, the average monthly income per nucleus household member was applied as a criterion. Households with an average monthly income per nucleus household member greater than 200% of the poverty line[1] for rural Vietnam were not considered eligible for the sub-sample for the in-depth case study. Since the overall topic of the study is vulnerability to poverty, only those households who are below the poverty line or relatively close above to the poverty line are of interest. It is assumed that such households face the risk of falling into poverty or, if already poor, even deeper into poverty in the advent of economic shocks.

Third, households who received remittances from friends, relatives or absent household members which made up at least 60% of their average per capita income were not considered eligible for the sub-sample for the for the in-depth case study. Such households are atypical for Thua Thien Hue because data from the 2007 base survey indicate that the vast majority of households received considerably lower shares of remittances. They were excluded because it is assumed that interviewing households who receive a large fraction of their income from remittances are faced with little coping-necessity in the advent of agricultural production shocks.

Fourth, households with a share of land used mainly for cropping on total land of less than 20% were considered not eligible for the sub-sample for the in-depth case study in order to avoid having households in the sample who are strongly specialized in activities other than cropping such as livestock husbandry, fishing or logging. Descriptive analysis indicates that the average household in mountainous areas of Thua Thien Hue accounts for a share of about 50% of land with main use for cropping on total land.

The eligible households were divided into 3 groups of households:

- households who were exclusively engaged in agriculture, fishing, hunting, collecting and/or logging
- households who were additionally engaged in off-farm wage employment and/or non-farm self-employment and who had an income above the poverty line
- households who were additionally engaged in off-farm wage employment and/or non-farm self-employment and who had an income below the poverty line.

[1] Poverty line for rural Vietnam in 2007: 225200 VND per person per month. (Source: General Statistics Office of Vietnam)

20 households were randomly selected into each group. The application of coping strategies might differ between households depending on their poverty status. By selecting households into the second and third group who were both below and above the poverty line, it was intended to capture as many different applications of coping strategies as possible. Since the vast majority of households in the first group were below the poverty line, households in that group were selected independent of their poverty status.

Results

Results of a descriptive analysis of the 2007 base survey data indicate that two groups of households can be identified which are typical for the study site regarding their income portfolio (see Table 1). It is also shown that households were affected by both covariate and idiosyncratic shocks, and that different coping strategies were applied.

	% of all households
Households solely engaged in agriculture, fishing, hunting, collecting and/or logging	24.3
Households with additional occupation in wage-labour and/or non-farm self-employment	68.6
Households affected by…	
...illness of household members	37.2
…flooding	38.5
…unusually heavy rainfall	38.9
…livestock disease	15.6
Households who…	
…took up additional occupation	29.7
…substituted crops	10.9
…used savings	12.1
…borrowed from relatives, friends or neighbours	23.4
…received help from government	11.7

Table 2: Income sources, main shocks and main coping strategies of rural households in mountainous areas of Thua Thien Hue (N=239)

Tables 2 and 3 show first results of a descriptive analysis of data from the in-depth case study. During the first survey wave households gave detailed information on a total of 154 shock events. The shocks mainly affected their agricultural production. A closer look at the average crop area that was damaged by shocks indicates a difference in the proportional size of shock damage between the main crops grown in the study area. A further analysis of these findings is expected to be helpful for the construction of realistic shock scenarios to be simulated by the mathematical programming model.

	% of all reported shocks
Shocks which affected the households'…	
...agricultural production	89.0
...non-agricultural income	10.4
...asset base	31.8

Table 3: Household elements affected by shock events (descriptive analysis of sub-sample data; N=154 shocks)

	Mean	SD	Median	N
Cassava	81	27	100	36
Acacia	53	34	50	13
Rice	90	22	100	59
Corn	100	0	100	17
Banana	93	19	100	25

Table 4: Area damaged by shock events (descriptive analysis of sub-sample data)
(in % of total area planted with affected crop)

Summary and Outlook

The main objective of this study is to collect the data needed to mathematically program agricultural household models which can contribute to a better understanding of the risk coping behavior of rural households' in Thua Thien Hue province, Vietnam. Based on the results of a descriptive analysis of primary data from 718 rural households in the research area, the need for a more profound analysis of the effects of shocks on farm households and their risk coping behavior was identified. Therefore, typical farm households were identified which are both representative for the final study site, the mountainous areas of Thua Thien Hue province, and relevant in the context of vulnerability to poverty. 60 typical farm households are being interviewed in an in-depth socio-economic case study. The first wave of data was carried out in May 2008 and first results of a descriptive analysis allow for a better understanding of how shocks affect typical farm households. The second and final wave of data collection for the in-depth case study will be carried out in January 2009. Data will be used for deriving parameters for the mathematical programming models and for constructing realistic shock scenarios. Results of the mathematical programming model can be expected by autumn 2009.

References

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